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# The Scottish Coastal Observatory 1997-2013

## Part 3 - Appendices

### Scottish Marine and Freshwater Science Vol 7 No 26

E Bresnan, K Cook, J Hindson, S Hughes, J-P Lacaze, P Walsham, L Webster and  
W R Turrell



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**The Scottish Coastal Observatory 1997-2013**  
**Part 3 - Appendices**

**Scottish Marine and Freshwater Science Vol 7 No 26**

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Published by Marine Scotland Science

ISSN: 2043-772

DOI: 10.7489/1881-1

Marine Scotland is the directorate of the Scottish Government responsible for the integrated management of Scotland's seas. Marine Scotland Science (formerly Fisheries Research Services) provides expert scientific and technical advice on marine and fisheries issues. Scottish Marine and Freshwater Science is a series of reports that publishes results of research and monitoring carried out by Marine Scotland Science. It also publishes the results of marine and freshwater scientific work that has been carried out for Marine Scotland under external commission. These reports are not subject to formal external peer-review.

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## Contents

|   |    |
|---|----|
| 1. Appendix A: Bibliography of Outputs              | 1  |
| 2. Appendix B: Data File                            | 26 |
| 3. Appendix C: Sample Numbers                       | 35 |
| 4. Appendix D: Data Quality Flags                   | 41 |
| 5. Appendix E: Supplementary Meteorological Figures | 43 |
| 6. Appendix F: Phytoplankton Species List           | 91 |
| 7. Appendix G: Zooplankton Species List             | 97 |

## 1. Appendix A: Bibliography of Outputs

### Summary

Table 1: Summary of outputs from the Scottish Coastal Observatory since 1997

|                             |    |
|-----------------------------|----|
| Peer Reviewed Papers        | 37 |
| Book Chapters               | 3  |
| Internal Reports            | 15 |
| External/Contract Reports   | 13 |
| ICES Reports                | 5  |
| Oral Presentations          | 57 |
| Poster Presentations        | 72 |
| Media                       | 9  |
| Studentships                | 19 |
| Nuffield Students           | 8  |
| Topic Sheets                | 6  |
| Outputs by External Authors | 10 |

A detailed list is given below. These are ordered in reverse date of publication with the most recent outputs first.

### Peer Reviewed Publications

Siemering B, Bresnan E, Painter SC, Daniels CJ, Inall M, Davidson K (2016) Phytoplankton Distribution in Relation to Environmental Drivers on the North West European Shelf Sea. PLoS ONE 11(10): e0164482. doi:10.1371/journal.pone.0164482.

Eckford-Soper, L.K., Bresnan, E., Lacaze, J-P., Green, D.H. (2016) The competitive dynamics of toxic *Alexandrium fundyense* and non-toxic *Alexandrium tamarens* from Scottish waters. Harmful Algae, 53, 135 – 144.

Bresnan, E., Cook, K., Hughes, S., Hay, S., Smith, K., Walsham, P., Webster, L. (2015) Seasonality of the plankton community at an east and west coast monitoring site in Scottish waters. Journal of Sea Research, 105,16-29.

Bresnan E., Kraberg, A., Fraser, S., Amorim, A.–L., Janisch S., Wiltshire, K.H. (2015) A comparison of *Pseudo-nitzschia* diversity and seasonality at two long-term monitoring sites in the North Sea with new records of *P. multiseriata* and *P. americana* at Helgoland Roads. Helgoland Marine Research, 69, 193 – 204.

Kopf, A., Bicak, M., Kottmann, R., Schnetzer, J., Kostadinov, I., Lehmann, K., Fernandez-Guerra, A., Jeanthon, C., Rahav, A., Ullrich, M., Wichels, A., Gerdt, G., Polymenakou, P., Kotoulas, G., Siam, R., Abdallah, R., Sonnenschein, E., Cariou, T., O’Gara, F., Jackson, S., Orlic, S., Steinke, M., Busch, J., Duarte, B., Caçador, I., Canning-Clode, J., Bobrova, O., Marteinsson, V., Reynisson, E., Loureiro, C., Luna, G., Quero, G., Löscher, G., Kremp, A., DeLorenzo, A., Øvreås, L., Tolman, J., LaRoche, J., Penna, A., Frischer, M., Davies, T., Barker, K., Meyer, C., Ramos, S.,

Jude-Lemeilleur, F., Aguirre-Macedo, M., Wang, S., Poulton, N., Jones, S., Collin, R., Fuhrmann, J., Conan, P., Alonso, C., Stambler, N., Goodwinn, K., Yakimov, M., Baltar, F., Bodrossy, L., Van De Kamp, J., Dion, M.F., Ostrowski, D., Van Ruth, P., Malthouse, P., Claus, P., Deneudt, K., Mortelmans, J., Pitois, S., Wallom, D., Salter, I., Costa, R., Schroeder, D., Kandil, M., Amaral, V., Pedrotti, M., Yoshida, T., Ogata, H., Ingleton, T., Munnik, K., Rodriguez-Ezpeleta, N., Berteaux-Lecellier, V., Wecker, P., Cancio, I., Vaultot, D., Bienhold, C., Ghazal, H., Chaouni, H., Essayeh, S., Ettamimi, S., Zaid, E., Boukhatem, N., Bouali, A., Chahboune, R., Barrijal, S., Timinouni, S., Otmani, F., Bennani, M., Todorova, N., Karamfilov, V., Hoopen, P., L'Haridon, S., Bizsel, K., Vezzi, V., Lauro, F., Martin, P., Jensen, R., Hinks, J., Gebbels, J., Rosselli, R., Pascale, F., Schiavon, S., dos Santos, A., Villar, E., Pesant, A., Cataletto, B., Malfatti, S., Edirisinghe, R., Herrera, J., Barbier, M., Turk, V., Tinta, T., Fuller, W., Salihoglu, S., Serakinci, M., Ergoren, S., Bresnan, E., Iriberrri, S., Nyhus, P., Edvardsen, B., Karlsen, P., Golyshin, J., Gasol, P., Moncheva, S., Dzhembekova, N., Johnson, Z., Sinigalliano, E., Gidley, L., Zingone, A., Tsiamis, G., Clark, M., Costa, A., Bour, M., Martins, A., Collins, E., Ducluzeau, A-L., Martinez, J., Costello, M., Amaral-Zettler, L., Gilbert, J., Davies, N. (2015) The Ocean Sampling Day Consortium. *GigaScience*, 4, 27. <http://dx.doi.org/10.1186/s13742-015-0066-5>.

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Walsham, P., Webster, L., Engelke, C., Greenwood, N., Stewart, B., Kivimae, C., Hartman, S., Pearce, D., Gowen, R. (2014) UK Ocean Acidification Coastal Monitoring Network - Expanding the Network - Defra Contract C5801/ME5309. *Scottish Marine and Freshwater Science*, 5 (1), 29pp.

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McCollin, T., Lichtman, D., Bresnan, E., Berx, B. (2011) A study of phytoplankton communities along a hydrographic transect on the north east coast of Scotland. *Marine Scotland Science Report*, 04/11, 37pp.

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Ostle, C., Williamson, P., Artioli, Y., Bakker, D.C.E., Birchenough, S., Davis, C.E., Dye, S., Edwards, M., Findlay, H.S., Greenwood, N., Hartman, S., Humphreys, M.P., Jickells, T., Johnson, M., Landschützer, P., Parker, R., Pearce, D., Pinnegar, J., Robinson, C., Schuster, U., Silburn, B., Thomas, R., Wakelin, S., Walsham, P., Watson, A. J. (2016) Carbon dioxide and ocean acidification observations in UK waters: Synthesis report with a focus from 2010 - 2015. Report to DEFRA.

León P., Bresnan E., Cook K, Walsham P., Helfrich M. and Mackenzie K (2016) Can pelagic gastropods be used to assess the impacts of ocean acidification? ICES Science Fund Final Report. 15pp.

Scherer, C., Gowen, R.J., Tett, P., Atkinson, A., Baptie, M., Best, M., Bresnan, E., Cook, K., Forster, R., Keeble, S., McQuatters-Gollop, A. (2015) Development of a UK integrated plankton monitoring programme. Report to DEFRA.

Devlin, M.J., Best M., Bresnan E., Baptie, M. (2013) Water Framework Directive: The development and status of phytoplankton tools for ecological assessment of coastal and transitional waters. United Kingdom. Update Report to UK Technical Advisory Group for the Environment Agency (May 2013).

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E eds] Relating harmful phytoplankton to shellfish poisoning and human health. Report Oban, Scotland October 2007. P 11 – 16.

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Bresnan, E., Fryer, R., Hart, M., Percy, P. (2005) Correlation between algal presence in water and toxin presence in shellfish. FRS Contract Report 04/05.

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O'Brien, T.D., Wiebe, P.H., Hay, S. (2011) ICES Zooplankton Status Report 2008/2009. ICES Cooperative Research Report, No. 307, 152pp.

O'Brien, T.D., López-Urrutia, A., Wiebe, P.H., Hay, S. (2008) ICES Zooplankton Status Report 2006/ 2007. ICES Cooperative Research Report, No. 292, 168pp.

Smayda, T. and Aertjeberg, G. (2008) Time Series Data Relevant to Eutrophication Ecological Quality Objectives [WKEUT].

### **Oral Presentations**

León P., Bresnan E., Cook K, Walsham P., McCoy G., Helfrich M. and Mackenzie K. (2016). Analysis of the potential impact of ocean acidification on the pelagic gastropod community in the North East of Scotland. Scottish Microscopy Group meeting, Herriot Watt University, 25 Nov 2016.

León P., Bresnan E., Cook K, Walsham P., McCoy G., Helfrich M. and Mackenzie K. (2016). Analysis of the potential impact of ocean acidification on the pelagic gastropod community in the North East of Scotland. MASTs Annual Science Meeting, Glasgow, Oct 2016.

Swan S., Turner A., Paterson P., Bresnan E., Davidson K. (2016) An unusual bloom of *Dinophysis acuta* in Scottish coastal waters linked to a change in diarrhetic shellfish toxin profiles. International Harmful Algal Bloom Conference, Florianopolis, Brazil, 10 – 14<sup>th</sup> Oct.

Paterson R., Green D., Davidson K., Bresnan E., Lacaze J.-P. (2016). Too Small to See: Using qPCR to monitor azaspiracid producer *Azadinium spinosum* in Scottish waters. Oral Presentation, International Harmful Algal Bloom Conference, Florianopolis, Brazil, 10 – 14<sup>th</sup> Oct.

Bresnan E., Fraser S., Brown L., Leon P., Cook K., Hughes S., Walsham P. and Webster L. (2016). The spring diatom bloom in Scottish waters; regional differences and interannual variation. ICES ASC, Riga, Sept 2016.

Eerkes-Medrano, D., Cook, K.B., Wright, P.J. (2016) The role of temperature as a proxy for prey availability ICES ASC, Riga, Sept 2016.

Siemering B, Inall M., Davidson K. Bresnan E., Gowen R. (2016) Using gliders to study phytoplankton. Oral Presentation Challenger Society Meeting, Liverpool, 5 – 9 Sept.

Paterson R., Green D., Davidson K., Bresnan E., Lacaze J.-P. (2016). Keeping Shellfish Safe: New technologies help protect consumers of cultured shellfish from toxic algae (*Azadinium spinosum* and azaspiracids) in Scottish waters. Oral Presentation, Challenger Society Meeting, Liverpool, 5 – 9 Sept.

Siemering B, Bresnan E., Painter S. C., Daniels C. J., Inall M., Davidson K. (2016) Phytoplankton distribution in relation to environmental drivers on the North West European shelf sea. Oral Presentation, British Phycological Society Meeting, Bournemouth, 22 – 24 June, 2016

Paterson R., Green D., Davidson K., Bresnan E., Lacaze J.-P. (2016). Understanding the ecology of the toxic dinoflagellate *Azadinium spinosum* in Scottish coastal regions. Oral Presentation, British Phycological Society Meeting, Bournemouth, 22 – 24 June, 2016

Cook, K., Bresnan, E., Fraser, J., Fraser, S., Robinson, S., Brown, L., Diaz, P. (2016) Status of pelagic habitats in Scottish coastal waters: an application of the UK plankton index. ICES/PICES 6th Zooplankton Production Symposium, Bergen, Norway, 9-13 May 2016.

Wells, S., Cook, K., Bresnan, E., Douglas, A., Mayor, D. (2016) Environmental drivers of zooplankton community at Loch Ewe, Scotland. ICES/PICES 6th Zooplankton Production Symposium, Bergen, Norway, 9-13 May 2016.

Bresnan, E. (2016) The Marine Scotland Science Stonehaven time-series: lessons working at the science/policy interface. Invited lecture: Nippon Foundation - POGO centre of excellence in observational oceanography session 2016, Alfred Wegner Institute, Helgoland, Germany, 23 March 2016.

Bresnan, E. (2016) Plankton and policy: protecting human health and 'assessment of state'. Invited lecture: Nippon Foundation - POGO centre of excellence in observational oceanography session 2016, Alfred Wegner Institute, Helgoland, Germany, 22 March 2016.

Bresnan, E. (2015) The use of transmission electron microscopy to identify diatom cells. Invited presentation: Imaging Marine Microorganisms Workshop, NUIG, Galway, Ireland, 14 September 2015.

Bresnan, E. (2015) Harmful Algal Blooms in Scottish Waters. Invited presentation: Environmental Research Group Meeting, University of St. Andrews, UK, 10 December 2015.

Bresnan, E., Diaz, P., Walsham, P., Webster, L., Hartman, S. (2015) Seasonality of carbonate chemistry and coccolithophores at the Stonehaven monitoring site in the north east of Scotland. Bequalm International Phytoplankton Workshop, Copenhagen, 8-12 November 2015.

Walsham, P., Bresnan, E., Leon Diaz, P., Webster, L. (2015) Seasonal cycles and interannual variability in total alkalinity, dissolved inorganic carbon and coccolithophore diversity at a Scottish inshore monitoring site. ICES Annual Science Conference, Copenhagen. H:06.

Walsham, P., Bresnan, E., Diaz, P., Webster, L., Hartman, S. (2015) Ocean Acidification – Science & Policy (applied to a Scottish Coastal Monitoring site). Marine Climate Change, SNH, Inverness.

Bresnan, E., Fraser, S., Brown, L., Amorim, A., Diaz, P. (2014) Marine phytoplankton; good things come in (very) small parcels. Internal MSS Seminar, Aberdeen.

Bresnan, E., Cook, K., Brown, L., Lacaze, J-P., Amorim, A-L., Graham, J., Turrell, E., Collins, C. (2014), Harmful algae in Scottish waters: diversity of the dinoflagellate *Alexandrium* (Halim) and interaction with zooplankton grazers. Invited presentation: British Phycological Society Meeting, Galway, Ireland, June 2014.

Reguera, B., Bresnan, E., Martin, J., Tester, P., Karlson, B. (2014), Distribution and impacts of Harmful Algal Blooms in the ICES area, ICES ASC, Spain, Sept 2014.

Bresnan, E., Berx, B., Collins, C., Cook, K., Gallego, A., Hughes, S., Lacaze, J.P., Walsham, P., Webster, L., Turrell, W.R. (2013) The Marine Scotland Science Ecosystem Monitoring Programme. Invited Seminar, Herriot Watt University.

Walsham, P., Webster, L., Berx, B., Bresnan, E., Hydes, D., Hartman, S. (2013) Carbonate Chemistry Observations in Scottish Coastal and Offshore Waters. Oral Presentation to the UK Ocean Acidification Annual Science Meeting and Global Ocean Acidification observing Network. St Andrews 22<sup>nd</sup> -26<sup>th</sup> July 2013.

Bresnan, E., Cook, K., Geldart, M., Lacaze, J-P., Webster, L., Rasmussen, J., Turrell, W. (2012) Variability in a sealoch plankton community; observations over a decade of monitoring. ECSA meeting, Oban, May 2012.

Bresnan, E., Cook, K., Hughes, S.L., Berx, B., Walsham, P., Webster, L., Rasmussen, J., Hay, S., Turrell, W.R. (2012) Long term plankton monitoring in

Scottish waters: requirements and emerging patterns. Invited speaker, Helgoland  
50<sup>th</sup> Anniversary Symposium. Helgoland, Germany.

Bresnan, E., Cook, K., Geldart, M., Lacaze, J.-P., Webster, L., Brown, L., Fraser, J., Fraser, S., Hermann, G., Rasmussen, J., Robinson, S., Turrell, W.R. (2012) Seasonality and composition of the plankton community in Loch Ewe, a sea loch on the west coast of Scotland. ECSA Sea Lochs and Adjacent Waters Meeting. Oban, Scotland.

Eckford-Soper, L., Davidson, K., Green, D., Bresnan, E., Lacaze, J.P. (2012) The dynamics of toxic and non toxic strains of the harmful dinoflagellate *Alexandrium tamarensis* from Scottish Waters. 60<sup>th</sup> Annual Meeting, British Phycological Society Meeting, Newcastle.

Eckford-Soper, L., Davidson, K., Green, D., Bresnan, E., Lacaze, J.P. (2012) The dynamics of toxic and non toxic strains of the harmful dinoflagellate *Alexandrium tamarensis* from Scottish Waters. Challenger Society Meeting, Norwich.

Eckford-Soper, L., Davidson, K., Green, D., Bresnan, E., Lacaze J.P. (2012) The dynamics of toxic and non toxic strains of the harmful dinoflagellate *Alexandrium tamarensis* from Scottish Waters. XIV Harmful Algal Bloom Conference, Korea.

Penston, M.J., Cook, K., Rasmussen, J., Fraser, J., Robinson, S., MacLachlan, P., Dunn, J., Hay, S. (2011) Seasonal and interannual variation of two *Calanus* species off the east and west coasts of Scotland. ICES/NAFO Symposium on the Variability of the North Atlantic and its Marine Ecosystems during 2000–2009, Santander, Spain, 10-12 May 2011.

Bresnan, E., Edwards, M., Stern, R., Hughes, S.L., Fraser, S., Johns, D.G., Lacaze, J.P. (2011) Changes in the diversity of the dinoflagellate genus *Dinophysis* (Ehrenberg) in the north west North Sea. World Conference on Marine Biodiversity, Aberdeen, 2011.

Bresnan, E., Hughes, S.L., Fraser, S., Amorim, A.L., Smith, K., Rose, M., Slesser, G., Hay, S., Rasmussen J., Heath, M.R. (2010) Changes in the phytoplankton community in the North East of Scotland: observations since 1997. EMBS symposium, Edinburgh 2010.

Bresnan, E., Hughes, S.L., Amorim, A-L., Smith, K., Rose, M., Slesser, G., Hay, S., Rasmussen, J., Heath, M.R. (2009) Changes in the phytoplankton community structure in the North East of Scotland: observations since 1997. 58th Annual Meeting of the British Phycological Society, Oban, Scotland, UK, 6-9 January 2010.

Rasmussen, J., Heath, M., Dunn, J., Fraser, J., Hay, S., Robinson, S. (2009) Seasonal Patterns of Size Structured Biomass in Scottish Coastal Zooplankton. CERF 20th Biennial Conference, Estuaries and Coasts in a Changing World, Portland, Oregon, USA, 1-5 November 2009.

Bresnan, E., Hughes, S.L., Amorim, A-L., Smith, K., Rose, M., Slesser, G., Hay, S., Rasmussen, J., Heath, M.R. (2009) Changes in the phytoplankton community structure in the North East of Scotland: observations since 1997. CERF 20th Biennial Conference, Estuaries and Coasts in a Changing World, Portland, Oregon, USA, 1-5 November 2009.



Bresnan, E., Hughes, S.L., Amorim, A-L., Smith, K., Rose, M., Slesser, G., Hay, S., Rasmussen, J., Heath, M.R. (2009) Changes in the phytoplankton community structure in the North East of Scotland: observations since 1997. Coasts and Estuaries Research Federation, 20th Biennial Conference, Estuaries and Coasts in a Changing World, Portland, Oregon, USA.

Fraser, S., Amorim, A.L., Bresnan, E. (2009) Phytoplankton monitoring in Scottish waters: developing time series to identify and evaluate community change. Aberdeen Research Consortium Environmental Change Awareness Day, MLURI, Aberdeen.

Gowen, R., Tett, P., Bresnan, E., Davidson, K., Milligan, S., McKinney, A. (2009) An investigation into the relationship between anthropogenic nutrient enrichment and blooms of harmful micro-algae. GEOHAB - 2nd Open Science Meeting on HABs and Eutrophication, Beijing, China.

Turrell, E. (2009) Early warning of harmful algal events – SPIES-DETOX. 9<sup>th</sup> Irish Shellfish Safety Scientific Workshop (Kenmare, Ireland).

Lacaze, J.-P., Alfonso, A., Rodriguez, P., Hermann, G., Touzet, N., Turrell, E. (2009) Advances in Solid-phase Adsorption Toxin Tracking (SPATT) for Detection of Toxins Produced by Alexandrium Species. 7th International Conference on Molluscan Shellfish Safety (Nantes, France).

Lacaze, J-P. (2009) SPATT as an early warning tool for harmful algal events. . SPIES-DETOX Workshop: Integrating new Marine biotoxin management Tools in HACCP and Food Safety management. Marine Institute, Galway (Sept 09).

Turrell, E. (2009) Warning of Algal Toxin Events to support aquaculture in the NPP Coastal Zone Region (WATER). Northern Periphery programme Scottish Project Partner Event (16 & 17 March, 2009, Inverness, UK).

Hermann, G., Lacaze, J.P., Bresnan, E., Fraser, S., Turrell, E.A. (2008) Occurrence of algal toxins in water – Solid Phase Adsorption Toxin Tracking (SPATT) as a monitoring tool. The 13th International Conference on Harmful Algae 2008 (Hong Kong, China).

Lacaze, J-P. (2008) Solid-phase adsorption toxin tracking (SPATT). Training in rapid testing for algal toxins in shellfish at NAFC (Shetland, UK).

Hermann, G., Turrell, E. (2008) Findings from an EC Collective Research Project – SPIES-DETOX – ‘Early warning and detection of algal toxins’. Association of Scottish Shellfish Growers Annual Conference '08 (Oban, UK).

Bresnan, E., Hughes, S.L., Fraser, S., Johns, D., Edwards, M. (2008) Interannual variation of *Dinophysis* in Scottish waters: Where has *D. acuta* gone? The 13th International Conference on Harmful Algae, Hong Kong.

Bresnan, E., Kraberg, A., Fraser, S., Janish, S., Wiltshire, K. (2008) Diversity of *Pseudo-nitzschia* in the North Sea: Observations from two long term monitoring sites. 15th International Conference on Diatom Research, Croatia.

Bresnan, E. (2008) Phytoplankton dynamics in Scottish Coastal waters. Invited seminar. Botanik Institute, University of Copenhagen, Denmark.

Mayor, D.J., Matthews, C.A., Cook, K., Hay, S. (2007) Sub-lethal effects of elevated CO<sub>2</sub> on *Calanus* spp. ICES/PICES/GLOBEC 4th International Zooplankton Symposium Human and climate forcing of zooplankton populations, Hiroshima, Japan, 28 May-1 June 2007.

Turrell, E., Stobo, L.A., Piletsky, S., Drago, G., Kleivdal, H. (2007) Evaluation and Method Development of Solid Phase Adsorbents for Phycotoxins in the Marine Environment. 8<sup>th</sup> European Meeting on Environmental Chemistry (Inverness, UK).

Bresnan, E., Davidson, K., Gowen, R., Higman, W., Lawton, L., Lewis, J., Percy, L., McKinney, A., Milligan, S., Shammon, T., Swan, S. (2007) Harmful phytoplankton in U.K. waters: Current and future organisms of concern. NERC UK HAB Workshop, Oban.

Bresnan, E., Fraser, S., Brown, L., Cook, K., Dunn, J., Fraser, J., Hay, S., Rasmussen, J., Robinson S., Heath, M. (2007) Interannual variation in phytoplankton community structure in the North East of Scotland. Chapman conference on Long Time-Series Observations in Coastal Ecosystems: Comparative Analyses of Phytoplankton Dynamics on Regional to Global Scales, Croatia.

Brown, L. and Bresnan, E. (2006) Transmission electron microscopy: An essential tool in assessing diatom diversity in Scottish waters. Meeting of the Scottish Microscopy Group. Aberdeen.

Lacaze, J.P. (2005) Progress in research into on-site biotoxin monitoring. ASSG International Conference 2005 'The Sustainability of the Shellfish Sector' (Oban, UK).

Bresnan, E., Fryer, R., Fraser, S., Smith, N., Brown, N., Scott, A., Lacaze, J-P., Greive, M., Stobo, L., Smith, E. (2004) The relationship between the occurrence of toxin producing phytoplankton and toxin in shellfish flesh at two sites in Scotland – 5th International Conference on Molluscan Shellfish Safety (ICMSS 04), Galway, Ireland.

Bresnan, E. (2003) Toxic Phytoplankton Monitoring and Research at Fisheries Research Services (FRS). Association of Scottish Shellfish Growers Meeting, Oban.

### **Poster Presentations**

Siemering B, Inall M., Davidson K. Bresnan E., Gowen R. (2016) Using gliders to study phytoplankton. Oral Presentation, International Harmful Algal Bloom Conference, Florianopolis, Brazil, 10 – 14<sup>th</sup> Oct.

Fanjul, A., Villate, F., Uriarte, I., Iriarte, A., Atkinson, A., Cook, K. (2016) Seasonal and interannual relationships in the zooplankton dynamics of the Northeast Atlantic Shelves in relation to latitude and trophic status. ICES/PICES 6th Zooplankton Production Symposium, Bergen, Norway, 9-13 May 2016.

Iriarte, A., Uriarte, I., Villate, F., Fanjul, A., Atkinson, A., Cook, K. (2016) Comparison of different scales of zooplankton variability in four sites of the Northeast Atlantic Shelves in relation to latitude and trophic status. ICES/PICES 6th Zooplankton Production Symposium, Bergen, Norway, 9-13 May 2016.

León, P., Bresnan, E., Cook, K., Walsham, P., McCoy, G.R., Helfrich, M., Mackenzie, K. (2016) Can pelagic gastropods be used to assess the impacts of ocean acidification in the North Sea? ICES/PICES 6th Zooplankton Production Symposium, Bergen, Norway, 9-13 May 2016.

Eerkes-Medrano, D., Cook, K.B., Wright, P.J. (2016) The role of temperature as a proxy for prey availability. ICES/PICES 6th Zooplankton Production Symposium, Bergen, Norway, 9-13 May 2016.

Mayor, D.J., Sommer, U., Cook, K.B., Viant, M.R. (2016) The metabolic response of marine copepods to environmental warming and ocean acidification in the absence of food. ICES/PICES 6th Zooplankton Production Symposium, Bergen, Norway, 9-13 May 2016.

Garvetto, A., Bresnan E., Gachon, C. (2016) Characterising novel oomycete and protist pathogens in the context of harmful algal blooms, EMBL Symposium, Heidelberg, Germany.

León, P., Bresnan, E., Cook, K., Walsham, P., Helfrich, M., Mackenzie, K. (2015) Can pelagic gastropods be used to assess the impacts of ocean acidification in the North Sea? ICES CM 2015/H.

Villate, F., Iriarte, A., Uriarte, I., Fanjul, A., Atkinson, A., Cook, K. (2015) Comparison of mesozooplankton-environment relationships during a fifteen years period at four coastal sites in the North Atlantic Shelves Province. 55th Conference of Estuarine Coastal Sciences Association, London, UK, 6-9 September 2015.

Fanjul, A., Villate, F., Uriarte, I., Iriarte, A., Atkinson, A., Cook, K. (2015) Comparison of seasonal and inter-annual patterns of variability of coastal zooplankton along a latitudinal gradient in the Northeast Atlantic Shelves Province. 55th Conference of Estuarine Coastal Sciences Association, London, UK, 6-9 September 2015.

Bresnan, E., Brown, L., Collins, C. (2015) Diversity and seasonality of the microbial community at the Stonehaven coastal ecosystem monitoring site in the north east of Scotland. MASTS Annual Science Meeting, Technology & Innovation Centre, Glasgow, 30 September - 2 October 2015.

León Diaz, P., Bresnan, E., Cook, K., Walsham, P., Helfrich, M., Mackenzie, K. (2015) Can pelagic gastropods be used to assess the impacts of ocean acidification in the North Sea? ICES CM H: 16.

León Diaz, P., Bresnan, E., Cook, K., Walsham, P., Helfrich, M., Mackenzie K. (2015) Can pelagic gastropods be used to assess the impacts of ocean acidification in the North Sea? MASTS Annual Science Conference Glagsow, Sept 2015.

León Diaz, P., Bresnan, E., Cook, K., Walsham, P., Helfrich, M., Mackenzie, K. (2015) Can pelagic gastropods be used to assess the impacts of ocean acidification in the North Sea? "Response of pteropods to ocean acidification and climate change" Workshop in Cambridge, June 2015.

McCoy, G.R., Brown, L., Leon Diaz, P., Bresnan, E. (2015) A first description of seasonality of the nano and pico-plankton communities in the north-east of Scotland. MASTS Annual Science Meeting, Technology & Innovation Centre, Glasgow, 30 September - 2 October 2015.

Winterton, C., Austin, W., Bresnan, E., Davidson, K. (2015) A 100-year record of changing toxic algae in Scottish coastal waters relating to climate change. MASTS Annual Science Meeting, Technology & Innovation Centre, Glasgow, 30 September - 2 October 2015.

Winterton, C., Bresnan, E., Davidson, K., Austin, W. (2015) A 100-year record of toxic algae in Scottish coastal waters relating to changes in climate change. IOC-ICES-PICES Symposium on HABs and climate change. Gothenburg, Sweden, May 2015.

Bresnan, E., Lacaze, J-P., Fraser, S., Brown, L., Amorim, A-L., Cook, K. (2014) Algal toxins in Scottish waters: the first association of domoic acid with the diatom *Pseudonitzschia pseudodelicatissima* complex in the North East of Scotland, MASTs Annual Science Meeting, Edinburgh.

Diaz, P., Bresnan, E., Walsham, P., Webster, L. (2014) Seasonal variation of *Emiliania huxleyi* morphology at an ecosystem monitoring site off the east coast of Scotland. MASTs ASM, Edinburgh.

Paterson, R., Davidson, K., Green, D., Bresnan, E., Lacaze, J-P., Tillman, U. (2014) Understanding the factors governing *Azadinium* generated shellfish toxicity in Scottish waters. Harmful Algae XVI, New Zealand.

Siemering, B., Inall, M., Bresnan, E., Gillibrand, P., Davidson, K. (2014) Advective transport of harmful phytoplankton. British Phycological Society Meeting, Galway, June 2014. *Awarded Manton Prize for best student poster at meeting.*

Siemering, B., Inall, M., Bresnan, E., Gillibrand, P., Davidson, K. (2014) Advective transport of harmful phytoplankton. Challenger Society Meeting, Plymouth, July 2014.

Smith, K., Walsham, P., Bresnan, E., Webster L. (2014) High performance liquid chromatography (HPLC) and fluorometric analyses of phytoplankton pigments at a Scottish coastal ecosystem monitoring site. MASTs ASM, Edinburgh, Sep 2014.

Walsham, P., Bresnan, E, Webster L., Hartman, S. (2014) High frequency monitoring of carbonate chemistry parameters (Total Alkalinity and Dissolved Inorganic Carbon) at a Scottish Coastal monitoring site to understand seasonal and inter-annual variation.

Scott-Murray, A., Colucci-Gray, L., Cook, K., Bresnan, E., Mayor, D.J. (2013) Communicating marine science in the 21st century. MASTs Annual Science Meeting, Edinburgh.

Bresnan, E., Brown, L., Fraser, S., Lacaze, J.P., Kinnear, S., Hermann, G., Stobo, L., Turrell, E., Cook, K. (2013) *Pseudo-nitzschia* (Peragallo) and domoic acid in Loch Ewe, a sea loch on the west coast of Scotland. GEOHAB open science meeting, UNESCO, France.

Sander, B., Edwards, C., Lacaze, J.P., Bresnan, E. (2013) Investigation into the toxicity of *Alexandrium minutum* isolated from Scottish waters. RGU final year student poster day, June 2013.

Stern, R., Amorim, A.-L., Bresnan E. (2013) Diversity and plastid types in *Dinophysis acuminata* complex (Dinophyceae) in Scottish waters. E-poster at MASTs ASM, Edinburgh.

Eckford-Soper, L., Davidson, K., Green, D., Bresnan, E., Lacaze, J.P. (2012) The dynamics of toxic and non toxic strains of the harmful dinoflagellate *Alexandrium tamarense* from Scottish Waters. 60<sup>th</sup> Annual Meeting, British Phycological Society Meeting, Newcastle.

Eckford-Soper, L., Davidson, K., Green, D., Bresnan, E., Lacaze, J.P. (2012) The dynamics of toxic and non toxic strains of the harmful dinoflagellate *Alexandrium tamarense* from Scottish Waters. Challenger Society Meeting, Norwich.

Eckford-Soper, L., Davidson, K., Green, D., Bresnan, E., Lacaze, J.P. (2012) The dynamics of toxic and non toxic strains of the harmful dinoflagellate *Alexandrium tamarense* from Scottish Waters. XIV Harmful Algal Bloom Conference, Korea.

Mayor, D.J., Cook, K., Thornton, B., Walsham, P., Witte, U.F.M., Zuur, A.F., Anderson, T.R. (2011) Absorption efficiencies and basal turnover of carbon, nitrogen and fatty acids in *Calanus* spp. ICES/PICES/GLOBEC 5th International Zooplankton Symposium. Population connections, community dynamics and climate variability. Pucon, Chile. 14-18 March 2011.

Cook, K., Penston, M., Rasmussen, J., Fraser, J., Robinson, S., MacLachlan, P., Dunn, J., Hay, S. (2011) Interannual variation in 'indicator' chaetognaths off the east and west coasts of Scotland. ICES/NAFO Symposium on the Variability of the North Atlantic and its Marine Ecosystems during 2000–2009, Santander, Spain, 10-12 May 2011.

Bresnan, E., Hughes, S.L., Fraser, S., Amorim, A.-L., Smith, K., Walsham, P., Webster, L., Berx, B., Slesser, G., Rasmussen, J., Hay, S. (2011) Observed changes in the marine phytoplankton community in the north east of Scotland. Plankton Symposium, SAHFOS, Plymouth, Sept 2011.

Bresnan, E., Hughes, S.L., Fraser, S., Amorim, A.L., Smith, K., Rose, M., Walsham, P., Slesser, G., Hay, S., Rasmussen, J., Heath, M.R. (2011) Variation in the phytoplankton community in Scottish waters over the last decade. ICES/NAFO

Symposium on the Variability of the North Atlantic and its Marine Ecosystems during 2000–2009, Santander, Spain, 10-12 May 2011.

Bresnan, E., Hay, S., Hughes, S.L., Slesser, G., Lichtman, D., Smith, K., Walsham, P., Webster, L., Lacaze, J.P., Rasmussen, J., Amorim, A-L., Fraser, S., Fraser, J., Robinson S., Dunn, J. (2011) Marine Scotland - Science Inshore Ecosystem Monitoring Programme: Observed changes in the plankton community since 1997. MASTS Science Meeting, Edinburgh.

Fraser, S., Amorim, A-L., Rasmussen, J., Hay, S., Bresnan, E. (2010) Interannual variation in the diatom genus *Skeletonema* (Greville) in Scottish waters 58th Annual Meeting of the British Phycological Society, Oban, Scotland, Uk, 6-9 January 2010.

Fraser, S., Amorim, A.L., Bresnan, E. (2009) Phytoplankton monitoring in Scottish waters: developing time series to identify and evaluate community change. Scottish Marine Group Autumn Meeting, Stirling, Scotland, UK, 29 October 2009.

Scherer, C., Tett, P., Gowen, R., Gilpin, L., Bresnan, E., Mills, D. (2009) Can the phytoplankton community index be improved by accounting for the heterotrophic and mixotrophic microplankton? 44th European Marine Biology Symposium 2009, Liverpool.

Bresnan, E., and Yucel, R. (2009) Marine microflagellates: investigations of diversity and seasonality using flow cytometry. Flow Cytometry Workshop, University of Aberdeen.

McCollin, T. (2009) *Mediopyxis helysia* in Scottish Waters. British Phycological Society meeting, London.

Brown, L. and Bresnan, E. (2009) The diversity of the genus *Alexandrium* Halim (Dinoflagellata) in Scottish waters, assessed using morphological criteria. British Phycological Society meeting, London.

Turrell, E.A, Lacaze, J.P., Hermann, G., Alfonso, A., Maher, M., Raine, R., Keady, E., Touzet, N., Papapanagiotou, E. (2008) Occurrence of algal toxins in water and shellfish from Europe – The potential of solid phase adsorption toxin tracking as a monitoring tool. 11th International Conference on Applied Phycology (Galway, Ireland).

Fraser, S. and Bresnan, E. (2009) Comparing the current distribution of *Pseudo-nitzschia* (Peragallo) and *Dinophysis* (Ehrenberg) along the west coast of Scotland with data collected a century ago. British Phycological Society meeting, London.

Bresnan, E. (2008) Phytoplankton Projects at Fisheries Research Services, Marine Laboratory. Poster: 9th Advanced Phytoplankton Taxonomy Course, Naples, Italy.

Brown, L., Bresnan, E., Graham, J., Collins, C., Lacaze, J-P, Turrell, E.A. (2008) Diversity of *Alexandrium* (Dinophyceae) in Scottish waters. Algal Culture Collections conference, Oban.

Bresnan, E., Hay, S.J., Hughes, S.L., Fraser, S., Heath M.R. (2008) Changes in spring bloom dynamics in the North East of Scotland. Annual Science Conference 2008, Halifax, Nova Scotia, Canada, 22-26 September 2008 CM 2008.

McCollin, T. (2008) Observation of *Mediopyxis helysia* in Scottish waters. Annual Science Conference 2008, Halifax, Nova Scotia, Canada, 22-26 September 2008 CM 2008.

McCollin, T. (2008) *Mediopyxis helysia* in Scottish Waters. Non-Native Species Forum, Cardiff, Wales, 29-30 May 2008.

McCollin, T. (2008) *Mediopyxis helysia* in Scottish Waters. Non-Native Species Workshop, Leicester, England, June 2008.

Brown, L. and Bresnan, E. (2008) The diversity of the genus *Alexandrium* Halim (Dinoflagellata) in Scottish waters, assessed using morphological criteria. 3rd Congress of the International Society for Applied Phycology, Galway, Ireland.

Fraser, S. and Bresnan, E. (2008) Comparing the current distribution of *Pseudo-nitzschia* (Peragallo) and *Dinophysis* (Ehrenberg) along the west coast of Scotland with data collected a century ago. 3rd Congress of the International Society for Applied Phycology and the 11th International Conference on Applied Phycology, Galway, Ireland.

Turrell, E.A. (2007) Active biological monitoring and removal of toxins in aquaculture ecosystems and shellfish-including the development of a Solid-Phase In-situ Ecosystem Sampler (SPIES) and detoxification of shellfish (DETOX). Association of Scottish Shellfish Growers (ASSG) International Conference '07 - "Managing coastal resources" (Oban, UK).

Fraser, S., Brown, L., Bresnan, E. (2007) Investigation of an atypical *Pseudo-nitzschia* spp. bloom in Scottish waters. 10th Canadian Workshop on Harmful Algae, Quebec, Canada.

Hay, S., Robinson, S., Fraser, J., Rasmussen, J., Cook, K., Dunn, J., Heath, M., Bresnan, E., Fraser, S., Lichtman, D., Rose M. (2007) Zooplankton community description and comparison of seasonal population development for common species and groups, sampled weekly at time series sites on the Scottish east and west coasts. ICES/PICES/GLOBEC 4th International Zooplankton Symposium Human and climate forcing of zooplankton populations, Hiroshima, Japan.

Cook, K.B., Hay, S., Robinson S., Skinner, C. (2007) Seasonal patterns of abundance, egg production and egg viability of the calanoid copepods *Calanus helgolandicus* and *Calanus finmarchicus* at a station off the north-western North Sea coast. ICES/PICES/GLOBEC 4th International Zooplankton Symposium Human and climate forcing of zooplankton populations, Hiroshima, Japan, 28 May-1 June 2007.

Graham, J., Turrell, E., Stobo, L., Bresnan, E. (2006) Identification and assessment of the toxicity burden of natural phytoplankton populations. Proceedings of the 6th International Conference on Molluscan Shellfish Safety, Marlborough, New Zealand, 18-23 March 2006.

Stobo, L., Turrell, E., Lacaze, J.-P., Bresnan, E. (2006) Solid phase adsorption toxin tracking (SPATT) from New Zealand to the Scottish Coast. XII International Conference on Harmful Algae, Copenhagen, Denmark.

Collins, C., Bresnan, E., Brown, L., Grieve, M., Turrell, E., Cunningham, C. (2006) Molecular diversity of *Pseudo-nitzschia* cf. *delicatissima* in Scottish waters. Unravelling the algae, London.

Lichtman, D., Hughes, S., Beaton, J., Turrell, W.R. (2006) How water currents in the northern Atlantic Ocean effect Scottish coastal temperature. Poster displayed at an exhibition on the sea held at Taigh Chearsabhagh arts centre Lochmaddy.

Smith, E.A., Gubbins, M.J., Grieve, M., Bresnan, E. (2005) Monitoring toxic phytoplankton and shellfish in support of eutrophication assessments for Scottish coastal waters. GEOHAB Open Science Meeting on HABs and Eutrophication, Baltimore, Maryland, USA, 7-10 March 2005.

Stobo, L.A., Lacaze, J-P., Scott, A.C., Smith, E.A. (2004) An investigation into the occurrence of pectenotoxins (PTXs) in shellfish from Scottish waters. XI International Conference on Harmful Algae, Cape Town, 15-19 November 2004.

Fraser, S., Bresnan, E., Brown, L. (2004) Variation in *Dinophysis* spp: Cell size in Scottish waters. XI International Conference on Harmful Algae, Cape Town, South Africa.

Bresnan, E., Fraser, S., Smith, N. (2004) Diversity of *Pseudo-nitzschia* blooms in a sealoch in Northern Scotland. XI International Conference on Harmful Algae, Cape Town, South Africa.

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### **Studentships (PhD Completed)**

Lisa Eckford- Soper (2013) The competitive dynamics of toxic and non-toxic ribotypes of the harmful dinoflagellates *Alexandrium tamarense* in Scottish waters. Ph.D. thesis. University of Highlands and Islands.

Natalia Serpetti (2011) Modelling and mapping the physical and biogeochemical properties of sediments. PhD thesis, University of Aberdeen.

Traiani Stari (2010) Seasonal Stability in Time Series of Zooplankton Abundance. PhD thesis, Department of Mathematics and Statistics, University of Strathclyde.

Dorota Demain (2010) Settlement ecology of juvenile cod *Gadus morhua*, haddock *Melanogrammus aeglefinus* and whiting *Merlangius merlangus*. University of Aberdeen.

María C. Pan Añón (2009) Decapod Crustacean Larvae in Scottish (UK) Coastal Plankton. Seasonal Patterns, Settling Stages and a Real-Time PCR Identification Method. University of Aberdeen.

### **Studentships (PhD In Progress 2016)**

Angelina Angelova (in progress) Hydrocarbon degrading bacteria in the FSC. Herriot Watt University.

Andrea Garvetto (in progress) Phytoplankton parasites. University of the Highlands and Islands.

Ruth Paterson (in progress) Ecology of *Azadinium* in Scottish waters. University of Highlands and Islands.

Beatrix Siemering (in progress) Advection of harmful algal blooms. University of Highlands and Islands.

Seona Wells (in progress) Ecology of zooplankton on the west coast of Scotland. University of Aberdeen.

Cathy Winterton (in progress) *Alexandrium* in the paleoecological record. University of St. Andrews.

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Anna Harte (2015) Factors influencing the Density of Larval Sea Lice at East and West Locations in Scotland. MSc thesis, University of Aberdeen.

Paul Dees (2015) Domoic acid concentration and *Pseudo-nitzschia* spp. cell count compared to environmental conditions within a Scottish sea loch. MSc thesis, University of Aberdeen.

Neil Everett (2011) Examination of the Effects of Ocean Acidification on Copepod Egg Viability Using Novel Staining Techniques. MSc thesis, University of Aberdeen.

Christine McGunnigle (2008) An investigation into the behaviour of *Phaeocystis globosa* and *Skeletonema* sp. grown at different light and nutrient concentrations. MSc. Thesis, University of Aberdeen.

Ceri Matthews (2006) The sub-lethal effects of elevated carbon dioxide on *Calanus* spp. in the year 2300: the worst case scenario. MSc thesis, University of Aberdeen.

### **Studentships (BSc Completed)**

Bianca Sander (2013) The toxicity of *Alexandrium minutum*. BSc Honours thesis, Robert Gordon's University.

Sarah Lou Giering (2008) Estimation of LC<sub>50</sub> of hydrochloric acid and carbon dioxide on *Temora longicornis*. BSc honours thesis, University of Aberdeen.

Claire Skinner (2005) Reproduction of *Calanus helgolandicus* and *Calanus finmarchicus* at a station off Stonehaven: effect of female gonad maturity, female size, chlorophyll concentration and temperature. BSc honours thesis, University of Aberdeen.

### **Nuffield Students**

Skye Arnott (2015) Albyn School. Can jellyfish blooms be predicted? Crest gold award, British Association for Science gold award, Two press releases.

Mairi Bell (2011) Hazlehead Academy. Diagnosing Embryo Abnormalities in Zooplankton. British Association for Science gold award, Big Bang science festival Manchester winner, BBC special commendation, Tomorrows Water UK winner.

Katie Forbes (2010) Kincorth Academy. Sampling efficiency of plankton nets. British Association for Science Gold medal, Big Bang Science festival London 2<sup>nd</sup> place, Tomorrows Water UK Winner & International 3<sup>rd</sup> place, two press releases locally and nationally.

Nicole Little (2009) Inverurie Academy. Biometrics in Zooplankton. Press release.

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## Topic Sheets

Coastal ecosystem monitoring at Marine Scotland

M. V. Temora

## Outputs by External Authors

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## 2. Appendix B: Data File

Table 2 lists the parameters included in the dataset available at doi [10.7489/1761-1](https://doi.org/10.7489/1761-1) which accompanies this report. The figure numbers refer to those presented in Part 2 of this report. Shaded rows in italics indicate supporting data from an external source.

**Table 2:** Scottish Coastal Observatory data included in data file available at doi 10.7489/1761-1.

| <b>Data No.</b> | <b>Fig No.</b> | <b>Description</b>   | <b>Site</b>         | <b>Units</b> |
|-----------------|----------------|--|---------------------|--------------|
| 1               | 4.2            | <i>Mean air temperature at eight sites around Scotland</i>     | <i>Ballypatrick</i> | <i>°C</i>    |
| 2               | 4.2            | <i>Mean air temperature at eight sites around Scotland</i>     | <i>Dunstaffnage</i> | <i>°C</i>    |
| 3               | 4.2            | <i>Mean air temperature at eight sites around Scotland</i>     | <i>Tiree</i>        | <i>°C</i>    |
| 4               | 4.2            | <i>Mean air temperature at eight sites around Scotland</i>     | <i>Stornoway</i>    | <i>°C</i>    |
| 5               | 4.2            | <i>Mean air temperature at eight sites around Scotland</i>     | <i>Lerwick</i>      | <i>°C</i>    |
| 6               | 4.2            | <i>Mean air temperature at eight sites around Scotland</i>     | <i>Wick Airport</i> | <i>°C</i>    |
| 7               | 4.2            | <i>Mean air temperature at eight sites around Scotland</i>     | <i>Nairn</i>        | <i>°C</i>    |
| 8               | 4.2            | <i>Mean air temperature at eight sites around Scotland</i>     | <i>Leuchars</i>     | <i>°C</i>    |
| 9               | 4.3            | <i>Number of days of frost at eight sites around Scotland</i>  | <i>Ballypatrick</i> | <i>Days</i>  |
| 10              | 4.3            | <i>Number of days of frost at eight sites around Scotland</i>  | <i>Dunstaffnage</i> | <i>Days</i>  |
| 11              | 4.3            | <i>Number of days of frost at eight sites around Scotland</i>  | <i>Tiree</i>        | <i>Days</i>  |
| 12              | 4.3            | <i>Number of days of frost at eight sites around Scotland</i>  | <i>Stornoway</i>    | <i>Days</i>  |
| 13              | 4.3            | <i>Number of days of frost at eight sites around Scotland</i>  | <i>Lerwick</i>      | <i>Days</i>  |
| 14              | 4.3            | <i>Number of days of frost at eight sites around Scotland</i>  | <i>Wick Airport</i> | <i>Days</i>  |
| 15              | 4.3            | <i>Number of days of frost at eight sites around Scotland</i>  | <i>Nairn</i>        | <i>Days</i>  |
| 16              | 4.3            | <i>Number of days of frost at eight sites around Scotland</i>  | <i>Leuchars</i>     | <i>Days</i>  |
| 17              | 4.4            | <i>Number of sunshine hours at eight sites around Scotland</i> | <i>Ballypatrick</i> | <i>Hours</i> |
| 18              | 4.4            | <i>Number of sunshine hours at eight sites around Scotland</i> | <i>Dunstaffnage</i> | <i>Hours</i> |
| 19              | 4.4            | <i>Number of sunshine hours at eight sites around Scotland</i> | <i>Tiree</i>        | <i>Hours</i> |
| 20              | 4.4            | <i>Number of sunshine hours at eight sites around Scotland</i> | <i>Stornoway</i>    | <i>Hours</i> |
| 21              | 4.4            | <i>Number of sunshine hours at eight sites around Scotland</i> | <i>Lerwick</i>      | <i>Hours</i> |
| 22              | 4.4            | <i>Number of sunshine hours at eight sites around Scotland</i> | <i>Wick Airport</i> | <i>Hours</i> |
| 23              | 4.4            | <i>Number of sunshine hours at eight sites around Scotland</i> | <i>Nairn</i>        | <i>Hours</i> |
| 24              | 4.4            | <i>Number of sunshine hours at eight sites around Scotland</i> | <i>Leuchars</i>     | <i>Hours</i> |
| 25              | 4.5            | <i>Rainfall at eight sites around Scotland</i>                 | <i>Ballypatrick</i> | <i>mm</i>    |

|    |      |   |                     |                                    |
|----|------|---|---------------------|------------------------------------|
| 26 | 4.5  | <i>Rainfall at eight sites around Scotland</i>                | <i>Dunstaffnage</i> | <i>mm</i>                          |
| 27 | 4.5  | <i>Rainfall at eight sites around Scotland</i>                | <i>Tiree</i>        | <i>mm</i>                          |
| 28 | 4.5  | <i>Rainfall at eight sites around Scotland</i>                | <i>Stornoway</i>    | <i>mm</i>                          |
| 29 | 4.5  | <i>Rainfall at eight sites around Scotland</i>                | <i>Lerwick</i>      | <i>mm</i>                          |
| 30 | 4.5  | <i>Rainfall at eight sites around Scotland</i>                | <i>Wick Airport</i> | <i>mm</i>                          |
| 31 | 4.5  | <i>Rainfall at eight sites around Scotland</i>                | <i>Nairn</i>        | <i>mm</i>                          |
| 32 | 4.5  | <i>Rainfall at eight sites around Scotland</i>                | <i>Leuchars</i>     | <i>mm</i>                          |
| 33 | 4.9  | <i>River flow for 10 rivers on the West Coast of Scotland</i> | <i>Annan</i>        | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 34 | 4.9  | <i>River flow for 10 rivers on the West Coast of Scotland</i> | <i>Nith</i>         | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 35 | 4.9  | <i>River flow for 10 rivers on the West Coast of Scotland</i> | <i>Cree</i>         | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 36 | 4.9  | <i>River flow for 10 rivers on the West Coast of Scotland</i> | <i>Ayr</i>          | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 37 | 4.9  | <i>River flow for 10 rivers on the West Coast of Scotland</i> | <i>Clyde</i>        | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 38 | 4.9  | <i>River flow for 10 rivers on the West Coast of Scotland</i> | <i>Leven</i>        | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 39 | 4.9  | <i>River flow for 10 rivers on the West Coast of Scotland</i> | <i>Orchy</i>        | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 40 | 4.9  | <i>River flow for 10 rivers on the West Coast of Scotland</i> | <i>Shiel</i>        | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 41 | 4.9  | <i>River flow for 10 rivers on the West Coast of Scotland</i> | <i>Carron</i>       | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 42 | 4.9  | <i>River flow for 10 rivers on the West Coast of Scotland</i> | <i>Ewe</i>          | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 43 | 4.10 | <i>River flow for 13 rivers on the East Coast of Scotland</i> | <i>Naver</i>        | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 44 | 4.10 | <i>River flow for 13 rivers on the East Coast of Scotland</i> | <i>Conon</i>        | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 45 | 4.10 | <i>River flow for 13 rivers on the East Coast of Scotland</i> | <i>Ness</i>         | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 46 | 4.10 | <i>River flow for 13 rivers on the East Coast of Scotland</i> | <i>Findhorn</i>     | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 47 | 4.10 | <i>River flow for 13 rivers on the East Coast of Scotland</i> | <i>Spey</i>         | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 48 | 4.10 | <i>River flow for 13 rivers on the East Coast of Scotland</i> | <i>Deveron</i>      | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 49 | 4.10 | <i>River flow for 13 rivers on the East Coast of Scotland</i> | <i>Don</i>          | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 50 | 4.10 | <i>River flow for 13 rivers on the East Coast of Scotland</i> | <i>Dee</i>          | <i>m<sup>3</sup>s<sup>-1</sup></i> |
| 51 | 4.10 | <i>River flow for 13 rivers on the East Coast of Scotland</i> | <i>North_Esk</i>    | <i>m<sup>3</sup>s<sup>-1</sup></i> |



|    |           |   |                        |             |
|----|-----------|---|------------------------|-------------|
| 52 | 4.10      | River flow for 13 rivers on the East Coast of Scotland  | South_Esk              | $m^3s^{-1}$ |
| 53 | 4.10      | River flow for 13 rivers on the East Coast of Scotland  | Earn                   | $m^3s^{-1}$ |
| 54 | 4.10      | River flow for 13 rivers on the East Coast of Scotland  | Tay                    | $m^3s^{-1}$ |
| 55 | 4.10      | River flow for 13 rivers on the East Coast of Scotland  | Tweed                  | $m^3s^{-1}$ |
| 56 | 4.12      | Sea surface temperature for 13 Scottish Sea Areas   | Clyde                  | °C          |
| 57 | 4.12      | Sea surface temperature for 13 Scottish Sea Areas   | Minches and Malin Sea  | °C          |
| 58 | 4.12      | Sea surface temperature for 13 Scottish Sea Areas   | Hebrides               | °C          |
| 59 | 4.12      | Sea surface temperature for 13 Scottish Sea Areas   | Rockall                | °C          |
| 60 | 4.12      | Sea surface temperature for 13 Scottish Sea Areas   | Bailey                 | °C          |
| 61 | 4.12      | Sea surface temperature for 13 Scottish Sea Areas   | Faroe Shetland Channel | °C          |
| 62 | 4.12      | Sea surface temperature for 13 Scottish Sea Areas   | North Scotland Coast   | °C          |
| 63 | 4.12      | Sea surface temperature for 13 Scottish Sea Areas   | West Shetland          | °C          |
| 64 | 4.12      | Sea surface temperature for 13 Scottish Sea Areas   | East Shetland          | °C          |
| 65 | 4.12      | Sea surface temperature for 13 Scottish Sea Areas   | Fladen                 | °C          |
| 66 | 4.12      | Sea surface temperature for 13 Scottish Sea Areas   | Moray Firth            | °C          |
| 67 | 4.12      | Sea surface temperature for 13 Scottish Sea Areas   | Forties                | °C          |
| 68 | 4.12      | Sea surface temperature for 13 Scottish Sea Areas   | East Scotland Coast    | °C          |
| 69 | 5.3 & 5.4 | Sea surface temperature from Minilogger data at nine coastal monitoring sites around the Scottish coast | Millport               | °C          |
| 70 | 5.4       | Sea surface temperature from Minilogger data at nine coastal monitoring sites around the Scottish coast | Mallaig                | °C          |
| 71 | 5.4       | Sea surface temperature from Minilogger data at nine coastal monitoring sites around the Scottish coast | Loch Maddy             | °C          |
| 72 | 5.4       | Sea surface temperature from Minilogger data at nine coastal monitoring sites around the Scottish coast | Loch Ewe               | °C          |
| 73 | 5.4       | Sea surface temperature from Minilogger data at nine coastal monitoring sites around the Scottish coast | Fair Isle              | °C          |
| 74 | 5.4       | Sea surface temperature from Minilogger data at nine coastal monitoring sites around the Scottish coast | Scalloway              | °C          |
| 75 | 5.4       | Sea surface temperature from Minilogger data at nine coastal monitoring sites around the Scottish coast | Scapa                  | °C          |
| 76 | 5.4       | Sea surface temperature from Minilogger data at nine coastal monitoring sites around the Scottish coast | Cromarty               | °C          |

|     |      |   |            |               |
|-----|------|---|------------|---------------|
| 77  | 5.4  | Sea surface temperature from Minilogger data at nine coastal monitoring sites around the Scottish coast | East Coast | °C            |
| 78  | 5.5  | Sea surface temperature data at Loch Maddy  | Loch Maddy | °C            |
| 79  | 5.6  | Sea surface salinity data at Loch Maddy   | Loch Maddy | PSU           |
| 80  | 5.7  | Upper layer temperature data (0-10m) at Loch Ewe  | Loch Ewe   | °C            |
| 81  | 5.8  | Upper layer salinity data (0-10m) at Loch Ewe   | Loch Ewe   | PSU           |
| 82  | 5.9  | Lower layer temperature data (>30m) at Loch Ewe   | Loch Ewe   | °C            |
| 83  | 5.10 | lower layer salinity data (>30m) at Loch Ewe  | Loch Ewe   | PSU           |
| 84  | 5.11 | Sea surface temperature data at Scapa   | Scapa      | °C            |
| 85  | 5.12 | Sea surface salinity data at Scapa  | Scapa      | PSU           |
| 86  | 5.13 | Sea surface temperature data at Scalloway   | Scalloway  | °C            |
| 87  | 5.14 | Sea surface salinity data at Scalloway  | Scalloway  | PSU           |
| 88  | 5.15 | Upper layer temperature data (0-10m) at Stonehaven  | Stonehaven | °C            |
| 89  | 5.16 | Upper layer salinity data (0-10m) at Stonehaven   | Stonehaven | PSU           |
| 90  | 5.17 | Lower layer temperature data (>30m) at Stonehaven   | Stonehaven | °C            |
| 91  | 5.18 | Lower layer salinity data (>30m) at Stonehaven  | Stonehaven | PSU           |
| 92  | 6.1  | Seicchi depth at Loch Ewe   | Loch Ewe   | m             |
| 93  | 6.2  | Seicchi depth at Stonehaven   | Stonehaven | m             |
| 94  | 7.1  | Dissolved inorganic phosphorus (DIP, $\mu\text{M}$ ) data at Loch Maddy                                 | Loch Maddy | $\mu\text{M}$ |
| 95  | 7.2  | Dissolved silicate (DSi, $\mu\text{M}$ ) data at Loch Maddy   | Loch Maddy | $\mu\text{M}$ |
| 96  | 7.3  | Total oxidised nitrogen (TOxN, $\mu\text{M}$ ) data at Loch Maddy                                       | Loch Maddy | $\mu\text{M}$ |
| 97  | 7.4  | Surface layer (0 -10 m) dissolved inorganic phosphorus (DIP, $\mu\text{M}$ ) data at Loch Ewe           | Loch Ewe   | $\mu\text{M}$ |
| 98  | 7.5  | Lower layer (>30m) dissolved inorganic phosphorus (DIP, $\mu\text{M}$ ) data at Loch Ewe                | Loch Ewe   | $\mu\text{M}$ |
| 99  | 7.6  | Surface layer (0 -10 m) dissolved silicate (DSi, $\mu\text{M}$ ) data at Loch Ewe                       | Loch Ewe   | $\mu\text{M}$ |
| 100 | 7.7  | Lower layer (>30m) dissolved silicate (DSi, $\mu\text{M}$ ) data at Loch Ewe                            | Loch Ewe   | $\mu\text{M}$ |
| 101 | 7.8  | Surface layer (0 -10 m) total oxidised nitrogen (TOxN, $\mu\text{M}$ ) data at Loch Ewe                 | Loch Ewe   | $\mu\text{M}$ |
| 102 | 7.9  | Lower layer (>30m) total oxidised nitrogen (TOxN, $\mu\text{M}$ ) data at Loch Ewe                      | Loch Ewe   | $\mu\text{M}$ |
| 103 | 7.10 | Surface layer (0 -10 m) ammonia ( $\mu\text{M}$ ) data at Loch Ewe                                      | Loch Ewe   | $\mu\text{M}$ |
| 104 | 7.11 | Lower layer (>30m) ammonia ( $\mu\text{M}$ ) data at Loch Ewe   | Loch Ewe   | $\mu\text{M}$ |

|     |      |   |            |                       |
|-----|------|---|------------|-----------------------|
| 105 | 7.12 | Dissolved inorganic phosphorus (DIP, $\mu\text{M}$ ) data at Scapa                              | Scapa      | $\mu\text{M}$         |
| 106 | 7.13 | Dissolved silicate (DSi, $\mu\text{M}$ ) data at Scapa  | Scapa      | $\mu\text{M}$         |
| 107 | 7.14 | Total oxidised nitrogen (TOxN, $\mu\text{M}$ ) data at Scapa                                    | Scapa      | $\mu\text{M}$         |
| 108 | 7.15 | Dissolved inorganic phosphorus (DIP, $\mu\text{M}$ ) data at Scalloway                          | Scalloway  | $\mu\text{M}$         |
| 109 | 7.16 | Dissolved silicate (DSi, $\mu\text{M}$ ) data at Scalloway                                      | Scalloway  | $\mu\text{M}$         |
| 110 | 7.17 | Total oxidised nitrogen (TOxN, $\mu\text{M}$ ) data at Scalloway                                | Scalloway  | $\mu\text{M}$         |
| 111 | 7.18 | Ammonia ( $\mu\text{M}$ ) data at Scalloway   | Scalloway  | $\mu\text{M}$         |
| 112 | 7.19 | Surface layer (0 -10 m) dissolved inorganic phosphorus (DIP, $\mu\text{M}$ ) data at Stonehaven | Stonehaven | $\mu\text{M}$         |
| 113 | 7.20 | Lower layer (>30m) dissolved inorganic phosphorus (DIP, $\mu\text{M}$ ) data at Stonehaven      | Stonehaven | $\mu\text{M}$         |
| 114 | 7.21 | Surface layer (0 -10 m) dissolved silicate (DSi, $\mu\text{M}$ ) data at Stonehaven             | Stonehaven | $\mu\text{M}$         |
| 115 | 7.22 | Lower layer (>30m) dissolved silicate (DSi, $\mu\text{M}$ ) data at Stonehaven                  | Stonehaven | $\mu\text{M}$         |
| 116 | 7.23 | Surface layer (0 -10 m) total oxidised nitrogen (TOxN, $\mu\text{M}$ ) data at Stonehaven       | Stonehaven | $\mu\text{M}$         |
| 117 | 7.24 | Lower layer (>30m) total oxidised nitrogen (TOxN, $\mu\text{M}$ ) data at Stonehaven            | Stonehaven | $\mu\text{M}$         |
| 118 | 7.25 | Surface layer (0 -10 m) ammonia ( $\mu\text{M}$ ) data at Stonehaven                            | Stonehaven | $\mu\text{M}$         |
| 119 | 7.26 | Lower layer (>30m) ammonia ( $\mu\text{M}$ ) data at Stonehaven                                 | Stonehaven | $\mu\text{M}$         |
| 120 | 8.1  | Stonehaven Total Alkalinity - Surface   | Stonehaven | $\mu\text{mol/kg}$    |
| 121 | 8.2  | Stonehaven Total Alkalinity - Depth   | Stonehaven | $\mu\text{mol/kg}$    |
| 122 | 8.3  | Stonehaven Dissolved Inorganic Carbon - Surface   | Stonehaven | $\mu\text{mol/kg}$    |
| 123 | 8.4  | Stonehaven Dissolved Inorganic Carbon – Depth   | Stonehaven | $\mu\text{mol/kg}$    |
| 124 | 8.5  | Stonehaven pH (Derived, Total Scale) – Surface  | Stonehaven | total scale           |
| 125 | 8.6  | Stonehaven pH (Derived, Total Scale) – Depth  | Stonehaven | total scale           |
| 126 | 8.7  | Stonehaven Calcite Saturation (Derived) – Surface   | Stonehaven | (No Units)            |
| 127 | 8.8  | Stonehaven Calcite Saturation (Derived) – Depth   | Stonehaven | (No Units)            |
| 128 | 9.1  | Diatoms: Millport   | Millport   | cells $\text{L}^{-1}$ |
| 129 | 9.2  | Diatoms: Loch Maddy   | Loch Maddy | cells $\text{L}^{-1}$ |
| 130 | 9.3  | Diatoms: Loch Ewe   | Loch Ewe   | cells $\text{L}^{-1}$ |
| 131 | 9.4  | Diatoms: Scapa  | Scapa      | cells $\text{L}^{-1}$ |
| 132 | 9.5  | Diatoms: Scalloway  | Scalloway  | cells $\text{L}^{-1}$ |

|     |      |                              |            |                       |
|-----|------|------------------------------|------------|-----------------------|
| 133 | 9.6  | Diatoms: Stonehaven          | Stonehaven | cells L <sup>-1</sup> |
| 134 | 9.7  | Dinoflagellates: Millport    | Millport   | cells L <sup>-1</sup> |
| 135 | 9.8  | Dinoflagellates: Loch Maddy  | Loch Maddy | cells L <sup>-1</sup> |
| 136 | 9.9  | Dinoflagellates: Loch Ewe    | Loch Ewe   | cells L <sup>-1</sup> |
| 137 | 9.10 | Dinoflagellates: Scapa       | Scapa      | cells L <sup>-1</sup> |
| 138 | 9.11 | Dinoflagellates: Scalloway   | Scalloway  | cells L <sup>-1</sup> |
| 139 | 9.12 | Dinoflagellates: Stonehaven  | Stonehaven | cells L <sup>-1</sup> |
| 140 | 9.13 | Alexandrium: Millport        | Millport   | cells L <sup>-1</sup> |
| 141 | 9.14 | Alexandrium: Loch Maddy      | Loch Maddy | cells L <sup>-1</sup> |
| 142 | 9.15 | Alexandrium: Loch Ewe        | Loch Ewe   | cells L <sup>-1</sup> |
| 143 | 9.16 | Alexandrium: Scapa           | Scapa      | cells L <sup>-1</sup> |
| 144 | 9.17 | Alexandrium: Scalloway       | Scalloway  | cells L <sup>-1</sup> |
| 145 | 9.18 | Alexandrium: Stonehaven      | Stonehaven | cells L <sup>-1</sup> |
| 146 | 9.19 | Dinophysis: Millport         | Millport   | cells L <sup>-1</sup> |
| 147 | 9.20 | Dinophysis: Loch Maddy       | Loch Maddy | cells L <sup>-1</sup> |
| 148 | 9.21 | Dinophysis: Loch Ewe         | Loch Ewe   | cells L <sup>-1</sup> |
| 149 | 9.22 | Dinophysis: Scapa            | Scapa      | cells L <sup>-1</sup> |
| 150 | 9.23 | Dinophysis: Scalloway        | Scalloway  | cells L <sup>-1</sup> |
| 151 | 9.24 | Dinophysis: Stonehaven       | Stonehaven | cells L <sup>-1</sup> |
| 152 | 9.25 | Pseudo-nitzschia: Millport   | Millport   | cells L <sup>-1</sup> |
| 153 | 9.26 | Pseudo-nitzschia: Loch Maddy | Loch Maddy | cells L <sup>-1</sup> |
| 154 | 9.27 | Pseudo-nitzschia: Loch Ewe   | Loch Ewe   | cells L <sup>-1</sup> |
| 155 | 9.28 | Pseudo-nitzschia: Scapa      | Scapa      | cells L <sup>-1</sup> |
| 156 | 9.29 | Pseudo-nitzschia: Scalloway  | Scalloway  | cells L <sup>-1</sup> |
| 157 | 9.30 | Pseudo-nitzschia: Stonehaven | Stonehaven | cells L <sup>-1</sup> |
| 158 | 10.1 | Chlorophyll 'a': Loch Ewe    | Loch Ewe   | µg L <sup>-1</sup>    |
| 159 | 10.2 | Chlorophyll 'a': Stonehaven  | Stonehaven | µg L <sup>-1</sup>    |

|     |       |   |            |                                   |
|-----|-------|---|------------|-----------------------------------|
| 160 | 11.3  | OA concentration in SPATT passive samplers at Loch Ewe  | Loch Ewe   | ng OA g of resin <sup>-1</sup>    |
| 161 | 11.4  | PTX-2 concentration in SPATT passive samplers at Loch   | Loch Ewe   | ng PTX-2 g of resin <sup>-1</sup> |
| 162 | 11.5  | DTX-1 concentration in SPATT passive samplers at Loch Ewe                                     | Loch Ewe   | ng DTX-1 g of resin <sup>-1</sup> |
| 163 | 11.6  | DTX-2 concentration in SPATT passive samplers at Loch Ewe                                     | Loch Ewe   | ng DTX-2 g of resin <sup>-1</sup> |
| 164 | 11.7  | AZA-1 concentration in SPATT passive samplers at Loch Ewe                                     | Loch Ewe   | ng AZA-1 g of resin <sup>-1</sup> |
| 165 | 11.8  | YTX concentration in SPATT passive samplers at Loch Ewe                                       | Loch Ewe   | ng YTX g of resin <sup>-1</sup>   |
| 166 | 11.9  | OA concentration in SPATT passive samplers at Scapa   | Scapa      | ng OA g of resin <sup>-1</sup>    |
| 167 | 11.10 | PTX-2 concentration in SPATT passive samplers at Scapa  | Scapa      | ng PTX-2 g of resin <sup>-1</sup> |
| 168 | 11.11 | DTX-1 concentration in SPATT passive samplers at Scapa  | Scapa      | ng DTX-1 g of resin <sup>-1</sup> |
| 169 | 11.12 | DTX-2 concentration in SPATT passive samplers at Scapa  | Scapa      | ng DTX-2 g of resin <sup>-1</sup> |
| 170 | 11.13 | AZA-1 concentration in SPATT passive samplers at Scapa  | Scapa      | ng AZA-1 g of resin <sup>-1</sup> |
| 171 | 11.14 | YTX concentration in SPATT passive samplers at Scapa  | Scapa      | ng YTX g of resin <sup>-1</sup>   |
| 172 | 12.1  | Total Copepod Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe                       | Loch Ewe   | mg dry weight m <sup>-3</sup>     |
| 173 | 12.2  | Total Copepod Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven                     | Stonehaven | mg dry weight m <sup>-3</sup>     |
| 174 | 12.3  | Calanus finmarchicus Stages C5-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe    | Loch Ewe   | mg dry weight m <sup>-3</sup>     |
| 175 | 12.4  | Calanus finmarchicus Stages C5-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven  | Stonehaven | mg dry weight m <sup>-3</sup>     |
| 176 | 12.5  | Calanus helgolandicus Stages C5-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe   | Loch Ewe   | mg dry weight m <sup>-3</sup>     |
| 177 | 12.6  | Calanus helgolandicus Stages C5-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven | Stonehaven | mg dry weight m <sup>-3</sup>     |
| 178 | 12.7  | Centropages hamatus Stages C1-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe     | Loch Ewe   | mg dry weight m <sup>-3</sup>     |
| 179 | 12.8  | Centropages hamatus Stages C1-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven   | Stonehaven | mg dry weight m <sup>-3</sup>     |
| 180 | 12.9  | Centropages typicus Stages C1-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe     | Loch Ewe   | mg dry weight m <sup>-3</sup>     |
| 181 | 12.10 | Centropages typicus Stages C1-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven   | Stonehaven | mg dry weight m <sup>-3</sup>     |
| 182 | 12.11 | Acartia clausi Stages C1-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe          | Loch Ewe   | mg dry weight m <sup>-3</sup>     |
| 183 | 12.12 | Acartia clausi Stages C1-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven        | Stonehaven | mg dry weight m <sup>-3</sup>     |
| 184 | 12.13 | Paracalanus parvus Stages C1-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe      | Loch Ewe   | mg dry weight m <sup>-3</sup>     |
| 185 | 12.14 | Paracalanus parvus Stages C1-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven    | Stonehaven | mg dry weight m <sup>-3</sup>     |

|     |       |  |            |                               |
|-----|-------|--|------------|-------------------------------|
| 186 | 12.15 | Pseudocalanus spp. Stages C1-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe   | Loch Ewe   | mg dry weight m <sup>-3</sup> |
| 187 | 12.16 | Pseudocalanus spp. Stages C1-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven | Stonehaven | mg dry weight m <sup>-3</sup> |
| 188 | 12.17 | Temora longicornis Stages C1-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe   | Loch Ewe   | mg dry weight m <sup>-3</sup> |
| 189 | 12.18 | Temora longicornis Stages C1-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven | Stonehaven | mg dry weight m <sup>-3</sup> |
| 190 | 12.19 | Oithonidae Stages C1-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe           | Loch Ewe   | mg dry weight m <sup>-3</sup> |
| 191 | 12.20 | Oithonidae Stages C1-6 Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven         | Stonehaven | mg dry weight m <sup>-3</sup> |
| 192 | 12.21 | Benthic Larvae Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe                   | Loch Ewe   | mg dry weight m <sup>-3</sup> |
| 193 | 12.22 | Benthic Larvae Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven                 | Stonehaven | mg dry weight m <sup>-3</sup> |
| 194 | 12.23 | Decapod Larvae Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe                   | Loch Ewe   | mg dry weight m <sup>-3</sup> |
| 195 | 12.24 | Decapod Larvae Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven                 | Stonehaven | mg dry weight m <sup>-3</sup> |
| 196 | 12.25 | Bivalve Larvae Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe                   | Loch Ewe   | mg dry weight m <sup>-3</sup> |
| 197 | 12.26 | Bivalve Larvae Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven                 | Stonehaven | mg dry weight m <sup>-3</sup> |
| 198 | 12.27 | Barnacle Larvae Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe                  | Loch Ewe   | mg dry weight m <sup>-3</sup> |
| 199 | 12.28 | Barnacle Larvae Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven                | Stonehaven | mg dry weight m <sup>-3</sup> |
| 200 | 12.29 | Cnidaria Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe                         | Loch Ewe   | mg dry weight m <sup>-3</sup> |
| 201 | 12.30 | Cnidaria Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven                       | Stonehaven | mg dry weight m <sup>-3</sup> |
| 202 | 12.31 | Calcifying Plankton Biomass (mg dry weight m <sup>-3</sup> ) data at Loch Ewe              | Loch Ewe   | mg dry weight m <sup>-3</sup> |
| 203 | 12.32 | Calcifying Plankton Biomass (mg dry weight m <sup>-3</sup> ) data at Stonehaven            | Stonehaven | mg dry weight m <sup>-3</sup> |

### 3. Appendix C: Sample Numbers

Tables 3 – 8 details the numbers of samples collected at Millport, Loch Maddy, Loch Ewe, Scapa , Scalloway and Stonehaven.

**Table 3:** Millport sample numbers

| <b>Parameter</b>    | <b>Phyto</b> | <b>Phyto<sub>tox</sub></b> |
|---------------------|--------------|----------------------------|
| <b>1997</b>         | 0            | 0                          |
| <b>1998</b>         | 0            | 0                          |
| <b>1999</b>         | 0            | 0                          |
| <b>2000</b>         | 0            | 0                          |
| <b>2001</b>         | 0            | 0                          |
| <b>2002</b>         | 0            | 0                          |
| <b>2003</b>         | 0            | 0                          |
| <b>2004</b>         | 0            | 0                          |
| <b>2005</b>         | 14           | 14                         |
| <b>2006</b>         | 38           | 38                         |
| <b>2007</b>         | 42           | 42                         |
| <b>2008</b>         | 43           | 43                         |
| <b>2009</b>         | 38           | 38                         |
| <b>2010</b>         | 41           | 41                         |
| <b>2011</b>         | 47           | 47                         |
| <b>2012</b>         | 49           | 49                         |
| <b>2013</b>         | 41           | 41                         |
|                     |              |                            |
| <b>Sample total</b> | 353          | 353                        |

**Table 4:** Loch Maddy sample numbers

| <b>Parameter</b>    | <b>DIP</b> | <b>DSi</b> | <b>TOxN</b> | <b>Phyto</b> | <b>Phyto<sub>tox</sub></b> | <b>Sal</b> |
|---------------------|------------|------------|-------------|--------------|----------------------------|------------|
| <b>1997</b>         | 0          | 0          | 0           | 0            | 0                          | 0          |
| <b>1998</b>         | 0          | 0          | 0           | 0            | 0                          | 0          |
| <b>1999</b>         | 0          | 0          | 0           | 0            | 0                          | 0          |
| <b>2000</b>         | 0          | 0          | 0           | 0            | 0                          | 0          |
| <b>2001</b>         | 0          | 0          | 0           | 0            | 0                          | 0          |
| <b>2002</b>         | 0          | 0          | 0           | 0            | 0                          | 0          |
| <b>2003</b>         | 37         | 25         | 37          | 0            | 30                         | 37         |
| <b>2004</b>         | 34         | 31         | 40          | 36           | 37                         | 40         |
| <b>2005</b>         | 29         | 29         | 29          | 30           | 33                         | 30         |
| <b>2006</b>         | 0          | 25         | 19          | 35           | 35                         | 35         |
| <b>2007</b>         | 26         | 27         | 27          | 29           | 27                         | 27         |
| <b>2008</b>         | 15         | 16         | 12          | 28           | 27                         | 28         |
| <b>2009</b>         | 4          | 8          | 18          | 24           | 23                         | 25         |
| <b>2010</b>         | 5          | 10         | 7           | 15           | 15                         | 24         |
| <b>2011</b>         | 0          | 0          | 0           | 0            | 2                          | 37         |
| <b>2012</b>         | 0          | 0          | 0           | 0            | 0                          | 47         |
| <b>2013</b>         | 0          | 0          | 0           | 0            | 0                          | 30         |
|                     |            |            |             |              |                            |            |
| <b>Sample total</b> | 150        | 171        | 189         | 197          | 229                        | 360        |



**Table 5:** Loch Ewe sample numbers

| Parameter           | DIP:<br>Upper | DSi:<br>Upper | TOxN:<br>Upper | Amm:<br>Upper | DIP:<br>Lower | DSi:<br>Lower | TOxN:<br>Lower | Amm:<br>Lower | Secchi | Phyto | Phyto <sub>tox</sub> | Chl | Al <sub>tox</sub> | Zoo | Sal<br>Upper | Sal<br>Lower |
|---------------------|---------------|---------------|----------------|---------------|---------------|---------------|----------------|---------------|--------|-------|----------------------|-----|-------------------|-----|--------------|--------------|
| 1997                | 0             | 0             | 0              | 0             | 0             | 0             | 0              | 0             | 0      | 0     | 0                    | 0   | 0                 | 0   | 0            | 0            |
| 1998                | 0             | 0             | 0              | 0             | 0             | 0             | 0              | 0             | 0      | 0     | 0                    | 0   | 0                 | 0   | 0            | 0            |
| 1999                | 0             | 0             | 0              | 0             | 0             | 0             | 0              | 0             | 0      | 0     | 14                   | 0   | 0                 | 0   | 0            | 0            |
| 2000                | 0             | 0             | 0              | 0             | 0             | 0             | 0              | 0             | 0      | 0     | 44                   | 0   | 0                 | 0   | 0            | 0            |
| 2001                | 0             | 0             | 0              | 0             | 0             | 0             | 0              | 0             | 0      | 42    | 52                   | 0   | 0                 | 0   | 0            | 0            |
| 2002                | 0             | 0             | 0              | 0             | 0             | 0             | 0              | 0             | 0      | 39    | 52                   | 28  | 0                 | 40  | 24           | 24           |
| 2003                | 31            | 39            | 38             | 39            | 0             | 0             | 0              | 0             | 0      | 52    | 52                   | 52  | 0                 | 52  | 52           | 52           |
| 2004                | 0             | 50            | 48             | 51            | 0             | 0             | 0              | 0             | 0      | 51    | 52                   | 52  | 0                 | 52  | 52           | 52           |
| 2005                | 0             | 52            | 40             | 47            | 0             | 0             | 0              | 0             | 0      | 49    | 52                   | 52  | 37                | 51  | 52           | 52           |
| 2006                | 0             | 44            | 50             | 1             | 0             | 0             | 0              | 0             | 0      | 49    | 50                   | 52  | 51                | 52  | 52           | 52           |
| 2007                | 50            | 52            | 52             | 1             | 0             | 0             | 0              | 0             | 0      | 52    | 52                   | 53  | 52                | 53  | 52           | 52           |
| 2008                | 133           | 152           | 134            | 1             | 44            | 49            | 44             | 0             | 49     | 52    | 52                   | 52  | 52                | 51  | 52           | 52           |
| 2009                | 154           | 155           | 156            | 1             | 51            | 51            | 52             | 0             | 52     | 52    | 52                   | 52  | 52                | 52  | 52           | 52           |
| 2010                | 156           | 155           | 156            | 153           | 51            | 52            | 52             | 51            | 52     | 52    | 52                   | 52  | 52                | 51  | 52           | 52           |
| 2011                | 156           | 152           | 156            | 156           | 52            | 51            | 52             | 52            | 52     | 52    | 51                   | 52  | 52                | 52  | 52           | 52           |
| 2012                | 104           | 108           | 104            | 104           | 50            | 50            | 50             | 49            | 53     | 52    | 51                   | 53  | 52                | 53  | 53           | 53           |
| 2013                | 67            | 67            | 67             | 131           | 45            | 45            | 45             | 84            | 51     | 51    | 52                   | 50  | 52                | 52  | 51           | 51           |
|                     |               |               |                |               |               |               |                |               |        |       |                      |     |                   |     |              |              |
| <b>Sample total</b> | 851           | 1026          | 1001           | 685           | 293           | 298           | 295            | 236           | 309    | 645   | 730                  | 600 | 452               | 611 | 596          | 596          |

**Table 6:** Scapa sample numbers

| <b>Parameter</b>    | <b>DIP</b> | <b>DSi</b> | <b>TOxN</b> | <b>Amm</b> | <b>Phyto</b> | <b>Phyto<sub>tox</sub></b> | <b>Al<sub>tox</sub></b> | <b>Sal</b> |
|---------------------|------------|------------|-------------|------------|--------------|----------------------------|-------------------------|------------|
| <b>1997</b>         | 0          | 0          | 0           | 0          | 0            | 25                         | 0                       | 0          |
| <b>1998</b>         | 0          | 0          | 0           | 0          | 0            | 20                         | 0                       | 0          |
| <b>1999</b>         | 3          | 3          | 3           | 0          | 0            | 25                         | 0                       | 3          |
| <b>2000</b>         | 28         | 28         | 28          | 0          | 11           | 32                         | 0                       | 29         |
| <b>2001</b>         | 14         | 22         | 15          | 0          | 32           | 33                         | 0                       | 24         |
| <b>2002</b>         | 24         | 34         | 24          | 0          | 52           | 52                         | 0                       | 36         |
| <b>2003</b>         | 48         | 38         | 49          | 1          | 53           | 52                         | 0                       | 50         |
| <b>2004</b>         | 44         | 45         | 46          | 0          | 44           | 47                         | 0                       | 46         |
| <b>2005</b>         | 21         | 50         | 27          | 0          | 49           | 49                         | 0                       | 50         |
| <b>2006</b>         | 1          | 50         | 45          | 0          | 52           | 52                         | 0                       | 50         |
| <b>2007</b>         | 41         | 48         | 41          | 0          | 49           | 49                         | 0                       | 48         |
| <b>2008</b>         | 44         | 31         | 44          | 0          | 47           | 48                         | 0                       | 45         |
| <b>2009</b>         | 34         | 35         | 34          | 0          | 47           | 47                         | 0                       | 45         |
| <b>2010</b>         | 24         | 49         | 24          | 0          | 48           | 48                         | 0                       | 49         |
| <b>2011</b>         | 50         | 49         | 50          | 0          | 49           | 49                         | 29                      | 50         |
| <b>2012</b>         | 45         | 26         | 45          | 0          | 50           | 50                         | 53                      | 50         |
| <b>2013</b>         | 49         | 49         | 49          | 87         | 49           | 49                         | 49                      | 89         |
|                     |            |            |             |            |              |                            |                         |            |
| <b>Sample total</b> | 470        | 557        | 524         | 88         | 632          | 727                        | 131                     | 664        |

**Table 7:** Scalloway sample numbers

| <b>Parameter</b>    | <b>DIP</b> | <b>DSi</b> | <b>TOxN</b> | <b>Ammonia</b> | <b>Phyto</b> | <b>Phyto<sub>tox</sub></b> | <b>Al<sub>tox</sub></b> | <b>Sal</b> |
|---------------------|------------|------------|-------------|----------------|--------------|----------------------------|-------------------------|------------|
| <b>1997</b>         | 0          | 0          | 0           | 0              | 0            | 0                          | 0                       | 0          |
| <b>1998</b>         | 0          | 0          | 0           | 0              | 0            | 0                          | 0                       | 0          |
| <b>1999</b>         | 0          | 0          | 0           | 0              | 0            | 0                          | 0                       | 0          |
| <b>2000</b>         | 25         | 25         | 25          | 25             | 3            | 3                          | 0                       | 26         |
| <b>2001</b>         | 41         | 41         | 41          | 41             | 42           | 42                         | 0                       | 43         |
| <b>2002</b>         | 28         | 28         | 28          | 28             | 41           | 40                         | 0                       | 28         |
| <b>2003</b>         | 0          | 40         | 34          | 35             | 39           | 41                         | 0                       | 41         |
| <b>2004</b>         | 15         | 23         | 23          | 23             | 33           | 36                         | 0                       | 35         |
| <b>2005</b>         | 15         | 15         | 15          | 21             | 24           | 24                         | 0                       | 21         |
| <b>2006</b>         | 0          | 32         | 32          | 0              | 36           | 36                         | 0                       | 34         |
| <b>2007</b>         | 15         | 15         | 15          | 1              | 20           | 20                         | 0                       | 15         |
| <b>2008</b>         | 21         | 21         | 21          | 1              | 40           | 38                         | 0                       | 33         |
| <b>2009</b>         | 31         | 20         | 32          | 1              | 39           | 38                         | 0                       | 44         |
| <b>2010</b>         | 43         | 43         | 43          | 13             | 43           | 44                         | 0                       | 44         |
| <b>2011</b>         | 42         | 43         | 42          | 43             | 44           | 45                         | 12                      | 44         |
| <b>2012</b>         | 44         | 46         | 44          | 33             | 43           | 44                         | 10                      | 46         |
| <b>2013</b>         | 57         | 60         | 56          | 84             | 49           | 49                         | 31                      | 85         |
|                     |            |            |             |                |              |                            |                         |            |
| <b>Sample total</b> | 377        | 452        | 451         | 349            | 496          | 500                        | 53                      | 539        |

**Table 8:** Stonehaven sample numbers

| Parameter           | DIP:<br>Upper | DSi:<br>Upper | TOxN:<br>Upper | Amm:<br>Upper | TA<br>Upper | DIC<br>Upper | DIP:<br>Lower | DSi:<br>Lower | TOxN:<br>Lower | Ammonia:<br>Lower | TA<br>Lower | DIC<br>Lower | Secchi | Phyto | Phyto <sub>tox</sub> | Chl | Zoo | Sal<br>Upper | Sal<br>Lower |
|---------------------|---------------|---------------|----------------|---------------|-------------|--------------|---------------|---------------|----------------|-------------------|-------------|--------------|--------|-------|----------------------|-----|-----|--------------|--------------|
| <b>1997</b>         | 31            | 36            | 35             | 37            | 0           | 0            | 34            | 37            | 36             | 36                | 0           | 0            | 0      | 39    | 40                   | 37  | 0   | 45           | 45           |
| <b>1998</b>         | 21            | 16            | 22             | 22            | 0           | 0            | 24            | 16            | 24             | 24                | 0           | 0            | 0      | 49    | 50                   | 40  | 0   | 49           | 49           |
| <b>1999</b>         | 51            | 48            | 51             | 49            | 0           | 0            | 51            | 48            | 51             | 48                | 0           | 0            | 0      | 51    | 51                   | 48  | 51  | 51           | 51           |
| <b>2000</b>         | 48            | 47            | 48             | 47            | 0           | 0            | 50            | 48            | 49             | 50                | 0           | 0            | 0      | 50    | 52                   | 51  | 52  | 58           | 58           |
| <b>2001</b>         | 47            | 46            | 48             | 48            | 0           | 0            | 46            | 45            | 46             | 46                | 0           | 0            | 27     | 48    | 48                   | 45  | 48  | 48           | 48           |
| <b>2002</b>         | 44            | 45            | 44             | 45            | 0           | 0            | 42            | 43            | 43             | 43                | 0           | 0            | 44     | 44    | 51                   | 45  | 44  | 45           | 45           |
| <b>2003</b>         | 6             | 49            | 50             | 18            | 0           | 0            | 10            | 46            | 49             | 17                | 0           | 0            | 47     | 50    | 50                   | 53  | 51  | 51           | 51           |
| <b>2004</b>         | 0             | 46            | 46             | 33            | 0           | 0            | 0             | 42            | 41             | 31                | 0           | 0            | 45     | 46    | 47                   | 49  | 46  | 46           | 46           |
| <b>2005</b>         | 0             | 45            | 45             | 45            | 0           | 0            | 0             | 45            | 45             | 45                | 0           | 0            | 44     | 46    | 46                   | 45  | 46  | 45           | 45           |
| <b>2006</b>         | 0             | 47            | 47             | 0             | 0           | 0            | 0             | 47            | 47             | 0                 | 0           | 0            | 46     | 47    | 47                   | 47  | 47  | 47           | 47           |
| <b>2007</b>         | 45            | 47            | 46             | 0             | 0           | 0            | 46            | 46            | 46             | 0                 | 0           | 0            | 46     | 44    | 47                   | 46  | 46  | 46           | 46           |
| <b>2008</b>         | 62            | 70            | 64             | 0             | 4           | 4            | 44            | 47            | 45             | 0                 | 4           | 4            | 50     | 48    | 49                   | 48  | 49  | 49           | 49           |
| <b>2009</b>         | 92            | 92            | 92             | 0             | 42          | 38           | 46            | 46            | 46             | 0                 | 39          | 38           | 46     | 48    | 47                   | 47  | 47  | 47           | 47           |
| <b>2010</b>         | 85            | 88            | 86             | 72            | 42          | 42           | 41            | 43            | 41             | 36                | 41          | 41           | 44     | 44    | 44                   | 39  | 44  | 44           | 44           |
| <b>2011</b>         | 79            | 74            | 79             | 77            | 20          | 20           | 38            | 35            | 38             | 37                | 19          | 19           | 39     | 40    | 40                   | 39  | 40  | 40           | 40           |
| <b>2012</b>         | 60            | 60            | 60             | 58            | 38          | 38           | 37            | 37            | 37             | 36                | 38          | 38           | 36     | 39    | 39                   | 38  | 38  | 38           | 38           |
| <b>2013</b>         | 47            | 49            | 48             | 105           | 37          | 37           | 36            | 38            | 38             | 75                | 37          | 37           | 41     | 42    | 42                   | 40  | 42  | 42           | 42           |
|                     |               |               |                |               |             |              |               |               |                |                   |             |              |        |       |                      |     |     |              |              |
| <b>Sample total</b> | 718           | 905           | 911            | 656           | 183         | 179          | 545           | 709           | 722            | 524               | 178         | 177          | 555    | 775   | 790                  | 757 | 691 | 791          | 791          |

#### 4. Appendix D: Data Quality Flags

Table 9 presents the quality flags assigned to Scottish Coastal Observatory data.

**Table 9:** Quality Flags from SEADATA NET 2010

| Flag | Name                       | Explanation of protocol used in this dataset  |
|------|----------------------------|---|
| 0    | No Quality Control Applied | This is the initial status for all data values in the file. Note that for chemical parameters subject to UKAS accreditation these values will have passed the initial analytical tests.   |
| 1    | Good Data                  | These data have passed all appropriate analytical tests without question. These data have passed all environmental and statistical range tests without question.  |
| 2    | Probably Good Data         | These data have failed an initial analytical test or been flagged as unusual during environmental and statistical range tests. Following review, and using available evidence from associated parameters they have been determined to be good.  |
| 3    | Probably Bad Data          | These data have failed an initial analytical test or been flagged as unusual during environmental and statistical range tests. Following review, and using available evidence from associated parameters they have been determined to be bad.   |
| 4    | Bad Data                   | Obviously erroneous values. These data may have failed repeated analytical tests and are therefore flagged as bad. Or these data have been flagged as out of expected range during environmental and statistical range tests. Following review, and using evidence from associated parameters no evidence can be found to show they are good. |
| 5    | Changed Value              | Data value has been adjusted during quality control. These are generally limited to metadata information where evidence   |

|    |                          |   |
|----|--------------------------|---|
|    |                          | of a misstype has been found in paper records.  |
| 6  | Below limit of detection | The level of the measured phenomenon was too small to be quantified by the technique employed to measure it.  |
| 7  | Above limit of detection | The level of the measured phenomenon was too large to be quantified by the technique employed to measure it.  |
| 8  | Estimated/Interpolated   | Estimated Data. This value has been derived by interpolation from other values in the data object.  |
| 9  | Missing data             | A survey was made on this date, but no data is available for this particular parameter either because it was not measured or the sample was lost or spoilt. Any accompanying value will be a magic number representing absent data, typically a number < -99. |
| 10 | Repeated Bad Flag        | Internal QF flag, used to assist with repeated flagging, has the same meaning as QF4.   |

## 5. Appendix E: Supplementary Meteorological Figures

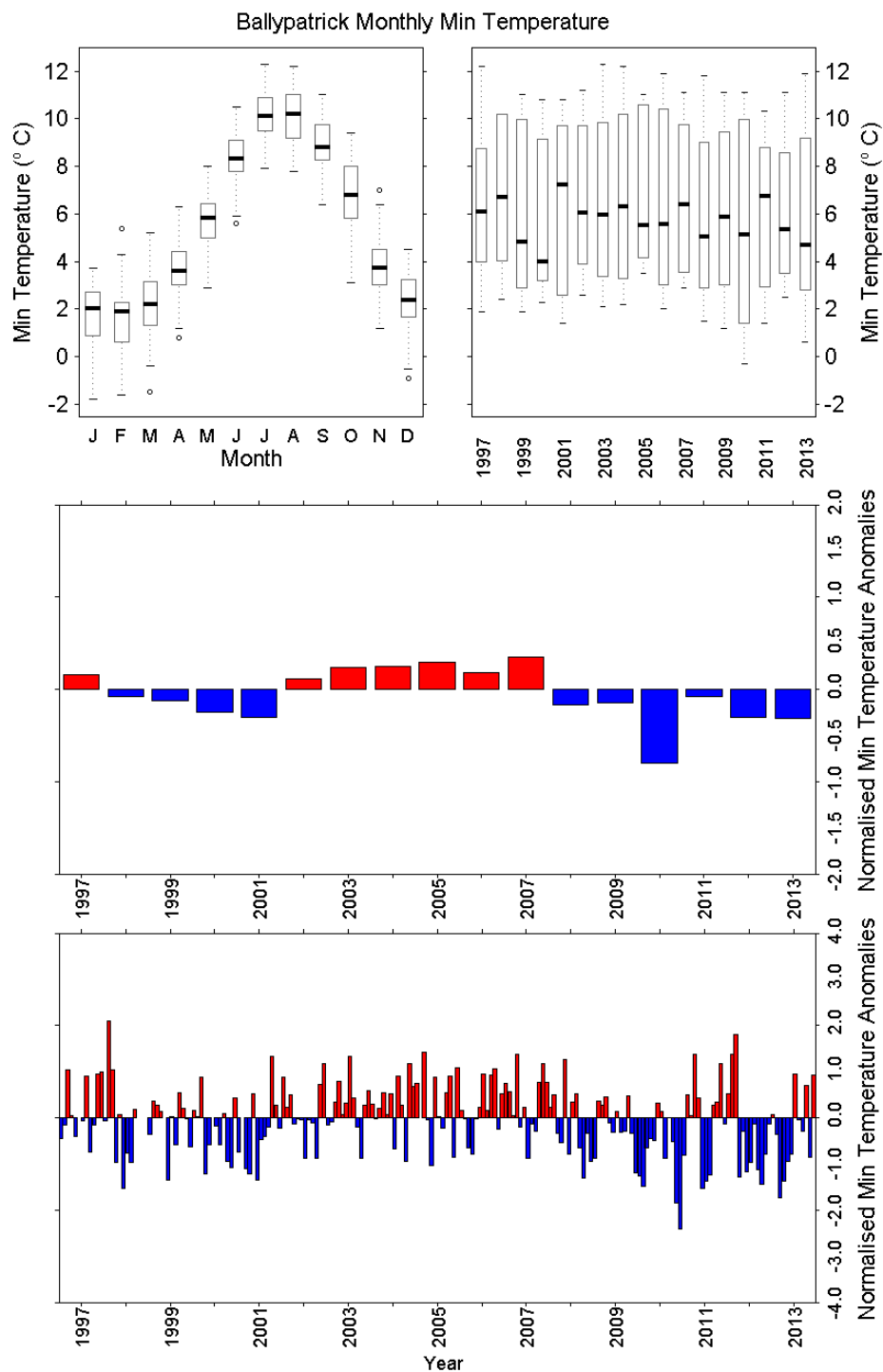


Figure E1.1 Monthly Minimum Air Temperature ( $^{\circ}\text{C}$ ) data from the meteorological station at Ballypatrick. a) Monthly boxplot of minimum air temperature data. b) Annual boxplot of minimum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in Jun 1997, Oct-Dec 1998, May 1999, Jun 2000, Feb 2001 and Feb 2005.

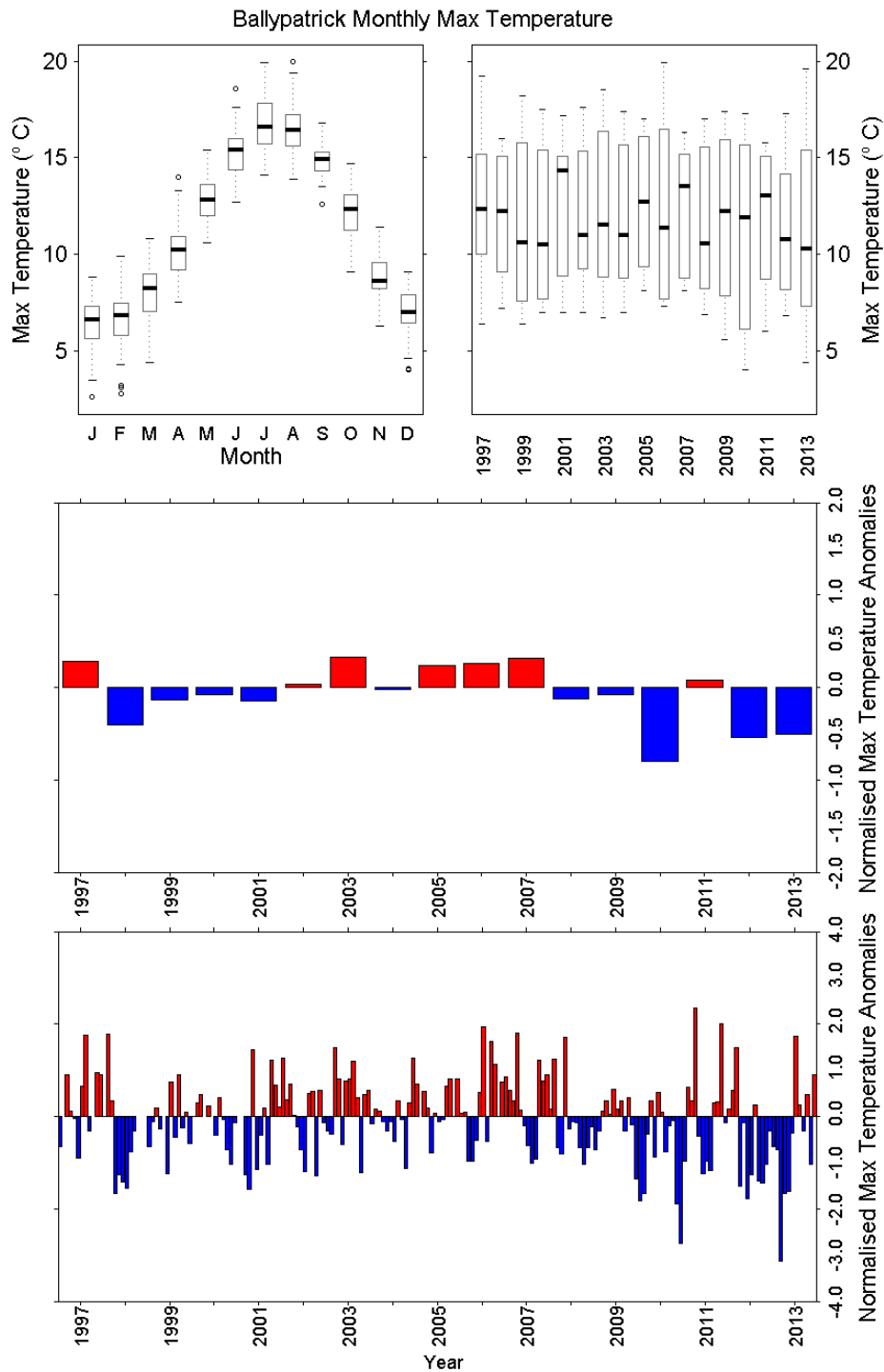


Figure E1.2 Monthly Maximum Air Temperature (°C) data from the meteorological station at Ballypatrick. a) Monthly boxplot of maximum air temperature data. b) Annual boxplot of maximum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in February or October 1997, October, November or December 1998, May 1999, April or June 2000, January or February 2001, or February 2005.



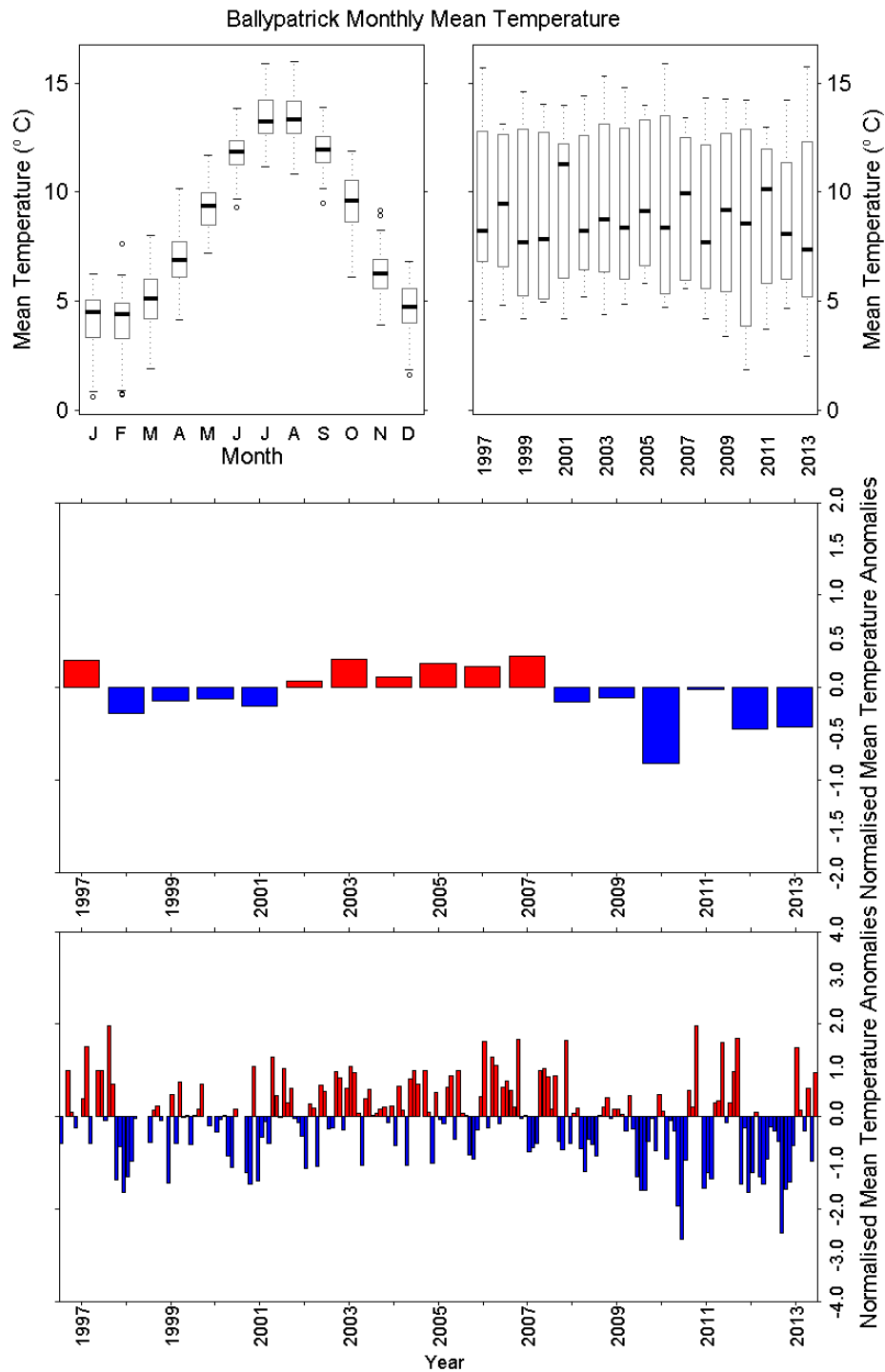


Figure E1.3 Monthly Mean Air Temperature (°C) data from the meteorological station at BallyPatrick. a) Monthly boxplot of mean air temperature data. b) Annual boxplot of mean air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in February 1997, June 1997, October 1997, October, November or December 1998, May 1999, April 2000, June 2000, January or February 2001, or February 2005.

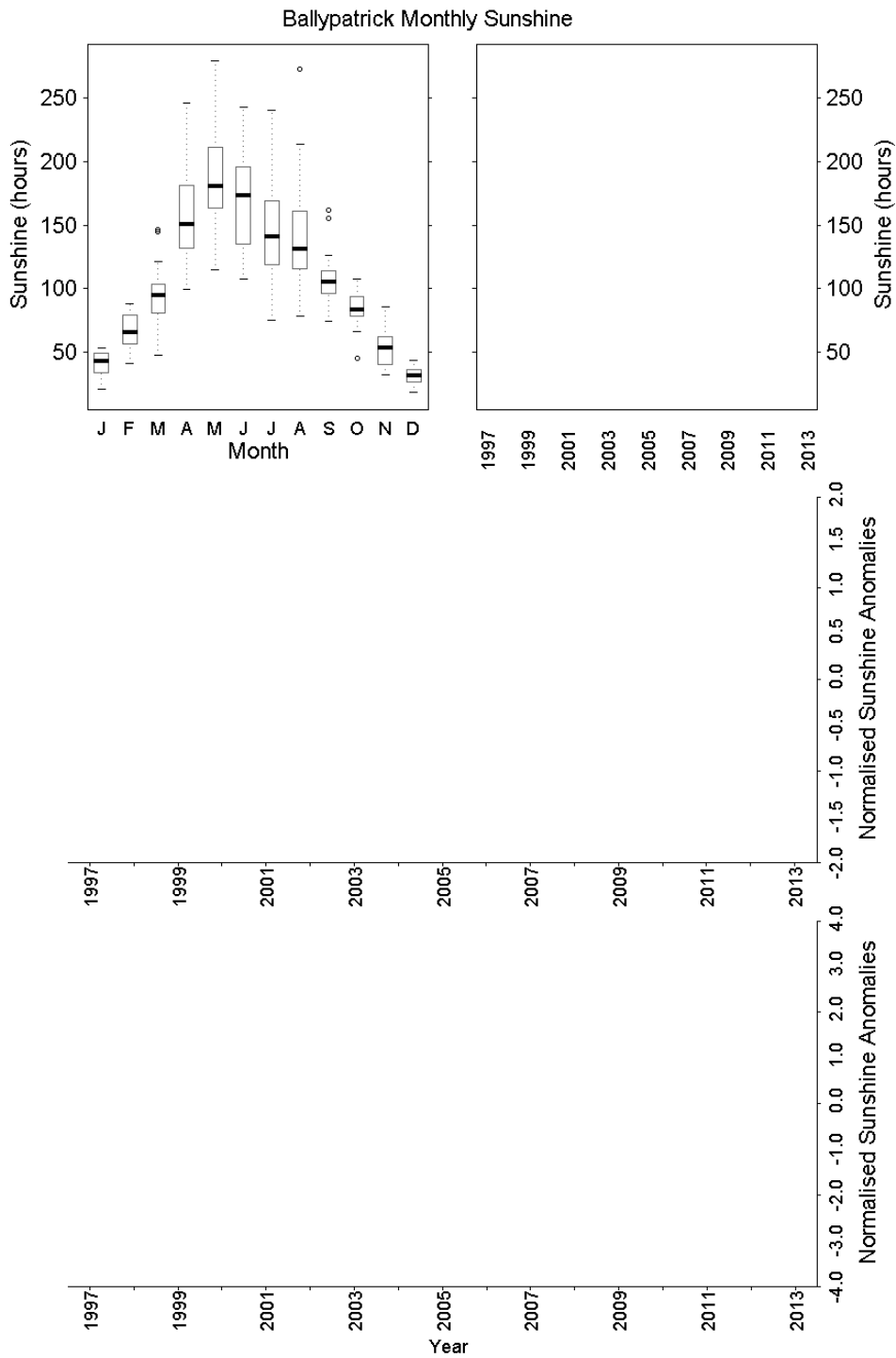


Figure E1.4 Monthly Sunshine hours from the meteorological station at Ballypatrick. a) Monthly boxplot of sea surface temperature data. b) Annual boxplot of sea surface temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries

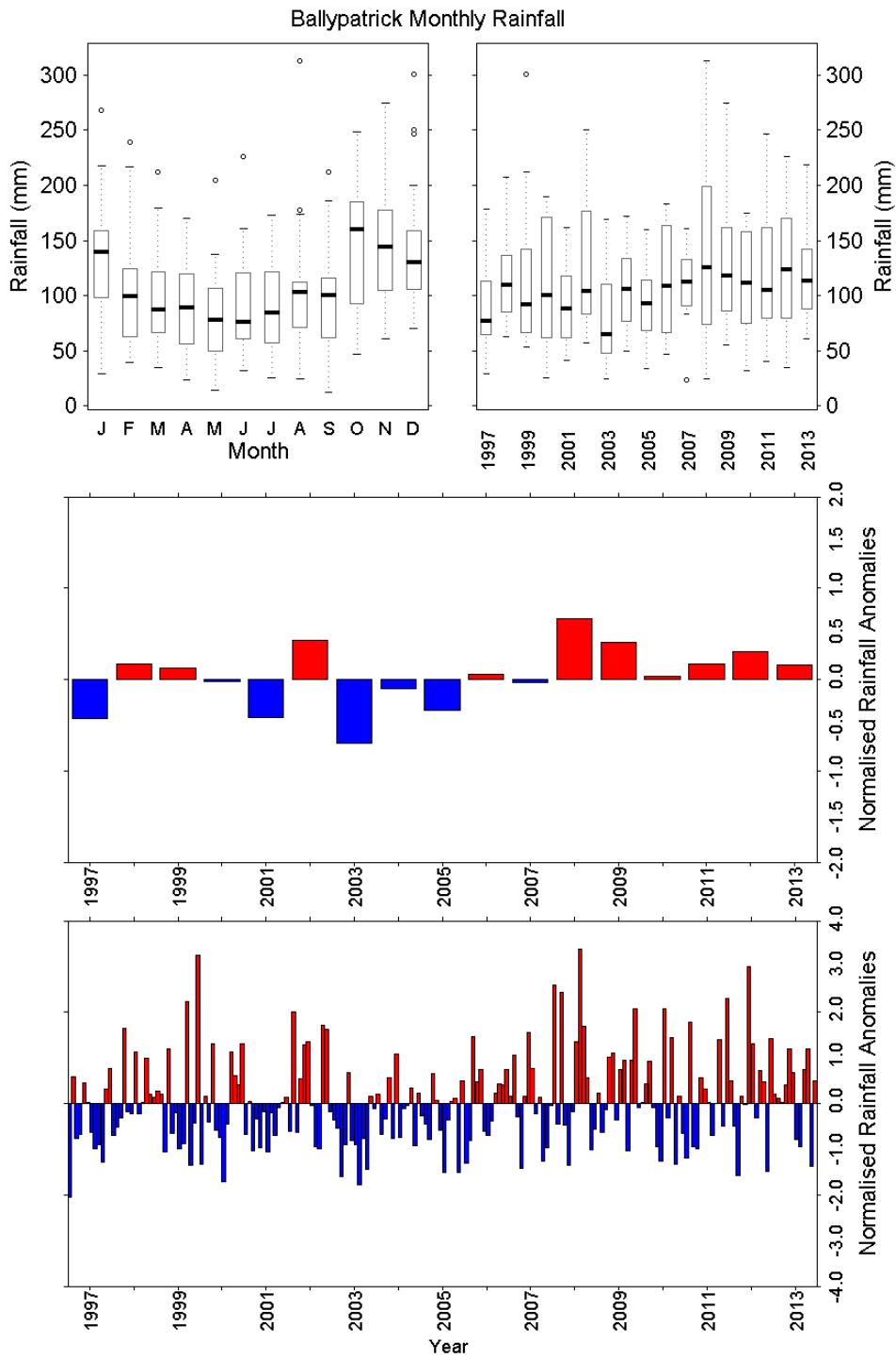


Figure E1.5 Rainfall totals from the meteorological station at Ballypatrick. a) Monthly boxplot of rainfall data. b) Annual boxplot of rainfall data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

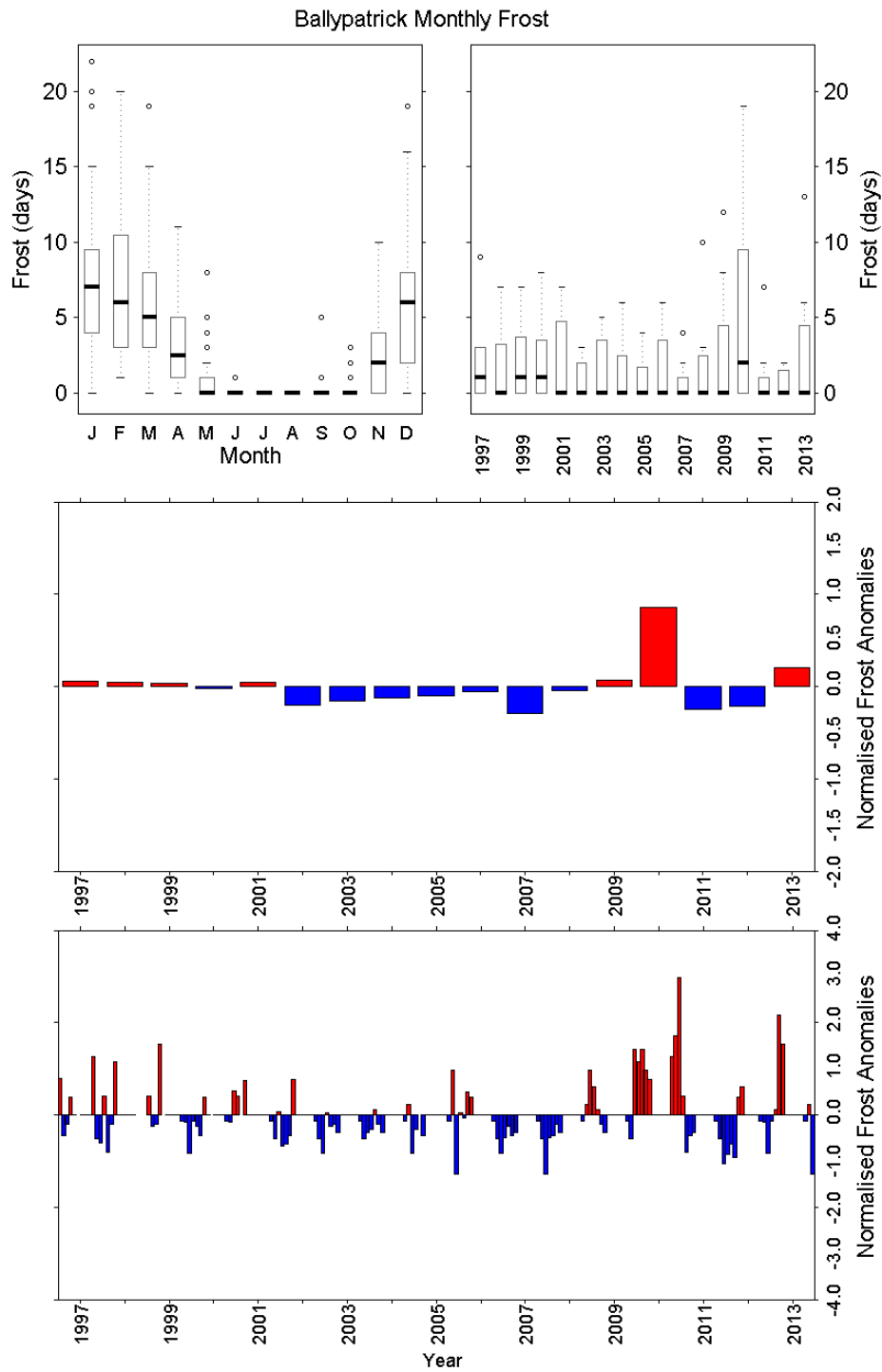


Figure E1.6 Monthly Days of Frost from the meteorological station at Ballypatrick. a) Monthly boxplot of frost data. b) Annual boxplot of frost data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

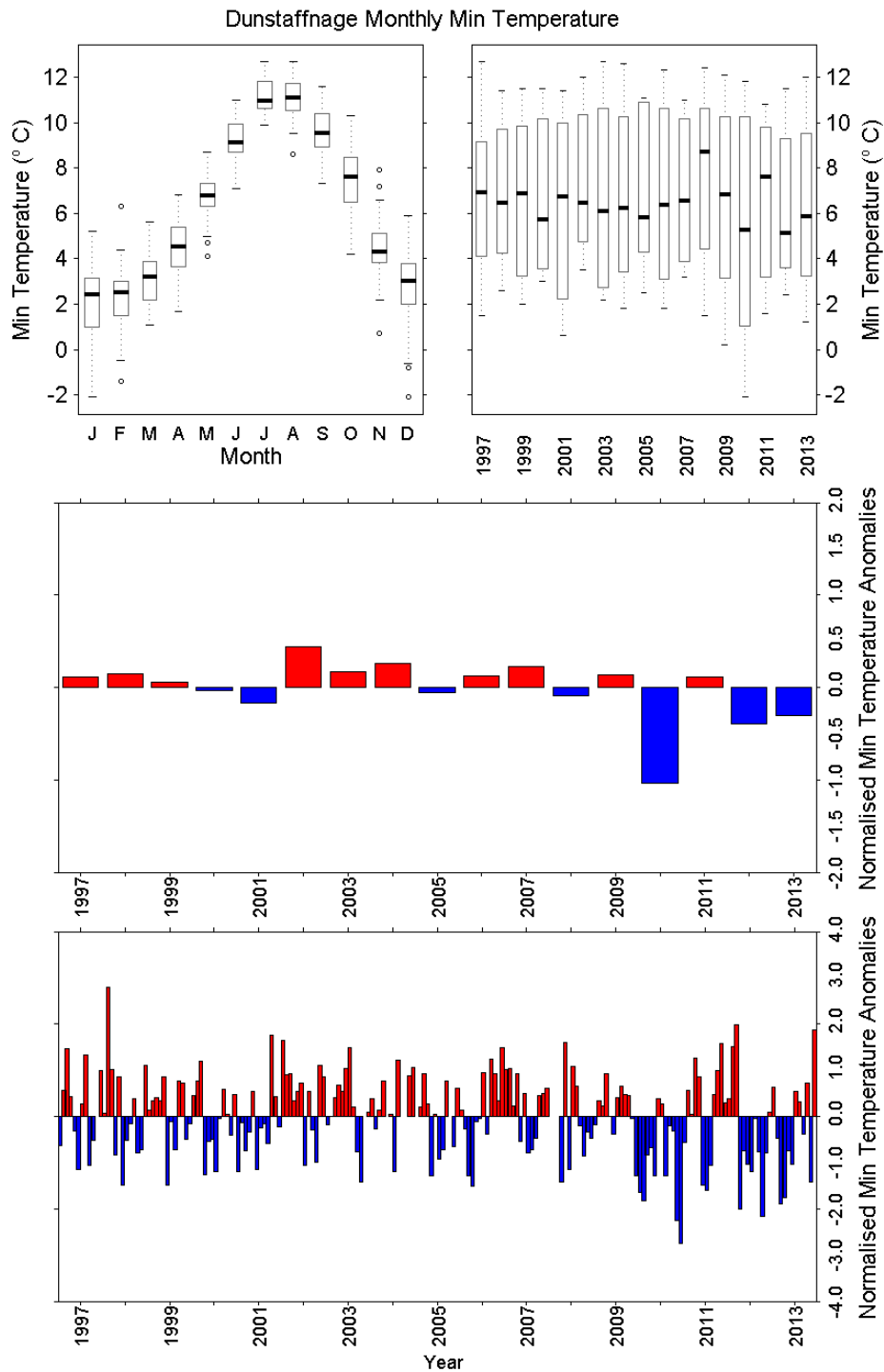


Figure E2.1 Monthly Minimum Air Temperature (°C) data from the meteorological station at Dunstaffnage. a) Monthly boxplot of minimum air temperature data. b) Annual boxplot of minimum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in Nov 1997, Nov 2003, May and Sep-Oct 2004, Jan and Oct 2005, Jan-Mar 2008.

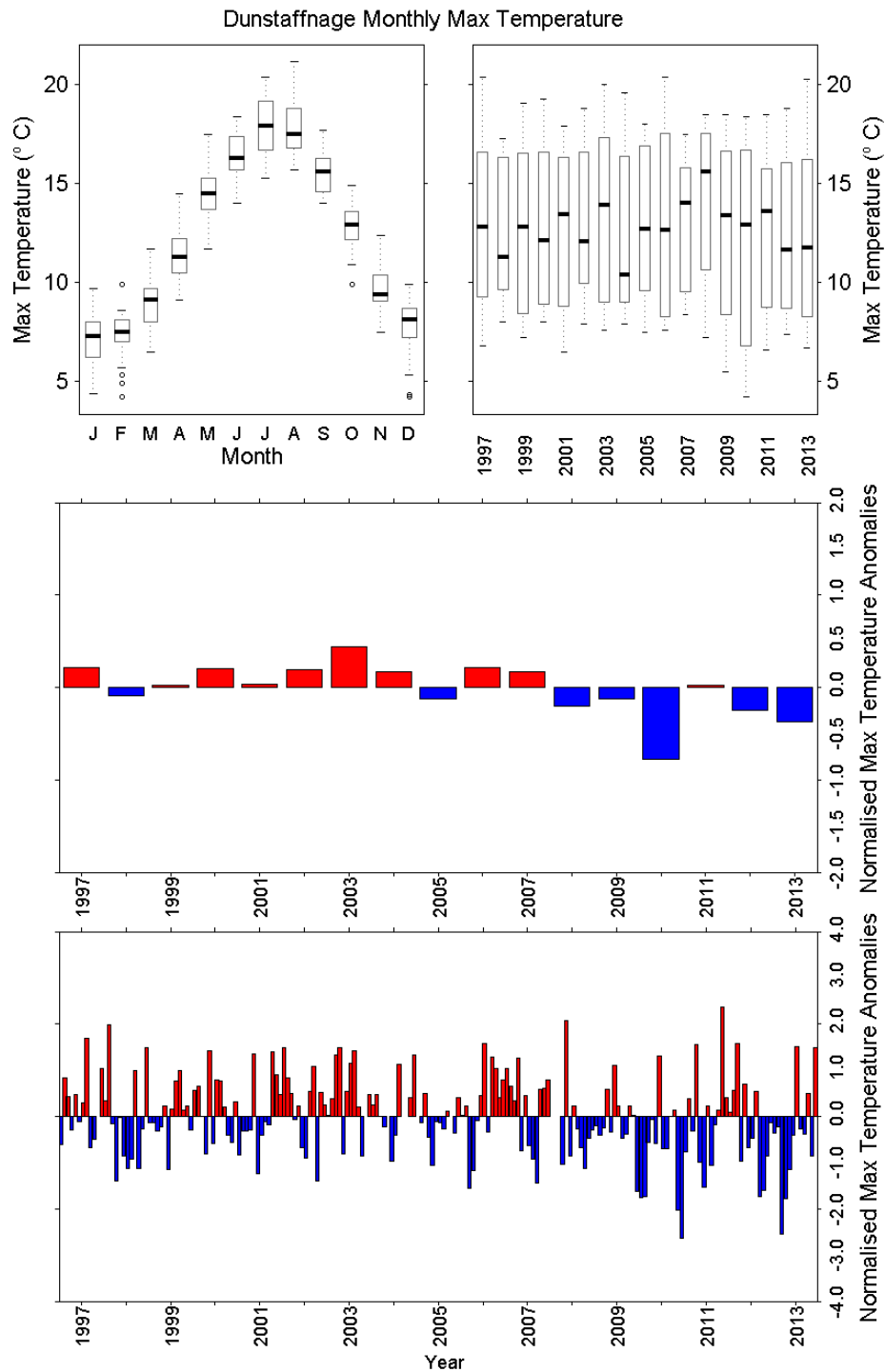


Figure E2.2 Monthly Maximum Air Temperature (°C) data from the meteorological station at Dunstaffnage. a) Monthly boxplot of maximum air temperature data. b) Annual boxplot of maximum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in November 1997, November 2003, May, September or October 2004, January or October 2005, January, February or March 2008.

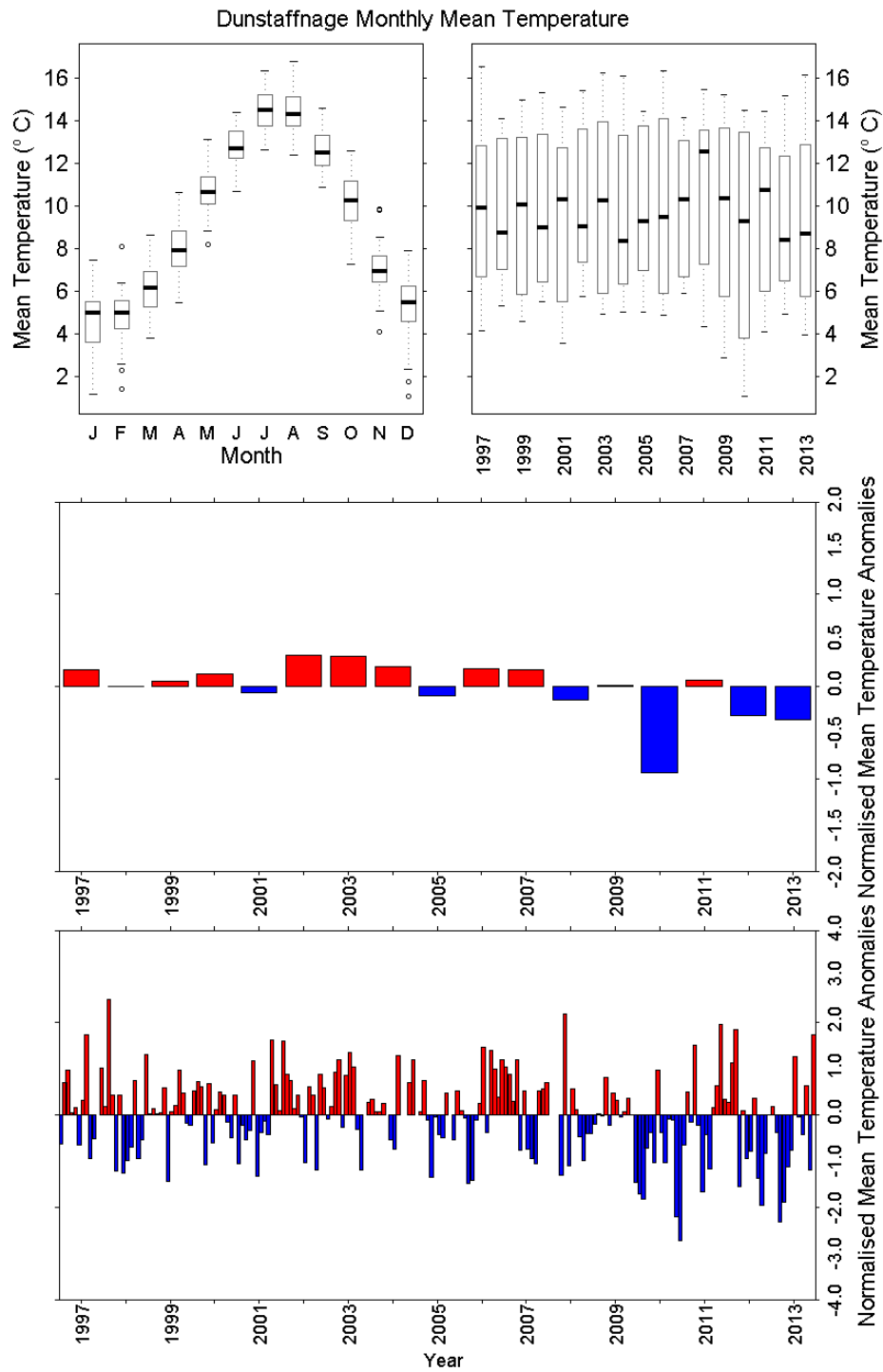


Figure E2.3 Monthly Mean Air Temperature (°C) data from the meteorological station at Dunstaffnage. a) Monthly boxplot of mean air temperature data. b) Annual boxplot of mean air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in November 1997, November 2003, May 2004, September or October 2004, January 2005, January, February or March 2008.

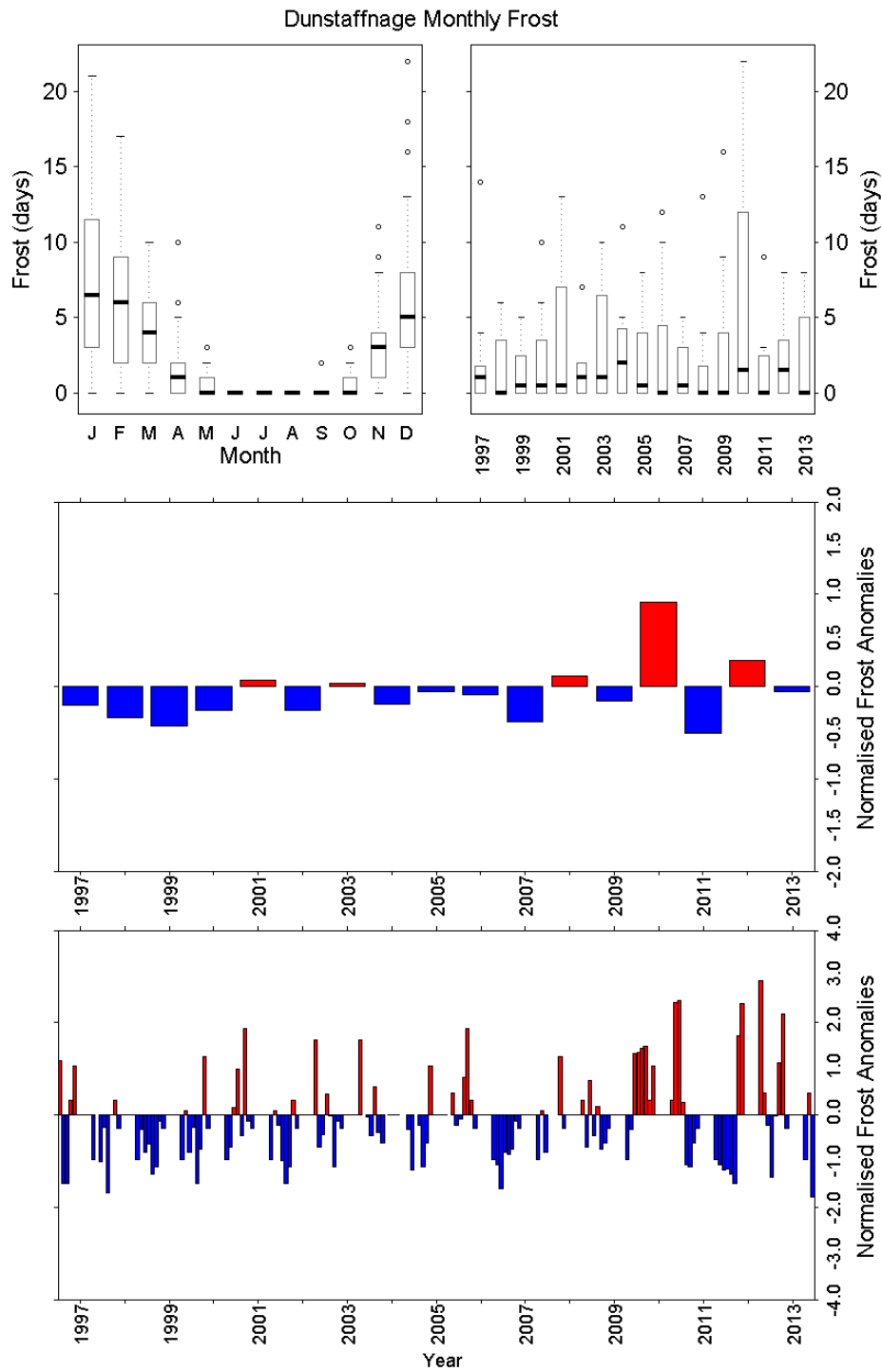


Figure E2.4 Monthly Days of Frost from the meteorological station at Dunstaffnage. a) Monthly boxplot of frost data. b) Annual boxplot of frost data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in June 1997, October, November or December 1998, May 1999, June 2000, February 2001 or February 2005.



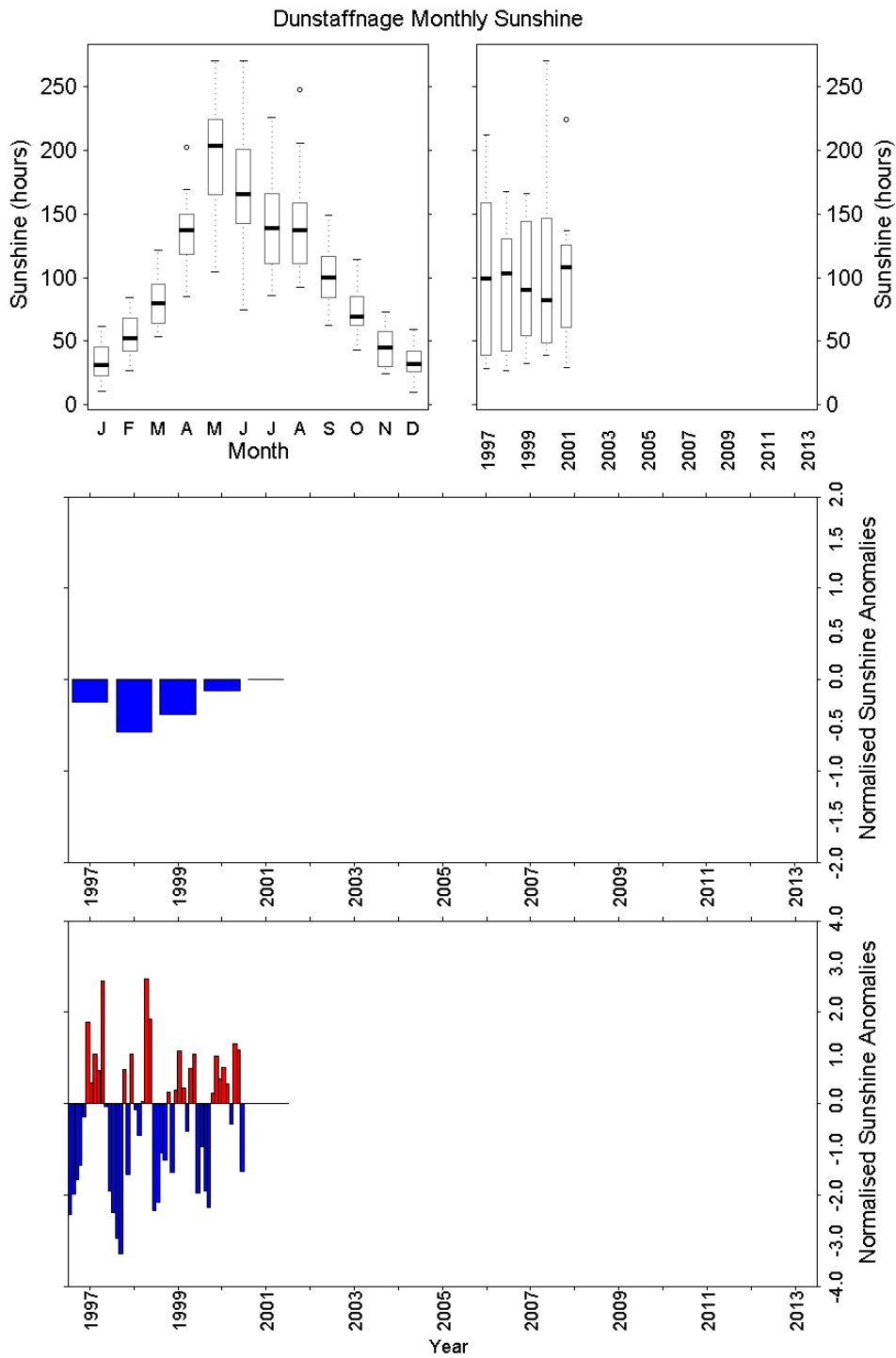


Figure E2.5 Monthly Sunshine hours from the meteorological station at Dunstaffnage. a) Monthly boxplot of sea surface temperature data. b) Annual boxplot of sea surface temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available after December 2001.

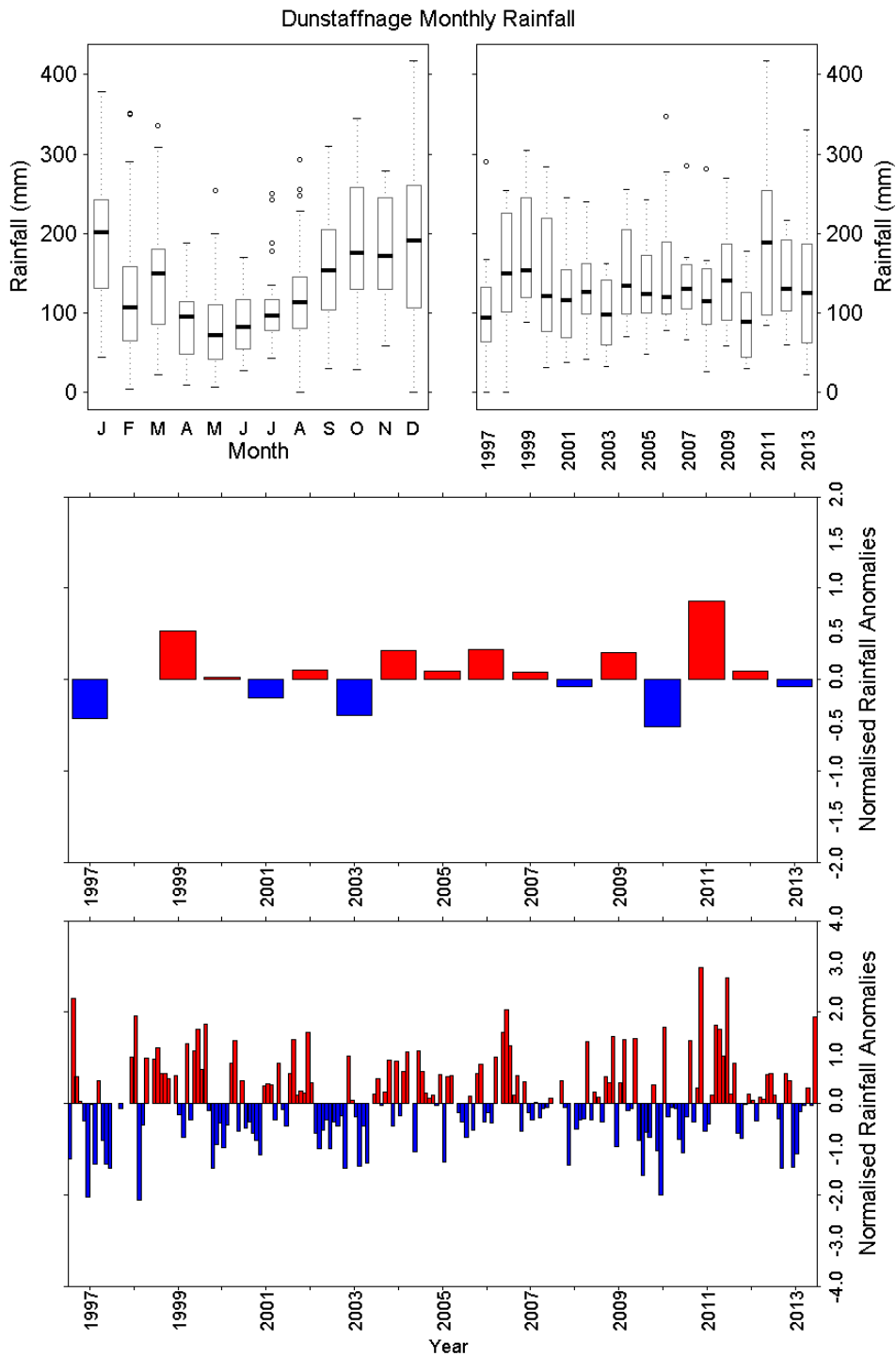


Figure E2.6 Rainfall totals from the meteorological station at Dunstaffnage. a) Monthly boxplot of rainfall data. b) Annual boxplot of rainfall data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in January, February, April, May or November 1998, May 1999, November 2003, October 2004, October 2005, October 2006, January, February or June 2008.

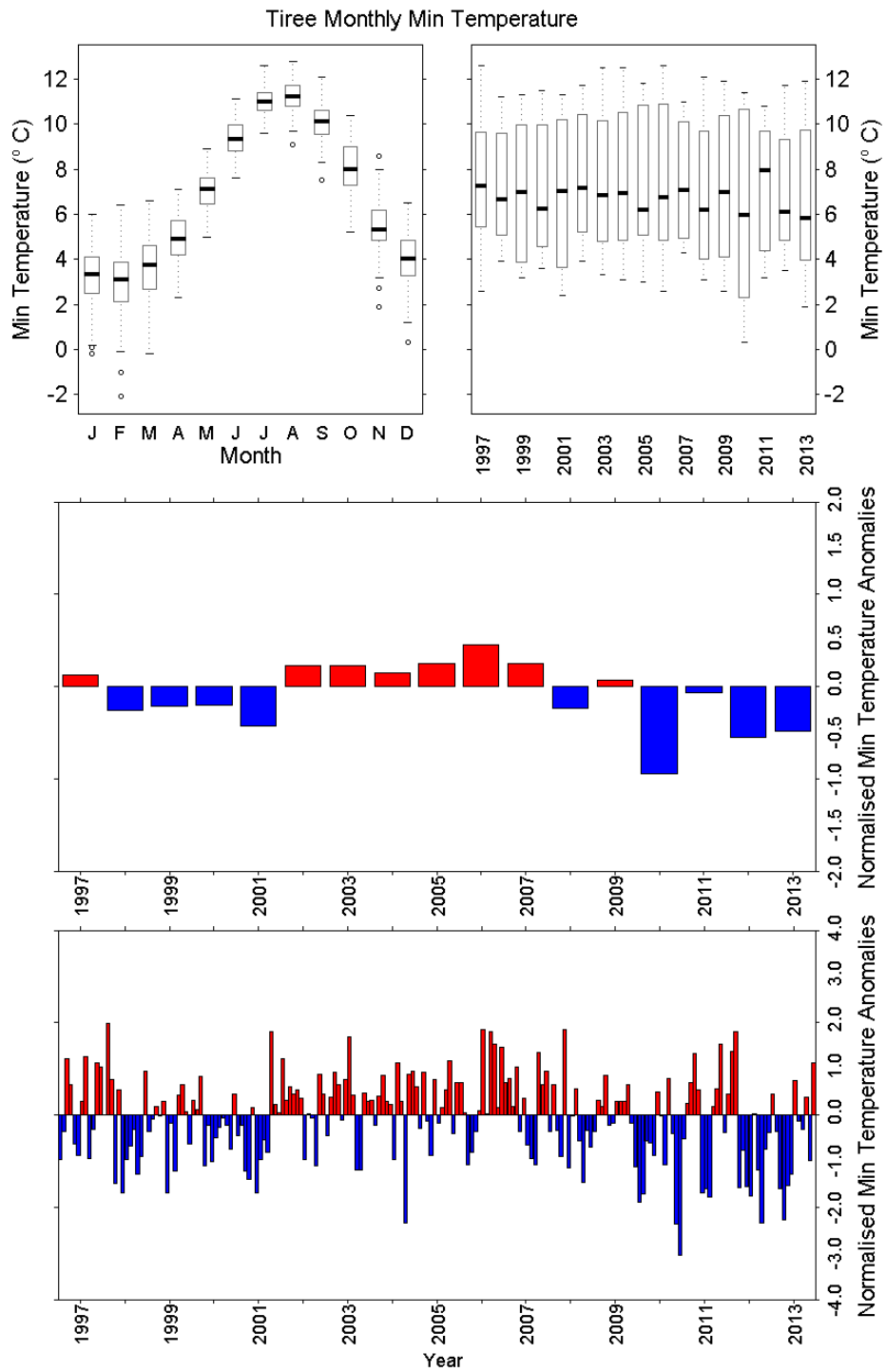


Figure E3.1 Monthly Minimum Air Temperature (°C) data from the meteorological station at Tiree. a) Monthly boxplot of minimum air temperature data. b) Annual boxplot of minimum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

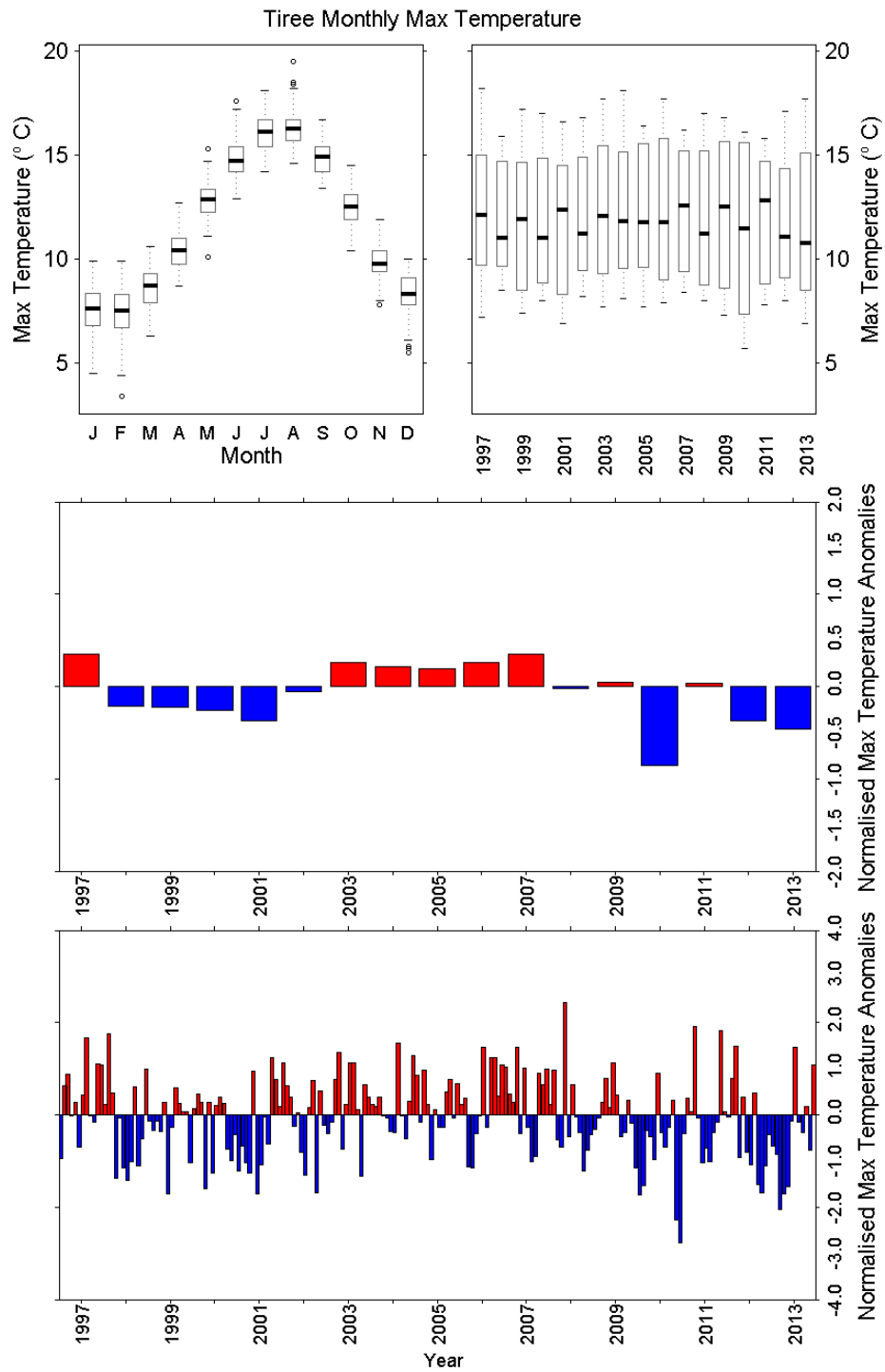


Figure E3.2 Monthly Maximum Air Temperature (°C) data from the meteorological station at Tirie. a) Monthly boxplot of maximum air temperature data. b) Annual boxplot of maximum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

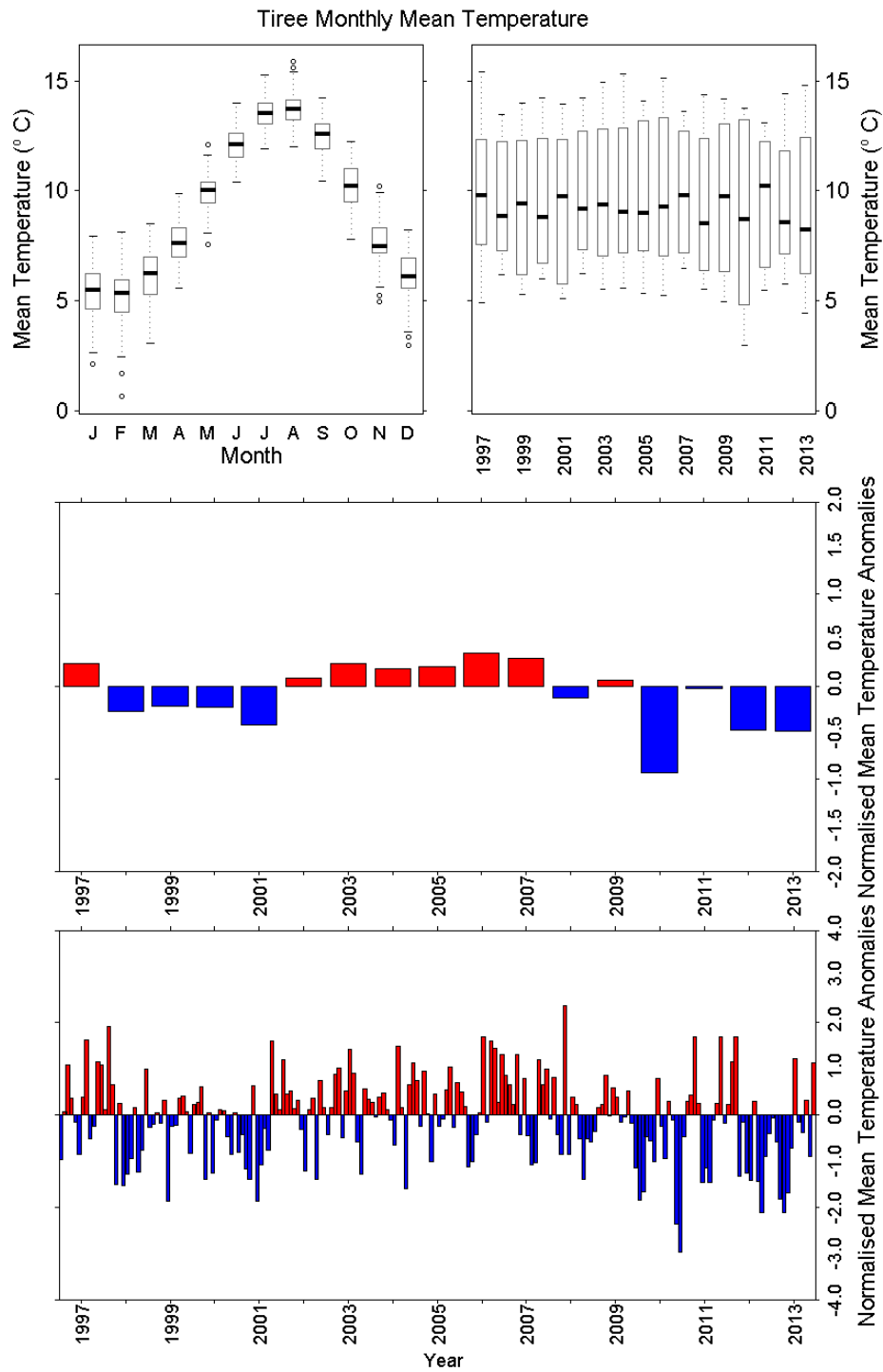


Figure E3.3 Monthly Mean Air Temperature ( $^{\circ}\text{C}$ ) data from the meteorological station at Tiree. a) Monthly boxplot of mean air temperature data. b) Annual boxplot of mean air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

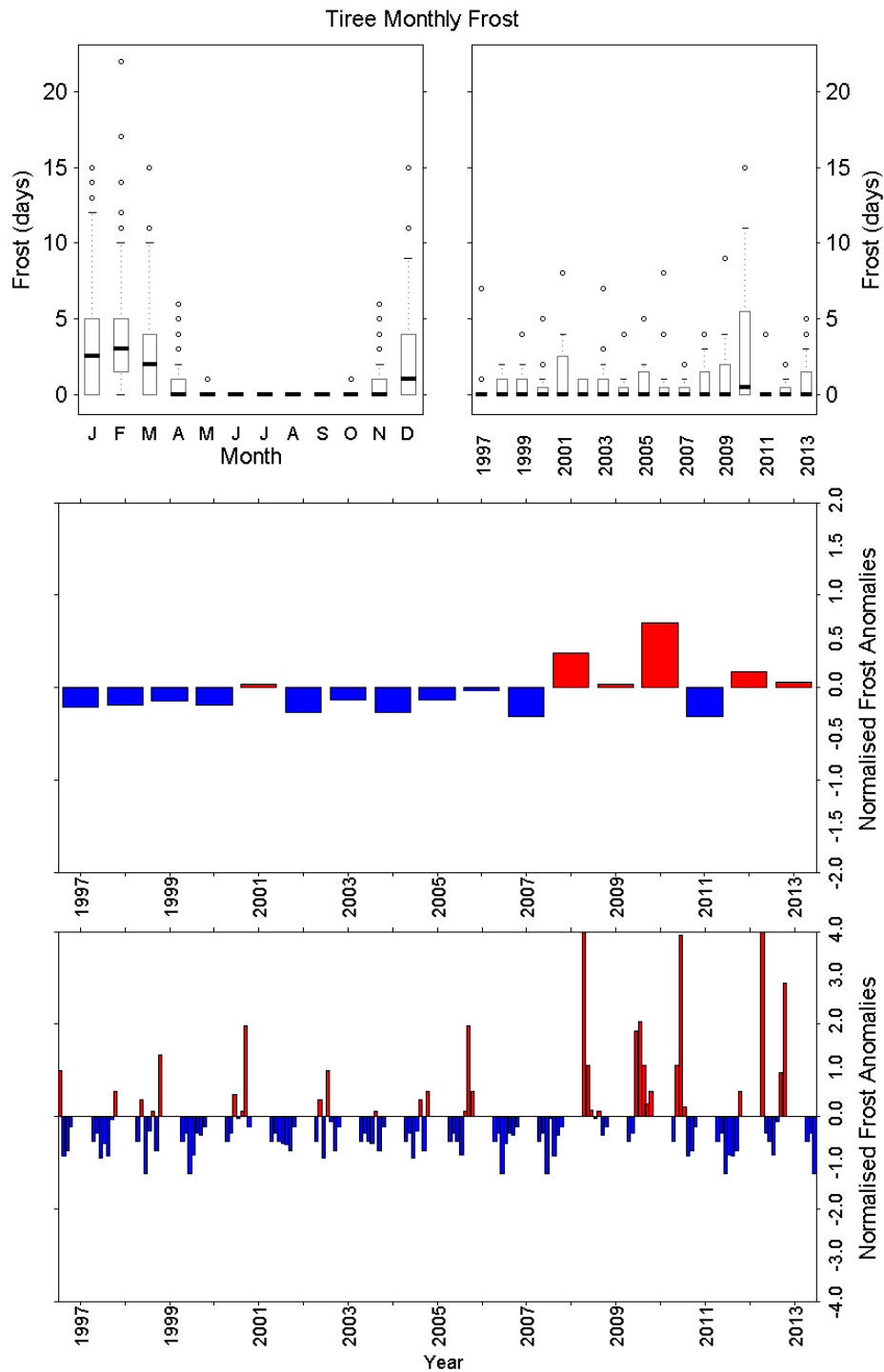


Figure E3.4 Monthly Days of Frost from the meteorological station at Tiree. a) Monthly boxplot of frost data. b) Annual boxplot of frost data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in November 1997, November 2003, May, September or October 2004, January or October 2005, January, February or March 2008.

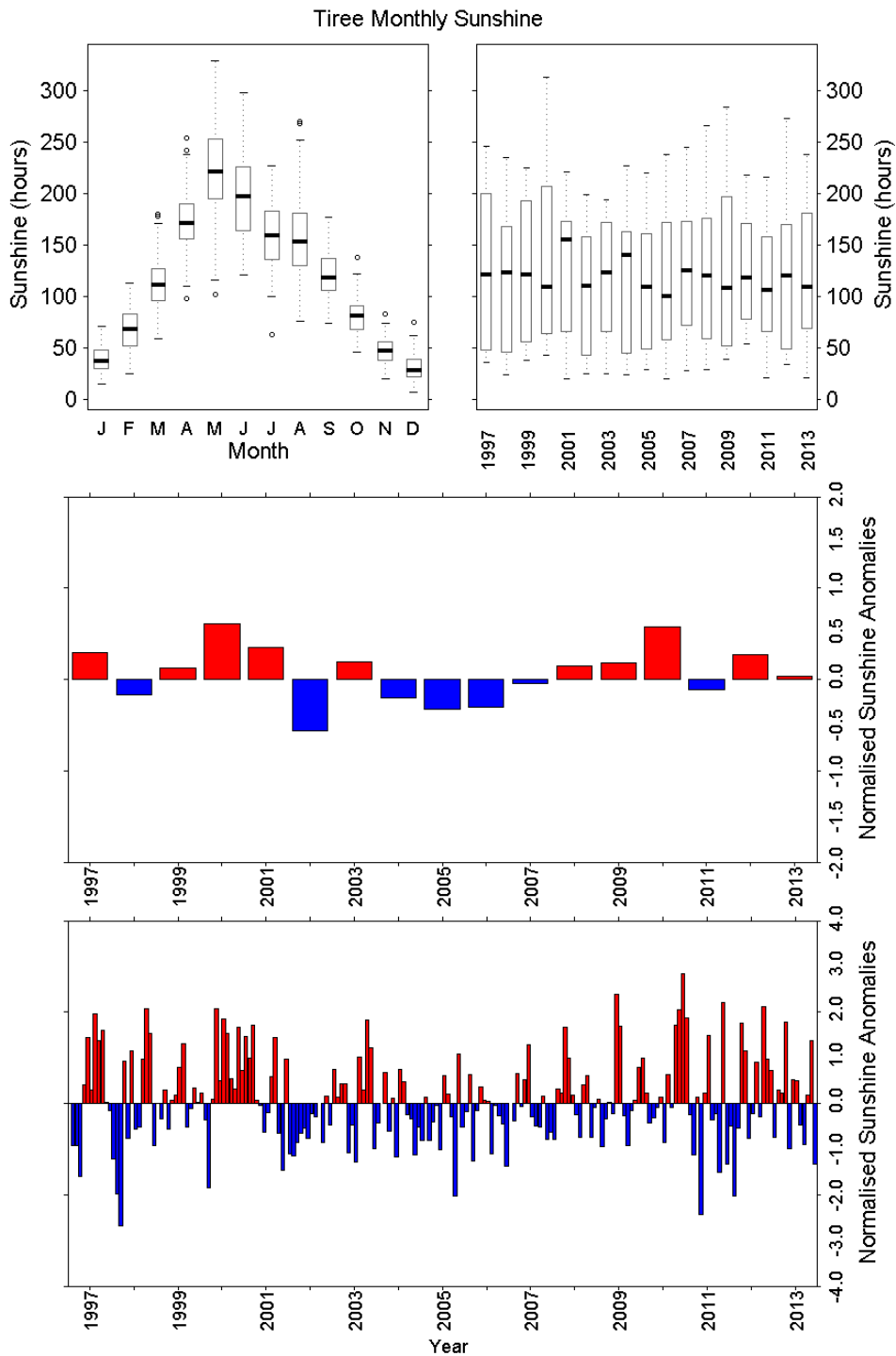


Figure E3.5 Monthly Sunshine hours from the meteorological station at Tiree. a) Monthly boxplot of sea surface temperature data. b) Annual boxplot of sea surface temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in September 2002, February 2004 or January 2007.

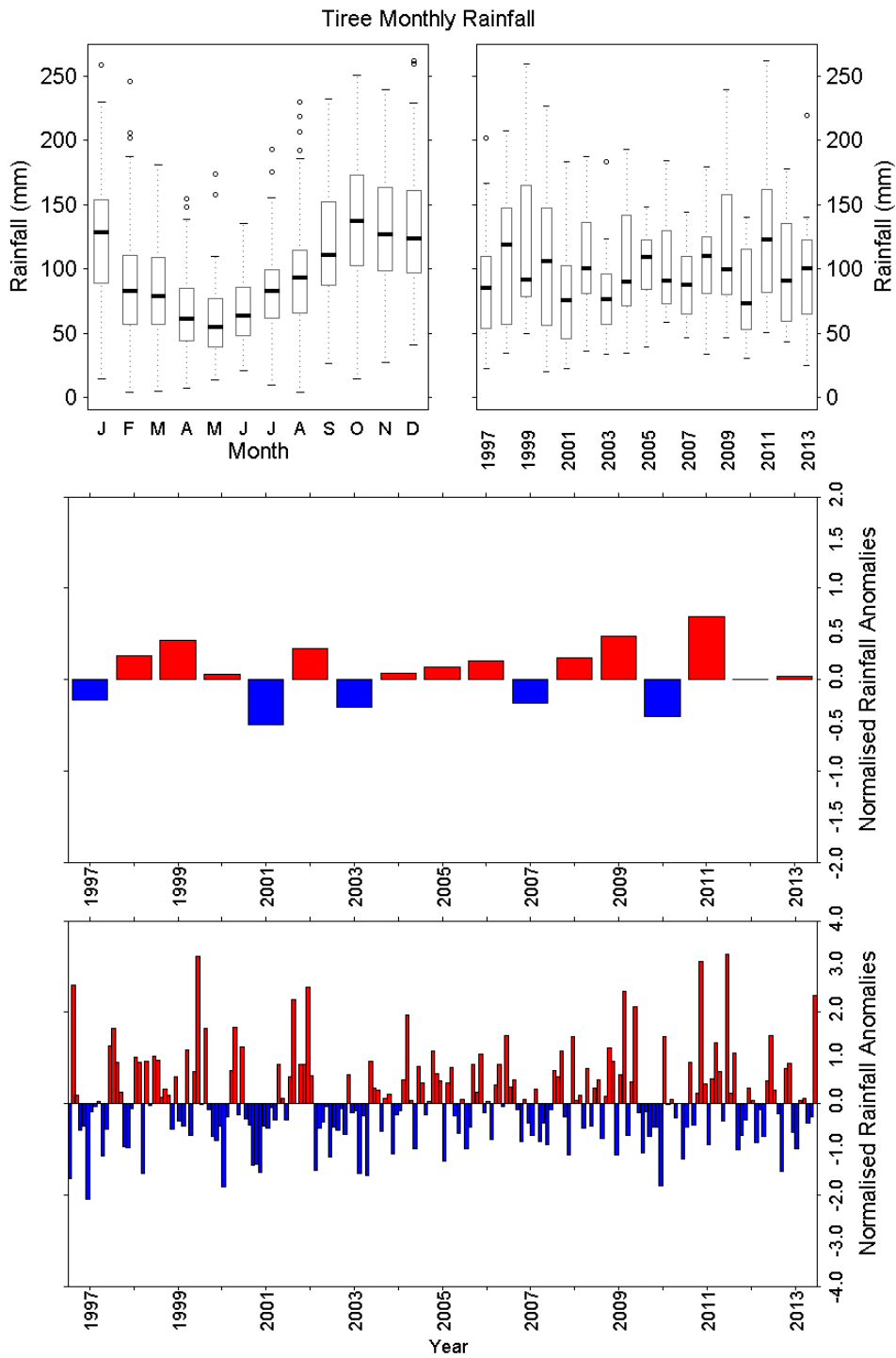


Figure E3.6 Rainfall totals from the meteorological station at Tiree. a) Monthly boxplot of rainfall data. b) Annual boxplot of rainfall data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.



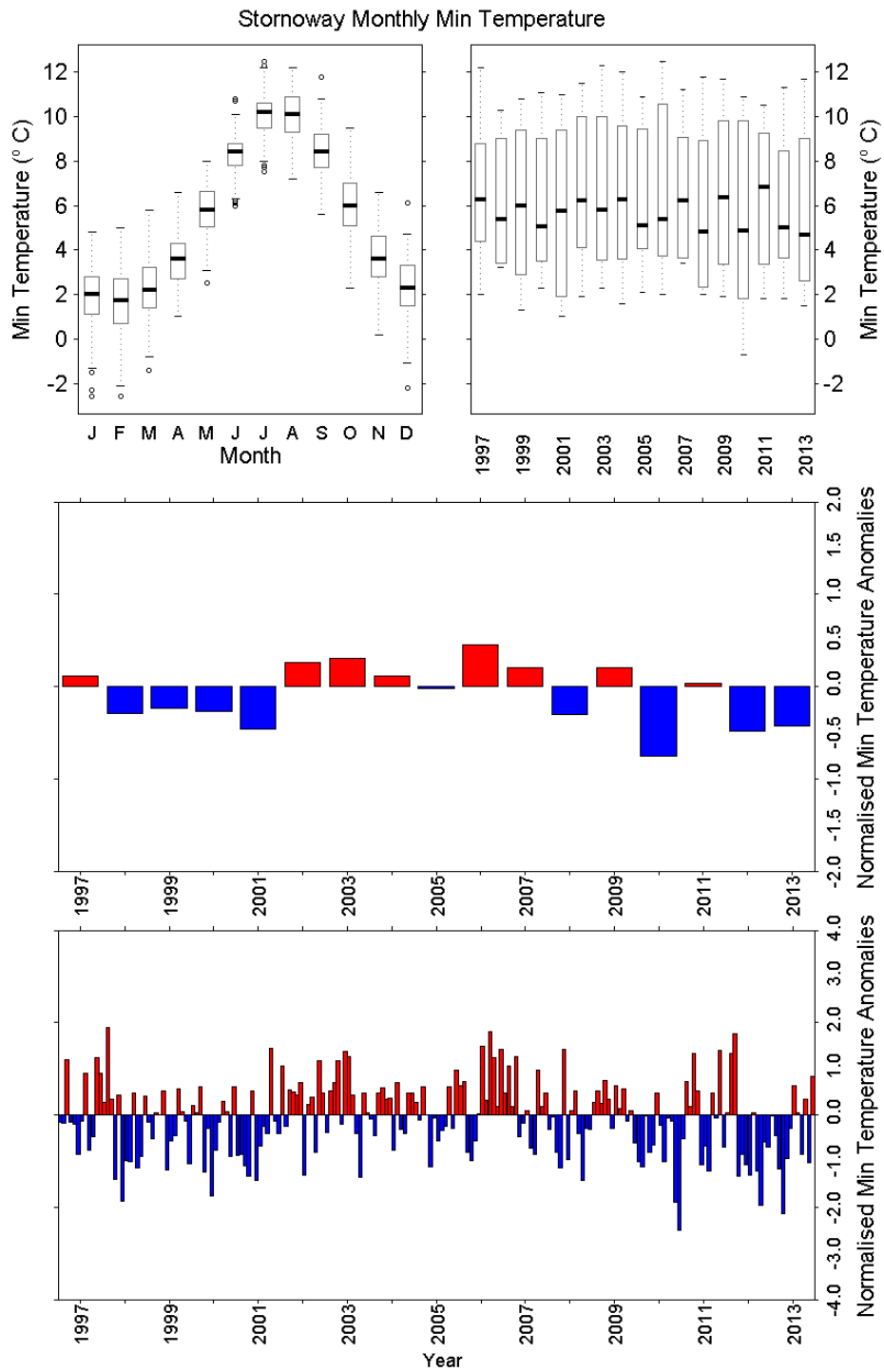


Figure E4.1 Monthly Minimum Air Temperature (°C) data from the meteorological station at Stornoway a) Monthly boxplot of minimum air temperature data. b) Annual boxplot of minimum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

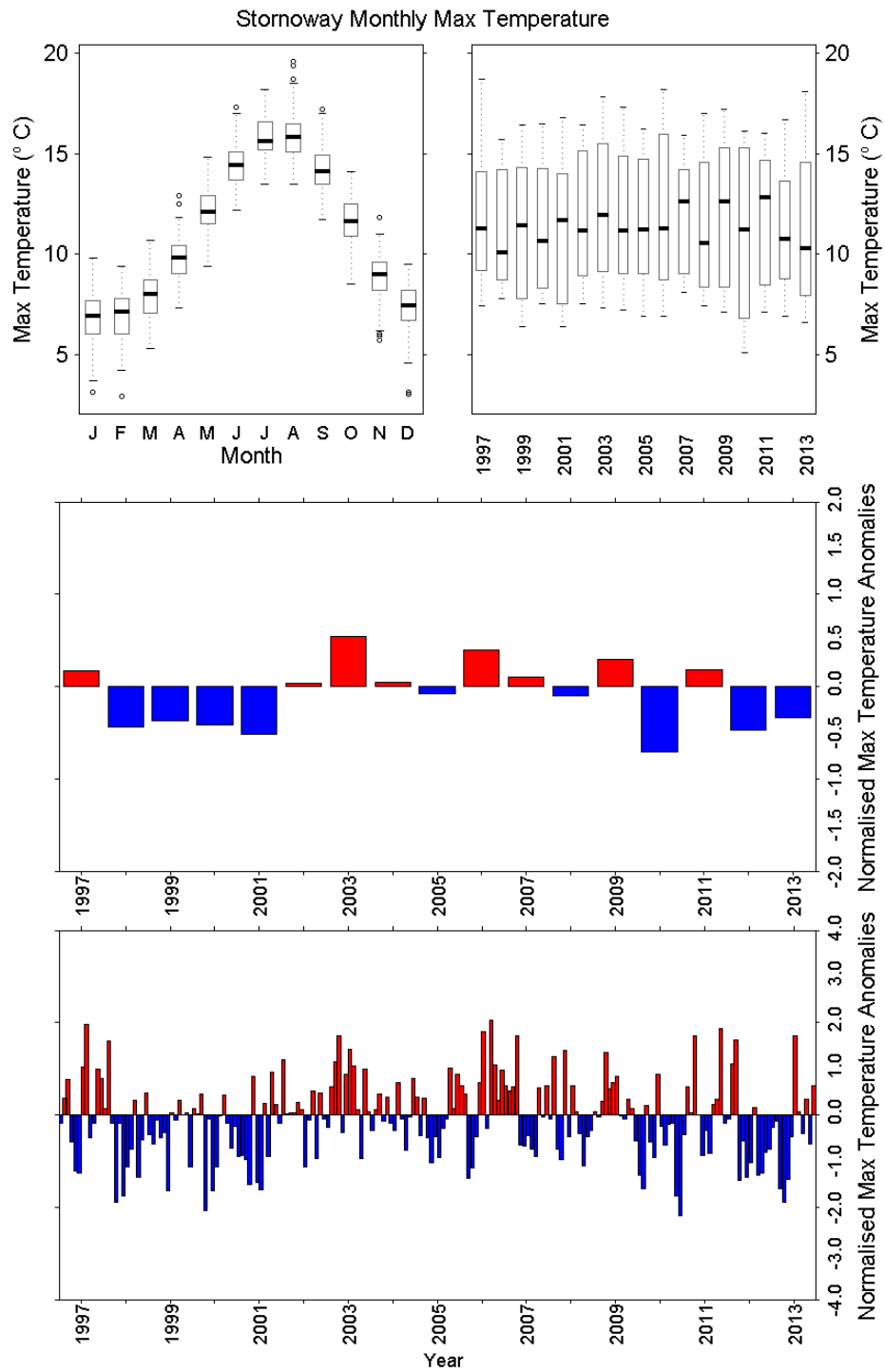


Figure 4.2 Monthly Maximum Air Temperature (°C) data from the meteorological station at Stornoway. a) Monthly boxplot of maximum air temperature data. b) Annual boxplot of maximum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

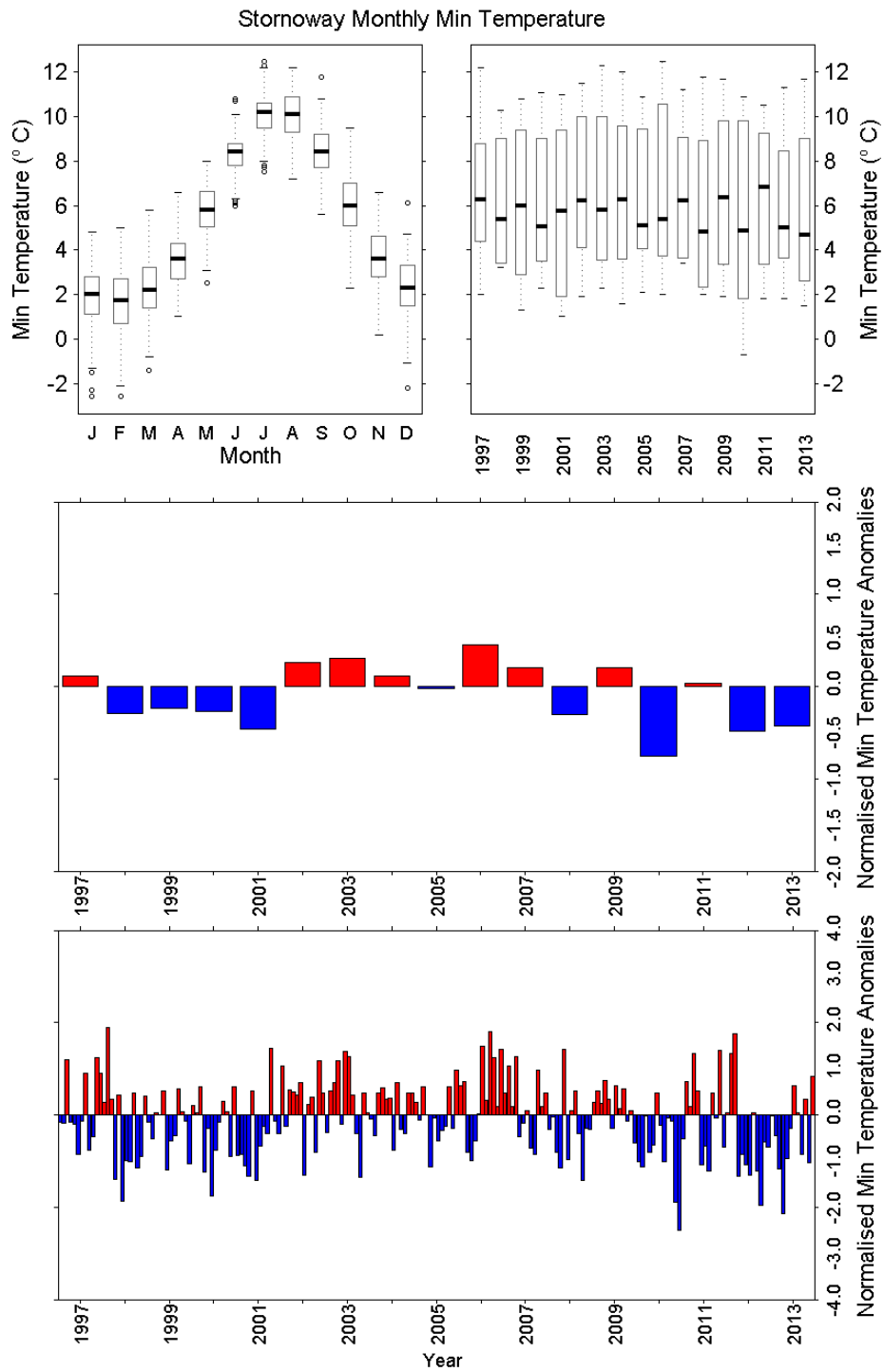


Figure E4.3 Monthly Mean Air Temperature (°C) data from the meteorological station at Stornoway. a) Monthly boxplot of mean air temperature data. b) Annual boxplot of mean air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

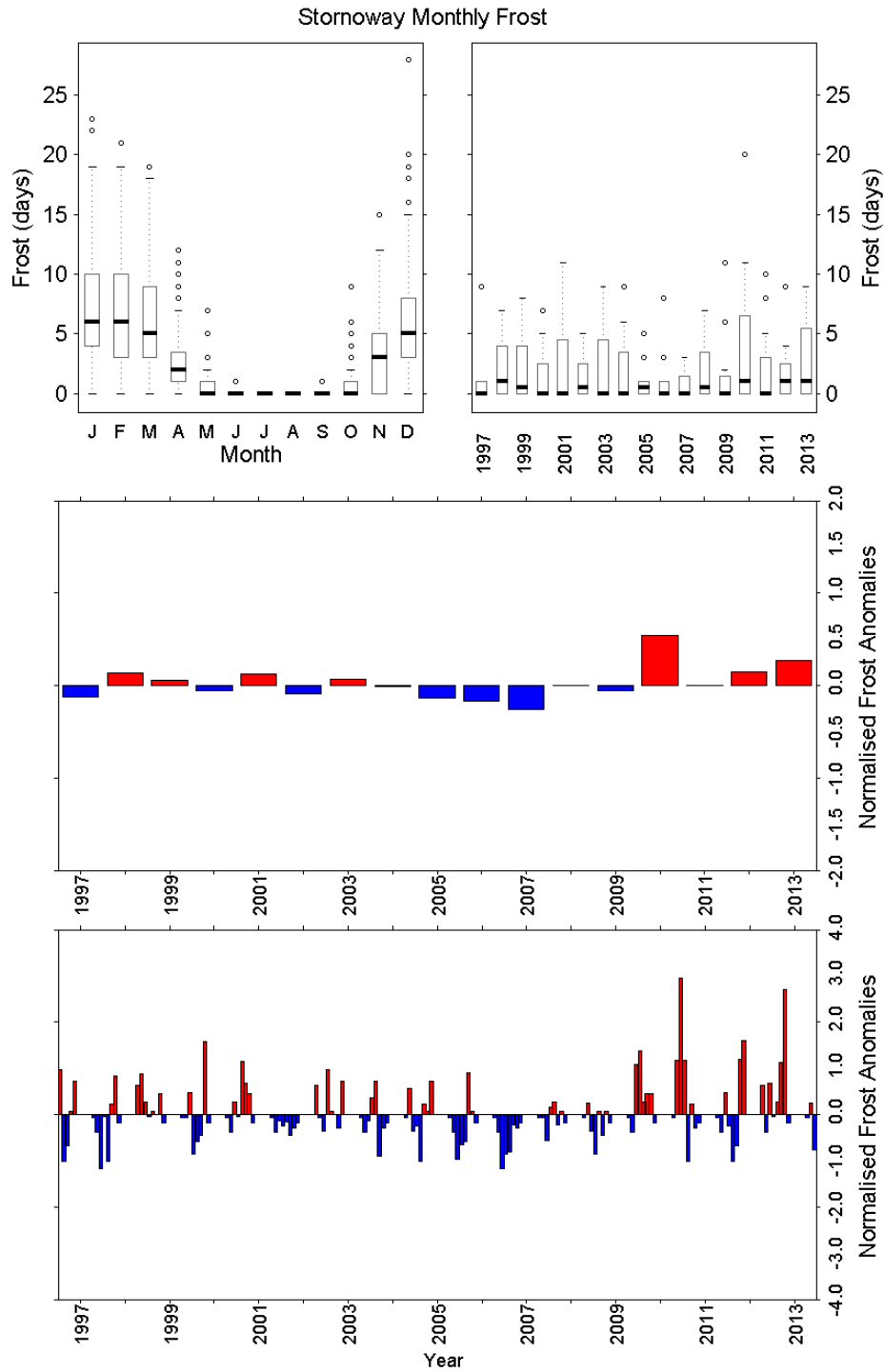


Figure E4.4 Monthly Days of Frost from the meteorological station at Stornoway. a) Monthly boxplot of frost data. b) Annual boxplot of frost data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

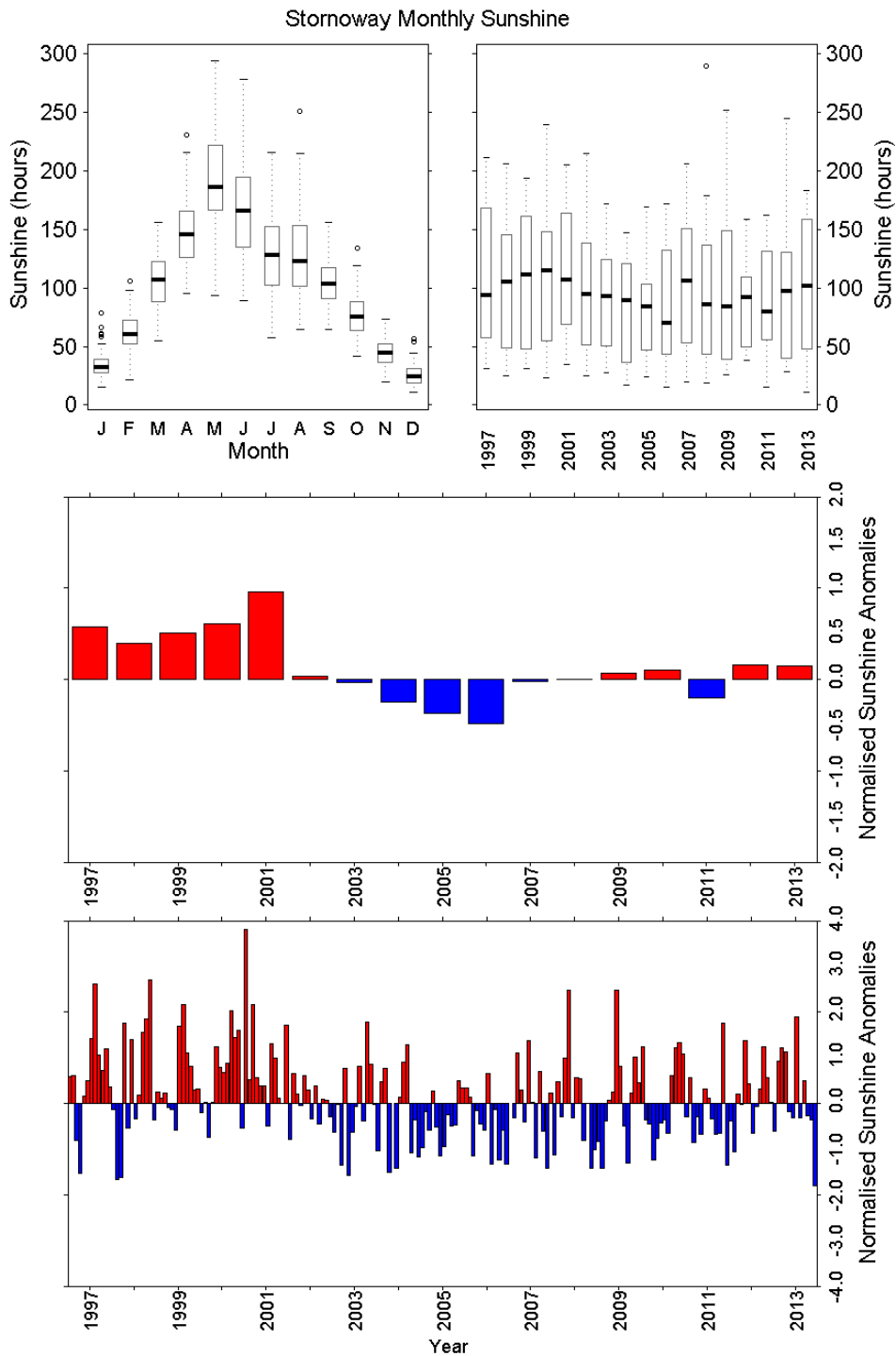


Figure E4.5 Monthly Sunshine hours from the meteorological station at Stornoway. a) Monthly boxplot of sea surface temperature data. b) Annual boxplot of sea surface temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in May 2004 or January 2007.

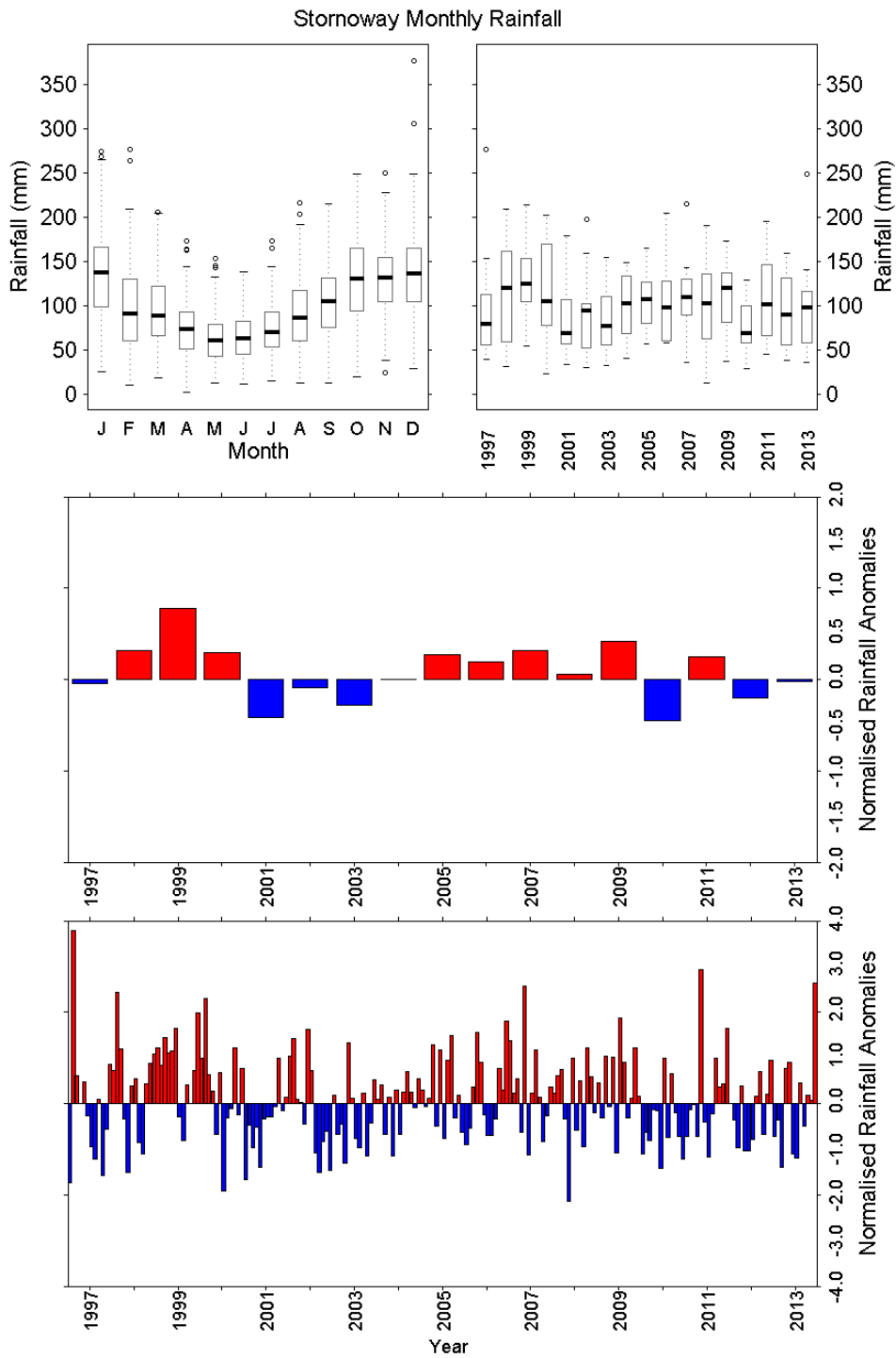


Figure E4.6 Rainfall totals from the meteorological station at Stornoway. a) Monthly boxplot of rainfall data. b) Annual boxplot of rainfall data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

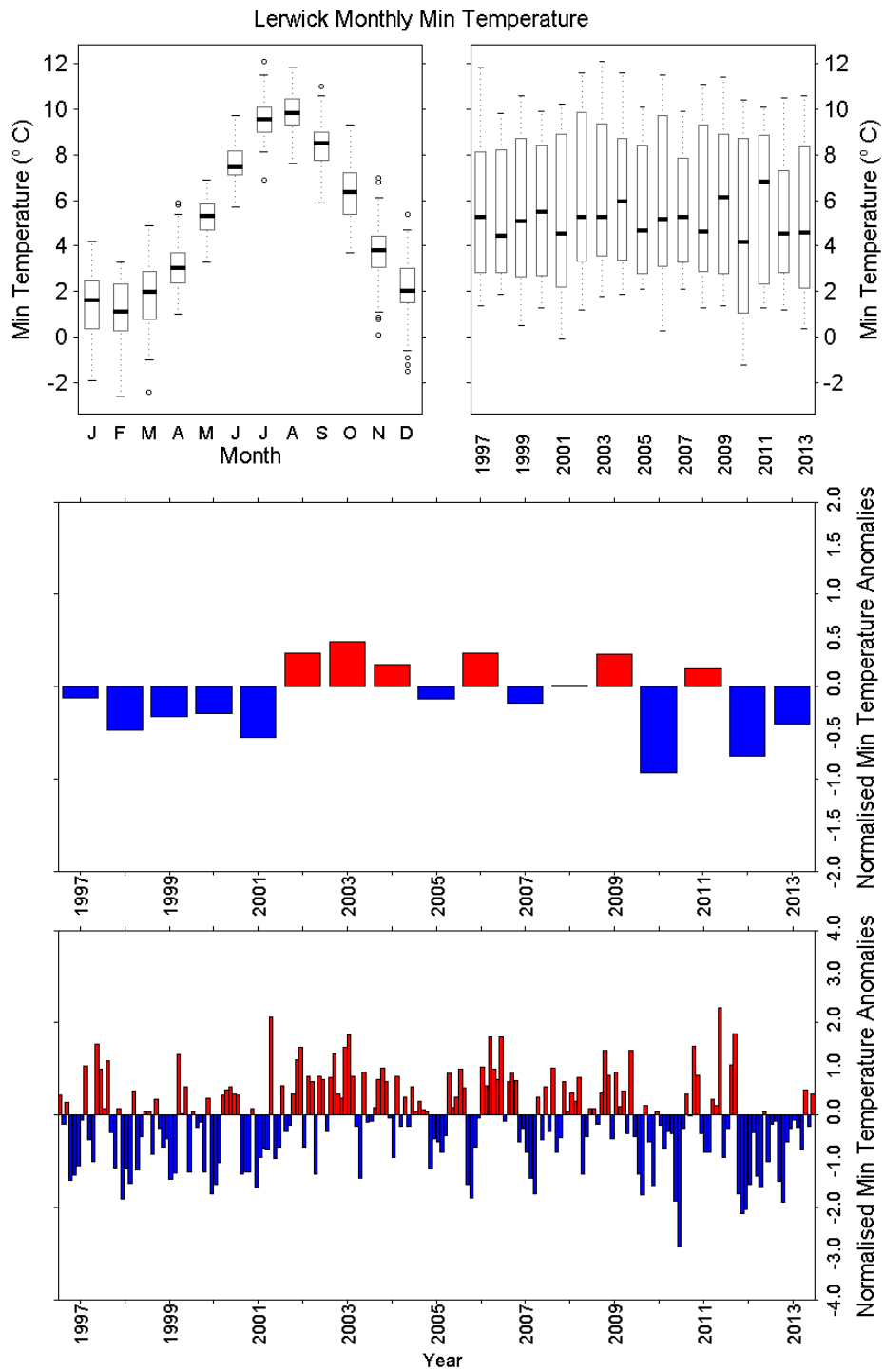


Figure E5.1 Monthly Minimum Air Temperature (°C) data from the meteorological station at Lerwick. a) Monthly boxplot of minimum air temperature data. b) Annual boxplot of minimum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

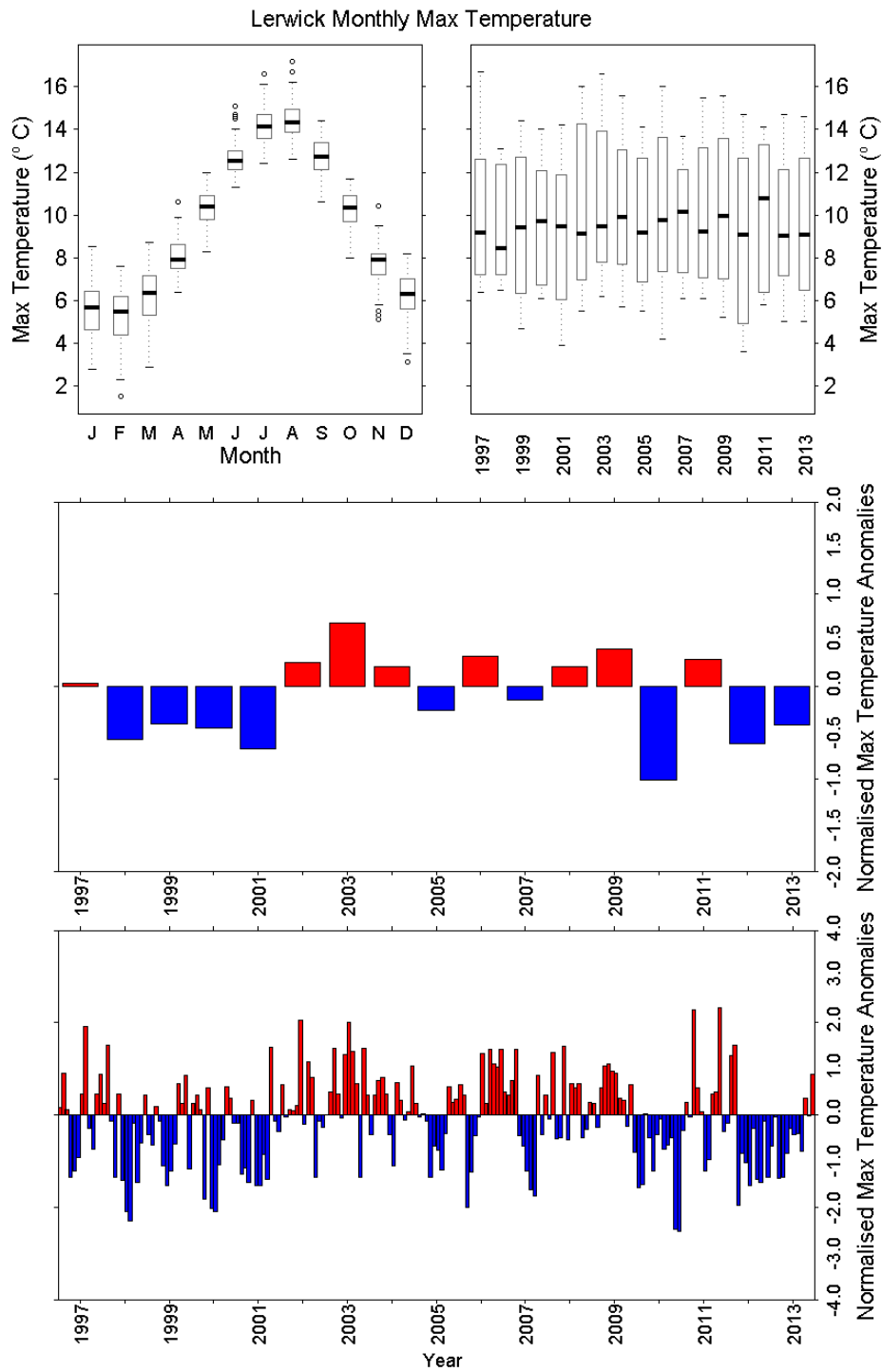


Figure E5.2 Monthly Maximum Air Temperature (°C) data from the meteorological station at Lerwick. a) Monthly boxplot of maximum air temperature data. b) Annual boxplot of maximum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.



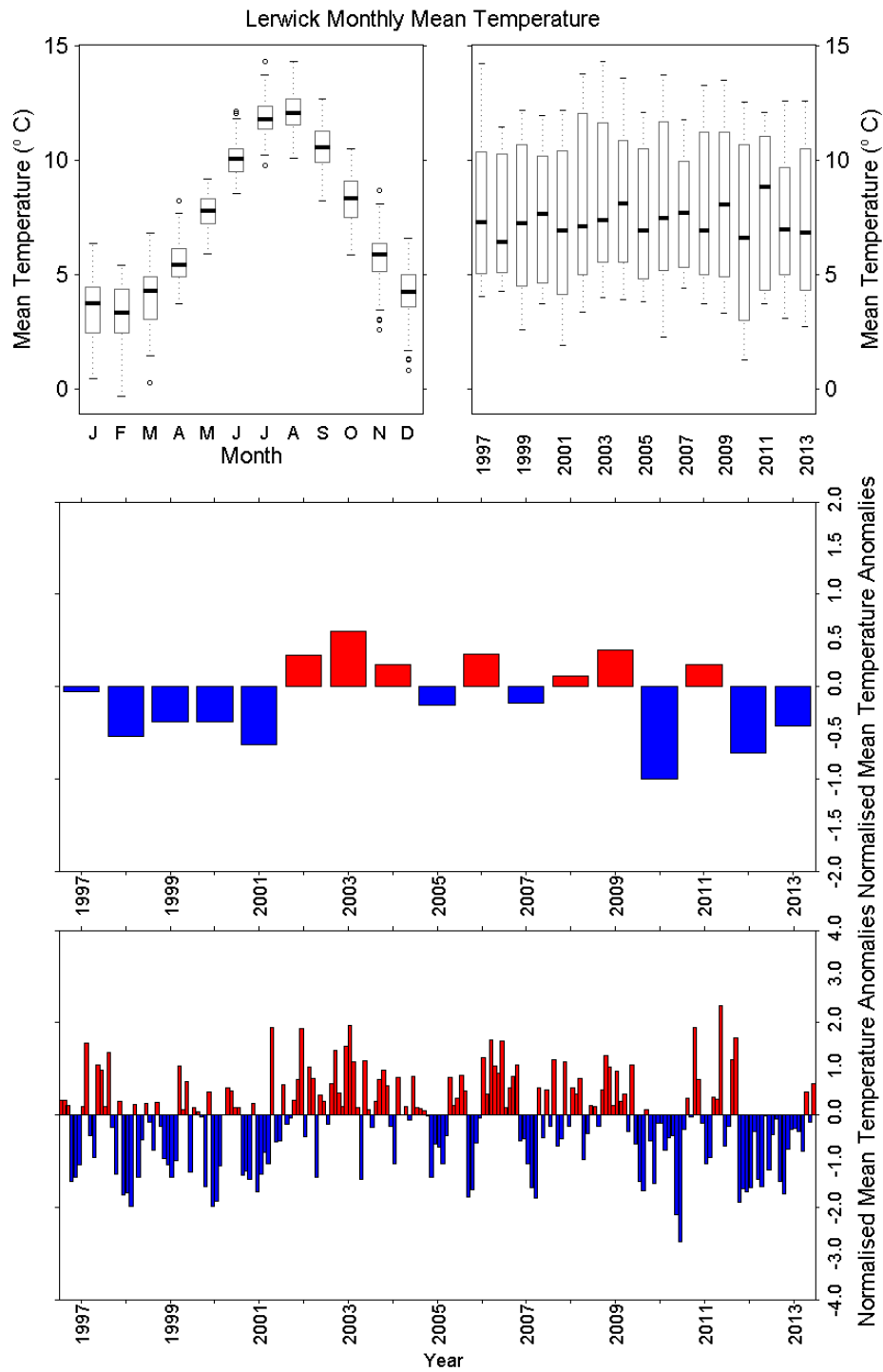


Figure E5.3 Monthly Mean Air Temperature ( $^{\circ}\text{C}$ ) data from the meteorological station at Lerwick. a) Monthly boxplot of mean air temperature data. b) Annual boxplot of mean air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

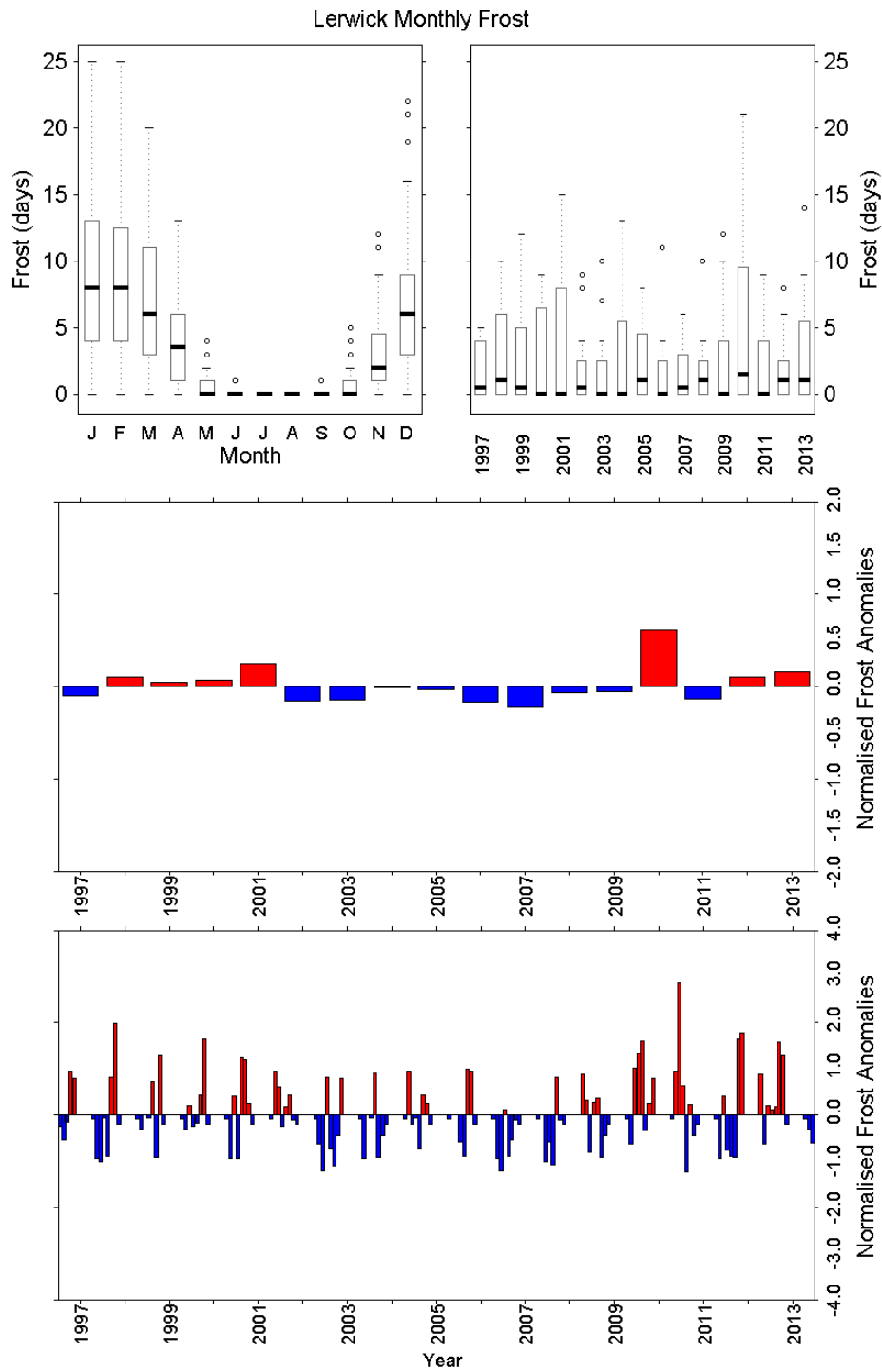


Figure E5.4 Monthly Days of Frost from the meteorological station at Lerwick. a) Monthly boxplot of frost data. b) Annual boxplot of frost data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

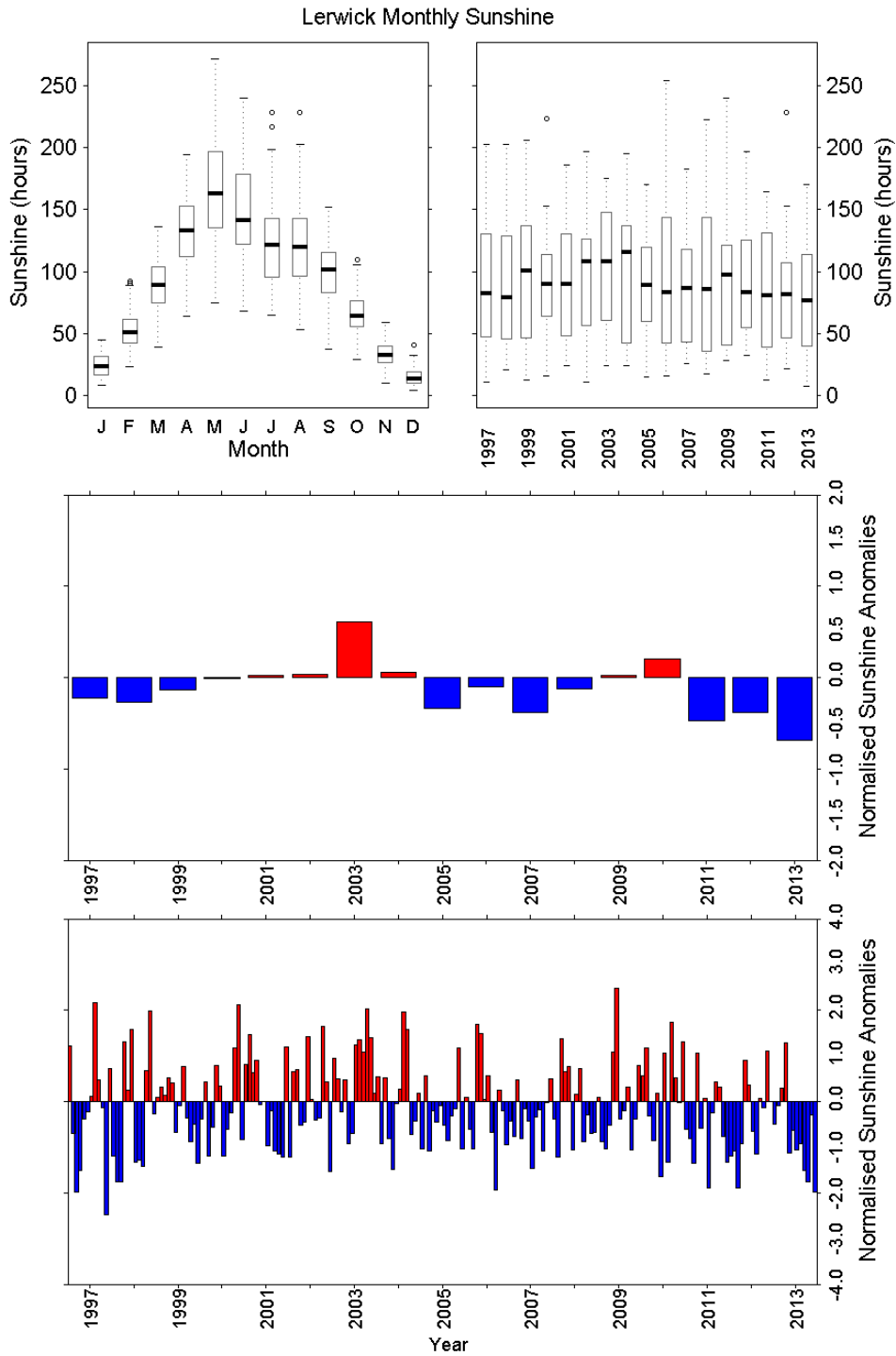


Figure E5.5 Monthly Sunshine hours from the meteorological station at Lerwick. a) Monthly boxplot of sea surface temperature data. b) Annual boxplot of sea surface temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

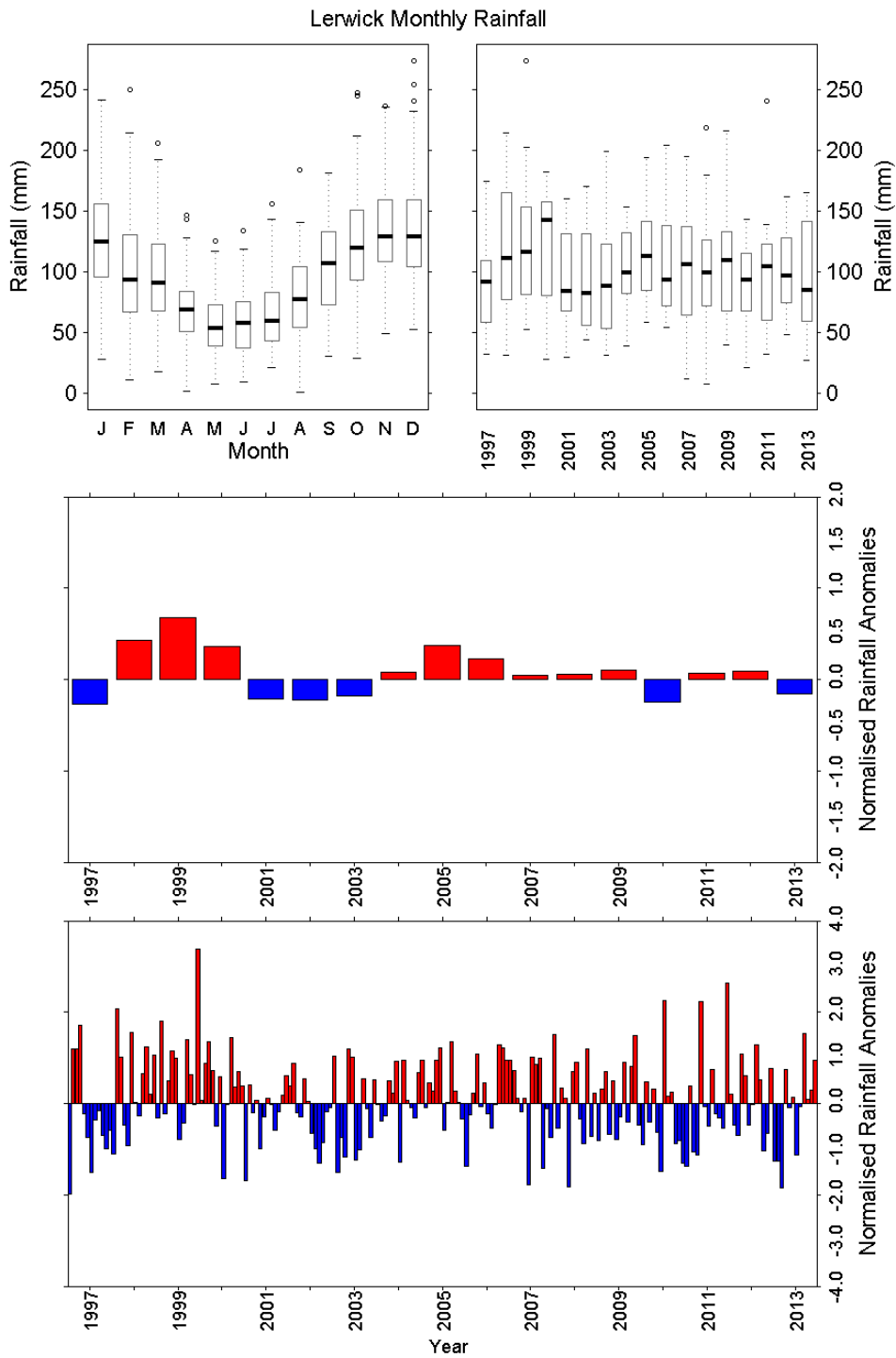


Figure E5.6 Rainfall totals from the meteorological station at Lerwick. a) Monthly boxplot of rainfall data. b) Annual boxplot of rainfall data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

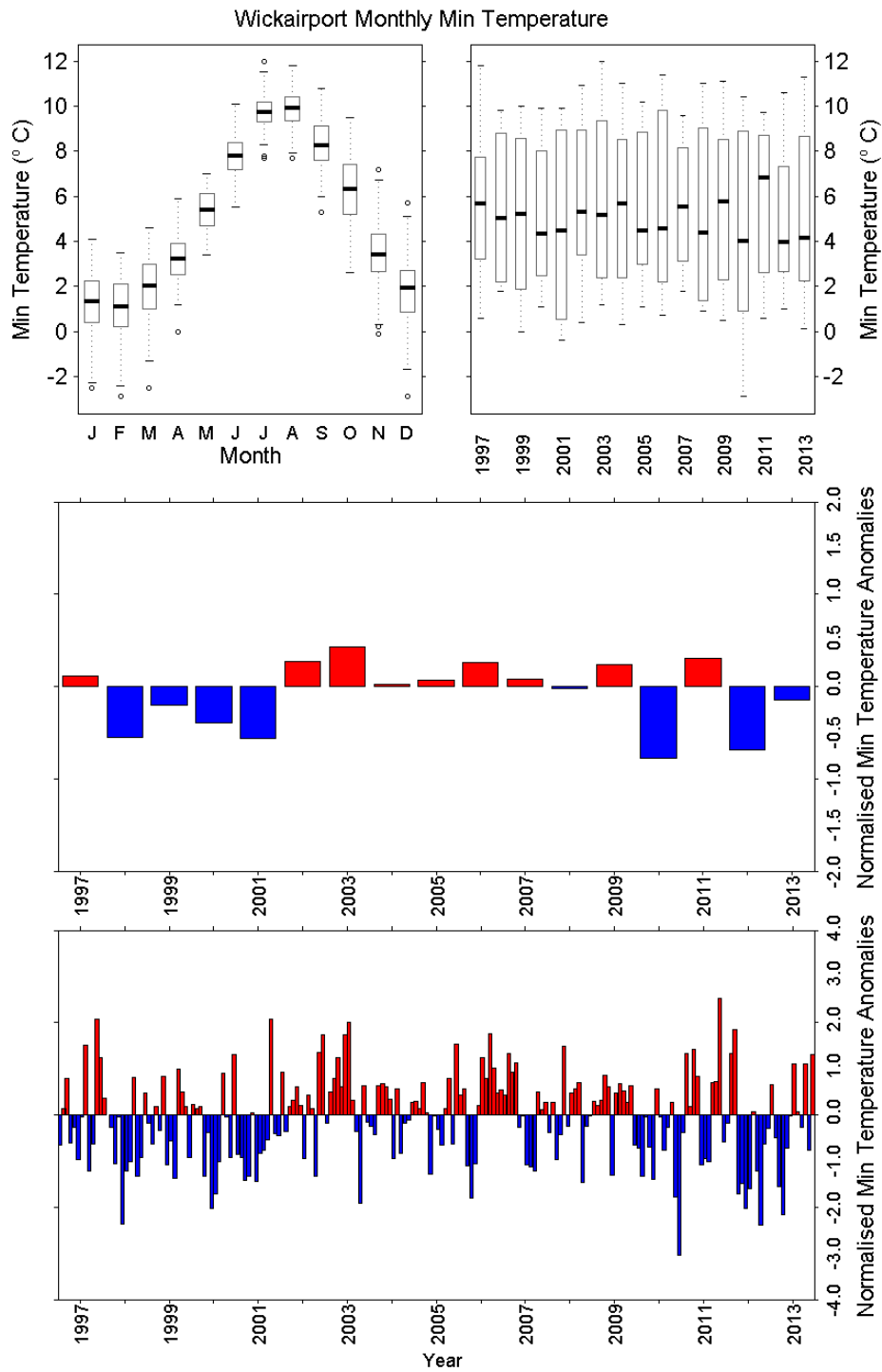


Figure E6.1 Monthly Minimum Air Temperature (°C) data from the meteorological station at Wick. a) Monthly boxplot of minimum air temperature data. b) Annual boxplot of minimum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in February 1998.

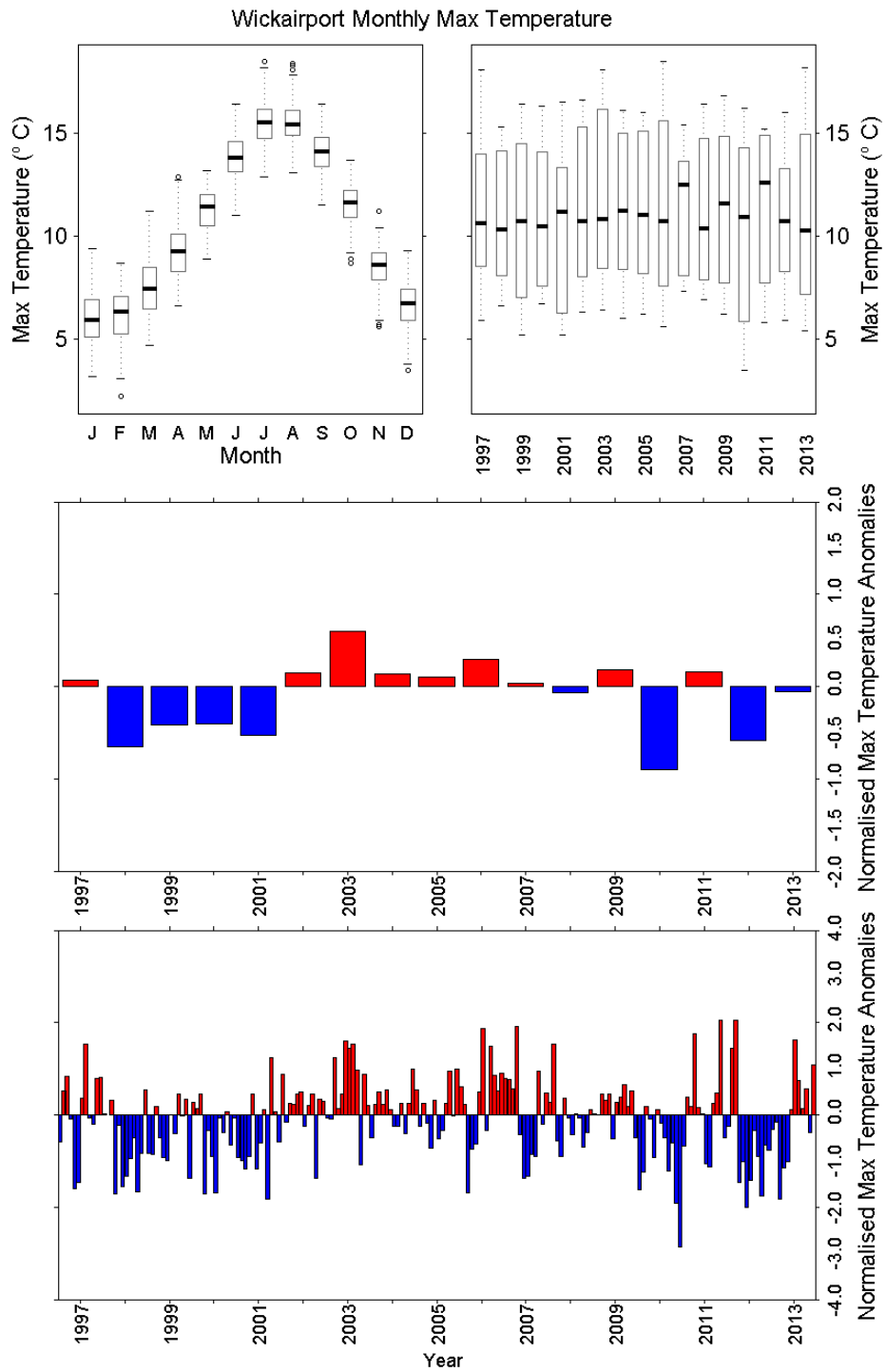


Figure E6.2 Monthly Maximum Air Temperature (°C) data from the meteorological station at Wick. a) Monthly boxplot of maximum air temperature data. b) Annual boxplot of maximum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in February 1998.

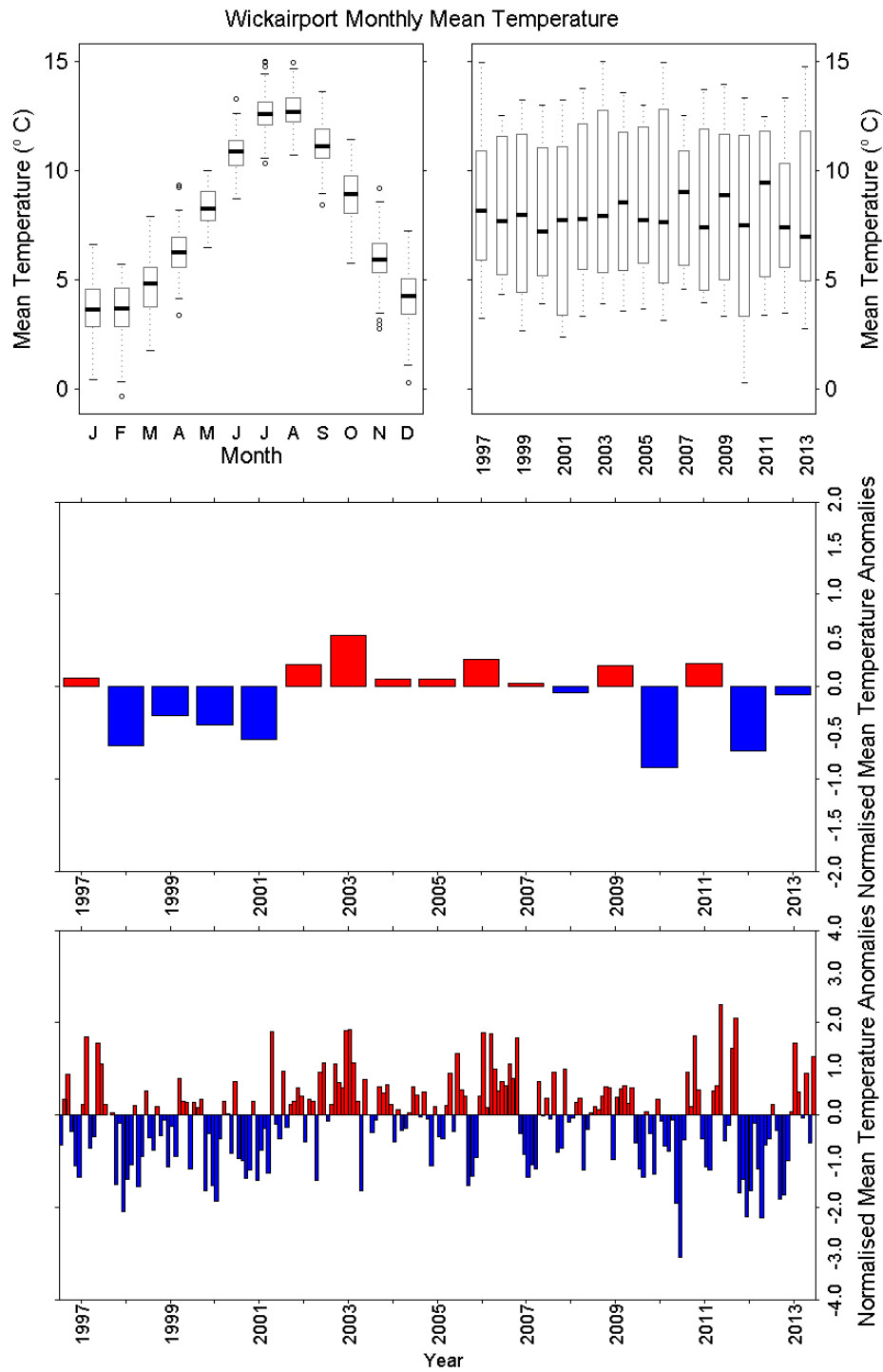


Figure E6.3 Monthly Mean Air Temperature (°C) data from the meteorological station at Wick. a) Monthly boxplot of mean air temperature data. b) Annual boxplot of mean air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in February 1998.

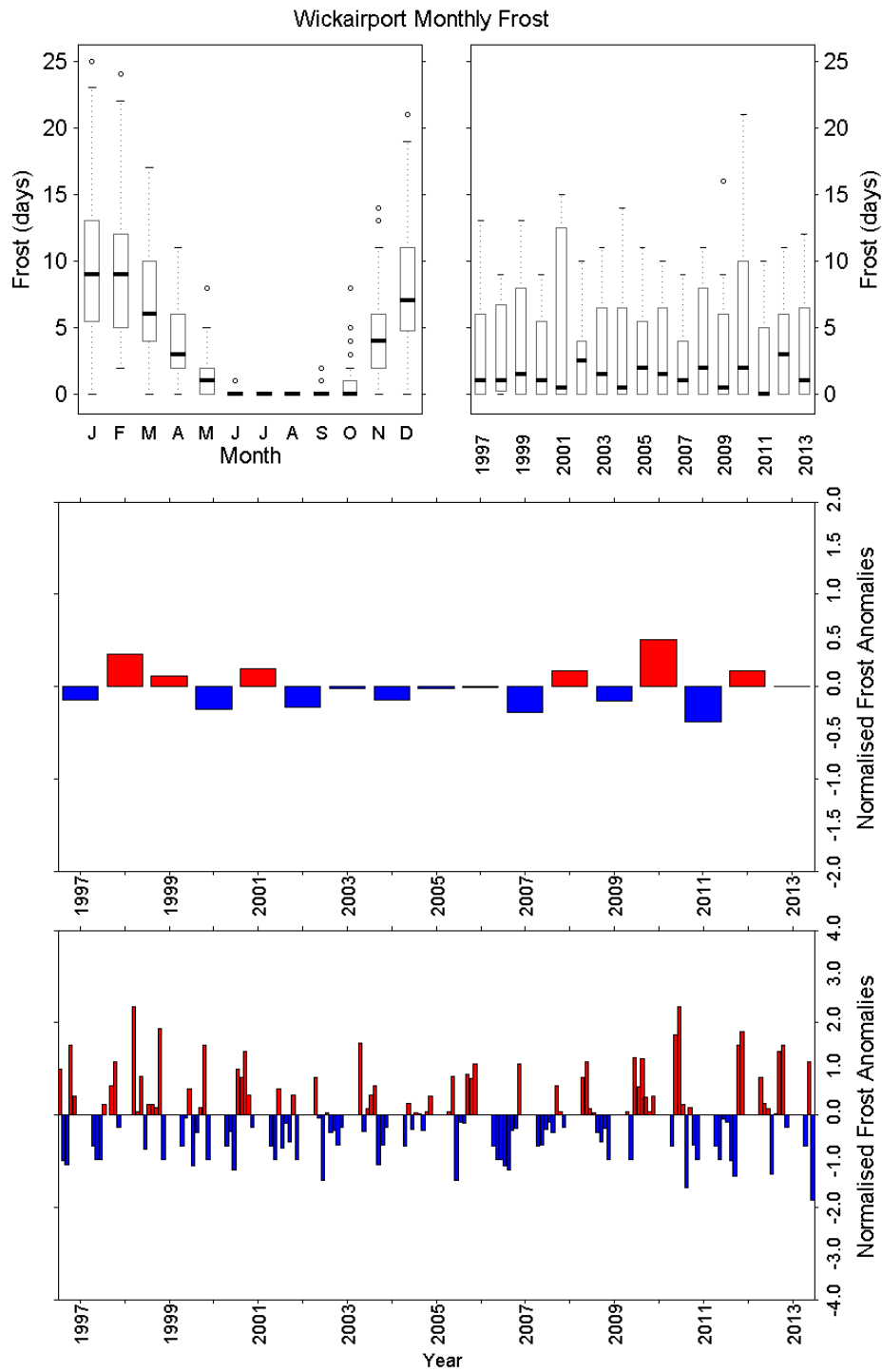


Figure E6.4 Monthly Days of Frost from the meteorological station at Wick. a) Monthly boxplot of frost data. b) Annual boxplot of frost data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in February 1998.



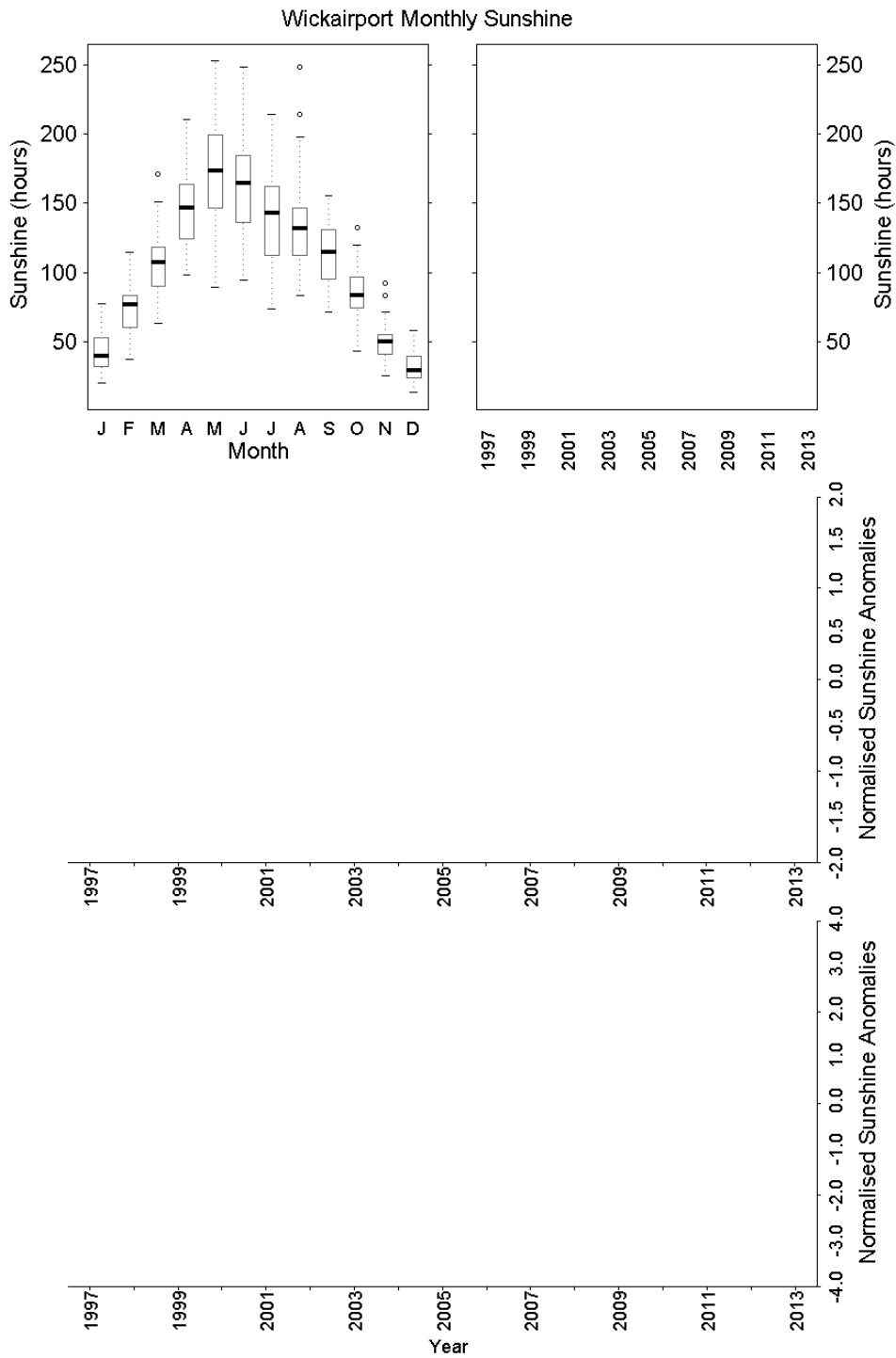


Figure E6.5 Monthly Sunshine hours from the meteorological station at Wick. a) Monthly boxplot of sea surface temperature data. b) Annual boxplot of sea surface temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

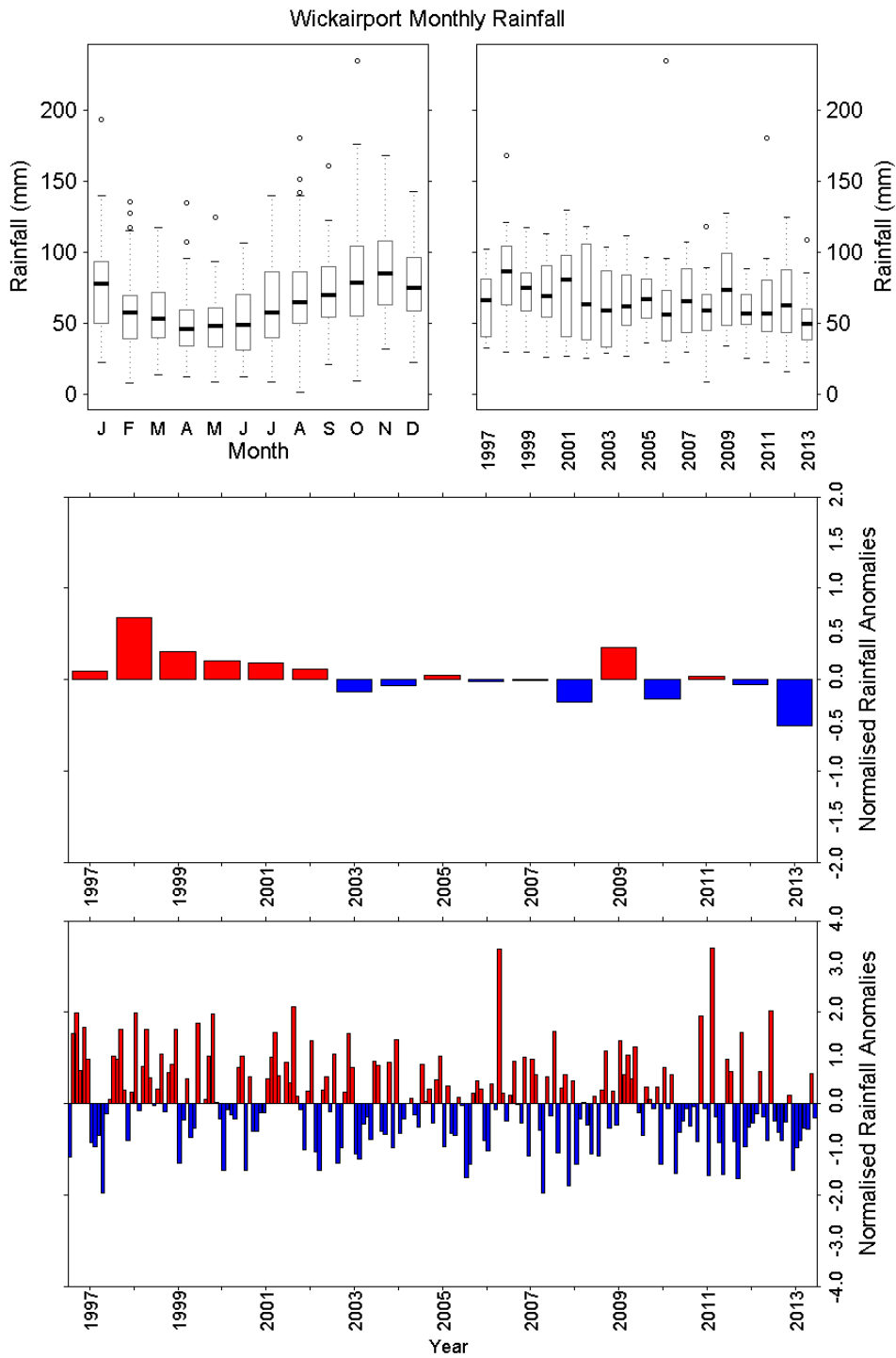


Figure E6.6 Rainfall totals from the meteorological station at Wick. a) Monthly boxplot of rainfall data. b) Annual boxplot of rainfall data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

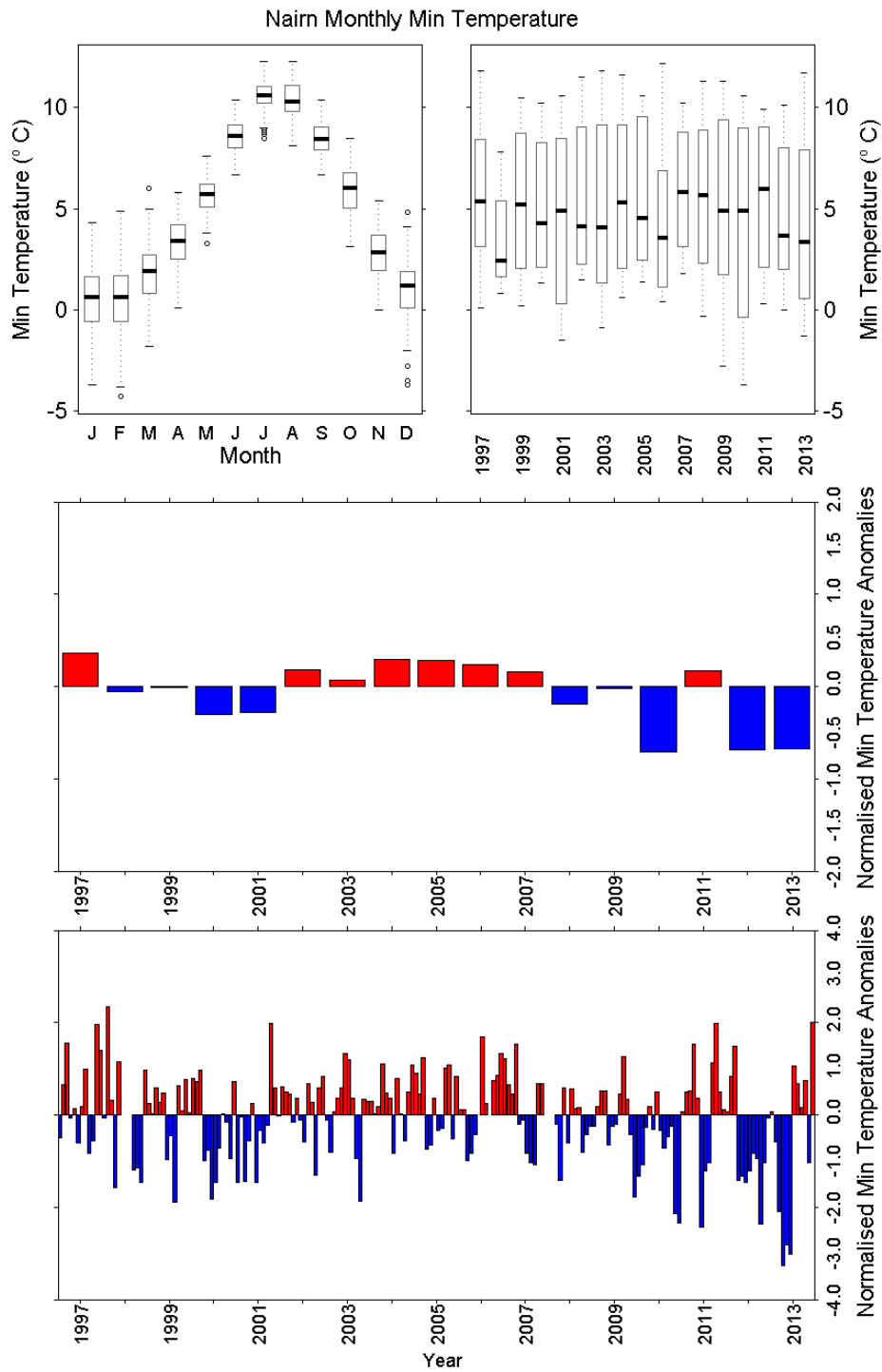


Figure E7.1 Monthly Minimum Air Temperature (°C) data from the meteorological station at Nairn. a) Monthly boxplot of minimum air temperature data. b) Annual boxplot of minimum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available June-August 1998, June 2006, September 2006, December 2007, January and February 2008.

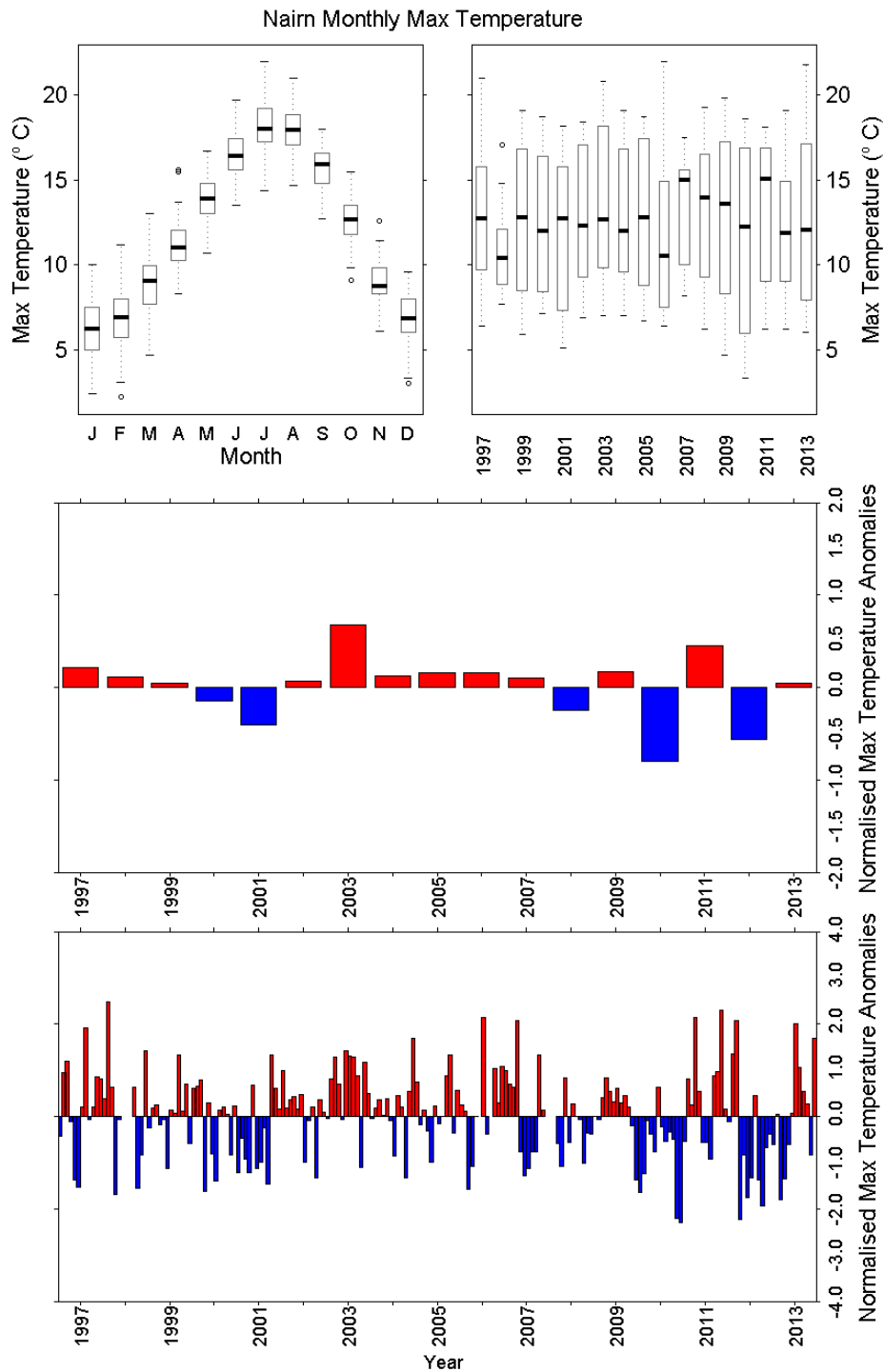


Figure E7.2 Monthly Maximum Air Temperature (°C) data from the meteorological station at Nairn. a) Monthly boxplot of maximum air temperature data. b) Annual boxplot of maximum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in June, July or August 1998, June or September 2006, December 2007, January or February 2008.

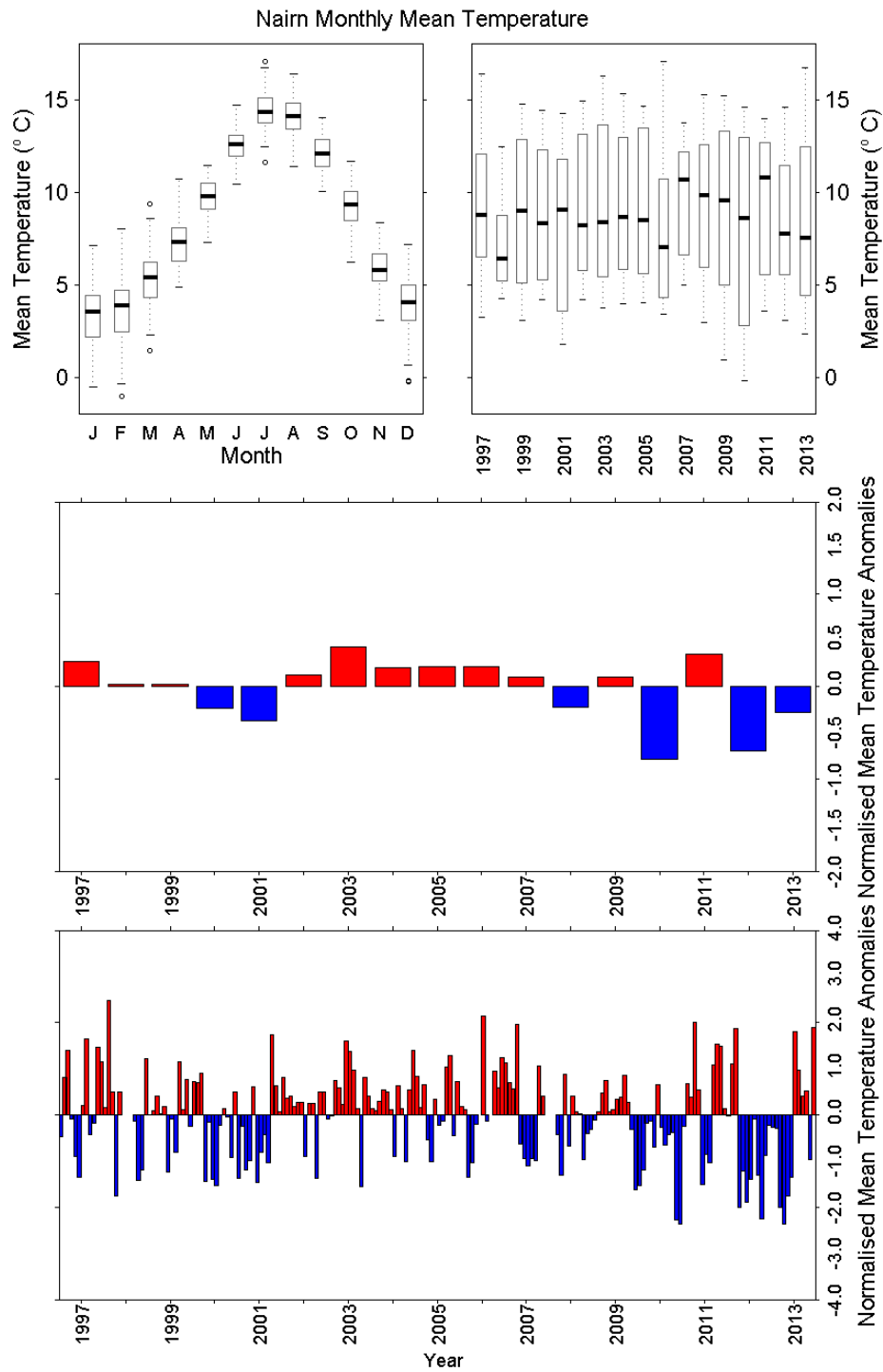


Figure E7.3 Monthly Mean Air Temperature (°C) data from the meteorological station at Nairn. a) Monthly boxplot of mean air temperature data. b) Annual boxplot of mean air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in June, July or August 1998, June 2006, September 2006, December 2007, January or February 2008.

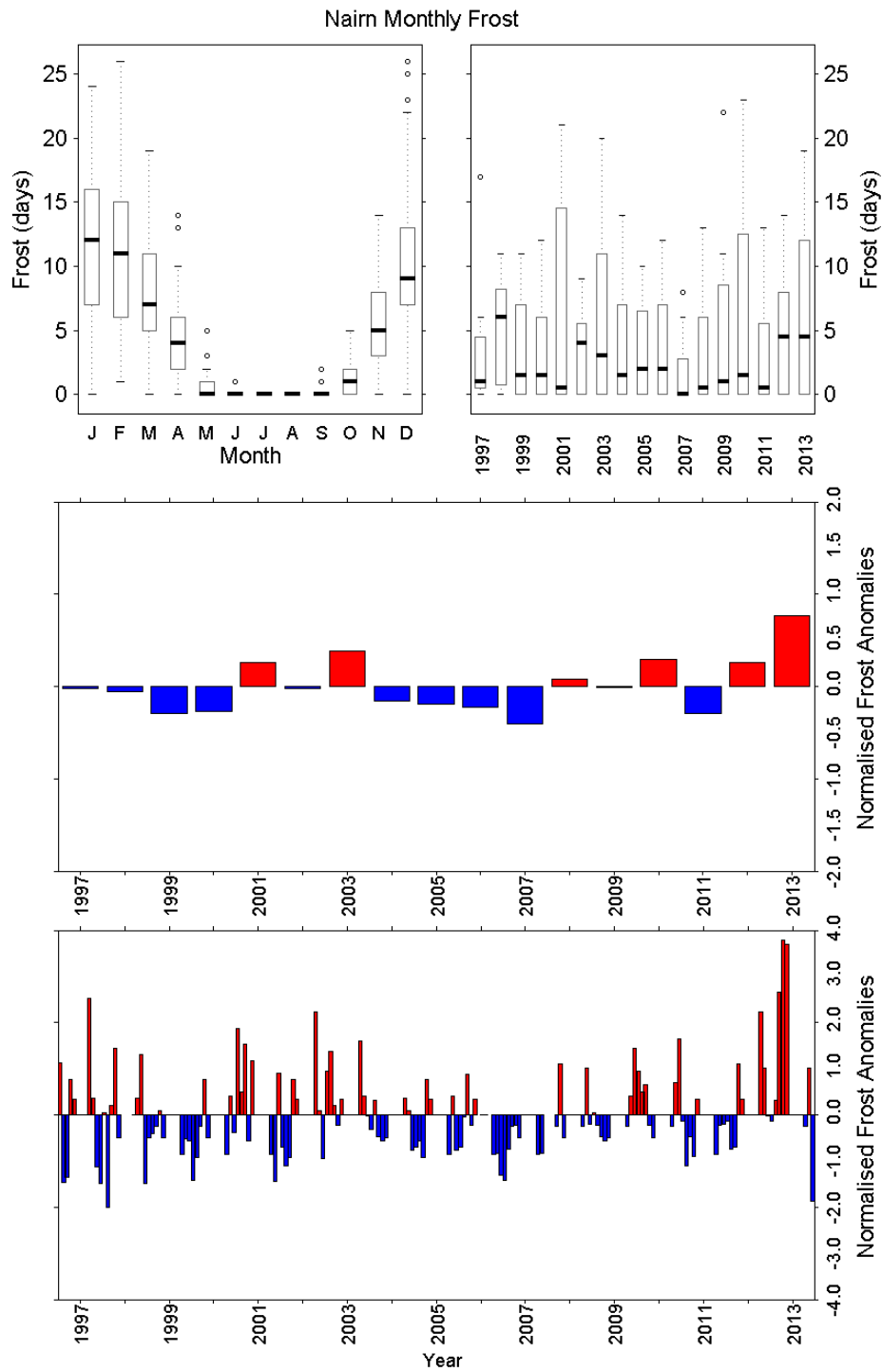


Figure E7.4 Monthly Days of Frost from the meteorological station at Nairn. a) Monthly boxplot of frost data. b) Annual boxplot of frost data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in June, July or August 1998, June or September 2006, December 2007, January or February 2008.

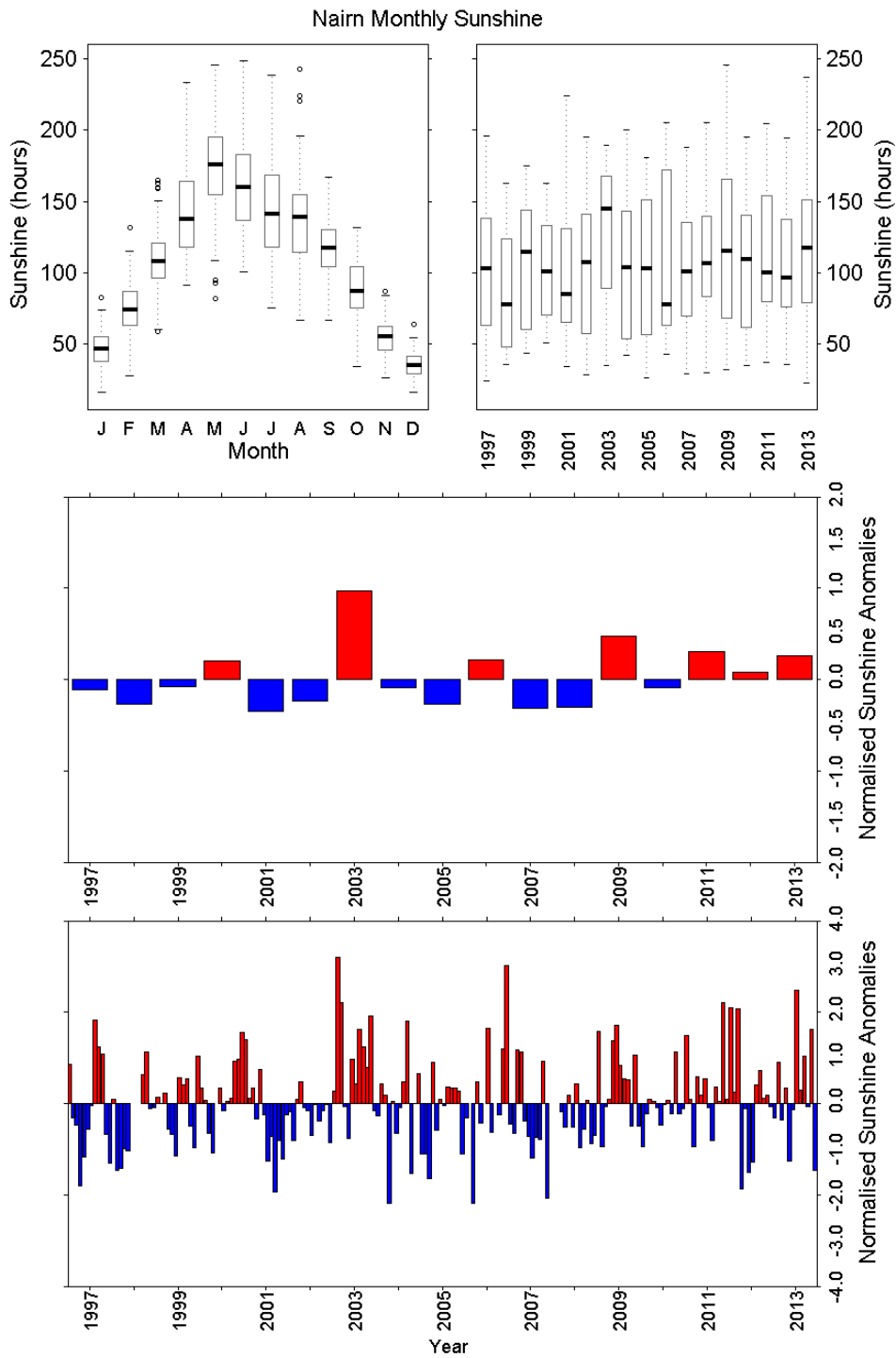


Figure E7.5 Monthly Sunshine hours from the meteorological station at Nairn. a) Monthly boxplot of sea surface temperature data. b) Annual boxplot of sea surface temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in June, or July or August 1998, May 2000, February 2006, June 2006, September 2006, December 2007, January or February 2008.

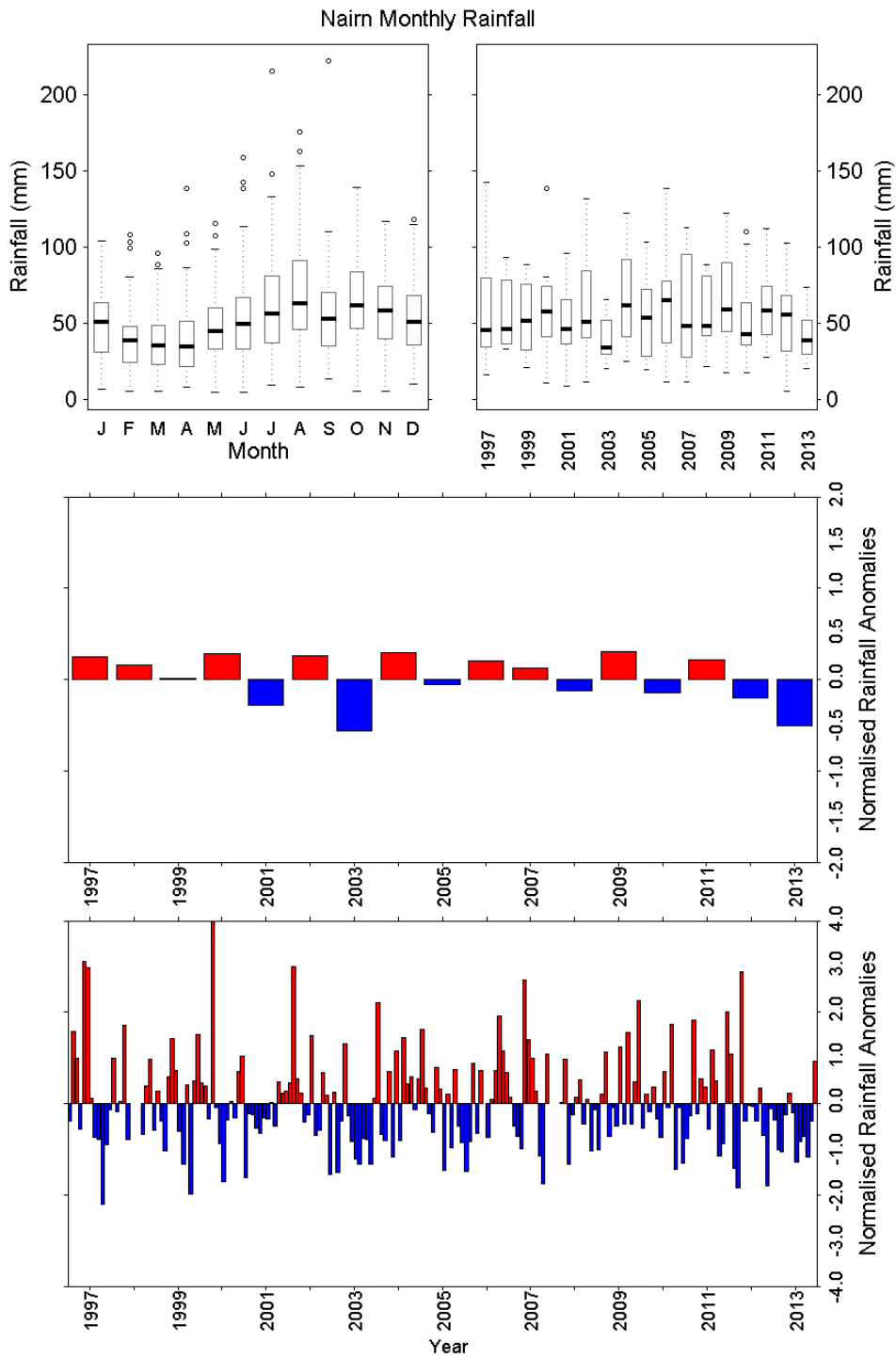


Figure E7.6 Rainfall totals from the meteorological station at Nairn. a) Monthly boxplot of rainfall data. b) Annual boxplot of rainfall data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries. There were no data available in June, July or August 1998, June 2006, December 2007, January or February 2008.



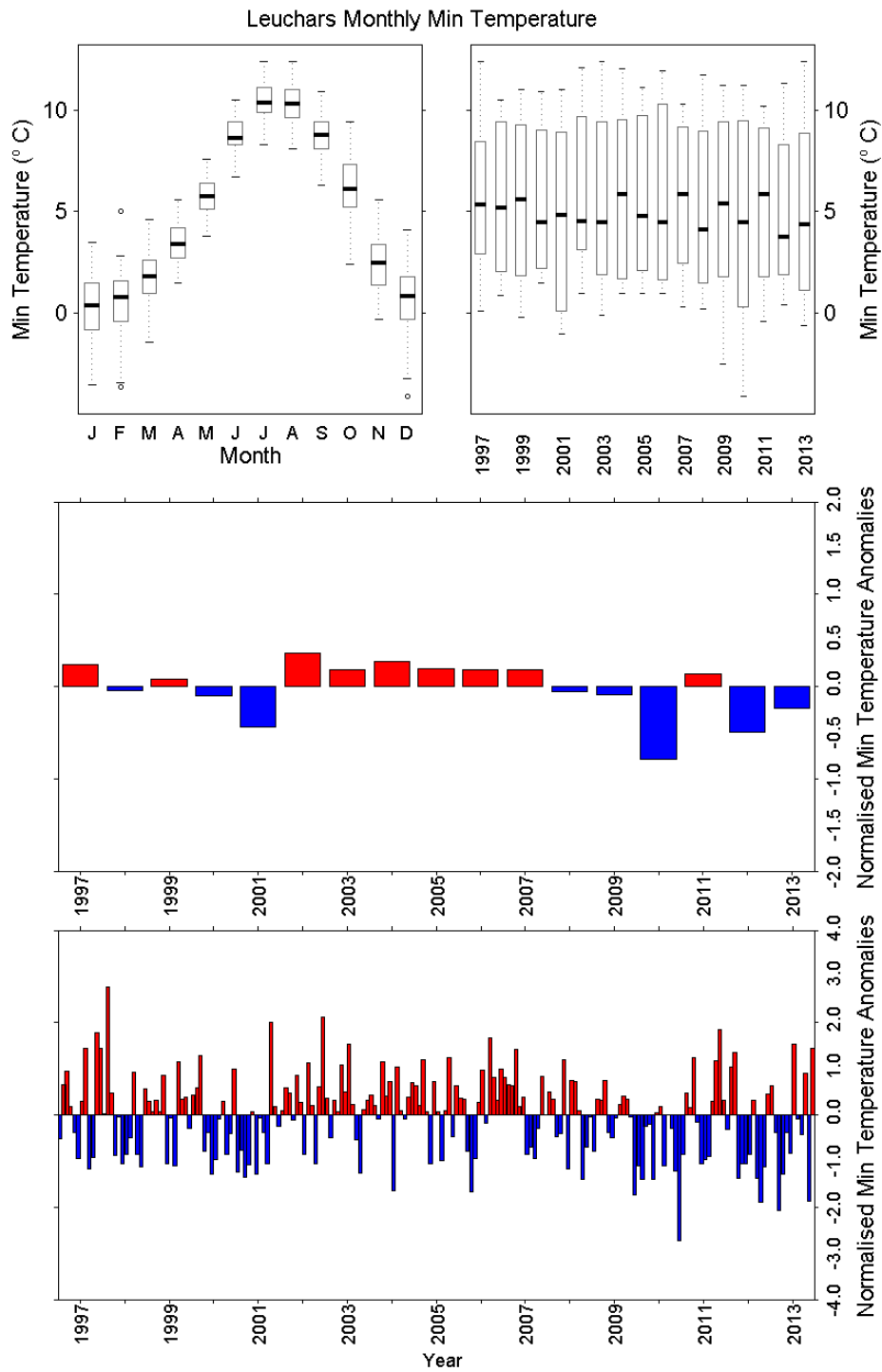


Figure E8.1 Monthly Minimum Air Temperature (°C) data from the meteorological station at Leuchars. a) Monthly boxplot of minimum air temperature data. b) Annual boxplot of minimum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

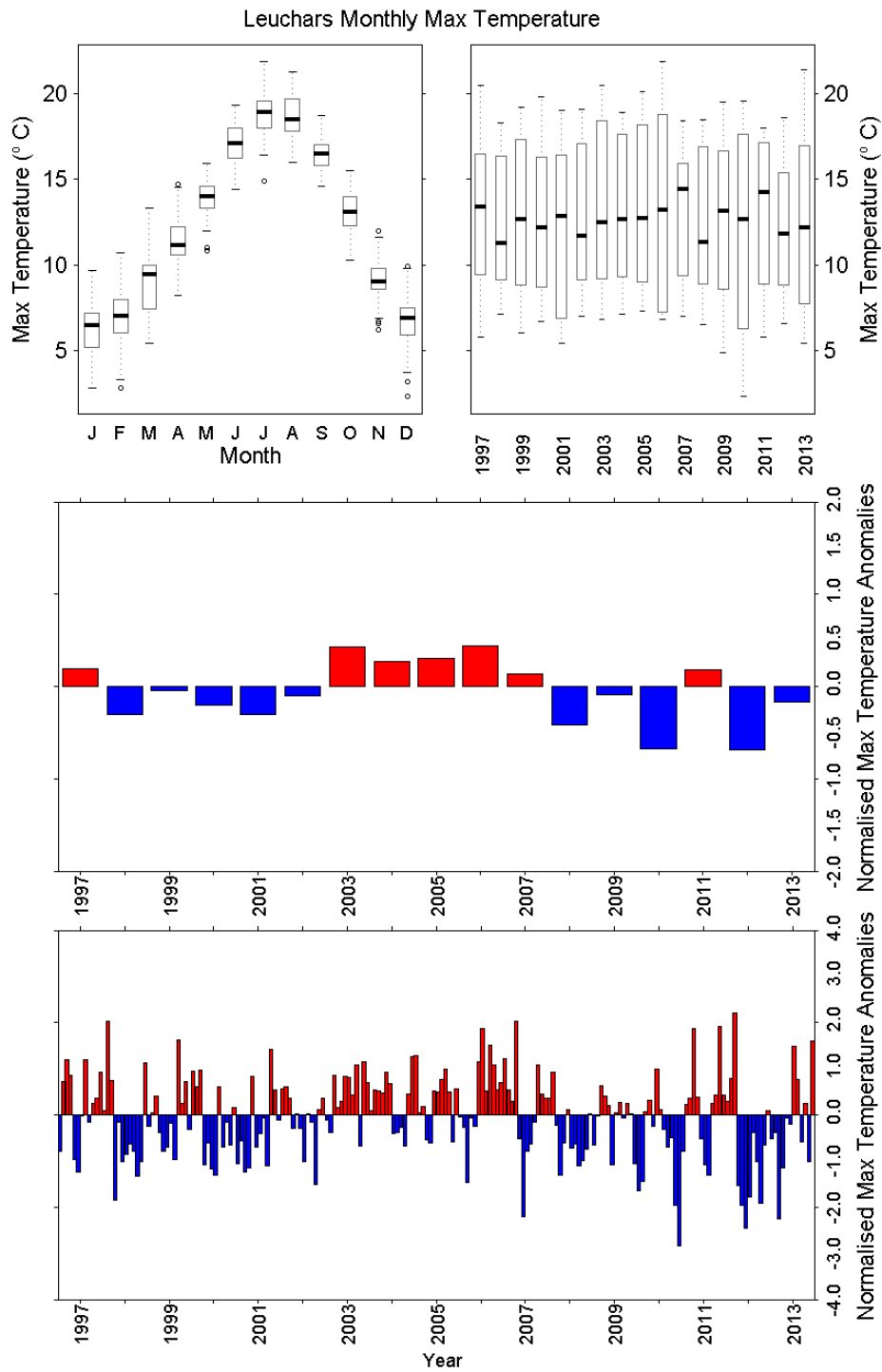


Figure E8.2 Monthly Maximum Air Temperature (°C) data from the meteorological station at Leuchars. a) Monthly boxplot of maximum air temperature data. b) Annual boxplot of maximum air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

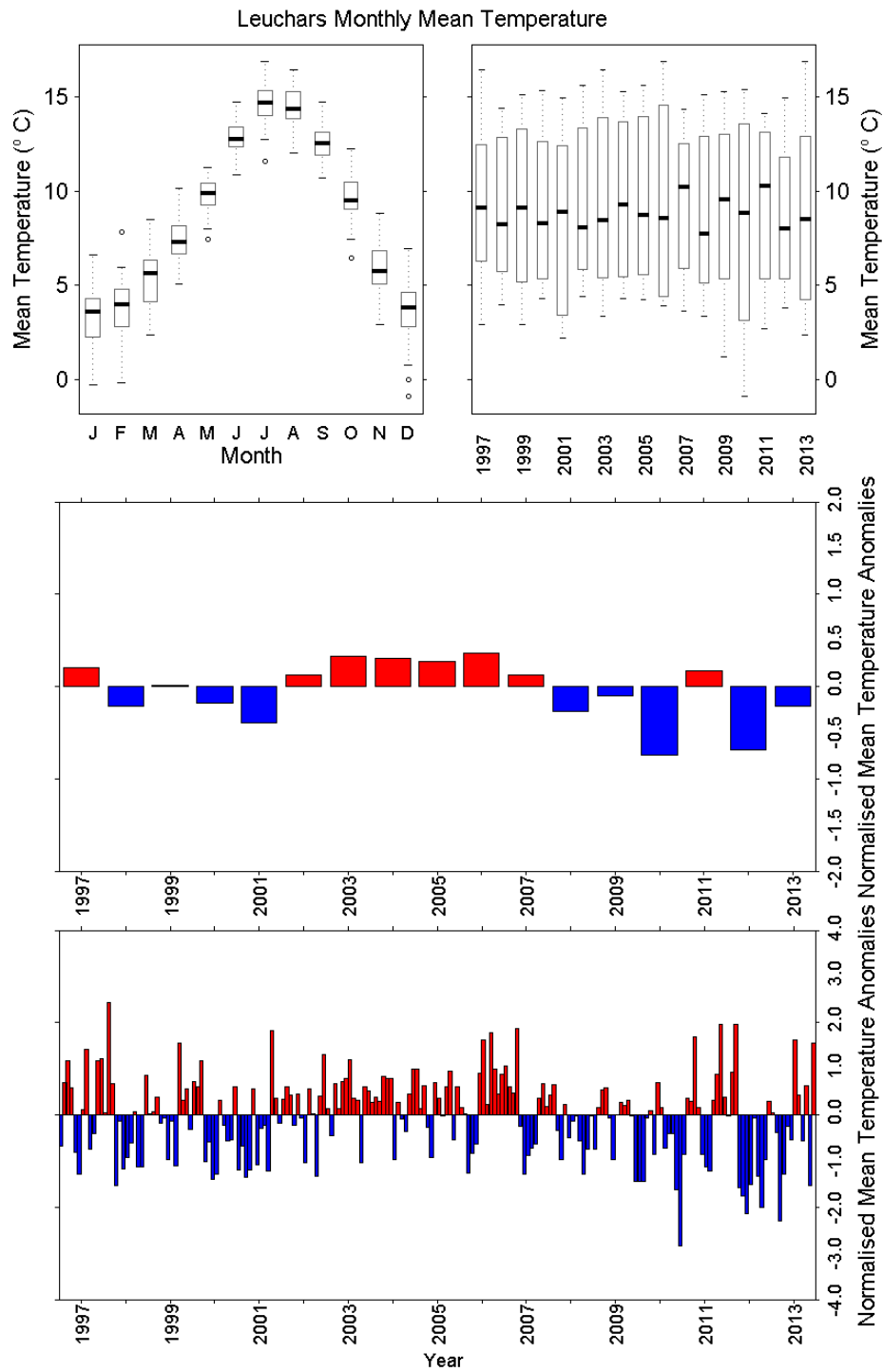


Figure E8.3 Monthly Mean Air Temperature (°C) data from the meteorological station at Leuchars. a) Monthly boxplot of mean air temperature data. b) Annual boxplot of mean air temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

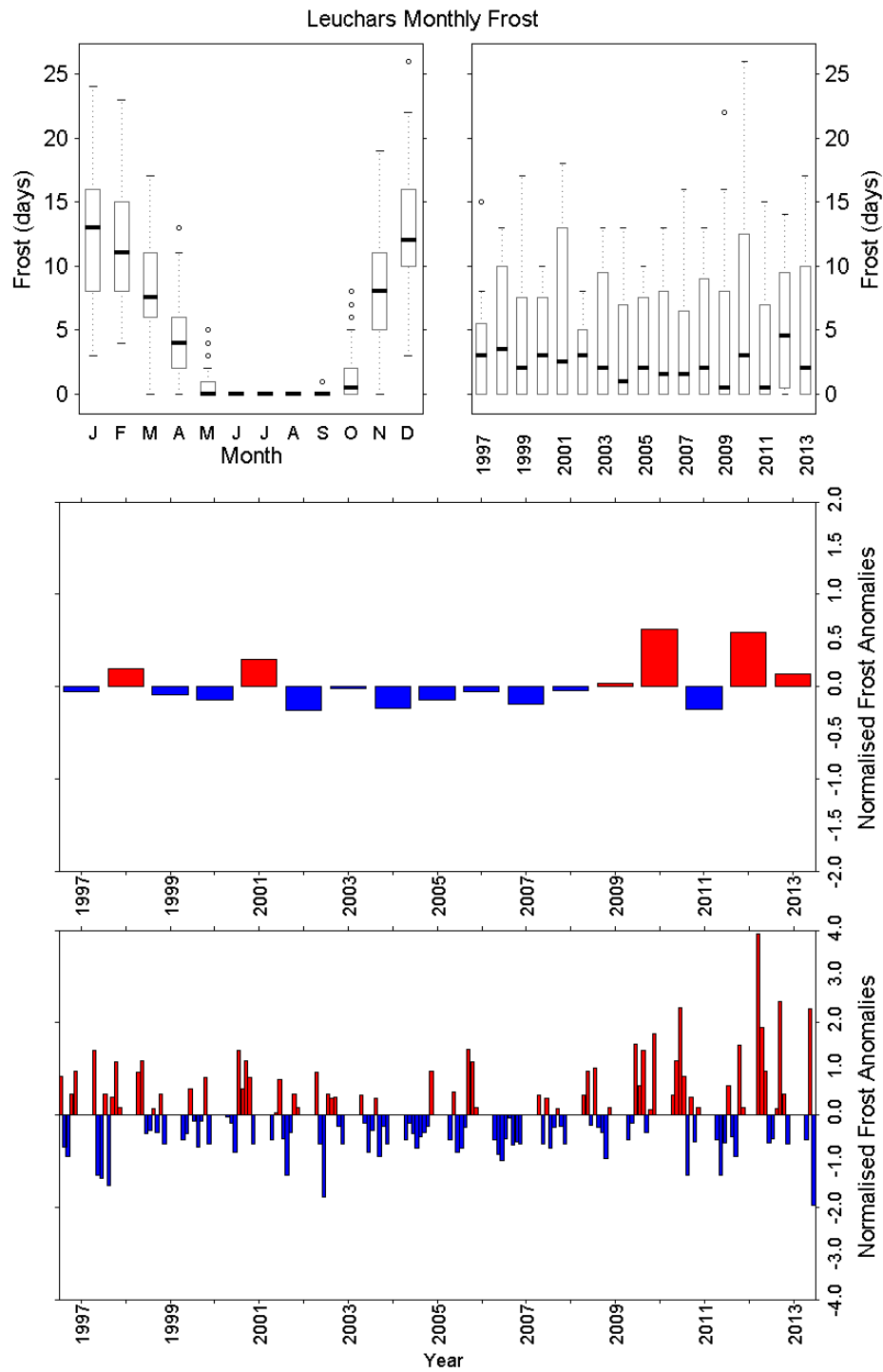


Figure E8.4 Monthly Days of Frost from the meteorological station at Leuchars. a) Monthly boxplot of frost data. b) Annual boxplot of frost data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

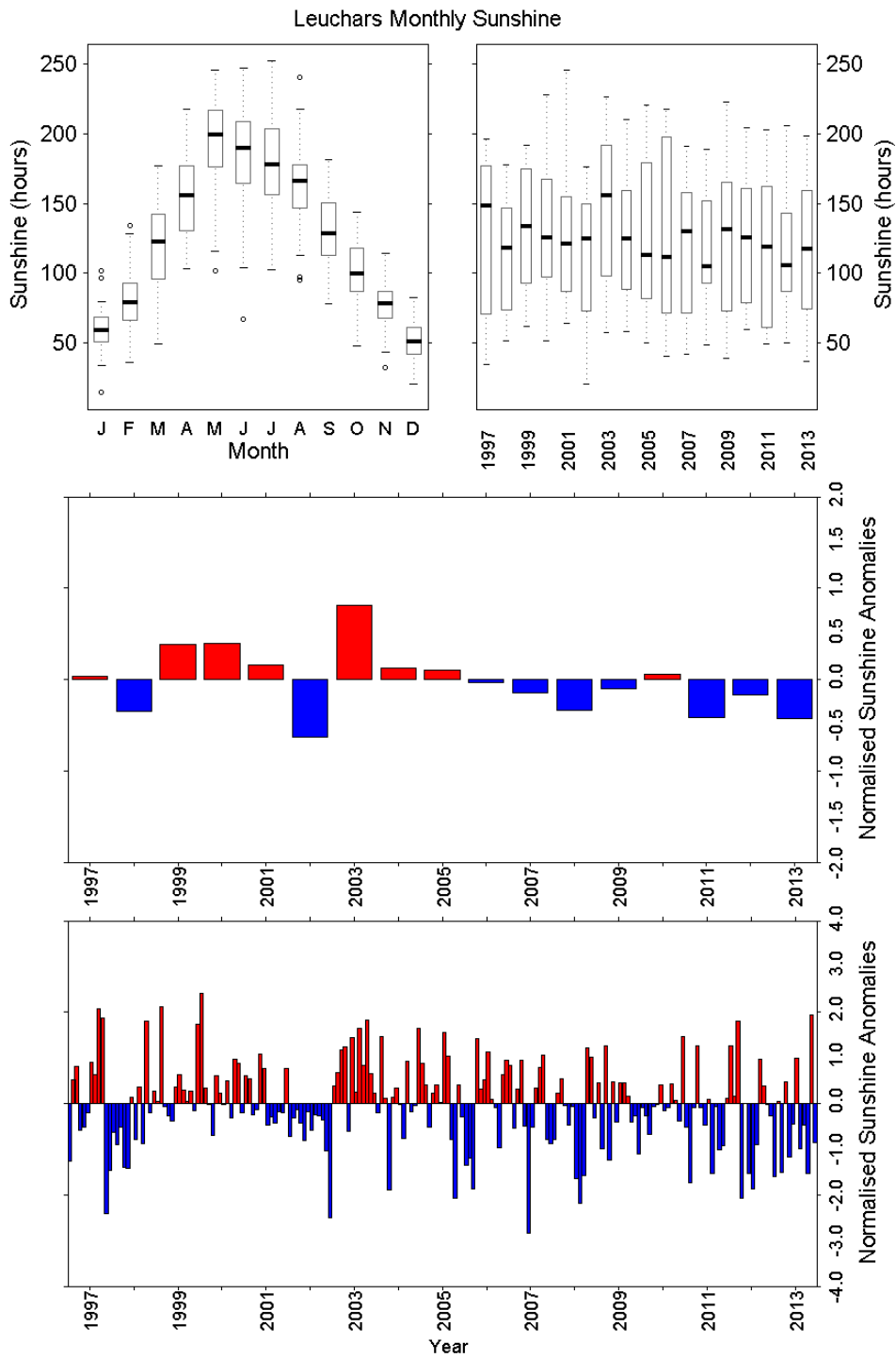


Figure E8.5 Monthly Sunshine hours from the meteorological station at Leuchars. a) Monthly boxplot of sea surface temperature data. b) Annual boxplot of sea surface temperature data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

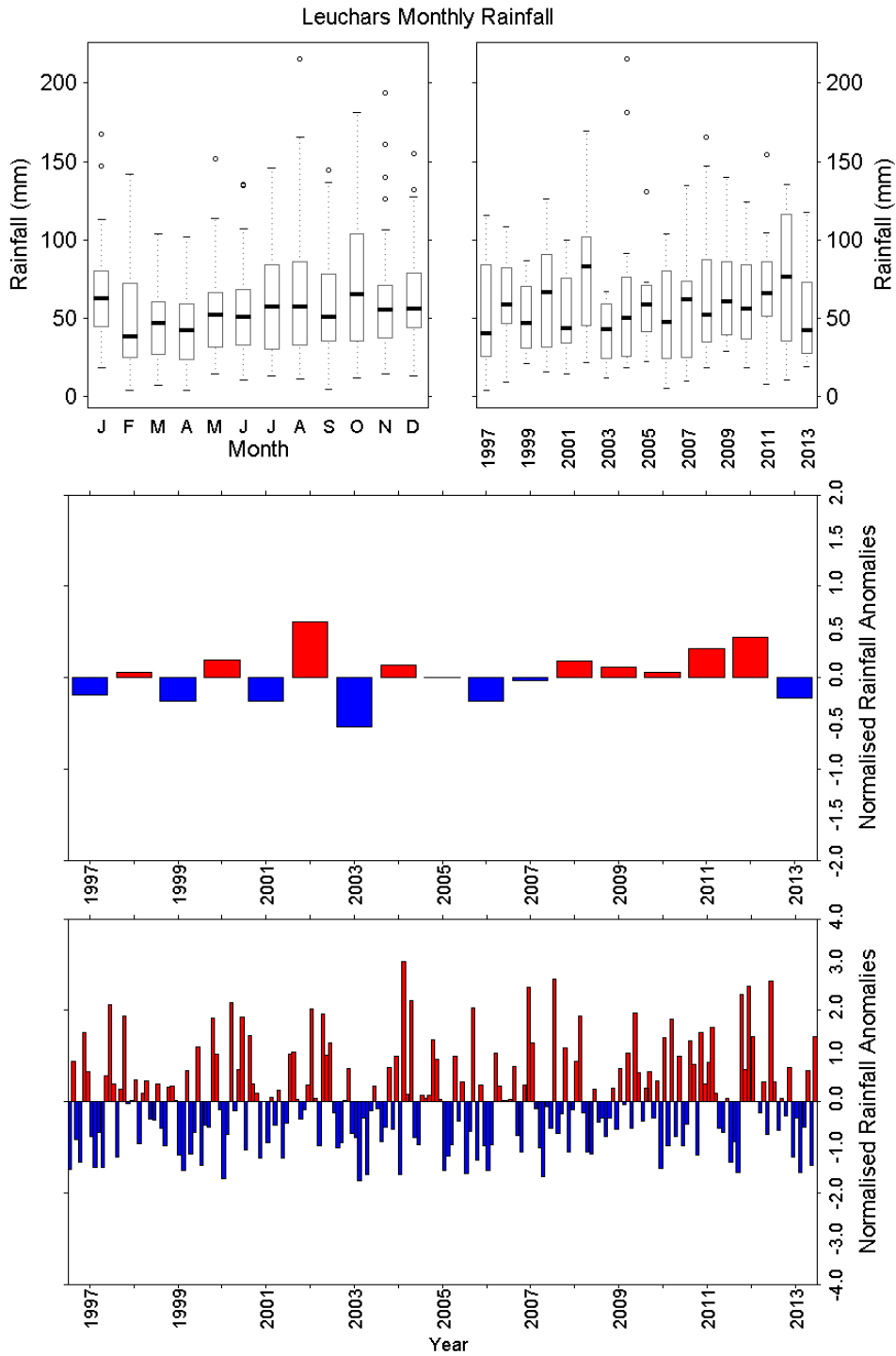


Figure E8.6 Rainfall totals from the meteorological station at Leuchars. a) Monthly boxplot of rainfall data. b) Annual boxplot of rainfall data. c) Annual mean anomaly timeseries d) Monthly mean anomaly timeseries.

## 6. Appendix F: Phytoplankton Species List

| Genus                             | Species/Group         | Size (um) when used       | Life form type |
|-----------------------------------|-----------------------|---------------------------|----------------|
| Asteromphalus                     | species               |                           | Diatom         |
| Achnanthes                        | longipes              |                           | Diatom         |
| Bacillaria                        | paxillifera           |                           | Diatom         |
| Ceratoneis/Nitzschia              | closterium/longissima |                           | Diatom         |
| Cylindrotheca                     | gracilis              |                           | Diatom         |
| Fragilariopsis                    | species               |                           | Diatom         |
| Licmophora                        | species               |                           | Diatom         |
| Pseudo-nitzschia sp               | species               |                           | Diatom         |
| Pseudo-Nitzschia                  | species               | ( $\leq 4.9\mu\text{m}$ ) | Diatom         |
| Pseudo-Nitzschia                  | species               | ( $\geq 5\mu\text{m}$ )   | Diatom         |
| Attheya                           | species               |                           | Diatom         |
| Bacteriastrum                     | species               |                           | Diatom         |
| Chaetoceros                       | species               |                           | Diatom         |
| Chaetoceros                       | Phaeroceros           |                           | Diatom         |
| Chaetoceros                       | Hyalochaetae          |                           | Diatom         |
| Chaetoceros cf. socialis colonies |                       | ( $\leq 399\mu\text{m}$ ) | Diatom         |
| Chaetoceros cf. socialis colonies |                       | ( $\geq 400\mu\text{m}$ ) | Diatom         |
| Corethron                         | pennatum              |                           | Diatom         |
| Coscinodiscus                     | species               |                           | Diatom         |
| Coscinodiscus                     | species               | $< 20\mu\text{m}$         | Diatom         |
| Coscinodiscus                     | species               | $20-50\mu\text{m}$        | Diatom         |
| Coscinodiscus                     | species               | $> 50\mu\text{m}$         | Diatom         |
| Actinoptychus                     | spp                   |                           | Diatom         |
| Fragilaria                        | species               |                           | Diatom         |
| Grammatophora                     | marina                |                           | Diatom         |
| Asterionella                      | formosa               |                           | Diatom         |
| Asterionellopsis                  | glacialis             |                           | Diatom         |
| Asteroplanus                      | karianus              |                           | Diatom         |
| Cerataulina                       | pelagica              |                           | Diatom         |
| Eucampia                          | cornuta               |                           | Diatom         |
| Eucampia                          | groenlandica          |                           | Diatom         |
| Eucampia                          | zodiacus              |                           | Diatom         |
| Hemiaulus                         | species               |                           | Diatom         |
| Helicotheca                       | tamesis               |                           | Diatom         |
| Leptocylindrus                    | cf. danicus           |                           | Diatom         |
| Leptocylindrus                    | mediterraneus         |                           | Diatom         |
| Leptocylindrus                    | cf. minimus           |                           | Diatom         |
| Bellerochea                       | species               |                           | Diatom         |
| Ditylum                           | brightwellii          |                           | Diatom         |
| Lithodesmium                      | undulatum             |                           | Diatom         |
| Podosira                          | stelligera            |                           | Diatom         |
| Melosira                          | species               |                           | Diatom         |

|                           |                     |           |        |
|---------------------------|---------------------|-----------|--------|
| Stephanopyxis             | species             |           | Diatom |
| Stephanopyxis             | turris              |           | Diatom |
| Navicula                  | species             |           | Diatom |
| Navicula                  | species             | <20µm     | Diatom |
| Navicula                  | species             | 20 - 50µm | Diatom |
| Navicula                  | species             | > 50µm    | Diatom |
| Meuniera                  | membranacea         |           | Diatom |
| Gyrosigma/Pleurosigma     | species             |           | Diatom |
| Lennoxia                  | species             |           | Diatom |
| Striatella                | unipunctata         |           | Diatom |
| Paralia                   | sulcata             |           | Diatom |
| Dactyliosolen             | fragilissimus       |           | Diatom |
| Dactyliosolen             | antarcticus         |           | Diatom |
| Guinardia                 | cylindrus           |           | Diatom |
| Guinardia                 | delicatula          |           | Diatom |
| Guinardia                 | flaccida            |           | Diatom |
| Guinardia                 | striata             |           | Diatom |
| Proboscia                 | alata               |           | Diatom |
| Pseudosolenia             | calcar-avis         |           | Diatom |
| Neocalyptrella            | robusta             |           | Diatom |
| Rhizosolenia              | species             |           | Diatom |
| Rhizosolenia              | species             | 0-10µm    | Diatom |
| Rhizosolenia              | species             | 10-20µm   | Diatom |
| Rhizosolenia              | species             | >20µm     | Diatom |
| Rhizosolenia              | borealis            |           | Diatom |
| Rhizosolenia              | setigera f. pungens |           | Diatom |
| Rhizosolenia              | setigera            |           | Diatom |
| Rhizosolenia              | styliformis         |           | Diatom |
| Rhizosolenia              | hebetata            |           | Diatom |
| Rhizosolenia              | imbricata           |           | Diatom |
| Mediopyxis                | helysia             |           | Diatom |
| Thalassionema             | species             |           | Diatom |
| Thalassionema             | nitzschioides       |           | Diatom |
| Lauderia                  | annulata            |           | Diatom |
| Detonula                  | confervaceae        |           | Diatom |
| Detonula                  | pumila              |           | Diatom |
| Skeletonema               | species             |           | Diatom |
| Planktoniella             | sol                 |           | Diatom |
| Thalassiosira sp          | species             |           | Diatom |
| Thalassiosira             | species             | <10µm     | Diatom |
| Thalassiosira             | species             | 10-50µm   | Diatom |
| Thalassiosira             | species             | >50µm     | Diatom |
| Odontella                 | species             |           | Diatom |
| Triceratium sp            |                     |           | Diatom |
| Trigonium                 | alternans           |           | Diatom |
| Indet. araphiated pennate | species             |           | Diatom |



|                           |                             |         |                |
|---------------------------|-----------------------------|---------|----------------|
| Indet. araphiated pennate | species                     | <20µm   | Diatom         |
| Indet. araphiated pennate | species                     | 20-50µm | Diatom         |
| Indet. araphiated pennate | species                     | >50µm   | Diatom         |
| Indet. raphiated pennate  | species                     |         | Diatom         |
| Indet. raphiated pennate  | species                     | <20µm   | Diatom         |
| Indet. raphiated pennate  | species                     | 20-50µm | Diatom         |
| Indet. raphiated pennate  | species                     | >50µm   | Diatom         |
| Indet. centric            | species                     |         | Diatom         |
| Indet. centric            | species                     | <20µm   | Diatom         |
| Indet. centric            | species                     | 20-50µm | Diatom         |
| Indet. centric            | species                     | >50µm   | Diatom         |
| Indet. chain diatom       | ribbons                     |         | Diatom         |
| Other diatoms             |                             |         | Diatom         |
| Dinophysis                | species                     |         | Dinoflagellate |
| Dinophysis                | species                     | <20µm   | Dinoflagellate |
| Dinophysis                | species                     | 20-50µm | Dinoflagellate |
| Dinophysis                | species                     | >50µm   | Dinoflagellate |
| Dinophysis                | acuminata                   |         | Dinoflagellate |
| Dinophysis                | acuminata/norvegica complex |         | Dinoflagellate |
| Dinophysis                | acuta                       |         | Dinoflagellate |
| Dinophysis                | caudata                     |         | Dinoflagellate |
| Dinophysis                | dens                        |         | Dinoflagellate |
| Dinophysis                | fortii                      |         | Dinoflagellate |
| Dinophysis                | hastata                     |         | Dinoflagellate |
| Dinophysis                | nasuta                      |         | Dinoflagellate |
| Dinophysis                | norvegica                   |         | Dinoflagellate |
| Dinophysis                | odiosa                      |         | Dinoflagellate |
| Dinophysis                | ovum                        |         | Dinoflagellate |
| Dinophysis                | pulchella                   |         | Dinoflagellate |
| Dinophysis                | punctata                    |         | Dinoflagellate |
| Phalacroma                | rotundatum                  |         | Dinoflagellate |
| Dinophysis                | sacculus                    |         | Dinoflagellate |
| Dinophysis                | skagii                      |         | Dinoflagellate |
| Dinophysis                | tripos                      |         | Dinoflagellate |
| Sinophysis                | species                     |         | Dinoflagellate |
| Coolia                    | species                     |         | Dinoflagellate |
| Alexandrium               | species                     |         | Dinoflagellate |
| Alexandrium               | species                     | <20µm   | Dinoflagellate |
| Alexandrium               | species                     | 20-50µm | Dinoflagellate |
| Alexandrium               | species                     | >50µm   | Dinoflagellate |
| Amylax                    | buxus                       |         | Dinoflagellate |
| Amylax                    | triacantha                  |         | Dinoflagellate |
| Gonyaulax                 | species                     |         | Dinoflagellate |
| Gonyaulax                 | species                     | <20µm   | Dinoflagellate |
| Gonyaulax                 | species                     | 20-50µm | Dinoflagellate |

|                                |                |         |                |
|--------------------------------|----------------|---------|----------------|
| Gonyaulax                      | species        | >50µm   | Dinoflagellate |
| Gonyaulax                      | spinifera      |         | Dinoflagellate |
| Gonyaulax                      | verior         |         | Dinoflagellate |
| Gonyaulax                      | grindleyi      |         | Dinoflagellate |
| Lingulodinium                  | polyedrum      |         | Dinoflagellate |
| Oxytoxum                       | species        |         | Dinoflagellate |
| Pyrocystis                     | species        |         | Dinoflagellate |
| Dissodinium                    | species        |         | Dinoflagellate |
| Amphidinium                    | species        |         | Dinoflagellate |
| Amphidinium                    | cartarae       |         | Dinoflagellate |
| Cochlodinium                   | species        |         | Dinoflagellate |
| Gymnodinium                    | species        |         | Dinoflagellate |
| Gymnodinium                    | species        | <20µm   | Dinoflagellate |
| Gymnodinium                    | species        | 20-50µm | Dinoflagellate |
| Gymnodinium                    | species        | >50µm   | Dinoflagellate |
| Karenia                        | mikimotoi      |         | Dinoflagellate |
| Akashiwo                       | sanguinea      |         | Dinoflagellate |
| Gyrodinium                     | species        |         | Dinoflagellate |
| Gyrodinium                     | species        | <20µm   | Dinoflagellate |
| Gyrodinium                     | species        | 20-50µm | Dinoflagellate |
| Gyrodinium                     | species        | >50µm   | Dinoflagellate |
| Katodinium                     | species        |         | Dinoflagellate |
| Torodinium                     | robustum       |         | Dinoflagellate |
| Polykrikos                     | species        |         | Dinoflagellate |
| Oxyrrhis                       | marina         |         | Dinoflagellate |
| Noctilucales                   |                |         | Dinoflagellate |
| Noctiluca                      | scintillans    |         | Dinoflagellate |
| Pronoctiluca                   | species        |         | Dinoflagellate |
| Pronoctiluca                   | pelagica       |         | Dinoflagellate |
| Spatulodinium                  | pseudonociluca |         | Dinoflagellate |
| Kofooidinium                   | species        |         | Dinoflagellate |
| Scrippsiella/Pentapharsodinium | species        |         | Dinoflagellate |
| Tripes                         | species        |         | Dinoflagellate |
| Tripes                         | species        | <20µm   | Dinoflagellate |
| Tripes                         | species        | 20-50µm | Dinoflagellate |
| Tripes                         | species        | >50µm   | Dinoflagellate |
| Tripes                         | tripos         |         | Dinoflagellate |
| Tripes                         | arietinum      |         | Dinoflagellate |
| Tripes                         | azoricum       |         | Dinoflagellate |
| Tripes                         | hexacanthum    |         | Dinoflagellate |
| Tripes                         | setaceum       |         | Dinoflagellate |
| Tripes                         | furca          |         | Dinoflagellate |
| Tripes                         | fuscus         |         | Dinoflagellate |
| Tripes                         | macroceros     |         | Dinoflagellate |
| Tripes                         | minutum        |         | Dinoflagellate |
| Tripes                         | horridum       |         | Dinoflagellate |

|   |                   |          |                |
|---|-------------------|----------|----------------|
| Triplos                                 | lineatum          |          | Dinoflagellate |
| Triplos                                 | longipes          |          | Dinoflagellate |
| Triplos                                 | platycorne        |          | Dinoflagellate |
| Triplos                                 | compressum        |          | Dinoflagellate |
| Heterocapsa                             | species           |          | Dinoflagellate |
| Heterocapsa                             | triquerta         |          | Dinoflagellate |
| Heterocapsa minima/Azadinium/Amphidoma. | Species/Group     |          | Dinoflagellate |
| Diplopsalis                             | group             |          | Dinoflagellate |
| Protoperidinium                         | species           |          | Dinoflagellate |
| Protoperidinium                         | species           | <20µm    | Dinoflagellate |
| Protoperidinium                         | species           | 20-50µm  | Dinoflagellate |
| Protoperidinium                         | species           | >50µm    | Dinoflagellate |
| Protoperidinium                         | bipes             |          | Dinoflagellate |
| Peridinium spp.                         |                   |          | Dinoflagellate |
| Peridinium quinquecorne                 |                   |          | Dinoflagellate |
| Kryptoperidinium                        | foliaceum         |          | Dinoflagellate |
| Prorocentrum                            | species           |          | Dinoflagellate |
| Prorocentrum                            | species           | <20µm    | Dinoflagellate |
| Prorocentrum                            | species           | 20-50µm  | Dinoflagellate |
| Prorocentrum                            | species           | >50µm    | Dinoflagellate |
| Prorocentrum                            | lima              |          | Dinoflagellate |
| Prorocentrum                            | micans            |          | Dinoflagellate |
| Prorocentrum                            | triestinum        |          | Dinoflagellate |
| Prorocentrum                            | cordatum/balticum |          | Dinoflagellate |
| Indet. armoured dinoflagellate          | species           |          | Dinoflagellate |
| Indet. armoured dinoflagellate          | species           | <20µm    | Dinoflagellate |
| Indet. armoured dinoflagellate          | species           | 20-50µm  | Dinoflagellate |
| Indet. armoured dinoflagellate          | species           | >50µm    | Dinoflagellate |
| Indet. naked dinoflagellate             | species           |          | Dinoflagellate |
| Indet. naked dinoflagellate             | species           | <20µm    | Dinoflagellate |
| Indet. naked dinoflagellate             | species           | 20-50µm  | Dinoflagellate |
| Indet. naked dinoflagellate             | species           | >50µm    | Dinoflagellate |
| Other dinoflagellates                   |                   |          | Dinoflagellate |
| Phaeocystis                             | species           |          | Others         |
| Phaeocystis                             | colonies          | (≤399µm) | Others         |
| Phaeocystis                             | colonies          | (≤400µm) | Others         |
| Silicoflagellates indet                 |                   |          | Others         |
| Dictyocha                               | fibula            |          | Others         |
| Dictyocha                               | speculum          |          | Others         |
| Octactis                                | octonaria         |          | Others         |
| Desmid indet                            |                   |          | Others         |
| Cyanobacteria indet                     |                   |          | Others         |
| Pediastrum indet                        |                   |          | Others         |
| Coccolithophorid indet                  |                   |          | Others         |
| Others                                  | others            |          | Others         |

|                      |         |  |          |
|----------------------|---------|--|----------|
| Euglenophyceae indet |         |  | Others   |
| Microflagellates     | species |  | Others   |
| Crucigenia           | species |  | Others   |
| Dinobyron            | species |  | Others   |
| Scenedesmus          | species |  | Others   |
| Desmodesmus          |         |  | Others   |
| Tetraedron           | species |  | Others   |
| Pyramimonas          | species |  | Others   |
| Ciliates             |         |  | Ciliates |
| Tintinnids           |         |  | Ciliates |
| Mesodinium           | rubrum  |  | Ciliates |
|                      |         |  |          |

## 7. Appendix G: Zooplankton Species List

The following tables present the species list used in the community analysis of zooplankton.

AphiaID is a unique identifier from the World Register of Marine Species (<http://www.marinespecies.org>)

M = male

F = female

C = copepodite stage.

| <i>AphiaID</i> | <i>Taxa name</i>           | <i>Dry Wgt. (mg)</i> | <i>Family</i>      | <i>Suborder</i> | <i>Order</i>  | <i>Superorder</i> | <i>Infraclass</i> | <i>Subclass</i> | <i>Class</i> | <i>Subphylum</i> | <i>Phylum</i> |
|----------------|----------------------------|----------------------|--------------------|-----------------|---------------|-------------------|-------------------|-----------------|--------------|------------------|---------------|
| 152230         | Coelenterata               | 0.5                  |                    |                 |               |                   |                   |                 |              |                  | Coelenterata  |
| 13551          | Anthoathecata              | 0.5                  |                    |                 | Anthoathecata |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117117         | Hydractinia spp.           | 0.05                 | Hydractiniidae     | Filifera        | Anthoathecata |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117848         | Rathkea octopunctata       | 0.01                 | Rathkeidae         | Filifera        | Anthoathecata |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117345         | Lizzia blondina            | 0.01                 | Rathkeidae         | Filifera        | Anthoathecata |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117015         | Bougainvillia spp.         | 0.5                  | Bougainvilliidae   | Filifera        | Anthoathecata |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117988         | Hybocodon prolifer         | 0.05                 | Tubulariidae       | Capitata        | Anthoathecata |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117095         | Euphysa spp.               | 0.01                 | Corymorphidae      | Capitata        | Anthoathecata |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117836         | Proboscidactyla stellata   | 0.5                  | Proboscidactylidae | Filifera        | Anthoathecata |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117070         | Sarsia spp.                | 0.5                  | Corynidae          | Capitata        | Anthoathecata |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117491         | Sarsia tubulosa            | 0.5                  | Corynidae          | Capitata        | Anthoathecata |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117791         | Leuckartiara octona        | 1                    | Pandeidae          | Filifera        | Anthoathecata |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117178         | Amphinema spp.             | 0.5                  | Pandeidae          | Filifera        | Anthoathecata |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 13552          | Leptothecata               | 0.5                  |                    |                 | Leptothecata  |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 116998         | Aequorea spp.              | 3                    | Aequoreidae        | Conica          | Leptothecata  |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117804         | Phialella quadrata         | 0.3                  | Phialellidae       | Conica          | Leptothecata  |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117515         | Eutima gracilis            | 0.5                  | Eirenidae          | Conica          | Leptothecata  |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117978         | Tiaropsis multicirrata     | 0.5                  | Tiaropsidae        | Conica          | Leptothecata  |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117452         | Corymorpha nutans          | 0.05                 | Corymorphidae      | Capitata        | Anthoathecata |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117725         | Laodicea undulata          | 0.5                  | Laodiceidae        | Conica          | Leptothecata  |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 594013         | Staurostoma mertensii      | 3                    | Laodiceidae        | Conica          | Leptothecata  |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117755         | Mitrocomella polydiademata | 0.5                  | Mitrocomidae       | Conica          | Leptothecata  |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117368         | Clytia hemisphaerica       | 0.3                  | Campanulariidae    | Proboscoida     | Leptothecata  |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117034         | Obelia spp.                | 0.05                 | Campanulariidae    | Proboscoida     | Leptothecata  |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 117849         | Aglantha digitale          | 0.2                  | Rhopalonematidae   |                 | Trachymedusae |                   |                   | Trachylina      | Hydrozoa     |                  | Cnidaria      |
| 117947         | Solmaris corona            | 3                    | Solmarisidae       |                 | Narcomedusae  |                   |                   | Trachylina      | Hydrozoa     |                  | Cnidaria      |
| 1371           | Siphonophorae              | 0.2                  |                    |                 | Siphonophorae |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 135484         | Agalma elegans             | 0.2                  | Agalmatidae        | Physonectae     | Siphonophorae |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |

| <i>AphiaID</i> | <i>Taxa name</i>       | <i>Dry Wgt. (mg)</i> | <i>Family</i>    | <i>Suborder</i> | <i>Order</i>  | <i>Superorder</i> | <i>Infraclass</i> | <i>Subclass</i> | <i>Class</i> | <i>Subphylum</i> | <i>Phylum</i> |
|----------------|------------------------|----------------------|------------------|-----------------|---------------|-------------------|-------------------|-----------------|--------------|------------------|---------------|
| 135496         | Nanomia cara           | 0.2                  | Agalmatidae      | Physonectae     | Siphonophorae |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 135338         | Diphyidae              | 0.01                 | Diphyidae        | Calycophorae    | Siphonophorae |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 135441         | Muggiaea atlantica     | 0.01                 | Diphyidae        | Calycophorae    | Siphonophorae |                   |                   | Hydroidolina    | Hydrozoa     |                  | Cnidaria      |
| 135220         | Scyphozoa ephyra       | 0.5                  |                  |                 |               |                   |                   |                 | Scyphozoa    |                  | Cnidaria      |
| 135259         | Cyanea spp.            | 0.83                 | Cyaneidae        |                 | Semaeostomeae |                   |                   | Discomedusae    | Scyphozoa    |                  | Cnidaria      |
| 135259         | Cyanea spp. Ephyra     | 0.5                  | Cyaneidae        |                 | Semaeostomeae |                   |                   | Discomedusae    | Scyphozoa    |                  | Cnidaria      |
| 135302         | Cyanea lamarcki        | 0.83                 | Cyaneidae        |                 | Semaeostomeae |                   |                   | Discomedusae    | Scyphozoa    |                  | Cnidaria      |
| 135263         | Aurelia spp. Ephyra    | 0.5                  | Ulmaridae        |                 | Semaeostomeae |                   |                   | Discomedusae    | Scyphozoa    |                  | Cnidaria      |
| 135306         | Aurelia aurita         | 0.83                 | Ulmaridae        |                 | Semaeostomeae |                   |                   | Discomedusae    | Scyphozoa    |                  | Cnidaria      |
| 135305         | Pelagia noctiluca      | 0.02                 | Pelagiidae       |                 | Semaeostomeae |                   |                   | Discomedusae    | Scyphozoa    |                  | Cnidaria      |
| 100782         | Cerianthus spp.        | 0.02                 | Cerianthidae     | Spirularia      | Ceriantharia  |                   |                   | Hexacorallia    | Anthozoa     |                  | Cnidaria      |
| 1248           | Ctenophora (remains)   | 0.04                 |                  |                 |               |                   |                   |                 |              |                  | Ctenophora    |
| 1248           | Ctenophora             | 0.04                 |                  |                 |               |                   |                   |                 |              |                  | Ctenophora    |
| 106386         | Pleurobrachia pileus   | 0.5                  | Pleurobrachiidae |                 | Cydrippida    |                   |                   | Typhlocoela     | Tentaculata  |                  | Ctenophora    |
| 106358         | Beroe cucumis          | 1                    | Beroidae         |                 | Beroida       |                   |                   |                 | Nuda         |                  | Ctenophora    |
| 106265         | Bosmina spp.           | 0.016                | Bosminidae       | Cladocera       | Diplostraca   |                   |                   | Phyllopoda      | Branchiopoda | Crustacea        | Arthropoda    |
| 106269         | Podon spp.             | 0.016                | Podonidae        | Cladocera       | Diplostraca   |                   |                   | Phyllopoda      | Branchiopoda | Crustacea        | Arthropoda    |
| 106277         | Podon leuckartii       | 0.016                | Podonidae        | Cladocera       | Diplostraca   |                   |                   | Phyllopoda      | Branchiopoda | Crustacea        | Arthropoda    |
| 106276         | Podon intermedius      | 0.016                | Podonidae        | Cladocera       | Diplostraca   |                   |                   | Phyllopoda      | Branchiopoda | Crustacea        | Arthropoda    |
| 247981         | Pleopis polyphaemoides | 0.016                | Podonidae        | Cladocera       | Diplostraca   |                   |                   | Phyllopoda      | Branchiopoda | Crustacea        | Arthropoda    |
| 106273         | Evadne nordmanni       | 0.003                | Podonidae        | Cladocera       | Diplostraca   |                   |                   | Phyllopoda      | Branchiopoda | Crustacea        | Arthropoda    |
| 127482         | Halocypridae           | 0.020                | Halocyprididae   | Halocypridina   | Halocyprida   |                   |                   | Myodocopa       | Ostracoda    | Crustacea        | Arthropoda    |
| 1082           | Cirripedia cypris      | 0.008                |                  |                 |               |                   | Cirripedia        | Thecostraca     | Maxillopoda  | Crustacea        | Arthropoda    |
| 1082           | Cirripedia nauplius    | 0.001                |                  |                 |               |                   | Cirripedia        | Thecostraca     | Maxillopoda  | Crustacea        | Arthropoda    |
| 1080           | Copepoda C1-6          | 0.053                |                  |                 |               |                   |                   | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 1100           | Calanoida C1-6         | 0.053                |                  |                 | Calanoida     | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104152         | Calanus spp. C6 F      | 0.149                | Calanidae        |                 | Calanoida     | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104152         | Calanus spp. C6 M      | 0.138                | Calanidae        |                 | Calanoida     | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104152         | Calanus spp. C1        | 0.005                | Calanidae        |                 | Calanoida     | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104152         | Calanus spp. C2        | 0.011                | Calanidae        |                 | Calanoida     | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104152         | Calanus spp. C3        | 0.025                | Calanidae        |                 | Calanoida     | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104152         | Calanus spp. C4        | 0.048                | Calanidae        |                 | Calanoida     | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |

| <i>AphiaID</i> | <i>Taxa name</i>                     | <i>Dry Wgt. (mg)</i> | <i>Family</i>   | <i>Suborder</i> | <i>Order</i> | <i>Superorder</i> | <i>Infraclass</i> | <i>Subclass</i> | <i>Class</i> | <i>Subphylum</i> | <i>Phylum</i> |
|----------------|--------------------------------------|----------------------|-----------------|-----------------|--------------|-------------------|-------------------|-----------------|--------------|------------------|---------------|
| 104152         | Calanus spp. C5                      | 0.120                | Calanidae       |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104464         | Calanus finmarchicus C6 F            | 0.149                | Calanidae       |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104464         | Calanus finmarchicus C6 M            | 0.138                | Calanidae       |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104464         | Calanus finmarchicus C5              | 0.120                | Calanidae       |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104466         | Calanus helgolandicus C6 F           | 0.189                | Calanidae       |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104466         | Calanus helgolandicus C6 M           | 0.185                | Calanidae       |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104466         | Calanus helgolandicus C5             | 0.120                | Calanidae       |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149718         | Eucalanus elongatus C1-5             | 0.269                | Eucalanidae     |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149718         | Eucalanus elongatus C6 F             | 0.859                | Eucalanidae     |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149718         | Eucalanus elongatus C6 M             | 0.859                | Eucalanidae     |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104544         | Subeucalanus crassus C1-5            | 0.269                | Subeucalanidae  |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104544         | Subeucalanus crassus C6 F            | 0.859                | Subeucalanidae  |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104544         | Subeucalanus crassus C6 M            | 0.859                | Subeucalanidae  |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104543         | Rhincalanus nasutus C6 F             | 0.189                | Rhincalanidae   |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104543         | Rhincalanus nasutus C6 M             | 0.185                | Rhincalanidae   |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104543         | Rhincalanus nasutus C1-5             | 0.132                | Rhincalanidae   |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104685         | Paracalanus parvus C5 F              | 0.006                | Paracalanidae   |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104685         | Paracalanus parvus C6 F              | 0.008                | Paracalanidae   |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104685         | Paracalanus parvus C5 M              | 0.006                | Paracalanidae   |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104685         | Paracalanus parvus C6 M              | 0.007                | Paracalanidae   |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104685         | Paracalanus parvus C1                | 0.001                | Paracalanidae   |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104685         | Paracalanus parvus C2                | 0.001                | Paracalanidae   |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104685         | Paracalanus parvus C3                | 0.002                | Paracalanidae   |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104685         | Paracalanus parvus C4                | 0.004                | Paracalanidae   |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104685         | Paracalanus parvus C5                | 0.006                | Paracalanidae   |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104193         | Calocalanus spp. C6 F                | 0.008                | Calocalanidae   |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149711         | Pseudocalanus minutus elongatus C5 F | 0.008                | Clausocalanidae |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149711         | Pseudocalanus minutus elongatus C6 F | 0.012                | Clausocalanidae |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149711         | Pseudocalanus minutus elongatus C5 M | 0.008                | Clausocalanidae |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149711         | Pseudocalanus minutus elongatus C6 M | 0.008                | Clausocalanidae |                 | Calanoidea   | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |



| <i>AphiaID</i> | <i>Taxa name</i>                   | <i>Dry Wgt. (mg)</i> | <i>Family</i>    | <i>Suborder</i> | <i>Order</i> | <i>Superorder</i> | <i>Infraclass</i> | <i>Subclass</i> | <i>Class</i> | <i>Subphylum</i> | <i>Phylum</i> |
|----------------|------------------------------------|----------------------|------------------|-----------------|--------------|-------------------|-------------------|-----------------|--------------|------------------|---------------|
| 149711         | Pseudocalanus minutus elongatus C1 | 0.001                | Clausocalanidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149711         | Pseudocalanus minutus elongatus C2 | 0.002                | Clausocalanidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149711         | Pseudocalanus minutus elongatus C3 | 0.003                | Clausocalanidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149711         | Pseudocalanus minutus elongatus C4 | 0.005                | Clausocalanidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104510         | Ctenocalanus vanus C6 F            | 0.010                | Clausocalanidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104510         | Ctenocalanus vanus C6 M            | 0.008                | Clausocalanidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104510         | Ctenocalanus vanus C5              | 0.005                | Clausocalanidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 157675         | Microcalanus pusillus C6 F         | 0.001                | Clausocalanidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 157675         | Microcalanus pusillus C6 M         | 0.001                | Clausocalanidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 157675         | Microcalanus pusillus C1           | 0.000                | Clausocalanidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 157675         | Microcalanus pusillus C2           | 0.000                | Clausocalanidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 157675         | Microcalanus pusillus C3           | 0.000                | Clausocalanidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 157675         | Microcalanus pusillus C4           | 0.001                | Clausocalanidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 157675         | Microcalanus pusillus C5           | 0.001                | Clausocalanidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104161         | Clausocalanus spp. C1-6            | 0.006                | Clausocalanidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104275         | Aetideus armatus C1-6              | 0.009                | Aetideidae       |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104086         | Euchaetidae C1-6                   | 0.025                | Euchaetidae      |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104566         | Paraeuchaeta norvegica C1-6        | 0.026                | Euchaetidae      |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104103         | Scolecitrichidae C1-5              | 0.003                | Scolecitrichidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104811         | Scolecithricella minor C6 F        | 0.024                | Scolecitrichidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104811         | Scolecithricella minor C6 M        | 0.019                | Scolecitrichidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104811         | Scolecithricella minor C1-5        | 0.003                | Scolecitrichidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104521         | Diaixis hibernica C6 F             | 0.010                | Diaixidae        |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104521         | Diaixis hibernica C5 M             | 0.005                | Diaixidae        |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104521         | Diaixis hibernica C6 M             | 0.008                | Diaixidae        |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104521         | Diaixis hibernica C2               | 0.001                | Diaixidae        |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104521         | Diaixis hibernica C3               | 0.002                | Diaixidae        |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104521         | Diaixis hibernica C4               | 0.003                | Diaixidae        |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104521         | Diaixis hibernica C5               | 0.005                | Diaixidae        |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104521         | Diaixis hibernica C1-5             | 0.002                | Diaixidae        |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104878         | Temora longicornis C5 F            | 0.012                | Temoridae        |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |

| <i>AphiaID</i> | <i>Taxa name</i>         | <i>Dry Wgt. (mg)</i> | <i>Family</i> | <i>Suborder</i> | <i>Order</i> | <i>Superorder</i> | <i>Infraclass</i> | <i>Subclass</i> | <i>Class</i> | <i>Subphylum</i> | <i>Phylum</i> |
|----------------|--------------------------|----------------------|---------------|-----------------|--------------|-------------------|-------------------|-----------------|--------------|------------------|---------------|
| 104878         | Temora longicornis C6 F  | 0.032                | Temoridae     |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104878         | Temora longicornis C5 M  | 0.014                | Temoridae     |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104878         | Temora longicornis C6 M  | 0.023                | Temoridae     |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104878         | Temora longicornis C1    | 0.001                | Temoridae     |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104878         | Temora longicornis C2    | 0.002                | Temoridae     |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104878         | Temora longicornis C3    | 0.003                | Temoridae     |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104878         | Temora longicornis C4    | 0.006                | Temoridae     |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104878         | Temora longicornis C5    | 0.013                | Temoridae     |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104092         | Metridinidae C1-6        | 0.015                | Metridinidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104633         | Metridia lucens C6 F     | 0.066                | Metridinidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104633         | Metridia lucens C6 M     | 0.023                | Metridinidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104633         | Metridia lucens C1       | 0.001                | Metridinidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104633         | Metridia lucens C2       | 0.003                | Metridinidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104633         | Metridia lucens C3       | 0.005                | Metridinidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104633         | Metridia lucens C4       | 0.011                | Metridinidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104633         | Metridia lucens C5       | 0.016                | Metridinidae  |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104496         | Centropages hamatus C5 F | 0.013                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104496         | Centropages hamatus C6 F | 0.026                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104496         | Centropages hamatus C5 M | 0.014                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104496         | Centropages hamatus C6 M | 0.019                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104496         | Centropages hamatus C1   | 0.001                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104496         | Centropages hamatus C2   | 0.002                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104496         | Centropages hamatus C3   | 0.004                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104496         | Centropages hamatus C4   | 0.007                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104496         | Centropages hamatus C5   | 0.013                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104499         | Centropages typicus C6 F | 0.035                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104499         | Centropages typicus C6 M | 0.028                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104499         | Centropages typicus C1   | 0.001                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104499         | Centropages typicus C2   | 0.003                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104499         | Centropages typicus C3   | 0.005                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104499         | Centropages typicus C4   | 0.009                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104499         | Centropages typicus C5   | 0.019                | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |

| <i>AphiaID</i> | <i>Taxa name</i>                       | <b>Dry Wgt.</b><br>(mg) | <i>Family</i> | <i>Suborder</i> | <i>Order</i> | <i>Superorder</i> | <i>Infraclass</i> | <i>Subclass</i> | <i>Class</i> | <i>Subphylum</i> | <i>Phylum</i> |
|----------------|--|-------------------------|---------------|-----------------|--------------|-------------------|-------------------|-----------------|--------------|------------------|---------------|
| 104501         | Isias clavipes C6 F                    | <b>0.026</b>            | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104501         | Isias clavipes C6 M                    | <b>0.019</b>            | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104501         | Isias clavipes C1-5                    | <b>0.006</b>            | Centropagidae |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104474         | Candacia armata C6 F                   | <b>0.087</b>            | Candaciidae   |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104474         | Candacia armata C6 M                   | <b>0.076</b>            | Candaciidae   |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104474         | Candacia armata C1                     | <b>0.002</b>            | Candaciidae   |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104474         | Candacia armata C2                     | <b>0.005</b>            | Candaciidae   |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104474         | Candacia armata C3                     | <b>0.010</b>            | Candaciidae   |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104474         | Candacia armata C4                     | <b>0.021</b>            | Candaciidae   |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104474         | Candacia armata C5                     | <b>0.040</b>            | Candaciidae   |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104722         | Anomalocera patersoni C6 F             | <b>0.226</b>            | Pontellidae   |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104722         | Anomalocera patersoni C6 M             | <b>0.162</b>            | Pontellidae   |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104722         | Anomalocera patersoni C1-5             | <b>0.069</b>            | Pontellidae   |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149755         | Acartia (Acartiura) clausi C5 F        | <b>0.006</b>            | Acartiidae    |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149755         | Acartia (Acartiura) clausi C6 F        | <b>0.010</b>            | Acartiidae    |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149755         | Acartia (Acartiura) clausi C5 M        | <b>0.005</b>            | Acartiidae    |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149755         | Acartia (Acartiura) clausi C6 M        | <b>0.008</b>            | Acartiidae    |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149755         | Acartia (Acartiura) clausi C1          | <b>0.001</b>            | Acartiidae    |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149755         | Acartia (Acartiura) clausi C2          | <b>0.001</b>            | Acartiidae    |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149755         | Acartia (Acartiura) clausi C3          | <b>0.002</b>            | Acartiidae    |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149755         | Acartia (Acartiura) clausi C4          | <b>0.003</b>            | Acartiidae    |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 149755         | Acartia (Acartiura) clausi C5          | <b>0.005</b>            | Acartiidae    |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 346037         | Acartia (Acartiura) longiremis<br>C6 F | <b>0.006</b>            | Acartiidae    |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 346037         | Acartia (Acartiura) longiremis<br>C6 M | <b>0.005</b>            | Acartiidae    |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 346037         | Acartia (Acartiura) longiremis C1-5    | <b>0.002</b>            | Acartiidae    |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 234125         | Acartia (Acartiura) discaudata<br>C6 F | <b>0.010</b>            | Acartiidae    |                 | Calanoida    | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |

|        |  |              |                 |  |           |           |             |          |             |           |            |
|--------|--|--------------|-----------------|--|-----------|-----------|-------------|----------|-------------|-----------|------------|
| 234125 | Acartia ( <i>Acartiura</i> ) <i>discaudata</i><br>C1-5   | <b>0.002</b> | Acartiidae      |  | Calanoida | Gymnoplea | Neocopepoda | Copepoda | Maxillopoda | Crustacea | Arthropoda |
| 345919 | Acartia ( <i>Acanthacartia</i> ) <i>bifilosa</i><br>C6 F | <b>0.010</b> | Acartiidae      |  | Calanoida | Gymnoplea | Neocopepoda | Copepoda | Maxillopoda | Crustacea | Arthropoda |
| 104097 | Pontellidae C1-6   | <b>0.152</b> | Pontellidae     |  | Calanoida | Gymnoplea | Neocopepoda | Copepoda | Maxillopoda | Crustacea | Arthropoda |
| 104686 | <i>Parapontella brevicornis</i> C6 F                     | <b>0.226</b> | Parapontellidae |  | Calanoida | Gymnoplea | Neocopepoda | Copepoda | Maxillopoda | Crustacea | Arthropoda |

| <i>AphiaID</i> | <i>Taxa name</i>              | <i>Dry Wgt. (mg)</i> | <i>Family</i>     | <i>Suborder</i> | <i>Order</i>      | <i>Superorder</i> | <i>Infraclass</i> | <i>Subclass</i> | <i>Class</i> | <i>Subphylum</i> | <i>Phylum</i> |
|----------------|-------------------------------|----------------------|-------------------|-----------------|-------------------|-------------------|-------------------|-----------------|--------------|------------------|---------------|
| 104686         | Parapontella brevicornis C6 M | 0.162                | Parapontellidae   |                 | Calanoida         | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104686         | Parapontella brevicornis C1-5 | 0.069                | Parapontellidae   |                 | Calanoida         | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104204         | Xanthocalanus spp. C1-5       | 0.069                | Phaennidae        |                 | Calanoida         | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104757         | Pseudocyclopia minor C6 F     | 0.226                | Pseudocyclopiidae |                 | Calanoida         | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 104757         | Pseudocyclopia minor C1-5     | 0.069                | Pseudocyclopiidae |                 | Calanoida         | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 247924         | Diaptomus spp. C6 F           | 0.226                | Diaptomidae       |                 | Calanoida         | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 247924         | Diaptomus spp. C6 M           | 0.162                | Diaptomidae       |                 | Calanoida         | Gymnoplea         | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 1102           | Harpacticoida C1-6            | 0.007                |                   |                 | Harpacticoida     | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 116115         | Microsetella norvegica C1-6   | 0.001                | Ectinosomatidae   |                 | Harpacticoida     | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 116116         | Microsetella rosea C1-6       | 0.001                | Ectinosomatidae   |                 | Harpacticoida     | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 128586         | Oncaeiidae C1-6               | 0.016                | Oncaeiidae        |                 | Poecilostomatoida | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 128569         | Corycaeiidae C1-6             | 0.016                | Corycaeiidae      |                 | Poecilostomatoida | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 1101           | Cyclopoida C1-6               | 0.006                |                   |                 | Cyclopoida        | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 106422         | Oithonidae C1-6               | 0.002                | Oithonidae        |                 | Cyclopoida        | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 106485         | Oithona spp. C1               | 0.001                | Oithonidae        |                 | Cyclopoida        | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 106485         | Oithona spp. C2               | 0.002                | Oithonidae        |                 | Cyclopoida        | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 106485         | Oithona spp. C3               | 0.004                | Oithonidae        |                 | Cyclopoida        | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 106485         | Oithona spp. C4-5             | 0.008                | Oithonidae        |                 | Cyclopoida        | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 106485         | Oithona spp. C6 M             | 0.016                | Oithonidae        |                 | Cyclopoida        | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 106485         | Oithona spp. C6 F             | 0.016                | Oithonidae        |                 | Cyclopoida        | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 119777         | Monstrillidae C1-6            | 0.01                 | Monstrillidae     |                 | Monstrilloida     | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 135513         | Caligidae C1-6                | 0.01                 | Caligidae         |                 | Siphonostomatoida | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 135566         | Caligus spp. C1-6             | 0.01                 | Caligidae         |                 | Siphonostomatoida | Podoplea          | Neocopepoda       | Copepoda        | Maxillopoda  | Crustacea        | Arthropoda    |
| 1071           | Malacostraca                  | 0.32                 |                   |                 |                   |                   |                   |                 | Malacostraca | Crustacea        | Arthropoda    |
| 149668         | Mysida                        | 0.31                 |                   |                 | Mysida            | Peracarida        |                   | Eumalacostraca  | Malacostraca | Crustacea        | Arthropoda    |
| 1137           | Cumacea                       | 0.1                  |                   |                 | Cumacea           | Peracarida        |                   | Eumalacostraca  | Malacostraca | Crustacea        | Arthropoda    |
| 1131           | Isopoda                       | 0.01                 |                   |                 | Isopoda           | Peracarida        |                   | Eumalacostraca  | Malacostraca | Crustacea        | Arthropoda    |
| 1131           | Isopoda (parasitic)           | 0.01                 |                   |                 | Isopoda           | Peracarida        |                   | Eumalacostraca  | Malacostraca | Crustacea        | Arthropoda    |
| 1135           | Amphipoda (non-hyperiidea)    | 0.21                 |                   |                 | Amphipoda         | Peracarida        |                   | Eumalacostraca  | Malacostraca | Crustacea        | Arthropoda    |
| 1135           | Amphipoda (parasitic)         | 0.21                 |                   |                 | Amphipoda         | Peracarida        |                   | Eumalacostraca  | Malacostraca | Crustacea        | Arthropoda    |
| 101800         | Themisto spp.                 | 0.24                 | Hyperiidae        | Hyperiidea      | Amphipoda         | Peracarida        |                   | Eumalacostraca  | Malacostraca | Crustacea        | Arthropoda    |
| 101796         | Hyperia spp.                  | 0.07                 | Hyperiidae        | Hyperiidea      | Amphipoda         | Peracarida        |                   | Eumalacostraca  | Malacostraca | Crustacea        | Arthropoda    |

| <i>AphiaID</i> | <i>Taxa name</i>               | <i>Dry Wgt. (mg)</i> | <i>Family</i> | <i>Suborder</i>   | <i>Order</i>    | <i>Superorder</i> | <i>Infraclass</i> | <i>Subclass</i> | <i>Class</i>   | <i>Subphylum</i> | <i>Phylum</i> |
|----------------|--------------------------------|----------------------|---------------|-------------------|-----------------|-------------------|-------------------|-----------------|----------------|------------------|---------------|
| 110671         | Euphausiidae calyptopis        | 0.01                 | Euphausiidae  |                   | Euphausiacea    | Eucarida          |                   | Eumalacostraca  | Malacostraca   | Crustacea        | Arthropoda    |
| 110671         | Euphausiidae furcilia          | 0.08                 | Euphausiidae  |                   | Euphausiacea    | Eucarida          |                   | Eumalacostraca  | Malacostraca   | Crustacea        | Arthropoda    |
| 110671         | Euphausiidae nauplius          | 0.01                 | Euphausiidae  |                   | Euphausiacea    | Eucarida          |                   | Eumalacostraca  | Malacostraca   | Crustacea        | Arthropoda    |
| 254316         | Nyctiphanes couchii adult      | 0.28                 | Euphausiidae  |                   | Euphausiacea    | Eucarida          |                   | Eumalacostraca  | Malacostraca   | Crustacea        | Arthropoda    |
| 254316         | Nyctiphanes couchii juvenile   | 0.14                 | Euphausiidae  |                   | Euphausiacea    | Eucarida          |                   | Eumalacostraca  | Malacostraca   | Crustacea        | Arthropoda    |
| 254316         | Nyctiphanes couchii furcilia   | 0.07                 | Euphausiidae  |                   | Euphausiacea    | Eucarida          |                   | Eumalacostraca  | Malacostraca   | Crustacea        | Arthropoda    |
| 110679         | Thysanoessa spp. furcilia      | 0.08                 | Euphausiidae  |                   | Euphausiacea    | Eucarida          |                   | Eumalacostraca  | Malacostraca   | Crustacea        | Arthropoda    |
| 110708         | Thysanoessa inermis adult      | 1.04                 | Euphausiidae  |                   | Euphausiacea    | Eucarida          |                   | Eumalacostraca  | Malacostraca   | Crustacea        | Arthropoda    |
| 110709         | Thysanoessa longicaudata adult | 0.32                 | Euphausiidae  |                   | Euphausiacea    | Eucarida          |                   | Eumalacostraca  | Malacostraca   | Crustacea        | Arthropoda    |
| 107254         | Nephrops norvegicus larva      | 0.21                 | Nephropidae   | Macrura Reptantia | Decapoda        | Eucarida          |                   | Eumalacostraca  | Malacostraca   | Crustacea        | Arthropoda    |
| 1130           | Decapoda larva                 | 0.21                 |               |                   | Decapoda        | Eucarida          |                   | Eumalacostraca  | Malacostraca   | Crustacea        | Arthropoda    |
| 51             | Mollusca                       | 0.004                |               |                   |                 |                   |                   |                 |                |                  | Mollusca      |
| 101            | Gastropoda larva               | 0.004                |               |                   |                 |                   |                   |                 | Gastropoda     |                  | Mollusca      |
| 101            | Gastropoda egg                 | 0.000                |               |                   |                 |                   |                   |                 | Gastropoda     |                  | Mollusca      |
| 140227         | Limacina retroversa            | 0.010                | Limacinidae   | Euthecosomata     | Thecosomata     |                   | Opisthobranchia   | Heterobranchia  | Gastropoda     |                  | Mollusca      |
| 138101         | Lamellaria spp. larva          | 0.004                | Velutinidae   |                   | Littorinimorpha |                   |                   | Caenogastropoda | Gastropoda     |                  | Mollusca      |
| 138101         | Lamellaria spp. egg            | 0.000                | Velutinidae   |                   | Littorinimorpha |                   |                   | Caenogastropoda | Gastropoda     |                  | Mollusca      |
| 164            | Gymnosomata                    | 0.004                |               |                   | Gymnosomata     |                   | Opisthobranchia   | Heterobranchia  | Gastropoda     |                  | Mollusca      |
| 139178         | Clione limacina                | 0.005                | Clionidae     |                   | Gymnosomata     |                   | Opisthobranchia   | Heterobranchia  | Gastropoda     |                  | Mollusca      |
| 105            | Bivalvia larva                 | 0.001                |               |                   |                 |                   |                   |                 | Bivalvia       |                  | Mollusca      |
| 5953           | Sagittidae                     | 0.048                | Sagittidae    |                   | Aphragmophora   |                   |                   |                 | Sagittoidea    |                  | Chaetognatha  |
| 5953           | Sagittidae juvenile            | 0.012                | Sagittidae    |                   | Aphragmophora   |                   |                   |                 | Sagittoidea    |                  | Chaetognatha  |
| 105440         | Parasagitta elegans            | 0.048                | Sagittidae    |                   | Aphragmophora   |                   |                   |                 | Sagittoidea    |                  | Chaetognatha  |
| 105443         | Parasagitta setosa             | 0.048                | Sagittidae    |                   | Aphragmophora   |                   |                   |                 | Sagittoidea    |                  | Chaetognatha  |
| 105464         | Serratosagitta serratodentata  | 0.048                | Sagittidae    |                   | Aphragmophora   |                   |                   |                 | Sagittoidea    |                  | Chaetognatha  |
| 15177          | Spadellidae                    | 0.048                | Spadellidae   |                   | Phragmophora    |                   |                   |                 | Sagittoidea    |                  | Chaetognatha  |
| 11676          | Fish larva                     | 0.517                |               |                   |                 |                   |                   |                 | Actinopterygii | Vertebrata       | Chordata      |
| 11676          | Fish egg                       | 0.005                |               |                   |                 |                   |                   |                 | Actinopterygii | Vertebrata       | Chordata      |
| 125464         | Clupeidae larva                | 0.084                | Clupeidae     |                   | Clupeiformes    |                   |                   |                 | Actinopterygii | Vertebrata       | Chordata      |
| 10313          | Gadiformes larva               |                      |               |                   | Gadiformes      |                   |                   |                 | Actinopterygii | Vertebrata       | Chordata      |
| 125516         | Ammodytidae larva              | 0.084                | Ammodytidae   |                   | Perciformes     |                   |                   |                 | Actinopterygii | Vertebrata       | Chordata      |
| 883            | Polychaeta adult               | 0.30                 |               |                   |                 |                   |                   |                 | Polychaeta     |                  | Annelida      |

| <i>AphiaID</i> | <i>Taxa name</i>    | <i>Dry Wgt. (mg)</i> | <i>Family</i> | <i>Suborder</i>             | <i>Order</i> | <i>Superorder</i> | <i>Infraclass</i> | <i>Subclass</i> | <i>Class</i>   | <i>Subphylum</i> | <i>Phylum</i> |
|----------------|---------------------|----------------------|---------------|-----------------------------|--------------|-------------------|-------------------|-----------------|----------------|------------------|---------------|
| 883            | Polychaeta larva    | 0.006                |               |                             |              |                   |                   |                 | Polychaeta     |                  | Annelida      |
| 129715         | Tomopteris spp.     | 0.292                | Tomopteridae  | Phyllodocida incertae sedis | Phyllodocida |                   |                   | Aciculata       | Polychaeta     |                  | Annelida      |
| 1789           | Phoronida larva     | 0.292                |               |                             |              |                   |                   |                 |                |                  | Phoronida     |
| 146142         | Bryozoa cyphonautes | 0.001                |               |                             |              |                   |                   |                 |                |                  | Bryozoa       |
| 1806           | Echinodermata larva | 0.001                |               |                             |              |                   |                   |                 |                |                  | Echinodermata |
| 1818           | Hemichordata larva  | 0.01                 |               |                             |              |                   |                   |                 |                |                  | Hemichordata  |
| 1839           | Ascidiacea larva    | 0.01                 |               |                             |              |                   |                   |                 | Ascidiacea     | Tunicata         | Chordata      |
| 146421         | Appendicularia      | 0.050                |               |                             |              |                   |                   |                 | Appendicularia | Tunicata         | Chordata      |
| 137272         | Salpa fusiformis    | 0.1                  | Salpidae      |                             | Salpida      |                   |                   |                 | Thaliacea      | Tunicata         | Chordata      |
| 137215         | Doliolidae          | 0.01                 | Doliolidae    |                             | Doliolida    |                   |                   |                 | Thaliacea      | Tunicata         | Chordata      |
| 1824           | Cephalochordata     | 0.1                  |               |                             |              |                   |                   |                 |                | Cephalochordata  | Chordata      |