
Draft report of the

MarClim Policy Workshop

**held at DTLR, Eland House, London
on 5 September 2001**

Prepared by the UK Climate Impacts Programme

1. Context

The MarClim project aims to assess the impacts of climate change on the marine environment, principally based on intertidal organisms. It is the first project of its kind, and is funded by a range of organisations with different information needs. For the project to be of maximum use to its funders, it is important that their needs are captured early on, so that they can be fed in to the project. It is also important to identify the information needs that are beyond the scope of the MarClim project.

UKCIP was asked by the MarClim Advisory Group to organise a policymakers' workshop to:

- a) define the range of policymakers' information needs on the impacts of climate change on the marine environment;
- b) agree how the outputs from MarClim can most usefully be presented for policymakers;
- c) clarify which information needs are beyond the scope of MarClim and hence identify gaps;
- d) discuss the need for, and scope of, marine climate change scenarios to underpin policymakers' needs.

This short draft report summarises the discussions at the workshop. It is intended to be discussed at the MarClim Advisory Group meeting in October and, when finalised, could be circulated more widely.

The workshop was held on 5 September 2001 at DTLR, Eland House. It was attended by about a dozen members of the MarClim Advisory Group. The list of attendees is provided at the end of this report.

2. Summary of discussions on policymakers' information needs

Identifying information needs

The workshop agreed that policymakers need to understand the relationships between marine biodiversity, environmental change and climate change, to help inform policies on the marine environment. Understanding change was considered central for evaluations and reporting on the following:

- a) Habitats Directive
- b) Birds Directive
- c) Water Framework Directive
- d) EIA Directives
- e) Sites of Special Scientific Interest
- f) Marine Nature Reserves
- g) Biodiversity Action Plans for Habitats and Species
- h) OSPAR
- i) ICES
- j) Common Fisheries Policy
- k) North Sea Conferences
- l) "Rio + 10" in 2002
- m) Sustainable Development Strategies
- n) Marine Stewardship Reports
- o) IPCC Fourth Assessment Report.

The workshop also identified other information needs as follows:

Marine nature conservation and management / exploitation of commercial species

- a) Understanding the sensitivity and vulnerability of species and habitats to climate change, looking at species, population and community levels
- b) Information on the impacts of climate change on offshore fisheries (range and reproduction) and implications for fish quotas
- c) To distinguish climate change impacts from impacts of fishing
- d) Understanding the impacts of climate change on inshore aquaculture (salmon, cod, halibut, haddock), including any changes in diseases and health of species
- e) Information on the effects of climate change on pollutants and UV, and the knock-on impacts on biota –including interrelationships between climate change and pollutants.
- f) Information on shifts of species at their northerly/southerly limits
- g) Information on how far alien species and introductions will spread
- h) Guidance on changes to the North Atlantic thermohaline circulation (see Dr Jenkins' presentation below).

Offshore development aspects

- i) To distinguish climate change impacts from other pressures on the marine environment, including off-shore developments and aggregate collection
- j) For strategic environmental assessments of off-shore oil, gas and wind farm developments and marine aggregates
- k) To understand the impacts of climate change on offshore developments, to guide the placement of such developments.

Sustainability indicators

- l) To identify appropriate marine species as reliable indicators of change – there are currently no marine Sustainability Indicator species

Coastal issues

- m) To identify opportunities for adaptation to climate change at the coast, e.g. managed realignment of coastal wetlands
- n) Understanding the impacts of climate change on flood and coastal defence structures (it should be noted that there is considerable research already underway on this topic, funded by DEFRA and the EA).

Nature of the information needed

There was limited discussion on the **nature** of the information needed for the points raised above. It was agreed that the Advisory Group would identify members who could provide this information, for each of the areas listed above. This would include considering the spatial boundaries, spatial resolution, temporal resolution and timescales over which the information is required.

Products required

The workshop identified the following requirements:

- a) Overall summary for policymakers of what has been learnt about future marine climate and the links between biodiversity, climate and climate change – illustrated with a few key colour maps and graphs – and forecast impacts on the policy areas identified above.
- b) Hind cast summary maps, graphs and text for last 50 – 100 years for biological parameters (intertidal indicators, fish, plankton) covering Britain and Ireland and their designated waters. To include a reference list of key supporting publications.
- c) Hind cast summary maps, graphs and text for physical parameters (sea temperatures, waves and currents) covering Britain and Ireland and their designated waters. To include a reference list of key supporting publications.
- d) Forecast maps, graphs and text giving individual summary information for biological parameters (intertidal indicators, fish, plankton) and physical parameters (sea temperatures, waves and currents) and composite summary maps and graphs.
- e) Short, specific reports providing forecast of impacts on the policy areas identified above, with predicted outcomes and speculative changes that may be needed to inform policy and action.
- f) Interactive computer model showing climate change predictions.
- g) Website providing all data.
- h) Public articles in the press.

It was agreed that this list was not exhaustive, but should be allowed to evolve over time.

With respect to maps being produced (points b-d), it was noted that the existing intertidal indicators data is point source data, and some parts of the UK are better covered than others. The issue of how these data can be handled to provide complete UK coverage was raised and requires further discussion by the Project Team and Advisory Group.

The reports should provide an assessment of the level of confidence in the information/data.

Role of MarClim in answering these needs, and identification of gaps

It was noted that the only **predictive modelling** that will be undertaken for the MarClim project is for intertidal species. Using the results of this modelling, and results emerging from other research on offshore species, the MarClim Project Team and Advisory Group will draw conclusions about changes in offshore species.

It was agreed that the MarClim Project Team would provide the following information at the next Advisory Group meeting (spring 2002):

- a clear definition of the information outputs from MarClim
- outline of the “hard maps” that will be produced from MarClim
- flow diagrams showing links from MarClim to other projects

The Advisory Group then needs to discuss how well these outputs meet the range of policy needs, and how the gaps in information can be filled. It is clear that additional work (and possibly additional research) will be required by the Advisory Group to develop products that satisfy all requirements.

3. Marine climate change scenarios

Dr Geoff Jenkins from the Hadley Centre of the Met Office gave a presentation on marine climate change. In particular, he presented the Hadley Centre proposals for marine climate modelling, for consideration by the workshop. (Details of his proposals were previously circulated to participants). This work is not currently being funded.

A copy of Dr Jenkins' overheads is appended to this report and the key points are summarised below.

- a) The new UKCIP02 scenarios are being published early next year, based on the latest atmosphere-ocean coupled model, HadCM3. The scenarios will include **some** information about future changes in marine climate, i.e:
 - sea surface temperatures (SSTs)
 - sea level rise (SLR)
 - information on storm surges at the coast
- b) The Hadley Centre could, with additional funding, undertake extra marine climate change modelling including shelf seas modelling and wave modelling. The additional modelling would be compatible with the UKCIP02 scenarios.
- c) The shelf seas modelling would provide profiles of:
 - sea temperature
 - density
 - salinity
 - currentsat depths through the sea.
- d) The wave modelling would provide information on changes to:
 - waves
 - swellat 35km resolution. This would be directly useable to a range of users in shipping, offshore engineering, wind farms etc, without further downscaling. Regional wave predictions could be translated to a local scale, i.e. to specific lengths of UK coastline, using downscaling techniques.
- e) The Gulf Stream is included in HadCM3. The model results show that climate change over the next century will lead to an approximate 25% reduction in the strength of the North Atlantic circulation. The model does not predict a switch-off in the circulation.
- f) There are significant differences in the regional sea level rises predicted by different climate modelling groups around the world.
- g) The Hadley Centre is researching ways of quantifying the uncertainty in climate predictions, including predictions of sea level rise.

4. Key actions for the MarClim Advisory Group

The workshop made the following key points for action / consideration by the MarClim Advisory Group:

- a) Advisory Group members need to be identified to provide details on the **nature** of information required by policymakers (see “Nature of the information needed” in Section 1).
- b) The Advisory Group and Project Team need to discuss how Britain and Ireland maps can be produced from point source species data (see “Products required” in Section 1).
- c) The Project Team will provide the next Advisory Group meeting (spring 2002) with:
 - a clear definition of the information outputs from MarClim
 - outline of the “hard maps” that will be produced from MarClim
 - flow diagrams showing links from MarClim to other projects
- d) The Advisory Group needs to discuss how well these outputs meet policy needs and how the gaps in information can be filled.

5. Conclusions

The policy workshop considers that:

- a) The marine climate change scenarios proposed by the Hadley Centre are an essential tool for informing marine policy-makers.
- b) There is direct value to MarClim and value to a broader marine community in both the shelf seas and the wave modelling.
- c) The information in the forthcoming UKCIP02 scenarios (SSTs, sea level rise and storm surges) is sufficient for modelling of intertidal species in MarClim. However, the additional shelf seas modelling is needed for the MarClim project (and indeed other projects) to evaluate properly the impacts of climate change on offshore species.
- d) The wave modelling would be of more direct interest to offshore developers and government departments including DTI and those with responsibility for offshore and coastal engineering. It was agreed that a further meeting should be held with these groups to see if they would be interested in funding the wave modelling.

The view was expressed that the MarClim AG should discuss how this modelling could be funded. Given that MarClim is a user of marine climate change predictive information, it was accordingly not automatically assumed in the meeting that MarClim should fund this aspect of UK climate change research.

List of workshop attendees

Name	Organisation
Connell, Richenda	UKCIP
Drewitt, Joanna	Scottish Executive
Gubbay, Sue	Independent consultant
Harley, Mike	English Nature
Jenkins, Geoff	Hadley Centre, Met Office
Kendall, Mike	PML & MBA
Laffoley, Dan	English Nature
Leonard, Paul	DEFRA
Murray, Eleanor	English Nature
Murray, Tony	Crown Estate
Parrett, Alison	WWF
Stott, Andy	DEFRA WCD
Thurlow, Nigel	DEFRA MLL
Wood, Richard	Hadley Centre, Met Office