



Marine Climate Change Impacts Partnership

An introduction to MCCIP and our first
Annual Report Card

Key objective

The transfer of marine climate change impact evidence to decision-makers.

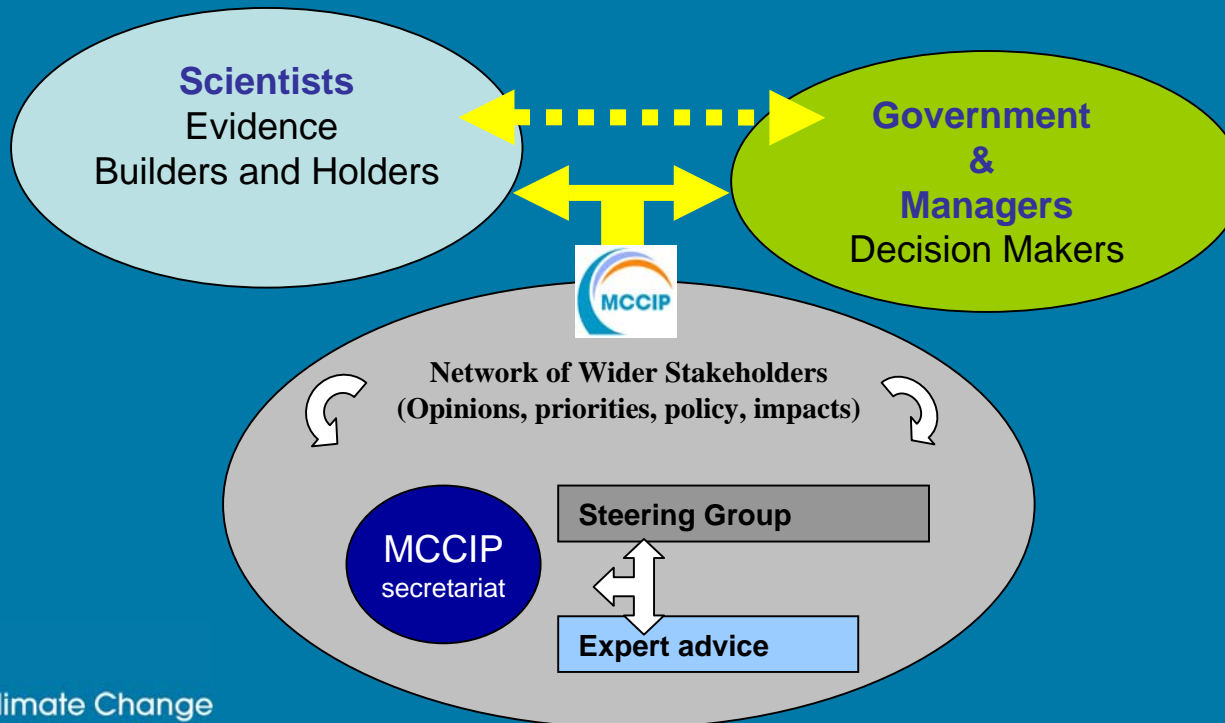
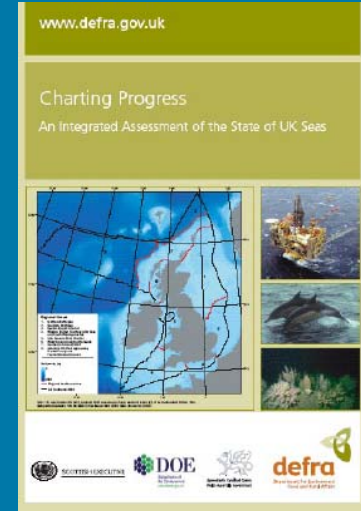
What is MCCIP?

MCCIP – A brief history...

The UK government has set out a vision for...

'clean, safe, healthy, productive and biologically diverse oceans and seas'

yet as recently as 2005, 'charting progress', was unable to assess the potential impacts of climate change on the UK's marine environment.



Sponsoring partners



Scientific partners on the SG



Marine Environmental Change Network



Developing a successful partnership

MCCIP aims to...

- be a 1st stop for both marine specialists and non-specialists
- provide a definitive source of evidence-based scientific advice
- stay away from policy
- be valued as more than a ‘talking shop’
- actively encourage two-way dialogue
- contribute to the development of an integrated marine climate impacts monitoring programme



The Annual Report Card

- An at-a-glance report on marine climate change impacts
- First card 'sets the scene', reviewing broad scale UK picture
- Summary of climate change in the marine environment
- Impacts of change on our vision for seas that are:
 - healthy and biologically diverse;
 - clean and safe;
 - and (commercially) productive.



Scope of the report card

*Understanding **climate change impacts** requires a synthesis of information across marine ecosystems which should be:*

Clean, healthy, safe, productive & biologically diverse

- Coastal Flooding
- HABs
- Pollution
- Nutrient Enrichment

- Oceanography
- Seabed ecology
- Fish
- Plankton
- Seabirds
- Mammals
- Intertidal species
- Non-Natives

- Shipping
- Fisheries
- Aquaculture
- Tourism
- Built Structures

Report card structure

Climate change in the marine environment

	WHAT IS ALREADY HAPPENING	WHAT COULD HAPPEN	CONFIDENCE
Temperature (air and sea) NOCS, FRS, Met Office, UKCIP	<ul style="list-style-type: none">● Sea surface temperature (SST) and air temperature over the sea within the mid-latitude North Atlantic and UK coastal waters have been rising by 0.2 – 0.6°C per decade over the past 30 years.● Warming is greatest within the English Channel and North Sea where temperatures have risen faster than land temperature.● Warming is also evident in waters of the upper 1500 m of the North Atlantic.	<ul style="list-style-type: none">● Climate change models anticipate that SST will continue to rise in all waters around the UK coast, with stronger warming in the south-east (~0.15 – 0.4°C per decade in the southern North Sea) than the north-west (~0.05 – 0.2°C per decade at Rockall).	HIGH
Ocean salinity NOCS, FRS, UKCIP, Cefas	<ul style="list-style-type: none">● An increasing trend in surface salinity since 1995 around the North Atlantic is less evident in the UK shelf-seas.● Deep waters of the North Atlantic have freshened over the past 40 years.	<ul style="list-style-type: none">● Difficult to predict, but changes in precipitation, evaporation, ocean circulation and ice melt have the potential to impact upon salinity.	LOW
Storms and waves NOCS, Met Office, ERI	<ul style="list-style-type: none">● There has been a greater incidence of severe winds and increasing wave heights (by about 2% per year) in western and northern UK territorial waters over the past 50 years.	<ul style="list-style-type: none">● Different modelling approaches project different scales of change but indicate that wind strength and wave heights will increase.	HIGH (present) LOW (future)

Report card structure

Climate change: impacts on our vision for a healthy and biologically diverse marine ecosystem

The variety and distribution of marine species are being altered by climate change, although it is not the only factor. Cold-water species of plankton, fish and intertidal invertebrates are retreating northwards around the UK and the ranges of southern species are expanding. Fishing pressure remains the principal cause of changes in the

abundance of most fish species, but climate has probably also played a role in some cases. For example, the decline of prey species (particularly sandeels) has resulted in low breeding success of black-legged kittiwakes and other seabirds.

	WHAT IS ALREADY HAPPENING	WHAT COULD HAPPEN	CONFIDENCE
Plankton SAHFOS	<ul style="list-style-type: none">● A 1000 km northward shift of warmer-water plankton, with a similar retreat of colder-water plankton, has been observed in the north-east Atlantic over the past 40 years as the seas around the UK have become warmer.● There is a correlation between plankton shifts and changes in various fish stocks.	<ul style="list-style-type: none">● Continued increase in sea temperature and ocean acidification may exert a major influence on plankton variability, with implications for primary production and climate control.	MEDIUM
Fish MBA	<ul style="list-style-type: none">● Abundances of some warm-water fish species (e.g. tuna, stingrays, triggerfish) have increased in southern UK waters during recent warming periods (1950s, 1980s – 2002), while declines were apparent during cooling episodes (1920s, 1960 – 1970s). Observations of rare fish migrants to UK waters cannot be directly attributed to climate change.● Cold-water species have retracted north in some regions (e.g. North Sea) but not in others.	<ul style="list-style-type: none">● Continuing temperature rises are likely to further change fish distributions.	LOW

Hard copy is limited to headline messages

Online version allows us to expand greatly upon key themes.

Full reports with:

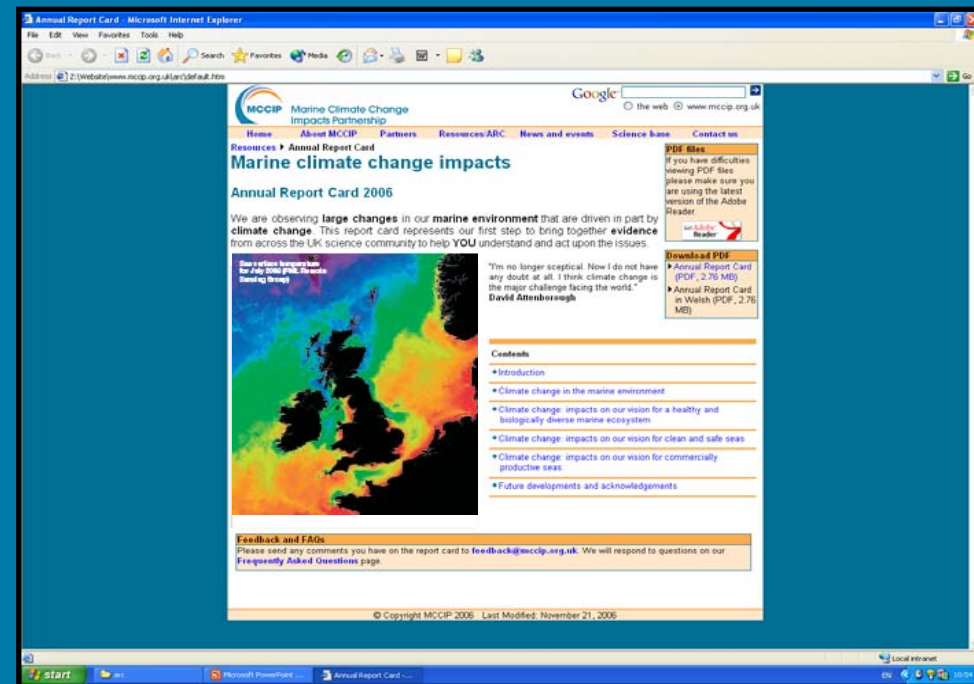
Executive summaries

Supporting evidence / references

Online version also has:

E-mail feedback address and FAQs

Glossary



Key Messages

Although knowledge is weak in some areas, the ARC suggests marine climate change will have significant impacts across our marine ecosystem

- We are observing large changes in the marine environment which are **driven in part by climate change**
- Impacts at **all trophic levels** but wider ecosystem responses are not well understood
- **Large knowledge gaps exist.**

A Great Big Thanks....

To...

Over 30 scientists from 16 organisations who kindly contributed to this years report card

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