

GLOBEC's History

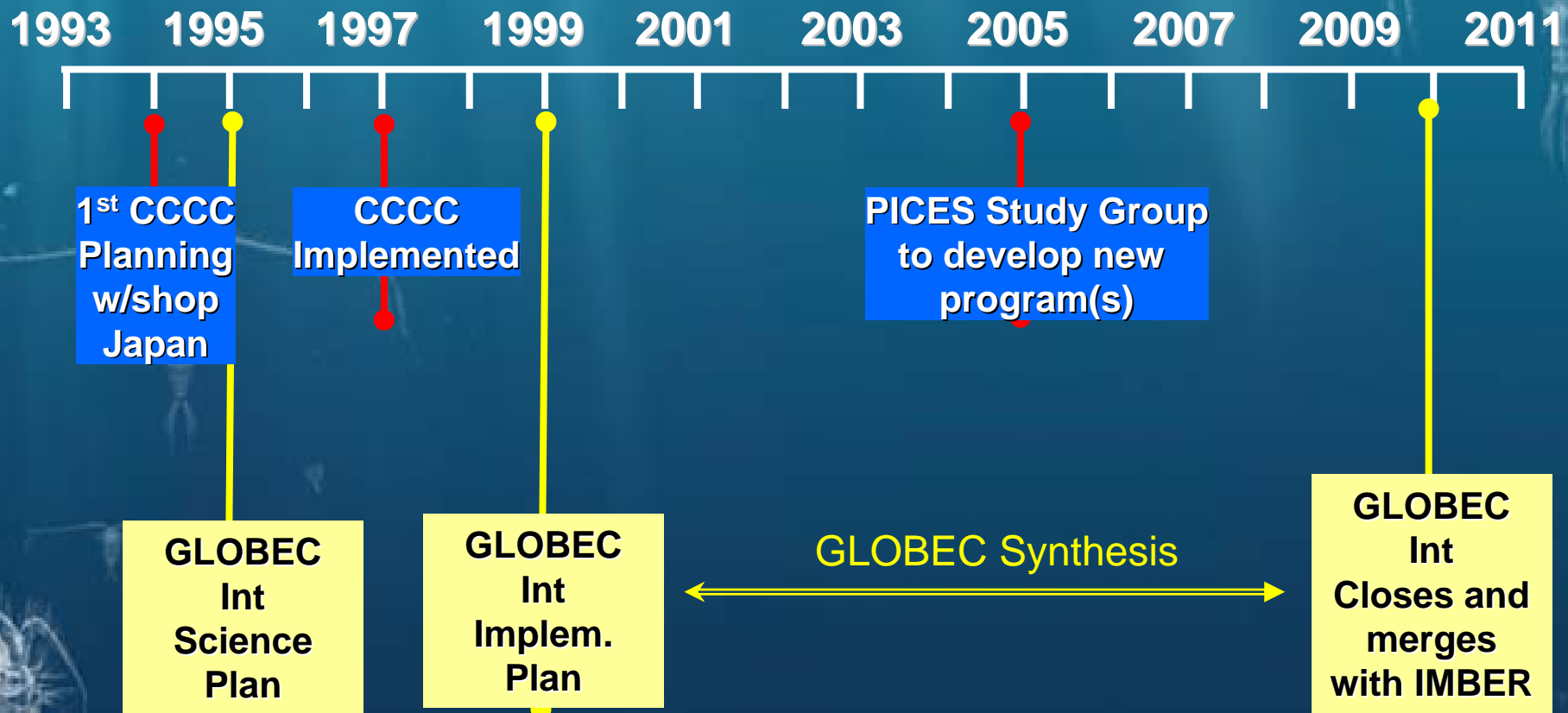
- 1995 – Adoption of GLOBEC by SCOR, IGBP and IOC
- 1997 – Approval of the Science Plan
- 1999 – Approval of the Implementation Plan
- 2009 – Sunset clause and merge with IGBP IMBER

Global sponsors

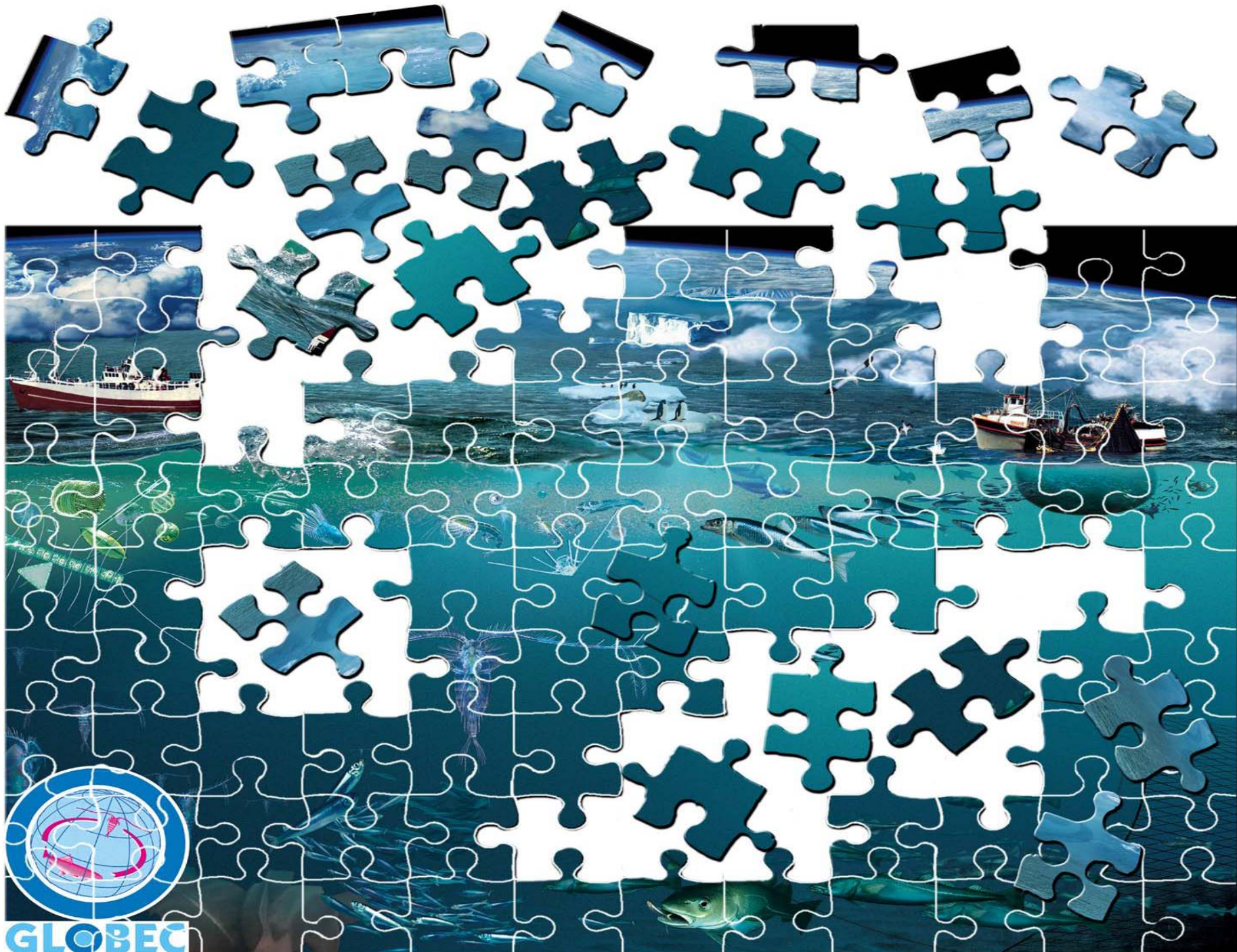


Regional sponsors





CCCC was instrumental in developing the scientific content of PICES and crucial in the development of GLOBEC along regional lines



GLOBEC

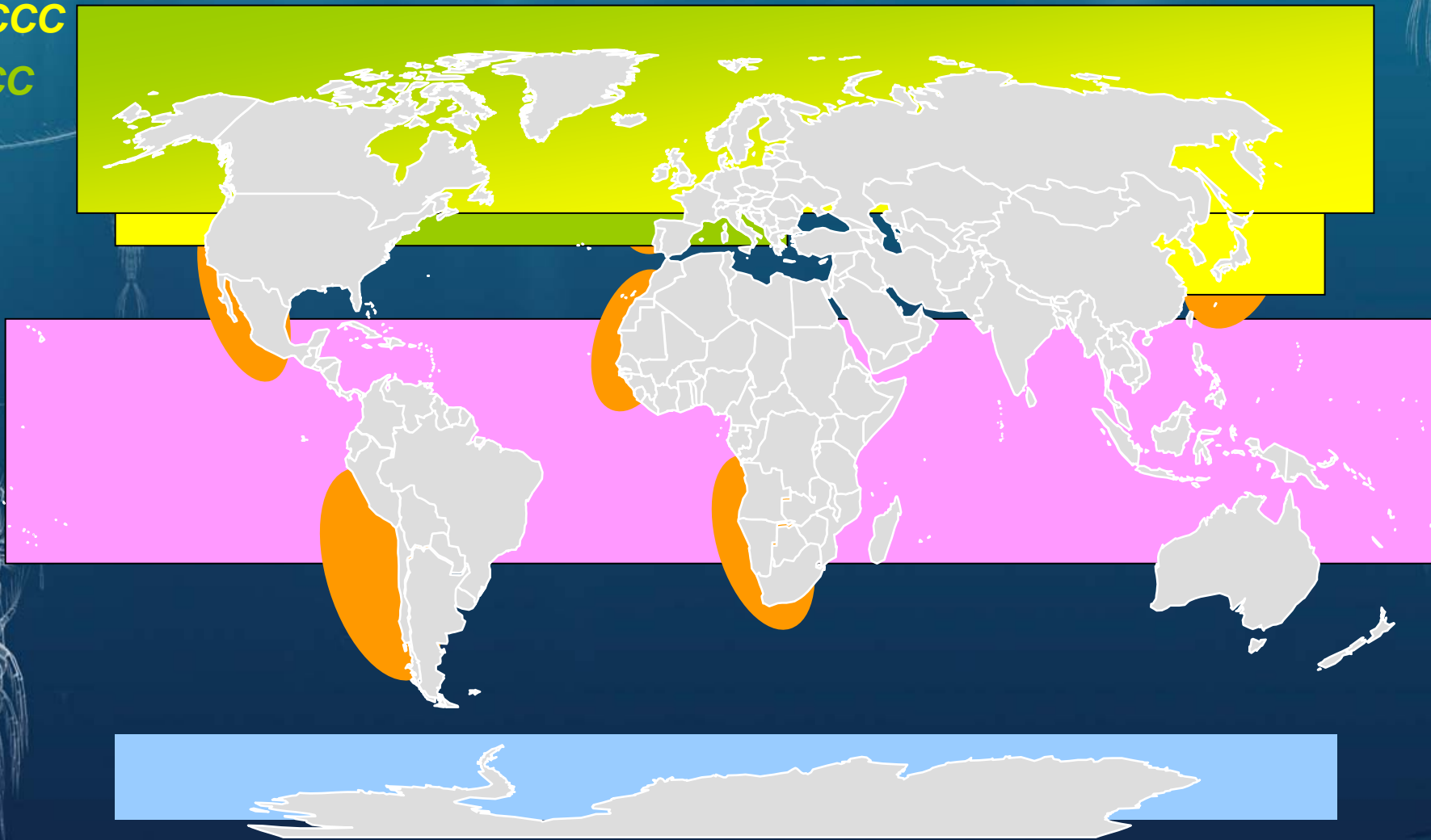
Synthesis along Regional programmes?

ESSAS

SPACC

CCCC

CCC



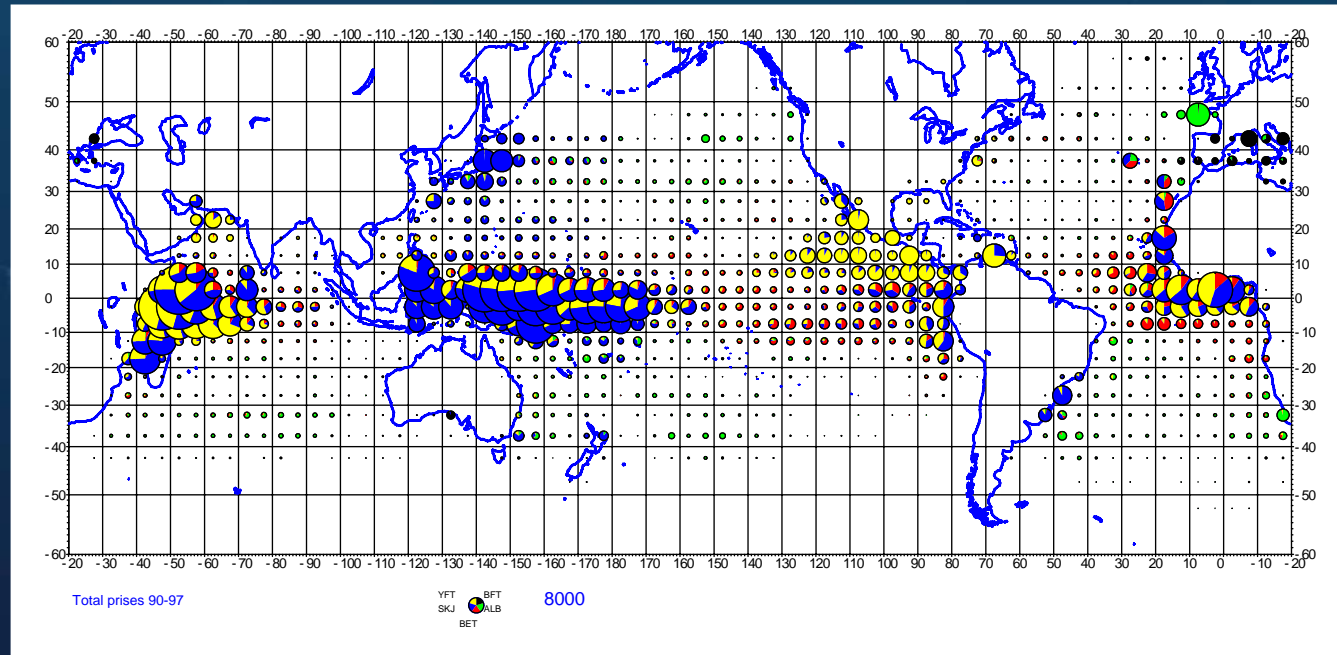
CLIOTOP

Southern Ocean GLOBEC



CLIMATE IMPACTS ON OCEANIC TOP PREDATORS (CLIOTOP)

Goal of CLIOTOP - to organize a large-scale comparative effort to determine the impact of climate variability on the structure and function of open ocean pelagic ecosystems and their top predators.



Population variability

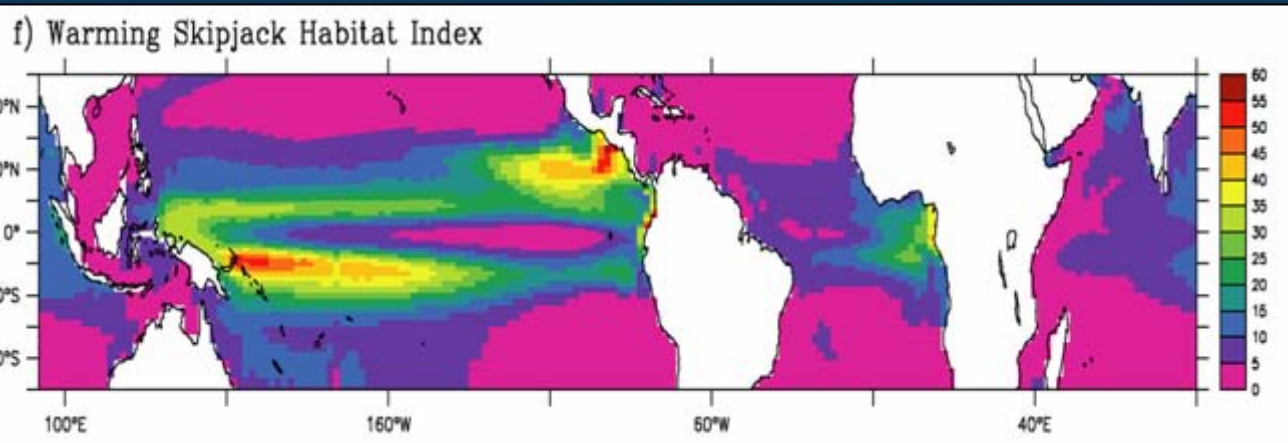
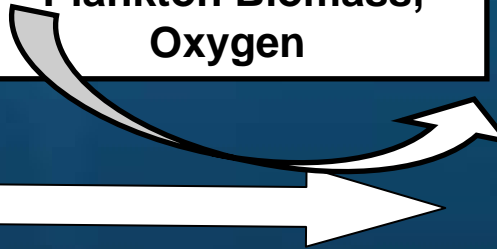
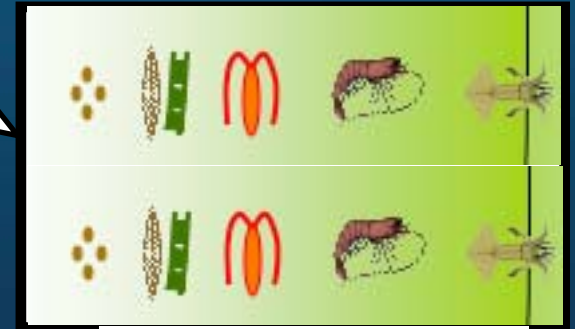
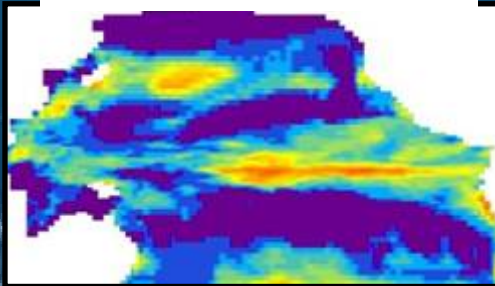
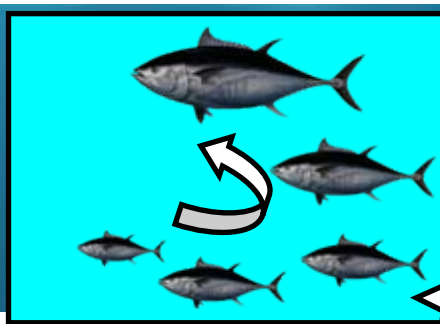
Age Structured Model

Fishing catch

Temperature, Currents,
Plankton Biomass,
Oxygen

New Production

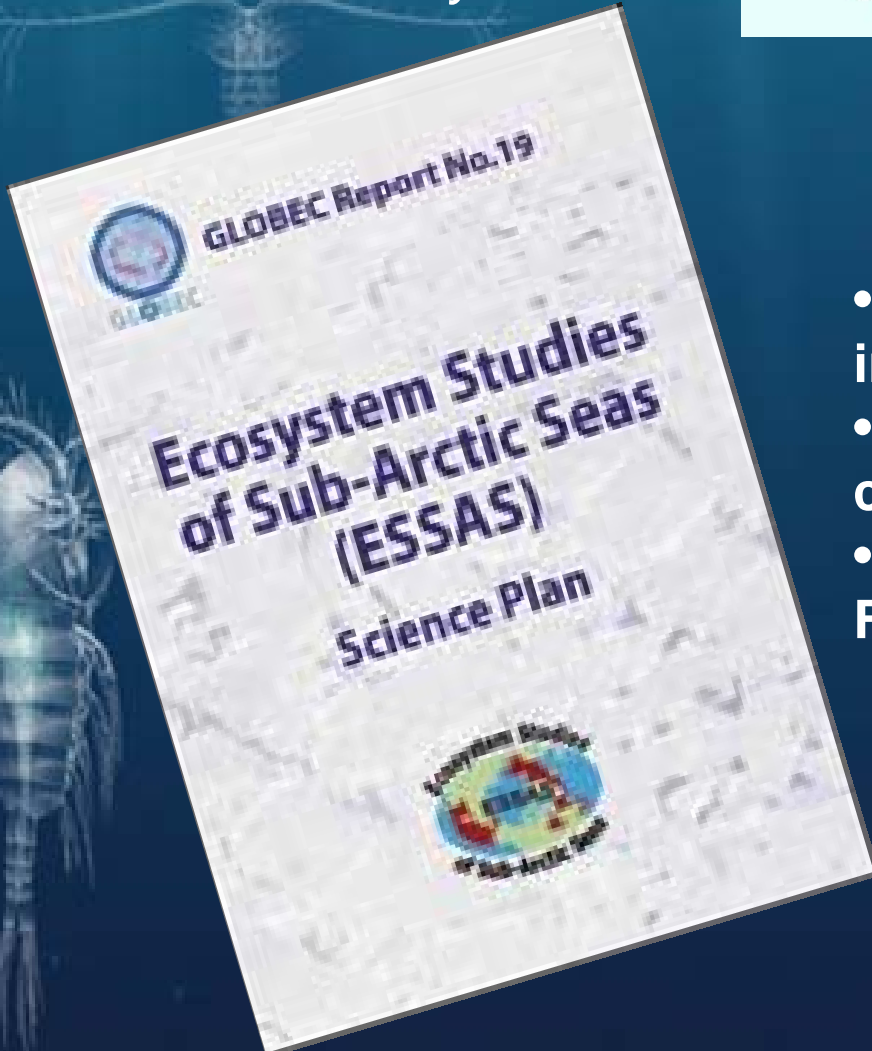
Tuna Forage Model



Goal of ESSAS: *To compare, quantify and predict the impact of climate variability on the productivity and sustainability of sub-arctic marine ecosystems.*

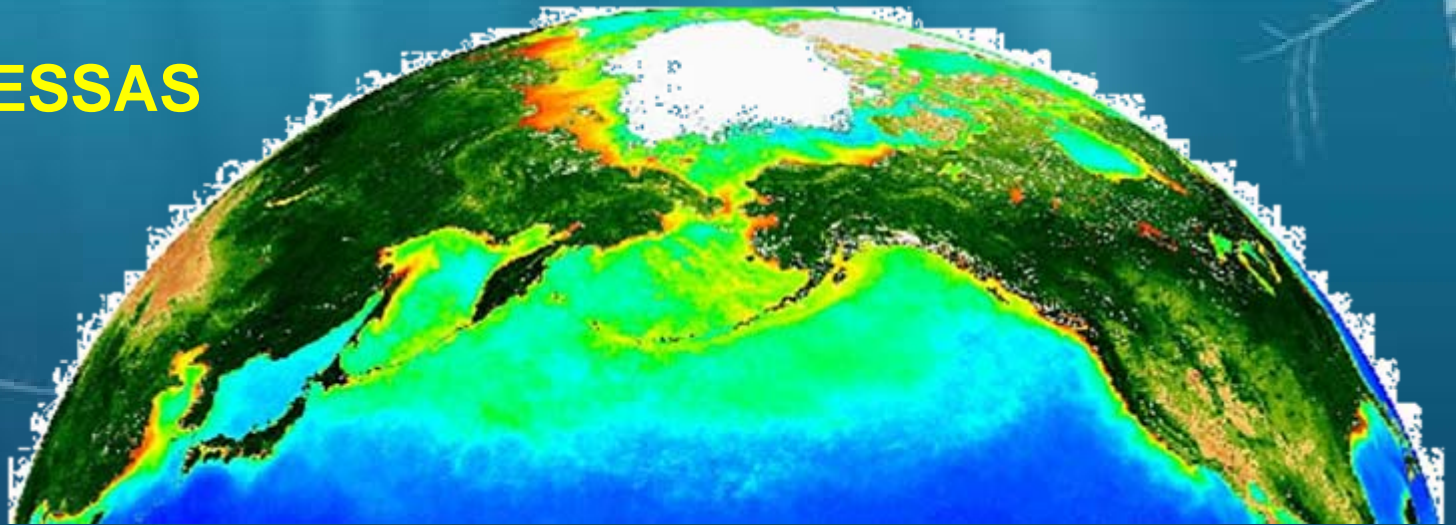


Oyashio, Okhotsk, Bering, Hudson Bay, Labrador/ Newfoundland, St Lawrence, Greenland, Iceland, Norwegian Sea, Barents

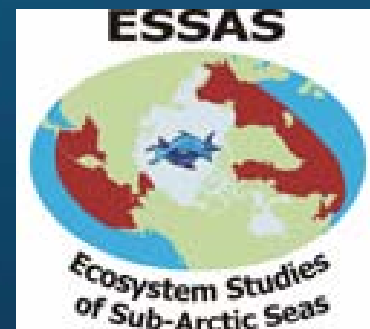
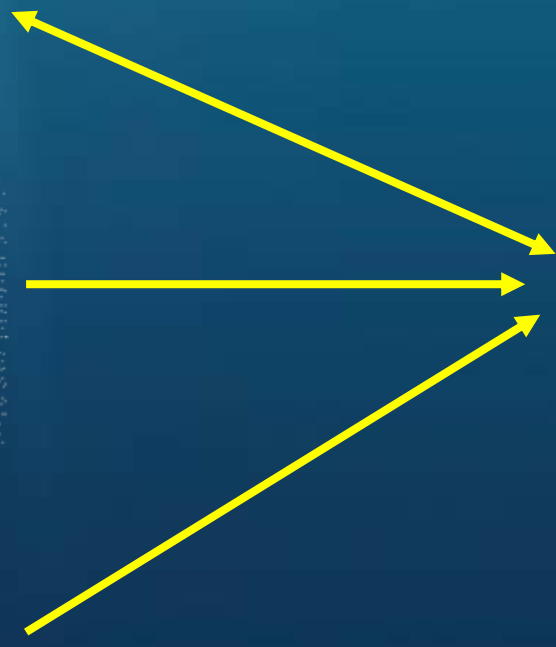
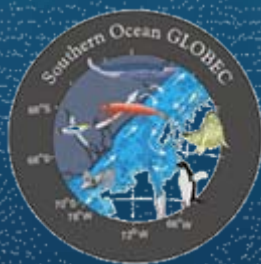


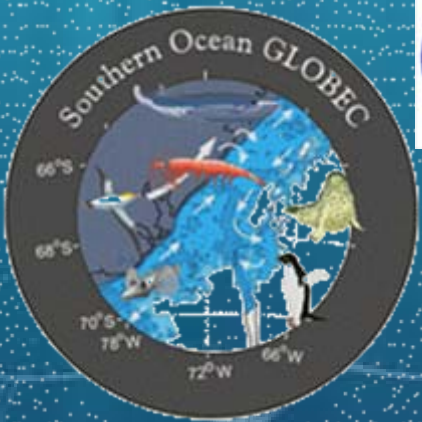
- Launched as a GLOBEC I+S project in 2005 (for a 10 y. duration)
- A link between Pacific and Atlantic community
- A contribution to CCCC (spec.-CFAME), FISP and the PICES Ecosystem Report

GLOBEC – ESSAS

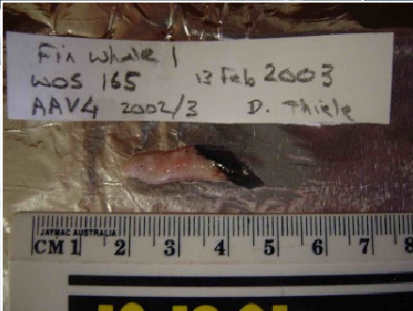
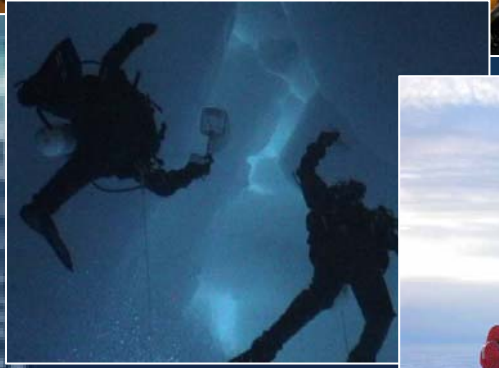
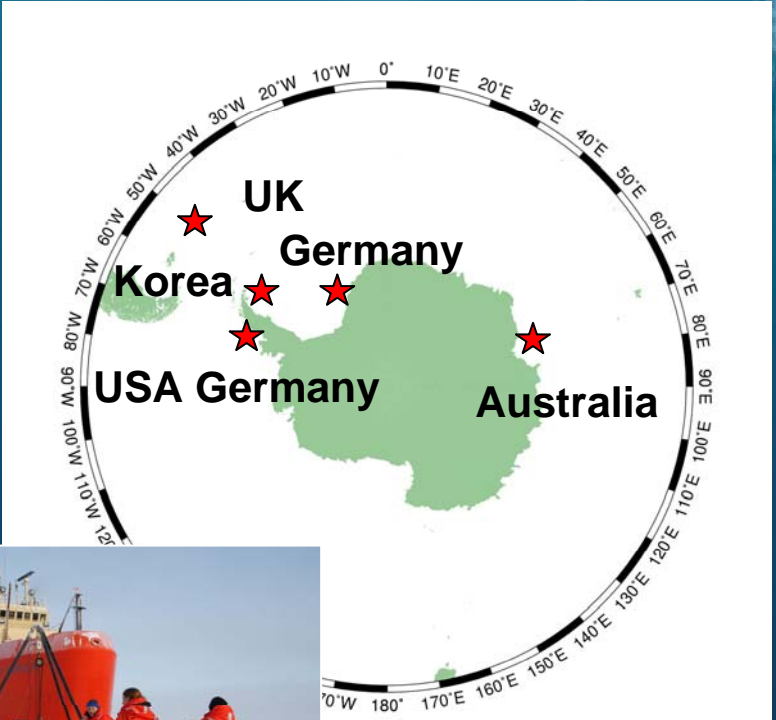


- ESSAS Symposium on Climate variability and sub-Arctic marine ecosystems. Victoria, Canada, May 2005. Sponsored by GLOBEC and hosted by PICES
- Workshop to compare four sub-Arctic marine ecosystems. St Petersburg, Russia. 12-14 June 2006
Co-sponsored by PICES and GLOBEC

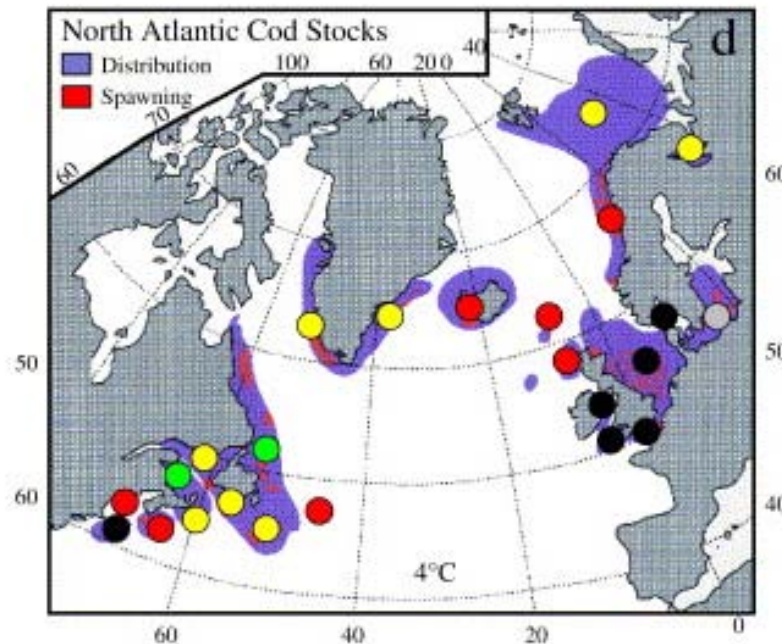
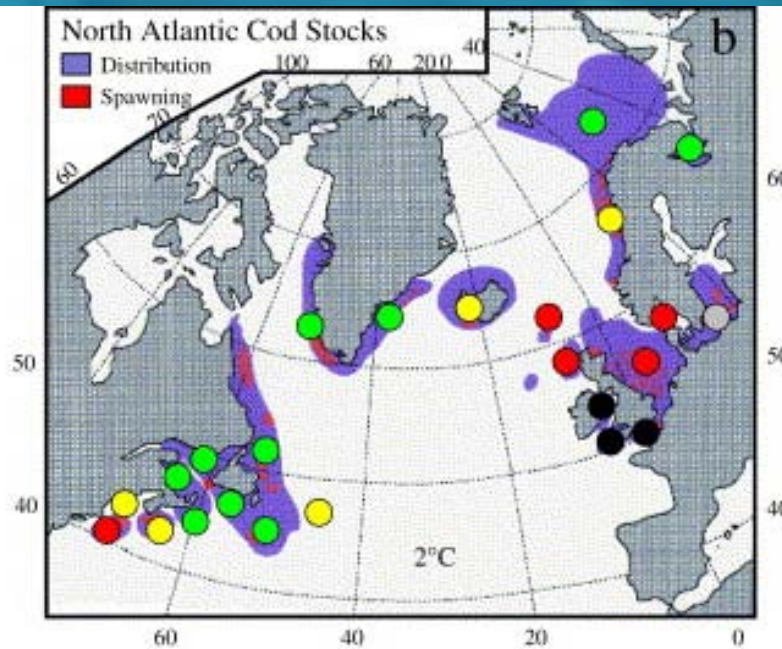




SOUTHERN OCEAN GLOBEC

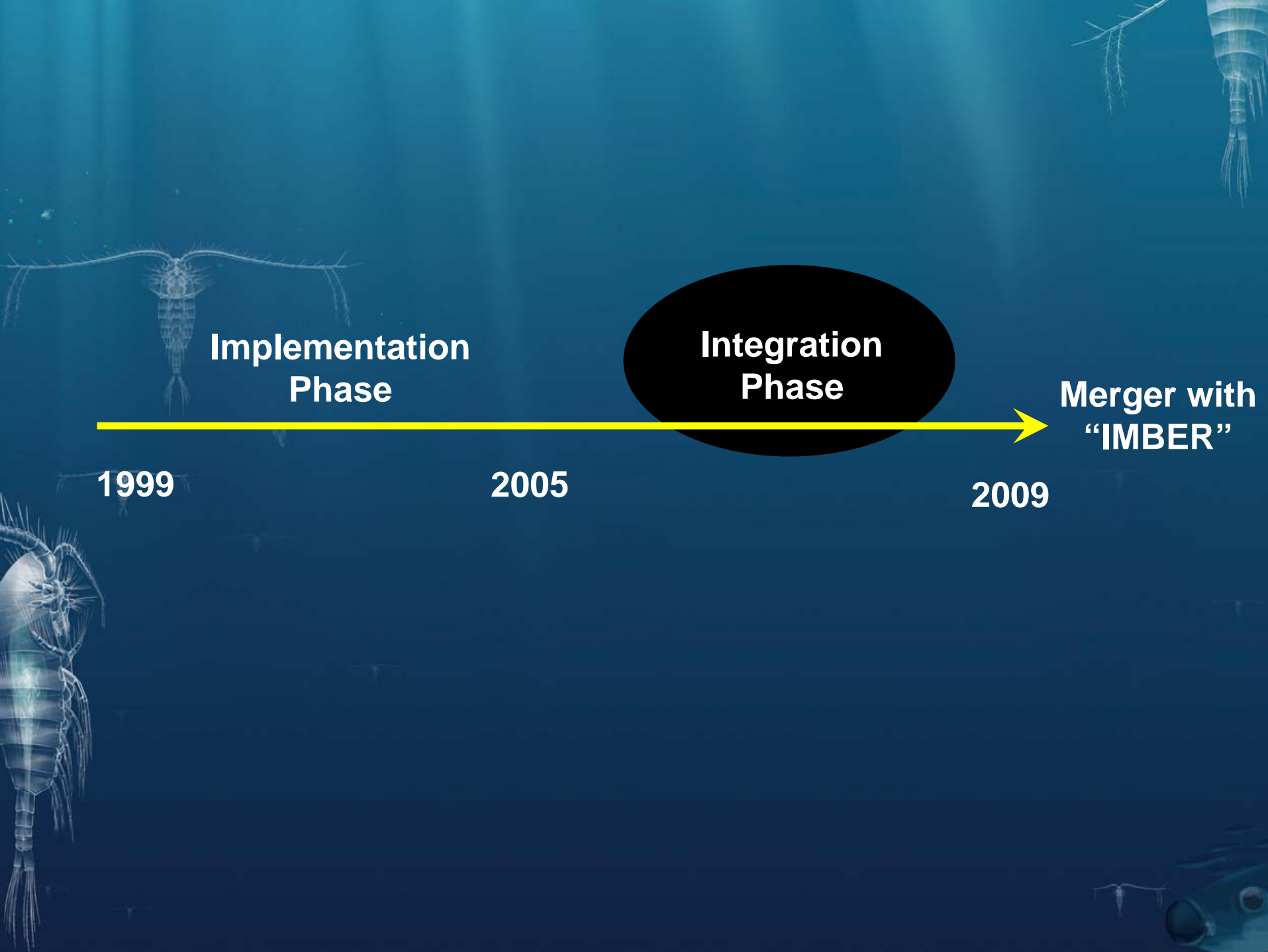


ICES/GLOBEC Cod and Climate Change (CCC)



Expected changes in the abundance of the cod stocks with a temperature increase of (b) 2° C, and (d) 4° C above current levels. Green= increase; Yellow= no change; Red= Decrease; Black= Collapse; Grey= Uncertain.

Drinkwater, K.F. 2005. The response of Atlantic cod (*Gadus morhua*) to future climate change. *ICES Journal of Marine Science* 62: 1327-1337



**Implementation
Phase**

**Integration
Phase**

**Merger with
"IMBER"**

1999

2005

2009



GLOBEC Symposia 2004-2009

2004	2005	2006	2007	2008	2009
1-North Atlantic	2-Sub-Arctic Seas	3-North Pacific	4-Natural/ Social science links 5- Zooplank. Production	6-Southern Ocean	7-GLOBEC FINAL OSM

1.ICES/GLOBEC “**The influence of Climate change on North Atlantic fish stocks**”, Bergen, Norway. 11-14 May 2004

2.GLOBEC “**Climate variability and sub-arctic marine ecosystems**”. Victoria, Canada, 16-20 May 2005

3.PICES/GLOBEC “**Climate Change and Ecosystem impacts in the North Pacific**”, Honolulu, USA, 19-21 April 2006

4.GLOBEC Focus 4 “**Natural and Human system implications of large-scale changes in marine systems**” Venue and date to be announced.

5.PICES/GLOBEC 4th “**Zooplankton Production Symposium**”. Hiroshima, Japan, June 2007

6.SO GLOBEC Symposium. Venue and date to be announced.

7.Final GLOBEC Open Science Meeting

Synthesis by topics?

Stratification

Upwelling

Buoyancy

Regime Shifts

Synchronicity

Retention

Cod

Copepods

Salmon

Krill

Sardines and Anchovies

Tuna

Humans

SUCH AS...




GLOBAL OCEAN ECOSYSTEM DYNAMICS

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GLOBEC is the International Geosphere-Biosphere Programme (IGBP) core project responsible for understanding how Global Change will affect the abundance, diversity and productivity of marine populations

Conferences



Sub-Arctic Ecosystems Symposium

ESSAS



North Pacific Marine Science Organization

PICES/GLOBEC Symposium

Climate variability and ecosystem impacts

AMEMR 2005

ADVANCES IN MARINE ECOSYSTEM MODELLING RESEARCH SYMPOSIUM



European network of excellence for Ocean Ecosystems Analysis

EUR-OCEANS

EUR-OCEANS kick-off and SSC meetings

GLOBEC (Global Ocean Ecosystem Dynamics) was initiated by SCOR and the IOC of UNESCO in 1991, to understand how global change will affect the abundance, diversity and productivity of marine populations comprising a major component of oceanic ecosystems.

The aim of GLOBEC is to advance our understanding of the structure and functioning of the global ocean ecosystem, its major subsystems, and its response to physical forcing so that a capability can be developed to forecast the responses of the marine ecosystem to global change.

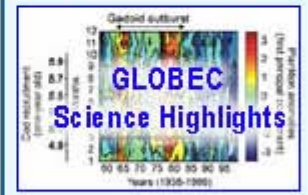


Write an article for the next GLOBEC Newsletter, click here for further details.



Publications

GLOBEC in nature



Update of
GLOBEC
Activities Report
(pdf 1.4mb)



GLOBAL OCEAN ECOSYSTEM DYNAMICS

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GLOBEC Integration and Synthesis activities

See below for a list of GLOBEC Integration and Synthesis activities. To participate in one or more of these activities or to propose a new activity click on the icons below.



Integration and Synthesis Activities:

Activity number: 1

Title: Climate Variability and Sub-Arctic Marine Ecosystems Symposium

Description: The symposium will be held in Victoria, Canada, 16-20 May 2005. The objective of the symposium is "to present current knowledge of the effects of seasonal to multi-decadal climate variability on the structure and function of Sub-Arctic marine ecosystems". Papers are invited, particularly interdisciplinary or comparative ones on the following topics: - large scale climate forcing on the physical oceanography of Sub-Arctic seas - physical and biological factors structuring Sub-Arctic ecosystems - the transfer of energy and material through subarctic food webs, from primary producers through zooplankton and benthic fauna to fish, seabirds, marine mammals and fisheries - recent changes in subarctic ecosystems, time scales of variation and possible causes - inter-comparisons between Sub-Arctic systems

Preferred dates: 16-20 May 2005

Venue: Victoria, Canada



GLOBEC Synthesis

- Targeted workshops
- Task Teams
- Synthesis books
- New "GLOBEC Lab" website
- Final science brochure and summary for Policy makers

DRAFT GLOBEC International Synthesis Book Outline

Global Change and Marine Ecosystems

**Editors: Cisco Werner, Manuel Barange, Ian Perry, Roger Harris, John Field,
Eileen Hofmann**

Content

Chapter 1: Introduction: The role of marine ecosystems in the Earth System

Chapter 2: Understanding marine ecosystems: observational and modelling methods

Chapter 3: Marine ecosystem dynamics and scales of variability

Chapter 4: Marine ecosystem structure and function

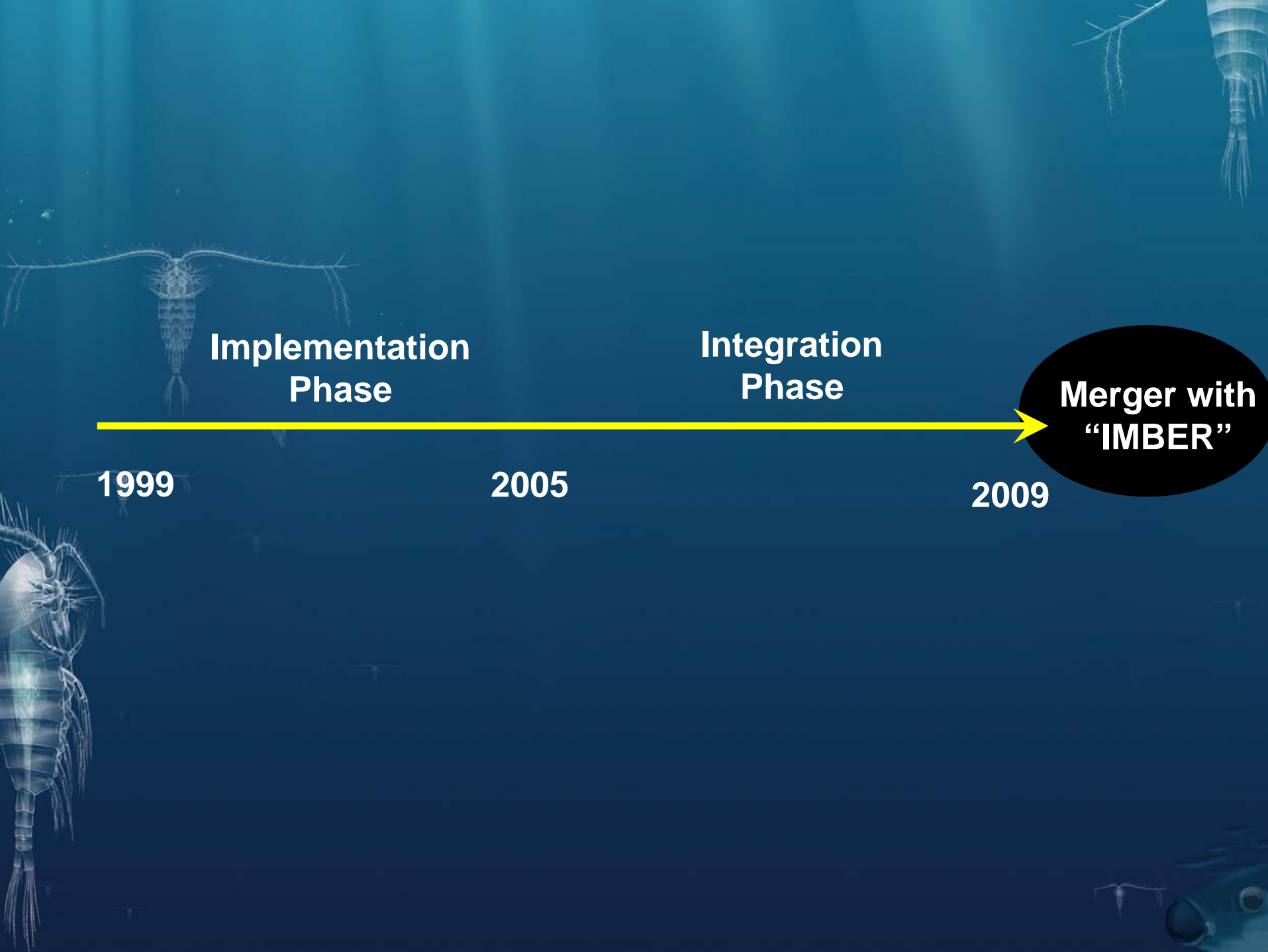
Chapter 5: Human impacts on marine ecosystems

Chapter 6: Marine ecosystem changes and human communities

Chapter 7: Predicting marine ecosystems responses to global change

Chapter 8: Managing marine ecosystems in the face of change

Chapter 9: Perspectives on global change and marine ecosystems



**Implementation
Phase**

**Integration
Phase**

**Merger with
"IMBER"**

1999

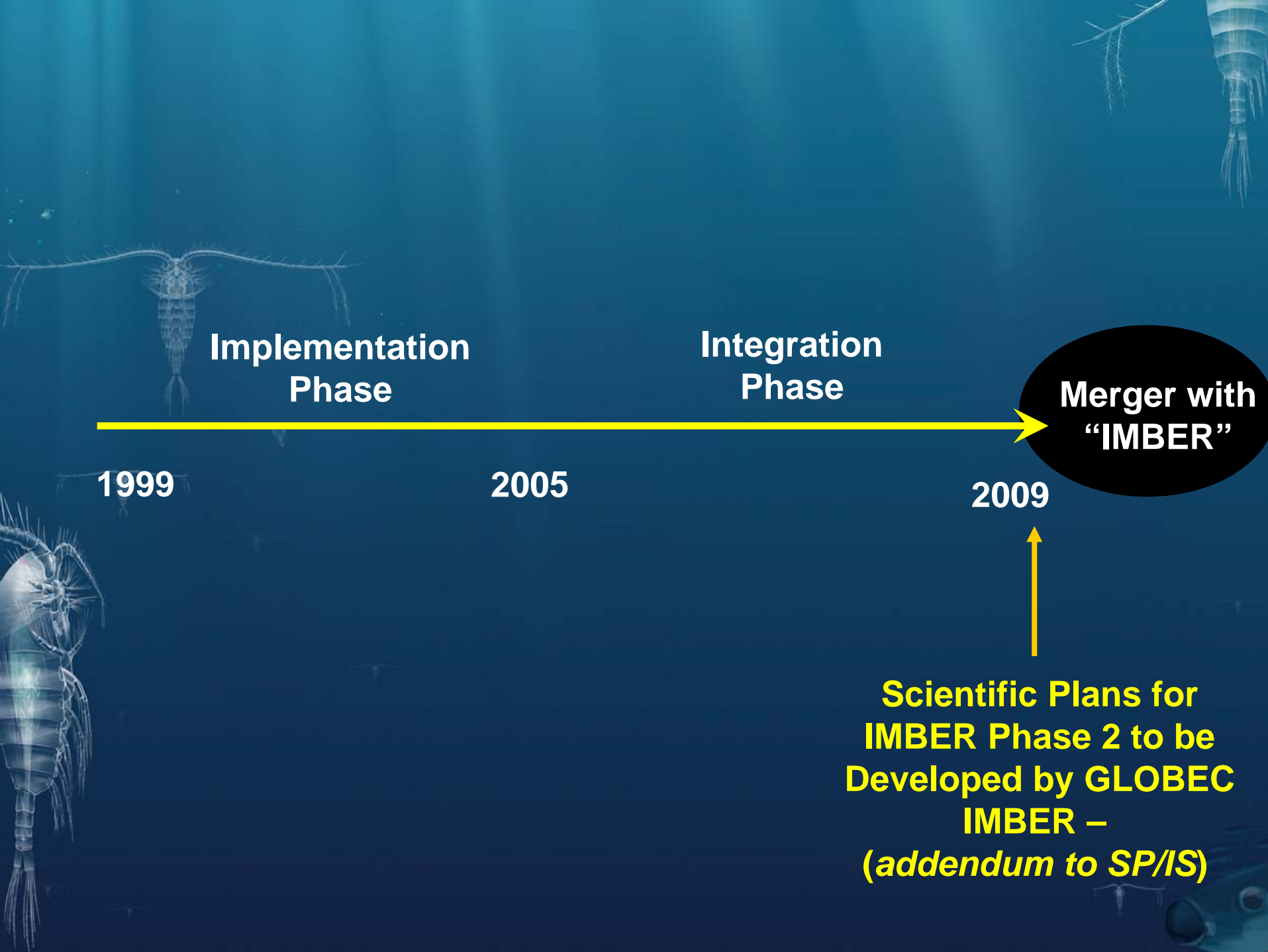
2005

2009



Proposal

- **IMBER Phase 1 (2005-2009):**
 - **GLOBEC & IMBER SSC Exec Committees meet back-to-back**
 - **Meet together to plan joint activities:**
 - e.g. end-to-end foodweb studies,
 - joint regional studies (e.g. Southern Ocean)
 - some joint modelling activities,
 - plans for integration into earth system studies,
 - human dimensions
 - write addendum to Science Plan for IMBER Phase II
 - joint annual progress report to sponsors
- **GLOBEC synthesis activities continue in parallel as main activity**



**Implementation
Phase**

**Integration
Phase**

**Merger with
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1999

2005

2009

**Scientific Plans for
IMBER Phase 2 to be
Developed by GLOBEC
IMBER –
(*addendum to SP/IS*)**