



Ecosystem Studies of Sub-Arctic Seas (ESSAS)

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ESSAS

ESSAS is an IMBER regional program whose aim is to compare, quantify and predict the impact of climate variability on the productivity and sustainability of Sub-Arctic marine ecosystems.



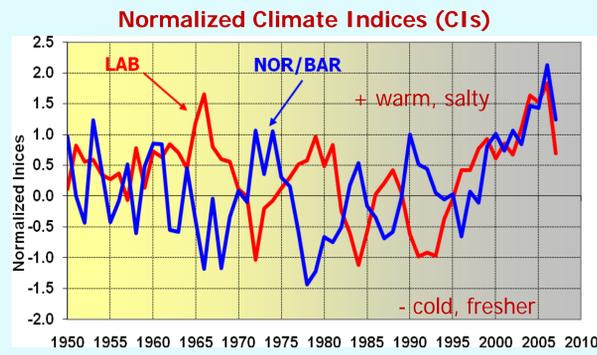
ESSAS undertakes comparative studies between different Sub-Arctic Seas:

- to gain scientific insights
- to determine what processes are fundamental to Sub-Arctic Seas and which are unique to particular seas
- to share methodologies.

ESSAS has undertaken several comparative studies both within the Sub-Arctic Seas and between Sub-Arctic, Arctic and Antarctic Regions.

NORCAN (NORway-CANada Comparison of Marine Ecosystems)

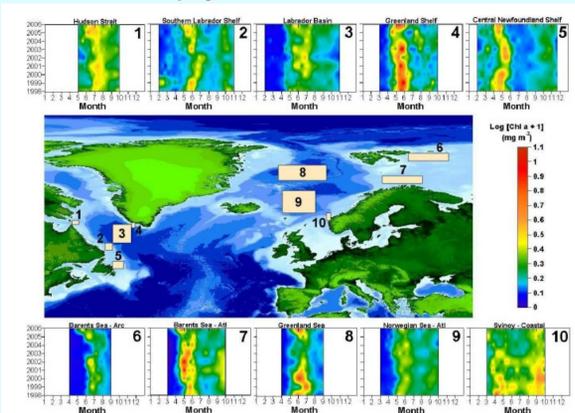
This project has been comparing different ecosystem components between the Labrador Sea and the Norwegian/Barents seas.



Change from out of phase to in phase CIs between the two regions in the late 1990s caused by shifts in atmospheric pressure systems (weakening of NAO).

Drinkwater et al., PiO, accepted

Surface Chlorophyll Concentrations from SeaWiifs

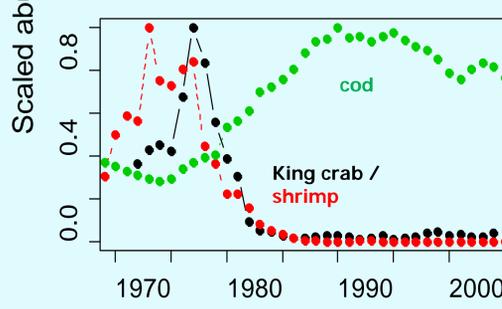


Timing of the spring bloom and peak seasonal productivity are occurring progressively earlier in the year, particularly at high latitudes.

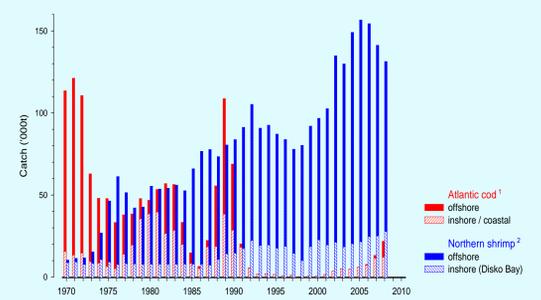
Harrison et al., PiO, accepted

Investigating Invertebrate-Gadoid Interactions

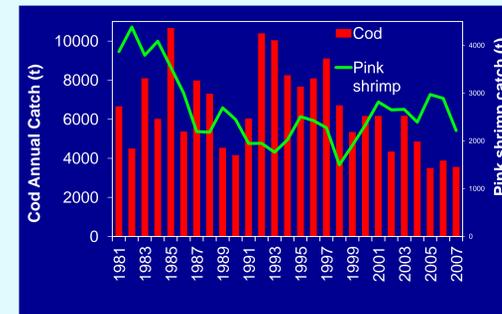
An ESSAS comparative study between different Sub-Arctic Ecosystems is testing the hypothesis that gadoids control invertebrate abundance through predation.



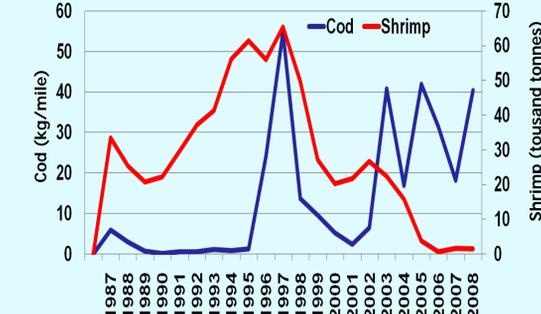
Eastern Bering Sea: Mueter



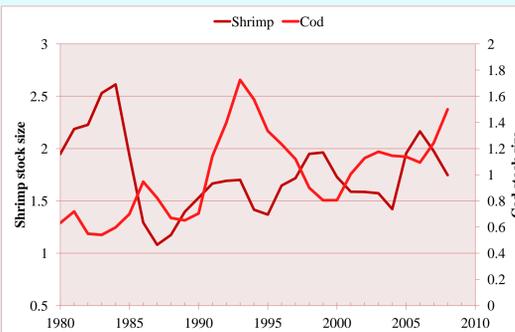
Northern Iceland: Astthorsson



Japanese Waters: Yamamura and Sakurai



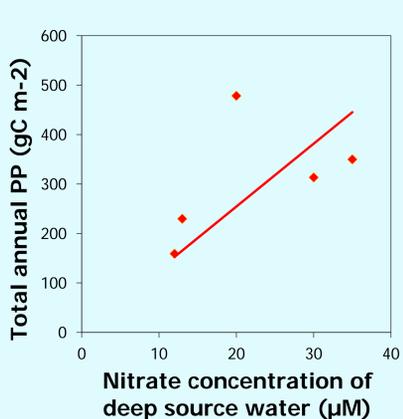
West Greenland: Wieland et al.



Barents Sea: Hvingel

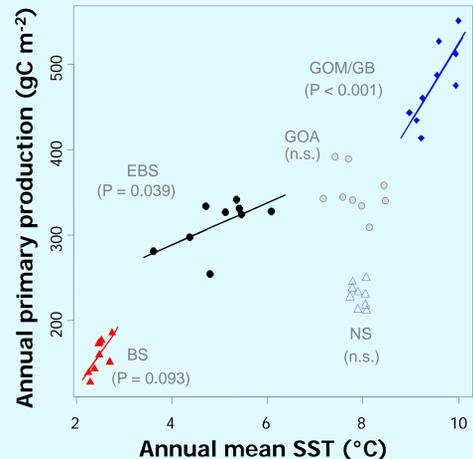
Analyses indicate no consistent relationship between shrimp abundances with gadoids, nor with physical variables in the different regions. Further studies are ongoing.

MENU (Comparison of Marine Ecosystems of Norway and the United States)



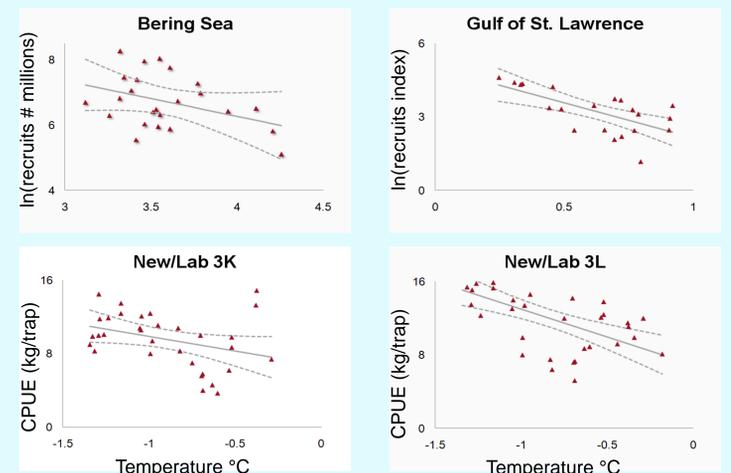
Variations in primary production depends on deep water nitrate concentrations.

Drinkwater et al., PiO, 2009; Mueter et al., PiO, 2009



Primary production increased with warming from 1998-2006 in 3 of 5 ecosystems.

Analyses of snow crab show no relationship with gadoid abundance but do show a negative relationship with temperature for all regions investigated.



Marcello et al.

ESSAS is continuing to undertake further comparative studies using both observations and models. For more information on ESSAS and these and other comparative studies visit <http://www.imr.no/essas>.