

2. Arctic Shelves

Biodiversity studies

Ecosystem dynamics. Kongsfjord, Svalbard is a European flagship site under the new Network of Excellence, MARBEF. SAMS scientists are contributing to systematic studies on biodiversity development in arctic shelf seas. Planned collaboration with Polish scientists from their base at Hornsund is under discussion for 2004-5.

Biodiversity and biotechnology of microbes from extreme environments. This work would be led from the NERC – supported Culture Collection for Algae and Protozoa , and the European Centre for Marine Biotechnology, in collaboration with other nations with strong interest in the physiology and natural product chemistry of arctic marine organisms.

Ecological and biogeochemical role of microbes in polar marine environments. Arctic pelagic ecosystems may be more responsive to climate change (the amplification effect of polar regions) but we still need to know more about their fundamental ecology and biogeochemistry in order to predict their response to change. Specifically, we are interested in examining some unresolved issues of how microbes behave at low temperature (their growth rates and activities) as these are not necessarily a linear reduction of warmer rates (they may behave qualitatively differently). There is international interest in UVB effects on phytoplankton and their interactions with other factors (eg. temperature). This is linked to UV and low temperatures transformation of DOM/DMS compounds and resulting air/sea gas exchange (SOLAS in the Arctic). Opening of sea lanes in the Russian arctic herald the potential for transport of exotic and harmful algal bloom species of Asian origin to European waters.

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