Technologies for sea bottom inhabitants' monitoring and Integral Costal Zones Management. Example of the Kandalaksha Bay, White Sea

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The problem

Ecological problems concerned with exploration and production of mineral recourses located on arctic shelf, changes in traditional use of natural resources could be very dangerous for stability of development of northern regions of Russia

Project Participants:

- White Sea Bilogical Station, MSU
- Geological Faculty, MSU
- DECO-Project Ltd., DECO Group
- Dive Centre “Polar Circle”, RU Dive Group

Project tasks

Research and development activities in the field of marine environmental monitoring:

- development of technologies for sea bottom mapping and sea inhabitants' monitoring using remote geophysical methods, underwater observations, sampling by divers and remote-controlled techniques; development of technology for environmental monitoring of water mass using chemical analysis, fluorometric, and luminometric methods;
- Development of hardware and software for remote geophysical study of stability and strength characteristics of bottom sediments; development of software for analyzing environmental characteristics, including bio-diversity using statistics

Development of technologies for Integrated Coastal Zone management and Sustainable natural resources use and development at the level of local municipalities and communities.

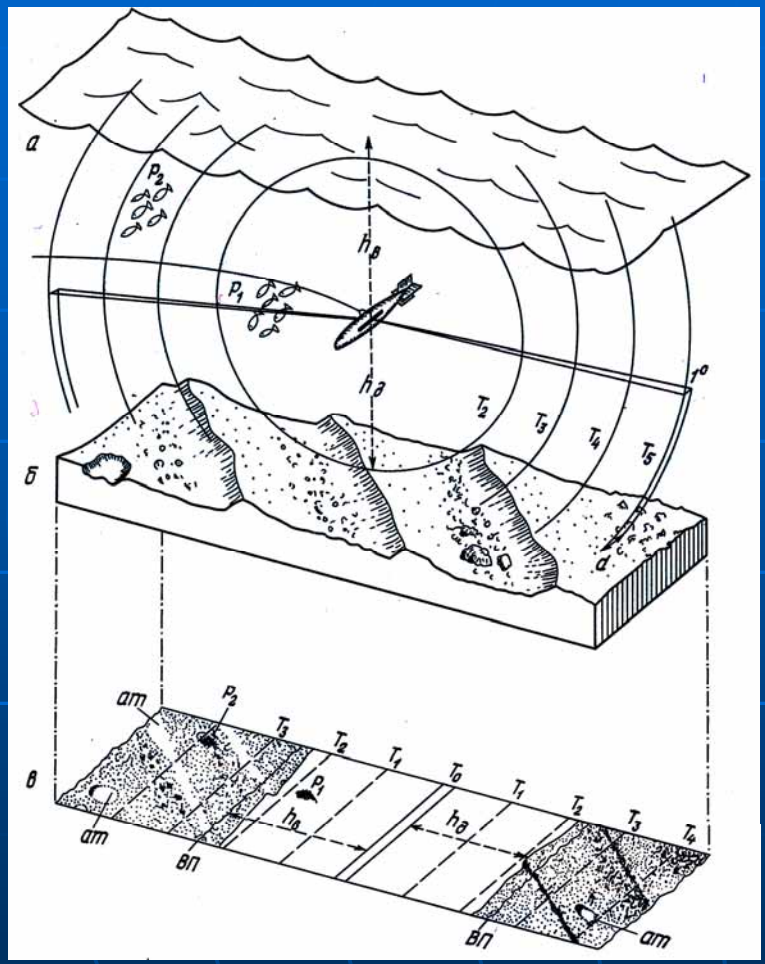
- Development of principles of integrated coastal zone management by federal and local authorities, communities, and stakeholders; working out methods for projecting integrated development of coastal zones; Education of local communities and stakeholders in the field of environmental science and practice, and sustainable development;
- Development of methods of studying the coastal zone in order to define the most sensitive areas in terms of anthropogenic pressure. Creating the network of underwater preserves; Involving local communities in environmental tourism and diving industry, integration of efforts of marine ecologists, local communities, and divers for implementing the programs on preservation of the coastal zones.

Investigation methods

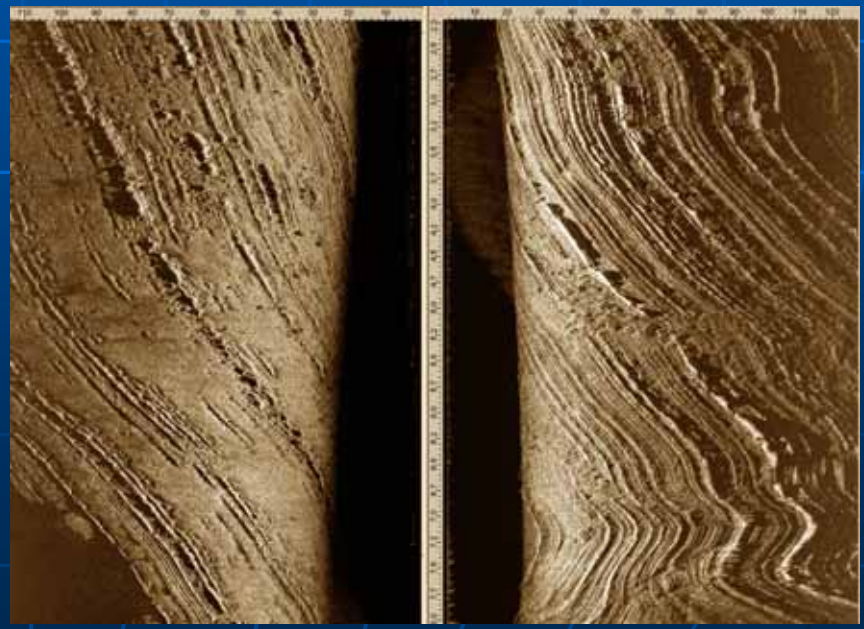
- Geological. Sampling from research vessels, diving observations and sampling.
- Underwater photo and video.
- Geophysical. Echosounding, side-scan sonar imaging, single-channel and multy-channel high frequency seismic surveying.
- Biological research.
- Hydrological research.
- Laboratory analyses and comprehensive interpretation.

MSU biologists (headed by prof. Tsetlin) study sea ecosystems and develops technologies of investigations in northern seas of Russia

Side Scan Sonar Survey



MSU geologists and geophysicists works on technologies, hardware and software for remote investigation of sea bottom and subsurface



Diving

Approaches for underwater video and some hardware have being developed in MSU dive club since 1996

Recent research projects

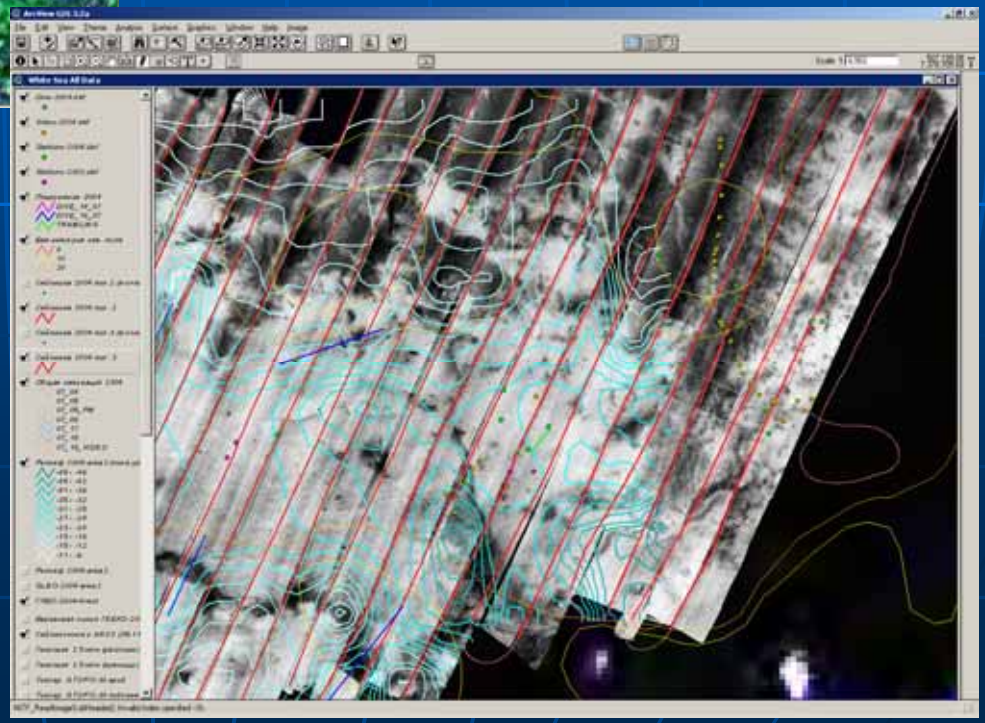
2005-2006, PADI, Project AWARE Foundation (International) grant № 369: Ecodiving-diving for the science.

2005, IFAW, International Found for Animal Welfare. Protection and monitoring of marine mammals in the White Sea. A program for Coastal Council of the Norh Karelian Coast.

2003-2004, Lighthouse Foundation funded project: Introducing the participatory approach for sustainable coastal resource management in Russia: Chupa Basin Council 2001-2003, Pathways of organic matter and its implication for biodiversity and sustainable uses in the White Sea. Contract N: ICA2-CT-2000-10053 (Copernicus EU program)

1998-1999, INTAS project N 96 1359 White Sea Ecosystem: seasonal flux of organic matter to the bottom and inter-annual trends in benthic diversity and community structure in the White Sea. A comparison with the Arctic and the Northeast Atlantic Sea, investigator.

Project "Developing methodology for monitoring bottom habitats of Russian's Northern seas shelf" Supported by Ministry of Natural Resources of Russian Federation



Several research and commercial groups have joined their efforts during the project life and this leads to new marine ecological surveying services could be obtained