

Safety of Maritime operation and sustainable industrial development in the Arctic, 2012–2015 (SMIDA)

Project description

1. Synopsis

The aim of the project is to develop the educational and research cooperation between Norwegian and Russian Universities for the increase of basic knowledge required for sustainable development of Arctic offshore and coastal Technology.

The project study is focused on the regions of offshore and coastal development in the Barents and Kara Seas. Main activities within the projects are the teaching and exchange of MSc/PhD students, increase of communications between academic, technical and administrative staff, synchronization of the teaching procedures in Norwegian and Russian Universities and organizing of joint fieldwork in Svalbard and the Russian Arctic.

2. Project objective, sub goals and planned activities

The objective of the project is the development of educational and research cooperation between Norwegian and Russian Universities. The focus is increase of basic knowledge of physical and mechanical processes and models influencing and used for design and support of offshore and coastal structures and ice resistant ships in the Arctic.

The project aims in particular towards sustainable development of the exploitation of petroleum resources in the Barents and Kara Seas. Basic knowledge will be communicated to students through lectures, laboratory and field works in the areas of industrial activity in the Arctic.

The project is also focused on collection of necessary experience and knowledge for young specialists planning to work in industrial companies involved in offshore and coastal development in the Arctic. Joint elaboration of new lecture courses in Norwegian and Russian Universities involved in the project and joint educational processes will improve the understanding and professional relationships between Norwegian and Russian companies and specialists working in the Arctic.

The educational activity will be organized at the base of the courses of the Arctic Technology Department in the University Centre in Svalbard (UNIS) in the cooperation with the Norwegian University of Science and Technology/Faculty of Engineering Science and Technology (NTNU), University of Tromsø (UiT), Moscow University of Physics and Technology/Faculty of Aero and Space Research, Moscow (MIPT), St.Petersburg State Polytechnic University (SPbSPU), Moscow State University/Faculty of Geography, Moscow (MSU), and Marine Technical University St.Petersburg (SPbMTU).

The 3 different cycles (BSc, MSc, PhD) of education including the description of Learning Outcome are implemented at UNIS. When UNIS cooperate with professors, researchers and students from Russia, they get improved knowledge about the European education system established through the

Bologna process and all of the partners make mutual efforts to adapt and be able to cooperate. It also gives the students extended knowledge about the systems of education of the different institutions, and our experience is that these students and researchers pass on this knowledge to improve the possibility for further exchange.

3. Planned activities

- 1) Teaching and exchange of master students
- 2) Teaching and exchange of PhD students
- 3) Research cruises with student groups on RV Lance (Norway) in the Barents Sea
- 4) Research cruises with student groups on RV Professor Molchanov (Russia) in the Russian Arctic
- 5) Fieldwork on land fast ice in Isfjorden and Van Mijenfjorden, Spitsbergen
- 6) Fieldwork in coastal zones of the Russian Arctic (Pechora Sea, Yamal)
- 7) Fieldwork around industrial areas in Spitsbergen (Longyearbyen, Svea, Barentsburg, Pyramiden)

The project will focus the following research directions:

- 1) Physics and mechanics of ice
- 2) Physics and mechanics of frozen soils
- 3) Hydrodynamics of ice covered waters
- 4) Physical environmental actions on Arctic coastal structures
- 5) Ice loads on offshore structures/ships and effects on marine operations
- 6) Coastal erosion and ice actions on seabed
- 7) Instrumentation for advance field and laboratory measurements