INTRODUCTION

One of the main purposes of the Norwegian Scientific Academy for Polar Research (NVP) is to promote research, education and sustainability in the Polar Regions through international cooperation and professional interactions across disciplinary and sectoral boundaries. In operationalizing this objective the NVP has in cooperation with partners hosted four multi- and interdisciplinary PhD and Post-doc summer schools in Longyearbyen since 2011, namely:

- Impact of climate change - on resources, maritime transport and geopolitics in the Arctic and the Svalbard area in 2011,
- Shipping in Arctic Water - the interaction of sea ice, ship technology, climate change, economy and other operational conditions in 2013,
- Impact of climate change - on resources, maritime transport and geopolitics in the Arctic and the Svalbard area in 2015, and
- The Arctic Ocean and the marginal ice zone (MIZ) in 2017.

The multi- and interdisciplinary approaches and holistic insights supplement activities at universities and research institutions, which traditionally have disciplinary priorities, have been challenged during these NVP summer schools.

OBJECTIVES

The basic reasons for making the summer schools integrative, cooperative, multi-cultural and boundary breaking, includes:

- Interdisciplinary interaction and research provide supplementary knowledge to that of disciplinary research.
- Interdisciplinary research requires multidisciplinary cooperation on all levels to create horizontal (or interdisciplinary) curiosity.
- Interdisciplinary requires communication across different disciplinary traditions and specialized terminology.
- The interdisciplinary approach should be applied also on the knowledge integration across the gorge between nature and society.

Experience shows that to overcome the integrative restrictions of disciplinary boundaries and to synthesize in an effective manner, years of practice is needed. There is simply no quick fix. The question then is what can be achieved, in a short hectic week of integrative schooling? Part of the answer to this question is to be found in the selection process of students and disciplines, in the program organization and in the overall implementation of the summer school.

RESULTS

The student participants have during each of the summer school course prepared a scientific report leading to a later published scientific peer review article addressing the different Arctic topics.

Summer School 2011 - Impact of climate change on resources, maritime transport and geopolitics in the Arctic and the Svalbard area - a contribution to the 150 years anniversary of Fridtjof Nansen:

- Report: “The (un)changing Arctic? Results from a multi-disciplinary examination of climate change, resources, marine transport, and geopolitics through 2030”
- Follow up article: “Transdisciplinarity and Training Engaged Researchers”, was published as a peer review article in the Ocean Yearbook 28, of the Dalhousie University in Halifax in 2014.
- Article: Interdisciplinary Cooperation on Impacts on Climate Change in the Arctic, by Louis Wardell was published by EOS in september 2012

Summer School 2013 - Shipping in Arctic Water: The interaction of sea ice, ship technology, climate change, economy and other operational conditions

- Article: “Commercial Arctic shipping through the Northeast Passage, Routes, resources, governance, technology, and infrastructure”, which was published in the peer review journal Polar Geography in 2014.

Summer School 2015 - Arctic Ocean Governance as a Multifunctional Challenge

- Article: “Assessing the added value of the recent declaration on unregulated fishing for sustainable governance of the central Arctic Ocean”, which was published as a peer review article in the Marine Policy, Volume 66 in 2016.

Summer School 2017 - The Arctic Ocean and the marginal ice zone (MIZ).

Interdisciplinary research, management practices and policy developments.

This international summer school in Longyearbyen, Svalbard 2017 had a multi- and interdisciplinary thematic approach to meet challenges and opportunities related to the changes and governance of the Arctic Oceans focusing on the marginal ice zone (MIZ).

All the week of activities represented a 55 hours course – lectures, student group work and interactive sessions in preparations of a peer review an interdisciplinary scientific article. The 23 lecture presentations were given by 13 international lecturers during seven thematic sessions related to the Arctic Ocean and the Marginal Ice Zone (MIZ) covered:

- Framing the course and study methodology
- Individual students presentations (10’ in each)
- Introduction to the MIZ
- Environmental and climate monitoring and forecasting
- Management and policy challenges in an international policy context
- Management and policy challenges: Local, national and international management contexts
- Student reporting, presentation, assessment and conclusions.

The 23 participating students from Austria, Canada, Finland, France, Germany, Nepal, Norway, Poland, Portugal, Russia, Turkey and UK were divided in four working groups initially addressing the Values, Vulnerability, Exploitation, and Management and regulations of the MIZ. The groups were merged and combined in order to foster cross- and inter-disciplinary interactions. The students completed a joint report founding the basis for their further preparations of a peer review an interdisciplinary scientific article to be completed jointly after the summer school in consultation with the summer school coordinators.

- Report: “The Arctic Ocean and the Marginal Ice Zone (MIZ)”
- Article: “Missing the Obvious in Arctic Shipping Regulations: A Maritime Lawyer’s Observation from Svalbard”, by Ilker Basaran; published in the Arctic Yearbook 2017

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