Co-funded by the Erasmus+ Programme of the European Union

P5: RUSSIAN STATE HYDROMETEOROLOGICAL UNIVERSITY

Saint Petersburg, Russia

Departments concerned with SUNRAISE-related topics:

- Faculty of Ecology (Department of Applied and System Ecology; and Department of Geo-ecology, Nature Use and Environmental Safety)
- Faculty of Meteorology (Department of Meteorology, Climatology and Atmosphere Protection)
- Institute of Hydrology and Oceanography (Department of Water-Technical Surveys)
- Institute of Continuous Education

Contact person: Dr. Eduard Podgaiskii (podgaisky@rshu.ru)

The Russian State Hydrometeorological University (RSHU) is a relatively small university (round 4000 students) with narrow specialization on water-, oceanic- and atmospheric as well as environmental sciences. Historically the specialization in hydrometeorology (and later also oceanography) was even narrower, and although the research and training scope has substantially broaden since then, it is still, by large and away, greatly prioritized over any other academic and professional fields. Such a prioritization, except that it is still the strongest area of expertise, is supported by considerable national and international reputation of the university in the field, and its close links to national hydrometeorological services as well as the World Meteorological Organisation (WMO).

Multidisciplinary sustainability science research and education are emerging and growing as well: the faculty of Ecology with its three departments addressing various aspects of environmental sciences has been established already over 2 decades ago, while with the recent merge of the RSHU with the Polar Academy, its scope became even broader. One of the latest additions with a multidisciplinary research agenda is Center of the Climate and Arctic Research. The university's research agenda officially put forward through the Rector's order include such topics as (summarized and shortened; only the areas related to sustainability):

- Environmental protection, monitoring, environmental impact modeling;
- Hydrophysical, -chemical and -biological marine and coastal research;
- Hydrodynamics and water quality research for better water management and protection;
- Modelling and forecast of atmosphere and hydroshere catastrophic events;
- Climate change research for national economics and environmental protection;

- Multisensor remote sensing-based GIS (including data collection, modelling and security);
- Economics and sectoral management, and management of innovations based on natural conditions and natural resource economics;
- Integrative sustainable coastal management of Russian coastal zones.

Thus overview (see a more detailed research profile attached) demonstrates that in principle RSHU has capacity and intentions to carry on multidisciplinary research agenda adhering to SUNRAISE research priorities. Importantly, the current research priorities are already very much focusing both on national policy priorities (and basically re-formulate them) and (although to a lesser extent) to international ones (very much due to cooperation ties with the WMO and the university's mandate to be an important focal point for this collaboration). Based on these considerations, as well as interviews with RSHU's academic staff and relevant stakeholders in Russia, the following additional multidisciplinary research agenda items can be strongly suggested, considering the research capacity of the university and upcoming international research area and policy priorities that are becoming relevant and feasible in Russia:

- Integrative marine and coastal governance (i.e. moving beyond the management paradigma); marine spatial planning as a governance tools; analysis of governance efficiency of policy options;
- Science, management and economics of carbon sequestration (in particular in the Arctic zone);
- ESG in natural resource economics of the Arctic zone (in particular in relation to mining and transportation sectors);
- Climate change vulnerability and adaptation of the Arctic region, jn particular in connection with increasing environmental impacts from sectors and accumulated environmental issues; environmental impact assessment of the growing Arctic marine operations as a focal topic;
- Land-use/land-cover – climate change coupling mechanisms, their modelling and monitoring;
- Environmental justice of the indigenous people of the Arctic zone;
- Transition of food production systems in the Arctic zone under the environmental change.

In order to make most of the Arctic research capacity, an important move can be creation of research and educational consortium with St.-Petersburg State university that possesses complementary expertise, but also has massive experience in multidisciplinary sustainability research. At the institutional level, important moves can be related to adequate efforts for balancing priorities by further coupling environmental science and hydrometeorological research and educational activities.

Summary of the research profile:

SUNRAISE-RELEVANT RESEARCH TOPICS	
1.	Methods and means of satellite monitoring of sea ice in the Arctic

2.	Influence of global dynamic processes on the composition and structure of the Arctic stratosphere
3.	Construction of the "sea ice-ocean-atmosphere" system in the Arctic
4.	Variability of the gas composition of the Arctic in a changing climate
5.	Urbanisation of the indigenous people of the Arctic and sustainable development of the social environment
6.	Gender research in the Arctic region

KEY PERSONALITIES, POTENTIAL MASTER'S AND DOCTORAL SUPERVISORS

- Dr. Denis Alexeev – *Research interests: Applied and system ecology*
- Prof. Dr. Nadezhda Sanotskaya – *Research interests: Hydrology; Hydraulics; Water resources; Statistics*
- Prof. Dr. Larisa Timofeeva – *Research interests: Catchment hydrology; Application of satellite data in hydrology; Interdisciplinary studies; Transboundary water bodies; Modern approaches for teaching hydrology*
- Prof. Dr. Aleksandr Evdokimov – *Research interests: Mineral resources of Russian Arctic*

CURRENT AND PAST PROJECTS

Project 1: "Arctic PIRE: Promoting Urban Sustainability in the Arctic"	*Funded by*: National Science Foundation (NSF), Office of the Director (OD), USA	*Project type*: research, education
	Keywords: Urban sustainability; Arctic zone	
Project 2: "Development of a complex of digital educational solutions for continuous professional development in the field of hydrometeorological support and environmental monitoring in the Arctic zone - Federal Innovation Platform 'Hydromet-Arctic'"	*Funded by*: Erasmus+ programme of the European Union	*Project type*: education, capacity development
	Keywords: Arctic zone; Human resources development	
Project 3: **"**Provision of specialised hydrometeorological information to ensure navigation in the Barents and White Seas and the area of the Prirazlomnaya OIRFP"	*Funded by*: Gazprom-Neft	*Project type*: building relations with external stakeholders
	Keywords: Arctic zone development	
Project 4: "Climate change and environmental protection in the Arctic -	*Funded by*: Dialogue Trianon	*Project type*: education, international cooperation

perception, education and environmental transformation"	*Keywords*: Environmental protection in Arctic

Project 5: "Transarctic-2019"	*Funded by*: Government of Russia	*Project type*: research, education
	Keywords: Environmental research	

Project 6: "Business Index North"	*Funded by*: Ministry of Foreign Affairs, Norway	*Project type*: research, education, building relations with external stakeholders
	Keywords: Sustainability in the Arctic; Business opportunities	

Project 7: "Strengthening the capacity of MSP stakeholders and decision makers (Capacity4MSP)"	*Funded by*: Interreg, European Union	*Project type*: building relations with external stakeholders, research
	Keywords: MSP; Baltic region; Capacity building	

CURRENT AND RECENT PhD THESES

- Ekaterina Bulavina "Snow cover toxicity as an indicator of the ecological status of urban areas" (2018 – ongoing)
- Ilya Pavlov "The influence of climatic parameters of the Vologda Oblast on the transport of pollutants in the atmosphere and the deposition of pollutants in urban areas" (2018 – ongoing)
- Rahmatullozoda Akobirdzhon "Hydrochemical regime of rivers of South-Western Tajikistan" (2017 – 2020)
- Sherali Murtazoyev "Geoecological analysis of air pollution factors in the city of Dushanbe" (2018 – 2021)

RESEARCH AMBITIONS IN RELATION TO SUNRAISE

1.	Implementation of research activities and provision of consulting services in the field of satellite oceanology, hydrometeorology, environmental management, and environmental safety for the Arctic zone
2.	Improvement of the system for training specialists and outreach
3.	Setting up the Centre of Arctic and Climate Research at the institution
4.	Development of a Microplastic Lab and an Arctic Lab in the institution

ENABLERS AND BARRIERS ENCOUNTERED FOR RESEARCH DEVELOPMENT

Enablers	Barriers
➢ Highly experienced professionals ➢ Track record in research ➢ Good connections to alumni ➢ Growing interest in professional education ➢ Changes in national legislation ➢ Implementation of state programmes in the profile areas of the institution ➢ Uniqueness of the training offered ➢ Activation of participation in scientific and educational projects ➢ Development of scientific and educational centres	➢ Low salaries of teaching and support personnel ➢ Staff leakage ➢ Increased average age of teachers ➢ Increased pedagogical load of academic staff ➢ Outdated development plan of the institution ➢ Unforeseen risks, such as a pandemic

NATIONAL RESEARCH/ POLICY SUPPORTING RESEARCH DEVELOPMENT

1.	Strategy for developing Russia's Arctic zone and ensuring national security up to 2035

CAPABILITY IMPROVEMENT TARGETED TO FULFIL THE ASPIRED RESEARCH GOALS

Improvements are desired in:

- Multimedia equipment
- Training for academic or technical staff in language skills
- Integration into the world-leading research
- Marketing policy
- Maintenance of educational buildings and dormitories

ENABLERS AND BARRIERS ENCOUNTERED FOR RESEARCH TRAINING

Enablers	Barriers

-	➢ High competition for funds and excellence ➢ Small number of budget-funded places at post-graduate school