ICEBERG: INNOVATIVE COMMUNITY ENGAGEMENT FOR BUILDING EFFECTIVE RESILIENCE AND ARCTIC OCEAN

Description

The ICEBERG project has a two-fold aim: to comprehensively assess sources, types, distributions and impacts of pollution in combination with chronic climate-induced stressors on ecosystems and communities in the European Arctic's land-ocean continuum using a One Health approach, and to develop strategies for enhancing community-led resilience, as well as pollution-control governance. To this end, the project focusses on three (sub)regional case studies: western Svalbard, southern Greenland, and northern Iceland.

ICEBERG investigates known and emerging pollutants, including macro-, micro, nanoplastics, ship emissions, wastewater, persistent organic pollutants (Dioxins, PCBs, PFAS, PAHs, old and new generation pesticides), and terrigenous elements (heavy metals). To assess the effects of pollutant discharges from Arctic ship traffic, freshwater discharge/cryosphere meltwater, wastewater, and land-based atmospheric pollution on the marine food web, the project is using model simulations and complementing these with remote sensing, in-situ observations, and measurements. ICEBERG analyses the sanitary quality of the food chain by characterising chemical contaminants using an exposomics approach, gaining a comprehensive understanding of the synergistic impacts of Climate Change and pollution on human health. It evaluates toxicological impact of micro- and nano-plastics and POPs on human digestive health. The project develops automatic marine litter detection tools combining use of drones, AI and citizen science.

ICEBERG champions multi-stakeholder and gender-based approaches to assess the impacts, risks, and vulnerabilities on Indigenous and local communities and co-create scenarios of change. Scenario modelling is used to co-design local pollution control strategies, which includes both mitigation (reducing pollution) and adaptation (reducing vulnerability to pollution). ICEBERG creates novel governance approaches pollution-control in the Arctic at multiple scales.

Barcelona Supercomputing Center - Centro Nacional de Supercomputación