15th Indian Arctic Expedition (2024-2025)

Batch No.: 4 Duration: from 29th July to 28th August

Group Photo in front of Himadri Station:

Brief Scientific Description of Batch Members' Activities (in 200 words):

Hydrography and plankton samples were collected on board MS Teisten in the Kongsfjorden and Krossfjorden during august 2024. The water samples and plankton samples were collected from various depths in both the fjords using Niskin sampler and plankton net respectively. Considering the knowledge gap, the present research proposal hypothesizes that (i) the sea ice decline and on-going Arctic amplification will significantly impact the fjords' biogeochemical processes and ecosystem function. (ii) Understanding the diversity of plankton and their adaption/shifting would be the contribution of biomass and feedback to climate change. (iii) Understanding the present and future ecosystem function and climate change of the region using satellite and model estimation for long-term observation in the Arctic fjords.

Map of sampling locations (compiled for all the projects):

1. Projects Executed:

Sl. No	Project Title and Brief Description (in approx. 200 words per project)
1	**Title:** Seasonal variability of plankton diversity and biogeochemical cycle in the Arctic Kongsfjorden and Krossfjorden-Svalbard, driven by glacial/sea-ice inputs

	Description (in approx. 200 words): We conducted this study to investigate how ongoing Arctic amplification influences the bio-chemistry and plankton community of the Arctic fjords both Kongsfjorden and Krossfjorden. Considering the knowledge gap, the present research proposal hypothesizes that (i) the sea ice decline and on-going Arctic amplification will significantly impact the fjords' biogeochemical processes and plankton diversity which eventually impact the ecosystem function. (ii) Understanding the present and future ecosystem function and climate change of the region using satellite and model estimation for long-term observation in the Arctic fjords. Hydrography and plankton samples were collected on board MS Teisten in the Kongsfjorden and Krossfjorden during august 2024. The water samples and plankton samples were collected from various depths in both the fjords using Niskin sampler and plankton net respectively. Nutrient samples were collected in the 60ml plastic bottles and samples are stored in the -20^{0}C. In addition to that, DIC/Methane samples were collected in 60 ml glass bottles and samples were preserved in Hgcl2 until further analysis at NCPOR, Goa. 3L of water samples from each depth filtered through GF/F filter paper for pigment analysis. Filters are stored in -20^{0}C until further analysis. Subsequently, phytoplankton samples were collected from each depth until 50m, and added Lugols solution. Zooplankton net was hauled from 50 m to the surface at each location; the catch was preserved in 5% formalin until further analysis at NCPOR, Goa. The preliminary results revealed that the Kongsfjorden was influenced by glacial runoff than the Krossfjorden. Therefore, we anticipate significant changes in hydrological conditions in the Kongsfjorden than the Krossfjorden, thus mostly may affecting the plankton community. Relatively, the zooplankton biomass was higher in the Krossfjorden than in the Kongsfjorden
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2. Participants Details:

Sl. No	Name	Designation, Affiliation, E-mail
1	Dr. V. Venkataramana	Project Scientist, NCPOR, venkat@ncpor.res.in
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3. Other Activities (outreach/ celebration):

4. Photographs of field activities (with short caption):



Fig: Deploying the portable CTD to obtain the vertical profiles of temperature and salinity in the Arctic fjord



Fig: Lowering the plankton net to collect the vertical profile of zooplankton community structure in the Arctic fjord