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BUILDING A MULTI-DISCIPLINARY OBSERVATORY IN THE LOWER YENISEI REGION (IGARKA GEOCRYOLOGY LAB)

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Long-term multi-disciplinary observations of the Arctic environment tend to be organized around a certain spot, a point on the map, where the capacity of the local infrastructure (transport, accommodation, *etc*) meets the needs of the research teams. Further research efforts are organized around this spot and employ to the largest possible extent the environmental possibilities offered by the chosen location.

It may seem that the 'point' approach is too restrictive for the wide spatially-distributed research. However, our experience in building the multi-disciplinary research network is relying on finding ways to lift such restrictions and on extending this 'point' approach by giving our site additional 'research gravity'.

Lower Yenisei Observational Network (LYON) is currently organized around the facilities of the Igarka Geocryology Lab located in the Northern Yenisei region, above the Arctic Circle in Siberia. The purpose of our efforts is to create an integrative research environment in order to facilitate: a) logistic support for the field campaigns where our spot is central for the multitude of observational hot-spots; b) long-term hydrological monitoring, where Igarka Lab can produce lumped data from the largest Arctic River, the Yenisei; c) support of the global-scale projects with involvement in the pan-Arctic networks.

Multi-scale monitoring design is in our view one of the most important features summing to the success of the research efforts. Lower Yenisei observatory is capable of maintaining the long-term comprehensive monitoring (meteo, hydrology, soil properties, ground temperatures, land cover, eddy covariance data) in numerous points situated in representative landscapes (peatlands, mires, mixed forest of different age). Thus many researchers are able to overarch remote sensing data with the 'ground truth' collected by the observatory staff as well as the other research groups working in the field.

From a hydrological viewpoint, Igarka is the closing station for the Yenisei River, the largest river of the Arctic in terms of annual discharge. Here, 'point' refers to the Yenisei River cross-section. Point observations correspond to the bulk response of the huge Arctic watershed to numerous inputs and signals including both natural and man-induced impacts. Temporal dynamics of a variety of water properties and associated fluxes is to be assessed in order to understand the interactions between the watershed processes and the Kara Sea waters, for which the Igarka point is an interface. Successful launch of the EU-funder TOMCAR-Permafrost Project based in Toulouse and Igarka allowed for the evaluation of the total DOC and POC flux of the Yenisei River to the Arctic Ocean. This approach was also downscaled to the smaller watersheds in the vicinity of Igarka. Zonal features of the freshwater cycle are studied extensively by the observatory staff, and these data are also contributing to the global databases (*e.g.* sediment data are supplied to the I.A.G. SEDIBUD Working Group).

Our place on the map makes us a part of the global-scale efforts in monitoring the changing Arctic, including both networking (INTERACT) and observing (GTN-P, CALM) collaborative projects. 'Research gravity' is gained by Igarka observatory (LYON), allowing development of further field-based scientific projects.