THE LENA DELTA AND ITS CATCHMENT AREA –
A HIGHLY SENSITIVE ARCTIC GEO-ECO SYSTEM

The Lena Delta is the largest river delta of the Arctic (about 32,000 km²) It is highly dynamic concerning hydrology, accumulation, periglacial conditions, and biota all of which show distinctive response to catchment-wide environmental change.

The large-scale geomorphic coupling has been attracting scientific attention for more than 100 years. Already from 1882 to 1884 in the frame of the 1st International Polar Year a biennial years scientific Polar station was established at Sagastyr Island in the northern Lena Delta Organised by the Imperial Russian Geographical Society the main objectives of the station were meteorological and magnetic observations as well as observations of natural history, aurora and hydrology. In the scope of Russian-German, -Japanese and -American cooperation various international projects of a broad variety of scientific aspects in arctic research were carried out during the last decade concerning e.g. carbon dynamics, coastal processes, environmental reconstruction, archaeological survey.

Due to the sensitivity of arctic ecosystems to environmental changes and the importance for global climate events, the Lena Delta and its hinterland is proposed to become a multidisciplinary research object of the IPY 2007-8 that continues the 125 years tradition of the 1st IPY 1882-83 in this region. Research activities of various disciplines (e.g. hydrology, pedology, geology, geophysics, geomorphology, palaeontology, geocryology, botany, zoology, microbiology, meteorology, remote sensing) could be help to understand processes and feedbacks in arctic geo-ecosystems. The obtained data could be processed by Geoinformation Systems, which provide ongoing archiving, data manipulation, and moreover, new data insights.

Possible research topics:
- Modern surface processes and their influence on the periglacial ecosystem
- Classification and changes of modern arctic biota
- Hydrology of the Lena Delta and its hinterland and the input of freshwater, organic carbon and inorganic matter to the Arctic Ocean
- Permafrost dynamics, neotectonic and landscape history and change detection
- Tundra landscapes and greenhouse gases
- Microbial life in extreme habitats

A well-developed scientific infrastructure allows numerous field observations and measurement campaigns:
- Dunay Island and Stolb Island (Meteorological and hydrological station); Island Samoylov (Observation station of the Lena Delta Reserve/AWI Potsdam); Lena Nordenskjoeld Station (WWF- Station, Bykovsky Channel); Geophysical Observatory Tiksi (PGO); Station of the Russian Hydrometeorological Survey, Tiksi

Potential Partners
- Germany (AWI, DLR, GSF, Uni-HH, Uni-Leipzig, IFM-Geomar)
- Russia (AARI, PIY, MGU, LDR, ISSP, Admin. of Northern sea route)
- International (Japanese Institute of Low Temperature Science Hokkaido University Sapporo; Geophysical Institute University of Alaska Fairbanks, Technical University Tampere Finland)
- International organisations (IPA, WWF)

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Proposal for the International Polar Year 2007/2008
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Satellite: Terra

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