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Coring of the unfrozen subhydric soils in channels of the Lena River Delta

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The Lana River Delta, the largest arctic delta extends over an area of around 32,000 km^2. It is located in the zone of continuous permafrost with depths up to 800 m. Around 10,000 km^2 of the delta area are occupied by river channels and large closed water bodies. These areas are supposed to be underlain by unfrozen sediments and subhidric soils, so called taliks.

To investigate this neglected but substantial part of the Lena River Delta an expedition is planned to be performed in early summer 2014. This time of the year provides best conditions for drilling. The water bodies are still covered by a >2 m thick ice sheet, temperatures with -30 °C to -10 °C are bearable both for equipment as well as the expedition participants and there is sufficient day light due to the starting polar day. The technical conduction will be as follows: the drilling and coring equipment will be installed on the ice sheet; drilling will be performed through the ice, passing the water column and subsequently penetrating the river channel sediments with the subhydric soils. Drilling and coring will be performed to a depth of at least 30 m.

The overall goal of this scientific drilling expedition is to sample unfrozen cores (as well as frozen - from higher depths) of the unknown part of the Lena River Delta. These cores are likely to provide information about changes in the environment in the catchment area as well as the delta itself. Subsequently, the goal is to deliver first biogeochemical and physicochemical information about the unknown sediments and soils. Information about the depth of the unfrozen talik will be provided, if the underlying frozen permafrost zone will be reached.