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## Variability of the thermal regime of the frozen islands in the Lena floodplain, Yakutia

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In Yakutia, the Lena River is one of the largest fluvial hydrosystems within the periglacial zone with thick and continuous permafrost. The Lena River and its tributaries are characterized by a large inter-annual variability with a thawing of the ice cover, inducing huge ice-jams and a fast rising of the water level, together with an active process of thermal and mechanical erosion. During spring floods, the islands along the Lena River channel are submerged and this induces an additional thermal imprint. Ten islands upstream of the city of Yakutsk have been monitored during two consecutive years (July 2009 to July 2011). We measured the frozen soil thermal regime and water temperatures of these islands on a daily basis using automated waterproof data loggers. Other sensors are used to estimate the height and duration of flooding. We examine the effect of repeated inundations and warm stream water on the thermal regime of frozen islands as well as the effect of the duration of the flood season. Our measurement campaigns revealed that the effect of island submersion at the time of break-up appears to have a relatively moderated impact on the frozen soil thermal profile at depth. The results also show that the Lena floodplain is thermally heterogeneous with islands composed of permafrost and others with only seasonally frozen ground. Our study shows that relatively young (less than 30 years old) islands, composed of fine sand material appear less prone to permafrost formation compared to older islands with ice-rich silty material.