

## **Deglacial-Holocene short-term variability in sea-ice distribution on the Eurasian shelf (Arctic Ocean) - An IP25 biomarker reconstruction.**

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Four well-dated sediment cores from the Eurasian continental shelf, i.e. the Kara Sea (Cores BP99/07 and BP00/07) and Laptev Sea (Cores PS51/154 and PS51/159), were selected for high-resolution reconstruction of past Arctic environmental conditions during the deglacial-Holocene time interval. These marginal seas are strongly affected by the post-glacial sea-level rise of about 120m. The major focus of our study was the reconstruction of the paleo-sea-ice distribution as sea-ice plays a key role within the modern and past climate system. For reconstruction of paleo-sea ice, the sea-ice proxy IP25 in combination with open-water phytoplankton biomarkers was used (for approach see Belt et al., 2007; Müller et al., 2009, 2011). In addition, specific sterols were determined to reconstruct changes in river run-off and biological production.

The post-glacial sea-level rise is especially reflected in prominent decrease in terrigenous biomarkers. Deglacial variations in sea-ice cover sustained for thousand of years, mostly following climatic changes like the Bølling/Allerød (14.7-12.9 ka), Younger Dryas (12.9-11.6 ka) and Holocene warm phase (10-8 ka). Superimposed on a (Late) Holocene cooling trend, short-term fluctuations in sea-ice cover (on centennial scale) are distinctly documented in the distal/off-shore Core BP00/07 from the Kara Sea, less pronounced in the proximal/near-shore Core PS99/07 and in the Laptev Sea cores. Interestingly, this short-term variability in sea-ice cover correlates quite well to changes in Siberian river run-off (e.g., Stein et al. 2004), pointing to a direct linkage between precipitation (atmospheric circulation) and sea-ice formation.

### References

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