The linkage between Arctic sea ice changes and mid-latitude atmospheric circulation – The role of synoptic-planetary wave interactions

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Summary & Outlook

- In general there is a good agreement between ERA-Interim and AFES concerning the planetary wave spectrum and nonlinear spectral fluxes, but AFES underestimates the transient terms
- Changes with respect to sea-ice showed
- Agreement between ERA-Interim and AFES in autumn and early winter, but different responses in February, probably due to time shift in tropo-stratospheric interaction processes
- Future task: Study of full energy budget and cycle changes

References
Crasemann, Berit (2016): Der Einfluss arktischer Prozesse auf mittlere und hohle Schicht-Interaktionen. 129 S., Dissertation, Univ. Potsdam (in German)
The ERA-interim data were obtained from the ECMWF web site (http://data portal.ecmwf.int).
The AFES simulations (Nakamura et al. 2015) were performed on the Earth Simulator at the Japan Agency for Marine-Earth Science and Technology.

Figure captions

- November: less upscale energy flux on planetary and synoptic scales for low ice conditions
- December and January: less upscale energy flux on planetary scales for low ice conditions (due to stationary and transient terms: enhanced upscale energy flux on synoptic scale for low ice conditions (due to interaction and transient terms: large changes for ERA-2009)
- November: more energy accumulated on planetary scales around 7-10
- February: different changes in all terms in ERA-1 and AFES (also in the stratosphere) could be related to time shift in tropo-stratospheric interaction processes, cf. poster Jaiser et al.)

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