June Report: Outlook Based on May Data
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Arctic multiyear ice thickness at the onset of the 2009 melting season

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Discussions among experts of the international 2008 SEARCH Sea Ice Outlook repeatedly stated a lack of ice thickness data as one main gap in our understanding and prediction of Arctic sea ice coverage. In April 2009, a team of the University of Alberta (Canada) and Alfred Wegener Institute for Polar and Marine Research (AWI, Germany) obtained an almost pan-Arctic airborne ice thickness snapshot of some of the key multiyear ice regions of the Arctic Ocean. The wide regional coverage was possible because for the first time ice thickness surveys using electromagnetic sounding could be performed from a fixed-wing aircraft, a Basler BT67/DC3 owned by AWI. A state-of-the-art towed ice thickness sensor (an “EM bird”) was operated on an 80 m long cable below the plane, 20 m above the ice, and was winched under the belly of the plane for take-off and landing. Surveys were performed north of Svalbard, Greenland and Ellesmere Island, and in the Beaufort and Chukchi Seas, and included a visit of the Russian Drifting Station NP-36. Results show prominent thickness gradients in all regions as surveys crossed ice regimes of different age and origin. Individual profiles show marked differences as a result of their variable deformational and thermodynamic history. Data are available for comparison with results from satellite measurements and to validate or initialize numerical models. Comparisons with results from previous, regional surveys are still ongoing. However, preliminary findings indicate that modal ice thicknesses were similar or slightly larger than in recent years. This, together with a slight increase in the overall multiyear-ice coverage, may lead to speculations about a temporary recovery of the Arctic sea ice cover to more normal, though slowly declining conditions, at least for the summer of 2009. However, little information is available about the thickness of the vast first-year ice regions, which may be the most vulnerable to rapid mass loss during the summer. The figure shows mean ice thickness of 20 km segments of all profiles.

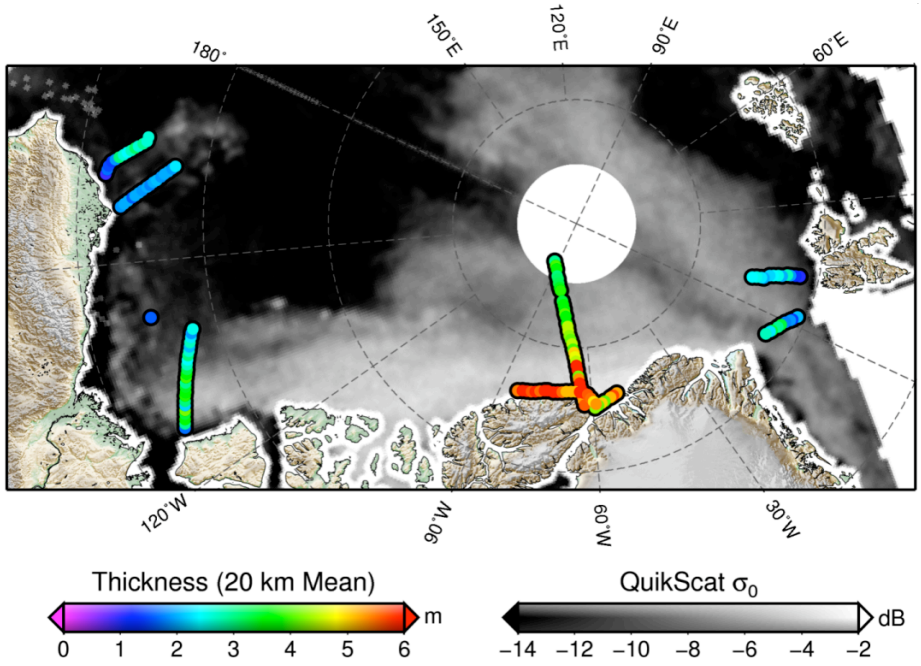

Figure: Mean ice thickness of 20 km segments of all profiles surveyed in April 2009. Backscatter (σ_0) information shows the approximate distribution of first-year (dark) and older ice (brighter).