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MID-WINTER FREEZE EXPERIMENT IN THE ARCTIC OCEAN: NORWEGIAN YOUNG SEA ICE CRUISE (N-ICE2015)

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In mid-January 2015, RV *Lance* will freeze into the ice north of Svalbard, Arctic Ocean at around 83.25°N 30°E, and passively drift with the ice as part of the Norwegian Young sea ICE cruise (N-ICE2015). Judging from historic sea ice drift trajectories, it is likely that RV *Lance* will drift in a SW direction and the ship will probably be freed from the ice in mid spring after about two to three months of drift. Thereafter, RV *Lance* will return to her starting position and start a new drift. Under all circumstances, the ice drift project will end in late June 2015. Throughout the cruise the focus will be on the interaction of the atmosphere-ice-ocean system and the response of the marine ecosystem to the thinner ice regime. The overall goal of the project team is to improve our understanding of the role of the younger ice pack in the Arctic on greenhouse gas fluxes and to ultimately assess whether the Arctic Ocean is a sink or source of greenhouse gases. We plan to conduct long-term synchronous observations of Arctic snow and sea ice biogeochemistry and physics and fluxes of carbon dioxide, methane, nitrous oxide and bromoform. This work targets at filling a crucial gap in our understanding of the role of Arctic sea ice in the climate system. This is done by conducting state of the art observations on Arctic sea ice in the polar night, when observations are basically non-existent. Further we are focusing on the new thinner ice regime, which is even less documented. We aim to understand how the thinner sea ice in the Arctic basin contributes (i) to important greenhouse gas exchange between the atmosphere and ocean and (ii) to aerosol formation, that contribute to the radiative balance of the planet. This work will increase direct collaboration between Japanese and European scientists in the Arctic, and combines complimentary expertise and experience from several international partners to carry out the interdisciplinary work proposed.