

厳冬期北極海における漂流航海観測計画 (N-ICE2015)

野村大樹^{1,2}, マッツ・グランシュコグ³, アグネタ・フランソン³, メリッサ・キアリチ⁴,
フィリップ・アシミー³, ブルーノ・ディレリ⁵, ガーハート・ディエックマン⁶, ハラルド・スティーン³

¹ 北海道大学低温科学研究所、² 日本学術振興会、³ ノルウェー極地研究所、⁴ ノルウェー海洋研究所、
⁵ リエージュ大学、⁶ アルフレッドウェゲナー極地海洋研究所

Mid-winter freeze experiment in the Arctic Ocean: Norwegian Young sea ICE cruise (N-ICE2015)

Daiki Nomura^{1,2}, Mats A. Granskog³, Agneta Fransson³, Melissa Chierici⁴,
Philipp Assmy³, Bruno Delille⁵, Gerhard S. Dieckmann⁶, Harald Steen³

¹ *Institute of Low Temperature Science, Hokkaido University, Sapporo, Japan.*

² *Japan Society for the Promotion of Science, Tokyo, Japan.*

³ *Norwegian Polar Institute, Tromsø, Norway.*

⁴ *Institute of Marine Research and the Fram Centre, Tromsø, Norway.*

⁵ *Université de Liège, Liège, Belgium.*

⁶ *Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany.*

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 months drift. After this, 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 our project team is to improve our understanding the role of the younger ice pack in the Arctic on greenhouse gas fluxes, to ultimately understand whether the Arctic Ocean is a sink or source. We plan to conduct; 1. Long-term synchronous observations of Arctic snow and sea ice chemistry and physics and greenhouse gas fluxes, 2. Quantify the fluxes of carbon dioxide (CO₂) from Arctic sea ice in winter, 3. Bromoform cycles within snow and sea ice systems and flux to the atmosphere in winter. This work targets at filling a key knowledge 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 target the new thinner ice regime, which is even less well known. We aim to understand how the thinner sea ice in the Arctic basin contributes to important greenhouse gas exchange between the atmosphere and ocean (carbon dioxide, CO₂ and nitrous oxide, N₂O) and contributes to aerosol formation (bromoform, CHBr₃), all climatically important compounds, contributing to the greenhouse effect and thus the radiative balance of the planet. This work will increase direct collaboration between Japanese and Norwegian scientists in the Arctic, and combines complimentary expertise and experience from several international partners to carry out the interdisciplinary work proposed.

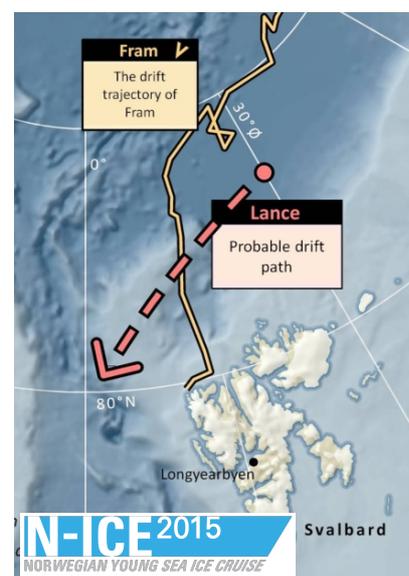


Figure 1. Drift path. The RV *Lance* will freeze into the ice north of Nordaustlandet, Svalbard, and passively drift with the ice, likely in a SW direction. Map: Norwegian Polar Institute. From <http://www.npolar.no/en/projects/details?pid=b98886ce-590a-48a8-b113-4b96e98c65c8>