

Foreword

The rapid decline of Arctic sea ice is one of the most prominent climate changes of our time. This change, on one side, generates considerable impact on the local and global environment, affecting ecosystems and human living conditions. On the other side, the decrease of Arctic sea ice provides new opportunities for fishing, shipping, and natural resource exploration in the Arctic. How to mitigate the negative effects while at the same time effectively utilize the emerging opportunities is an important issue that the climate research community can address to benefit our whole society.

Due to the limited access to the polar regions, it remains a great challenge to make *in-situ* observation. This hinders deeper understanding and comprehensive modeling of polar climate changes. In the recent decade, with the marked development and application of satellite remote sensing technologies, autonomous platforms, and considerable effort of *in-situ* observations such as the Multidisciplinary drifting Observatory for the Study of Arctic Climate (MOSAiC), observations of Arctic sea ice have been significantly improved. As a result, there have been some promising progress in the understanding and prediction of the polar climate system, and in particular sea ice. However, there is still a long way to go in order to satisfactorily understand and predict polar climate processes on longer terms.

With such growing needs and ongoing difficulties, it is highly desirable to promote international collaboration for exchanging knowledge and sharing data from polar region studies. “The first China-Norway Bilateral Workshop on Polar Observations and Modeling” is such an initiative, held in Tromsø, Norway in June 2018. The workshop targeted enhancing our knowledge of polar climate as well as using existing knowledge for better operational services. The six papers published in this Special Issue are part of that effort, with the main focus on Arctic sea ice. The papers stem from the presentations during the workshop along with some other submissions that are closely related to the workshop. The topics cover management of remotely sensed sea ice data, operational sea ice forecasting, laboratory study of water drag on ridge keels, and interaction of atmosphere and sea ice in the Arctic. We believe the outcome of the workshop and the publication of this Special Issue will be a helpful contribution for promoting China-Norway collaboration on polar climate studies and operational services.

Finally, we would like to thank all the workshop participants, and all the authors and reviewers, for their contributions to the workshop and to this Special Issue.

Guest Editors:

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