



Toward valuable weather and sea ice services for the marine Arctic: exploring metSERVICE perspectives on the user-producer interface

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The Arctic is warming twice as fast as the global average. This has severe consequences for the natural environment. At the same time, a transforming environment – in particular retreating sea ice - allows for an increase in maritime activities in areas such as around Svalbard, with a rapid growth in cruise tourism and a northward move of fisheries. These activities take place in a dynamic environment where weather and ice conditions can change rapidly, and where information about conditions might be difficult to access or lack necessary qualities needed to make decisions across temporal scale-levels. Hence, there is an increased need for valuable weather and sea-ice services. Recognition is growing that valuable weather, water, ice and climate (WWIC) services for marine, Arctic environments can only be produced in close dialogue with its actual users. This denotes an acknowledgement that knowing how users incorporate WWIC information in their activities should be considered throughout the service value chain. Notions like co-production and user engagement are current terms to grapple with user needs, but little is known about how such concepts are operationalized in the practical context of national meteorological services' tasks and responsibilities. Based on a series of in-depth, qualitative interviews with a diversity of personnel from the Norwegian Meteorological Institute, we first describe shifting dynamics of interactions between WWIC information providers and maritime stakeholders operating in Arctic environments, along the following three challenges: 1). the importance of knowing how information is used, 2). the increasing automation of meteorological practices and the growing need for user observations, and 3). the need for bridging research-to-operations gaps. Second, we embed these findings in a discussion on how user-producer interfaces are shaped and transforming through an ongoing negotiation of expertise, along which roles and responsibilities attributed to users and producers result in particular constellations of co-producing WWIC information services. Third, we provide various practical examples of how public meteorological institutes can and do face these challenges.