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# Acoustic Characteristics of the Fram Strait

The Fram Strait is of great importance in ocean climate monitoring, as it is the only deep-water connection between the Arctic and Atlantic Oceans. An extensive array of oceanographic moorings has been operated in Fram Strait since 1996 to monitor the transports through the Strait. The small spatial scales of the flow are poorly resolved, and lead to large uncertainties. In the 2005–2010 underwater acoustic methods were introduced to improve the monitoring of Fram Strait as part of the DAMOCLES project. The 2008–2009 single acoustic path experiment was followed by the implementation of a multipurpose acoustic network (2010-2012) with a triangle of acoustic transceivers for ocean acoustic tomography, ambient noise, and glider navigation (ACOBAR project). The measurements were continued during 2014–2016 in UNDER-ICE, with eight acoustic paths crisscrossing the Fram Strait. The complex ocean environment makes acoustic tomography in Fram Strait demanding. The sound-speed field has a weak sound channel with little geometric dispersion, making it difficult to resolve and identify individual arrivals. The strong oceanographic variability in space and time reduces the coherence of the received signal and the stability of the arrival pattern. Focus will be on capabilities and challenges using acoustic observing methods.

**Primary author:** SAGEN, Hanne (Nansen Environmental and Remote Sensing Center)

**Presenter:** SAGEN, Hanne (Nansen Environmental and Remote Sensing Center)

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