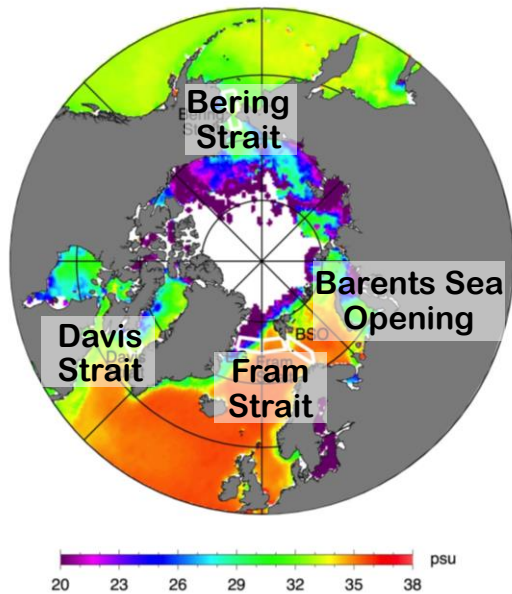
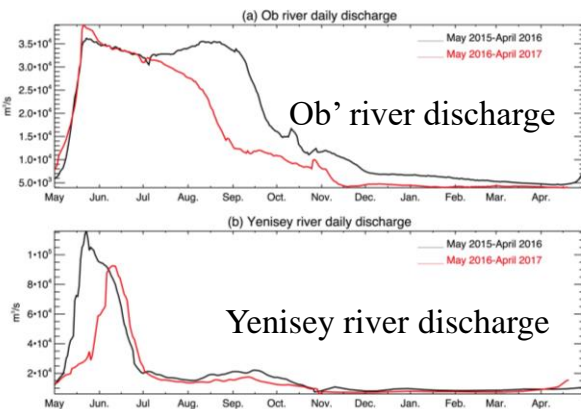


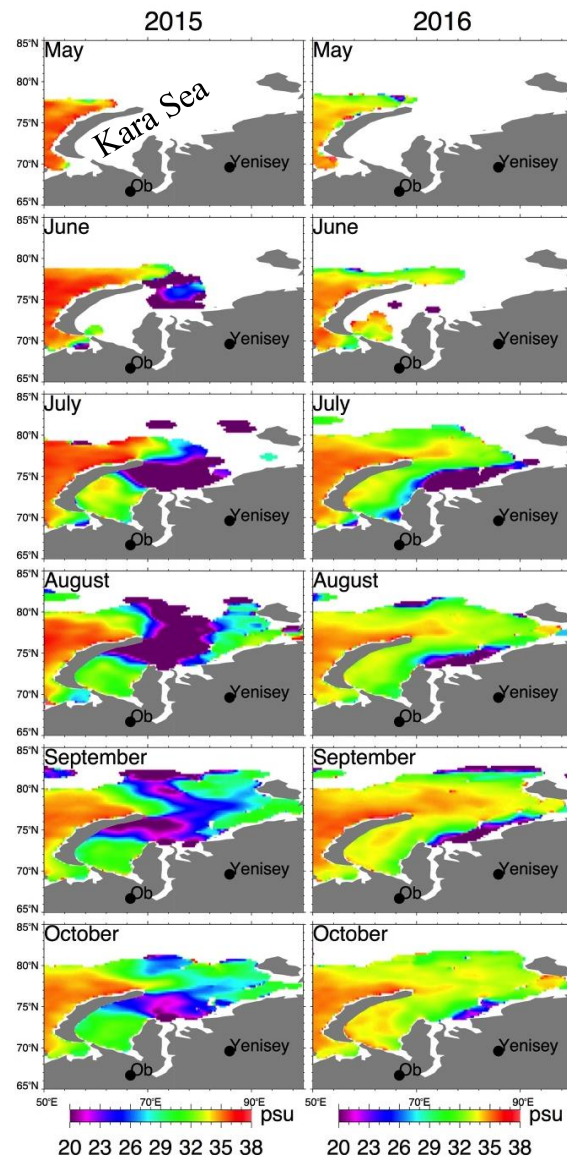
# The potential and challenges of using SMAP SSS to monitor Arctic Ocean freshwater changes (Tang et al.)



Three years mean of SMAP SSS (April 2015 -March 2018).



Daily discharge from Ob' and Yenisey rivers.



SMAP SSS in Kara Sea in ice-free season.

**Problem:** The paucity of in situ Sea Surface Salinity (SSS) data in the Arctic Ocean has been limiting our understanding of Arctic Ocean freshwater changes and the consequences. JPL SMAP algorithm adopts advanced land correction which allows SSS retrieval in ice-free condition much closer to land and ice edge than previously achieved.

**Findings:** In the Kara Sea, the large SSS contrast ( $>> 1$  psu) between 2015 and 2016 observed by SMAP is corroborated by the changes of discharges from the Ob' and Yenisey rivers. This provides a process-oriented validation where no in situ salinity data is currently available. At major Arctic gateways, SMAP SSS captures seasonal and interannual variations with magnitudes larger than the retrieval uncertainty.

**Significance:** This study demonstrates that SMAP SSS provides useful information in monitoring large freshwater signals in the Arctic Ocean. Challenges remain in further improvement of SSS retrieval sensitivity in cold water region and having adequate in situ data for calibration and validation.

Tang, W., S. Yueh, D. Yang, A. Fore, A. Hayashi, T. Lee, S. Fournier, and B. Holt, 2018. The potential and challenges of using SMAP SSS to monitor Arctic Ocean freshwater changes. *Remote Sens.*, doi:10.3390/rs10060869, June 2018.