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## **Total Water Vapour in Polar Regions from Passive Microwave Satellites**

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### **Abstract**

Water vapour plays a key role in the global climate system, and its global continuous knowledge is required for numerical weather prediction and climate models.

Microwave imagers like SSM/I or AMSR-E have routinely provided daily vertically integrated water vapour content (total water vapour, TWV) over open ocean for more than 30 years, but not over the vast areas of the polar sea and land ice. Over those surfaces, a newer method based on data of the microwave humidity sounders AMSU-B and MHS, on the NOAA and METOP satellites respectively, gives the TWV. The first steps towards merging these two complementary datasets for the Arctic will be presented. This will eventually provide an Arctic-wide daily dataset of 50 km resolution with seamless coverage from the high Arctic to mid-latitudes from 2002 until now. With that, an assessment of water vapour distribution and temporal variations is possible. Moreover, results from the AMSU-B method will be compared with Global Positioning System (GPS) and radiosounding (RS) measurements from the Antarctic coast, where stations are available and their long time series of observations can be used to retrieve TWV.