Contribution ID: **42** Type: **Oral**

Drilling the coldest firn

Thursday 3 October 2019 13:00 (20 minutes)

The coldest firn on the East Antarctic plateau is the best modern analogue of glacial firn to study firnification and pore close off. In the austral field seasons 2012/13 and 2016/17 a total of six 200 m lang shallow cores were drilled in the area between Kohnen Station, Dome Fuji and the former US Plateau Station. The drill sites cover the temperature range between -45℃ and -60℃ (former US Plateau Station)and the accumulation range between 80 and 20 kg/m3. Two sites were supported by plane and three by overland traverse (OIR traverse). The cores were drilled dry. The core quality was generally excellent down to a depth of 120 m depth. Below 130 m depth fractures along the cores were frequent most likely caused by the too long core catchers designed for drilling in firn. A 200 m core was drilled in a week by a team of 4/5 persons. Presented and discussed are our experiences how to drill shallow ice cores in remote sites on the East Antarctica plateau during the short austral field season by plane and overland traverse support, respectively.

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Session Classification: Session 7