

IceCube Polar Science Workshop



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Borehole deformation at the South Pole

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An acoustic televiewer, which collects tilt, azimuth, and high-resolution caliper measurements, was deployed to measure the 3D shape of the 1751m SPICEcore Borehole in December 2019. We will present the results of this data collection including analysis of borehole shape and inclination, evidence of drilling artifacts on the borehole wall, and lessons learned for optimal data collection with the acoustic televiewer.

Our ultimate goal is an improved understanding of ice flow laws to contribute to ice flow models. We assume an initially smooth, circular hole of consistent diameter, and provide preliminary analysis of the effects of impurities, grain size, and crystal fabric on deformation from observed borehole shape. We show how a future second log of the borehole will provide an improved assessment of the effects of ice properties on ice flow.

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