Geophysical Research Abstracts,
Vol. 11, EGU2009-11978, 2009
EGU General Assembly 2009

Dry-wet bedrock interface detection by radio echo sounding measurements

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In this presentation a method to distinguish a wet or dry bedrock-ice interface is proposed. It is based on the analysis of Radio Echo Sounding (RES) measurements, a widely employed method for determining bedrock topography in Antarctica. In particular, the RES system has played an important role in subglacial lake exploration and hydrogeological studies at the bedrock-ice interface. Recently, bedrock characterization has been improved through the analysis of the power of radar echoes. Signal power depends on bedrock reflectivity and its specific physical condition. In this work a linear model describing the loss term (internal ice absorption) is proposed. This model, together with other known quantities, contributes towards an assessment of power variation of bedrock reflectivity in order to determinate wet and dry bedrock interfaces in the Dome C region in Antarctica.