

SHP04

## Evaluating transience of a potential geothermal flux anomaly beneath a tributary ice stream of Thwaites Glacier, West Antarctica

DeSanto, J.<sup>1</sup>, Blankenship, D.<sup>1</sup>, Young, D.<sup>1</sup>, Lavier, L.<sup>1</sup>, Choi, E.<sup>1</sup>

[johndesanto@utexas.edu](mailto:johndesanto@utexas.edu)

*1. The University of Texas Institute for Geophysics, Austin, TX*

The Amundsen Sea Embayment of the West Antarctic ice sheet (WAIS) is currently one of the most rapidly changing sectors of a continental ice sheet. As a marine ice sheet, the WAIS is in a potentially unstable configuration. In addition to known active volcanoes such as Mt. Takahe and Mt. Murphy, subglacial volcanic activity has been identified using ice layer drawdown anomalies. Drawdown anomalies are features identifiable by a characteristic radar signature and represent significant loss of basal ice. We identify several features with the geometry of drawdown anomalies in the Thwaites Glacier along an ice stream tributary near Mt. Takahe. By modeling the flow of ice along the ice stream, we assess the hypothesis that these drawdown anomalies are a coherent feature caused by basal melt that is consistent with subglacial volcanic activity. The melt rate is then used to determine the spatial and temporal variations of geothermal heat flux in the region. We discuss these variations in the context of their geologic, morphologic and glaciologic setting and their implications for local volcanism and its impact on ice flow.

**Keywords:** ice sheet dynamics, Antarctica, airborne geophysics