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## **CROSS-FRONTAL FLUXES IN THE ACC NEAR UDINTSEV FRACTURE ZONE**

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Across the Antarctic Circumpolar Current (ACC), fluxes of heat and momentum and other dynamical quantities establish the heat budget for the whole Southern Ocean, govern the strength of the ACC and its vital inter-ocean exchanges, and arguably govern the main pycnocline structure of the world oceans. Heat that melts glaciers along the Antarctic coast must have first crossed the ACC by a combination of mean and eddy heat transport mechanisms. The Udintsev Fracture Zone, northwest of the Amundsen study region and Pine Island Glacier, is a local “hot spot” of eddy activity in the lee of the ACC crossing the Pacific Antarctic Ridge. It is hypothesized that large southward mean and eddy heat transport occurs in that region. A particular question is how the relatively large eddy heat fluxes that occur along the northern ACC (SAF and PF) continue to cross further southward across the southern ACC (SACCF).

This study will deploy two arrays of Current and Pressure recording Inverted Echo Sounders (CPIES), for a period of 2 years, in order to observe and quantify exchanges of heat and dynamical quantities across the ACC. The methods and results will be described from a CPIES array in Drake Passage. The array locations near the Udintsev Fracture Zone (UFZ) have been selected because the SAF, PF, and SACCF converge closely together as they deflect equatorward where they encounter complex shallower ridges and exhibit strong eddy variability in the lee. Therefore, the UFZ emerges as a likely location for mean and eddy fluxes to conspire to cross the entire ACC enroute southward, ultimately affecting the Antarctic coast. This will be a collaborative study with a team of French and Korean scientists, who have been granted separate funding to deploy tall current meter moorings and conduct CTD surveys in this location. The French and Korean tall moorings will provide measurements of currents and temperature at fixed levels, providing complementary estimates of mean and eddy fluxes.