

Statement of Interest for GEOTRACES GP17-ANT

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We wish to express our interest in measuring noble gases (including helium isotopes) and tritium along the Antarctic leg of US GEOTRACES section GP17-ANT in the Noble Gas Laboratory of the Lamont-Doherty Earth Observatory. GP17-ANT spans the sea ice covered portions of the western Bellinghousen and the Amundsen Seas, including coastal polynyas on the shelf and regions adjacent to the bordering ice shelves.

Our primary scientific objectives for noble gas measurements would be to use the relative saturation states of He, Ne, Ar, Kr, and Xe (in combination with $\delta^{18}\text{O}$) to identify glacial and basal ice shelf meltwater contributions (e.g., Loose and Jenkins, 2014). Noble gas measurements will allow us to quantify the sources of iron and other trace elements coming out from under the melting ice shelves.

We aim to collaborate with other GP17-ANT participants to test the hypothesis that basal ice shelf melting delivers a significant source of dissolved iron to Southern Ocean surface waters. Our research goals directly support GEOTRACES objectives for GP17-ANT to characterize the influence of glacial and subglacial meltwater inputs to Amundsen Sea trace element and isotope distributions.

We are open to coordinating and collaborating with other noble gas groups with similar research interests.