

- a. A description of the nature of the research project being conducted.

GeoSAR Interferometric Synthetic Aperture Radar (IFSAR), owned and operated by Fugro Earthdata, is a commercial remote sensor with high potential for determining the thickness of multiyear arctic ice associated with offshore ice flows. The data will be examined by [NASA JPL, the University of Alaska, and EarthData](#) to further the state of the art in remote sensing for arctic ice applications.

- b. A showing that the communications facilities requested are necessary for the research project involved.

P-band radar is known to penetrate several 10s of meter into glaciers; however, the ability to accurately and simultaneously measure the top and bottom of the arctic ice from a high flying remote standoff sensor has not been established. GeoSAR is uniquely qualified for simultaneously making the necessary top and bottom surface measurements; no other sensor in current operation has this capability.

- c. A showing that existing communications facilities are inadequate.

Current methodologies are: (1) deploy people and equipment onto the ice flow, drill core samples, and drag a ground penetrating radar sled across the ice to measure thickness profiles along the sled tracks; (2) employ a low flying helicopter (or light aircraft) equipped with a down-looking UHF/VHF sounder to generate ice thickness profiles. Both these methods suffer from limited coverage and are severely impacted by weather events. Use of a high flying jet aircraft using IFSAR technologies promises to provide timely, wide area coverage with sufficient ice thickness measurement capability to aid decision making regarding the hazards imposed by ice flows.