Icepod: Imaging of Ice Sheets from Top to Bottom

Robin Bell, Nick Frearson, Chris Zappa, Kirsty Tinto

Lamont-Doherty Earth Observatory of Columbia University

Icepod is a modular airborne imaging system capable of high resolution imaging of the surface morphology, the surface thermal structure, the internal structure and bed topography of ice sheets. Icepod is designed to be flown on the rear-paratrooper door of the New York Air National Guard's ski-equipped LC-130s. In January 2013 the Icepod system was flight certified in a series of test flights in the New York. The system was deployed to Greenland in the April and July 2013 to test the instrumentation suite over ice. The instrumentation suite includes scanning laser, high-resolution visual camera, an infrared thermal swath imaging system, a shallow ice radar and a deep ice radar positioned with GPS and IMU systems in the pod and within the aircraft. The plan is to operate the Icepod both in a piggy back mode and in a dedicated science mode. The Greenland operations demonstrated the viability of the piggyback mode. The Icepod system acquired collect data during flights that include landings on the ice sheet and combat offloads. The Greenland data demonstrated that the Icepod system is uniquely positioned to capture the seasonal melt cycle in Greenland along. Icepod will be commission during a final test deployment to Antarctica in January 2014. The new phase will be to operate the Icepod in piggyback mode in both Greenland and Antarctica measuring change and enhancing our understanding of the ice sheets and polar oceans while fostering the development of new science programs using the Icepod system as the dedicated mode.