



## **The British Antarctic Survey airborne geophysical platform: a tool to explore the polar regions**

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Antarctica is one of the least understood continents on Earth, because 99.6% of its surface is covered by ice up to 4.8 km thick. There is increasing international awareness of the pivotal role that Antarctica plays in the global climate and geodynamic systems. The stability of Antarctic ice sheets in a warming climate is of significant societal relevance because of its repercussions on global sea-level rise. Airborne geophysics is a prime tool to explore ice sheets, image subglacial environments and to study associated geological features. The British Antarctic Survey has recently been at the forefront in developing an enhanced aerogeophysical platform (installed in a Twin Otter), comprising airborne radar, aeromagnetic and aerogravity sensors. The HF radar is an in house system (PASIN) operating at 150 MHz, and capable of surveying ice surface, ice thickness, bedrock configurations, internal ice layering and subglacial lakes. A Scintrex aeromagnetic system uses Cs-137 cesium sensors in fixed-wing configuration, coupled with a fluxgate magnetometer for magnetic compensation. It provides data to image subglacial geology and crustal structure. An L&R gravity meter modified by ZLS allows us to image subglacial topography, sedimentary basins and investigate deep crustal structure. The new platform has successfully explored two key regions of Antarctica as part of major international projects with the US and Italian Antarctic Programmes: the Amundsen Sea Embayment and the Wilkes Subglacial Basin. As part of IPY the platform will be utilised to survey the Dome A/Gamburtsev Subglacial Mountains region in East Antarctica.