



# Polar Research Solutions

Powered by Iridium®





Iridium’s unique network architecture makes it the only commercial communications provider offering true global coverage across 100 percent of the Earth.

This has made Iridium the provider of choice for polar scientific research and environmental monitoring applications.

## Going where no other communications provider can go

Intensive international research programs aim at understanding the changing dynamics of Antarctica's ice sheets, ice shelves, glaciers, sea ice and the continent hidden beneath.

Iridium is uniquely qualified to bridge the scientific and business communities due to its one-of-a-kind service coverage in the Arctic, helping researchers improve their assessments by providing real time data for tracking sea levels, temperatures, water salinity, composition of the atmosphere, and more. In fact, new data is being collected and analyzed on an almost daily basis to help scientists study the climate, weather, geology and wildlife of this unique region.

Iridium's partners have created some of the world's most innovative polar IoT solutions in operation today, all powered by our unique pole-to-pole satellite constellation. Iridium is helping researchers gain a better understanding of our world, but to succeed, scientific equipment needs to be both reliable and rugged.

### Polar Research Solutions



**Autonomous Underwater Vehicles (AUV)** survey and explore the ocean in ways that human submersibles cannot; staying underwater for long periods of time as they map huge expanses of the sea floor. The Woods Hole Oceanographic Institute’s SeaBED AUV ‘Jaguar’ helped produce the world’s first detailed, high-resolution 3-D maps of Antarctic sea ice. It is outfitted with an Iridium Short Burst Data <sup>SM</sup> modem, which transmits telemetry and geolocation data from the depths beyond those considered reasonable for divers (~50m). This data enables a number of marine biological, geological and archaeological applications.



**iSVP**, by MetOcean, is a mini-polar weather station that is air-deployable, buoyant, ruggedized, expendable, and bi-directional. Ideal for remote and harsh environments, it was developed to assist meteorological and oceanographic scientific communities and transmits all of its sensor data crucial for weather forecasting over the Iridium satellite network. Designed to survive multi-year ice exposure, its standard configuration includes barometric pressure, sea surface temperature, and air temperature sensors.



**I-PAWS**, or the Iridium Polar Automated Weather Station, takes measurements of air, ice and ocean temperatures, along with snow depth and ice thickness. It uses the Iridium network to send aggregated data from a variety of sensors, including acoustic snow depth sounders, air temperature probes, and acoustic ice sensors located below the arctic ice.



**Ice Mass Balance Buoys**, installed by the U.S. Army Corps of Engineers, measure the Arctic sea ice cover. Designed for multi-year service, the Seasonal Ice Mass Balance Buoy (SIMB) program was developed in response to the recent dramatic shift to a younger, thinner ice cover. Data is collected and transmitted back through the Iridium network to provide knowledge needed for insight on fundamental sea ice thermodynamic processes to help researchers understanding complex atmospheric-ice-ocean interaction.



**Wave Measurement Buoys**, installed by the Office of Naval Research’s Sea State mission, measure wave movements in the western Arctic Ocean. Four types of buoys were released and monitored over 1-3 days: SWIFT (by APL-UW), Wave Buoys (by Polar Scientific, Ltd), Wave-Ice buoys (by NIWA), and Waverider G4 (by Datawell) to produce valuable vscientific measurements to increase fundamental knowledge and provide technology options for future naval capabilities and systems.



**Autonomous O-Zone Buoys** are stationed on the arctic sea ice to measure ozone levels, bromine monoxide radicals, CO2, and other parameters, for up to a year without human intervention. The O-Buoys relay data back to land every hour via satellite. Having access to real-time data is vital for chemical and organic research and can only be achieved using the Iridium satellite network.



**Polar Ocean Profiling System (POPS)**, by MetOcean, is an extremely rugged ice platform, which logs and transmits meteorological and oceanographic data. The hull is constructed of aluminum with an ionomer foam collar for floatation. The design is compact and lightweight to allow for easy deployment. Data is transmitted in real time over the Iridium network, providing critical information from regions where no other communications path is as reliable as Iridium.



**Ocean Profiler Buoys** are deployed by the North Pole Environmental Observatory (NPEO) to monitor environmental changes at camp Borneo in the upper Arctic Ocean. The buoys transmit throughout the harsh winter months and provide researchers with valuable real-time temperature and salinity data using the Iridium satellite constellation.

Reliable connectivity for researching the most remote regions on earth. Powered by Iridium®

▲ Constellation architecture of 66 satellites

▲ 100% pole-to-pole coverage

▲ Seasonal and multi-year deployments

▲ Reliable, real-time data

▲ IoT, SMS and voice communications

▲ Provider of choice for polar research initiatives



**Providing innovative satellite communications for  
the scientific community.**  
VERSATILE. RELIABLE. MOBILE. PROVEN.

**Only one communications company connects the entire globe**

Iridium commands the world's furthest reaching network, making it the only truly global communications company with solutions that span from pole-to-pole. Iridium voice and data products provide superior communications solutions that allow global companies, government agencies and individuals to stay connected everywhere. With a unique, global ecosystem of partners, Iridium continues to create new, high value capabilities that are leading the world into a new era of communication.



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