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Real-time GPS monitoring of Brunt Ice shelf, Antarctica

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This talk will present the methods and equipment used by the British Antarctic Survey to provide real-time monitoring of the growth and eventual calving of the Brunt Ice Shelf. The Brunt is nearing a period in its growth cycle where a calving event is expected. The Halley V Reseach station, which is built upon it, requires an emergency warning system to alert personnel when such an event occurs.

The warning system consists of six permanent Leica 1200 GPS sites with solar and wind power systems and radio modems, operated on a fixed reporting schedule to transmit an hour of raw GPS data back to the Halley station every day. In the event of a major position change resulting from a calving event, the reporting system can be adapted remotely to provide uninterrupted monitoring.

We will discuss the power and communications equipment and algorithms used to provide this warning system. In particular, we will present methods by which remote power consumption might be minimized, while maintaining flexibility in the delivery and accuracy of the provided GPS data. We will also describe some of the environmental challenges inherent in the operations of our equipment.