



**British  
Antarctic Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL

## **Background Information**

Ice shelves are the floating extension of the Antarctic Ice Sheet. They therefore provide an intimate link between a vast supply of freshwater and the global ocean. Our goal is to understand the way in which the interaction between the ice shelves and the ocean is likely to depend on climatic conditions.

For over a decade now a small group of physical oceanographers and glaciologists have been studying processes beneath the largest ice shelf – the Filchner-Ronne Ice Shelf, which has an area about that of France, and floats in the southern Weddell Sea. We have used several different techniques, including drilling holes through the ice and deploying instruments in the underlying water column, measuring basal melt rates using a variety of glaciological tools, and applying sophisticated numerical models to improve our interpretation of the data so obtained.

We now plan to use Autosub, the autonomous underwater vehicle developed by NERC, to gain access to the sub-ice shelf cavity. The datasets will include acoustical imagery of the ice shelf base, CTD and ADCP data. Colleagues from other institutes will be using the vehicle to undertake water sampling and sea floor photography, and also to study the sea ice north of the ice shelf.

This is a great opportunity to make some major progress in our understanding of the interaction between ice sheet and ocean using a unique instrument platform, together with concurrently-collected data from sub-ice shelf moored instruments.

**ANTARCTICA      Wider perspectives.      Bigger challenges.**