



## **RESOURCE**

### **Radio Sciences Research on AntarCtic AtmosphEre**

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We report the establishment of a Programme Planning Group for developing a SCAR (Scientific Committee on Antarctic Research) Scientific Research Programme (SRP) entitled “Radio Sciences Research on AntarCtic AtmosphEre” (RESOURCE). The proposed SRP aims to gather the communities that investigate the Arctic and Antarctic atmosphere, using radio probes into a shared initiative.

The scope of the SRP is to improve the current understanding of the polar atmosphere by sharing the expertise and the experience achieved by several scientific teams in the world, thus facilitating the advancement in the field and avoiding any duplication of activities already in action. SCAR is the best platform to create the necessary environment to assess the current understanding and to address the efforts required to fill the gaps. The combination of radio techniques enabled by ground and satellite-based sensors have proved to be very effective when probing the lower, middle and upper atmosphere. In parallel, several scientific communities using radio techniques spent significant efforts to remove “atmospheric noise” to extract the desired information from their measurements (as in the case of geodesy). However, these communities do not sufficiently interact to share resources. The RESOURCE SRP aims to take advantage of the experience of the SCAR Expert Group GRAPE (GNSS Research and Application for Polar Environment).

The proposed SCAR scientific programme RESOURCE will build upon this important legacy by enhancing interactions between the scientists who measure and utilise the entire radio spectrum, either as an auxiliary or principal observation, to study the atmosphere, the ionosphere, the ocean, the solid earth and outer space as well as ancillary measurements such as from magnetometers which provide supporting data on the solar-terrestrial relationship. Moving from the radio probing of the atmosphere, the proposed SRP aims to build on the ICESTAR (past SCAR SRP) heritage to ensure a continuation of SRPs dedicated to the study of the atmosphere, the upper atmosphere and the solar-terrestrial relationship.

Additionally, RESOURCE is designed to support the SERCE SRP, as a continuation of the experience matured within the SCAR Expert Groups GRAPE and AAA to facilitate the interaction between researchers in the fields of Astronomy, Astrophysics, Atmosphere and Ionosphere. Thanks to the ongoing RESOURCE initiative, a core group of about 40 scientists from all over the world is submitting for publication a survey to highlight the importance of conducting integrated and multi-disciplinary research to enhance the current capability of investigating the atmospheric dynamics in polar regions from the troposphere up to the plasmasphere.