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RESOURCE: an International Activity Addressed to Space Weather Monitoring at High Latitudes.

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An increasing demand for a better modelling and understanding of the parameters of the lower and upper atmosphere is required by the scientific community and the general public that use electromagnetic wave signals reflecting on or passing through this system (e.g. GNSS, INSAR, satellite operators). While the users of radio devices often consider the atmospheric contribution to their radio measurements to be a source of error that needs to be corrected, deleted, or mitigated, atmospheric scientists who rely on radio techniques have a common interest: to isolate the atmospheric contribution and use it in the study of the near-earth space environment.

Currently, several instruments working on radio frequencies are extensively used to probe the atmosphere. These instruments include VLF, VHF, UHF, and HF radars, GNSS receivers, radio beacons, and microwave humidity sounders on satellites. Used independently and in combination, these devices have contributed significantly to the advancement of the knowledge of the atmosphere physics. However, several questions remain open and need to be addressed with a synergistic approach requiring the involvement of various research groups in the field. This is particularly the case in Polar Regions where the data/instrumentation are less present while the mechanisms are more complexes compare to lower latitudes.

This paper will present the new international initiative called RESOURCE (Radio Sciences Research on AntarctiC AtmospherE) formed within the Scientific Committee of Antarctic Research (SCAR) Expert Group GRAPE (GNSS Research and Application for Polar Environment). RESOURCE is a proposed Scientific Research Program (SRP) supported by 14 countries, aiming at make the bridge between the radio and atmospheric scientists. We will focus on the activities done within the GRAPE EG since 2012 on the neutral and ionized layers in Polar Regions and will show the expected collaborations for this new proposed SRP.