



First steps of the AGATA Scientific Research Programme

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AGATA (Antarctic Geospace and Atmosphere ReseArch) is a Scientific Research Programme (SRP) of the Scientific Committee on Antarctic Research (SCAR). AGATA SRP has been approved as Scientific Research Programme by the SCAR Delegates Meeting in August 2024 with the start of activities in January 2025.

AGATA SRP addresses the following outstanding questions:

- How are different atmospheric layers coupled in the polar regions?
- How does the high latitude upper polar atmosphere respond to increased geomagnetic activity, including energy transfer from space?
- How does the whole polar atmosphere impact short- and long-term climate variations?

The AGATA SRP takes actions according to scientific and technological that focus on revealing the role of physical processes in the polar atmosphere in:

- coupling between different atmospheric layers (i.e., different “spheres”, such as troposphere, stratosphere, ionosphere);
- coupling between the neutral and ionized atmospheric components within the respective atmospheric layers;
- coupling of the Antarctic atmosphere to geospace and processes in the magnetosphere.

To understand the global context, the AGATA SRP will be set in the interhemispheric perspective: it will consider the Antarctic and Arctic atmosphere to understand the differences and similarities between the polar regions and their role for the global atmospheric processes (to learn more: <https://scar.org/science/research-programmes/agata>).

At the time of writing AGATA is organizing its kickoff meeting that will be held from 26-28 March 2025 fully online to optimize and maximize the participation.

The AGATA core members are working on its bylaws to set up its governance and its internal structuring that will be matter of the discussion during the kickoff meeting. The structuring foreseen interdisciplinary working groups to facilitate the collaboration between different scientific communities and the interaction with the stakeholders (from policy and decision makers to end users of space weather vulnerable technologies).

The AGATA core members are also working on the promotion of the programme and on the organization of capacity building initiatives to train the next generation of polar scientists. In this framework AGATA, that will have a duration of 8 years (from 2025 to 2032), envisages to have a leading role in the extraordinary activities that will be carried out in preparation and during the next International Polar Year (2032-2033; <https://ipy5.info/>).

This paper will provide an overview of the AGATA first initiatives and opportunities of collaboration and training at international level.

Useful references:

Alfonsi, L., Bergeot, N., Cilliers, P. . et al. Review of Environmental Monitoring by Means of Radio Waves in the Polar Regions: From Atmosphere to Geospace. *Surv Geophys* **43**, 1609–1698 (2022). <https://doi.org/10.1007/s10712-022-09734-z>

SCAR XXXVII Paper 26: Proposed Programme Planning Group - Antarctic Geospace and ATmosphere reseArch (AGATA) (<https://scar.org/~documents/scar-meeting-papers/xxxvii-scar-delegates-2022-go-India-1/37-p26?layout=default>)