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EISCAT 3D: A European three-dimensional imaging radar for atmospheric and geospace research

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(This talk is given on behalf of the EISCAT Scientific Association and the EISCAT_3D Design Team)

EISCAT_3D is a new kind of three-dimensional imaging radar for high-latitude atmosphere and geospace studies, located in northern Scandinavia. The facility will consist of multiple large phased-array antenna transmitters/receivers in three countries, comprising some 100 000 individual antenna elements. The new radars will measure from the upper stratosphere to the magnetosphere and beyond, contributing to the basic, environmental and applied science that underpins the use of space by contemporary society. EISCAT_3D's capabilities go beyond anything currently available to the international research community, and will form a significant enhancement to the European Research area.

Located in the auroral zone, at the edge of the northern polar vortex, EISCAT_3D will provide long-term continuous data for scientists studying global change, measuring the effects of man-made and natural variability on the middle and upper atmosphere. Its observations will underpin space weather prediction and monitoring, essential for operation and improved service of European space assets. In addition, EISCAT_3D will facilitate studies of solar system influences, such as solar wind, meteors, dust, energetic particles and cosmic rays. This will be done in collaboration with other research infrastructures, including the upper atmosphere programme of the SIOS proposal, focusing on observations made from Svalbard.

The importance of EISCAT_3D has been recognised by its place on the ESFRI roadmap of future European Research facilities. The project has already gone through a four-year design study, funded by the European Union under the 6th Framework, and has recently applied for Preparatory Phase funding under the EU 7th Framework. The Preparatory Phase activities will facilitate the resolution of the remaining legal, financial and technical questions which must be addressed before EISCAT_3D can be constructed. They will also provide a framework binding together a number of related national proposals, totalling over 13 M€ which are still under review. Integrated together, the EU and national contributions cover the full complement of activities needed to prepare for construction of a major European and global facility.

In this presentation, we will report on the current status of the EISCAT_3D development, and review the plans for the next phase of the project.