

PEM032-03

Room:103

Time:May 26 14:45-15:00

EISCAT_3D (Next-Generation IS Radar Project for Atmospheric and Geospace Science): Current status and roadmap

Hiroshi Miyaoka^{1*}, Satonori Nozawa², Yasunobu Ogawa¹, Shin-ichiro Oyama², Ryoichi Fujii², Natsuo Sato¹

¹National Institute of Polar Research, ²STE Laboratory, Nagoya University

The EISCAT Scientific Association (current member countries: China, Finland, Germany, Japan, Norway, Sweden and United Kingdom) is actively preparing for the construction of its next-generation radar, which will provide comprehensive 3D monitoring of the lower/middle/upper atmosphere and ionosphere. The EISCAT_3D radar will consist of multiple phased arrays, using the latest signal processing and beam-forming techniques to achieve ten times higher temporal and spatial resolution than the present radars. EISCAT_3D will be a volumetric radar, capable of imaging an extended spatial area with simultaneous full-vector drift velocities, designed for continuous operation modes, short-baseline interferometric capabilities for sub-beamwidth imaging, real-time data access and extensive data archiving facilities. The highly modular and expandable design envisages a system with at least one circular active array comprising 16,000-32,000 antennas. This central site will also include outlying antennas for imaging applications. At least four smaller remote sites, comprising receiving arrays of some 8,000 antennas will be located between 50 and 150km from the central site.

A four-year EISCAT_3D Design Study started since May 2005 supported by EU to develop an outline design for a multi-static, phased-array radar system. In 2008, the European Strategy Forum on Research Infrastructures (ESFRI) selected EISCAT_3D for inclusion in its roadmap of large-scale European environment research infrastructures for the next 20-30 years. In 2010, the EISCAT_3D Preparatory Phase proposal has successfully passed the EU evaluation process, and a four-year program is due to start from this October. In this paper, we present the outline and the current situation of the EISCAT-3D project including the science plans in order to call for interests and to promote consortium among the domestic user communities.

Keywords: EISCAT, ionosphere, themosphere, next-generation