EISCAT_3D: Current Status on Japan's Contribution

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The European Incoherent Scatter(EISCAT) Scientific Association with associate members from Sweden, Norway, Finland, UK, China and Japan, is planning to construct the next generation near-earth space and upper atmosphere radar system in northern Feno-Scandinavia, called EISCAT_3D. The technical design work is being almost finalized and the project has now entered the new phase of production engineering. The Swedish Research Council, the Academy of Finland, the Research Council of Norway and the European Commission have secured funds for the development, construction and operation of EISCAT_3D, which covers approximately more than 70% of the total costs of establishing the first stage of the system. EISCAT 3D is the major upgrade of the existing EISCAT mainlamd radars, with a multi-static phased array system composed of one central active (transmit-receive) site and 4 receive-only sites to provide us 50-100 times higher temporal resolution than the present system. The construction of EISCAT 3D is planned to implement by 4-staged approach, starting from the core site with half transmitting power about 5MW at Skibotn (Norway) and 2 receiving sites at Kaiseniemi (Sweden) and Karesuvanto (Finland) at the 1st stage. The Japanese EISCAT group has been pursuing the opportunity to contribute in-kind to the construction of EISCAT_3D by supplying power amplifiers for the radar transmitters as a joint venture with the EISCAT_3D Project Office in cooperation with Japanese industry. The EISCAT_3D program in Japan has been successfully granted as as one of 27 high-priority programs of Master Plan 2014 and 10 new Roadmap 2014 programs, as a part of ’ Study of Coupling Processes in the Solar-Terrestrial System’ (PI: Prof. Tsuda, Kyoto Univ.). This program is recently selected as one of 28 high-priority programs of the Master Plan 2017 update as well. Supported by these high evaluations, National Institute of Polar Research has been submitting a funding proposal to the Ministry (MEXT) for EISCAT_3D, collaborating with the Institute for Space-Earth Environmental Research, Nagoya University. Since last year, manufacturing of high energy-efficient transmitter power amplifiers has started for the engineering verification test at the EISCAT Tromso site using the development study budget from MEXT. In this paper, we will overview the current status and outlook on Japan’ s national contribution to the EISCAT_3D project.

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