



Poster Design: FFAB:UK and See3D
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EISCAT_3D

The next generation European incoherent scatter radar system

Spectacular future developments in Northern Europe

A radically new Atmospheric and Space Environment facility has been included in the first major revision of the ESFRI RoadMap announced at the European Committee on Research Infrastructures (ECRI), held in Versailles this week as France assumed the Presidency of the European Union.

The new Research Infrastructure (working title 'EISCAT_3D: The next generation European incoherent scatter radar system') is one of 9 new Infrastructures added to the 35 in the initial RoadMap. All these are major facilities seen to be of strategic importance to the future of European science and technology.

The EISCAT_3D concept involves a number of huge phased-array radar transmitters and receivers, each covering areas at least 300m square, distributed across northern Scandinavia, and possibly beyond. The most probably arrangement will include three ultra-high-power transmitting/receiving arrays, one in Finland, Sweden, and Norway, and at least three other even larger receiving arrays between and around the active sites. Typical distances between the sites will be 50 to 150km and individual sites will contain some tens of thousands of identical individual transmitters receivers and antennas. The artist impression shows what one such site might look like, together with a large semi-autonomous mobile construction and maintenance unit which will both build and maintain the arrays.

The EISCAT_3D proposal was submitted by the Swedish ESFRI delegation but builds on an ongoing 6th Framework supported design study also involving the United Kingdom and Norway directly, and indirectly all the other members (Finland, Germany, China, and Japan) of the EISCAT Scientific Association.

EISCAT_3D turns our best current 2-dimensional view into a unique and unprecedented 3-dimensional window into GeoSpace – essential to understanding crucial and societally relevant problems in the GeoSpace environment, in space weather, and in the global energy budget and related climate change as well as fundamental plasma physics, relevant technical issues in space weather effect mitigation, space environment, and trans-ionospheric signal effect forecasting and correction.

EISCAT_3D is a major World-class strategic resource located in the important northern periphery of the European Union and close to the crucially important Barents Sea and sub polar icecap areas.

EISCAT_3D will give unprecedented temporal and spatial information about the plasma and space environment and will give accurate, large-scale, three dimensional measurements of the ionosphere and atmosphere for the first time. It provides Earth-resources support, both through trans-ionospheric corrections (remote sensing, e.g. SAR, GPS) and ELF generation and forms a

component of the global approach to space weather, climate change, and ionospheric modeling and forecasting.

EISCAT_3D drives developments in radar technology and signal processing and supports European industry.

EISCAT_3D builds on the success of the present EISCAT facilities, which have driven forward both pure and applied research areas, and represents a fundamental step-function change in the power, scope, and utility of the technologically advanced radar facilities built, owned, and operated by the EISCAT (European Incoherent Scatter) Scientific Association on behalf of its Associate members in Finland, Sweden, Norway, Germany, and the UK as well as in Japan and China.

More information

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