

EISCAT_3D-N: A proposal to the Research Council of Norway to finance EISCAT_3D

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I describe in this presentation the proposal of the Department of Physics and Technology of the University of Tromso in Norway to the Research Council of Norway to partially fund the construction of EISCAT_3D (E3D). E3D is an international project on The European Strategy Forum on Research Infrastructures (ESFRI) roadmap. E3D will be a world-class radar facility for investigations of the geospace environment. It will replace the present EISCAT facilities in northern Norway, Sweden and Finland. E3D will use the incoherent scattering (IS) technique to make 3-dimensional vector measurements across a wide field of view of key parameters in the auroral atmosphere by taking advantage of technological advances in radio, radar, computing, and signal analysis. E3D will have 20 times better sensitivity and one order of magnitude better resolution than all other radar facilities in the world. E3D will allow us to understand the flows, sources, sinks, and interactions of energy, momentum and mass in the auroral atmosphere. E3D will provide synergies towards relevant areas of increasing socioeconomic importance; including atmospheric precursors of climate change and vulnerability of modern technological infrastructures due to space weather and space debris. E3D can study auroral particle precipitation that depletes ozone in the stratosphere, and atmospheric tides and sudden stratospheric warming events that bring disturbances to the ionosphere from below. Real-time measurements from E3D will be provided to monitoring services dealing with space weather and space debris, a key focus of ESA's Space Situational Awareness (SSA) programme. E3D will also contribute to science and engineering education at all levels. The project will create opportunities to national industry and services of the member countries in communications hardware and software and information technologies. This E3D project is backed by all major universities in Norway (Tromso, Bergen, Oslo, UNIS and NTNU), Andoya Rocket Range, and the Norwegian Space Centre).

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