

EGU21-15343

EGU General Assembly 2021

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New Earth-space infrastructures enable full-scale monitoring capability

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The near-Earth environment is continuously changing by disturbances from external and internal sources. A combined research ecosystem is needed to be able to monitor short- and long-term changes and mitigate their societal effects. Observatories and large-scale infrastructures are the best way to guarantee continuous 24/7 observations and full-scale monitoring capability. Sodankylä Geophysical Observatory takes care of continuous geoenvironmental monitoring in Finland and together with national infrastructures such as FIN-EPOS and E2S enable extending and expanding the monitoring capability. European Plate Observing System of Finland (FIN-EPOS) and flexible instrument network of FIN-EPOS (FLEX-EPOS) will create a national pool of instruments including geophysical instruments targeted for solving topical questions of solid Earth physics. Scientific and new hardware building by FLEX-EPOS is essential in order to identify and reduce the impact of seismic, magnetic and geodetic hazards and understand the underlying processes.

New national infrastructure Earth-Space Research Ecosystem (E2S) will combine measurements from atmosphere to near-Earth and distant space. This combined infrastructure will enable resolving how the Arctic environment change over the seasons, years, decades and centuries. We target our joint efforts to improve the situational awareness in the near-Earth and space environments, and in the Arctic for enhancing safety on ground and in space. This presentation will give details on the large-scale Earth-space infrastructures and research ecosystems and will give examples on how they can improve the safety of society.