LOFAR for Space Weather (LOFAR4SW) H2020 program

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The LOFAR for Space Weather (LOFAR4SW) is an international project the aim of which is to deliver the full conceptual and technical design for creating a new leading-edge European research facility for space weather science.
The project will engage with stakeholders to prepare a facility which produces unique research data with key impact on advance predictions of space weather events affecting crucial technological infrastructures of today's society.

The objective of LOFAR4SW is to prepare for a large scale high-end research facility in which completely simultaneous, independent observing modes and signal paths provide continuous access to two research communities: radio astronomy and space weather research.

Space weather science aims, through observation, monitoring, analysis and modelling, at understanding and ultimately predicting the complex state of the solar wind - magnetosphere - ionosphere - thermosphere system, and the potential impact on biological and technological systems on Earth. Increased fundamental knowledge, coupled to large-scale monitoring programs, is needed for much more advanced predictions of the impact of space weather events on Earth.

A fully-implemented LOFAR4SW system will enable a wide range of solar and space weather research topics to be tackled and have unique strengths in several high-impact science areas: tracing the initial launch of a CME; detailed tracking of the solar wind and CMEs through interplanetary space; in-depth studies of micro-structure in the Earth's ionosphere.
This facility will uniquely provide the missing link of measurements of the interplanetary magnetic field on global scales – a key parameter in forecasting the severity of geomagnetic storm on Earth. The LOFAR4SW will allow scientists to to answer many important questions with regard to the solar corona, the heliosphere, and Earth's ionosphere.

The action was started on December 2017 and the aim of this presentation is to show the main goals of the project and the initiated activities