



**Meteorologisk
institutt**

To:
Dr. Peter Bauer
Deputy Director
Research Department
European Centre for Medium-Range Weather Forecasts
Shinfield Park, Reading RG2 9AX, UK

Our date:
31 Aug 2018

Letter of support, ExtremeEarth

Dear Dr. Bauer,

The Norwegian Meteorological Institute (MET Norway) supports and is enthusiastic to engage in the ExtremeEarth Flagship proposal to be submitted to the second stage of the call FETFLAG-01-2018 in the area Energy, Environment and Climate change.

The national meteorological services must, in order to stay relevant and be authoritative on weather forecasts, warnings and on disaster risk reduction, constantly identify new areas of investigation and directions for interdisciplinary research. This implies to provide guidance beyond traditional numerical weather prediction and climate monitoring applications. A Flagship like ExtremeEarth will enable the emerging involvement of individual non-expert contributions, broader and deeper collaboration on mathematical tools, computer science and new technologies.

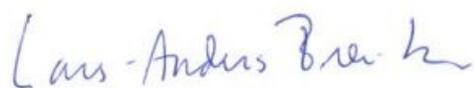
MET Norway associates itself with and will benefit from the technological and scientific goals of ExtremeEarth. Guided by the science for service approach, our operational value chain structure can enable an efficient transformation of research results into better informed decision making for users. Replacing parameterisations with explicit process representations in Earth System, Climate and NWP and ocean forecast models, will provide crucial leaps in process-understanding and prediction, and advance the exploitation of all kinds of observational data. Thus, the flagship has a strong potential to enable unprecedented breakthroughs in our own areas of responsibility, such as environment, weather and climate monitoring and prediction, including the hydrological cycle, ocean, sea-ice and pollution. This will in turn be of great importance for enhancing the quality of the services we provides to the society, like our world-leading weather app Yr.

MET Norway can contribute to the future work of preparing ExtremeEarth. ExtremeEarth might enable us to perform environmental ensemble forecasts on a scale of a few hundreds of meters with a coupled earth system model system. MET Norway has experience in both operational and research collaborations on numerical modelling and forecasting, including the Arctic and might contribute dependent on directions and needs in the project e.g. with:

- knowledge about atmospheric and oceanographic processes specific to Northern-Europe and the Arctic
- collaboration on very high resolution regional numerical prediction models of the earth system, including assimilation of emerging and existing observations
- user-centric post-processing of NWP data using a massive amount of observations
- aerosols, aerosol-cloud-climate interactions and fresh water cycling
- regional climate modeling, downscaling and post-processing
- monitor and forecast extreme events in a changing climate
- efficient and timely development of user-specific data and products under an open data policy

We look forward to hear the result of next stage and to get a chance to discuss possibilities for involvement in the ExtremeEarth Flagship.

Yours sincerely

A handwritten signature in blue ink that reads "Lars-Anders Breivik". The signature is written in a cursive, flowing style.

Lars-Anders Breivik
Director of Research