

EXWE - Extreme weather and nuclear power plants

Background and objective

Extreme weather and sea level events affect the design principles of nuclear power plants and might pose external threats to the plants.

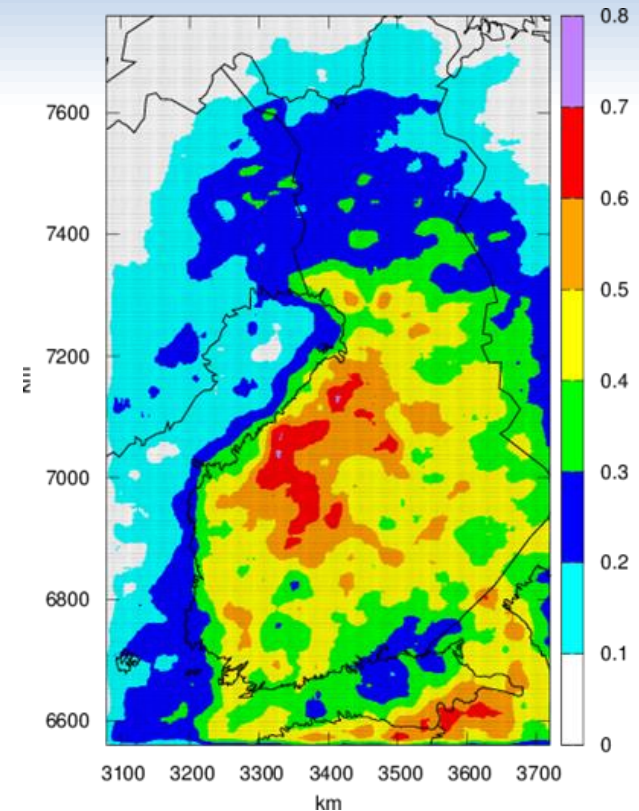
The aim is to enhance scientific understanding of the environmental conditions of the NPPs' sites and to predict how they may change. The work is focused on three topics: 1) extreme weather, 2) extreme sea level events, 3) atmospheric dispersion tool.

Results exploitation and effect on safety

The results can be used to improve the design of future NPP units and the safety of existing units against the effects of nature phenomena. The end-users are 1) the power companies designing and running the power plants and 2) the nuclear safety authorities defining the safety regulations for NPP constructions and operations.

Resources

- Project manager: Kirsti Jylhä, FMI
- Finnish Meteorological Institute (FMI)
- 20 person months and 200 k€ in 2017



Thunderstorm measurements can be used as a source of information for extreme convective weather cases. The figure shows the average annual number of cloud-to-ground lightning flashes per km² in 1998-2016. EXWE involves detailed analysis of measured and model-simulated data, as well as modelling runs.