



## **A high-resolution wave prediction system for Sulafjorden, Norway**

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Wave predictions in coastal areas and fjords are essential for a number of coastal activities. The Norwegian Public Roads Administration is planning a ferry-free coastal highway route E39 - where optimal bridge design is one of the key questions. Assessment of swell intrusion within the fjords becomes particularly important. The rugged coastline of Norway with thousands of islands and narrow fjords makes wave prediction especially challenging. The objective of this study is to investigate the performance of a high resolution wave model in fjords with exposure to the open ocean. For this purpose, we have implemented the third-generation wave model SWAN version 41.20 on 1km and 250m grid resolution for the area of Sulafjorden, a fjord located at the central west coast of Norway. Different model configurations have been tested using high resolution wind and bathymetry data. We evaluate the wave model performance against buoy measurements from different locations within the fjord. Furthermore, we use wind measurements to evaluate the quality of the forcing wind field. The preliminary results indicate that the overall performance of the model is good. Finally, we explore in more detail few cases in which the model performance could be further improved by tuning the model grid as well as model physics and parameterisations.