



## **Reconstruction of Ocean Wave Field using Marine Radar Images from the Norwegian Sea**

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Measurements of ocean wave parameters are important for estimation of wave power potential, marine operations, design of ships and offshore structures. Comparing to fixed point wave measurements from wave buoys, remote sensing techniques such as X-band marine radar are promising since they can obtain phase-resolved wave information from large sea surfaces (nearly) instantaneously. This study investigates the capability of RIMARC-OCEAN (Radar Image Analysis for ReConstruction of Ocean waves) tool to extract phase-resolved wave field information using X-band marine radar data from the Norwegian sea. An input radar image represents the backscatter electromagnetic wave energy received by a radar system. The radar image shows an instantaneous signature of ocean surface waves in a large area, which is not a 1:1 scale with the sea surface elevation. The tool uses a reconstruction method for ocean wave field, which is based on the three-dimensional Fourier transform and removes non-wave related signals using a sequence of filtering techniques. Finally, the ocean wave related signal is calibrated using wave measurement data.