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Short-term deterministic forecasting of waves fields

- Duration: February 2022 – October 2023.
- Scientific supervisors: Zhen Gao (SJTU/NTNU), Roger Skjetne (NTNU), Karl Henning Halse (NTNU).

Industrial goal:

- The main goal is to improve the safety and efficiency of marine operations using accurate, timely forecasts of wave conditions. Moreover, this research work aims towards short-lasting marine operations possible all-year-round.

Research topics:

- Fundamental research on the theoretical models for the short-term forecasting of wave fields.
- Development of real-time forecasting models for linear and nonlinear short-crested waves using limited spatio-temporal wave surface measurements.
- Research on the development of an integrated onboard decision support system to predict the wave-induced motions and loads for the next few tens of seconds into the future.

Scientific questions:

- What are the needs and limitations regarding the forecasting of wave fields using limited spatio-temporal sea-surface measurements?
- How can the position-keeping capabilities of a vessel be improved by using a feed-forward system using the forecasted wave-induced loads?

