



Maritime DTU  
Center for Maritime Activities

---

## A sensitivity study of variations in the sampling frequency - The effect on response statistics and spectral moments

Type of project: BSc/MSc

### Project description:

What value must the sampling frequency be to ensure reliable analyses of wave-induced responses?

Maersk is rolling out an installation campaign mounting motion sensors on their entire container fleet (+200 vessels). The particular sensor samples at 100 Hz when in operation. To limit the amount of data that should be sent from the single ship (via satellite) to the land-based office, data will be down-sampled before submission. This project must investigate the consequence of down-sampling data; that is, what is the maximum down-sampling frequency applicable before negative effects result in the subsequent data analyses? An investigation must be made of the effect both on short-term statistics (relying on spectral analysis through FFT) and on extreme values in the measured time series. The study starts by analysing synthetic data and moves to real (full-scale) data by the end. This study is done in collaboration with Maersk.

### Contact person

Ulrik Dam Nielsen  
DTU Construct  
[udni@dtu.dk](mailto:udni@dtu.dk)