



Q&A Webinar Metocean Campaign HKN

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Questions: from the audience

Answers given by: Eisse van den Oever (Fugro Marine), Vegar Neshaug (Fugro Norway), Wim Klomp (RHDHV), Olaf Scholl (RHDHV), Sofia Caires (Deltares), Matté Brijder (Netherlands Enterprise Agency)

In the answers we refer to the data reports for the metocean campaign HKN. The reports are published on <https://offshorewind.rvo.nl/windwaternh>.

Question: What kind of motion compensation is employed on the SWLB – passive or by software based compensation? Is it done in real time or in post-processing? Can you comment on the benefit with relation to accuracy improvement by the employed motion compensation? Does this also apply to wind speed?

Answer: The motion compensation is in real-time on the Wavesense3 datalogger, sampling the Zephir real-time measurements and an external real time heading source. The Wavesense3 datalogger produces 10-minute average true wind direction and speed.

Question: What are the wave limits for a "towed" transfer of the buoy to the deployment site?

Answer: Fugro makes an overall assessment of the conditions before sailing out for a towed transfer of the SWBL. It is not only wave height, but also period and wind conditions which play a role. In general, a wave height above 1.0 to 1.5 m is too high for safe transfer.

Question: Why have 5 buoys been used on the HKN project?

Answer: The HKN campaign was in parallel to the HKZ campaign, in which 2 buoys were used at HKZ and 2 buoys were deployed at HKN and 1 spare buoy was used for both campaigns. Due to rotation of the buoys for service (due to damage or data outage) 5 buoys (actually 6 buoys when counting all different spare buoys) appeared in HKN campaign.

Question: Is it assumed that Buoy A with lidar X measures exactly the same way as Buoy B with lidar Y? Or does this add additional uncertainty due to instrument differences? So, for both locations HKNA and HKNB more than 1 buoy/lidar combinations have been used - due to failures, service etc. Therefore, it was not the same instrument measuring throughout the measurement period.

Answer: Yes, over the period of the 24 months several buoys have been used on the same location. Both buoys measure exactly the same way and the accuracy of the buoys is similar as is proven by the pre-deployment validation of the individual buoys (pre-deployment validation reports are published on the website of rvo.nl). When a time series is constructed from different instruments, as is done for a 24-months time series, measurements of different buoys (instruments) are combined. Adding the measurements of several instruments to one data file may cause additional inaccuracies to the combined file. In the Wind Resource Assessment Report the analysis of combining measurements of different instruments is reported and more details on this aspect is given in this report. For the WRA assessment on WRA, the authors judged that no significant inaccuracy is introduced by using multiple instruments, as a full log on instruments used in which periods was available during the period of the dataset.

Question: Does RVO.nl give the Statement of Compliance?

Answer: The Statement of Compliance for the data reports of the HKN campaign is issued by Navigant (Ecofys WTTS). RVO.nl has contracted Navigant to do this, but the statement is independently given by Navigant.

Question: Do you reference against the IJmuiden met mast? I thought that met mast was dismantled a few years ago?

Answer: That is correct, the met mast at IJmuiden is dismantled. The reference data used here are the wave observations collected at IJmuiden munitiestortplaats, which is a fixed measuring station managed by Rijkswaterstaat collecting wave data and temperature data.

Question: Did you perform a cross check in Frøya or somewhere else both at the beginning and at the end of the project? Since during the project sensors might experience deviations.

Answer: Fugro always performs a cross check at Frøya at the beginning of the project (pre-deployment validation). Intermediate checks are done on a monthly basis by comparing the 2 systems deployed next to each other (see the monthly reports for the results of this comparison). A post-deployment validation (at Frøya) is possible and is normally done when there is doubt on the accuracy of the measurements done by one of the SWBL systems deployed. For the HKN metocean campaign no post-deployment validations have been undertaken.

Question: Why is the HKNB water level 0.5m higher than the Deltares model?

Answer: The measured water level data is dependent on the "installed depth" of the water level recorder, which is assumed based on the local seabed and the configuration of the water level recorder. This operational correction to report on absolute values is maintained through the campaign in order to have consistent datasets month to month.

The water level data collected during the 24 months will be calibrated (corrected) once all data have been put together. We think that the bias which is reported in some monthly validation reports is due to movement of the water level recorder (due to scour or turning over of the recorder). This bias correction (if any) will be reported in the 24-months report, which is planned to be published in August 2019 for HKN.