

# WaMoS II Wave Radar System- Frequently Asked Questions

## 1. Is there a minimum or maximum wave height that can be measured?

The minimum wave height should be around 0.50 -0.75 m, with no limitation on the maximum.

## 2. What is the threshold wave height that is needed for WaMoS to detect surface currents?

The system can measure currents when wave height is greater than 0.75 cm. The resolution for the standard measurements is 1 current vector in an area of 1square km. A new algorithm will be released in December 2003 that shows a current map with a resolution of 100 square metres, i.e. a current vector on a grid of 10m. It is expected that a study from the Danish coast will validate the accuracy of the data by the end of 2003.

## 3. What is the maximum detection radius?

The maximum radius is 1.5 nautical miles.

## 4. Does the movement of the vessel have an effect on accuracy of either wave or current measurements?

The movement of the vessel does not affect the measurements, and WaMoS II does not require motion compensation. The system is type approved by Det Norske Veritas (DNV) and Germanischer Lloyd (GL), confirming the systems functionality and accuracy for vessels moving at speeds of up to 40 knots.

## 5. Can the WaMoS II be installed on a mobile platform ashore, such as in a truck? Are there any special requirements?

There is no problem installing the WaMoS II on a mobile platform. The antenna should be mounted at a minimum of 8 m above sea level (the higher the better). Successful installations have been made as low as 7.5 metres from the surface, and up to 100 metres above the surface.

## 6. What aspects of the radar installation are important?

The antenna should be mounted in order to have a minimum free viewing angle of 180 degrees. A viewing angle of 270 degrees is ideal, but not necessary. For installations onboard a ship, and if the antenna is only used for wave measurements, the heading should point towards the stern of the ship. The radar must be operated in short pulse (near range), otherwise the sea clutter reflections are too weak.

## 7. For installation on a vessel, is there any other information required by the system, and in what format?

The system requires the following NMEA inputs from the ship:

- Ship speed and direction (mandatory)
- GPS position (mandatory)
- Water depth (helpful, but not mandatory)

## 8. What are the power requirements of the WaMoS II system?

The WaMoS II system requires 30W of power at either 110 or 220 volts.

## 9. Which X-band radar is recommended for the best operation?

The system works with all radar systems, but the best is Kelvin Hughes (expensive), or Furuno (inexpensive). OceanWaves now also recommends Koden yacht radar, which is of high quality, very small, light weight, inexpensive, and easy to handle.

## Why buy a WaMoS II Wave Radar System?

1. WaMoS II is type approved by Det Norske Veritas (DNV) and Germanischer Lloyd (GL), confirming the systems functionality and accuracy for ships moving at up to 40 knots.
2. WaMoS II has been commercially available since the mid nineties and is installed at a large number of international stations. For more information go to <http://www.oceanwaves.de/start.htm>
3. WaMoS II is under continuous further development to keep pace with the state of the art in wave science.
4. WaMoS II is participating in a number of national and international projects with its performance under scientific validation (References available at: OceanWaveS GmbH, [www.oceanwaves.de](http://www.oceanwaves.de) ).
5. WaMoS II data has been compared to a large number of independent measurements. These data comparisons are published and available by OceanWaveS GmbH.
6. WaMoS II has been participating since December 2002 in a national project (SinSee, funded by the German Research Council) with the goal of predicting ship movements in harsh weather conditions.
7. In December 2002 WaMoS II systems were purchased by the German and French navies in order to be evaluated for their requirements. Strong emphasis will be put on the refining of single wave detection with respect to the prediction of ship movements and the calculation of fatigue parameters.
8. WaMoS II data has been used for single wave measurements with respect to single extreme events (rogue waves).
9. WaMoS II has been used to measure waves in sea ice.
10. WaMoS II is robust and easy to maintain.
11. WaMoS II is very portable, and can be moved from ship to ship, or put in a vehicle and driven along a coastal road collecting information.
12. WaMoS II wave data has an internal quality control index giving the user information on whether the environmental conditions are sufficient for accurate radar wave measurements (e.g. Whether wind, rain or snowfall are degrading the quality of the images).