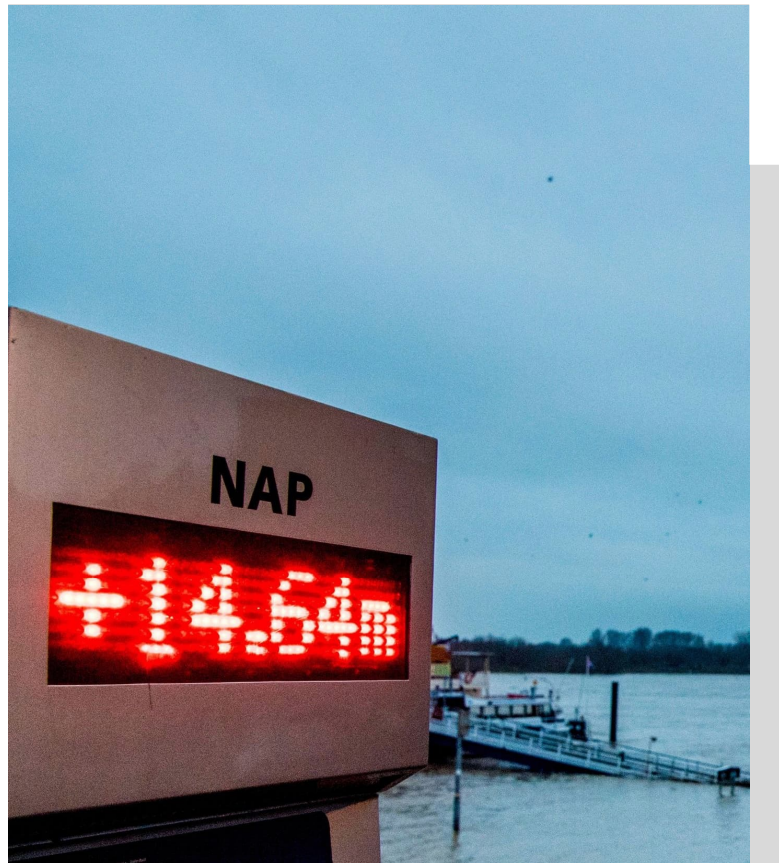


Market Consultation Document

For the procurement and maintenance of Radars for Water levels and Wave heights
English version



Credits

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1. Introduction

1.1 Background

This Market Consultation is intended for the preparation of measuring water levels and wave heights. Rijkswaterstaat, part of the Dutch Ministry of Infrastructure and Water Management and responsible for the design, construction, management and maintenance of the main infrastructure facilities in the Netherlands (hereafter referred to as RWS), attaches great importance to the opinions of market parties and wants to involve them early and actively before the proposed call for tenders starts.

The aim of this call for tenders is to guarantee the availability and quality of water-level sensors for the next 15 years. During this period, this also means:

- To guarantee availability of radars by supplying to both the Dutch National Water Monitoring Network (*Landelijk Meetnet Water, hereafter referred to as LMW*) and the Maritime Information Service Point (*Maritiem Informatievoorziening Servicepunt, hereafter referred to as MIVSP*).
- To ensure continuity through preventive and corrective maintenance (time span 25 years).
- To ensure the quality of performance by support during installation, training, and providing advice on connections to interfaces.

RWS is inviting market parties to participate in this Market Consultation.

1.2 Purpose of the Market Consultation

RWS has published this Market Consultation Document on TenderNed with the aim of reaching as many market parties as possible, to interest and encourage them to help seek solutions.

With this Market Consultation, RWS aims:

- a) to collect input for the tendering strategy and contract strategy (creating new ideas, assessing existing ideas);
- b) to involve the market in this project at an early stage to be able to harmonise the tender documents as closely as possible to the market situation;
- c) to determine whether there are enough qualified contractors in the market and how sufficient capacity is provided by the market;
- d) to understand the realistic feasibility of the project and the preconditions under which the project can be implemented, particularly in areas where sustainability ambitions are concerned:

The national government's targets are:

1. to be climatically-neutral by 2030;
2. to use 50% less primary raw materials by 2030 and to attain full-scale circular usage by 2050;
3. to encourage [labour force participation](#), which includes creating 5000 participation job opportunities;
4. to [sustainably improve international production chains](#) by tackling abuses or malpractices in working conditions, human rights and the environment;
5. to encourage innovations by being a launching customer.

In line with the government's objectives, RWS aspires to work climatically-neutral and circular by 2030.

Investigate the possibilities in respect of the greatest sustainability gains. In so doing, investigate at least, but not exclusively, the possibilities in terms of the internally used sustainability tool *Ambitiweb IV* for the following RWS priorities:

1. Energy consumption;
2. Logistics movements;
3. Materials and raw materials;
4. Social aspects.

RWS emphasizes that this Market Consultation does not form part of the call for tenders and one cannot derive any rights from it.

Insights gained from the Market Consultation will be used by RWS (where relevant) in preparation of the call for tenders and the tender documents. RWS reserves the right not to use these insights in full or in part.

1.3 Target group of the Market Consultation

Any party that believes it can contribute to this Market Consultation may respond. The primary target group of this Market Consultation is those market parties who have experience with or knowledge of or about the following topics:

- Supply of radars for water levels and wave heights;
- Preventive maintenance (cleaning, checking and calibrating) of radars 'in the workshop' and corrective maintenance (repairs, upgrades) of radars 'in the workshop';
- Support for maintenance personnel regarding the sensors, such as training, help desk, providing advice at the measuring sites.

And/or market parties who have experience, knowledge and an outlook on fully achieving the objectives set, such as:

- *more intense data availability through new techniques;*
- *lower costs across the chain for LMW, particularly for primary and secondary level maintenance;*
- *maintenance is carried out more sustainably.*

1.4 Approach to the Market Consultation in broad outlines

The Market Consultation consists of two parts. First of all, there will be a written questionnaire as well as an information meeting with all parties who have signed up and wish to provide a contribution. Immediately after that, individual discussions will take place with parties who wish to explain their views further on questions raised.

Chapter 3 describes the method and strategy of the Market Consultation in detail.

1.5 About Rijkswaterstaat (RWS)

RWS is the executive agency of the Ministry of Infrastructure and Water Management, dedicated to promote safety, mobility and the quality of life.

RWS is working on the smooth functioning and safe flow of traffic, on a safe, clean and user-oriented national waterway system, and on protecting our country from flooding. To achieve this, RWS manages the national roads network (8,394 km), the national navigable waterways network (1,686 km canals, rivers and 6,165 km of waterways in open water), as well as the national waterway system (65,250 km²).

The Rijkswaterstaat Central Information Services (RWS CIV) is one of the national organisational units of RWS. RWS CIV takes care of the collection, management and supply of data, as well as ICT management and development. More information about Rijkswaterstaat and RWS CIV is available on the website www.rijkswaterstaat.nl.

2. Context for the use of sensors;

The National Water Monitoring Network (LMW) is an information system intended for the collection, storage and distribution of water data. Data is collected, processed and stored via more than 400 measuring points. The data is automatically provided to users and can be viewed on the internet.

2.1 Use of the LMW

Measuring take place on the North Sea, in the Wadden Sea, estuaries, rivers, lakes and canals. It concerns data on water quantity and water quality such as water levels, wave heights, discharge data, temperature, salinity and beyond that meteorology. The data is relevant for real time shipping information, the operation and maintenance of flood defences, water discharge and storage, water-level management and emergency control.

Data provided by LMW is used by managers of barriers and storm-surge barriers, water authorities (national waters and regional waters) as well as the Netherlands Water Management Centre, among others. The data is also used by port authorities, municipalities, the offshore and hydraulic engineering sectors, knowledge institutes and civilians.

LMW data is used for the following purposes:

- Water reporting and crisis management
- Navigation guidance
- Operating barriers, barrages, sluices, floodgates, water control systems and bridges
- Operational Water Management
- Defining characteristics and trends of water systems
- National and international obligations and agreements
- Model designs and research projects
- Supportive measurements for determining derived parameters
- Asset management and construction and maintenance of engineering structures

The measurement data is available 24/7 in real time. About 10% of the measuring sites are characterised as mission critical; this requires a more intense availability requirement (in the order of 24 hours instead of a week) across the entire chain.

2.2 Management of measurement set-ups and sensors

Keeping the measurement set-ups in operation is of major importance to guarantee the availability of information. Hence a distinction is made between two types of maintenance:

- The management and maintenance of the complete measurement set-ups on site is vested in the maintenance contractors; this includes civil engineering maintenance and the 'primary sensor maintenance'. This primary sensor maintenance consists of all actions required at the measuring site: installation, regular cleaning, sensor replacement on failure. For other maintenance of the sensors, the sensors will be taken to shore. For this purpose, first a replacement device will be installed which has been taken from the reserve pool stock.
- The (secondary) maintenance falls within the scope of the envisaged contract. This includes preventive maintenance (if required) and corrective maintenance of the sensor.

2.3 Technical structure of the LMW

The National Water Monitoring Network (LMW) comprises an entire chain of physical measuring stations, a data-collection network, processing and validation as well as distribution to the various users. Various parameters can be measured at the measuring sites and different sensor types can also be used for the same parameter (depending on local conditions). The data-collection network, however, consists of modular solutions that are generic for the various parameters and sensors. This allows the LMW to be managed effectively and makes it flexible and expandable.

IoT gateway

At the measuring sites, the data from the various sensors is connected to an IoT gateway. This is done via a physical hardware interface that allows for connection of various types of connections and signal forms. The IoT gateway thus provides communications of the sensors with the network.

Parameter processing

The starting point of the processing is that raw data is processed centrally into parameters. This means that raw data is retrieved from the sensors:

- for water levels: every 10 seconds a water level above the Amsterdam Ordnance Datum (hereafter referred to as NAP),

or a high-frequency altitude compared to NAP

- for waves: an altitude above NAP or displacement at >2.5 Hz

- various statuses, metadata and error codes

This data is collected in real time and processed centrally into:

- 10-minute average water levels above NAP

- Wave parameters over an observation interval of 20 minutes

The processing involves validating the raw data based on a number of criteria, calculating the parameters and data validation based on knowledge of the water system and surrounding stations. Only correct data will be published.

2.4 Key targets to be achieved with the envisaged radars

Primarily the focus of the procurement is the following:

- To guarantee availability of radars for measuring water levels and wave heights by supplying to both the Dutch National Water Monitoring Network (LMW) and the Maritime Information Service Point (MIVSP).
- To ensure continuity through preventive and corrective maintenance (time span 25 years).
- To ensure the quality of performance by support during the installation, training, and providing advice on connections to interfaces.

Furthermore, with this procurement RWS envisages achieving the following objectives:

- A higher degree of data availability through new techniques.
- Low implementation costs, for example, as a result of minimally required adjustments to measurement set-ups and data collection systems.
- Minimal management costs across the entire management chain, for example, by reducing the need for maintenance and site visits.
- Maintenance that is carried out more sustainably, including a reduced need for site visits and through maximum value retention of the equipment during its service life.
- Maximum standardisation of sensor types: to provide the monitoring network with as few differing sensor types as possible to meet the entire need.
- The best possible contract management: logistics of the procurement with a minimum number of contracts and with the least possible administrative burden for RWS.

3 Scope of this call for tenders

3.1 Part of the LMW to be upgraded

The LMW currently comprises some 290 sensors for water levels and wave heights. These are located at about 250 measuring stations; this is due to several sensors having been installed at a number of measuring sites to increase the availability of measurement data by redundancy.

Not all of these 290 sensors will be upgraded. RWS has opted to continue managing a portion for which there is currently no necessity and added value for an upgrade. This has no cost benefit for RWS either. This means the following quantities:

- About 100 sensors currently in use will be upgraded in about 5 years.
- In addition, we will take into account 40 new-build sites in the next 10 years.
- In order to have these sensors effectively in operation, RWS will also procure spare sensors, and replace faulty sensors over time.

These quantities are elaborated below for each type of sensor requested.

3.2 Technical scope

This call for tenders requests proposals for radar level meters. This is the standard measuring technique chosen for the aforementioned limited portion of the LMW.

The technical scope of this call for tenders includes

- a radar level meter,
- accessories (cables, mounting bracket, etc.) and
- operating software, if necessary.

The processing of raw data to parameters is almost entirely outside the scope; if an initial processing is requested to e.g. a 10-minute transmission, this will be shown in the requirements.

So, outside the scope are:

- data communications and data-collection systems
- power supplies such as solar panels
- parameter processing and wave processing
- presentation software

3.3 Requested sensor types (types of radars)

There is a need for 4 types of radars, with the following provisional requirements:

Sensor type	Name	Maximum power	Must measure waves	Suited for waves of	Range needed	Measurement uncertainty	Beam angle
A	Freespace radar offshore	8 W	Yes (wave period 30 s-1.5 s)	11 m	34 m	$\leq \pm 5$ cm	$\leq 10^\circ$
B	Freespace radar nearshore	8 W	Yes (wave period 30 s-1.5 s)	4 m	19.5 m	$\leq \pm 1$ cm	$\leq 10^\circ$
C	Freespace radar water level	4 W	No	1 m	17 m	$\leq \pm 1$ cm	$\leq 10^\circ$
D	Stilling well radar	-	No	subdued	12 m	$\leq \pm 1$ cm	n/a

Sensor type A: Freespace radar offshore

This type of sensor will be used at offshore sites. The main feature here is the wave height for which the radar must be suitable, both for the uninterrupted measurement of the water level and the sufficiently accurate detection of the wave height itself. The mounting height could be large, so a larger range is necessary.

Sensor type B: Freespace radar nearshore

This type of sensor will be used at nearshore sites and estuaries. This has a restricted wave height range for which the radar must be suitable, both for the uninterrupted measurement of the water level and the sufficiently accurate detection of the wave height itself. The mounting height is also lower than for offshore. By contrast, however, the measurement uncertainty is subject to higher requirements.

Sensor type C: Freespace radar water level

This type of sensor is used at inland waterways such as rivers and lakes. Here, a very low wave-height range applies, for which the radar must be suitable for the uninterrupted measurement of the water level. The mounting height is also low. The measurement uncertainty is the same as required for the nearshore radar.

Sensor type D: Stilling well radar for 30 cm standpipe

This type of sensor is used at measurement set-ups that measure in a stilling well. The reason is that a shielded measurement is preferred at these sites, e.g. to be resistant to ice formation, floating debris, pleasure boating or vandalism. These stilling well measuring sites are already in use, so the pipe diameter is fixed at 30 cm. (There is a need to find future replacements for radars currently in use). There is absolutely no wave load. The measurement uncertainty is the same as required for the nearshore radar.

Annex 2 contains photographs that illustrate the type of sites envisaged for each sensor type.

3.4 Definitions used

The questionnaire in Annex 1 deals with a number of specifications. The definitions used by RWS are provided here. If the information you have provided is based on a different definition, please indicate this.

Measurement uncertainty

The term measurement uncertainty is understood by RWS to mean the uncertainty of the distance measurement without the influence of waves, i.e. the distance measurement up to a smooth flat surface. The uncertainty concerns a single distance measurement and radar output value, or an average distance measurement over a period of up to 10 seconds. The measurement uncertainty is expressed in 1 times standard deviation.

Beam angle

The beam angle is defined as: 2 times the angle between the main axis and the -3 dB point of the radar beam.

Range

Range is understood by RWS to mean the maximum distance from the radar of an object to be detected.

Blanking

Blanking is understood by RWS to mean the minimum distance between a surface to be detected and the radar itself. This blanking may require the radar to be mounted higher for the intended use and the current measuring structures to be modified. We would like to get a good idea of the blanking properties of the radars offered.

Power consumption

Power: average power consumed over a period of time during which a full measurement cycle has taken place. This is based on a sampling of (at least) 2.56 Hz.

Availability

Availability is understood by RWS to mean the period from the launch of a radar type in the market up to the end of the service life date. There are several interests involved here:

- RWS places radars at a large number of sites from a centrally situated reserve pool stock using technicians who work all over the country. That is why we opt for maximum standardisation. In this light, it is preferred that the same types can be procured and used over a longer period. When variants are introduced, there is a strong preference that they are functionally compatible: so, among other things, they must have equal transmission formats and connections and must physically be interchangeable.
- RWS needs reliable radars, which makes it preferable to use proven technology; radar types that have been available for some time in the market and hence undergo no teething problems.

3.5 Requested scope of supply and service

The procurement requirement includes the following provisional quantities (certain / uncertain). A portion of the radars to be supplied will be ordered immediately after contracting (year 1-2). Another portion will be ordered as required over the years following contracting (years 3-10). The provisional quantities and allocation over time are shown below.

Procurement need by sensor type	A	B	C	D
Initial procurement (initial roll-out + spare) – year 1-2	6	15	13	5
Additional use envisaged – year 3-10	17	16	14	10
Uncertain new-build and replacement – year 3-10	4	13	18	29
Total (certain and uncertain)	23-27	31-44	27-45	15-44

In addition to supplying the radars, the following services are required:

- Maintenance: performing corrective maintenance on the radars when they are faulty. The radars will be removed from the site by RWS and sent to the contractor. If necessary, this includes regular preventive maintenance (such as calibration).
- Support: This concerns support of the maintenance personnel with training, remote advice, or if necessary at the measuring sites.

4. Course of the Market Consultation

4.1 Procedure

This Market Consultation will be designed as described below.

- 1) The Market Consultation starts by publishing this document containing RWS's questions on TenderNed. The purpose of the questionnaire is to provide RWS with an overview of relevant available possibilities in the market.
- 2) RWS will organise an information meeting to explain the "how and why" of this Market Consultation and to eliminate any ambiguities with regard to this document and the questionnaire associated with it. You may submit questions prior to this meeting, which RWS might be able to answer during the meeting.
- 3) Any interested market party who believes that it can contribute to the Market Consultation is requested to submit responses to the questions in this Market Consultation by email to: inkoopcentrum-iv@rws.nl before the deadline date and time referred to in section 3.1.1.
- 4) With reference to the submitted responses, RWS would like to keep its options open to invite parties to verbally provide additional explanations to their answers. RWS will contact these parties to make an appointment in mutual agreement.
- 5) RWS will analyse the answers and discussions and will draw up a final report of this analysis, in which RWS clearly explains how the original ideas and/or starting points have been revised as a result of the Market Consultation. RWS will publish the final report on TenderNed.

The Market Consultation will be completed in September 2022.

4.2 Planning

RWS maintains the following timetable:

Activity	Date and time
Publishing of the Dutch Market Consultation Document	22 June 2022
Publishing of the English Market Consultation Document	29 June 2022
Registration deadline for the information meeting	4 July 2022 at 10:00
Information meeting for market parties	4 July 2022 at 11:00-12:30
Deadline to pose questions about this Market Consultation Document	6 July 2022 at 12:00
Publication of Summary of Additional Information and Changes	08 July 2022
Deadline for submitting completed questionnaire	10 August 2022 at 12:00
Dates for any individual explanatory discussions	Between 22 August 2022 and 9 September 2022
Finalisation and publication of final report	30 September 2022

Interested parties cannot derive any rights from the timetable.

RWS reserves the right to alter the timetable. The above timetable is therefore indicative, taking the greatest possible care to comply with the timetable.

4.3 Questions about the Market Consultation Document

Market parties have the opportunity to pose questions about unclear formulations in the Market Consultation Document with the aim of transparent and unambiguous communication. If the parties have questions about the Market Consultation Document, these can be submitted by email to: inkoopcentrum-iv@rws.nl <mailto:inkoopcentrum-iv@rws.nl> before the "Deadline to pose questions about this Market Consultation Document" referred to in section 3.1.1. RWS will respond to the (anonymised) questions

from market parties in a Summary of Additional Information and Changes published on TenderNed.

4.4 Information meeting

RWS is organising an information meeting to eliminate any ambiguities regarding the questionnaire and to explain the “how and why” of this Market Consultation. RWS is organising a digital information meeting on 4 July 2022 at 11:00-12:30. Registration and submission of questions prior to the information meeting is possible until 4 July 2022 at 10:00 by email to inkoopcentrum-iv@rws.nl. Please include the company name, names and email addresses of the people who want to attend the digital information meeting.

4.5 Submitting questionnaire

Any interested market party who believes that it can contribute to the Market Consultation is requested to submit answers to the Excel questionnaire annex to this Market Consultation Document by email to: inkoopcentrum-iv@rws.nl before the “Deadline for submitting completed questionnaire” referred to in section 5.2.

4.6 Verbal explanation to questionnaire

With reference to the submitted responses, RWS would like to keep its options open to invite parties to verbally provide additional explanations to their answers. RWS will contact these parties and will, in consultation, schedule half a day during the period as mentioned in section 5.2 “Dates for any individual explanatory discussions”.

4.7 Finalisation of Market Consultation and feedback of results

Finalisation of the Market Consultation will take place in the period mentioned in section 3.1.1. RWS will finalise the Market Consultation by publicly disclosing a report of the Market Consultation on TenderNed. The report will include, in the opinion of the project team, the main conclusions of the Market Consultation. In connection with this report, RWS explicitly points out the following:

1. The report will be publicly disclosed. Market parties authorise RWS to use their responses and other information and/or data provided by them as input for this report.
2. The information will be included in the report anonymously. The report will, however, mention the participating market parties.
3. The report will contain the conclusions as formulated by RWS. The contents of the report will not be harmonised in draft with participating market parties. The report will, however, state that it is the representation of the project team and that this is not necessarily endorsed by the participating market parties.

RWS will make it clear in the tender documents how the original ideas and/or questions have been updated or interpreted following the Market Consultation and will include the main conclusions.

4.8 Confidentiality

RWS will not publicly disclose the responses submitted and the discussion reports in full. RWS will only show this information to employees and consultants directly involved in the Market Consultation and/or in the call for tenders, unless RWS is required to make further disclosures on grounds of statutory regulations. RWS is, however, entitled to use the information provided for the purpose of drawing up the tender documents.

RWS will not include specific references to participants nor commercially sensitive information in the tender documents.

4.9 Other provisions in respect of the Market Consultation

The Market Consultation does not form part of the call for tenders. In order not to place Market Consultation participants in a privileged position, RWS will publicly disclose the results of the Market Consultation in the tender documents. In addition, all information shared by RWS during the Market Consultation will form part of the tender documents.

In the call for tenders, no distinction is made between parties who have and parties who have not participated in the Market Consultation.

Information in this Market Consultation may differ from information that is provided later (in the context of a call for tenders or other procurement procedure). No rights can be derived from the information provided in the context of the Market Consultation. The information is indicative and merely intended to improve the quality of the Market Consultation. If this information is contradictory to information that is provided later (in the context of a call for tenders or other procurement procedure), the latter will prevail.

RWS does not award any compensation to participants of the Market Consultation.

Annex 1: Questions regarding Market Consultation on Radars for Water levels and Wave heights

Annex 2: Pictures of measuring sites



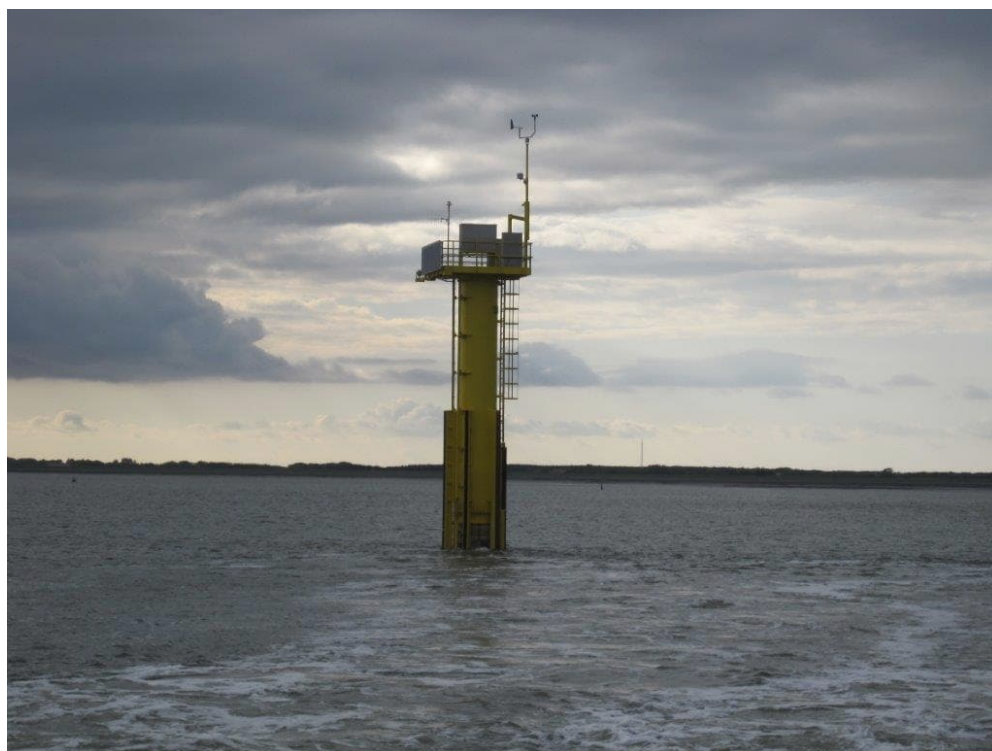
Sensor type A: Europlatform



Sensor type A: Haringvliet 10



Sensor type B: Hansweert



Sensor type B: Nes



Sensor type C: Nieuw Vossemeer



Sensor type C: Neer



Sensor type D: Holwerd



Sensor type D: Nieuwe Statenzijl