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Online availability of data of the Netherlands Hydrographic Service

In many cases, it is possible to reuse our data. There are several online opportunities to view or download our data yourself as well.¹

INSPIRE

The European INSPIRE Directive poses an obligation on Member States to publish geographic data in an automated way as web services. In the Netherlands, the Netherlands Hydrographic Service is responsible for a number of data sets in the North Sea. This results in geographic data that is automatically available against minimal use restrictions almost every type of use. The web services are for instance available via inspire.caris.nl (under construction).

Details about the data sets and their web services are available at the National Georegistry (NGR), at www.nationaalgeoregister.nl. Choose "zoeken", "geavanceerd zoeken", and select at "Organisatie" the option: "Ministerie van Defensie, Koninklijke Marine, Dienst der Hydrografie". This way, you will be presented with information of each data set about the data set itself, the view service, and the download service. It is also possible to view and download the web services through the NGR. The registrations of the NGR are reproduced at data.overheid.nl. The locations of the web services are also given in Table 1 and 2.

EMODNet

The EMODNet programme of the European Commission gives an overview of the available bathymetric data in the European seas and the Caribbean Sea, which can then be requested, visualised and downloaded in a web environment.

The bathymetry web site of the project is www.emodnet-bathymetry.eu. It also includes wreck information from the UKHO database. The locations of the web services are given in Table 3.

- To visualize and download a bathymetric grid of all depths with a resolution of 1/16' (115 m): the "Bathymetry Viewing and Downloading Service" is available via "Data Products".
- Information on bathymetric grids of the partners: the "Sextant Catalogue Service" is available via "Metadata & Data".
- To request individual bathymetric surveys: the "CDI data Discovery and Access Service" is available via "Metadata & Data".

The programme also has a web site with information on human activities at sea, www.emodnet-humanactivities.eu. Information available includes:

- wreck information from het European project Managing Cultural Heritage Under Water (MACHU),
- cables and pipelines,
- offshore installations and wind farms.

The European Commission uses EMODnet data sets to create the European Atlas of the Seas. See www.european-atlas-of-the-seas.eu.

DCDB

The worldwide bathymetric grid of the IHO Data Center for Digital Bathymetry (DCDB), available at www.ngdc.noaa.gov/iho. The bathymetric data of the Kingdom of the Netherlands finds its way to the DCDB through EMODnet. The IHO/IOC General bathymetric Chart of the Oceans (GEBCO) is based on the DCDB. The GEBCO map is available at www.gebco.net. GEBCO and the DCDB also maintain web services, see Table 3, and kml files of under sea feature names for visualisation in Google Earth.

¹ Delivery is also possible through the form at www.hydro.nl. Go to "Sales of nautical charts and publications" and subsequently to "Apply for hydrographic data".

The International Bathymetric Chart of the Caribbean (IBCCa) is a regional UNESCO-IOC project of GEBCO. Maps are available at gebco.net/about_us/committees_and_groups/scrum/ibcca/. GEBCO and the Nippon Foundation cooperate in the Seabed 2030 project, which aims for a full worldwide grid of depth data per 2030. The MACHC Seabed2030 subproject shows the DCDB data via a WebApp on www.iho-machc.org/seabed2030.html.

Other data sets

Bathymetry

- Data from Rijkswaterstaat is viewable and downloadable from bathymetrie.rijkswaterstaat.nl.
- Deltares provides individual bathymetric surveys via OpenEarth (www.openearth.nl) with a 25 m resolution. For some parts of the Netherlands Continental Shelf, a time series of surveys is available. The surveys are tiled in 5x5 km areas and include metadata. In addition to the data sets, kml files are also available for display in Google Earth. More information and an overview of urls can be found on publicwiki.deltares.nl/display/OET/Dataset+documentation+bathymetry+NLHO.

Wrecks

- The combined wreck data of the Netherlands Cultural Heritage Agency (RCE), Rijkswaterstaat and the Hydrographic Service are available for registered users through the GeoWeb application of Rijkswaterstaat at geoweb.rijkswaterstaat.nl. Additional information is given at geoweb.rijkswaterstaat.nl/ExterneDocumenten/NZ/GeowebNationaalcontactnummer.htm.
- The wreck data of the Netherlands Cultural Heritage Agency (RCE) are available for registered users through the European Managing Cultural Heritage Under Water (MACHU) project at <http://www.machuproject.eu>.

Maritime zones, limits and boundaries

- Data describing the location of the maritime boundaries and zones of the Kingdom of the Netherlands are available via our web site www.hydro.nl. See the Section "Maritime limits and boundaries". In general, updates are available within a few days at the web site, and possibly with a delay as a web service.
- Worldwide deposits of legislation on marine boundaries and zones are done at the Division of Ocean Affairs and law of the Sea of the United Nations (UN DOALOS). It is made public in their Maritime Space database, at www.un.org/Depts/los/LEGISLATIONANDTREATIES.

Sea bed and bed level constructions

- Offshore installations (like platforms, pipelines, and wells) at the North Sea are available via the site www.nlog.nl of the Geological Survey for the Netherlands of TNO.
- The Hydrographic Service provides Side Scan Sonar images of the sea bed and magnetometer data to the Geological Survey for the Netherlands, to include in the portal for Data and Information of the Netherlands Subsurface (DINO-loket). The data should be requested via www.dinoloket.nl.

Tidal heights and vertical references

- Water levels and predicted tides are available at the Waterinfo-site of Rijkswaterstaat at waterinfo.rws.nl, relative to NAP/MSL.
- The geoid and the Lowest Astronomical Tide (LAT) for the Netherlands part of the North Sea, as well as the difference between both, are published on www.hydro.nl. See the Section "Coordinate systems at sea", and then "Coordinate reference systems for depth measurement at sea". These are the results of the NEVREF project of Delft University of Technology (NLLAT2018 and NLGEO2018).
- The corresponding geoid for land area is offered via www.nsgi.nl, in the application RDNAPTRANS2018, variant 1.

Nautical charts

- The Meso-American and Caribbean Hydrographic Commission (MACHC) provides online access via MACHC ENC Online to the Caribbean ENCs of a growing set of States, see www.iho-machc.org, Also as a WMS.
- The British Admiralty offers paid view services containing Netherlands ENCs through AVCS Online (www.admiralty.co.uk/digital-services/digital-charts/admiralty-vector-chart-service-online).

- Primar offers paid view services containing Netherlands ENC's through the Primar Web Chart Service (www.primar.org/web-chart-service).
- Commercial parties offer products and services that are based on nautical charts and publications under licence, including online web services. To apply for a licence, we refer to UKHO (www.ukho.gov.uk/copyright) or IC-ENC (www.ic-enc.org/Distribution.html).

Web sites that combine data for planning and management

- The Informatiehuis Marien (IHM) shows a bathymetric grid for the entire Netherlands Continental Shelf, depth contours and the limits of the maritime zones at www.informatiehuismarien.nl/open-data/.
- The Caribbean Marine Atlas (CMA) is a portal for online national marine data sets of the entire Caribbean, see www.caribbeanmarineatlas.net.

Internal waters and coastal waters

The Hydrographic Service does not acquire any data in the internal waters or near the coast. Data requests for those specific areas are best dealt with by the Helpdesk Water (www.helpdeskwater.nl).

Web services

Web services for geographic data are able to automatically process requests to view data sets in a map (view services) or to download data (download services). The Open Geospatial Consortium (OGC) has developed standards for such services. The web services are not intended to be used with a standard browser. Free software for visualising and downloading of the data sets is for example:

- QGIS (www.qgis.org);
- ArcGIS Explorer (www.esri.com/software/arcgis/explorer/);
- CARIS EasyView (www.caris.com/products/easy-view/); or
- GAIA (www.thecarbonproject.com/Products/Gaia).

Feedback

We welcome your experiences with online services, preferably through our online feedback form for questions, remarks and complaints at our web site www.hydro.nl.

Table 1: links of INSPIRE web services North Sea

data set	name	URL
Geographic names at sea and large internal waters (harmonised)	INSPIRE View Service: INSPIRE Download Service: INSPIRE ATOM feed:	https://inspire.caris.nl/geoserver/gnwms/wms https://inspire.caris.nl/geoserver/gn/wfs https://inspire.caris.nl/atom/namen-noordzee-feed.atom
Maritime boundaries (harmonised)	INSPIRE View Service: INSPIRE Download Service: INSPIRE ATOM feed:	https://inspire.caris.nl/geoserver/auwms/wms (layer: auwms:AU.MaritimeBoundary) https://inspire.caris.nl/geoserver/mu/wfs (type: mu:MaritimeBoundary) https://inspire.caris.nl/atom/maritieme-grenzen-zones-noordzee-Maritieme-grenzen-Noordzee-feed.atom
Territorial Sea (harmonised)	INSPIRE View Service: INSPIRE Download Service: INSPIRE ATOM feed:	https://inspire.caris.nl/geoserver/auwms/wms (layer: auwms:AU.TerritorialSea) https://inspire.caris.nl/geoserver2/mu/wfs (type: mu:MaritimeZone) https://inspire.caris.nl/atom/maritieme-grenzen-zones-noordzee-Territoriale-Zee-Noordzee-feed.atom
Contiguous Zone (harmonised)	INSPIRE View Service: INSPIRE Download Service: INSPIRE ATOM feed:	https://inspire.caris.nl/geoserver/auwms/wms (layer: auwms:AU.ContiguousZone) https://inspire.caris.nl/geoserver/mu/wfs (type: mu:MaritimeZone) https://inspire.caris.nl/atom/maritieme-grenzen-zones-noordzee-aansluitende-zone-feed.atom
Exclusive Economic Zone (harmonised)	INSPIRE View Service: INSPIRE Download Service: INSPIRE ATOM feed:	https://inspire.caris.nl/geoserver/auwms/wms (layer: auwms:AU.ExclusiveEconomicZone) https://inspire.caris.nl/geoserver1/mu/wfs (type: mu:MaritimeZone) https://inspire.caris.nl/atom/maritieme-grenzen-zones-noordzee-EEZ-volgens-UNCLOS-feed.atom
Baseline (harmonised)	INSPIRE View Service: INSPIRE Download Service: INSPIRE ATOM feed:	https://inspire.caris.nl/geoserver/auwms/wms (layer: auwms:AU.Baseline) https://inspire.caris.nl/geoserver/mu/wfs (type: mu:Baseline) https://inspire.caris.nl/atom/maritieme-grenzen-zones-noordzee-baseline-feed.atom
Bathymetry deeper than 10 m LAT (harmonised)	INSPIRE View Service: OGC WCS:	https://inspire.caris.nl/geoserver3/bathy_wcs/wms https://inspire.caris.nl/geoserver3/bathy_wcs/wcs
Eems Mouth according to the Eems Dollard Treaty (harmonised)	INSPIRE View Service: INSPIRES Download Service:	https://inspire.caris.nl/g5/MarineRegion/wms https://inspire.caris.nl/g5/MarineRegion/wfs
Zones according to the EU Common Fisheries Policy until 3M and 6M (harmonised)	INSPIRE View Service: INSPIRE Download Service:	https://inspire.caris.nl/g5/am/wms https://inspire.caris.nl/g5/am/wfs
Block division NL Continental Shelf according to the Mining Act and Boundary Area according to the Supplementary Agreement to the Eems Dollard Treaty (harmonised)	INSPIRE View Service: INSPIRES Download Service:	https://inspire.caris.nl/g5/ProspectingAndMiningPermitArea/wms https://inspire.caris.nl/g5/ProspectingAndMiningPermitArea/wfs
Netherlands part of the PSSA Wadden Sea (harmonised)	INSPIRE View Service: INSPIRE Download Service:	https://inspire.caris.nl/g5/pssa_nl/wms https://inspire.caris.nl/g5/pssa_nl/wfs
LAT separations: NLLAT2018 w.r.t GRS80; NLGEO2018 w.r.t. GRS80; NLGEO2018 w.r.t. NLLAT2018 (harmonised)	INSPIRE View Service: INSPIRE Download Service:	https://inspire.caris.nl/g4/LAT2018OF/wms https://inspire.caris.nl/g4/LAT2018OF/wfs

Table 2: links of INSPIRE web services Caribbean Sea

data set	name	URL
Geographic names at sea	INSPIRE View Service Caribbean Sea:	https://inspire.caris.nl/server/services/ows/view/map/namen-carib_IVS
	INSPIRE Download Service Caribbean Sea:	https://inspire.caris.nl/server/services/ows/download/feature/namen-carib_IDS
Bathymetry (harmonised)	<i>Sint Maarten, Saba, Sint Eustatius</i> INSPIRE View Service Caribbean Sea:	https://inspire.caris.nl/g5/carib_noord/wms (Sint Maarten, Saba, Sint Eustatius)
	OGC WCS Caribbean Sea:	https://inspire.caris.nl/g5/carib_noord/wcs (Sint Maarten, Saba, Sint Eustatius)
	<i>Aruba, Curaçao, Bonaire</i> INSPIRE View Service Caribbean Sea:	https://inspire.caris.nl/g5/carib_zuid/wms (Aruba, Curaçao, Bonaire)
	OGC WCS Caribbean Sea:	https://inspire.caris.nl/g5/carib_zuid/wcs (Aruba, Curaçao, Bonaire)

Table 3: URLs of web services of the IHO community

dataset	naam	URL
European bathymetric grid	OGC WMS:	https://ows.emodnet-bathymetry.eu/wms
	OGC WMTS:	https://tiles.emodnet-bathymetry.eu
	OGC WFS:	https://ows.emodnet-bathymetry.eu/wfs
	OGC WCS:	https://ows.emodnet-bathymetry.eu/wcs
	REST:	https://rest.emodnet-bathymetry.eu/
Worldwide bathymetric grid	OGC WMS (Mercator):	https://www.gebco.net/data_and_products/gebco_web_services/web_map_service/mapserv
	OGC WMS (North pole area):	https://www.gebco.net/data_and_products/gebco_web_services/north_polar_view_wms/mapserv
	OGC WMS (South pole area):	https://www.gebco.net/data_and_products/gebco_web_services/south_polar_view_wms/mapserv
	REST (DCDB):	https://gis.ngdc.noaa.gov/arcgis/rest/services/web_mercator/multibeam_dynamic/MapServer
		https://gis.ngdc.noaa.gov/arcgis/rest/services/multibeam_mosaic/ImageServer
	https://gis.ngdc.noaa.gov/arcgis/rest/services/multibeam_mosaic_subsets/ImageServer	
	https://gis.ngdc.noaa.gov/arcgis/rest/services/csb/MapServer	
	https://gis.ngdc.noaa.gov/arcgis/rest/services/web_mercator/trackline_combined_dynamic/MapServer/1	
ENCs	OGC WMS:	https://gis.charttools.noaa.gov/arcgis/rest/services/MACHC/MACHC_ENCOnline_Public/MapServer/exts/MaritimeChartServer/WMServer