



REPUBLIC OF CYPRUS

**NATIONAL REPORT OF CYPRUS
TO THE
MEDITERRANEAN AND BLACK SEAS HYDROGRAPHIC
COMMISSION (MBSHC)**

MAY 2021

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1. Hydrographic Office / Service

In Cyprus the “hydrography stakeholders” are scattered across various departments of the government. In order to avoid duplication of work, to make full use of the existing infrastructure and for better coordination it was decided to establish a National Hydrographic Committee.

1.1 Cyprus National Hydrographic Committee

The Council of Ministers of the Republic of Cyprus with its decision number 513/7 established Cyprus National Hydrographic Committee (**CNHC**) which deals with all hydrographic matters in the country. The CNHC is composed by the representatives of the Ministry of Defence, Ministry of Foreign Affairs, and from the Departments of Lands and Surveys (**DLS**), Public Works, Geological Survey, Fisheries and Marine Research, Merchant Shipping and the Cyprus Ports Authority. The CNHC is chaired by the Director of DLS. At a later stage, the Cyprus Joint Rescue Coordination Centre, the Department of Environment, the Department of Antiquities and the Cyprus Police, joined the CNHC.

1.2 Hydrographic Office in Cyprus

The responsibilities of a typical Hydrographic Office are allocated to the Department of Lands and Surveys and the Cyprus Joint Rescue Coordination Centre.

1.2.1 Department of Lands and Surveys

Although CNHC made significant progress, it became clear that the cartographic contribution of DLS should be further strengthened. On 11/07/2014, the Law concerning the organisation and conduct of hydrographic activities and issuance of nautical charts, was voted for by the House of Representatives of the Republic of Cyprus.

The Department of Lands and Surveys, according to the legislation, is responsible to process and evaluate information and data of hydrography and nautical cartography for the purpose of:

- (a) Contributing to the safety of mariners;
- (b) Implementing, exploiting, promoting and developing sciences related to hydrography and marine cartography.

The Director of DLS is the Hydrographer of Cyprus. The DLS has a Hydrographic Unit which deals with all aspects of Hydrography and Nautical Cartography. The Hydrographic Unit operates within the Geodesy-Hydrography-Photogrammetry Branch. The DLS represents the Republic of Cyprus to the International Hydrographic Organisation and its subordinate organs.

A total of five employees are appointed in the Hydrographic Unit of DLS. DLS is a department with extensive knowledge and experience in land surveying, cartography, photogrammetry, GIS, geodesy, etc. Since 2006 DLS has been investing in capacity building on hydrography and nautical cartography.

DLS has bilateral agreements with the Hellenic Navy Hydrographic Service (Memorandum of Understanding) and the United Kingdom Hydrographic Office (Exchange of Letters).

No official or technical visits occurred from IHO officials or HOs within the last year. The DLS represents Cyprus at the IHO, and took part at the meetings of the Assembly (A2) and the 4th Council in 2020.

1.2.2 Cyprus Joint Rescue Coordination Centre

Cyprus Radio Coastal Station is providing Maritime Safety Information (MSI) within the area of Cyprus Search and Rescue Region which coincides with the Nicosia FIR. Cyprus Radio is currently operating under the command of the Joint Rescue Coordination Center in Larnaka.

Cyprus Radio collects and elaborates all the relevant navigational, meteorological, SAR, and any other safety and urgent information broadcasted via NAVTEX and radio, in order to ensure the safety of navigation within its area of responsibility.

Cyprus Radio has all the distress and safety communication facilities according to the GMDSS Master Plan and is operating on a 24/7 basis. Since June 2020, it has been relocated to new premises along with JRCC, in order to achieve more efficient and effective coordination.

In September 2020 JRCC participated, in the 12th meeting of the WNWNS-SC.

2. Surveys

2.1 General information

Waters of the Republic of Cyprus from 0-200 m have been adequately covered with various surveys conducted until 1960. With the establishment of CNHC, a resurvey program was defined, which started implementation in 2012. Three Hydrographic Surveys have been conducted as follows:

- 2012 with MBES
- 2014 with LiDAR
- 2018 with MBES

Data retrieved are S-44 compliant. So far, all coastal areas controlled by the Republic of Cyprus, from 0 – 280 m depth, have been resurveyed.

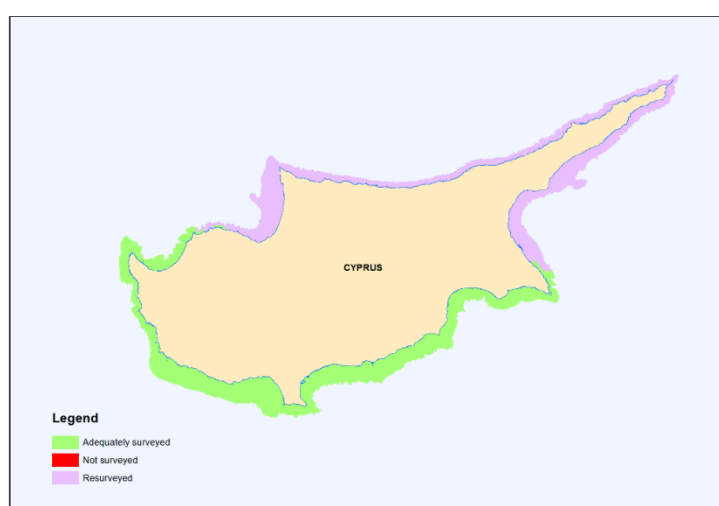


Figure 1: Areas surveyed from 0-200m depth

Waters beyond 200 m depth have not been adequately surveyed. DLS collects data from various activities carried out in the Exclusive Economic Zone of the Republic of Cyprus.

2.2 Coverage of new surveys / Future plans

A new extended survey is expected to take place in the area of Eratosthenes seamount in the following months.

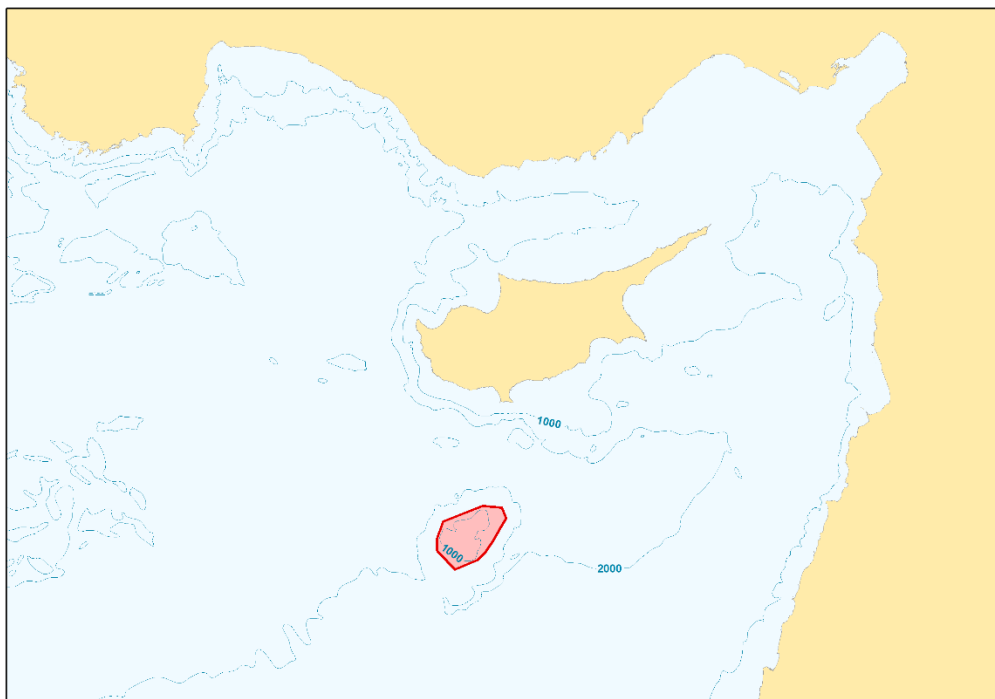


Figure 2: Survey area at Eratosthenis mount

As part of the ongoing hydrographic survey programme BYTHOS, DLS intends to resurvey the ports and other areas of interest.

The DLS is participating in a project named THAL-CHOR 2 which is part of the INTERREG V-A Greece Cyprus 2014-2020 program. One of the deliverables is Satellite Derived Bathymetry for the northern part of the island, which is not directly accessible due to the continuing illegal, military occupation of 36,2% of Cyprus' territory by Turkey since 1974.

2.3 New technologies and /or equipment

DLS, as part of the aforementioned THAL-CHOR 2 project, has acquired hydrographic equipment. The equipment consists of:

1. A Multibeam echosounder Teledyne RESON – Seabat T50-R ER
2. An Inertial Navigation System Teledyne RESON Teledyne INS Type 20
3. A Valeport miniSVS
4. An AML MinosX SVP

2.4 New Ships

The Department of Fisheries and Marine Research has decided to support DLS by providing the vessel “ALKYON” where all hydrographic equipment shall be installed on.



Figure 3: Installation of hydrographic equipment on ALKYON vessel

2.5 Problems encountered

Lack of an established vertical datum to support hydrographic activities. The existing Vertical Reference System was established in 1930 using limited extent of sea level data, deemed not suitable for hydrographic purposes. A new Vertical Reference System is under development which shall be connected directly to sea level, objective of one of the deliverables of the aforementioned project THALCHOR 2.

3. New charts & updates

As part of the DLS and UKHO collaboration, a processing of all available surveys is performed. The main objective is the update of charts and related products.

3.1 ENC's

For the time being Cyprus does not produce ENC's. The Republic of Cyprus has authorised the UKHO to produce on its behalf ENC's (11 cells) and other nautical publications that cover the maritime zones of Cyprus. Any other ENC's produced by a third party, in relation to the maritime zones of the island, and, in particular, the ENC's produced by Turkey in relation to the maritime zones of Cyprus, north of the island, are being produced without the consent of the Republic of Cyprus, thus, illegally, and may not, therefore, be deemed as official.

As part of the marine infrastructures development, DLS is in discussions with the UKHO, to enhance the existing chart schema.

DLS considers the option to undertake the production and maintenance of ENC's in the future.

3.2 ENC Distribution method

Nothing to report.

3.3 RNCs

Nothing to report.

3.4 INT charts

Nothing to report.

3.5 National paper charts

Nothing to report.

3.6 Other charts, e.g. for pleasure craft

Various coastal maps were prepared for use by government departments, members of the CNHC. These include maps showing Maritime Zones, maps for prevention of coastal erosion, maps for coastal management etc.

3.7 Problems encountered

Lack of an established vertical datum to support hydrographic activities (see paragraph 2.5)

4. New publications & updates

4.1 New Publications

One of the deliverables of project BYTHOS, was the survey of all lights and buoys of the island. The data is being processed, and DLS shall prepare a relevant publication.

4.2 Updated publications

Nothing to report.

5. Maritime Safety Information (MSI)

5.1 Existing infrastructure for transmission

Cyprus Radio has all the distress and safety communication facilities according to the GMDSS Master Plan and is operating on a 24/7 basis. The NAVTEX transmissions on frequency 518 kHz are conducted according to the pre-defined prototypes and procedures determined in the NAVTEX and MSI manuals.

Year	NAVTEX Bulletins	NAVVARS	NAVAREA III Warnings	METEO FORECAST	METEO WARNINGS	SARWARNS
2019	1374	608	308	730	25	11
2020	1273	509	198	730	31	3



Figure 4: Cyprus Radio NAVTEX Service and Coverage Area

5.2 New infrastructure in accordance with GMDSS Master

Nothing to report

5.3 Problems encountered

The Turkish Hydrographic Service issued navigational warnings within the Navtex service area of Cyprus, without any coordination and communication with CYPRUS RADIO, imposing in danger mariners in the region.

5.4 Research and development

JRCC Larnaca / Cyprus Radio aiming to enhanced the available maritime safety developed an interactive map accessible online, which includes the navigational warnings in force within the service area of Cyprus Radio, updated on a daily basis (<http://jrccmap.mod.gov.cy>).

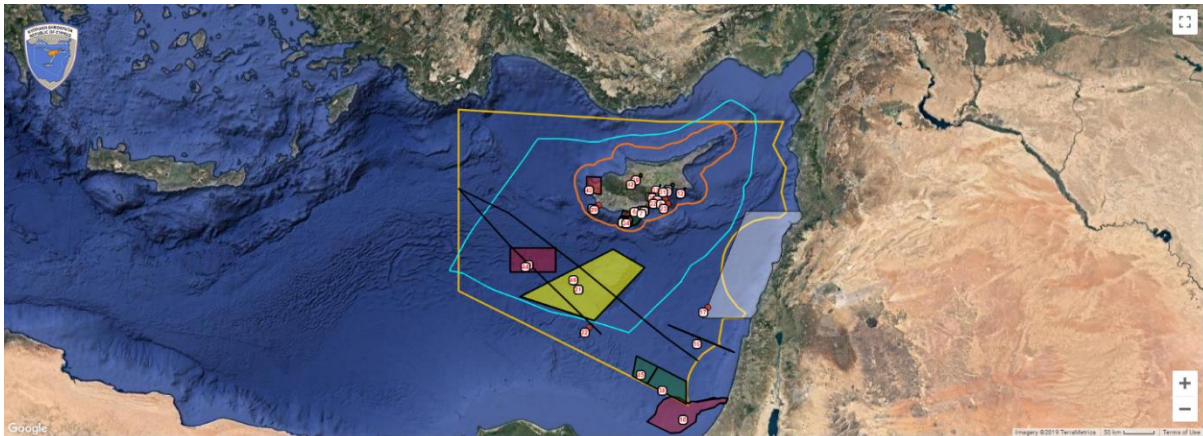


Figure 5: Navigational warnings in force

6. C-55

6.1 Latest update (Tables)

Last updates have been sent electronically through IHO online form.

7. Capacity Building

7.1 Offer of and/or demand for Capacity Building

7.1.1 Offer

At this stage it is not possible to offer a program for Capacity Building.

7.1.2 Demands

DLS needs training on the S-100.

7.2 Training received, needed, offered

7.2.1 Training received

Cyprus during 2020 – 2021 has received the following training through the IHO Capacity Building, provided by the UKHO:

A/A	Year	Title of Program / Project / Course	Participants
1	2021	Understanding ENC's	2
2	2021	Compiling for Navigational Safety	2
3	2021	Introduction to S-57	2

8. Oceanographic activities

8.1 General

Oceanographic Activities are carried out by the Cyprus Oceanography Centre (**COC**) after receiving a permit from the Marine Scientific Research Committee (**MSRC**), primarily under externally-funded research programs. The COC submits reports and data to the MSRC as required by the permits. The data are shared among all related parties.

8.2 Cruises / Observational Programs

Since 2008, the COC has conducted many offshore environmental campaigns, collecting information on water properties of temperature, salinity, dissolved oxygen, optical backscatter, and chlorophyll-a fluorescence using its two underwater gliders. Often, partner institutions (e.g. in Italy, France) also collect data with gliders in Cyprus as part of these projects. These data are also shared with the international oceanographic community via the Coriolis data center: <http://www.coriolis.eu.org/Data-Products/Data-Delivery/Data-selection>.

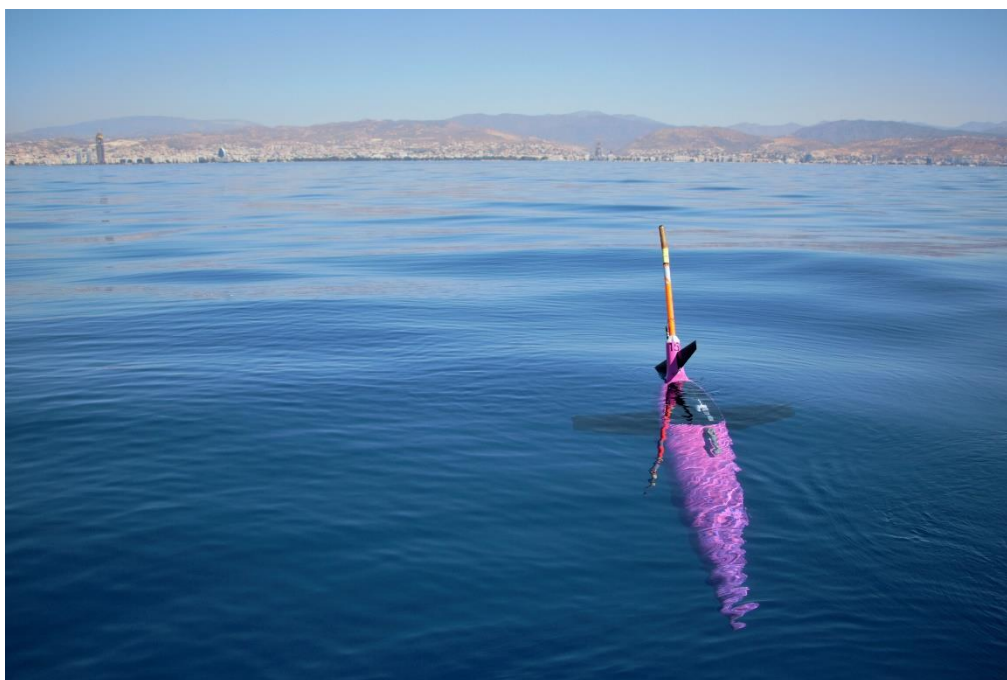


Figure 6: Seaglider SG150 during testing in 2019 in the coastal waters of Limassol, Cyprus.

The Oceanography website <http://www.ucy.ac.cy/oceanography/en/> maintains predictions regarding waves and currents corrected by merging with glider data which derived by CINEL.

8.3 GEBCO/IBC's activities

Nothing to report

8.4 Tide gauge network

DLS in 2017, established a new Tide Gauge Network named PYTHEAS, to not only support the tsunami warning system, but also to establish a Vertical Reference system and to support hydrographic activities. For this reason, DLS is collaborating with Cyprus University of Technology and the COC. Pytheas is fully operational and consists of 5 stations, of which four are under the DLS jurisdiction (Paralimni, Larnaka, Pafos, and Pamos) and one under the CUT (Lemesos). Stations are positioned approximately 40km apart.

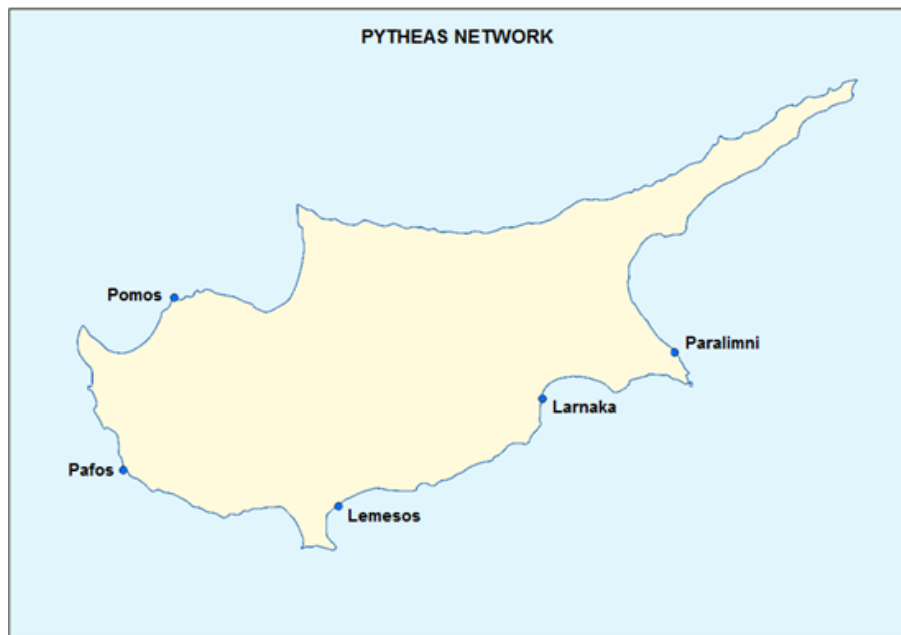


Figure 7: PYTHEAS network locations

8.5 New equipment

The four stations of PYTHEAS, in Paralimni, Larnaka, Pafos and Pamos, have been integrated with GNSS receivers. The main objective is to establish a vertical reference system, and also to monitor micro-movements.



Figure 8: PYTHEAS network station in Larnaka

8.6 Problems Encountered

DLS aimed on including a tide gauge station in the North East Atlantic and Mediterranean Tsunami Warning System. However, at the beginning of 2020, the pandemic struck, which initially limited our operations and then forced us to prioritize our obligations. Although this issue is still pending, we intend on making significant efforts to include a tide gauge station in the network.

9. Other Activities

9.1 Participation in IHO Working Groups

No participation in IHO working groups.

9.2 Meteorological data collection

The Sea Area forecasts provided by Larnaka Forecasting Office covers the sea region around the island and 8 Km seawards. All forecasts issued consist of a concise statement of the expected wind and sea state conditions at a certain area during the forecasting period.

The weather forecasts for NAVTEX service provided by Larnaka Forecasting Office cover the sea region in four NAVTEX areas, namely SOUTHEAST KRITIKO, DELTA, CRUSADE and TAURUS (shown below) which are registered in WMO No 9 Volume D, ("Information for shipping"). Warnings are also issued for the aforementioned areas, if and when necessary.

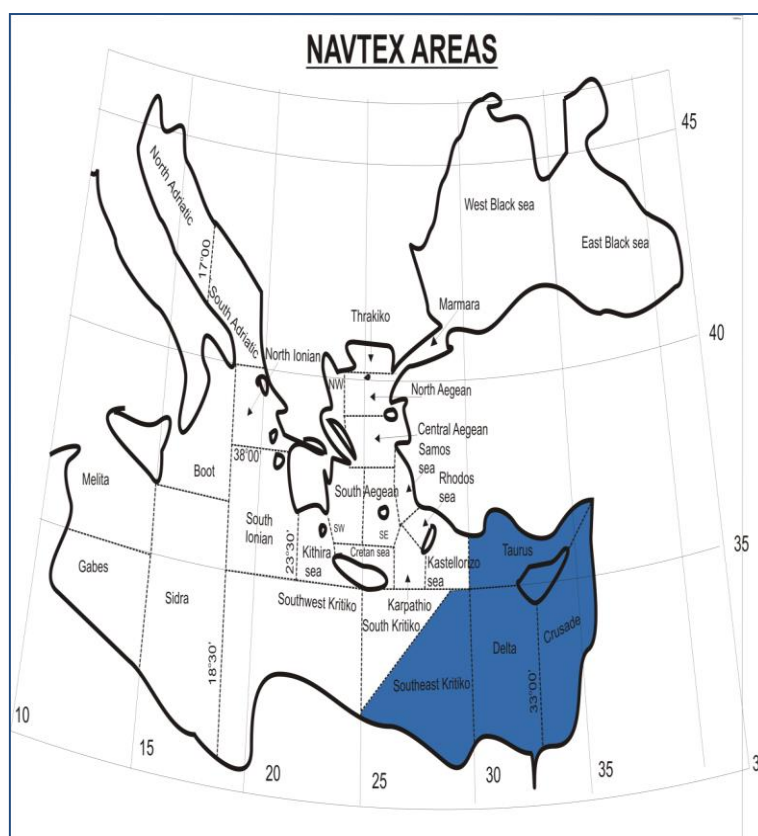


Figure 9: Larnaka Forecasting coverage

The NAVTEX reports (including warnings) are sent to Cyprus Radio by email for further dissemination. They are also uploaded to the WMO Website <http://weather.gmdss.org/>, through the Aeronautical Fixed Telecommunication Network (AFTN), and to the Department of Meteorology website. Marine Gale Warnings must be sent via AFTN independent of NAVTEX forecasts and even if their time of issue is identical.

9.3 Geospatial studies

The Cyprus University of Technology Laboratory of Geodesy (**CUT**) has received a 1M EUR grant by the European Union Regional Fund and the Republic of Cyprus, to establish a Strategic Research Infrastructure Unit, abbreviated CyCLOPS, to monitor geohazards within Cyprus and within the South-eastern Mediterranean region. Specifically, a network of co-located IGS-compliant GPS/GNSS permanent reference stations, weather stations, tiltmeters and novel InSAR Corner Reflectors is about to be deployed throughout Cyprus to enhance preparedness and prevention. The initial focus will be shed on earthquakes and landslides. Furthermore, CyCLOPS will augment the National GPS/GNSS Permanent Station network (CYPOS), which is operated by DLS. Consequently, the interstation distances will be shortened, and the accuracy and reliability of the provided services will be enhanced. CyCLOPS will also provide the backbone for the definition of a new, modernized National Coordinate Reference System. Furthermore, the cooperation of CyCLOPS and PYTHEAS will assist in geoid determination tasks for the area of Cyprus and the definition of the new National Vertical Datum.

An article titled “Establishing an Integrated Permanent Sea-Level Monitoring Infrastructure towards the Implementation of Maritime Spatial Planning in Cyprus”, was published in the Journal of Marine Science and Engineering. The abstract can be viewed at the following link:

<https://www.mdpi.com/2077-1312/8/11/861>

9.4 Disaster prevention

The Council of Ministers of the Republic of Cyprus, with its decision number 1795/2018 (09/10/2018), modified the composition of the Cyprus National Committee – Tsunami Warning System (CNCTWS) as follows:

- The representative of the Oceanographic Center of the University of Cyprus was named as observer.
- The representative of the Department of Lands and Survey was named as member.

The mandate of the Committee remains the same, namely:

- Represent the Republic of Cyprus at the NEAMTWS of IOC.
- Exchange of seismic and geophysical data and cooperate with Tsunami Service Providers within the framework of bilateral agreements.
- Prepare action plan for the response to a tsunami, evaluate existing action plans.

This committee is chaired by the Geological Survey Department and operates under the supervision of the Minister of Agriculture, Rural Development and Environment. The CNCTWS has defined so far the focal points for the various working groups that operate under NEAMTWS. Furthermore, the CNCTWS has submitted locations from Cyprus coast as tsunami forecast points for the Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas (NEAMTWS). In addition, the CNCTWS has subscribed to tsunami alert services from the following accredited Tsunami Service Providers (TSPs):

- NOA (Institute of Geodynamics, National Observatory of Athens, Greece),
- INGV (Istituto Nazionale di Geofisica e Vulcanologia, Italy), and
- KOERI (Kandilli Observatory and Earthquake Research Institute, Turkey)

In Zygi, an Inexpensive Device for Sea Level Measurement is operated by the Oceanography Center, University of Cyprus (in the frame of the initiative between JRC and UNESCO), to support the North East Atlantic and Mediterranean Tsunami Warning System.

The data is available at: https://webcritech.jrc.ec.europa.eu/TAD_server/Device/130.



Figure 10: IDSL device in Zygi Marina

9.5 Environmental protection

The Republic of Cyprus, on March 2019, has approved a revised version of National Contingency Plan for oil pollution combatting (NCP), which is published on DFMR's website on the following link:

<http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/All/EFC47876B89A5BB5422583E500414E9E>

Moreover, after the trilateral agreement signed on May 2018 between Cyprus, Greece and Israel, Cyprus has undertaken the initiative to develop a sub-regional contingency plan for oil pollution combatting in cooperation with Israel and Greece, under REMPEC's guidance and assistance. The plan has been approved by all parties.

In the case of accidental oil spill, the Department of Fisheries and Marine Research (DFMR) of Cyprus, acting as the national combat agency, is liable to activate its own manpower and resources to combat the oil spill. The Republic of Cyprus is equipped with airborne and waterborne means to confront such incidents.

At tier II and III or in the instance that the containment of the oil spill is not manageable, DFMR collaborates with the Deputy Ministry of Shipping, which in its turn contacts EMSA through CECIS program of Civil Defence for assistance. At the same time, REMPEC is also notified to provide operational assistance, as well as for any further actions needed to aid Cyprus' efforts to effectively and timely combat the oil spill.

On an annual basis, DFMR conducts table top exercises and up to two operational exercises on field, primarily to test the operational preparedness on a national level as well as on a regional level with the active participation of neighbouring countries.

The Department of Environment (DENV) is responsible specifically for the management of liquid and solid oily waste and residues arising from the oil response and recovery operations. The DENV also participates in the National Environmental and Scientific Advisory Committee, which is activated through the NCP.

The tender "Mapping and evaluation of Posidonia Meadows and other important marine habitats under the European Habitats Directive (92/43/EEC), in the coastal waters of Cyprus (19/2018) was signed on September 2019 and it is expected to be concluded by the end of 2023. The overall objective of the project is the mapping and evaluation of Posidonia meadows (Habitat 1120*) and other important marine habitats (1110, 1170 and 8330) under the European Habitats Directive (92/43/EEC) in the coastal waters of Cyprus (from 0 – 50 m depth).

9.6 Aids to navigation

In order to assess the adequateness and effectiveness of the system for delivering Aids to Navigation (Aton) services, a technical visit was conducted by the International Association of Marine Aids to Navigation and Lighthouse Authorities World-Wide Academy (IALA WWA) in February 2020.

The Aton services were evaluated and areas of possible improvement were identified. The Vessel Traffic Service (VTS) delivery was found to be well managed however, continuous training of VTS personnel is an ongoing concern.



Figure 11: Photo from the technical visit of IALA

9.7 Astronomical observations

Nothing to report

9.8 Magnetic/Gravity surveys

The Department of Earth and Environmental Sciences at the Ben Gurion University of Israel conducted a magnetic geophysical survey along 2 lines, to the Southwestern part of Cyprus EEZ during the 3rd quarter of 2019 in order to better understand how the oceanic crust preserves its magnetization.

In October 2020 a Geophysical, Seismic, Geotechnical and Geochemical surveys were conducted in relation to the second phase, for the East Med Pipeline Project.

9.9 MSDI Progress

The Department of Lands and Surveys continues the development of the National Land and Hydrographic Data Base. Various online services, including data downloading services, are available in DLS-Portal (<http://portal.dls.moi.gov.cy>).

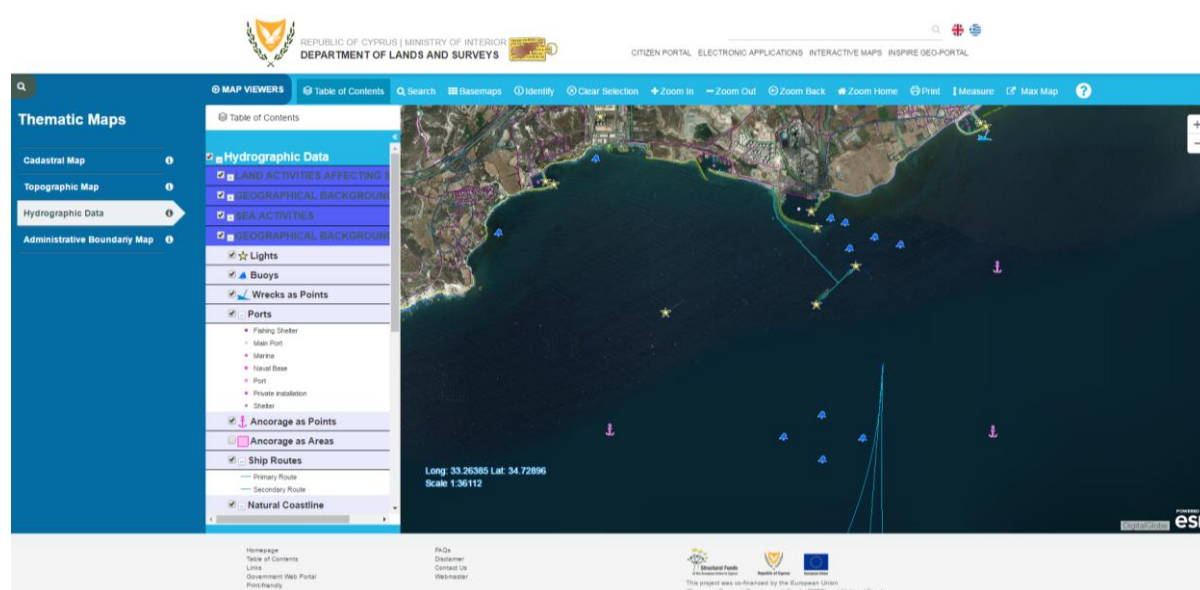


Figure 12: DLS Portal

9.10 Legislation and other related activities

List of Laws and Regulations of the Republic of Cyprus in relation to its maritime zones (non- exhaustive):

- The United Nations Convention on the Law of the Sea (Ratification) Law of 1988 (No. 203 of 1988)

Territorial Sea:

- Territorial Sea Law (N. 45 of 1964), as amended in 2014
- Law concerning the regulation of innocent passage through the territorial waters (28(I)/2011)

Contiguous Zone:

- Law for the provision of the proclamation of the Contiguous Zone (63(I)/2004)

Exclusive Economic Zone and Continental Shelf:

- Exclusive Economic Zone and Continental Shelf Law (64(I)/2004), as amended in 2014

Regulations issued in accordance with the Law 64(I)/2004:

- Marine Scientific Research Regulations of 2014
- Submarine Cables Regulations of 2014
- Submarine Pipelines Regulations of 2014

Regulations still in force, issued in accordance with the abolished Law on Continental Shelf of 1974:

- Safety Zones Regulations of 2013

Other laws applying in the maritime areas

- Organisation and Execution of Hydrographic Activities and Publication of Nautical Charts Law of 2014 (N.96(I)/2014)
- Geological Surveys Law of 2013 (N.140(I)/2013)
- Antiquities Law, Cap. 31 (as amended in 2014)
- Maritime Spatial Planning Law of 2017 (N. 144(I)/2017)
- other European Union legislative acts

There is a National Working Group (WG) responsible for the Integrated Coastal Zone Management (ICZM) chaired by the Department of Environment and one responsible for Maritime Spatial Planning chaired by the Shipping Deputy Ministry.

10. Conclusions

Cyprus is heading towards Blue Growth and this can be achieved through investment in the development of Hydrographic Services, promoting safety of navigation. The CNHC has established a mechanism to further develop hydrography in Cyprus. Through collaboration it was managed to acquire its first survey vessel, which will help enhancing data coverage.

All data retrieved by members of CNHC is collected, stored and maintained by the DLS, thus creating the appropriate conditions to take on a substantial and active cartographic role. Throughout the work cycle issues emerge, which are acknowledged, thoroughly considered and efforts are made for their resolution.

All CNHC bodies are collaborating, not only with other governmental departments, but also with other countries and organisations. These collaborations are significant for exchanging experience and knowledge. Capacity Building funds offer means for further development.

The pandemic limited our operations and forced us to prioritize our obligations. Even though this issue is still in effect, we intend on making significant efforts to achieve our goals.