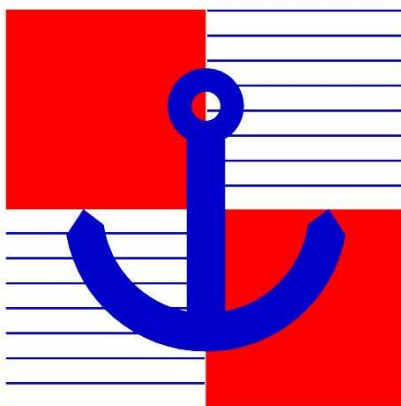


**MEDITERRANEAN AND BLACK SEAS
HYDROGRAPHIC COMMISSION**

XVII CONFERENCE

CONTRIBUTION BY CROATIA

HRVATSKI HIDROGRAFSKI



INSTITUT

**GREECE, Athens
1-3 June 2011**

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1. HYDROGRAPHIC OFFICE

Hydrographic Institute of the Republic of Croatia carries out scientific-research, development and professional works concerning the safety of navigation, hydrographic-geodetic survey of the area of national responsibility, marine geodesy, design and production of charts and nautical publications, oceanographic research, submarine geology research and finally publishing and printing activities. Hydrographic activities are regulated by law. The CHI position in the structure of Croatian administration is shown in Annex 1. For details see www.hhi.hr.

2. HYDROGRAPHIC SURVEYS

2.1 Survey status

Hydrographic surveys conducted along the Croatian coast since the XVI MBSHC Conference was limited to selective parts of the coast and principal ports and passages. Numerous hydrographic profiles have been surveyed in order to elaborate underwater marine installations. Annex 2 summarizes the status of hydrographic surveys.

2.2 Problems encountered

Due to some reasons which are not hydrography related, the joint IT/SI/HR hydrographic survey of the North Adriatic area (*Rec. MBSHC15*) planned to be supported by IHO CBC budget was not released.

3. CHARTS

3.1 ENCs

Croatian ENCs are based on the existing paper charts, and what has been produced so far are 107 ENC cells, all navigational purpose, covering the Croatian area of responsibility.

The CHI is planning to achieve adequate coverage, availability, consistency and quality of ENCs by the 01 July 2012. The current status of the CHI ENC production is shown in the following table:

User band	Navigational purpose	1 July 2008		1 July 2009		1 June 2011	
		No of Cell	Area coverage (%)	No of Cell	Area coverage (%)	No of Cell	Area coverage (%)
1	Overview	1	100%	1	100%	1	100%
2	General	4	100%	4	100%	4	100%
3	Coastal	15	100%	15	100%	15	100%
4	Approach	9	72%	11	77%	12	81%
5	Harbour	31	77%	33	80%	37	84%
6	Berthing	20	74%	21	77%	22	80%
TOTAL		80	87%	85	89%	91	91%

Annex 3 shows Croatian ENC priority plan. Annex 4 shows recognized HSC routes which are covered by ENCs from 1 July 2008 as it was planned. Annex 5 shows ENCs release status.

3.2 ENC's distribution method

CHI distributes its ENC's through the PRIMAR RENC. The first Croatian ENC's were released in February 2007. In the period between two conferences 91 ERs were released.

3.3 WMS for ENC's

CHI as a member of Primar Stavanger actively participated in the project WMS for ENC's together with a few other PS member states in the project defining phase as well as in the pilot testing of the new WMS service phase. At the moment, CHI and a few Croatian maritime governmental organizations (MRCC, Maritime Directorate, HM Offices) use WMS for ENC's for administrative purposes (Fig 1).

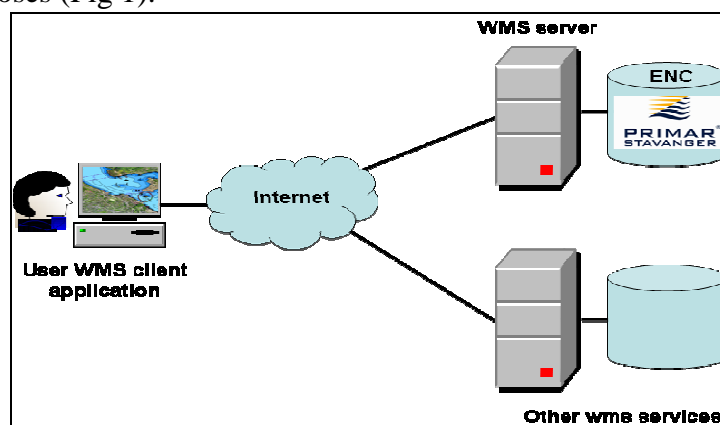


Figure 1. Primar WMS for ENC's

3.4 INT ENC scheme

The CHI view about INT ENC scheming as a response to MEDINT CHART Coordinator CL No 35 and 36 is attached as Annex 6 of this report. Croatian statement on Decision MBSHC15-MEDINTCHART 8 is attached as Annex 7.

3.5 RNCs

RNCs covering Croatian area of responsibility are available from ARCS according to bilateral agreement.

3.6 INT paper charts

MEDINTCHART Catalogue should be updated in accordance with table in Annex 9.

3.7 National paper charts

In the period between the two MBSHC Conferences Croatian Hydrographic Institute published the following charts:

New charts		
Sedmovračé – Prolaz Veli Ždrelac	32	1:35 000
New editions		
Ploče	63	1:8 000
New printing		
Male karte	(1-29)	1:100 000

3.8 New technologies

Print on Demand

The process of printing of charts using plotter (Print on Demand) has been introduced, by which is now possible to print more than 50% of HR charts portfolio (Fig 2).



Figure 2. Print on demand

Since 2008 the correction (corrections to the NtMs) printed charts is performed by machine correction to the plotter. The aim of this operating mode is that the HHI all charts out to customers up to date and charts to make better quality and more reliable for the safety of navigation. Using this method, the 2009th is corrected about 4500, and the 2010th about 2000 charts

Paper charts production using dKart Publisher

An intensive work to the adoption of the production process of making paper charts with dKart module (dKart Publisher) has continued (Fig 3)

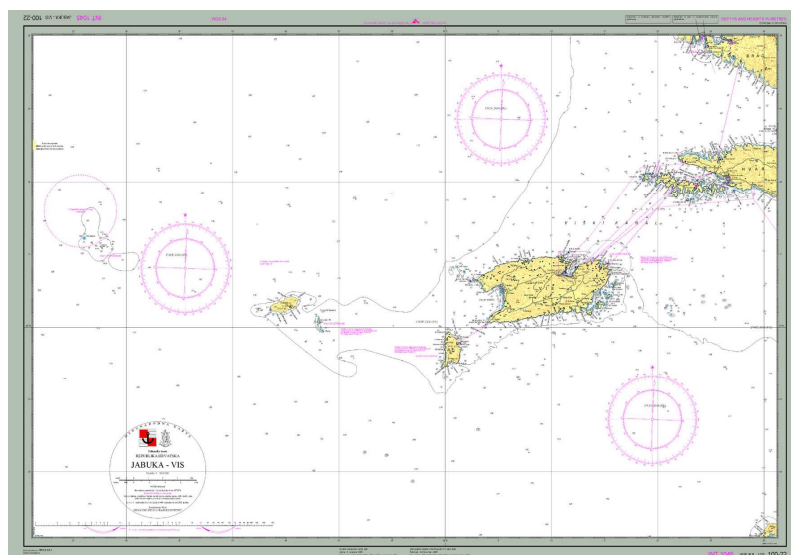


Figure 3. The chart 100-22 JABUKA - VIS produced using dKart module

3.9 Problems encountered

Some overlapping issues exist among HR, IT and GR Overview and General ENC's, and they should be discussed and solved. The CHI proposal for solving overlap issue as it is described in paper submitted and will be presented at the 25th International Cartographic Conference (Paris 3 -8 July 2011.), The title of the paper is "The analysis of the current problem of overlap of ENC data in the Adriatic Sea and a proposal for the solution", Bradarić, Ž., Čala, M. and Gržetić, Z. An extract is attached as Annex 8.

Some inconsistencies observed between national paper charts and ENC's are also under consideration and deliberation.

The CHI view about a few gaps in the Adriatic Sea covered by INT paper charts series scale 1:250 000 is attached as Annex 10 of this report.

The CHI comment on the SI initial proposal of the new INT chart in the North Adriatic is attached as Annex 11 of this report.

The CHI request for clarification of the inclusion of charts 3465 in the Medintchart Catalogue draft version Jan 2010 and May 2011 is attached as Annex 12.

4. NAVIGATIONAL PUBLICATIONS

4.1 National navigational publication series

CHI navigational publication series includes the following documents (Fig 4):

- 1 Sailing Directions (new edition in preparation)
- 1 Sailing Directions for Yachts (two volumes in four languages)
- 1 Lists of Lights
- 1 Radio Service
- 1 Nautical Almanac
- 1 Nautical Tables
- 1 Symbols and abbreviations (INT)
- Notices to mariners (monthly edition)
- Catalogue
- 1 Tide Tables
- 1 Special Publication for Croatian Navy Ships

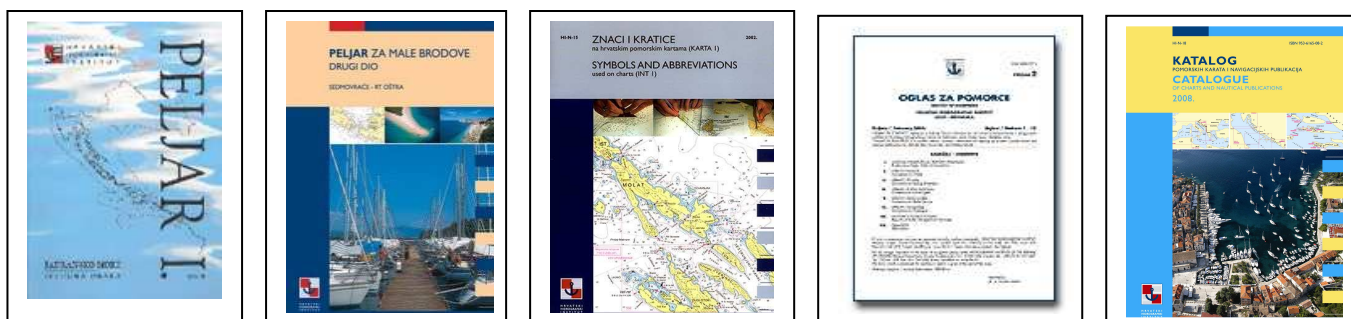


Figure 4. Navigational publications

4.2 Issued navigational publications

The publications issued since the XVI MBSHC Conference are listed hereinafter:
Tide Tables:

- Tablice morskih mijena 2010.
- Tablice morskih mijena 2011.

Nautical Almanac:

- Nautički godišnjak 2010.
- Nautički godišnjak 2011.
- Nautički godišnjak 2012. (in preparation)

Catalogue:

- Katalog pomorskih karata i navigacijskih publikacija, new edition (in preparation)

The Electronic version of Notices to Mariners is under preparation.

5. MARITIME SAFETY INFORMATION (MSI)

The Croatian NAVTEX Station has been installed in Hvar Is. (Q) since 1999 (previously Split), covering the area of the Adriatic Sea, being maintained by the coastal station Split Radio. This station broadcasts every four (4) hours. Correctness in the promulgation of information is controlled on the NAVTEX receiver in Nautical Department of the CHI. No failure occurred during ordinary operation. Schedule of radionavigational warnings is shown in the following table:

NAVWARNINGS	2009.	2010.	2011. (until 30.04.11.)
NAVAREA	15	4	-
COASTAL	50	26	16
LOCAL	296	255	60

The most important maritime safety information – Notices to Mariners (monthly edition), 10-day's bulletin of radionavigational warnings and the list of Temporary (T) and Preliminary (P) Notices – are available on www.hhi.hr.

5.1 Problem encountered

Although the newest Navtex areas of responsibility have been defined, CHI still promulgates Slovenian NAVAREA warnings through HR NAVTEX station.

6. S-55 IHO PUBLICATION

Updating information is provided as necessary.

7. CAPACITY BUILDING

7.1 New technologies

Computer and communication infrastructure

New network equipment was installed, using an optical fibre cable which provides the local computer network (LAN) of the Institute with a gigabit bandwidth for external links.

According to the project documentation for ArcGIS server implementation, installation of ArcGIS Server, MS SQL Server, and Reverse Proxy Web Server was completed. User accounts were created on the server, and the GIS application “Concessions” installed (Fig 5).

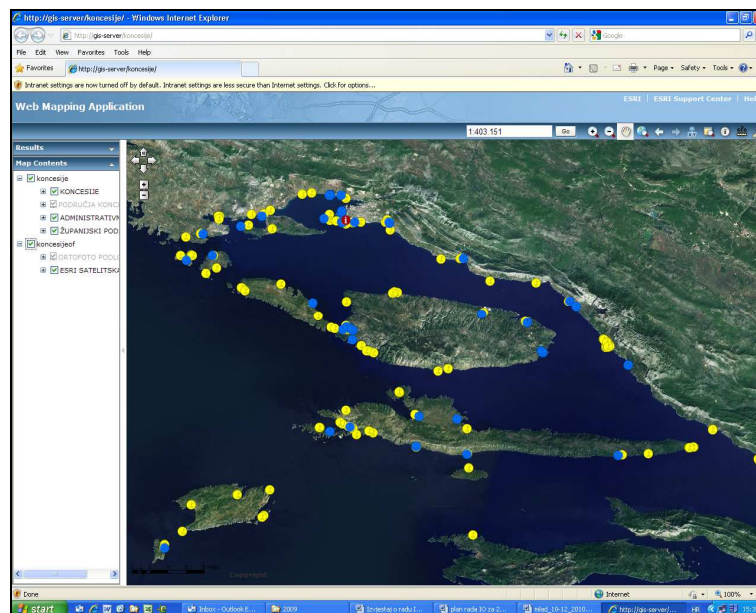


Figure 5. GIS application “Concessions”

WEB

New website of the Institute was launched (www.hhi.hr), providing a variety of new information, with modern design and functionality.

Online publication “CATALOGUE OF CHARTS AND NAUTICAL PUBLICATIONS” is updated on a regular basis (Fig 6).

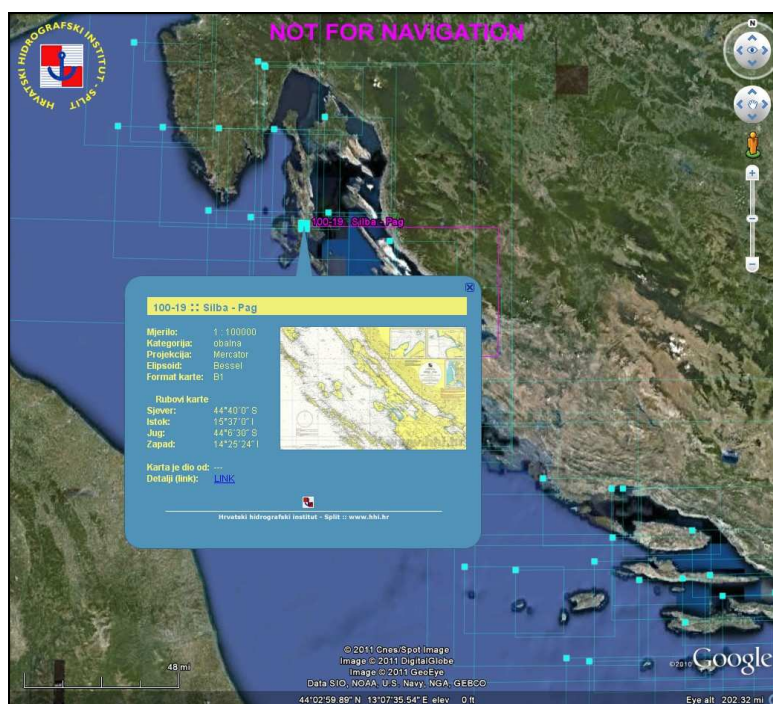


Figure 6. Online Catalogue of Charts and Nautical Publications

E-Services of Notices to Mariners and Radio Navigational Warnings are available on the Institute website. Digital “Notices to Mariners” provide monthly updates, as well as archives of previously published digital notices (Fig 7).

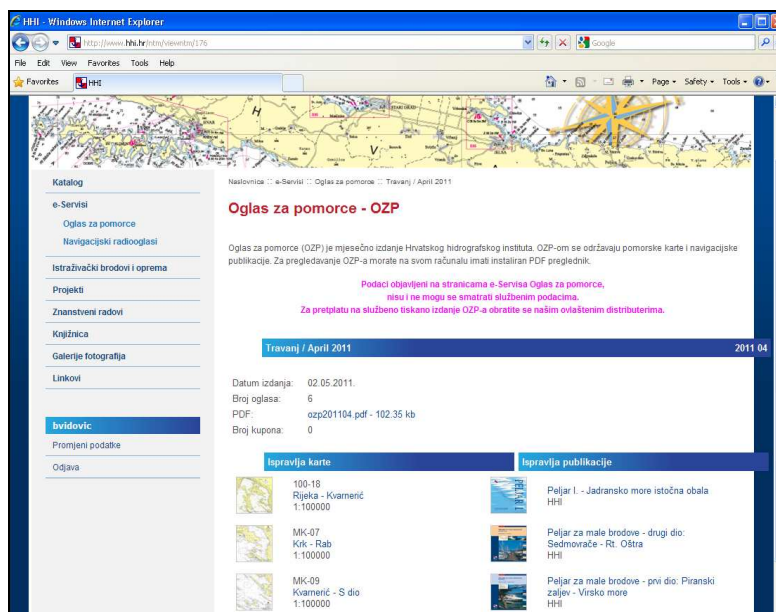


Figure 7. Notices to Mariners e-Service

Digital “Radio Navigational Warnings” are updated promptly, as soon as new information is reported (Fig 8).



Figure 8. Radio Navigational Warnings e-Service

Oceanographic information system

Tidal measurements

Computer support was implemented for tide-gauge Split (outer breakwater), tide-gauge station Ploče, and for tidal measurements and tide-gauge data.

Wave measurements

Application displaying the positions of waverider buoys was created with Google Earth interface (Fig 9).

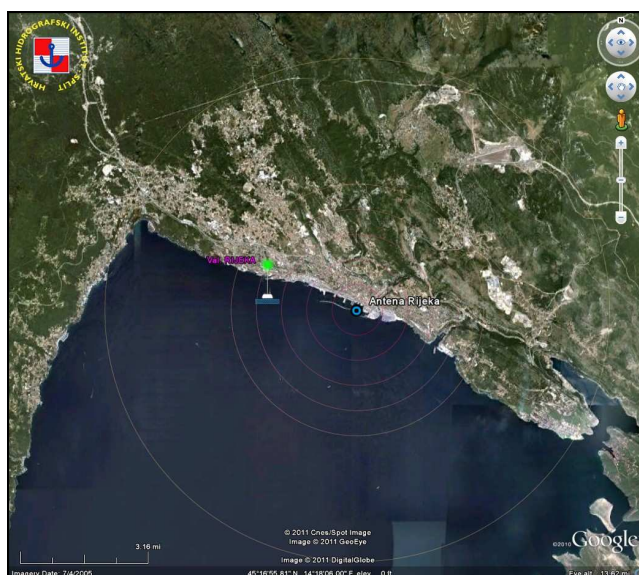


Figure 9. Tide-gauge display in Google Earth

Sea Water Transparency and Colour

Access database “Bojaiprozirnost” was created and exported to SQL server 2008 Express database. Access to data in the database is available through web form (Fig 10).

ID	Drzava	Ustanova	Brod	Operator	Broj krstarevanja	Projekt	Zona	Kvadrat	Godina	Mjesec	Dan	Vrijeme (h)	Vjetrov (m/s)	Oblačnost	Stanje mora	Secchi boja	Secchi sni	Boja	Fi	Fim	Fisok	Lambdas
131							01	0029	1968	8	13	6,6	5,2	0	3	23	10	99	44	38	0	14
135							01	0029	1968	10	7	15,5	2	5	8	30	11	3	44	38	0	14
194							01	0029	1970	4	10	11,8	4,5	7	8	22	11	3	44	38	0	14
199							01	0029	1970	6	6	9,3	8	8	2	17	8	4	44	38	0	14
208							01	0029	1971	10	8	13,6	3,5	0	1	35	18	3	44	38	0	14
412							01	0029	1974	1	24	7,6	4	3	1	14	5	99	44	38	0	14

Figure 10. Database of Sea Water Transparency and Optical Properties

Digital library system

Special library software package METELwin was installed to promote the resources of the Institute Library, including several modules (cataloguing and classification, management of users' records, statistics, search of library catalogue by all criteria) to cover most of the library operations. This new software enables online access and search of library catalogue (Fig 11).

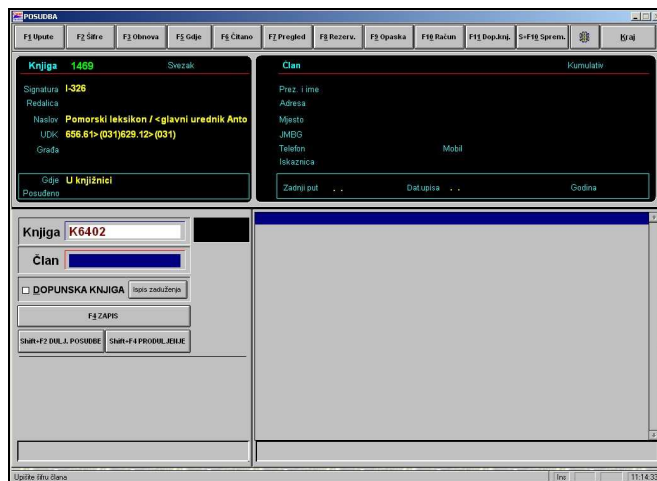


Figure 11. METELWin Application

Other projects

Catalogue of Orthophoto Images was created as Google Earth application, including about 12000 low-resolution images. Display of aerial photographs was created with Google Earth interface (Fig 12).

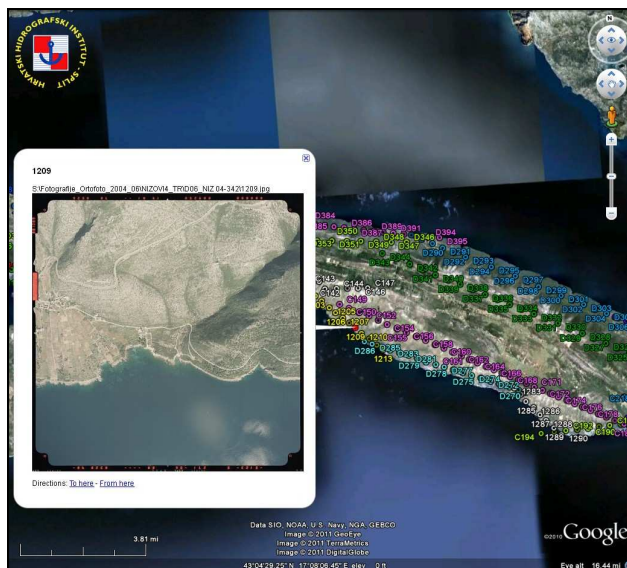


Figure 12. Catalogue of Aerial Photographs in Google Earth

National Spatial Data Infrastructure – NSDI

Hydrographic Institute actively participates in the long-term project of HR at national level for harmonising the national legislation with INSPIRE guidelines aiming to establish the NSDI.

7.2 Training

Within implementation of the three-year CRONO HIP project, instruments and equipment for the new digital production line are obtained. CHI personnel have been trained in various ENC construction issues and Quality Control and Validation procedures.

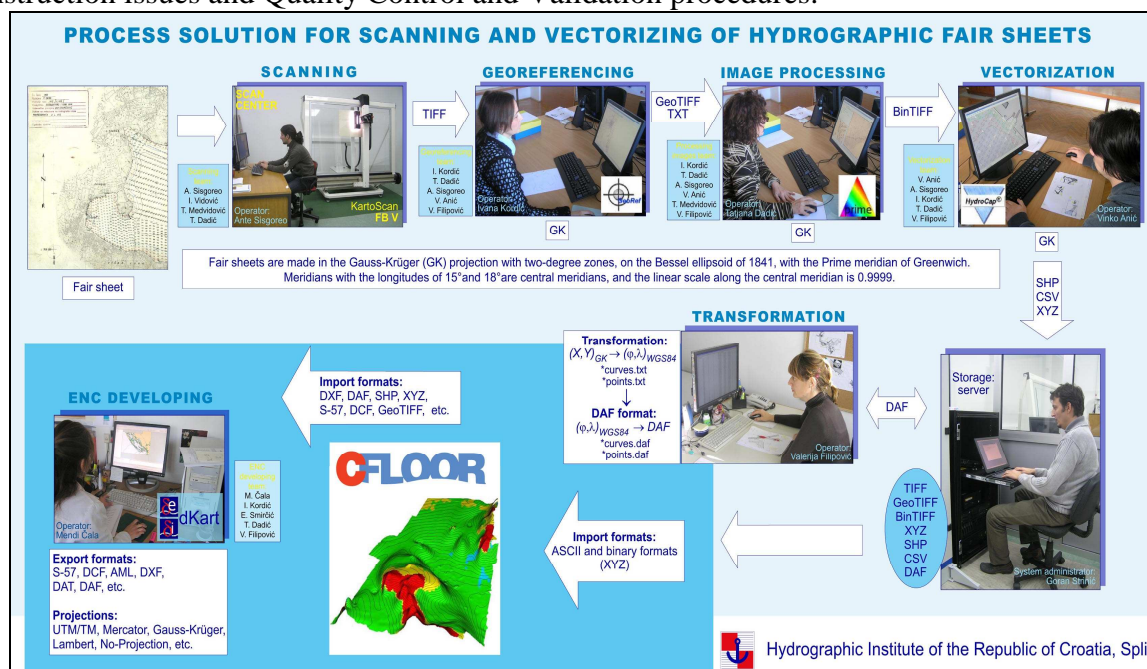


Figure 13. Process solution for scanning and vectorisation of hydrographic fair sheets

The institute currently has two separate databases, one for ENC production and one for the official paper charts. The project is underway by which will be established the production of paper and electronic charts from the single database and the WGS84 ellipsoid (Fig 13)

7.3 Bilateral agreements

During the period 2009-2011, the following Bilateral Arrangements were compiled and are now under affirmation between Croatia and the following countries: Greece and Italy.

IPA - Cross-Border Programme Croatia-Montenegro

The European Union (EU) through its funds and programmes provides support for different kinds of projects and activities. The instrument for pre-accession assistance (IPA) offers assistance to countries having the status as potential candidates and the status as candidate countries under the accession process in the period 2007–2013. The IPA is made up of five components, of which the second component concerns the cross-border cooperation.

Among the first five approved projects within the IPA Cross-Border Programme Croatia – Montenegro is the project of the Hydrographic Institute of the Republic of Croatia with its cross-border partner the Hydrometeorological Institute of Montenegro, entitled: „Joint Promotion and Increased Level of Safety in Nautical Tourism in Dubrovnik-Neretva County and Montenegrin Coast”.

Main objective of the project is to improve the tourism (especially nautical) potential of the Dubrovnik-Neretva County and the Montenegrin coast through its joint promotion as a unique tourist entity with rich cultural and natural heritage (Fig 14).

The project will contribute towards raising the quality of services and increasing the level of safety in nautical tourism through cooperation between:

- hydrographic institutions,
- institutions providing different tourist services (marinas and other tourist ports, charter agencies),
- institutions for maritime safety and safety in general (harbour master's offices, port authorities, maritime border police).

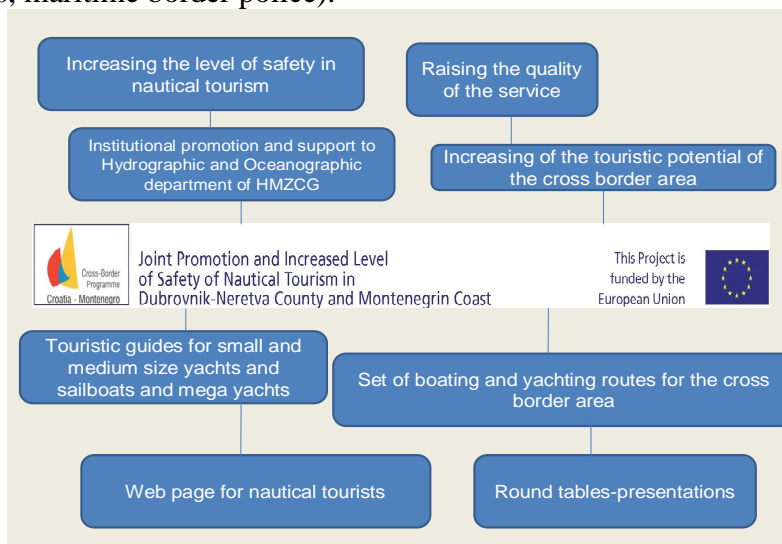


Figure 14. Scheme of the project goals

On the Croatian part, participants in the project are the Hydrographic Institute of the Republic of Croatia (HHI) as leading partner, and the University of Dubrovnik (Maritime department) as its partner. The participants on the Montenegrin part are the Hydrometeorological Institute of Montenegro (HMZCG) as leading partner, and the National tourist organization of Montenegro as its partner.

Associate partners are the Ministry of the Sea, Transport and Infrastructure of the Republic of Croatia, and on the Montenegrin part the Department for the Safety at Sea, the Harbour Master's Office Kotor (LK Kotor), and the Porto Montenegro Marina.

The project was launched in January 2011. The scheduled duration of the project is 23 months (until the end of 2012). Total value of the project for both sides is 451.928,36 €.

7.4 Status of approval to the amendments to the IHO Convention

In period between two conferences CHI made extra efforts in communication with competent administration with intention to speed up the bureaucratic procedure of approval of the Protocol of amendments. In accordance with the newest information it is expected the formal approval before the end of this year.

8. OCEANOGRAPHIC ACTIVITIES

8.1 Oceanographic projects

Oceanographic Department participates in several projects: Research of the Adriatic Sea as the Basis for the Sustainable Development of the Republic of Croatia - Project Adriatic (RASSDC). Through the project "Adriatic tides and sea level on-line" managed by the OCO-HHI, several web applications were created, giving tidal predictions at 7 ports along the Croatian coast of the

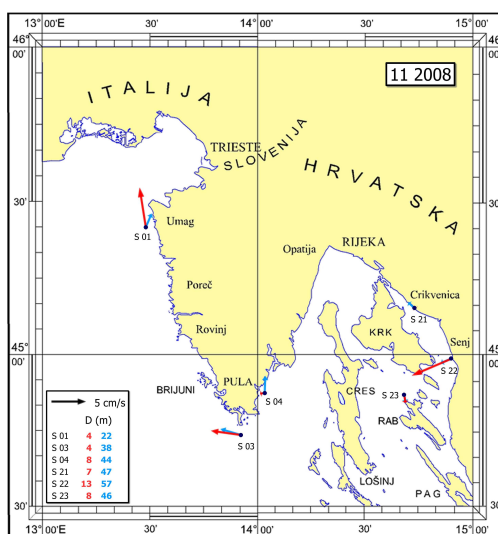
Adriatic Sea. Tide gauge station (Split) was collocated with (CGPS – Continuous Global Positioning System) providing the real-time information about absolute measured sea level for the years 2009, 2010, 2011. Operational tide gauges (see Figure 2) are equipped with analogue-to-digital converters (a/d) having continuity in the long-term observation, IPA Cross-Border programme Croatia-Montenegro (Project “Join promotion and Increased Level of safety of Nautical Tourism in Dubrovnik-Neretva County and Montenegrin Coast (see Fig 15).



Figure 15. Within IPA Cross-Border programme Croatia-Montenegro (2011-2014) conducted oceanographic training for colleagues from Montenegro.



Figure 16. Operational tide gauge network on the east Croatian coast of the Adriatic sea.



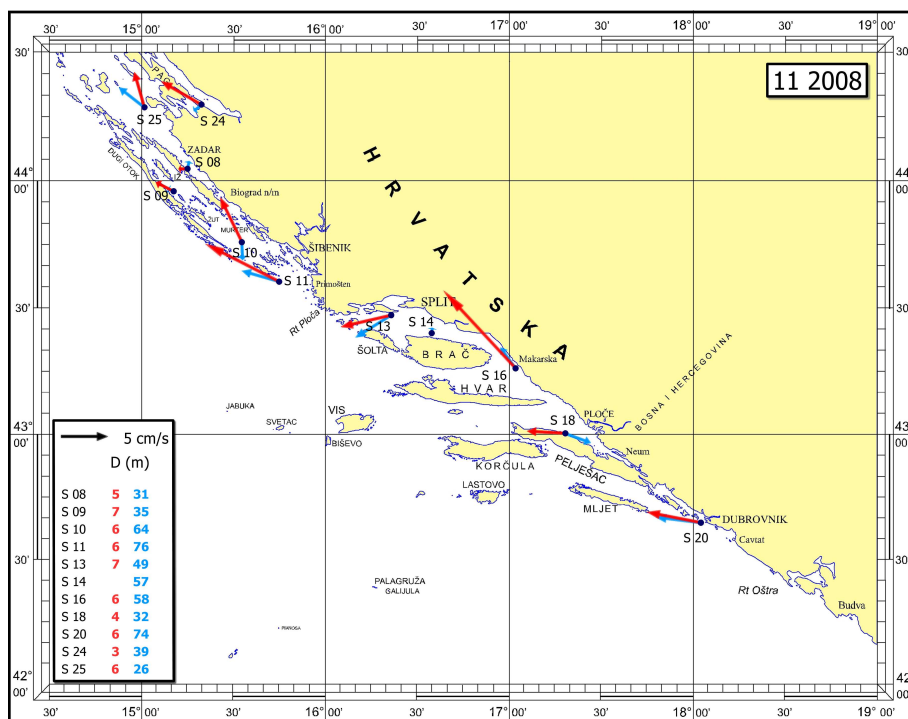


Figure 17. Mean sea currents measured during November 2008
(Final report Jadranski project).



Figure 18. Acoustic Doppler Current Profiler ready for deployment, aboard RV “Hidra”

During 2008/2009 oceanographic department participated within “JADRANSKI PROJECT” which was concluded after monitoring of oceanographic parameters like CTD (Fig 18) and current meter measurements as shown in Figure 3 and 4 with final report in November 2009.

The RIJEKA GATEWAY PROJECT titled “Wave Condition Monitoring within Port of Rijeka – Zagreb Pier” (Figure 21, 22, 23) started in May 2009 (oceanographic department deployed DATAWELL waverider buoy for monitoring wave heights, wave periods and wave direction generated by wind in front of Rijeka harbour), continued through 2010 and 2011.

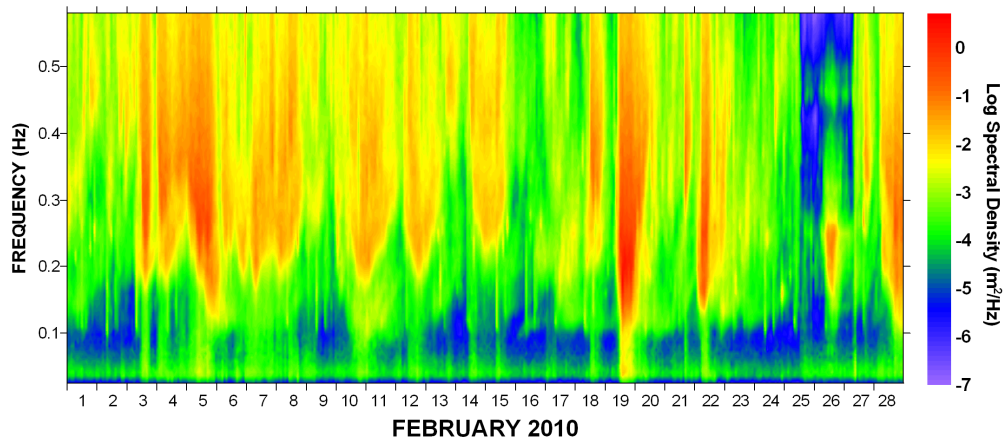


Figure 21. Monthly time series of waves power spectral density (log scale, Feb 2010) in Rijeka Bay.

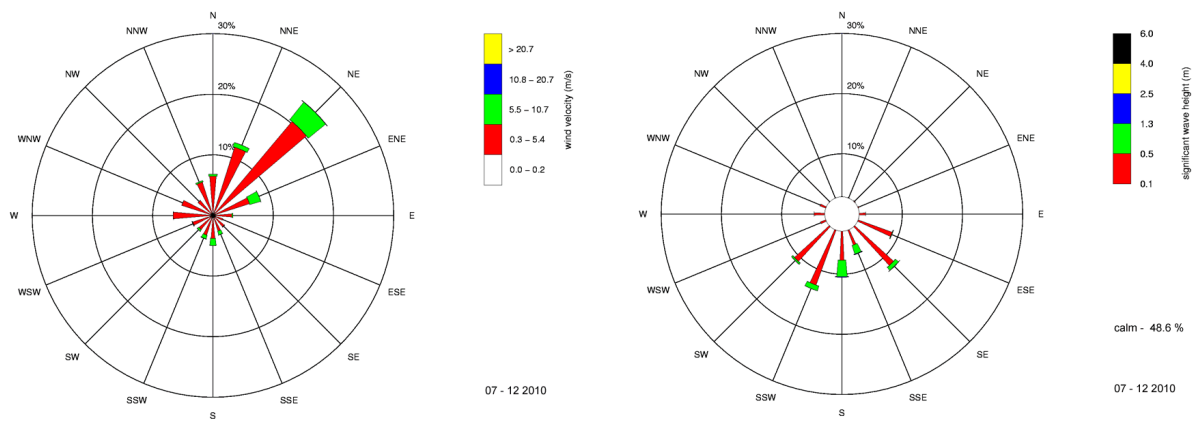


Figure 22. Wind and wave rose plot (Jul-Dec 2010) in Rijeka Bay.

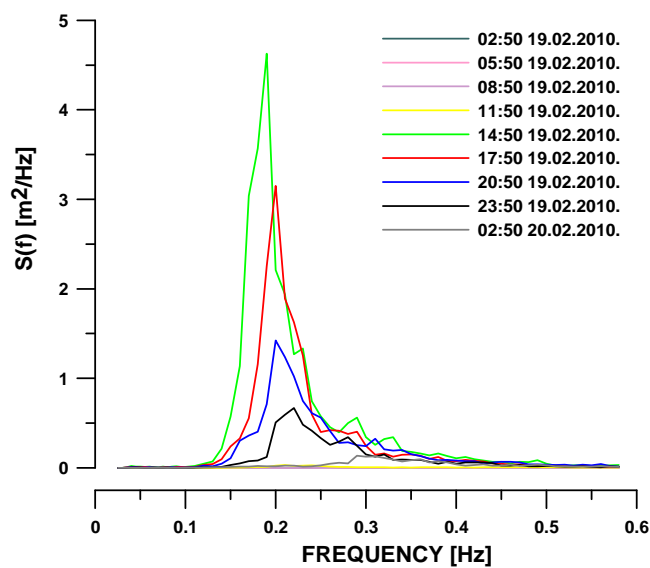


Figure 23. Evolution of the waves spectrum for the period of increase and decrease of energy (19 – 20 Feb 2010) in Rijeka Bay.

During 2010/2011 oceanographic department participated in geophysical and geotechnical survey in the North Adriatic area – shallow seismic of the future gas platform and pipe line installations (Fig. 24, 25 and 26).

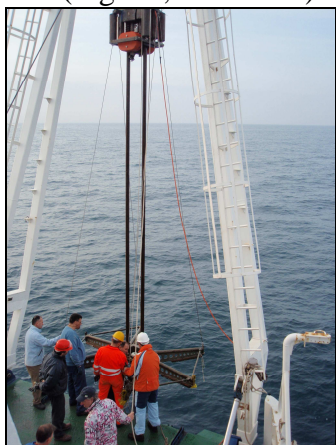


Figure 24. Sediment core sampler

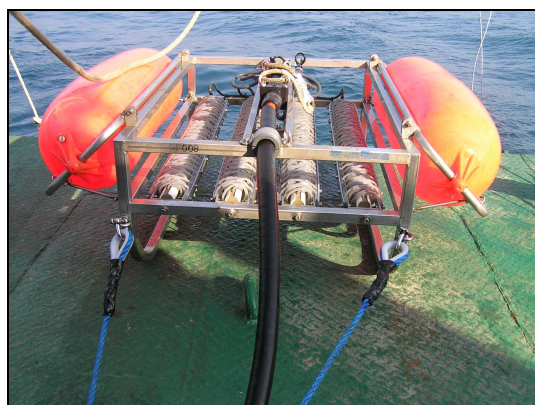


Figure 25. Sub bottom profiler-„Sparker 1000

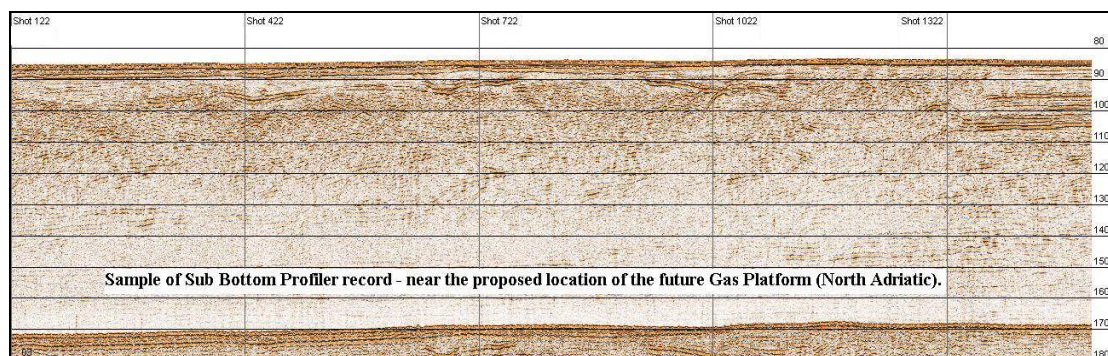


Figure 26. A sample of record – North Adriatic sea.

8.2 Oceanographic publications

Annual publications "Tide tables – Adriatic sea, East coast" and "Report on tide-gauge measurements along the east Adriatic coast" (Fig 27) are also presented in a digital format for the years 2010 and 2011.

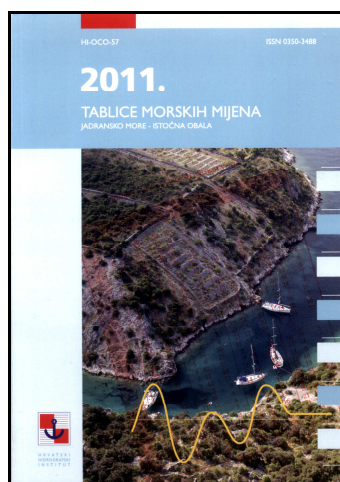


Figure 27. Tide tables – Adriatic sea, East coast

9. OTHER PROJECTS AND ACTIVITIES

CHI personnel participated in several IHO Committees and WG such as ABLOS, CPRNW, MBSHC and Primar RENC Advisory Committee and Joint Primar – IC-ENC TEWG.

CHI personnel participated in several international scientific and technical conferences presenting hydrographic and oceanographic papers.

CHI was coordinator of the Croatian project Places of refuge for ships in need of assistance. One of the project results is Adria_GIS computer application representing GIS product for decision making support. Application ensures rapid access and analysis of relevant safety, economic, ecological, logistic, and technical-technological parameters for the persons responsible for final decision making. Croatian ENC is one of the crucial data layers of the application, which is obtained from PRIMAR WMS for ENC (Fig.28). Data and functions update and maintenance of the system (software and hardware) as well as support is included. Marine cadastre database improvement, including field data collection (proposed project for 2008-2011), as proposed, is assumed. Training of MRCC employees and other system participants is included.

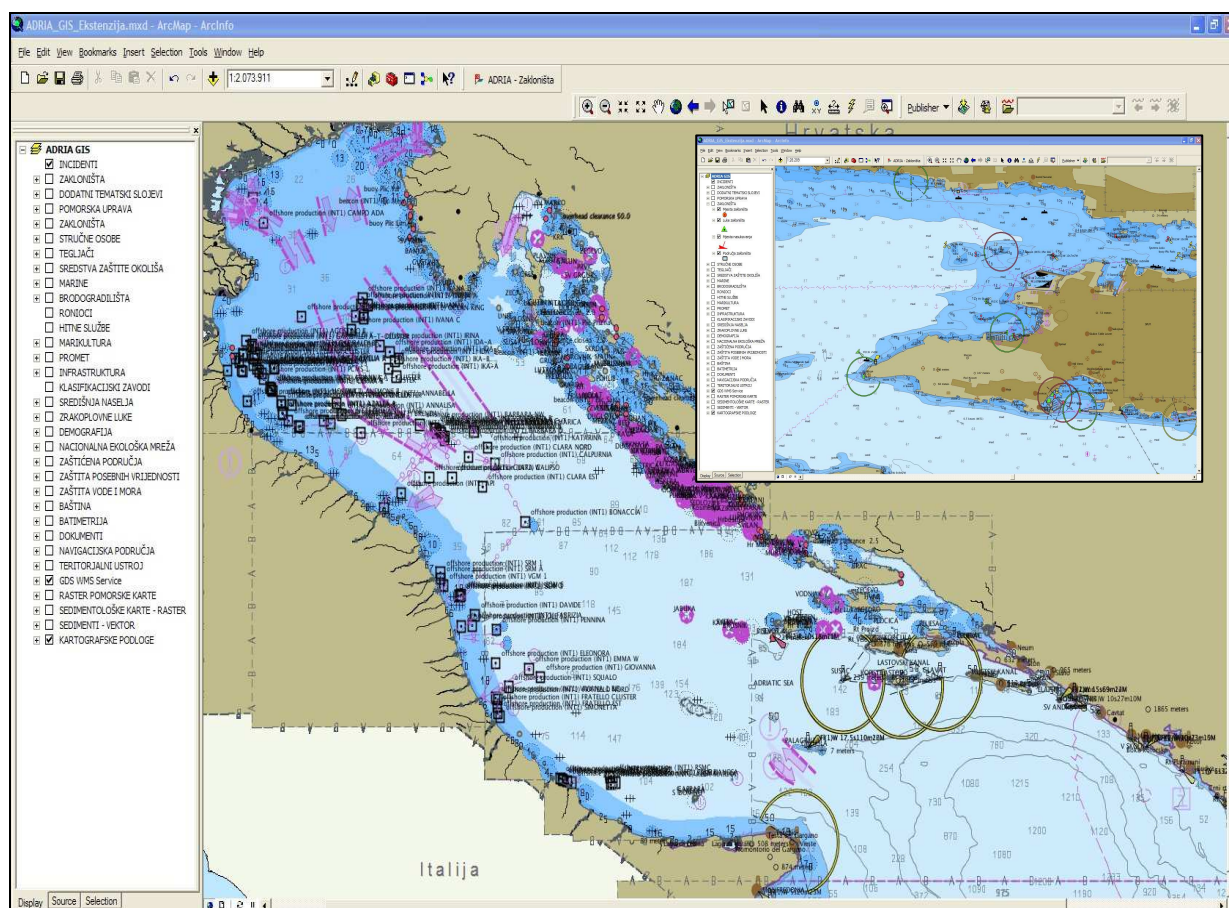


Figure 28. ADRIA GIS application – an example of using ENC for non navigational purpose

Adria GIS application is currently in development and testing phase as web application. Fig 29 shows multicriterion module which enable selecting and ranking potential PoR based on 13 recognized relevant criteria

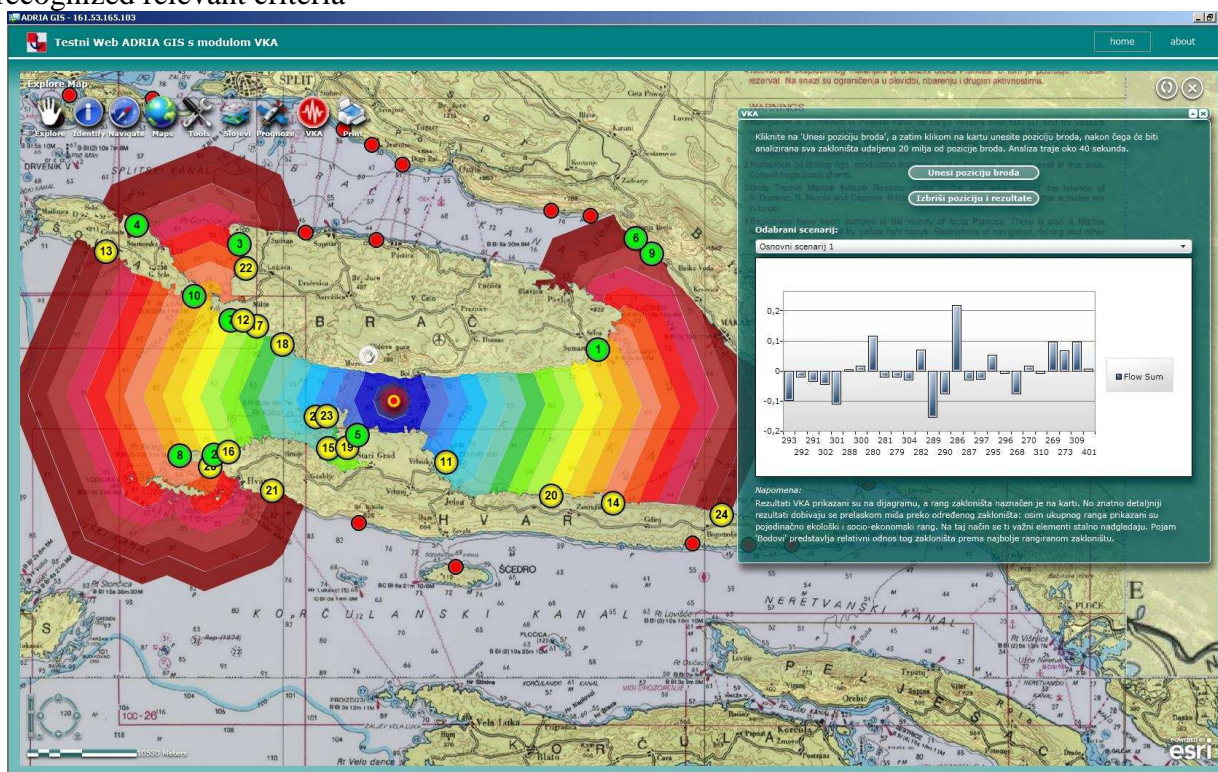


Figure 29. Multicriterion module of Adria GIS web application

CHI has actively participated in Croatian project for establishing vessel traffic service (CVTMIS). A study “VTS -PRELIMINARY METHODOLOGICAL CONSIDERATIONS WITH PROPOSED SOLUTION“ (Fig 30) is one of the result of that activities.

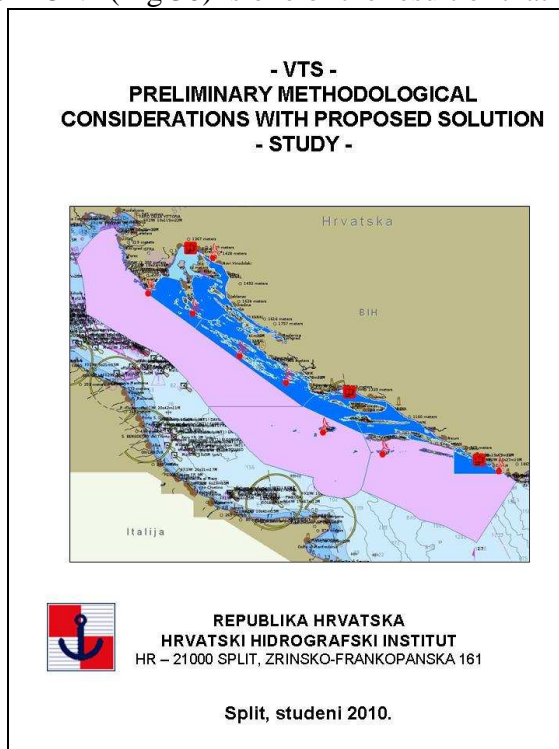
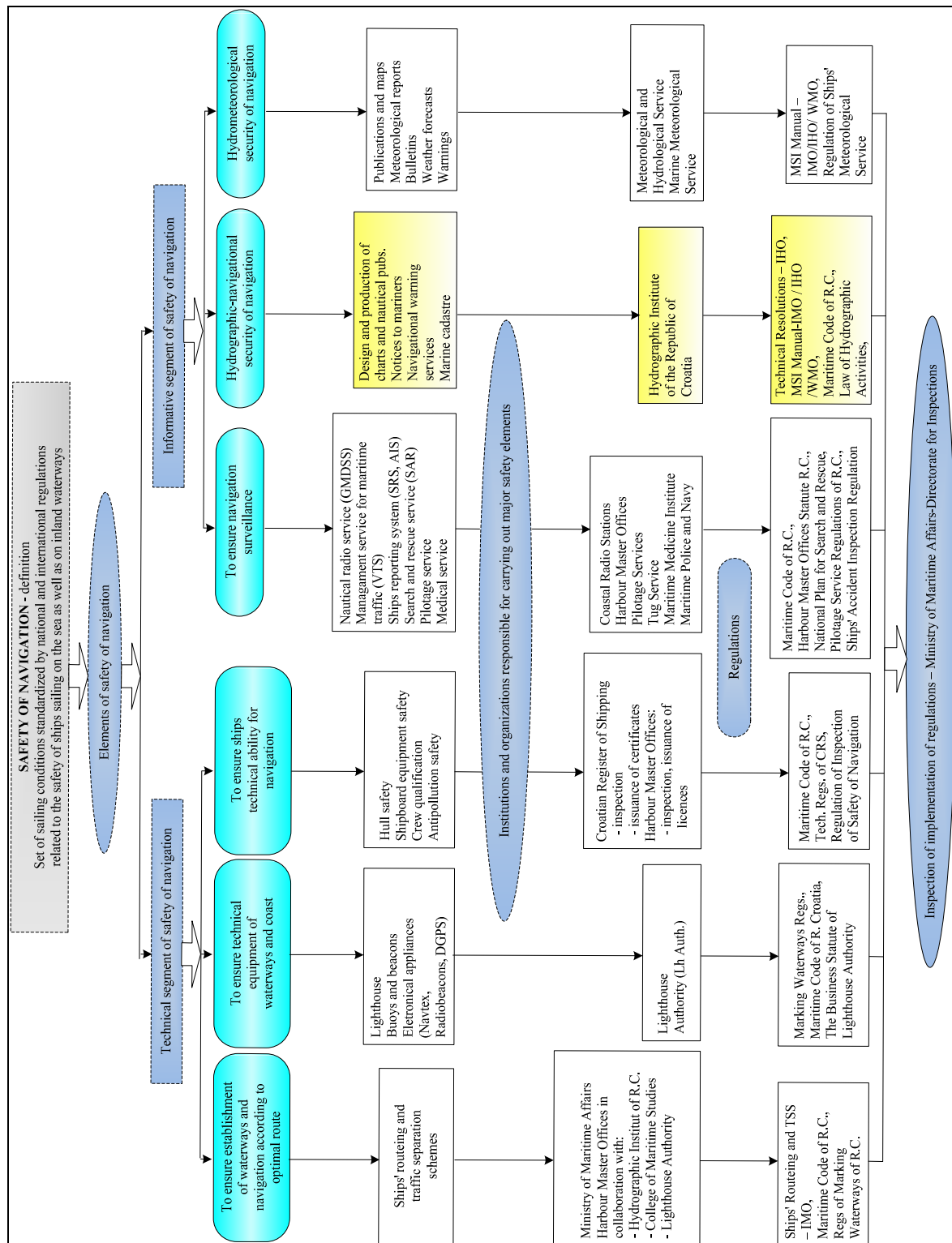
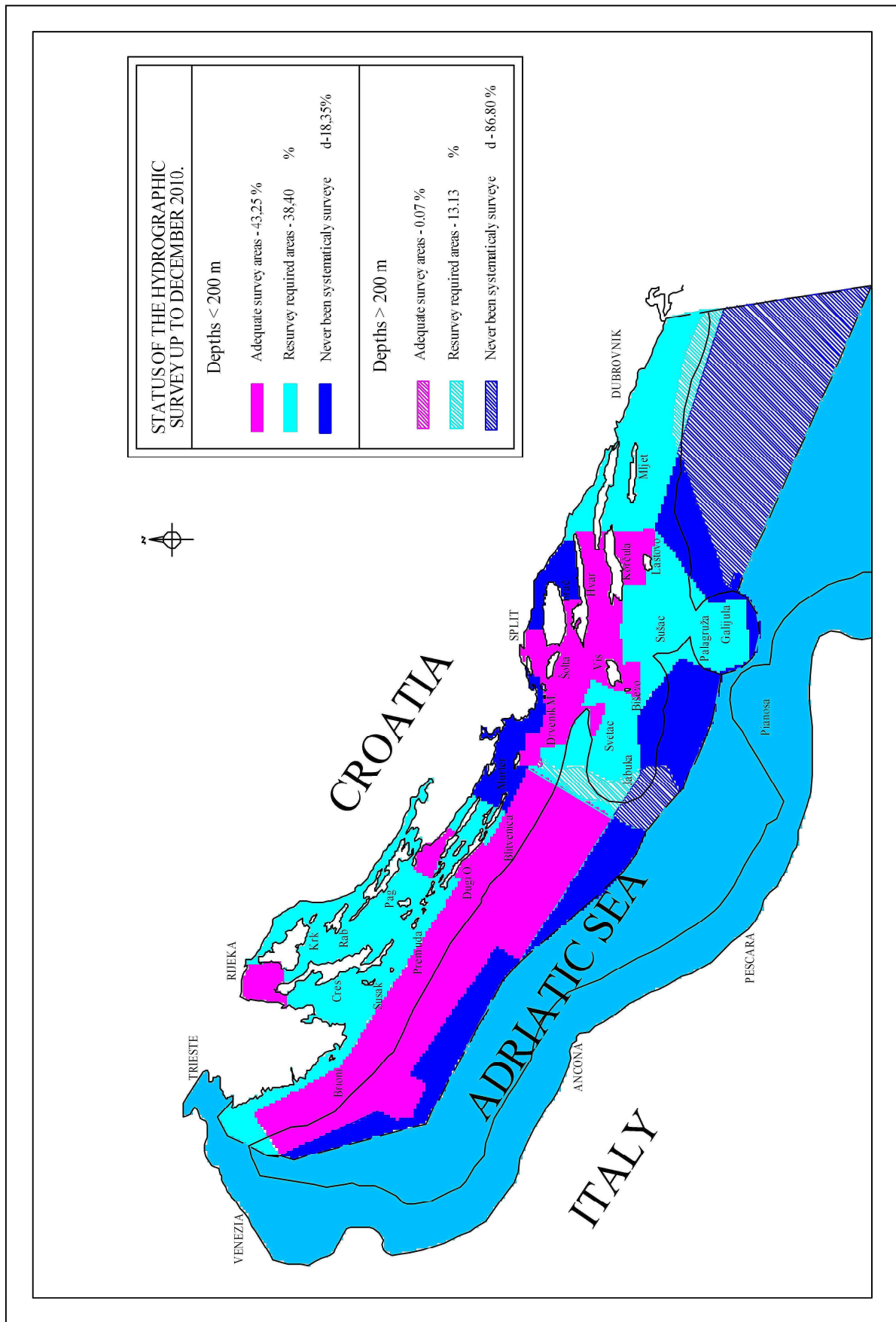


Figure 30. VTS study produced by CHI

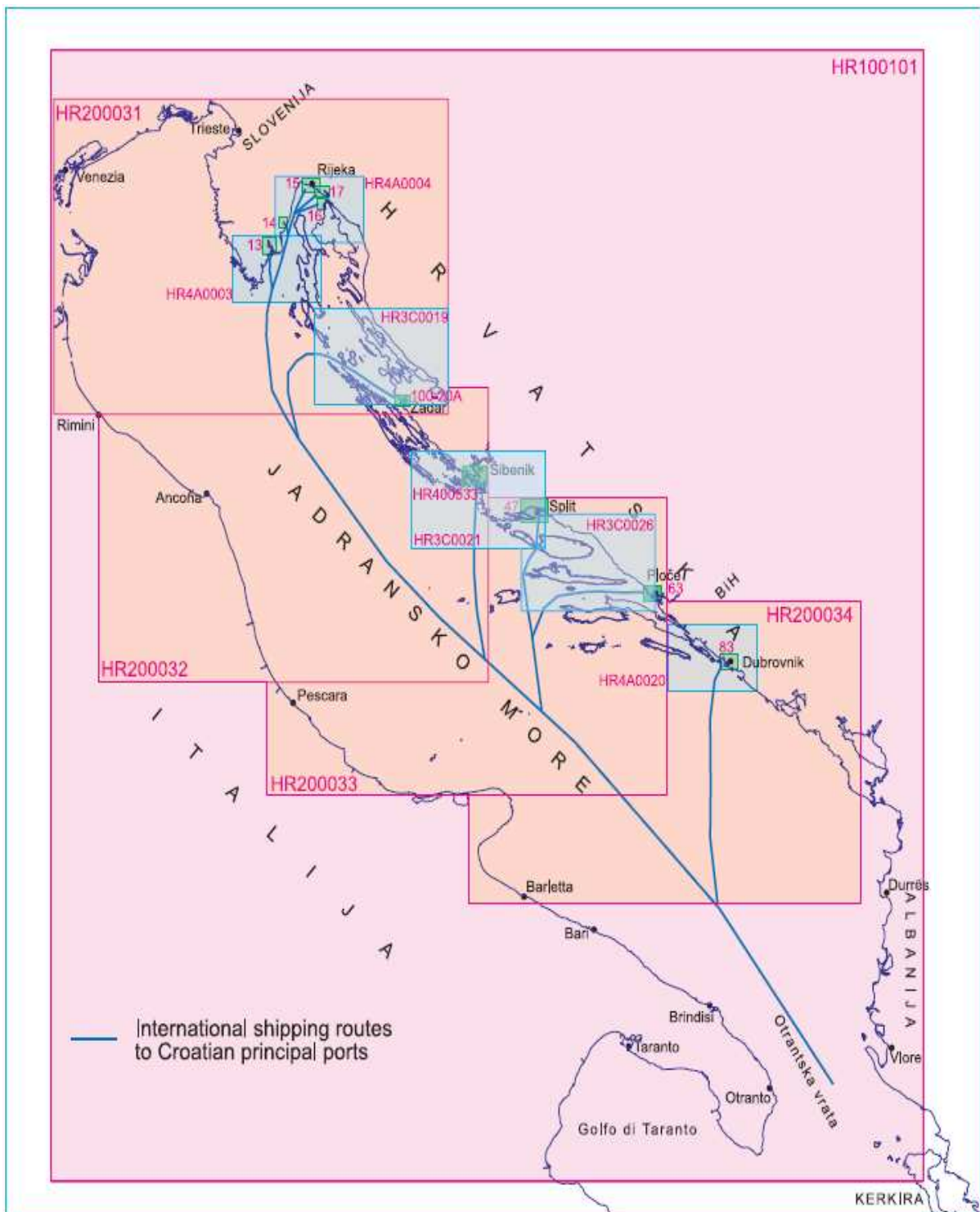
ANNEX 1 - CHI position in structure of Croatian administration



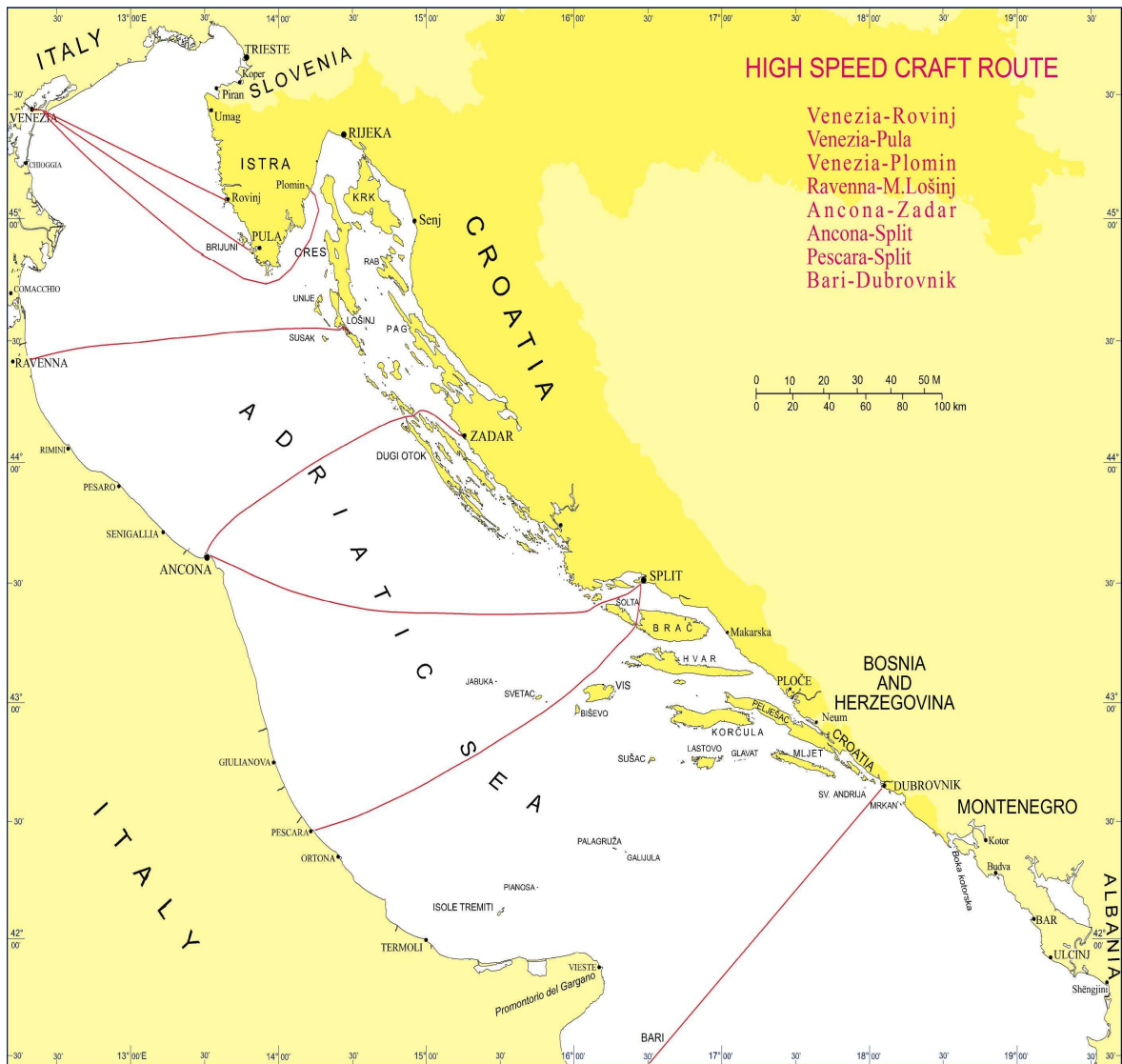
ANNEX 2 - Status of hydrographic surveys



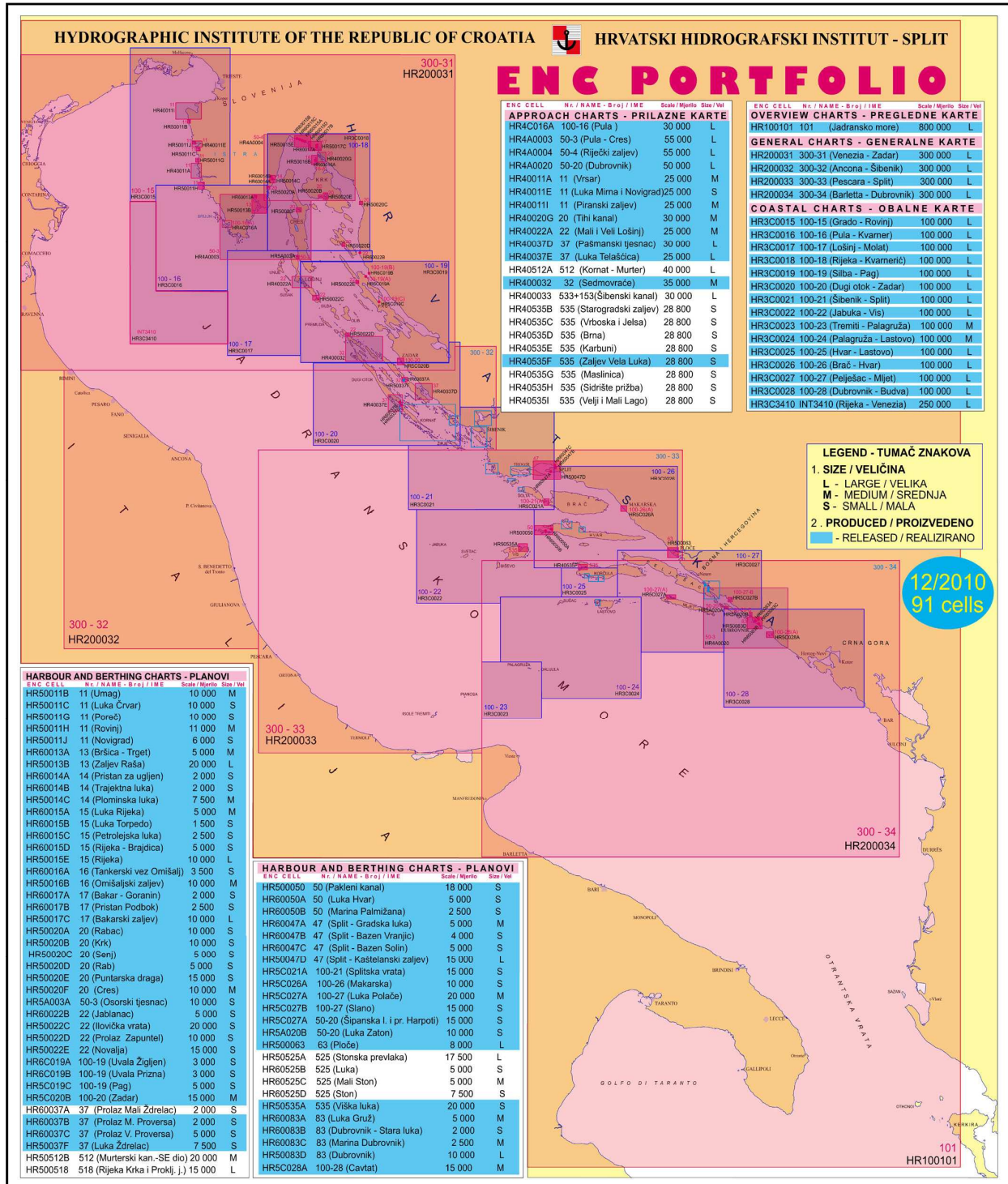
ANNEX 3 - Croatian ENC priority plan



ANNEX 4 - Recognized HSC routes



ANNEX 5 - ENC's release status



ANNEX 6 - INT ENC Scheming – Croatian response to the Medintchart CL 35 and 36

Sent to MEDINTCHART Coordinator by e-mail 31 January 2007.

Subject: ENC production in MBSHC

Reference: Circular Letter MEDINTCHART No 35 and 36

In reply to the above references, please note the Croatian views on the proposed scheming for MBS ENC's, for scale categories Overview (1), General (2) and Coastal (3), as follows:

1. Overview

1. Charts IT100340 and IT 100360 (scale 1:1 500 000) overlap with Croatian national paper chart 101 and ENC HR100101 (scale 1:800 000).

It is proposed that the data coverage limit be the continental shelf boundary (the middle of the Adriatic),

This would imply a co-production ITA/CRO instead of the production of Italian data.

2. General

2. Charts IT200435 and IT200434 (scale 1:700 000) overlap with Croatian national paper charts 300-31, 32, 33, 34 and Croatian ENC's: HR1B0031, HR1B0032, HR1B0033, HR1B0034 (scale 1:300 000).

It is proposed that the data coverage limit be the continental shelf boundary (the middle of the Adriatic).

This would imply a co-production ITA/CRO instead of the production of Italian data.

3. Coastal

3. Croatian paper charts: 100-15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28 (scale 1:100 000) and Croatian ENC's: HR2C0015 to HR2C0028, have been supplemented with the data from CRO INT charts: INT 3410, INT 3412, INT 3414 (scale 1:250 000), so that the entire Croatian part of the Adriatic will be covered with cells of usage band 3 (COASTAL).

Overlaps with neighbouring ENC producing countries will be solved through mutual technical arrangements.

4. Additional considerations:

- Consideration of the paper INT chart scheme as a possible solution for INT ENC scheme may not be the best approach, and the question arises whether such consideration is necessary at all. In other words, ENC by itself is an INT chart and has its rules for the construction of content, format, and coverage (limits), which is closely linked with the INT ENC scheming. If we follow the ENC "no data limit" concept, every ENC producing nation should represent within its ENC's only the area of its national jurisdiction, omitting the data of the neighbouring countries, which are normally shown on the paper INT charts according to the paper INT chart concept.

Croatia, in the production of its ENC's, provides coverage only of the area within its national jurisdiction. The issue yet to be solved is the above mentioned problem of overlapping between neighbouring countries which should be resolved and harmonised so as to avoid inconsistency of

data in boundary areas. In other words, by solving the overlapping problem, the use “no data limit” concept will be provided for end users.

The issue concerned could be summarised as follows:

- *the ENC by itself has an INT character,*
- *it is important to cover a wider area (MBS area) with such (INT) ENCs of different navigational purposes (Overview, General, ...Harbour, Berthing),*
- *each ENC producing nation should produce ENCs only for the area within its national jurisdiction,*
- *the problem of overlapping between neighbouring ENC producing nations, and in the whole MBS area, should be solved in co-operation with the INT Chart Coordinator.*

If the above mentioned conditions are fulfilled, INT ENC scheme will become irrelevant to end users for the navigation in a certain area (MBS area).

Yours sincerely,

*D.Sc. Zvonko Gržetić
Director CHI*

ANNEX 7 - Decision MBSHC15-MEDINTCHART 8 - Statement by Croatia

Sent to MEDINTCHART Coordinators by e-mail 31 August 2008.

Dear Sir (MEDINTCHART Coordinator),

With reference to Annex 7 to MBSHC15 Report, Decision MBSHC15-MEDINTCHART 8, about the possibility of making comments on Final proposals based on the MEDINTCHART Working Session, regarding ENC schemes for usage bands 1, 2, 3, please find below the statement issued by Croatia:

- 1. Croatia highly appreciates the efforts made by France as ENC Scheming Coordinator within the MBSHC. Croatia itself joined these efforts through the proposals submitted in its response to MEDINTCHART CL No 35 and 36, and during the last MBSHC Conference in Malta. However, in spite of all attempts to make progress in terms of providing an agreed ENC scheme for usage bands 1 and 2, Croatia cannot accept the part of the proposal encroaching upon the right and responsibility of Croatia to produce its own ENCs.*
- 2. Croatia derives the right and responsibility to produce ENCs for the area of its national jurisdiction not only from its national legislation, but also from IHO recommendations and recent provisions of the SOLAS Convention concerning the hydrographic activity. Under the above mentioned provisions, national hydrographic offices are entrusted with the task of providing high quality charts and nautical publications for the area of the state's maritime jurisdiction. In Croatia, this task of providing high quality paper charts and publications to end users is carried out by the Hydrographic Institute of the Republic of Croatia, which has come close to achieving ENC coverage of its area of responsibility. Moreover, taking into consideration the IHO recommendation to avoid HO charting of an area in which there is an established hydrographic service within the competence of another hydrographic office, Croatia cannot accept the fact that under the existing proposal the HO of the Italian Republic shall be responsible for issuing ENCs for usage bands 1 and 2 for the area of jurisdiction of the Republic of Croatia.*
- 3. Accordingly, it is proposed by Croatia that the principle of «no data limits» should be strictly adhered to in ENC scheming, which is also possible owing to technical characteristics of ENCs. According to this principle, Croatia proposes the plotting of boundaries of ENC cells (IT, HR) for usage bands 1 and 2 following the Osimo Treaty (1975) and Delimitation line between the continental shelves of Croatia and Italy (2005). This would also imply the production of cells for usage bands 1 and 2 by Italy and Croatia, each for its area of responsibility.*
- 4. Regarding the compilation scale, in an attempt to promote WEND principles and recommendations from CL 47/2004, Croatia will consider the change of compilation scales of already produced ENCs, to such a degree so as not to threaten their usage value for users, which is directly related to the configuration of Croatian seaboard and islands.*
- 5. As in the previous period, Croatia remains open for further discussion and harmonisation on these issues, following the above mentioned recommendations and principles, in order to provide high quality navigation products to their end users.*

*HHI Director
Zvonko Gržetić, Ph.D.*

CC: Member of MBSHC

ANNEX 8 - Overlap of ENC data in the Adriatic Sea - a proposal for the solution

An extract from the paper submitted and will be presented at the 25th International Cartographic Conference (Paris 3 -8 July 2011.). The title of the paper is “The analysis of the current problem of overlap of ENC data in the Adriatic Sea and a proposal for the solution”, Bradarić, Ž., Čala, M. and Gržetić, Z..

4.3. Description and review of the current state for the Adriatic Sea

The problem of overlap for the Adriatic Sea has been identified at the ENC cells published by three official publishers in both usage bands (Overview and General). This leads to the conclusion that the principle of “no data limits” has not been observed and that the majority of such cells have been produced according to the range of the existing paper charts, not taking into account or being unaware of production plans of the member states of the region. Also, there is inconsistency in compilation scale. According to the authors’ information, there are no mutual agreements between the three member states. Such untenable situation has been present for some time and there no indications for the solution in the near future.

According to the above paragraph, in the Overview navigational purpose band, there is overlap between ENC data of the three producers and inconsistency of the scale at the cell borders. GR and IT published cells in the scale 1:1 500 000 and HR published the cells in the scale 1: 800 000 (Figure 7). Double overlap of ENC data of IT and HR exists in the greater part of the Adriatic, while the triple overlap of cells is in the southern part of the Adriatic and in the northern part of the Ionian Sea. The triple overlap includes also the Strait of Otranto that is an important and congested navigation area.

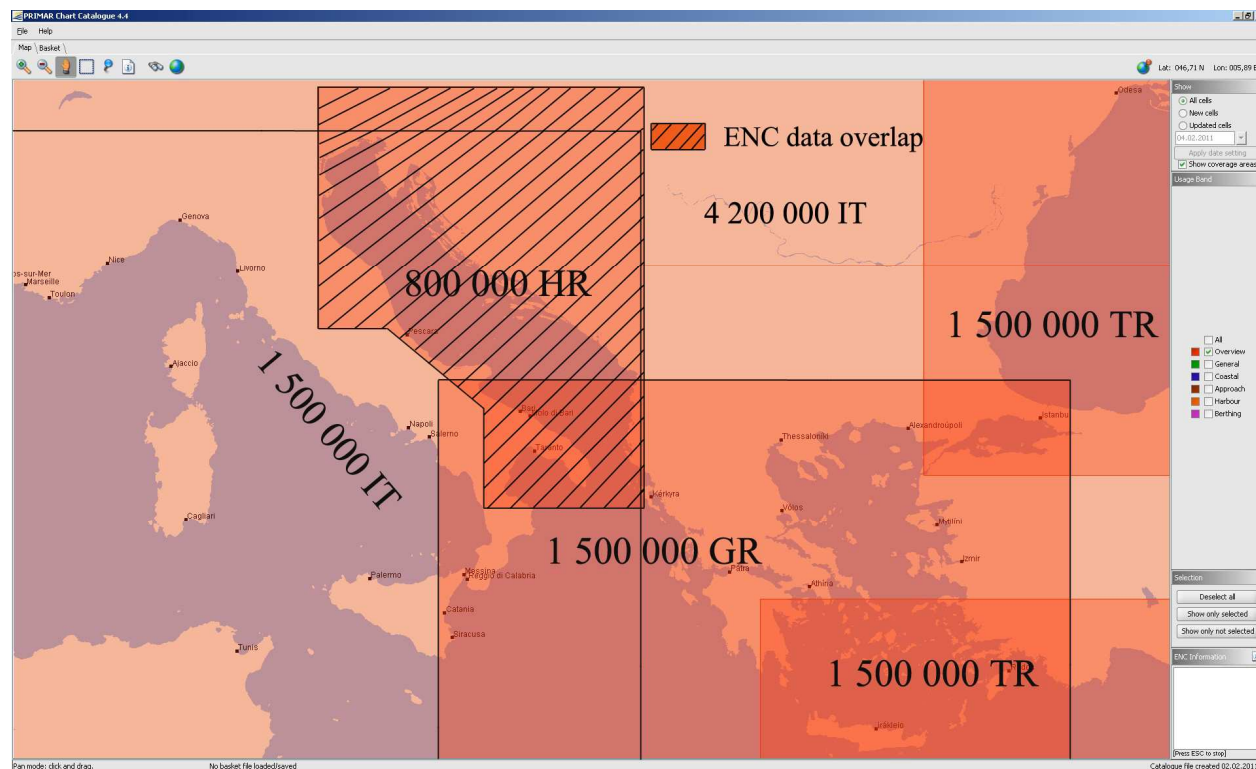


Figure 7. Overlap of ENC data within Overview navigational purpose band for the Adriatic Sea

In General navigational purpose band there is the overlap of ENC data between IT and HR. Croatia has published four ENC cells in the scale of 1:300 000, while IT has published one ENC cell in the scale of 1:700 000. There is a small overlap in two cells in the Ionian Sea between producers IT and GR. As for General ENCs, the cell borders do not correspond to the borders of the states' jurisdiction at sea, hence, it can be concluded that the principle of "no data limits" is not applied, since there is not agreement relating to it (Figure 8).

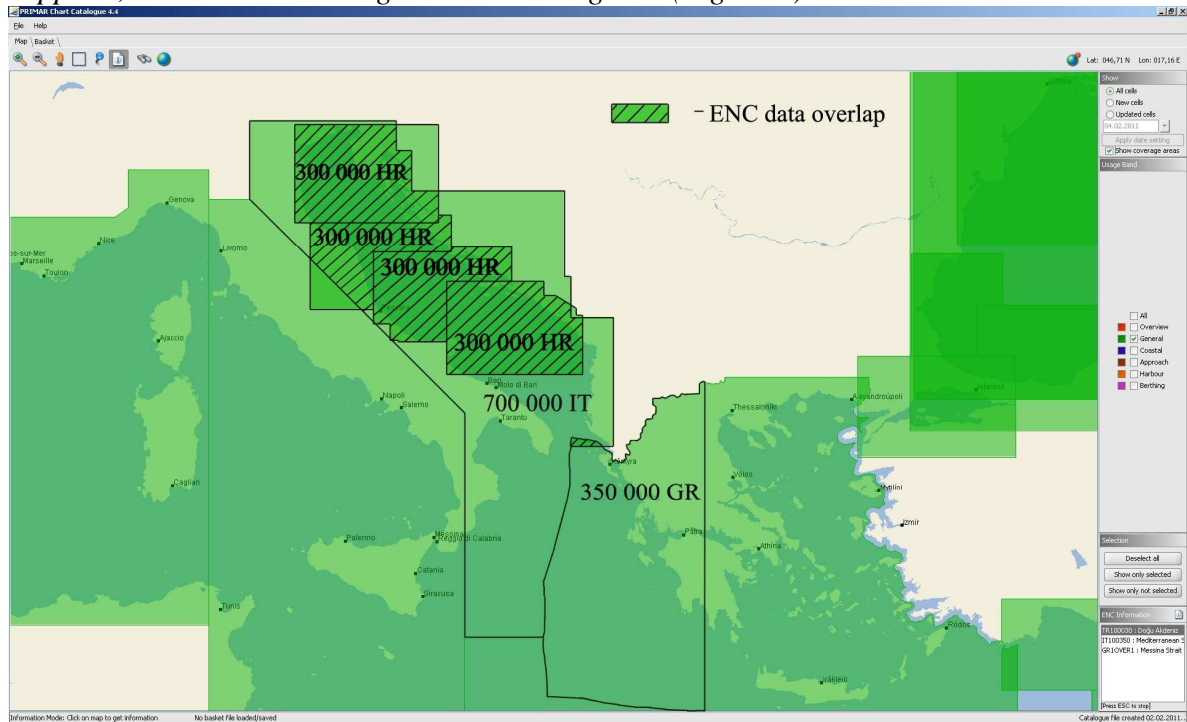


Figure 8. Overlap of ENC data within General navigational purpose band for the Adriatic Sea

5.0. Results

After completing an analysis of the current state of the areas with corresponding overlap solutions for the broader area of the Mediterranean and the Black Sea and the area of the Adriatic Sea for which the solution of overlap is being studied by applying the described methodology, the authors have designed a general proposal for the solution and proposal for each navigational purpose band.

5.1. General proposal for the solution

In conformity with the stated methodology, a general proposal for the solution has been developed, according to which it is proposed to map the borders of ENC cells (IT, HR) in compliance to the border determination of the epicontinental shelf's in the Adriatic. In the southernmost area of the Adriatic, where there is a triple overlap of the Overview ENCs IT, HR and GR, it is proposed to follow the middle line of border determination of coastal cells IT and sea border between AL and GR. The cells for user bands 1 and 2 HR and IT will be produced by each of the states for the area under its jurisdiction. For the areas under the jurisdiction on the east coast of the Adriatic which do not have an established hydrographic service or did not (will not) produce ENCs for the area under their jurisdiction by the mandatory terms, it is proposed to initiate the process of agreement. The agreement will stipulate that a state would allow the other state, in compliance to WEND principles, to produce and maintain the cells within the proposed borders. The agreement would remain effective until the states are ready to produce their own ENCs for the area under their jurisdiction.

5.2. Proposal for the solution of Overview navigational purpose band

The realisation of the proposed matter in the above paragraph related to the review cells would refer to implementing the following activities of the competent hydrographic offices:

- ◆ Croatian Hydrographic Institute should produce a new cell in the production scale of 1:1 500 000 for the area within its competence;
- ◆ New cell would also contain data from the territory of jurisdiction of the Republic of Albania, Montenegro, Federation of Bosnia and Herzegovina and Slovenia, with the prior approval of the stated countries;
- ◆ Croatian Hydrographic Institute would publish new cell not later than the date of mandatory implementation of ECDIS;
- ◆ By the same date, the Italian HO should be ready to publish a new cell that would leave out the content of the new cell published by the Croatian Hydrographic Institute.
- ◆ By the same date, GR should be ready to publish a new cell that would leave out the content of the new cell published by the Croatian Hydrographic Institute.

Production of new cell in the scale of 1:1 500 000 will meet the requirement pursuant to which a particular purpose of use will be assigned the corresponding compilation scale. Also, the requirement of cross-border consistency will be fulfilled (Figure 9).

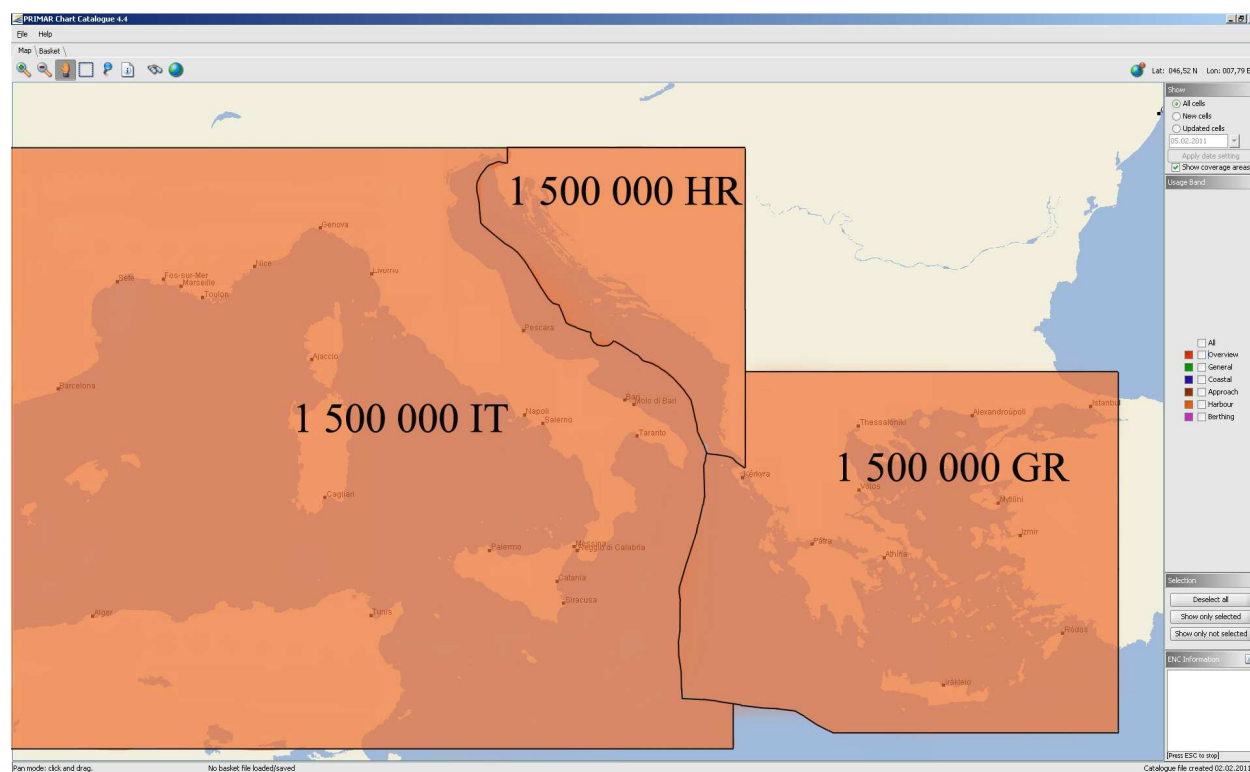


Figure 9. Proposal for the solution of overlap of ENC data in Overview navigational purpose band

5.3. Proposal for the solution of General navigational purpose band

The realisation of the proposed matter in the above paragraph related to the General cells would refer to implementing the following activities of the competent hydrographic offices:

- ◆ Croatian Hydrographic Institute should produce 4 new cells in the production scale of 1:350 000 from the current cells for the area of its competence and for the area of jurisdiction of the Republic of Slovenia, Federation of Bosnia and Herzegovina and Montenegro, with the prior approval of the stated countries;

- ◆ *Croatian Hydrographic Institute would produce an additional new cell in the production scale of 1:350 000 from the current cells which would contain data from the territory of jurisdiction of the Republic of Albania, with the prior approval of the stated country;*
- ◆ *Croatian Hydrographic Institute would publish new cells not later than the date of mandatory implementation of ECDIS;*
- ◆ *By the same date, the Italian HO should be ready to publish a new cell that would leave out the content of the new cells published by the Croatian Hydrographic Institute.*
- ◆ *Optionally, what would be the best solution, IT HO might consider the production of a new cell in the larger scale of 1:350 000.*

Production of new cells in the scale of 1:350 000 will meet the requirement according to which a particular purpose of use should be assigned the corresponding compilation scale. In view of the configuration of the eastern coast of the Adriatic it is more convenient to produce the cells for that area in a larger scale, i.e. the scale of 1:350 000. Also, since GR HO has published the ENC cell to the AL border in the scale of 1:350 000, the consistency in scale will be provided for the whole eastern coast of the Adriatic Sea and the Ionian Sea (Figure 10). However, the proposed solution has a minor drawback because of the inconsistency between the scale of the proposed cells that would cover the eastern coast of the Adriatic Sea and the Ionian Sea (all of the same scale of 1:350 000) and the scale of the cells that would cover the western coast of the Adriatic Sea and the Ionian Sea (scale 1:700 000). Should IT consider the issue and accept the production of a new cell in the scale of 1:350 000, the drawback would be eliminated. Nevertheless, the proposed solution would still be a significant improvement of the current situation.

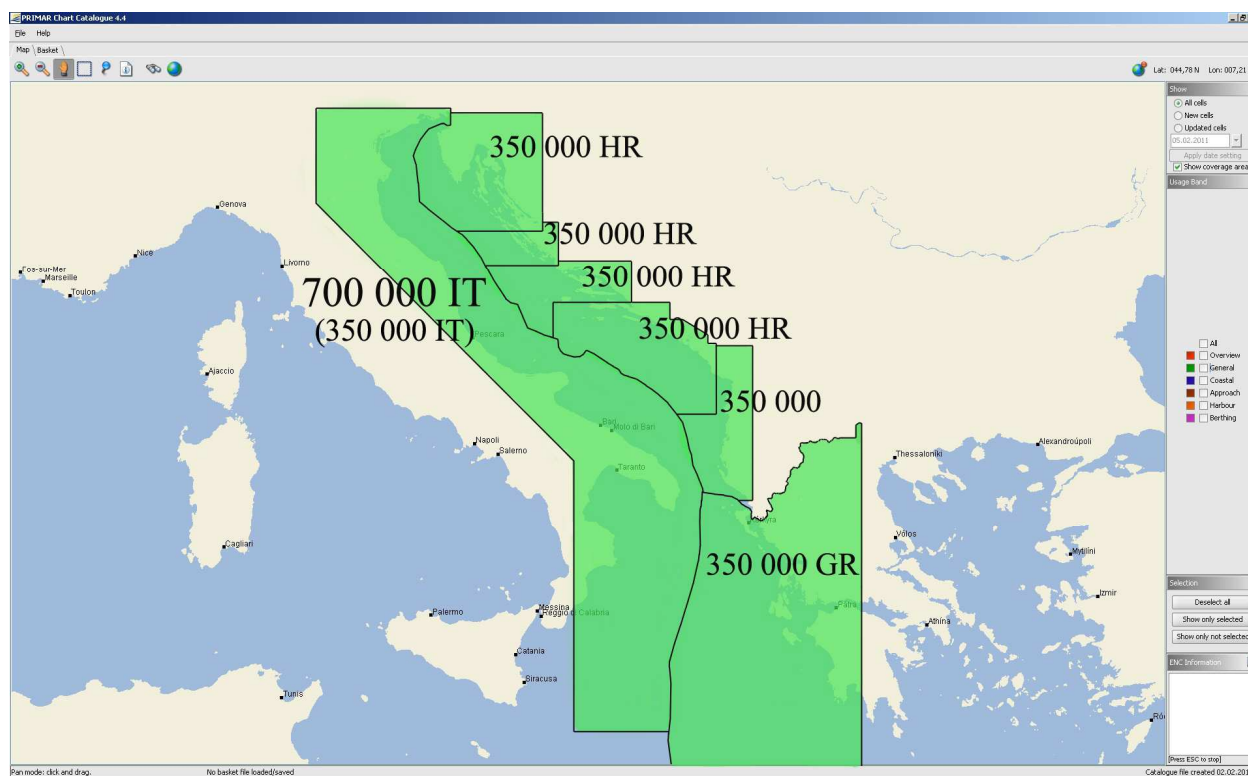
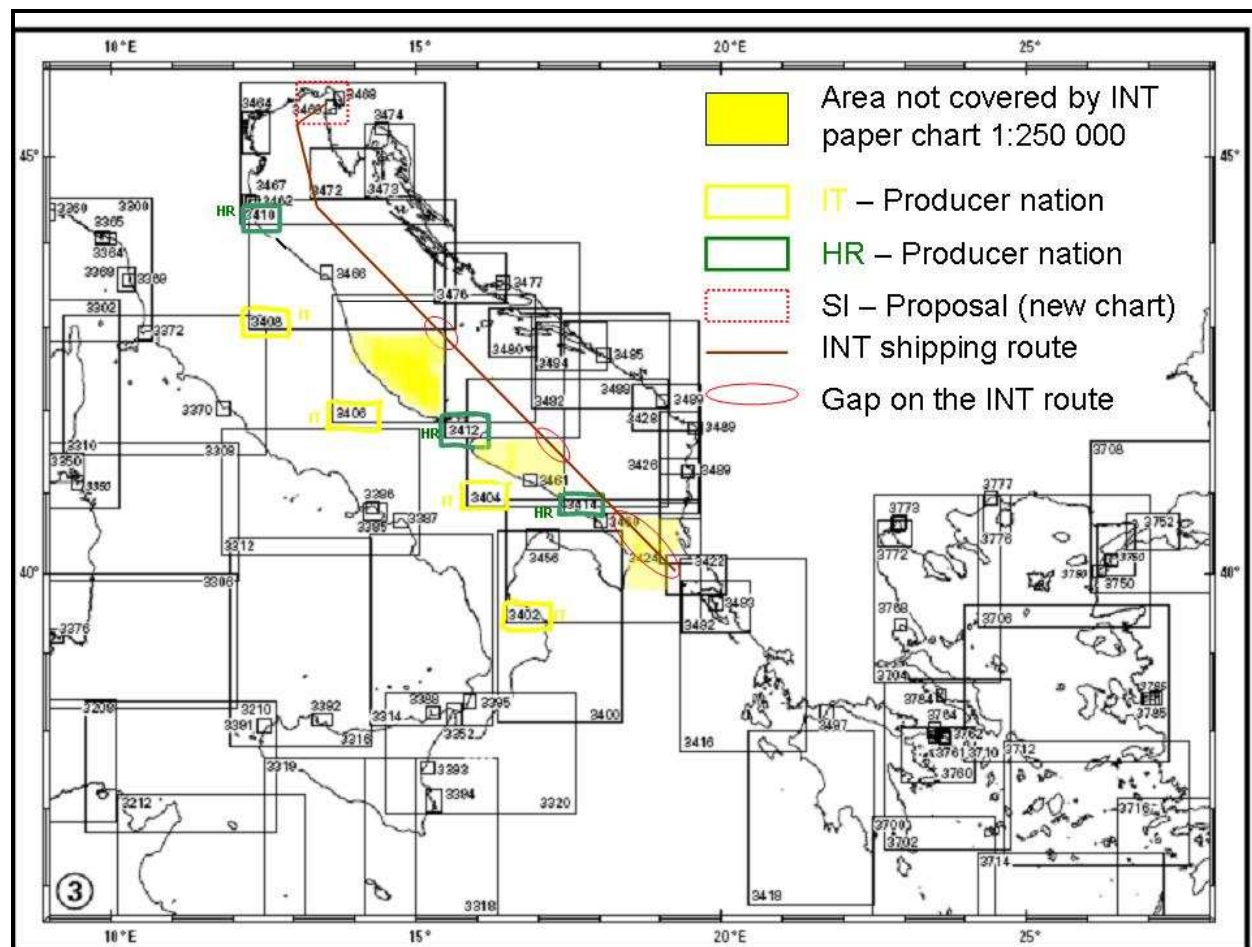


Figure 10. Proposal of the solution for overlap of ENC data for General navigational purpose band

ANNEX 9 - MEDINTCHART Catalogue_HR Status

INT_NO	PR	NAT_NO	SCALE		DATE		PRINT	MAIN_TITLE	CHART_LIMITS			STATUS	
			1:	LATITUDE	PUB	NEW_ED			FOR	LIMIT_S	LIMIT_N		LIMIT_W
300	IT	360	4 200 000	45°00'N	1984	1997	FR,ES,GB,HR	Sredozemno i Crno more	25°00'00"N	49°50'12"N	7°00'00"W	42°15'18"E	Available
301	IT	340	2 250 000	41°30'N	1972	1996	FR,DE,ES,GB,US,PT,HR	Sredozemno more zapadni dio	32°45'00"N	45°52'13"N	06°44'00"W	19°40'29"E	Available
302	IT	350	2 250 000	41°30'N	1982	1997	FR,DE,ES,GB,US,HR	Sredozemno more istočni dio	30°05'00"N	43°39'15"N	09°55'00"W	36°19'30"E	Available
INT_NO	PR	NAT_NO	SCALE		DATE		PRINT	MAIN_TITLE	CHART_LIMITS			STATUS	
1:	LATITUDE	PUB	NEW_ED	FOR	LIMIT_S	LIMIT_N			LIMIT_W	LIMIT_E			
3410	HR		250 000	45°00'N	1988	2007	FR	Rijeka - Venezia	44°13'00"N	45°50'00"N	12°08'00"N	15°28'00"N	Available
3412	HR		250 000	42°50'N	1991	2000	FR	Split - Gargano	41°40'00"N	44°00'00"N	15°29'00"N	17°40'00"N	Available
3414	HR		250 000	41°55'N	1998		FR	Dubrovnik - Durrës	40°45'00"N	43°04'00"N	17°25'00"N	19°38'00"N	Available
3472	HR	(100-16)	100 000	44°50'N	(1973)	(1998)		Pula - Kvarner	44°30'36"N	45°05'12"N	13°15'24"N	14°27'00"N	In Preparation
								A-Pula					
3473	HR	(100-18)	100 000	44°55'N	(1977)	(1996)		Rijeka - Kvarner	44°31'24"N	45°22'00"N	14°09'24"N	14°58'48"N	In Preparation
3474	HR	(15)	10 000	45°18'N	(2004)			Rijeka	45°16'36"N	45°20'36"N	14°22'36"N	14°30'48"N	In Preparation
								A-luka Rijeka-B-Rijeka-Lučica Torpedo-C-Petrolejska luka-D-Rijeka-Brajčica					
3476	HR	(100-21)	100 000	43°35'N	(1973)	(1996)		Šibenik - Split	43°17'12"N	43°51'48"N	15°17'30"N	16°28'00"N	In Preparation
3477	HR	(47)	15 000	43°30'30"N	(2002)			Split - Kaštelanski zaljev	43°28'00"N	43°34'00"N	16°17'54"N	16°30'00"N	In Preparation
								A-Split-Gradska luka-B-Bazen Vratijic-C-Bazen Solin					
3480	HR	(100-25)	100 000	42°25'N	(1972)	(1995)		Hvar - Lastovo	42°38'24"N	43°13'00"N	16°12'00"N	17°21'36"N	In Preparation
3482	HR	(154)	200 000	42°35'N	(1955)	(1975)		Peješac - Rt Oštra	42°01'00"N	43°09'00"N	16°54'00"N	19°10'00"N	In Preparation
3484	HR	(100-27)	100 000	42°51'N	(1970)	(1999)		Peješac - Mljet	42°28'48"N	43°03'24"N	16°58'36"N	18°08'12"N	In Preparation
								A-Luka Polače-B-Luka Slano					
3485	HR	(83)	10 000	42°40'N	(2001)			Dubrovnik	42°36'42"N	42°40'48"N	18°01'06"N	18°08'48"N	In Preparation
								A-Luka Gruž-B-Stara luka-C-Marina Dubrovnik					

ANNEX 10 - INT paper charts 1:250 000 - gaps in Adriatic Sea – Croatian consideration



Questions:

1. Is there any mariner who will sail across the Adriatic Sea using only three available INT charts having gaps between them?
2. Can the situation be improved if only one Approach chart is produced for the gulf of Trieste in the North Adriatic?
3. How to explain the necessity for keeping updated the existing three INT charts (HR producer nation) if others do not exist?
4. How to improve the overall situation in the Adriatic Sea?

Draft of Proposals:

1. Medintchart Coordinator to inform Commission about the situation in the Adriatic Sea.
2. Medintchart Coordinator to inform Commission and the producer nation about the possible action according to M-11 (3.11.3 and 3.11.4).
3. Make proposal for to be approved by Commission
4. ...??

ANNEX 11 - INT paper chart schemes – new demand submitted by SI – HR response

30 April 2008

Republic of Slovenia
Ministry of Transport
Maritime Directorate
Langusova 4,
Slovenia
1535 Ljubljana

Subject: INT paper chart schemes – new demand submitted by SI
Croatian comment

Ref.:

1. MBSHC15 Report, Annex 7, Decision MBSHC15-MEDINTCHART 1
2. Doc. No. 3730-4/2007/2-0005761, dated 16 July 2007, issued by Maritime Directorate, Ministry of Transport of the Republic of Slovenia, submitted to CHI through diplomatic channels between the Republic of Slovenia and the Republic of Croatia

Dear Sirs,

With reference to the above mentioned documents, pursuant to the provisions of IHO Publication M-11, Part A, Guidance for the Preparation and Maintenance of INT Chart Schemes, Croatia, having considered the proposal of Slovenia, supports such proposal under the following conditions:

- that producer nations be SI/HR/IT, by reference to the provision 3.11.2, as the chart area covers the areas of responsibility for chart production of the three countries – binding condition
- that the chart scale be 1:100 000, by reference to the provision 3.4, the proposed scale of 1:75 000 is intermediate between Approach Chart (1:30 000 – 1:75 000) and Coastal Chart (1:75 000 – 1:350 000), and by reference to the provision 3.4.3., as the proposed scale is larger than the source scale (1:100 000) – condition to be discussed and agreed on.

It is necessary to accept the conditions as listed above before Croatia gives consent to the initial proposal, whereupon, in accordance with the provision 3.10.1 of IHO publication M-11, the final proposal could be prepared jointly, specifying in detail the chart concept and all the elements of chart contents, under the provisions of IHO Publication M-4 „Chart Specification of the IHO and Regulations for International (INT) Charts“.

Dr. Sc. Zvonko Gržetić
CHI Director

Copies:

- MEDINTCHART Co-ordinator - France
- CSPCWG Chairman – UK
- IIG – Italy
- MFA – Croatia
- MSTI - Croatia

**ANNEX 12 - Catalogue MEDINTCHART - May 2011 draft edition - the correspondences
regarding chart 3465**

----- Original Message -----

From: "Office - Hrvatski hidrografski institut" <office@hhi.hr>

To: <bourzeix@shom.fr>

Cc: "Philippe Bourzeix" <bourzeix@shom.fr>; "Zvonko Grzetic" <zvonko.grzetic@hhi.hr>;

"Zeljko Bradaric" <zeljko.bradaric@hhi.hr>; <yves.guillam@shom.fr>;

<celine.roux@shom.fr>; <jean-christophe.long@shom.fr>

Sent: Wednesday, May 18, 2011 2:54 PM

Subject: Re: Catalogue MEDINTCHART - May 2011 draft edition

Dear Mr. Bourzeix,

Thank you for your prompt reply and clarification.

As it is now clear that no consensus was obtained about the proposed SI initial draft scheme, in so far as that initial draft scheme was not refined into a second or any further draft versions, nor a final draft scheme (agreed between IT, SI, and HR) was produced and submitted to the RHC for formal approval, we consider it essential and necessary to adhere to the procedure as prescribed in the IHO publication S-11, Ed. 2003, paragraph 3.10.1.

Our understanding of paragraph 3.10.1 of the IHO publication S-11, which was also expressed at the XV MBSHC Conference, as well as in our e-mail of 16 May 2011, is that no proposed draft INT chart scheme shall be included in the MEDINTCHART Catalogue unless formal approval by the MBSHC is obtained, provided that prior to such formal approval the final draft of the scheme (agreed between IT, SI, and HR) is submitted.

This is supported by the fact which points to the complexity of problems that occurred within the MBSHC in particular situations resulting from non-compliance with the required procedure, i.e. when certain draft schemes were included in the Catalogue without obtaining prior final consensus and formal approval. Many meetings and numerous statements by all concerned parties have not achieved any progress to the present day. On the contrary, every such meeting implies a waste of time, often involving emotions, even political connotations, having an adverse effect on the relations between the Commission MS, resulting in a reduced efficiency, and finally having a negative influence on the objectives and mission of the MBSHC.

Accordingly, we do not agree with your idea to amend the Catalogue as you specify in your e-mail of 17 May 2011. We require that you comply with the prescribed procedure, and omit the entire line referring to chart 3465 from the last draft version of MEDINTCHART Catalogue (May 2011) until a consensus is reached on the final agreed draft scheme to be formally approved by the MBSHC following the prescribed procedure.

Best regards,

Director CHI

Zvonko Grzetic PhD

Hrvatski hidrografski institut

Tel: +385 (0)21 308 803

Fax: +385 (0)21 347 242

----- Original Message -----

From: <bourzeix@shom.fr>

To: "Office - Hrvatski hidrografski institut" <office@hhi.hr>

Cc: "Philippe Bourzeix" <bourzeix@shom.fr>; "Zvonko Grzetic" <zvonko.grzetic@hhi.hr>;

"Zeljko Bradaric" <zeljko.bradaric@hhi.hr>; <yves.guillam@shom.fr>;

<celine.roux@shom.fr>; <jean-christophe.long@shom.fr>

Sent: Tuesday, May 17, 2011 10:56 AM

Subject: Re: Catalogue MEDINTCHART - May 2011 draft edition

Dear Mr Grzetic

The first proposal of this INT chart covering the Gulf of Trieste was made at the 15th MBSHC. It was again discussed at the 16th MBSHC and the coordinator asked for a new draft version (which could be admit by SI / HR / IT). As you said in your E-mail, at this time no agreement was reached.

I will emend the catalogue (May 2011 draft edition) by putting the national number and date in brackets (which means that chart is published without the corresponding INT number). I will also change the status by putting "TBD MBSHC" (line in blue in the catalogue).

Best regards,

Philippe Bourzeix

Subject: MEDINTCHART Catalogue - May 2011 draft edition

Ref.: MEDINTCHART Catalogue, draft version May 2011 received by mail on 12 May 2011

Dear Mr Philippe BOURZEIX,

Thank you for sending us the draft version of MEDINTCHART Catalogue incorporating amendments for charts allocated to Croatia as producer nation. Would you please be so kind and insert additionally a few minor amendments as provided in the attached table.

Furthermore, we would appreciate if you could clarify the inclusion of chart 3465, which for the first time appears in the Catalogue draft version of January 2010, still being included in its last version of May 2011. By inspection of the CHI files, there is no evidence or correspondence between the MEDINTCHART Coordinator and the MBSHC MS, supporting that the procedure set forth in the IHO Publication S-11 was fulfilled. Such procedure provides that the final and agreed draft INT chart scheme (SI, IT, and HR) should be circulated for comment to Member States, and only after the formal approval by MS the INT chart scheme could be included in the draft version of Catalogue. In addition, inspection of the CHI files provides evidence that except the initial draft scheme proposed by SI (dated 16 July 2007), the HR comment on that initial draft scheme (dated 30 April 2008), and the SI request submitted to IT for comment on the above mentioned SI initial draft scheme (dated 23 January 2009), we have no further information regarding the SI initial proposal.

Therefore, we would be grateful if you could advise on which procedure and under which document the chart 3465 was included in the Catalogue draft versions of 2010 and 2011.

Best regards,

Director CHI

Zvonko Grzetic PhD

Hrvatski hidrografski institut

----- Original Message -----

From: [Philippe Bourzeix](mailto:Philippe.Bourzeix@shom.fr)

To: director@shodb.gov.tr; director@hnhs.gr

Cc: shfn@mdn.dz; msavvides@dls.moi.gov.cy; office@hhi.hr; e.n.h.d@hotmail.com; ihmesp@fn.mde.es; iim.sre@marina.difesa.it; dhcmarine@yahoo.fr; marine@gouv.mc; hirm@cg.yu; hidro@dhmfn.ro; main@gunio.ru; ih-serbia@plovput.rs; mzp.pomorstvo@gov.si; danco@net.sy; sho@defense.tn; office@hydro.gov.ua; hs-varna@mbox.digsys.bg; hidrographia@list.ru; baruch_p@mapi.gov.il; joe.bianco@transport.gov.mt; International.RelationsUKHO@UKHO.gov.uk; hgorziglia@ihb.mc; mhuert@ihb.mc; yves.quillam@shom.fr; celine.roux@shom.fr; jean-christophe.long@shom.fr

Sent: Thursday, May 12, 2011 9:28 AM

Subject: Catalogue MEDINTCHART - May 2011 draft edition

Dear colleagues,

Please find in attachment a new version of the MedIntChart catalogue named "May 2011 / Draft" (updated on a routine basis from the last January 2010 "draft" edition - inputs in red for the updates and in blue for the proposals that have not been discussed yet). For the moment the figures are under construction (they are not included in this document). As you'll see an effort was made to be as close as possible from the scheme of the S-11 edition. Would you be kind enough to check if there is no error and also fill the empty cells if needed. The limits of the charts are very important in order to have in a near future a fully functional MedIntChart GIS.

You'll also see that a new column named "status" has been introduced:

STATUS	Meaning
Available	The chart is printed and distributed as an INT chart.
In preparation	The chart is already in the national scheme (or near to be). Some work has to be done to reach the INT rules in order to make it available.
Not available	The chart is not available either as INT chart or as a national chart.
TBD MBSHC	Chart which is planned in the INT scheme pending further discussions and approval of all MBSHC members.

Best regards,

Philippe BOURZEIX

philippe.bourzeix@shom.fr

French Navy Hydrographic and Oceanographic Service

Antenne SHOM - IGN - 2 avenue Pasteur - 94160 Saint-Mandé
Tél : (33).1.53.66.97.86 Fax : (33).1.41.74.94.25