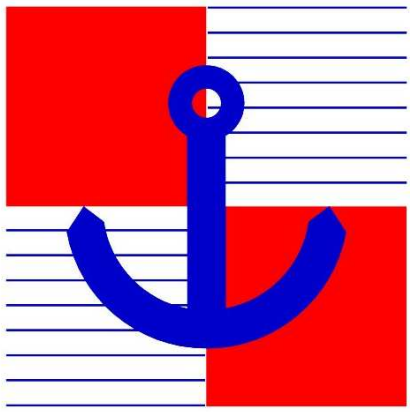
MEDITERRANEAN AND BLACK SEAS HYDROGRAPHIC COMMISSION

XVIII CONFERENCE

REPORT BY CROATIA

HRVATSKI HIDROGRAFSKI



INSTITUT

TURKEY, Istanbul
25-27 September 2013

HYDROGRAPHIC INSTITUT
OF THE REPUBLIC OF CROATIA

MEDITERRANEAN AND BLACK SEAS HYDROGRAPHIC COMMISSION

XVIII CONFERENCE

REPORT BY CROATIA

Prepared by:
Assistant Director
Capt. Željko Bradarić, M.Sc.

CHI Director:

Zvonko Gržetić, PhD

HR 21000 SPLIT, ZRINSKO-FRANKOPANSAKA 161
Phone: +385/21-308-800, Director+385/21-308-801 Telefax:+385/21-347-242 ; e-mail: office@hhi.hr

1. HYDROGRAPHIC OFFICE

In accordance with SOLAS V provisions that are implemented in Croatian national legislation (Law of Hydrographic Activity, 1998) Hydrographic Institute of the Republic of Croatia (CHI) 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 (maritime) administration is shown in Annex 1. For details see www.hhi.hr.

2. HYDROGRAPHIC SURVEY

2.1 Survey status

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

3. CHARTS

CHI is produced official paper and electronic navigational charts (ENCs) for the area of the Croatian responsibility at sea.

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 as it was planed has achieved 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:

		1 July 2008		**1 July 2009**		**1 June 2011**		**1 July 2013**	
User band	Navigational purpose	No of Cell	Area coverage (%)	No of Cell	Area coverage (%)	No of Cell	Area coverage (%)	No of Cell	Area coverage (%)
1	Overview	1	100%	1	100%	1	100%	1	100%
2	General	4	100%	4	100%	4	100%	4	100%
3	Coastal	15	100%	15	100%	15	100%	15	100%
4	Approach	9	72%	11	77%	12	81%	13	85%
5	Harbour	31	77%	33	80%	37	84%	37	84%
6	Berthing	20	74%	21	77%	22	80%	24	85%
TOTAL		**80**	**87%**	**85**	**89%**	**91**	91%	**94**	92%

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

3.2 ENCs distribution method

CHI distributes its ENCs through the PRIMAR RENC. The first Croatian ENCs were released in February 2007. In the period between two conferences three new ENCs and 194 ERs was produced. It was 15 ENCs in new edition.

3.3 WMS for ENCs

CHI as a member of PRIMAR RENC actively participate in the project WMS for ENCs together with a few other PS member states. At the moment, CHI and a few Croatian maritime governmental organizations (MRCC, Maritime Directorate, HM Offices) use WMS for ENCs for administrative purposes (Fig 1).

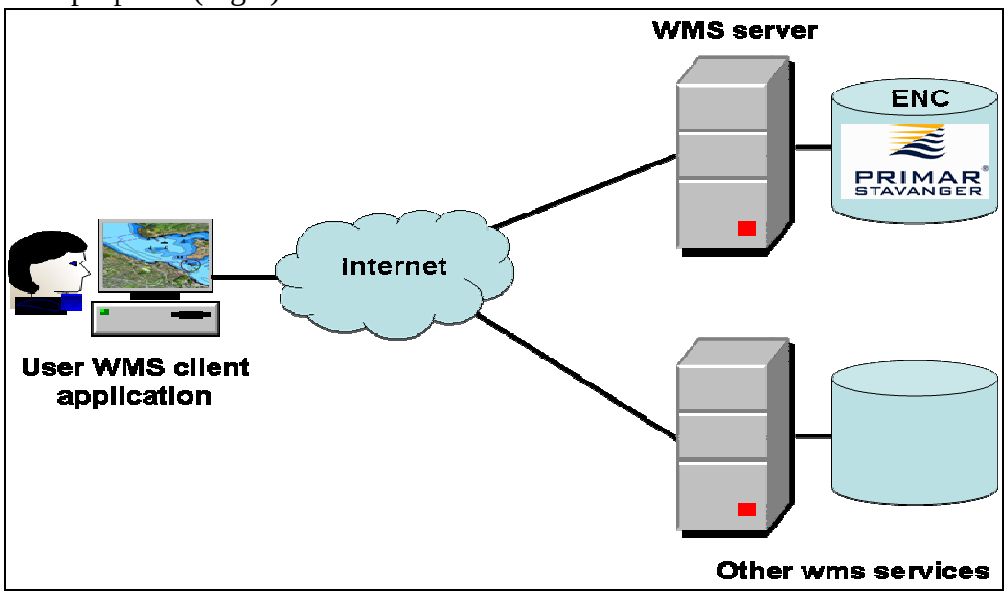


Figure 1. PRIMAR WMS for ENCs

3.4 INT ENC scheme

The current second draft proposal solution (ENC scheme for UB 1 i UB 2) for Adriatic Sea area, which is based on HR first proposal presented during last MBSCC, is under process of harmonization between IT and HR.

3.5 RNCs

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

3.6 INT paper charts

HR status of INT paper charts is shown in the table in Annex 6 of this report.

3.7 National paper charts

In the period between the two MBSHC Conferences the CHI published the following charts:

New charts
Kvarnerić (planovi luka) 22 – Plan:
- Uvala Mala Stinica – trajektni pristan 1:3 000 (Plan, Berthing)

New editions

Grado – Rovinj	100-15	1: 100 000 (Coastal)
Srednji Jadran (planovi luka i prolaza) 37:		
- Luka Ždrelac		1:7 500 (Plan)
- Prolaz Mali Ždrelac		1:2 500 (Plan)

New printing

Lošinj - Molat	100-17	1: 100 000 (Coastal)
Rijeka – Kvarnerić	100-18	1:100 000 (Coastal)
Silba – Pag	100-19	1:100 000 (Coastal)
Male karte	(1-29)	1:100 000 (Coastal)

3.8 New technologies

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 2)

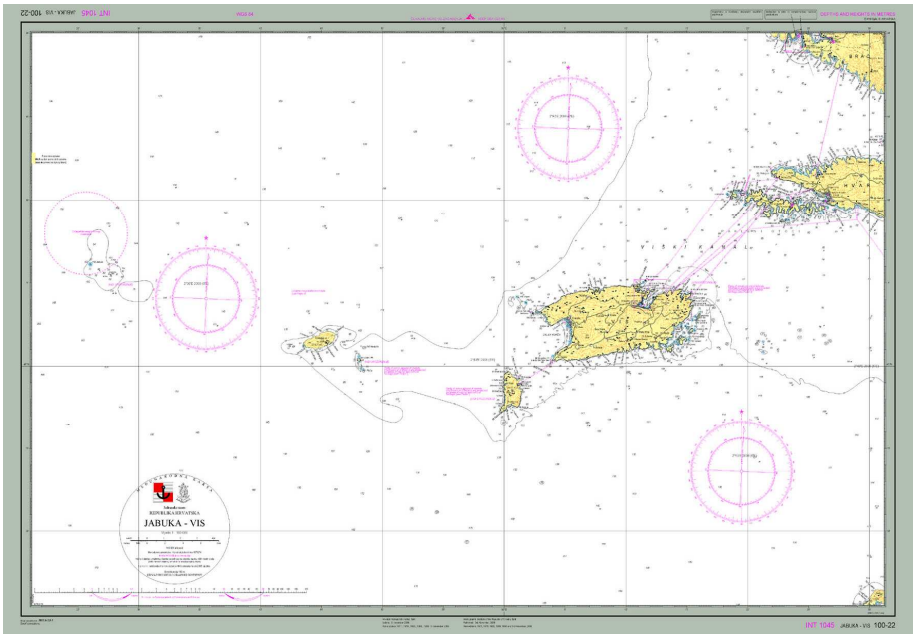


Figure 2. The chart 100-22 JABUKA - VIS produced using dKart Publisher module

3.9 Problems encountered

1. Some overlapping issues still exist among HR, IT and GR Overview and General ENCs. The process of harmonization of the second draft proposal is underway between IT and HR.
2. Some inconsistencies observed between (HR) national paper charts and ENCs are under constant consideration and deliberation. Furthermore, all feedback received from users and IHO are matter of an urgent examination and solving.
3. The CHI view about a few gaps in the Adriatic Sea covered by INT paper charts series scale 1:250 000 as it was presented during XVII MBSHC is under consideration between IT and HR.

4. NAVIGATIONAL PUBLICATIONS

4.1 National official navigational publication series

CHI navigational publication series includes the following documents (Fig 3):

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

Figure 3. CHI Official Navigational Publications

4.2 Issued navigational publications

The publications issued since the XVII MBSHC Conference are listed hereinafter:

Tide Tables:

- Tablice morskih mijena 2012**.**
- Tablice morskih mijena 2013**.**

Nautical Almanac:

- Nautički godišnjak 2012**.**
- Nautički godišnjak 2013**.**
- Nautički godišnjak 2014**.** (in preparation)

Catalogue:

- Katalog pomorskih karata i navigacijskih publikacija, (new edition 2013)

Sailing Directions (new edition 2012)

Symbols and abbreviations (new edition 2013)

Radio Service (new edition 2012)

Notices to Mariners - the digital version produced using dKart DNtM module is currently in testing phase.

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 navigational warnings is shown in the following table:

NAVWARNINGS	2011.	2012.	2013. (until 31.07.2013.)
NAVAREA	1	3	-
COASTAL	35	33	17
LOCAL	224	224	126
TOTAL	280	260	143

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

6. S-55 IHO PUBLICATION

Updating information is provided as necessary.

7. CAPACITY BUILDING

7.1 New technologies

Computer and communication infrastructure

A new wireless network (WiFi) was installed using four wireless access points.
To support the "Print on demand" printing technology, it has been installed, tested and put into operation a new line of two plotters based on Latex technology, which produces high-quality large format printing (Fig 4).

Figure 4. Print on demand

WEB Services

Recently launched website continuously has improved (www.hhi.hr), providing a variety of new information and services, with modern design and functionality.

Online publication "CATALOGUE OF CHARTS AND NAUTICAL PUBLICATIONS" is updated on a regular basis (Fig 5).

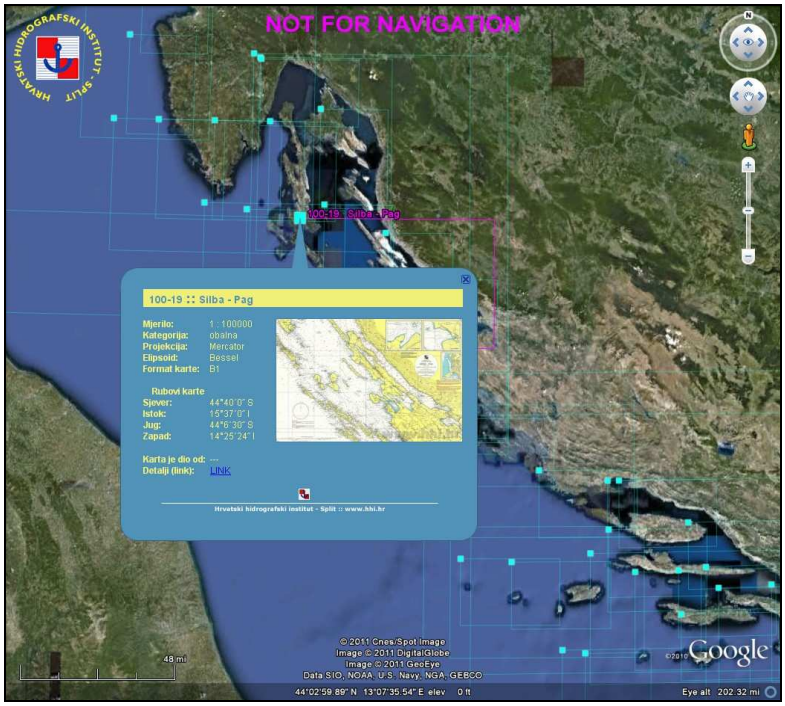


Figure 5. Online Catalogue of Charts and Nautical Publications

E-Services of Notices to Mariners and Navigational Warnings are available on the CHI website. Digital "Notices to Mariners" provide monthly updates for official editions, as well as archives of previously published digital notices (Fig 6).

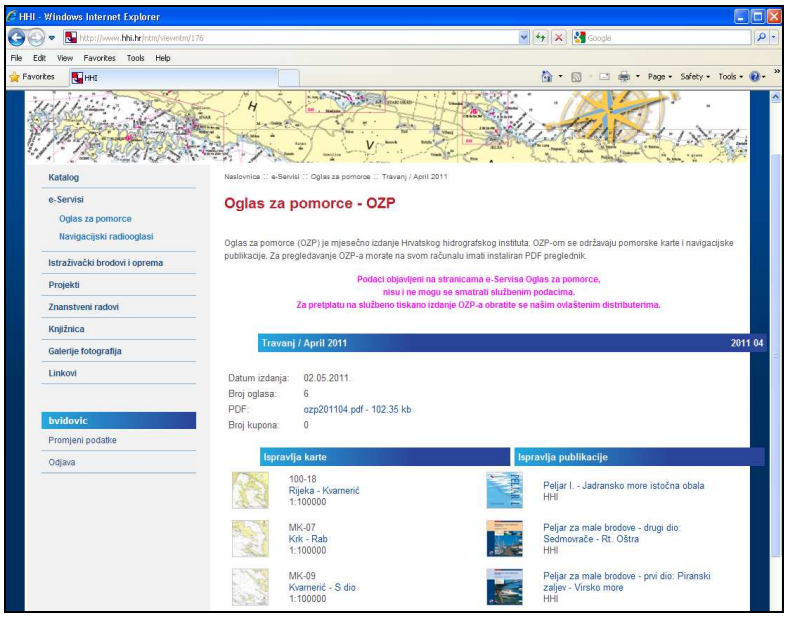


Figure 6. Notices to Mariners e-Service

Digital “Navigational Warnings” are updated promptly on web, as soon as new information is reported and promulgated to the mariners by ordinary means (NAVAREA, NAVTEX or VHF) (Fig 7).

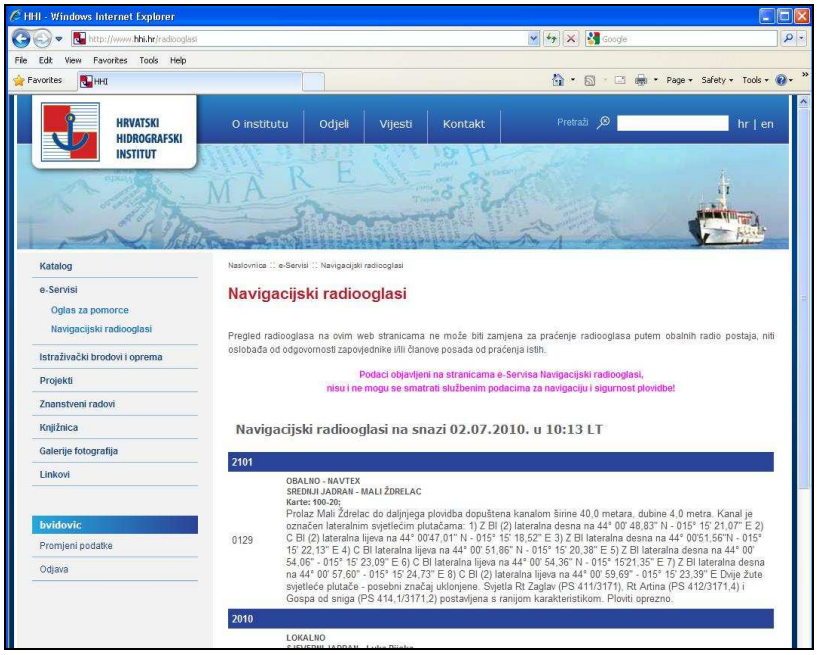


Figure 7. Navigational Warnings e-Service

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 (Fig 8).

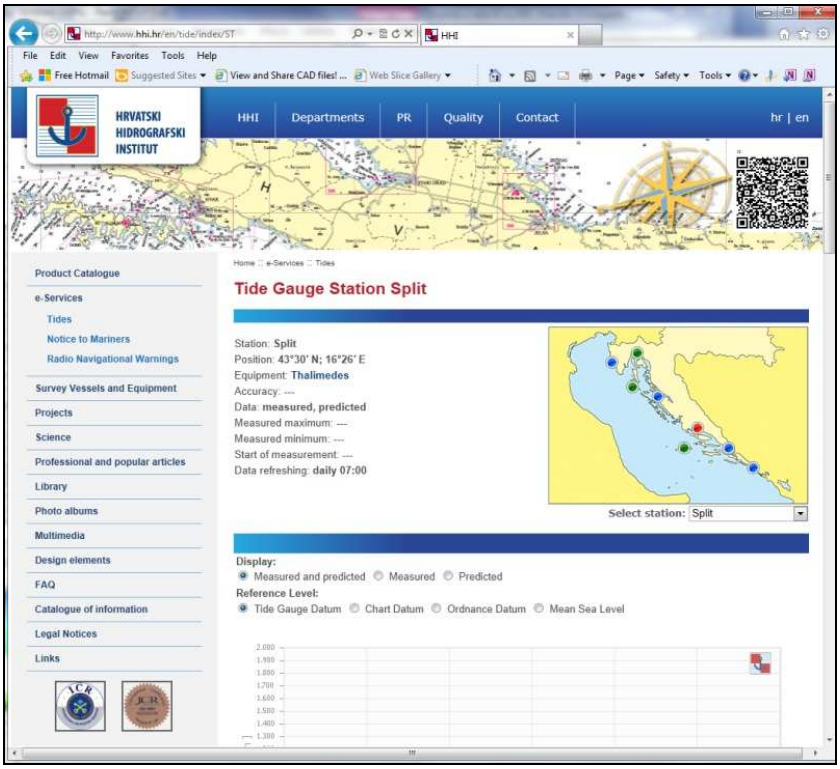


Figure 8. Tidal measurements and tide-gauge data e-Service

Wave measurements

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

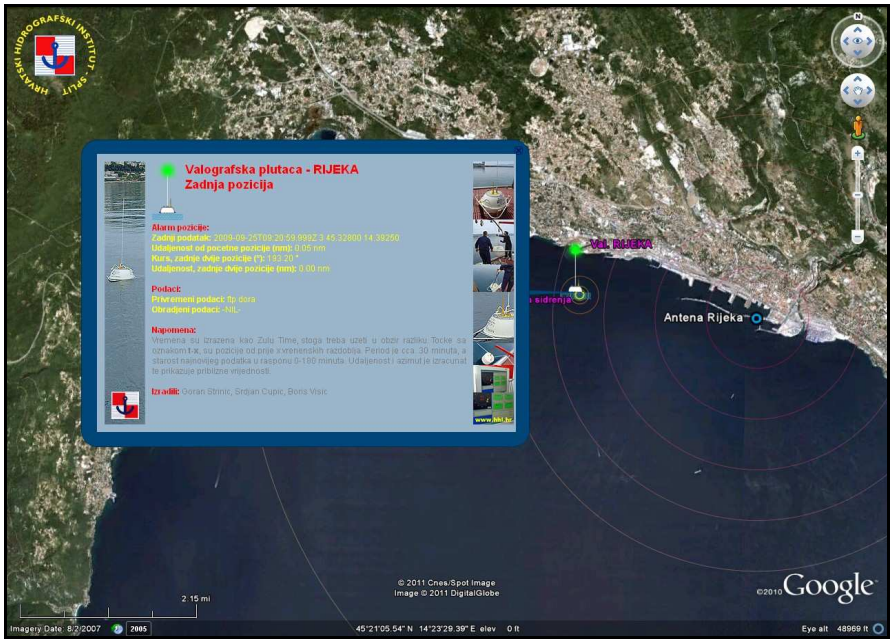
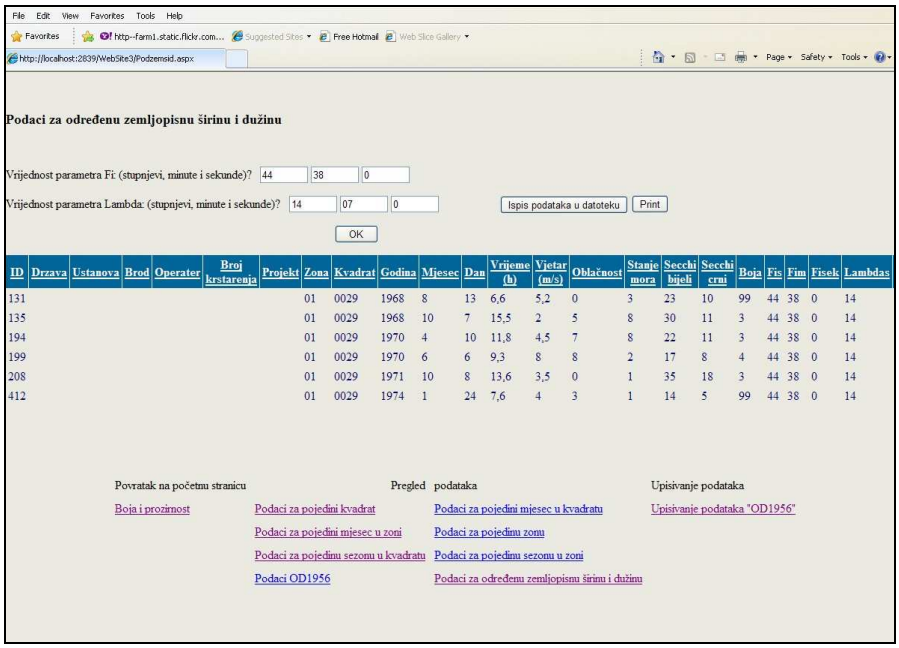


Figure 9. Waverider buoys display in Google Earth

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	Operater	Broj krstarenja	Projekt	Zona	Kvadrat	Godina	Mjesec	Dan	Vrijeme (h)	Vjetar (m/s)	Oblačnost	Stanje mora	Secchi bijeli	Secchi crni	Boja	Fis	Fim	Fisek	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 is upgraded aiming 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).

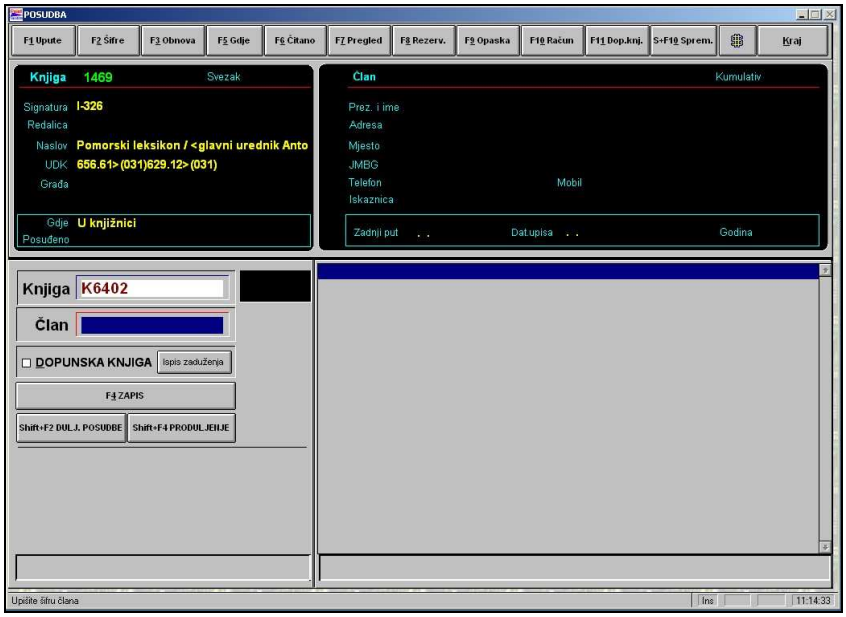


Figure 11. METELWin Application

Other projects

National (Marine) Spatial Data Infrastructure – N(M)SDI

The CHI actively participates in the long-term project of HR at national level for implementation the national legislation relating NSDI aiming to establish the MSDI (Fig 12).

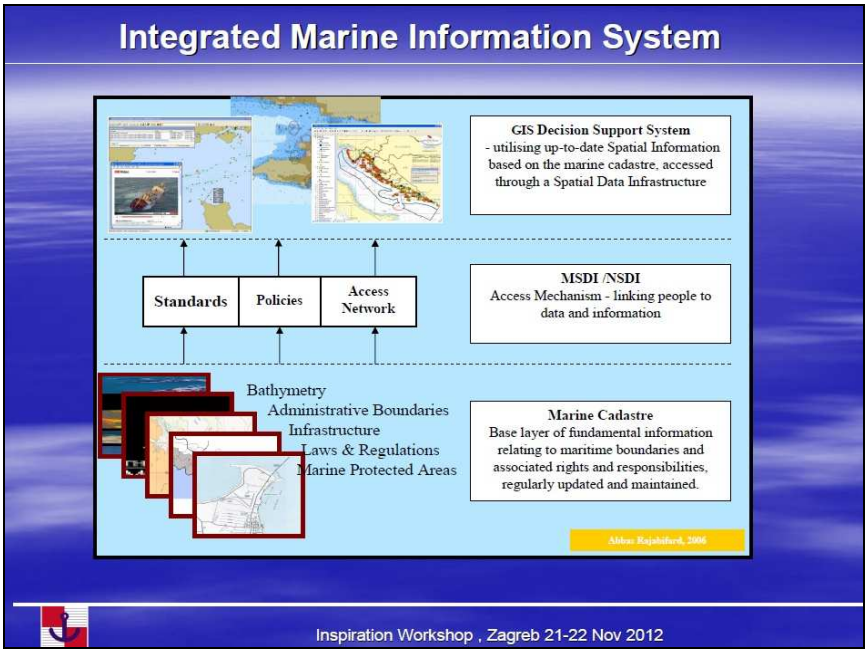


Figure12. An overview concept of HR MSDI

7.2 Training

The CHI has successfully completed the process of ISO 9001: 2008 certification and awarded in June 2013.

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 production issues and quality checking and validation procedures. Training is provided to staff for the all new version of the existing software for ENC production, validation and updating.
The institute has two separate databases, one for ENC production and one for the official paper charts. The project is still underway by which will be established the production of paper and electronic charts from the single database and the WGS84 ellipsoid (Fig 13)

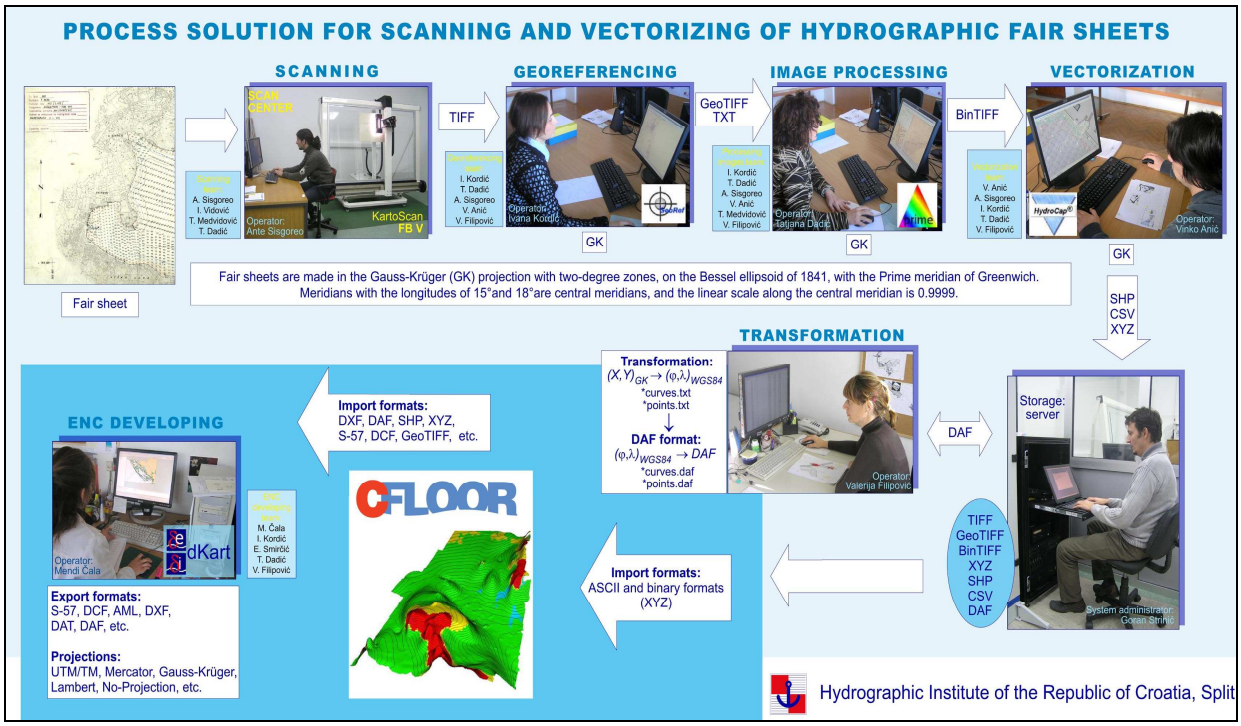


Figure 13. Process solution for scanning and vectorisation of hydrographic fair sheets

7.3 Bilateral Cooperation

Bilateral agreements

During the period 2011-2013, the bilateral agreement activities were started and currently are under alignments between Croatia and the following countries: Greece and Italy.

Bilateral projects

1. *EU / IPA project of component II (CBC), Measure 1.1. Joint Actions for Environment, Nature and Cultural Heritage.*

CHI has started implementing a new EU project named Joint Action for Sea Pollution Prevention - "JASPPer". Total value of the project is € 598,339.17. The project takes place in the Dubrovnik-Neretva County and Montenegrin coast.

The project aims to contribute to the reduction of transboundary pollution and preservation the marine ecosystem.
Croatian partners in the project are: Croatian Hydrographic Institute as Functional Lead Partner and Institute for Marine and Coast - University of Dubrovnik. Montenegrin partners: Institute of Seismology and Hdrometeorology of Montenegro as the leading Montenegrin partner and other Montenegrin partner - Institute of Marine Biology in Kotor - University of Montenegro. The planned duration of the project is 24 months (05.2013.-05.2015).

***2.** EU/IPA - Cross-Border Programme Croatia - Montenegro*

Among the first five approved projects within the IPA Cross-Border Programme Croatia – Montenegro was 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 was 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).

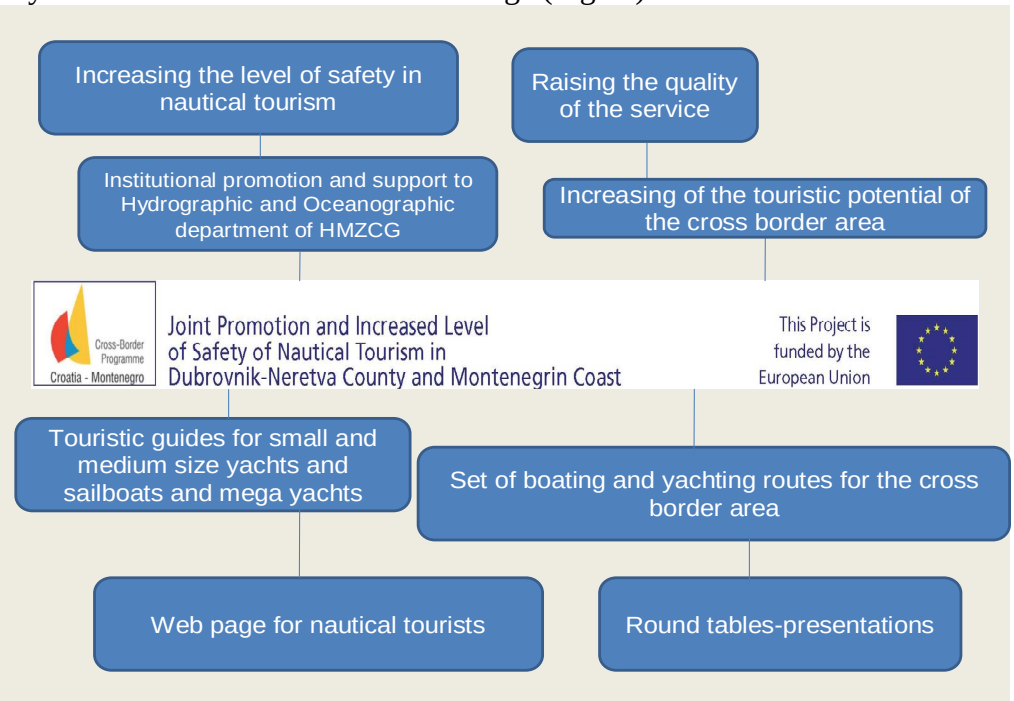


Figure 14. Scheme of the project goals

On the Croatian part, participants in the project were 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 were 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 and successfully finalised in Dec 2012. Total value of the project for both sides was 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 during 2014.

8. OCEANOGRAPHIC ACTIVITIES

8.1 Oceanographic projects

CHI participates in a few oceanographic projects. The two can be extracted as the most interesting:

1. Implementation of the "Marine Strategy Framework Directive) in Croatia started in March 2013 with complex oceanographic measurement in Croatian waters.

Sea temperature, salinity and density were measured in March, April, May and June 2013 at 44 CTD stations, by using standard drop-down from the surface to the bottom of the sea of the CTD probe.

Measurements of sea currents started in March 2013 by using ADCP (Acoustic Doppler Current Profiler) obtained from several manufactures at 9 current meter stations (Fig. 15).

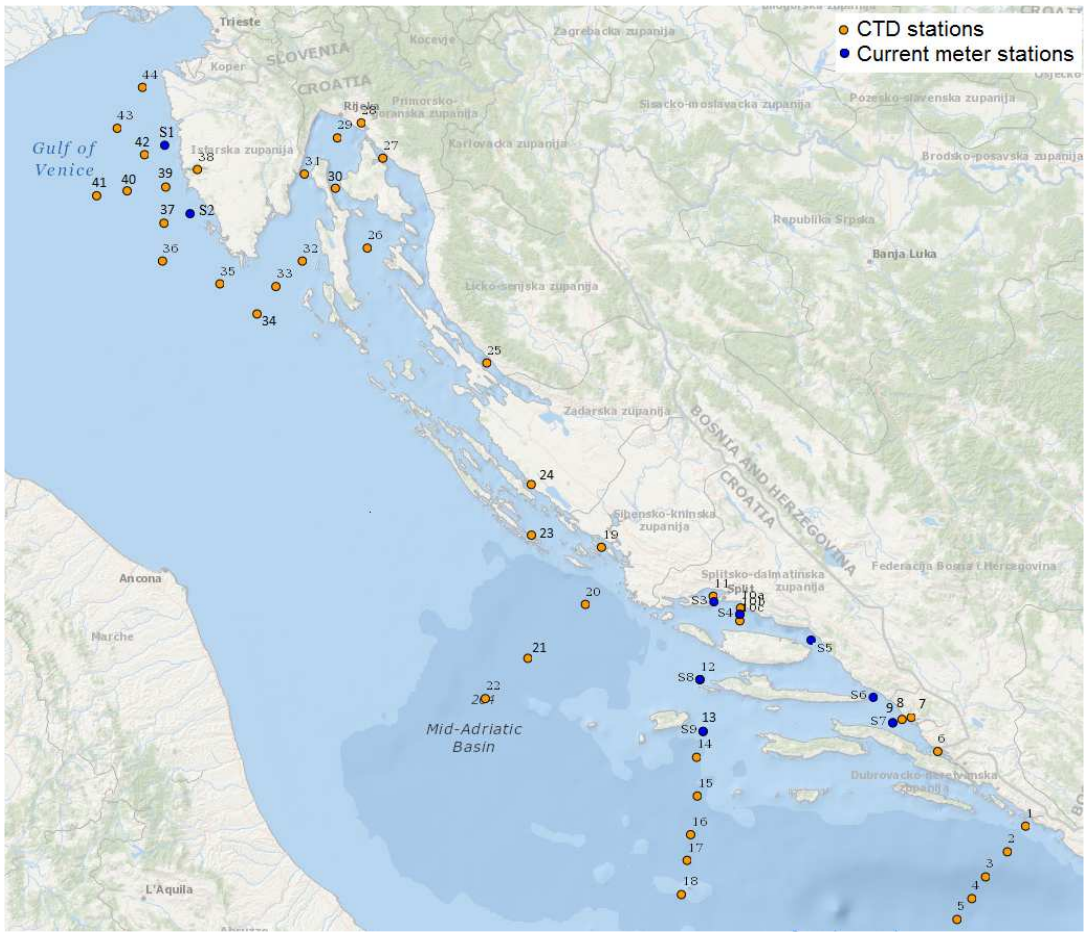


Figure 15. Geographic positions of CTD stations and current meter stations.

2. Through the project "Adriatic tides and sea level on-line" 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 Continuous GPS providing the real-time information about absolute measured sea level for the years 2009, 2010, 2011. Operational tide gauges (Fig.16) are equipped with analogue-to-digital converters having continuity in the long-term observation,

Figure 16. Operational tide gauge network on the east Croatian coast of the 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 17) are also presented in a digital format for the years 2013 and 2014.

Figure 17. Tide Tables – Adriatic Sea, East Coast

9. OTHER PROJECTS AND ACTIVITIES

CHI personnel participate 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.18). Data and functions update and maintenance of the system (software and hardware) as well as support is included (two time per year). Training of MRCC employees and other system participants is included and performed periodically.

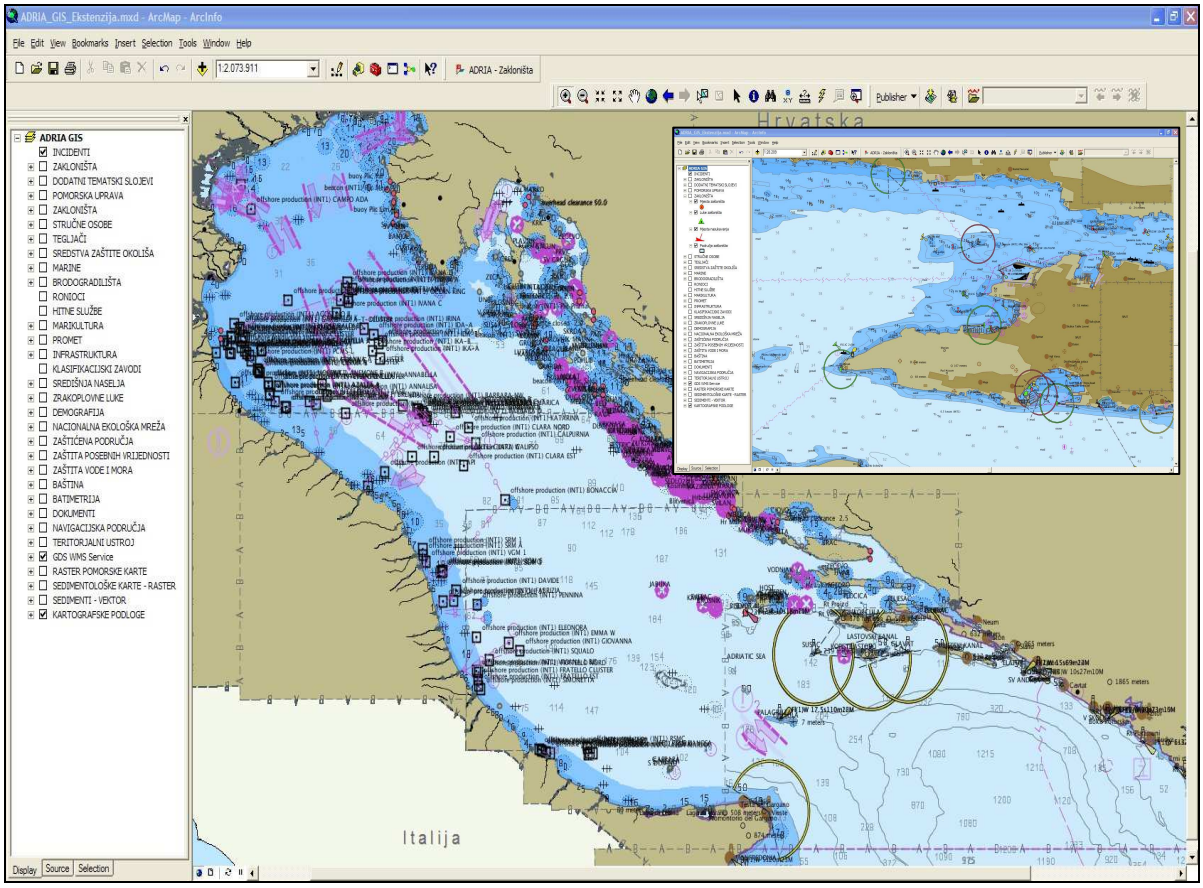


Figure 18. ADRIA GIS application – an example of using ENC for non navigational purpose

Adria GIS application is still under development and testing phase as web application. (Fig 19) shows multicriterion module which enable selecting and ranking potential PoR based on 13 recognized relevant criteria.

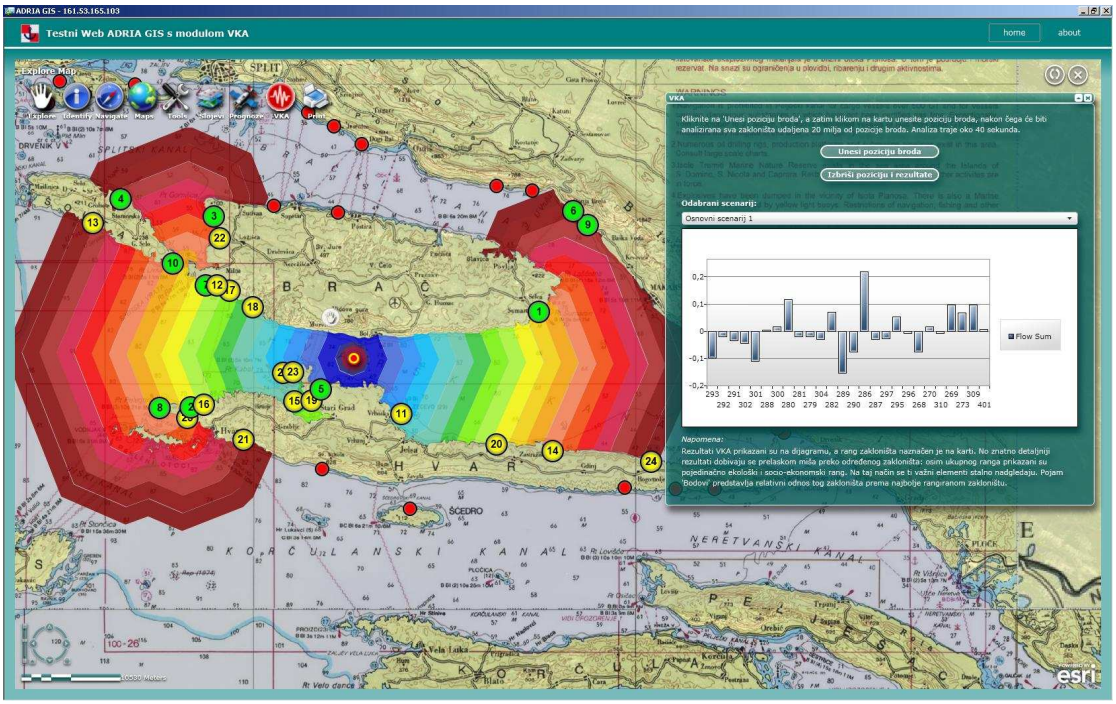
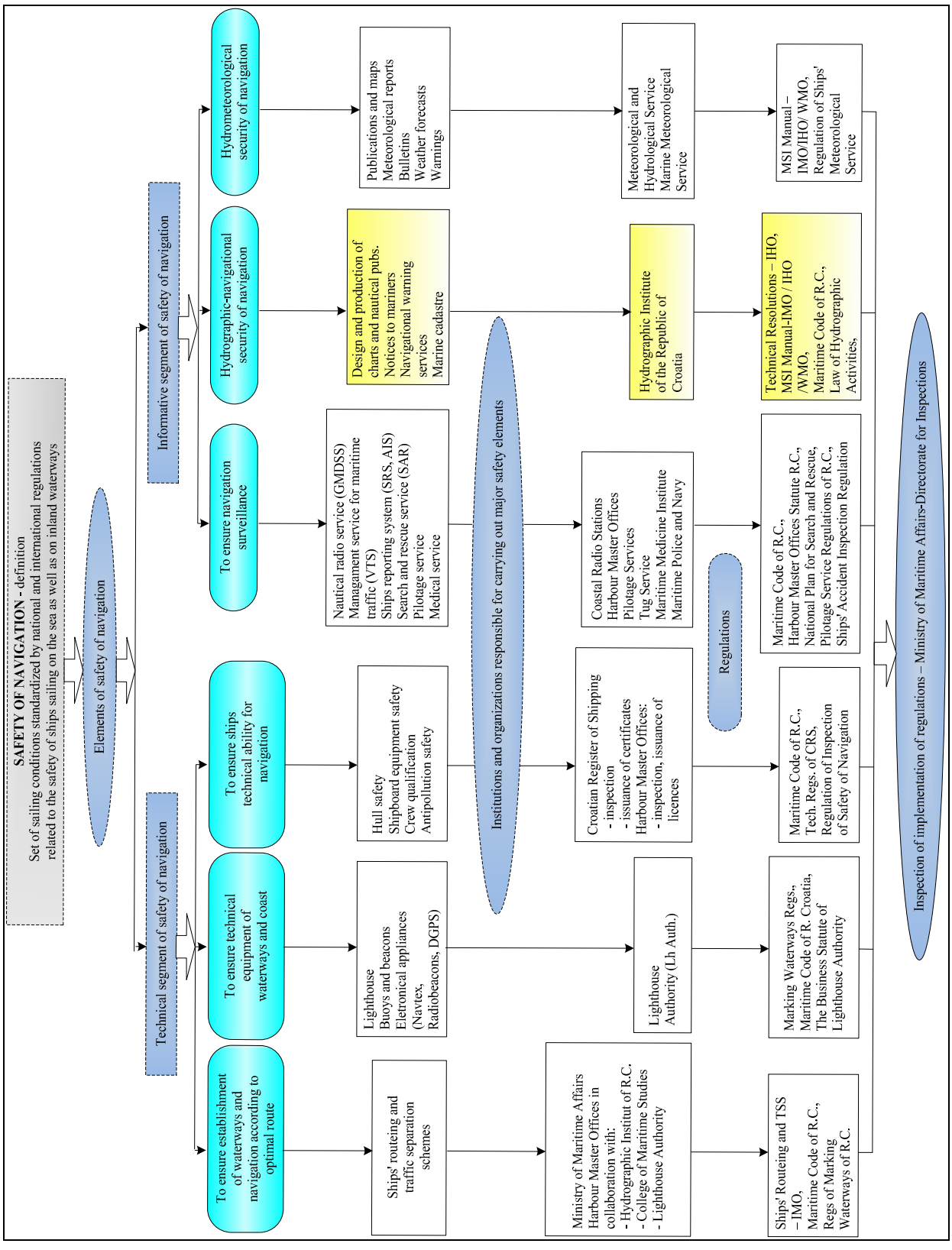


Figure 19. Multicriterion module of Adria GIS as web application

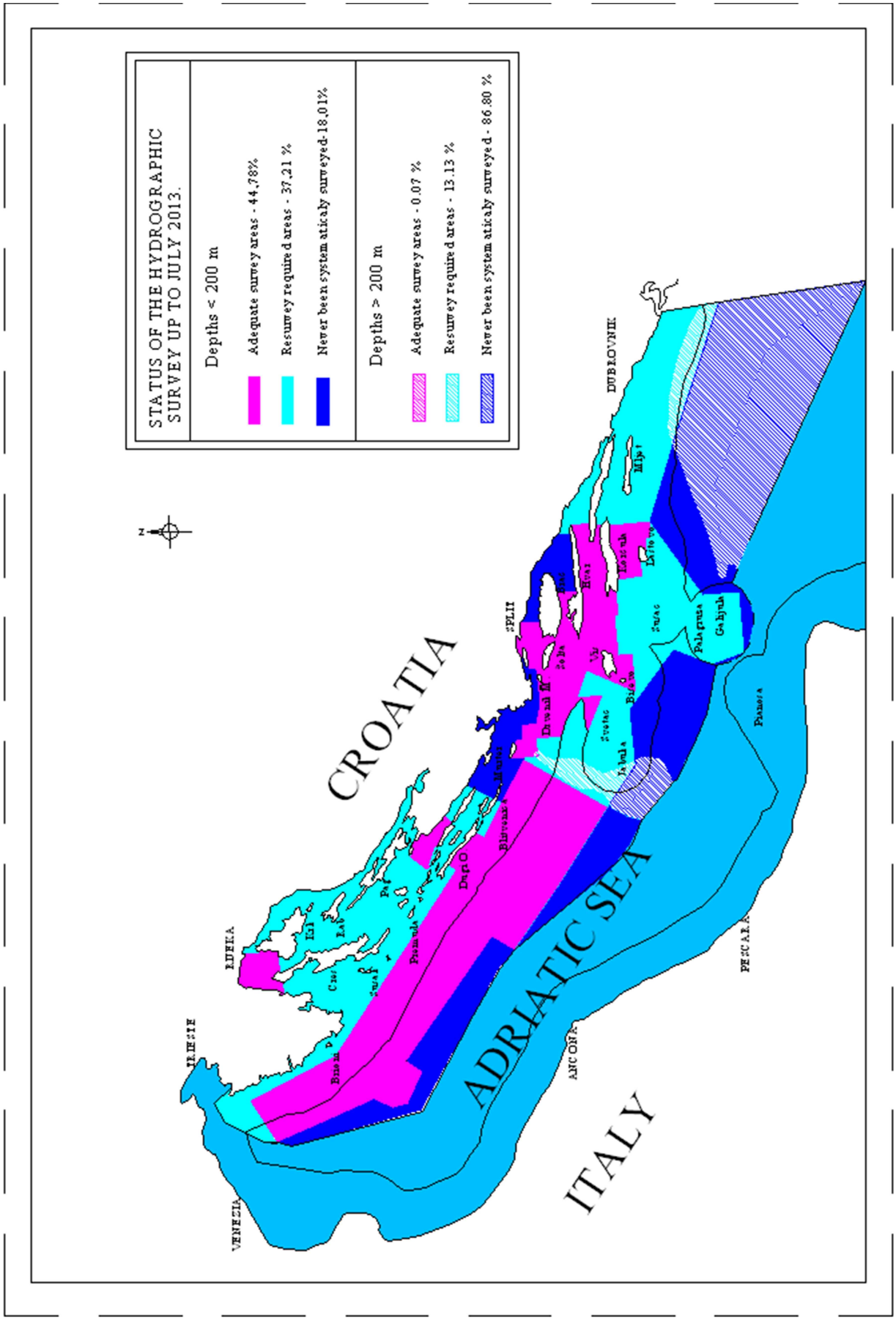
CHI has actively participated in Croatian project for establishing Vessel Traffic Service (CVTMIS). In the last faze of the project CHI took part in preparation of VTS regulations facilitating regulatory body for structuring the regulation as much as possible in accordance with recommended structure of notice to mariners consisting VTS elements provisions. It was presented in an updated version of the study "VTS - Preliminary Methodological Considerations with Proposed Solution - Updated Edition 2012" (Fig 20).

Figure 20. VTS Study - Updated Ed. 2012

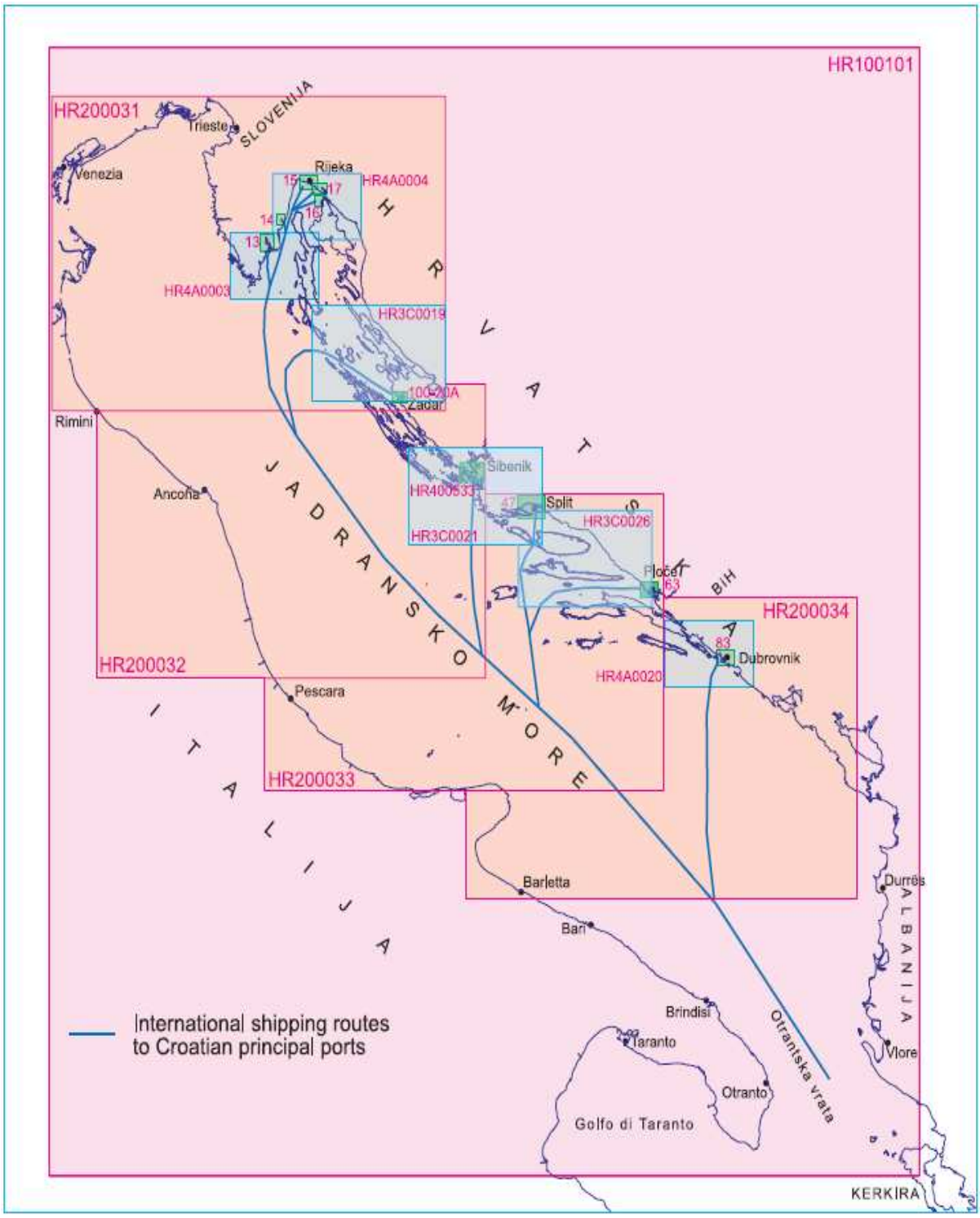
ANNEX 1 - CHI position in the structure of Croatian administration



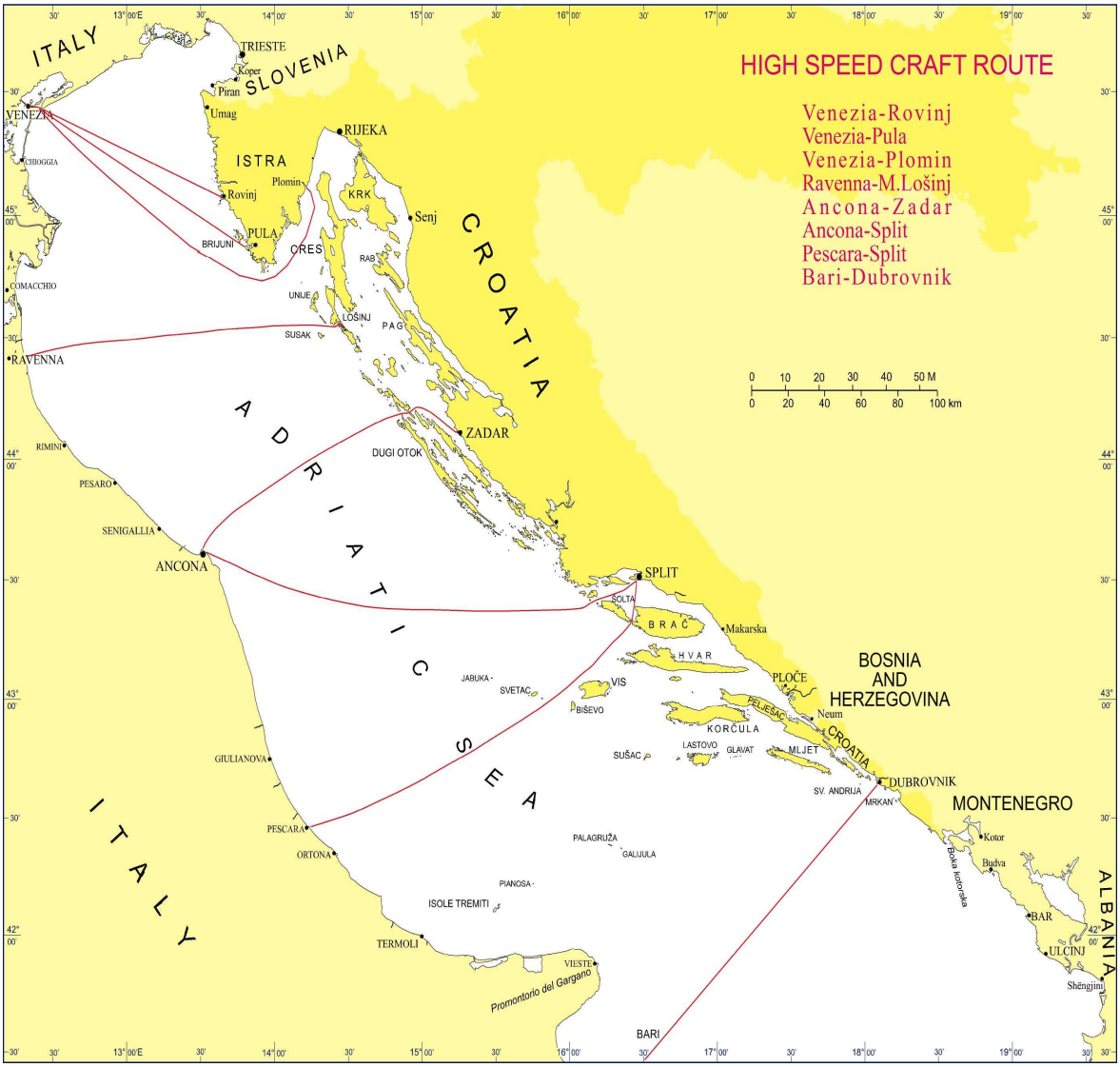
ANNEX 2 - Status of hydrographic survey



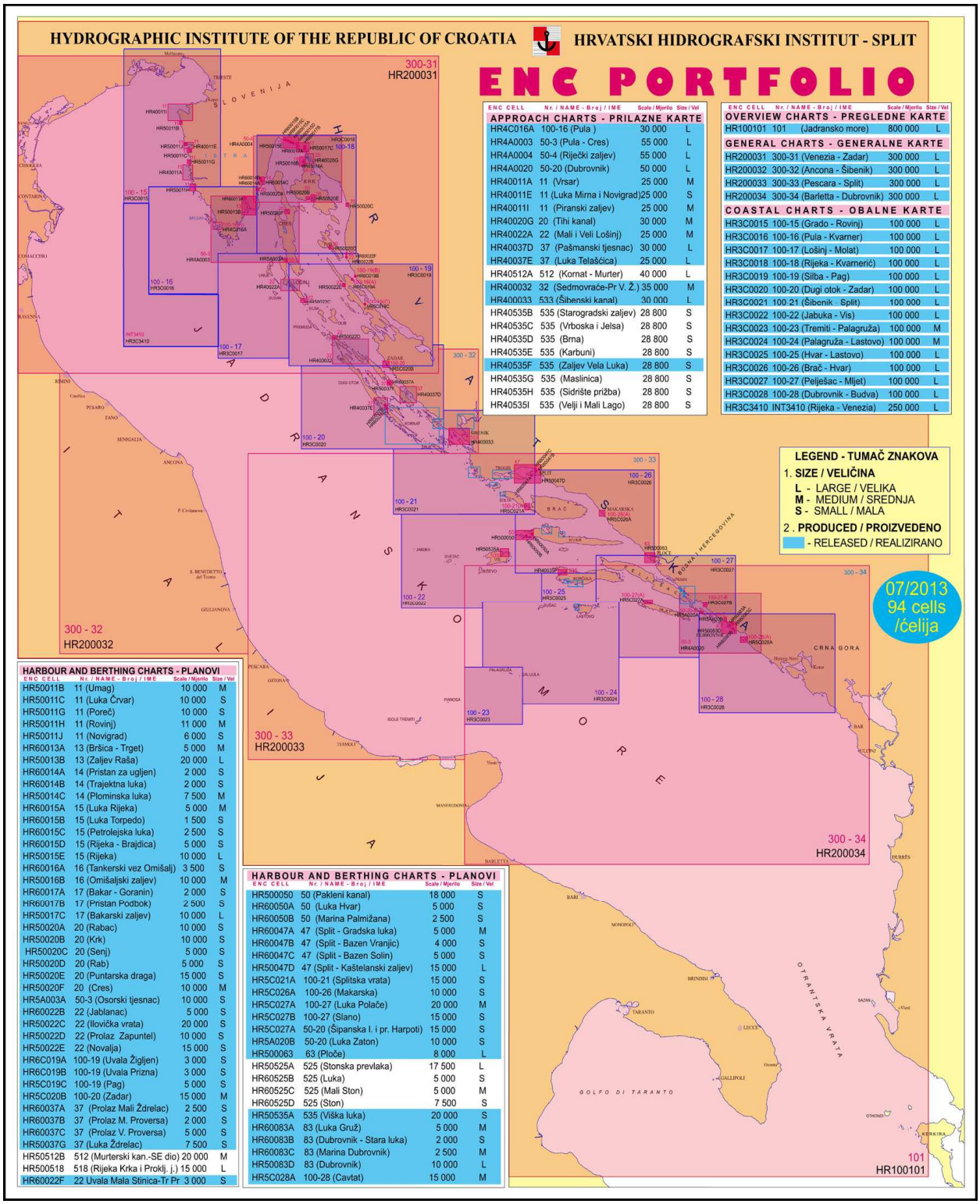
ANNEX 3 - Croatian ENC priority plan



ANNEX 4 - Recognized High Speed Crafts routes



ANNEX 5 - ENCs release status



ANNEX 6 - 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	LIMIT_E	
300	IT	360	4 200 000	45°00'N	1984	1997	A0	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	A0	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	A0	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
3410	HR		250 000	45°00'N	1988	2007	A0	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	A0	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		A0	FR	Dubrovnik - Durres	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)	B1	A-Pula	Pula - Kvarner	44°30'36"N	45°05'12"N	13°15'24"N	14°27'00"N	In Preparation
3473	HR	(100-18)	100 000	44°55'N	(1977)	(1996)	B1		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)		A0	A-luka Rijeka-B-Rijeka-Lučica Torpedo-C-Petrolejska luka-D-Rijeka-Brajdical	Rijeka	45°16'36"N	45°20'36"N	14°22'36"N	14°30'48"N	In Preparation
3476	HR	(100-21)	100 000	43°35'N	(1973)	(1996)	B1		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)		A0	A-Split-Gradska luka-B-Bazen Vranjic-C-Bazen Solin	Split - Kaštelanski zaljev	43°28'00"N	43°34'00"N	16°17'54"N	16°30'00"N	In Preparation
3480	HR	(100-25)	100 000	42°25'N	(1972)	(1995)	B1		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)	B1		Pelješac - 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)	B1	A-Luka Polače-B-Luka Slano	Pelješac - Mljet	42°28'48"N	43°03'24"N	16°58'36"N	18°08'12"N	In Preparation
3485	HR	(83)	10 000	42°40'N	(2001)		A0	A-Luka Gruž-B-Stara luka-C-Marina Dubrovnik	Dubrovnik	42°36'42"N	42°40'48"N	18°01'06"N	18°08'48"N	In Preparation