# ACTIVITY OF INTERNATIONAL DATA CENTRE ON HYDROLOGY OF LAKES AND RESERVOIRS

(July 2007 – June 2009)







The objective of the HYDROLARE is:

the establishment, development and regular update of international database on hydrological regime of lakes and reservoirs

in order to:

- stimulate the development of the global monitoring system on lakes and reservoirs for rational use, preservation and management of their water resources;
- improve the knowledge of lateral fluxes transformation within lakes and reservoirs;
- supply data for scientific and educational purposes, modelling, development of different global and regional projects/programmes.



### Principal expected outputs :

Basic data on permanently studied lakes and reservoirs of the world collected and processed, including physiographic and morphometric characteristics of water bodies and their catchments.

- Inventory of existing monitoring systems on lakes and reservoirs on a global scale.
- Inventory of existing data of permanent hydrological observations on lakes and reservoirs on a global scale.
- Database on long-term time series of lakes and reservoirs having permanent hydrological observations on a global scale.
- Preparation of basic processing and presentation tools for lakes and reservoirs data and distribution to member countries.
- Analysis and assessment of spatial and temporal tendencies of lakes and reservoirs hydrological elements.



First Meeting of the Steering Committee for the International Data Centre on the Hydrology of Lakes and Reservoirs (HYDROLARE)



St. Petersburg, Russian Federation, 14-15 June 2007 FINAL REPORT July 2007



In 2008 the preliminary phase of HYDROLARE creation was finished. The first phase of HYDROLARE activity started on 01.01.2009.

During the reporting period two main directions of HYDROLARE activity were realized:

- data base projecting and formation;
- creation of organizing basis of HYDROLARE.

Within the first direction:

• The projecting of the initial variant of data base was finished. An Access software was used for this purpose.

• The encoding system for water bodies and gauge stations was worked out using the WMO regionalization.



Lake Ladoga



# WMO region VI "Europe" and subregions (hydrographic regions)

32,33

64 66

- Two types of information are presented in the data base:
- metadata
- data of observations

Metadata consists of geographical, hydrographical, morphometric characteristics for lakes and reservoirs and projecting data for reservoirs.

Data of observations: mean monthly water levels, mean monthly and maximum water temperature and maximum ice cover thickness.

### During 2008 were prepared and loaded into the prototype of data base:

• metadata for lakes and reservoirs of Russia and former USSR countries;

 historical observational data on water level for lakes and reservoirs of Russia and former USSR countries (largest lakes and reservoirs).

The first test operation of HYDROLARE was made in the middle of 2008. Its efficiency was confirmed. In 2009 data preparation and loading into the data base is in progress.



# Within the second direction:

- The Agreement between Roshydromet and WMO on the establishment of HYDROLARE was signed in WMO headquarter on 20 June 2008. In the agreement a status of HYDROLARE, a sphere of its activity, responsibilities of sides and other positions are described.
- The special logo of HYDROLARE was issued.
- Web-site of HYDROLARE
  (<u>www.hydrolare.ru</u>) was established.

#### AGREEMENT

#### between

#### THE FEDERAL SERVICE FOR HYDROMETEOROLOGY AND

ENVIRONMENTAL MONITORING, THE RUSSIAN FEDERATION

and

#### THE WORLD METEOROLOGICAL ORGANIZATION

on

#### Establishment of the International Data Centre on Hydrology of Lakes and Reservoires – HYDROLARE

Whereas this Agreement between World Meteorological Organization (hereinafter referred to as WMO) and the Federal Service for Hydrometeorology and Environmental Monitoring (hereinafter referred to as ROSHYDROMET) on the Establishment of the International Data Centre on Hydrology of Lakes and Reservoirs – HYDROLARE (hereinafter referred to as Agreement) pertains to the Convention of the World Meteorological Organization of 1947 and the Russian Federation's rights and duties as a member-state of the WMO;

Whereas WMO and ROSHYDROMET (further named as "the Parties" collectively, or "Party" individually) want to enhance fruitful co-operation between the Parties and also to reach targets that are of common interest;

Whereas WMO co-ordinates and promotes global operational and scientific activities to allow increasingly prompt and accurate information services concerning weather, climate and water resources for public, private and commercial use, and in particular, that activities of WMO in hydrology and water resources are designed, among others, to monitor and assess water resources in support of integrated water resources management, to support global and regional water cycle assessments and climate monitoring, and to prevent hydrological disasters;

Whereas ROSHYDROMET bears the duties on national level to collect, analyze, interpret and disseminate all data and information on the hydrology of surface water bodies of the Russian Federation, including the hydrology of lakes and reservoirs;

Whereas the WMO Executive Council recognised at its 54th session in June 2002 the urgent need for hydrological data on lakes and reservoirs on a global scale for water resources assessment and climate research;

Whereas the Russian Federation at the 56th session of the WMO Executive Council (Geneva, June 2004) proposed to establish a Global Data Centre on Hydrology of Lakes and Reservoirs to be based at the State Hydrological Institute in St. Petersburg (Russian Federation), and further the recommendation of the 2nd session of the Global Terrestrial Network – Hydrology (GTN-H) coordination panel meeting (Koblenz, July 2005) as well as the recommendation of the GCOS/GTOS Terrestrial Observation Panel for Climate (TOPC) related to the establishment of an international data centre

for lake and reservoir data,

In the Agreement established:

- status of the Centre,
- scope and responsibility,
- intellectual property rights,
- settlement of disputes
- terms and conditions

The text of this Agreement in Russian and English languages was signed into the Headquarters of WMO in Geneva in 20 June 2008, during the 60th Session of the Executive Council of WMO by the Head of ROSHYDROMET A. I. Bedritsky and Secretary-General of WMO M. Jarraud





WEB- site

#### www.hydrolare.ru

The special Questionnaire on hydrology of lakes and reservoirs for HYDROLARE was distributed via WMO across WMO member-states.

Answers from 45 countries were received at the beginning of 2009.

**32 countries agreed to exchange data with HYDROLARE.** 

## Questionnaire on hydrology of lakes and reservoirs observations for HYDROLARE (Status on February 2008)

Please, fill-out one **questionnaire for each** organization in your country, which has a responsibility for hydrological observations on lakes and reservoirs.

Please note, this questionnaire has been prepared in a format to facilitate the electronic compilation of data. Whenever possible, kindly use the e-copy available on the website, under *Questionnaires*, at:

http://www.hydrolare.ru

and provide us with a copy of the completed questionnaire via e-mail attachment to the address:

wgrabs@wmo.int

6. Does your organization take part at the international exchange of hydrological data on lakes and reservoirs?



7. Is your organization/institution, in principle, in a position, to share data and information on lakes and reservoirs with HYDROLARE?

Yes No



Date	Country	Station	Level	T_water	lce_ regim	T_ice	Wave	Current	Archive	Type of data	Action
28.10.2008	BELARUS	14							PD	ОН	yes
16.12.2008	ISLOVAKIA	<u> </u>					i	İ		1 1	no
23.12.2008	SWITZERLAND	35						i i	PD	ОН	yes
26.12.2008	KAZAKHSTAN	34							P	i H	no
30.12.2008		25						·	P	ОН	yes
02.01.2009	FINLAND	300						*	D	ОН	yes
07.01.2009	!ESTONIA	6						•	PD	ОН	yes
08.01.2009		17	1	1		1	╄──·─ '	t	D	OH	yes
08.01.2009	KYRGYZSTAN	5				[		1	P	Н	yes
09.01.2009	AUSTRIA	53				[			PD	ОН	yes
12.01.2009		426				i	i	ii	PD	ОН	no
14.01.2009	ILAO PEOPLE'S (DR)			\$ 				i i		·	no
14.01.2009		16						;; 	PD	ОН	yes
15.01.2009	TANZANIA, UNITED REPUBLIC OF	5	Leo	la construction de la construction la construction de la construction la construction de la construction d		1   	<u> </u>		PD	ОН	yes
16.01.2009	HUNGARY	20							PD	OH	yes
19.01.2009	'OMAN		1			1	1	1 1		<b>↓</b>	yes
19.01.2009	TAJIKISTAN	6				+	<u>├</u>	<b>!</b>	P	¦    Η	yes
20.01.2009	BELIZE	3				†		<b>!</b>	PD	ОН	yes
20.01.2009	SPAIN	360							D	ОН	yes
22.01.2009	ARMENIA (Fax)	8				i momo	momon	j i	PD	і н	yes
22.01.2009	ROMANIA	142				gan eter tanlari eta (aniari eta)		<b>i</b> i	P	H	yes
23.01.2009	COLOMBIA (CVC)	2	T			₩		f	D	0	yes
23.01.2009	LATVIA (Post)	5							PD	ОН	no
23.01.2009	MALI	2							PD	Н	yes
26.01.2009	JAPAN	100							PD	OH	no
27.01.2009		134				 +	 		P	<u> </u>	no
28.01.2009		4	<u>L</u>	للسمي		L	Ļ	ļļ	PD	OH	yes
29.01.2009		1	<b> </b>	) — - — - — I		, +	, 		PD	0	yes
29.01.2009 29.01.2009		<u>22</u> 2					<u></u>	ii	D P	о ОН	no
30.01.2009	MOLDOVA, REPUBLIC OF	2 5					L		PD		yes
30.01.2009		6				+			<u>PD</u> PD		yes no
30.01.2009	CHILE	60		L		L	L	l	PD	H	yes
02.02.2009	GUYANA	<u>-</u>		¶		+	<u>├</u>	<b>!</b>			no
02.02.2009	SWEDEN	200		[]				<b>†</b> †	PD	Н	yes

Date	Country	Station	Level	T_water	lce_ regim	T_ice	Wave	Current	Archive	Type of data	Action
03.02.2009	AUSTRALIA	200	*	*					D	OH	yes
03.02.2009	CANADA	444							PD	OH	yes
03.02.2009	IPOLAND	89						I I	PD	OH	no
04.02.2009	ZAMBIA (Fax)								PD	OH	yes
05.02.2009	THAILAND										no
06.02.2009	DOMINICA (DES)								PD	OH	yes
12.02.2009	ANTIGUA AND BARBUDA								PD	0	yes
17.02.2009	INDIA (Fax)	81							P	OH	yes
23.02.2009	CYPRUS	57							PD	OH	yes
23.02.2009	TUNISIA	29							PD	OH	no
30.03.2009	MEXICO (Post)	176							PD	OH	yes
Итог	46	38	40	24	14	11	3	4			

there are other type of observations

don't mark quantum stations

Archive: P - paper records D - digital

Type of data: O- operational

H - historical

Nº	Milestone	Deadline	Result			
	micotorie	Beadine	yes	part	no	
1	Preparation of questionnaire for data collection, in collaboration with WMO	September 2007	+			
2	Development of encoding system for database, taking into account WMO requirements	September 2007	+			
3	Preparation of metadata for lakes and reservoirs of Russia and other former USSR countries, for loading into the prototype data base	December 2007	+			
4	Preparation of requests for historical observational data from foreign countries, and distribution of these requests and the questionnaire via WMO	December 2007	+			
5	Loading of available metadata for lakes and reservoirs of Russia and other former USSR countries into the database	since January 2008	+			
6	Preparation of historical observational data for lakes and reservoirs of Russia, for loading into prototype data base	January 2008		+		
7	Selection of the HYDROLARE database software, and design and development of the database to a prototype level	February 2008	+			
8	Loading of historical observational data for lakes and reservoirs of Russia into the prototype database	since February 2007		+		
9	First test operation of HYDROLARE	March 2008	+			
10	Preparation of historical observational data for lakes and reservoirs of former USSR countries, for loading into the data base	June 2008		+		
11	First review of HYDROLARE functions and activities	June 2008	+			
12	Loading of historical observational data for lakes and reservoirs of former USSR countries into the database	since July 2008		+		
13	Loading of available metadata for lakes and reservoirs of foreign countries into the database <sup>1</sup>	since July 2008			+	
14	Loading of historical observational data for lakes and reservoirs of foreign countries into the data base <sup>2</sup>	since October 2008			+	
15	Second meeting of HYDROLARE Steering Committee <sup>3</sup>	November 2008			+	

1 Dates have not received, as the Questionnaire was sent only in November 2008 2 Look 13<sup>th</sup> point 3 Meeting is put off on July 2009 on WMO initiative

# Future steps:

- Development of electronic forms for data acquisition and circulating them among the WMO member countries.
- Development of a system for accounting and monitoring the information collected from the WMO member countries.
- Analysis of data collected from the WMO member countries in digital form, preparation of information for loading into the database.
- Completion of loading the available information on hydrology of lakes and reservoirs of the former USSR countries into the database.
- Preparation of input data and loading it into the database with the use of DBMS.
- Development of a special technology for acquisition, control, transformation and loading the input data into the database.
- Development of a special technology for presenting regularly updated information on the database content on the Web-site.
- Providing the support for the operation of the Centre process system.
- Preparation of the Reports on the activities of the Centre in 2009 and 2010 for the WMO and Roshydromet.
- Preparation of the first HYDROLARE newsletter.
- Organization and holding the third HYDROLARE Steering Committee meeting.

# Thank you for your attention !

	Milestone	Deadline		
1	Development of electronic forms for data acquisition and circulating them among the WMO member countries.	III quarter 2009		
2	Development of a system for accounting and monitoring the information collected from the WMO member countries.	III quarter 2009		
3	Analysis of data collected from the WMO member countries in digital form, preparation of information for loading into the database.	since III quarter 2009		
4	Design solutions for specialized technologies: Data acquisition, control, transformation and loading the input information into the database. Regularly updated information on the content of the database presented on the Web-site.	IV quarter 2009		
5	Completion of loading the available information on hydrology of lakes and reservoirs of the former USSR countries into the database.	IV quarter 2009		
6	Preparation and approval by the WMO of the foremost information products of the Centre	IV quarter 2009		
7	Preparation of input data and loading it into the database with the use of DBMS	since IV quarter 2009		
8	Updating the Web-site	regularly, as required		
9	Preparation of the Report on the activities of the Centre in 2009 for the WMO and Roshydromet	IV quarter 2009		
10	Development of a special technology for presenting regularly updated information on the database content on the Web-site	II quarter 2010		
11	Development of a special technology for acquisition, control, transformation and loading the input data into the database	III quarter 2010		
12	Preparation of the first HYDROLARE newsletter	IV quarter 2010		
13	Organization and holding the third HYDROLARE Steering Committee meeting	IV quarter 2010		
14	Providing the support for the operation of the Centre process system	regularly		
15	Preparation of the Report on the activities of the Centre in 2010 for the WMO and Roshydromet	IV quarter 2010		