



МЕЖДУНАРОДНЫЙ ЦЕНТР ДАННЫХ  
ПО ГИДРОЛОГИИ ОЗЁР И ВОДОХРАНИЛИЩ  
INTERNATIONAL DATA CENTRE  
ON HYDROLOGY OF LAKES AND RESERVOIRS

## ANNUAL NEWSLETTER

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**D**ear Readers! This issue of the annual newsletter of the International Data Centre on Hydrology of Lakes and Reservoirs (HYDROLARE) will introduce you to extensive and various activities carried out by the Centre in 2013. Fourth meeting of the International Steering Committee for HYDROLARE held in the State Hydrological Institute (SHI, St. Petersburg, Russia) positively estimated these activities and planned its directions for 2014 – 2015. Information about it is provided by S. Bazanova.

One of the most important achievements of the Centre is the new possibility to display regularly updated information about current HYDROLARE database content on the website using map interface. There information about it in the article by L. Barinova, G. Barinova and N. Dolindo. Information about continued work on populating the database can be found in the article by E. Kuprienok.

Our cooperation with the Laboratory of Study of Geophysics and Oceanography from Space (LEGOS) at the National Centre for Space Studies (CNES, France) was substantially expanded in 2013. J-F. Crétaux devotes its article to results and the near-term outlook of this cooperation.

An international workshop on hydrological monitoring of lakes and reservoirs to be organized by HYDROLARE through coordination by WMO would be a remarkable event in 2014. The workshop will be held as a special session during the 15th World Lake Conference in Perugia (Italy).

Conference programme is available at: [www.wlc15perugia.com](http://www.wlc15perugia.com)

HYDROLARE is still keen on further populating and updating its database on hydrology of lakes and reservoirs of the World. We would be grateful to those WMO Members wishing to provide and regularly update their data and we thank all of you who already contributed to this very important international project.

*Prof. Valery Vuglinsky*  
*Director of HYDROLARE*



WWW.HYDROLARE.NET

Lake Baikal

## DATA COLLECTION FOR POPULATING THE HYDROLARE DATABASE

*E. Kuprienok, HYDROLARE, Russia*

In 2013 HYDROLARE kept working on collection, analysis and preparation of data on hydrology of lakes and reservoirs from WMO Members, as well as converting these data to the adopted format for loading into the database.

The database was updated with Swiss lake level data for the period from the beginning of observations up to the year 2012 and with reservoir data from Cyprus for the period 2010 – 2012 received in 2013.

Finland provided data on water level, water temperature and ice cover thickness of 36 lakes and reservoirs for the period from the beginning of observations up to the year 2012. The water level data were prepared and loaded in the HYDROLARE database. Also prepared and loaded were the appropriate metadata for these three countries. Kyrgyzstan sent data on lakes and reservoirs for 2010 - 2012 in addition to earlier data. Work has progressed on retrieval of data

from websites of the United States, Mexico, Sweden and Slovenia as well as on further identification, selection, analysis, preparation and conversion of data, including encoding of water bodies and stations. Data from the Great Lakes were updated up to the year 2012. As of the end of the year, 14 countries have provided their data in response to the HYDROLARE's request. The table below provides status of data collection.

Unfortunately, we are still facing problems associated with different data submission formats and languages which make it very complicated to retrieve, analyze and prepare data for loading.

Only Cyprus and Finland provided their data in the recommended Excel templates available on the web-site. Moreover, data providers do not indicate WMO subregions in the datasets, which is absolutely necessary for encoding of water bodies and stations uploading of data into the database.

**Table. DATA SUBMISSION STATUS**

Country	Status	Country	Status
<b>EUROPE</b>			
Armenia	☒	Moldova	☒ ☒
Austria	☒	Poland	☒
Azerbaijan	☒	Romania	☒
Belarus	☒ ☒	Serbia	☒
Cyprus	☒ ☒	Slovenia	☒ ☒
Estonia	☒	Spain	☒
Finland	☒ ☒	Sweden	☒ ☒
Hungary	☒	Switzerland	☒ ☒
Iceland	☒	Ukraine	☒
<b>ASIA</b>			
China	☒	Kyrgyzstan	☒ ☒
Hong Kong	☒ ☒	Mongolia	☒
India	☒	Tajikistan	☒ ☒
Kazakhstan	☒ ☒	Uzbekistan	☒

Country	Status	Country	Status
<b>AFRICA</b>			
Mali	☒	Zambia	☒
Tanzania	☒		
<b>NORTH AND CENTRAL AMERICA</b>			
Antigua and Barbuda	☒	Dominica	☒
Belize	☒	Mexico	☒ ☒
Canada	☒	USA	☒ ☒
<b>SOUTH AMERICA</b>			
Chile	☒	Colombia	☒
<b>AUSTRALIA-OCEANIA</b>			
Australia	☒ ☒		

☒ – data requested

☒ – data submitted

## DEVELOPMENT OF HYDROLARE WEBSITE

*L. Barinova, G. Barinova, N. Dolindo, HYDROLARE, Russia*

Website [www.hydrolare.net](http://www.hydrolare.net) was initially designed as a modern tool to inform stakeholders and users about activities of the Centre. In 2013 it was updated with a tool for displaying information

about current state of the HYDROLARE database. From this time, the choice of “Data availability in the HYDROLARE database” after “Data” in the navigation menu enables users to obtain information

about availability of data, data type and parameters of the dataset for the selected lake or reservoir (Fig.1). On the basis of the obtained information, users can submit a data request to the Centre.

At the same time, all previous options of the navigation menu including description of content and technical aspects of the database, data policy as well as the recommended electronic data submission templates are still available for users.

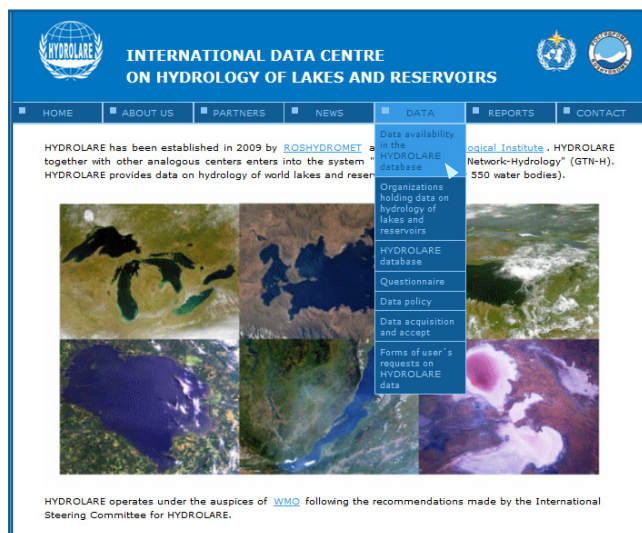


Fig. 1. Home page of the HYDROLARE website. The choice of "Data availability in the HYDROLARE database"

Regularly updated information about database content is provided to users by means of an information retrieval system and visualized using Google Maps (Fig. 2). Step-by-step water body search can be done by sequential selection of a WMO region, WMO subregion or country (optional) and finally a lake

or a reservoir from the side bar menu. Selected water body is visualized on the map. The user can also directly specify the name of the lake or reservoir in the search box.

For each lake or reservoir the user receives the list of stations which are also displayed by markers on the map. By selecting active stations sequentially from the list, users can obtain information about periods for which data are available for each selected station. The same information can be displayed by clicking station markers on the map. Moreover, for each selected lake or reservoir, information is indicated about the periods for which annual water body averaged levels (mean monthly and at the first date of each month) are available.

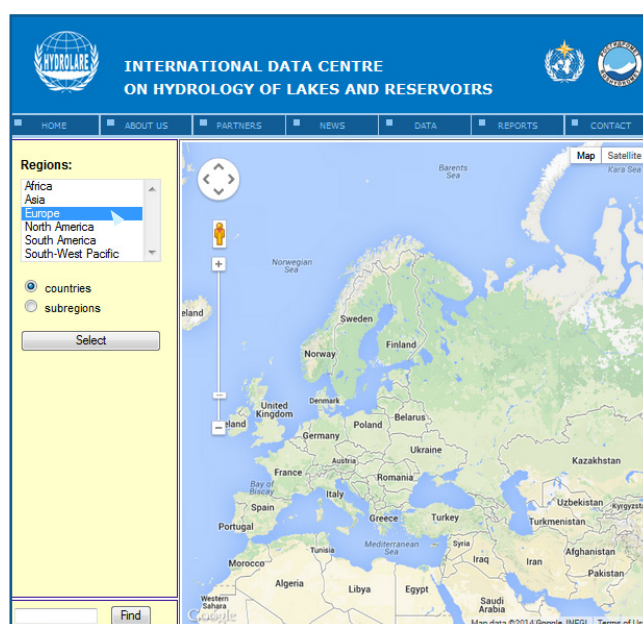


Fig. 2. Start page of the information retrieval system

## RECENT ADVANCEMENTS OF THE HYDROLARE - LEGOS COOPERATION

*J-F. Créteaux, LEGOS/CNES, France*

The cooperation between HYDROLARE and LEGOS within the HYDROLARE project in 2013 was very dynamic. Two workshops, one in July, the second one during the International Steering Committee meeting in September, both held in St. Petersburg, allowed to link HYDROLARE and Hydroweb databases more closely. A series of web links now allows to be redirected from HYDROLARE to Hydroweb and from Hydroweb to HYDROLARE for users who are visiting the websites of both data Centers. It was done for 34 lakes and reservoirs, mainly located in Europe, Asia and North America (Fig. 3).

Moreover, for a list of 60 lakes and reservoirs, the water level variations calculated at

LEGOS from radar altimetry have been provided to HYDROLARE database. This concerns the lakes and reservoirs present in Hydroweb including those in the Global Terrestrial Network for Lakes (GTN-L), and others for which in situ data are available in the HYDROLARE database. A standard format of delivery (LEGOS to HYDROLARE) for the data and metadata files has been agreed on and is now applied.

More recently (February 6, 2014), a short meeting in St. Petersburg between both teams allowed to start the preparation of the future two day workshop on hydrological monitoring of lakes and reservoirs which will be held in the beginning of September.



ber 2014 in Perugia (Italy) during the 15th World Lake Conference organized by the International Lake Environment Committee (ILEC). The objective of this workshop is to establish and enhance the cooperation between HYDROLARE project and potential providers of lakes and reservoirs in situ and satellite data over the different continents.

The strength of cooperation is also visible through different contributions to international conferences and workshops where HYDROLARE project has been presented in the form of oral or poster presentations,

as it was done in 2013 (GRDC Steering Committee meeting in Koblenz, Roshydromet - MFI workshop in Moscow, World Meteorology Expo in Geneva and GEO Exhibition in Brussels, and AGU fall meeting in San Francisco).

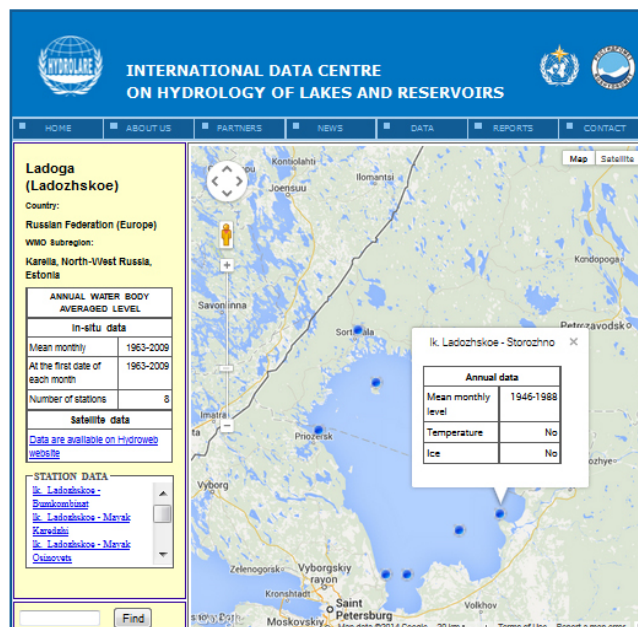
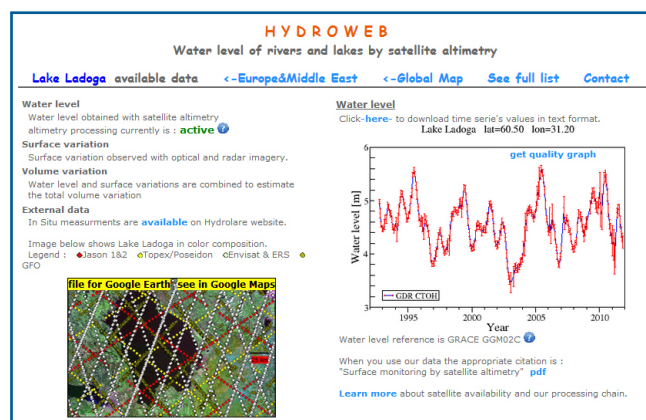


Fig. 3. Cross links between pages of LEGOS and HYDROLARE websites (example Lake Ladoga)

#### FOURTH MEETING OF THE INTERNATIONAL STEERING COMMITTEE FOR HYDROLARE

S. Bazanova, HYDROLARE, Russia

Fourth meeting of the Steering Committee for HYDROLARE was held on 24 – 26 September 2013 in SHI, St. Petersburg. The meeting was attended by the representatives of WMO, GCOS, LEGOS/CNES, ILEC, Roshydromet and HYDROLARE (Fig.4).

The Committee highly appreciated significant progress made in the reporting period. Among main achievements participants noted substantial update of the database, introduction of an updated technology for displaying information about database content on the website and progress in HYDROLARE - LEGOS cooperation. Detailed reports were provided on each activity and the information retrieval system was demonstrated.

The representative of Roshydromet Dr. A. Gusev provided information on the prospects of integration of HYDROLARE in the WMO Information System (WIS) as a Data Collection and Production Centre (DCPC).

Participants acknowledged the planned international workshop on monitoring of lakes and reservoirs

under the umbrella of the upcoming 15th World Lake Conference to be held in September 2014 in Perugia.



Fig. 4. Participants of the 4th HYDROLARE Steering Committee meeting

At the end of the meeting participants adopted a new list of actions for HYDROLARE in 2013 – 2015.

The report of the fourth meeting of the Steering Committee is available at: [www.hydrolare.net](http://www.hydrolare.net)