



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

ANNUAL NEWSLETTER

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Dear Reader,

Let me introduce you to the sixth newsletter of the International Data Centre on Hydrology of Lakes and Reservoirs (HYDROLARE).

This newsletter will provide you with information about the status of our database and development of the HYDROLARE IT infrastructure in 2015. I am pleased to emphasize that last year we started preparation and loading of a new type of data into our database – water temperature of lakes based on *in-situ* measurements.

In this newsletter you will find news from our partner – Laboratory of Study of Geophysics and Oceanography from Space (LEGOS) at the National Centre for Space Studies (CNES, France). If you want to learn about recent developments and new services of Hydroweb (web resource of LEGOS), please, check the article by J-F. Crétaux (LEGOS). For 30% of lakes in the Hydroweb database, water level data are currently delivered in near real time (3 days after acquisition of the measurements).

Fifth Meeting of the HYDROLARE Steering Committee was a very important milestone in the development of our data centre. It was held from 29 September to 1 October 2015 in St. Petersburg, Russia. This newsletter contains a summary of the outcomes of this meeting.

In conclusion, on behalf of the staff of our centre, may I thank all of you who contribute to the development of the HYDROLARE database. We continue to seek support from WMO Members and welcome any initiatives and submissions in this regard.

Prof. Valery Vuglinsky
Director of HYDROLARE



Lake General Carrera (Chile) or Lake Buenos Aires (Argentina)

WWW.HYDROLARE.NET

DATABASE STATUS

E. Kuprienok, HYDROLARE, Russia








































In 2015, HYDROLARE continued analyzing and loading of lake data provided by WMO Members. Work included coding of lakes, reservoirs and gauging sites as well as converting of data to the adopted format. Thus far, water levels for 220 Australian reservoirs for 1990 – 2012, 49 Mexican reservoirs for 1930 – 2012 and six Swedish lakes for 1858 – 2014, together with related metadata, have been prepared and loaded into the database. Metadata for 14 Mongolian lakes were added in 2015, and work started on analysis and preparation of water level series for upload. Work has progressed on identification and retrieval of data from websites
















of Mexico, Slovenia, Sweden and the United States with further analysis and preparation for loading. Long term water level series for the Great Lakes (USA, Canada) were added for the period until 2014.

HYDROLARE keeps working on improvement of its data provision services. A unified data request form was made available on the website. The form was made fully consistent with our data search tool for the ease of use.


Information relating to the status of HYDROLARE data collection at the end of 2015 is summarized in the table below.

Table. DATA SUBMISSION STATUS
(for the countries that consented to collaborate with HYDROLARE)

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

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

 – data requested

 – data submitted

DEVELOPMENT OF HYDROLARE IT INFRASTRUCTURE

L. Barinova, G. Barinova, HYDROLARE, Russia

In 2015, HYDROLARE continued developing its IT infrastructure by solving two major tasks.

Firstly, combined graphs of lake levels based on *in-situ* and satellite data were made available on the website. This was done for the lakes for which both *in-situ* and satellite data covering the same period are available in the database (Fig. 1).

Secondly, work started on loading of new type of data into the database. These include mean monthly

and maximum water temperatures from *in-situ* measurements.

As a result of the recent developments of the HYDROLARE IT infrastructure, it has become possible to visualize regularly updated information about availability of water temperature data in the database and deliver these data upon request (Fig. 2).

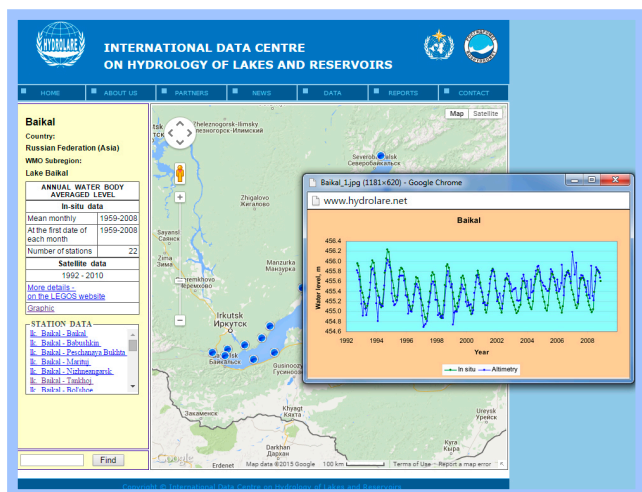


Fig. 1. Combined graphs of water levels based on *in-situ* and satellite data

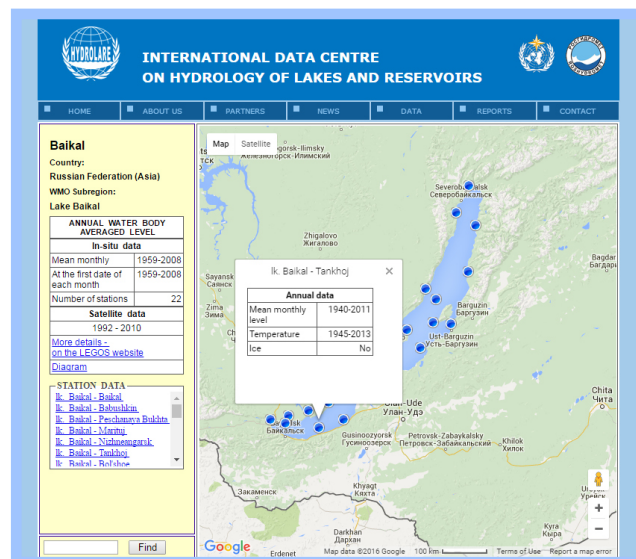


Fig. 2. Availability of water temperature data in the database

NEW HYDROWEB SERVICES

J-F. Créaux, LEGOS/CNES, France

The Hydroweb website and a related database were created by LEGOS in 2003 at a time when satellite altimetry applications to the monitoring of lakes, reservoirs and rivers were still very sparse and the missions design were focused on ocean applications. However, it was at that time when it was shown by a few authors (Birkett et al., 1995, J-F. Créaux and Birkett 2006) that the potential of altimetry for estimating hydrological characteristics along with *in-situ* measurements was very promising. Development of a methodology for estimating hydrological parameters using well-designed altimeter systems became a key issue in this respect. In this context we have opened the Hydroweb database to the scientific community in order to promote this technique firstly, to encourage space agencies to develop new more accurate altimeter systems for hydrology and then to satisfy the demand of international institutions like GCOS to support terrestrial *in-situ* network using remote sensing techniques such as radar altimetry.

In the beginning of 2016 the Hydroweb database has totally changed in the form but also in the data processing mode (<http://hydroweb.theia-land.fr>). The lakes are now separated into two groups: one called “operational”, the second one called “research”. For operational products, the water level will be produced with 3-day latency. It concerns about 30% of the total lakes in the database. The computation is done automatically. For “research” products, the delivery of the products through Hydroweb is done in the same way as previously (between 6 months and one year of latency).

The selection of data for users has also fully changed. The water bodies are presented on the website in terms of river watershed with lakes and reservoirs products visible to the users once they are located in the given watershed (Fig. 3).

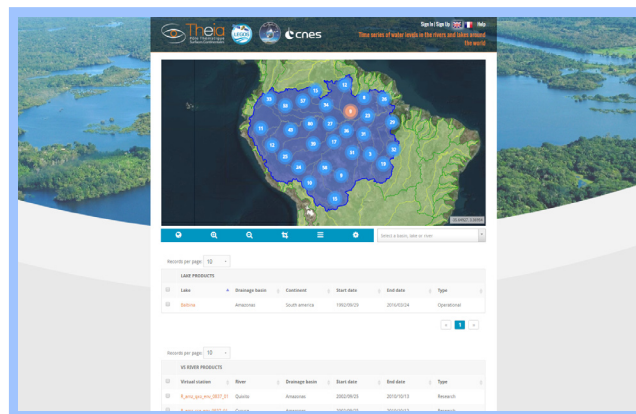


Fig. 3. The new Hydroweb web page for the Amazon basin with the small circle representing in blue the number of virtual stations along the rivers, and in orange the number of lakes or reservoirs included in this basin

The mode of selection of the products will be more comfortable for users with more options (selection of groups of water bodies will be possible, choice in the period of selection, possibility to develop code of automatic downloading of the data when new measurements are added, etc.). Surface and volume for lakes will be included as well as in the previous version of Hydroweb but for an extended number of lakes (Fig. 4).

New data processing capabilities enable measurements of all past and current missions to be included in the data processing chain.

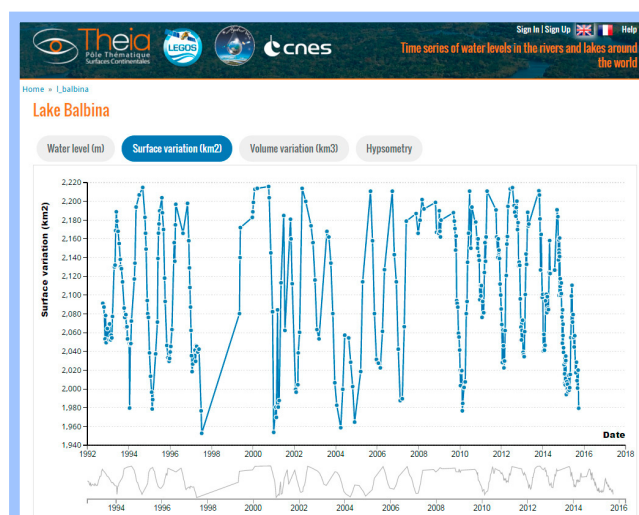


Fig. 4. The new Hydroweb web page with the plot of changes in lake surface area which could be downloaded by users (the Balbina lake located in the Amazon basin)

FIFTH MEETING OF THE INTERNATIONAL STEERING COMMITTEE FOR HYDROLARE

S. Bazanova (HYDROLARE)

The fifth HYDROLARE Steering Committee Meeting was held in SHI, St. Petersburg, Russia from 29 September to 1 October 2015. The meeting was attended by members of the Steering Committee from WMO, GRDC, ILEC, representatives of Roshydromet and the staff of the centre.

The objective of the Steering Committee Meeting was to discuss progress in various activities of the centre made over the reporting period and implementation of milestones agreed at the previous meeting. This was also an opportunity for HYDROLARE to inform the Steering Committee on its future plans and for the Steering Committee to give advice and comment planned activities. Participants highly appreciated the progress made in the reporting period.

The following were noted among main achievements of HYDROLARE:

- substantial update of the database including data received in the reporting period and its enhancement by adding a new type of information – lake and reservoir water temperature data;
- loading of water level time series based on satellite altimetry provided by LEGOS into HYDROLARE database and establishing linkage between HYDROLARE and Hydroweb;
- organization of an international workshop on monitoring of large lakes and reservoirs as a side event during the 15th World Lake Conference (Perugia, Italy, 2014).

The representative of WMO Dr T. Abrate provided information on recent decisions of the WMO Congress and CHy related to hydrology. In particular, he stressed to the evolving role of HYDROLARE among other related data centres

with respect to the monitoring and measurement of the achievement of the Sustainable Development Goals (SDGs). It was proposed to HYDROLARE to consider the possibility to register on the related data portal such as GEO.

Dr W. Grabs presented the GCOS activities on behalf of Dr C. Richter, Director of GCOS. He outlined GCOS-related meetings and activities, and presented the recent work undertaken within the programme and the role of HYDROLARE in these activities aimed at developing a balanced and integrated system of *in-situ*, air- and space-borne observations of the terrestrial ecosystems.

HYDROLARE is seen as an essential partner in this regard as a provider of *in-situ* lake data for this activity.

On behalf of Dr J-F. Crétau, Ms S. Bazanova provided information on the activities of LEGOS laboratory. She presented a completely new Hydroweb service with fully new website and a new approach to data delivery. Participants were also informed on a proposal made by LEGOS to invite SHI as an external partner to a newly developed ESA project on establishing of a platform for ECVs from satellites for different variables, including lakes.

In the course of the meeting, presentations from other collaborating partners (GRDC, ILEC etc.) were made.

At the end of the meeting participants adopted a new list of actions for HYDROLARE until 2017.

The report of fifth HYDROLARE Steering Committee Meeting is available at: www.hydrolare.net.