



World Meteorological Organization

Weather • Climate • Water

# WMO Hydrological Observing System (WHOS) and WMO Global Hydrometry Support Facility (GHSF)

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**President, Commission for Hydrology**

RA-VI Hydrology Forum - September 21, 2016

## Initial Concept -- Spring 2013

Concept paper prepared that called for the establishment of a WMO Hydrological Observing System (**WHOS**) as a portal to facilitate access to already available on-line real-time and historical data, drawing from the water information systems of countries around the world that make their data freely and openly available, including HYCOS projects.



## **AWG Endorsement -- September 2014**

At AWG-2, I proposed that WHOS be developed as the mechanism whereby CHy would provide the most comprehensive hydrological component in fulfillment of the WIGOS objective of “an integrated, comprehensive, and coordinated system which is comprised of the present WMO global observing systems.”

The proposal was formally endorsed by the AWG.



## Early Development -- 2014

CHy expert (Silvano Pecora) was tasked with developing an interactive map that would provide links to those National Hydrological Services that make their real-time stage and discharge data available online.



# Congress-17 -- June 2015

## Phase 1:

Map interface with links to those NHSs that make their real-time and historical stage and discharge data available online. Initial implementation occurred in August 2015.

<http://www.wmo.int/pages/prog/hwrrp/chy/whos/index.php>



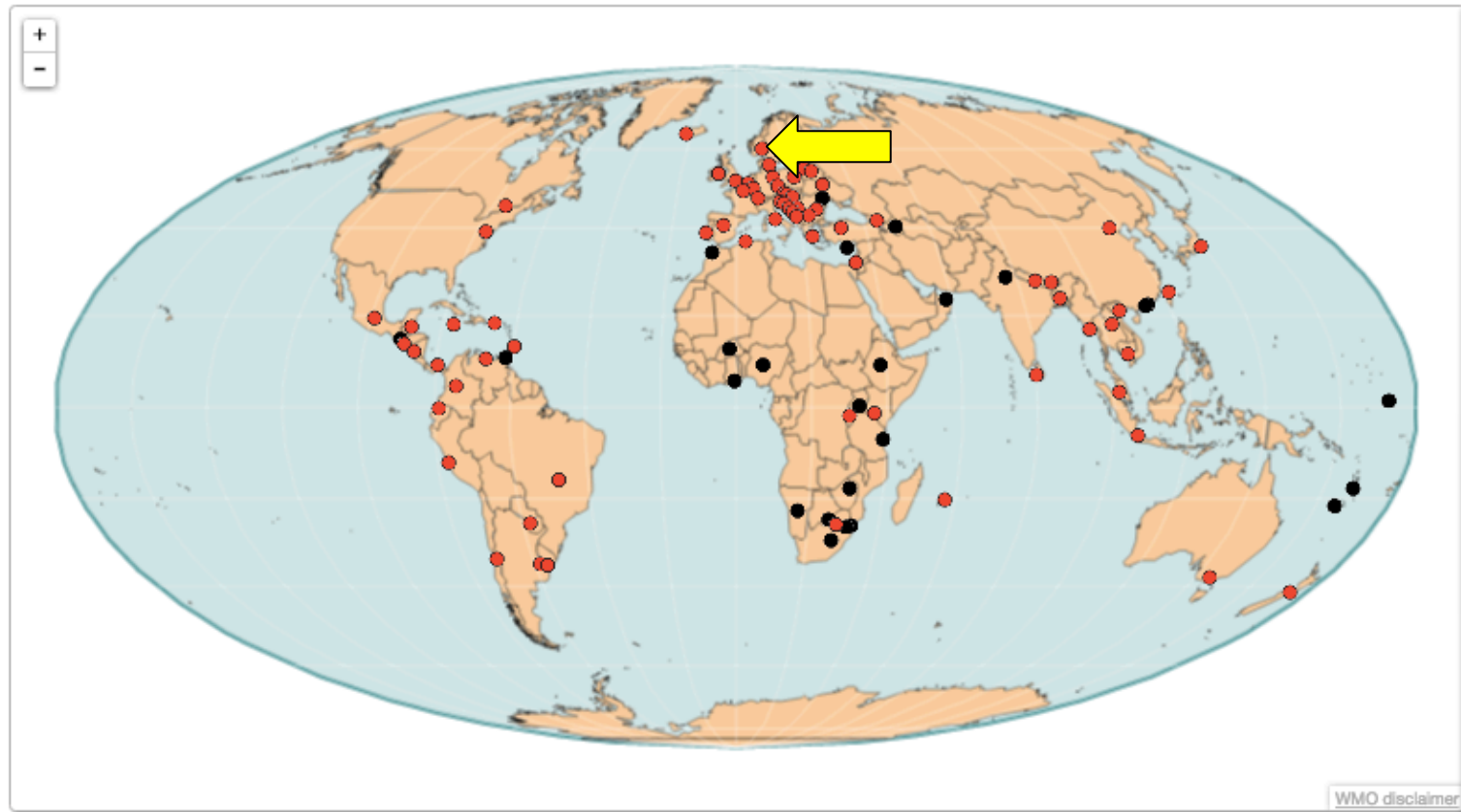


# WHOS WMO Hydrological Observing System

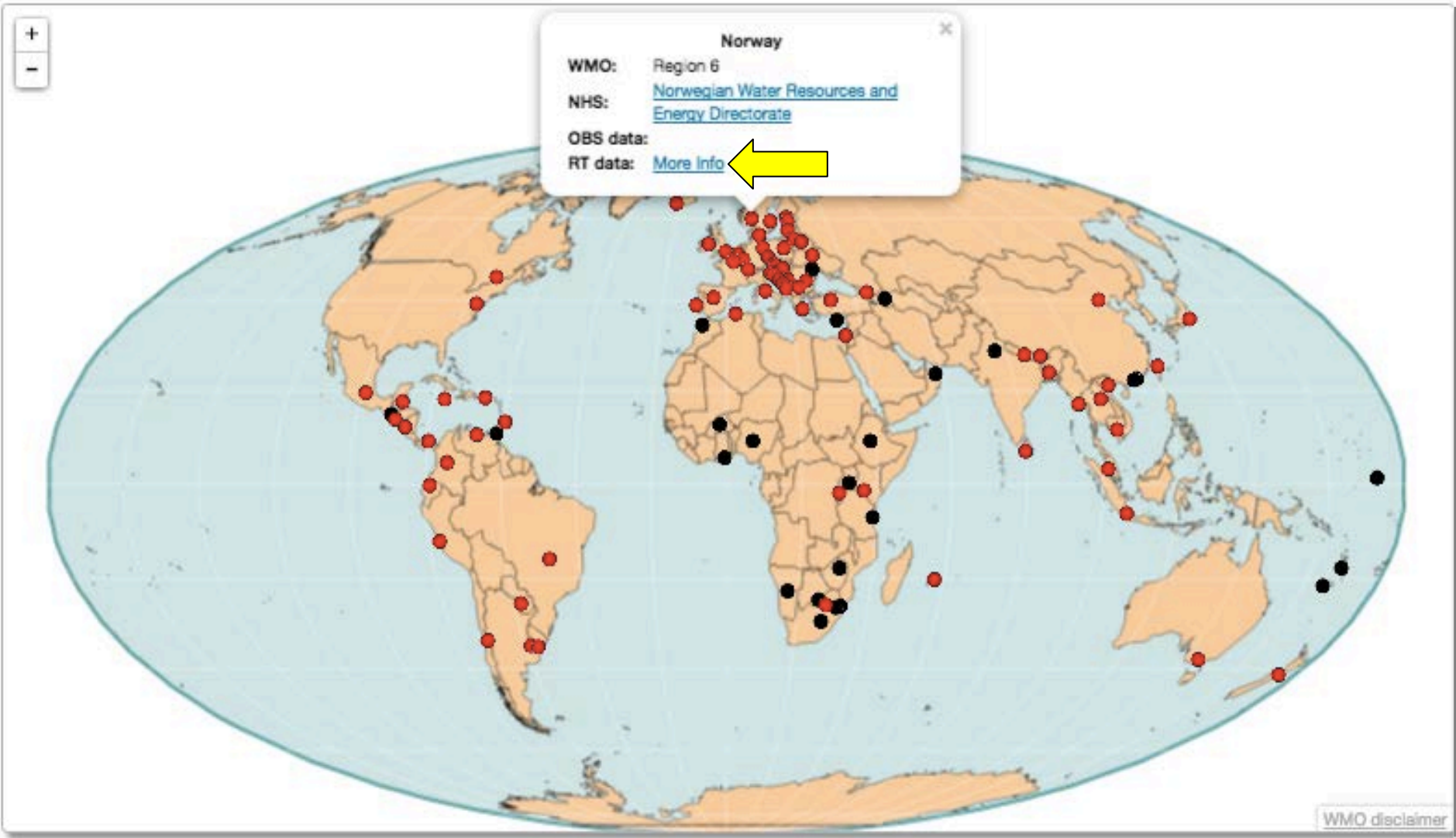
**WHOS** is a portal to the online holdings of National Hydrological Services (NHS) around the world that publish their historical (OBS) and/or real-time (RT) data without restrictions or cost. It represents the hydrological component of the WMO Integrated Global Observing System (WIGOS).

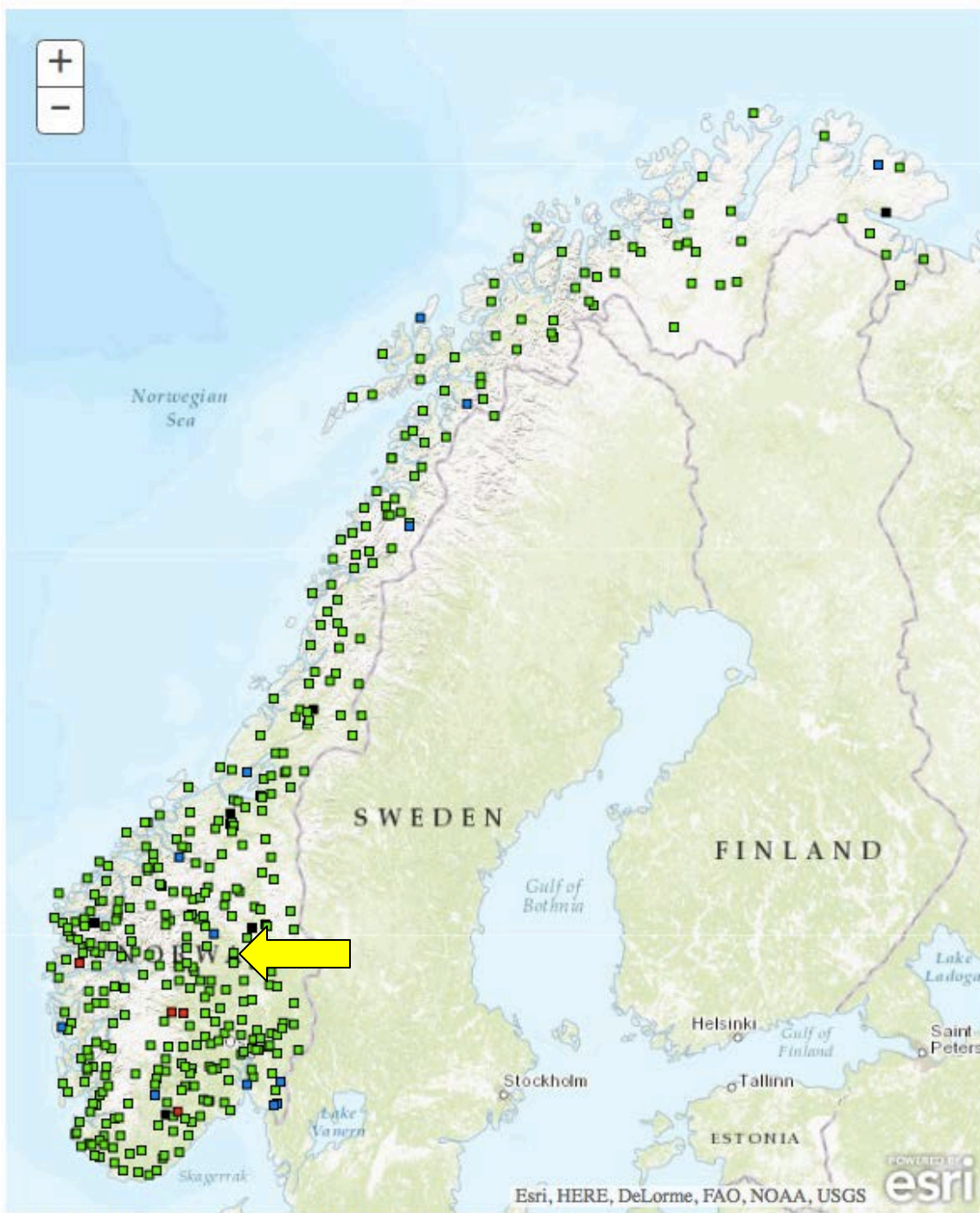
Access to the data comprising WHOS can be obtained via map-based links on the following map. Red dots appear in countries where the National Hydrological Service (NHS) makes data available from its website. Black dots appear in countries where the National Hydrological Service has a website, but where hydrological data are not available.

Please note that NHS websites appear in the native language of the country, although some NHSs translate parts or all of their websites into English or other languages.



- National Hydrological Service, website only
- National Hydrological Service, website and data



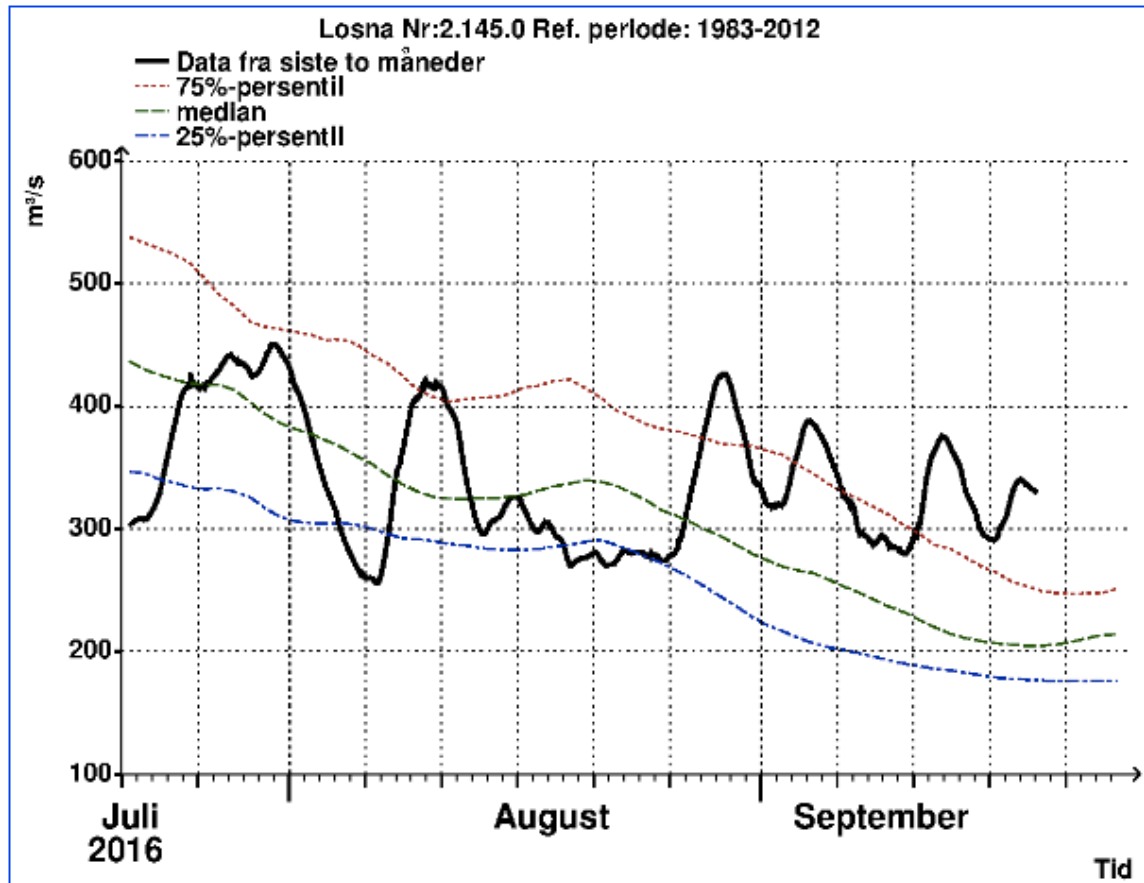


Grønn=oppdatert siste 24 timer, blå=oppdatert siste uke, rød=data eldre enn siste uke, grå=ikke oppdatert.



# Vannføring for Losna Nr:2.145.0

Siste måling, tid=19.09.2016 05:00, verdi=329.343



Plott fra siste uke finnes [her](#). Knekkpunkt-verdier-data, [tekstlig](#) eller [regneark\(CSV\)](#) for siste 14 døgn. (Omvendt rekkefølge, kun [tekstlig](#)).

Liste over plottets grunnlagsdata, [tekstlig](#) eller [regneark\(CSV\)](#).

Liste over døgndata, [tekstlig](#) eller [regneark\(CSV\)](#). Kart over stasjonen [her](#).

## Stasjon:

Stasjonsnavn : Losna  
Stasjonens h.o.h : 180.0  
Kartblad (N50-serien) : 1817-IV

## Plassering:

UTM-sone : 32  
UTM-øst : 568368  
UTM-nord : 6800591  
Lengdegrad: 10.27753  
Breddegrad: 61.33339

## Nedbørfelt:

Nedbørfeltareal : 11200km<sup>2</sup>  
Sjøprosent : 3.9

Fylke : Oppland  
Kommune : Øyer

## Recall CHy-14 -- November 2012

### Resolution 3

*“Decides to commence a process, including testing, that could see the potential adoption of the WaterML 2.0 as a WMO standard for information exchange managed by WMO (supported by the WMO/OGC Memorandum of Understanding), and to register this standard as a joint WMO/ISO standard.”*



# Congress-17 -- June 2015

## Phase 1:

Map interface with links to those NHSs that make their real-time and historical stage and discharge data available online. Initial implementation occurred in August 2015.

<http://www.wmo.int/pages/prog/hwrp/chy/whos/index.php>

## Phase 2:

A fully WIS/WIGOS compliant services-oriented framework linking hydrologic data providers and users through a hydrologic information system enabling data registration, data discovery, and data access.



# WaterML 2.0

A standard information model for the representation of water observations data, with the intent of enabling the exchange of such data sets across information systems.

- *WaterML 2.0, Part 1 – Timeseries*
- *WaterML 2.0, Part 2 – Ratings, Gaugings, and Sections*

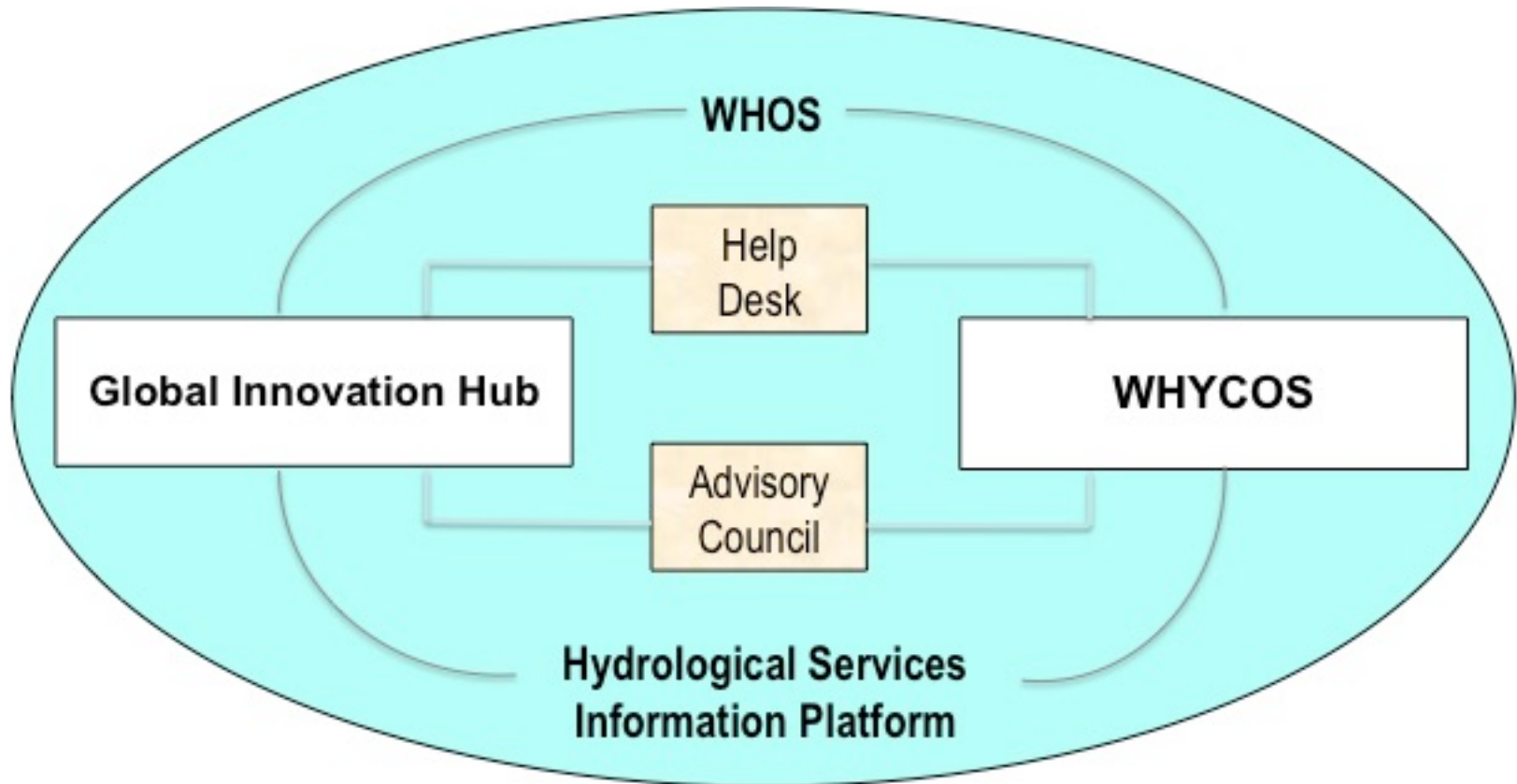


# Regional Demonstrations

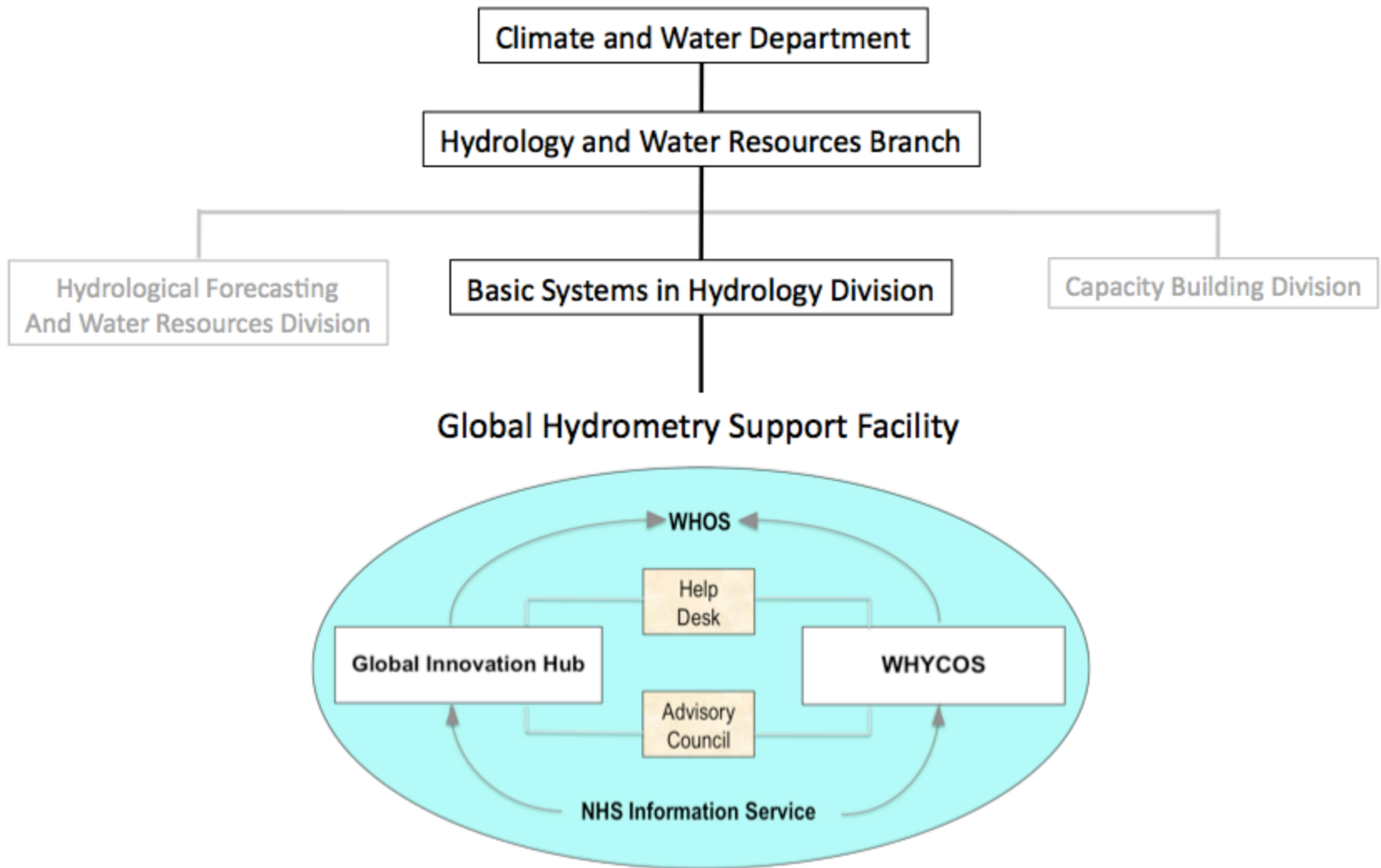
- *Served as the basis for recommending to CHy that WaterML 2.0 should or should not be registered as a joint WMO/ISO standard*
- *Served as a proof of concept for broad implementation of WHOS Stage 2*
- *La Plata River Basin*
- *Sava River Basin*
- *Arctic-HYCOS*



# WMO Global Hydrometry Support Facility (GHSF)



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# Commission for Hydrology Fifteenth Session

## Rome, Italy -- 7-13 December 2016

- *Pre-Session Discussion*  
([http://www.whycos.org/wordpress/?page\\_id=758](http://www.whycos.org/wordpress/?page_id=758))
- *Session details, hotel registration, etc., online soon*
- *Preceded by Women's Leadership in Hydrology Workshop*
- *Will propose a new structure for the programme of work*





## Coordination and Implementation Support

President, vice-president, 1 AWG member

RAs. ETR, APFM, IDMP, WIS/WIGOS, GFCS, GDPFS . . . .

### Measurement, Monitoring, and Infosystems

3 AWG members

WHOS, GHSF, Proj. X, QMF-H

### Hydrological Applications, Products and Services

3 AWG members

WRM, EHP, DRR, FFI, E2E EWS

### Activities Supported by Secretariat

Activities supported by Sec.  
with help from OPACHEs

### CHy Member Activities

Activities requiring  
leadership by Members



**Commission for Hydrology Fifteenth Session**  
*Rome, Italy -- 7-13 December 2016*

**PLEASE PLAN TO ATTEND**





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Organization**

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Thank you for your attention

[chy.president@gmail.com](mailto:chy.president@gmail.com)