CEOS Water Portal Project

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JAXA

Session Agenda

1. Status
2. Input to the GEOSS Community Portal Discussion
3. Discussion

1. CEOS Water Portal Overview and Status Update

Satoko Horiyama MIURA / JAXA
Akari YONEYAMA / JAXA

Kaori KUROIWA / RESTEC

Contents

1. Overview (just a reminder…)
2. Updates
3. Activity Plan in 2015

1. Overview

1.1 Concept

- CEOS Water Portal is ;
  - A distributed data system component of DIAS (Data Integrated Analysis System)-Program
  - To provide "Easy to Access" service to users
  - To provide access to a whole variety of hydrological data and water relevant data scattered over the world
  - To connect the existing components like data centers, scientists and wide users.
- Multiple types of data are available such as;
  - In-situ data
  - Satellite data
  - Model output data

1. Overview

1.2 Services

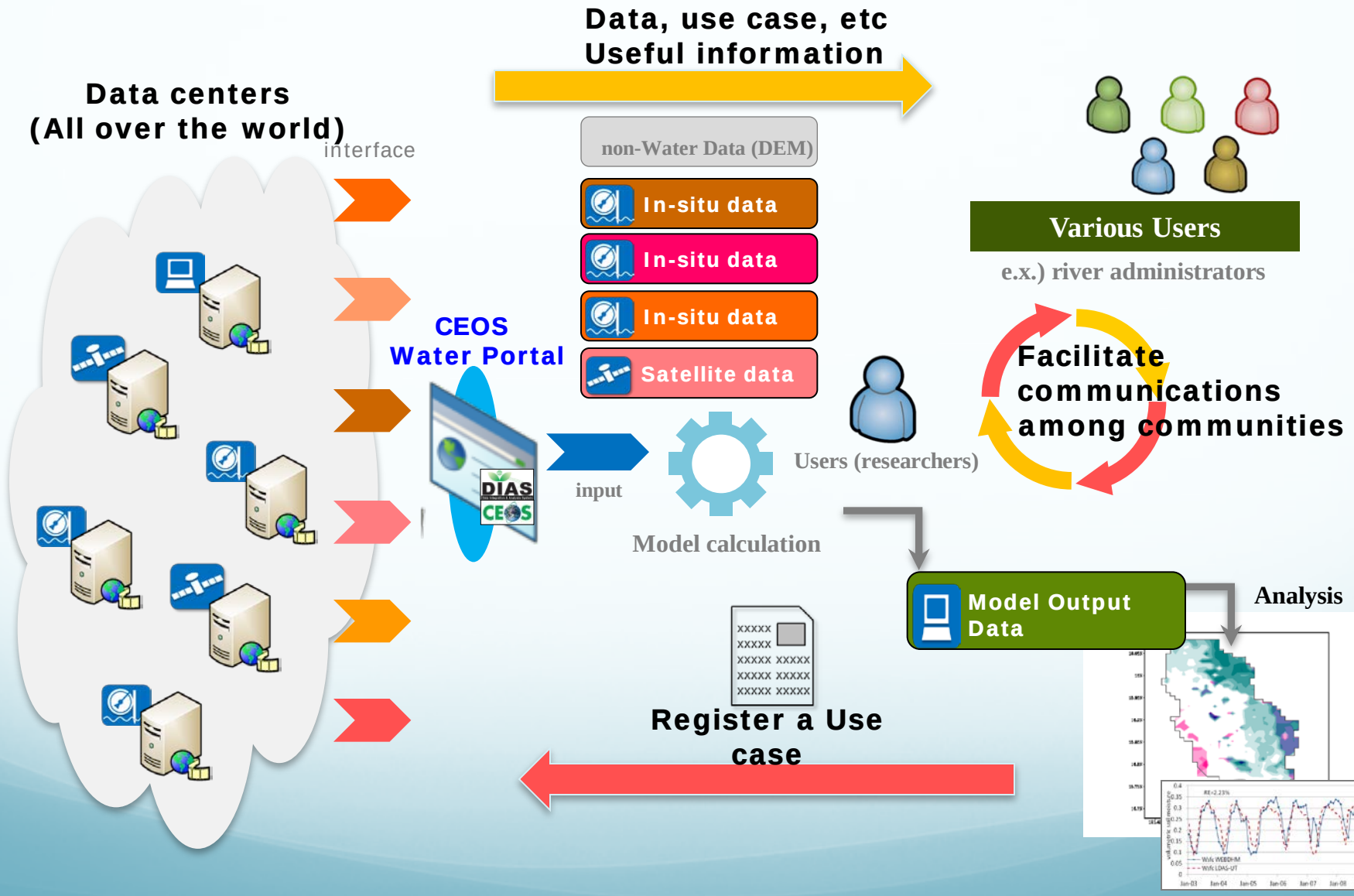
1. Dataset Search
   - Category Search/Map Search
   - Connecting to 11 data centers and 2 catalog broker system
2. Dataset Access

   (Depend on the Server side function,

   ex. OPeNDAP server)
   - Data Subset (time, variables)
   - Data Download/Format conversion (NetCDF, ascii, GRIB (Modeloutput only))
3. Sharing Use Case
   - Use Case registration/browsing

1. Overview

1.3 Goal



1. Overview

1.4 Data Partners

NASA/JPL
(PO.DAAC)
Satellite Data

GEMS/Water
In-situ data

NASA/ORNL
IN-situ (FLUXNET) data

NASA/GSFC
Satellite Data

NOAA /ESRL
In-situ(GPCC) data

NOAA /NCEI (New)
In-situ data

Search
Download

Use Case
Registration/Browsing

Users

CEOS
Water Portal

NCAR
In-situ data

MPI
Model Output data

In-situ data
Satellite data

GLOWASIS
Satellite data
Model Output data

CUAHSI
In-situ data

GEO DAB
In-situ data

NASA/ECHO
Satellite data
In-situ data
Model Output data

1. Overview
1.5 Available Data List (1/2)

Data Partners	Data Types	Variables	Server type	Server Locations
CEOP	Satellite	PR, TMI, AMSR, AMSR-E, MODIS,GLI, SSMI, VISSR	Hyrax	University of Tokyo (Japan)
	Model (MOLTS)	surface pressure, skin temperature, precipitation amount in hour, brightness temperature surface, specific humidity, u-component of wind, v-component of wind, etc	THREDDS	MPI (Germany)
	Model(Gridded)	Air pressure, surface air pressure, air temperature, precipitation rate, snowfall amount, etc	Jblob	MPI (Germany)
	In-situ	Surface Meteorological and Radiation Data Set Flux Data Set Soil Temperature and Soil Moisture Data Set Meteorological Tower Data Set	http link	NCAR (USA)
AWCI	Model(MOLTS)	surface pressure, skin temperature, precipitation amount in hour, brightness temperature surface, specific humidity, u-component of wind, v-component of wind, etc	THREDDS	MPI (Germany)
	In-situ	Precipitation amount, River discharge, River water level, etc	Hyrax	University of Tokyo (Japan)
NASA	Satellite	Airs level 3 data	Hyrax	NASA (GSFC)
NOAA (GPCC)	In-situ	Precipitation data	THREDDS	NOAA (USA)

1. Overview

1.5 Available Data List (2/2)

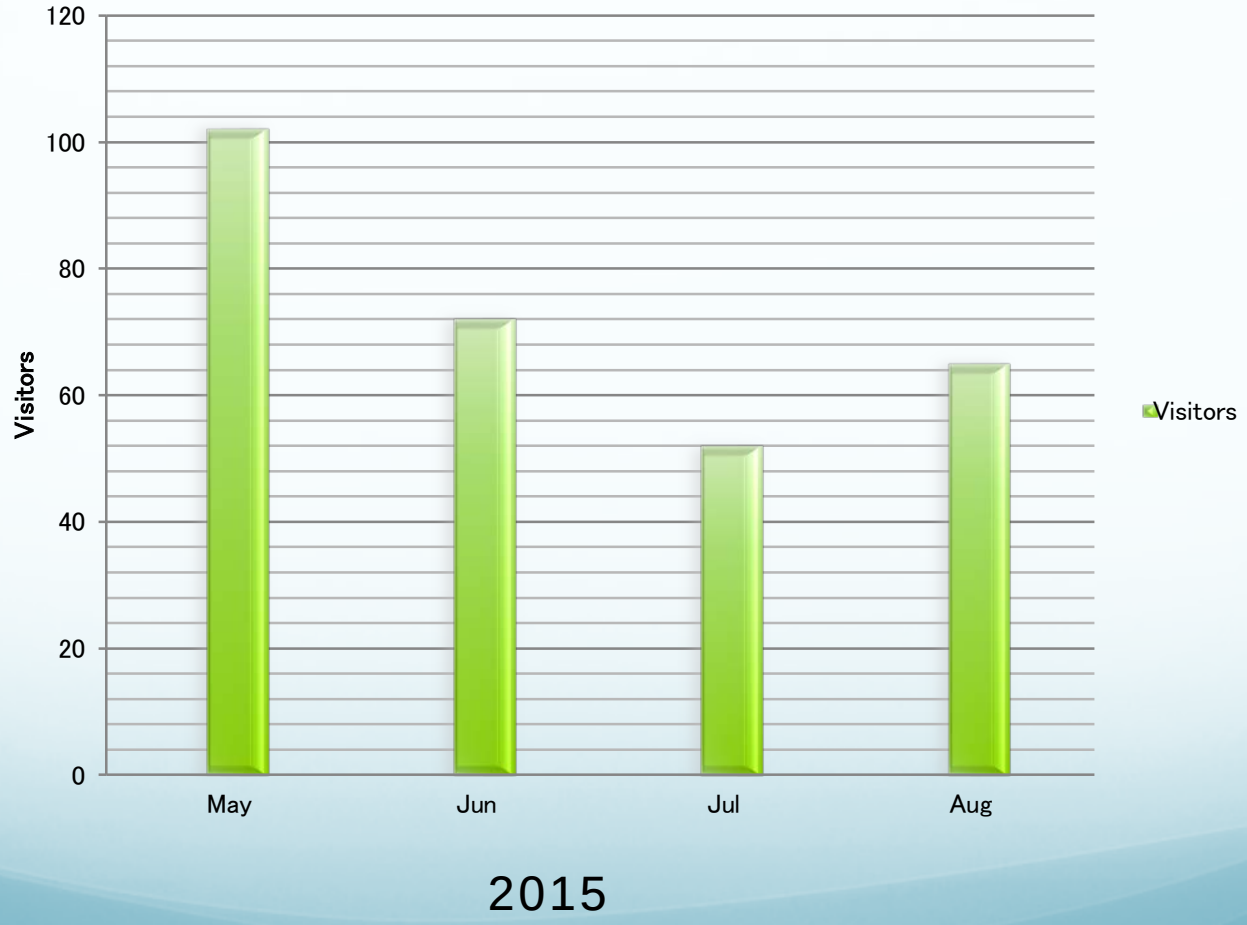
Data Partners	Data Types	Variables	Server type	Server Locations
NASA	Satellite	GRACE Level 3 data	THREDDS	NASA/JPL(PO.DACC)
FLUXNET	In-situ	FLUX data Fluxes of carbon dioxide, water vapor, and energy exchange, etc	THREDDS	NASA (ORNL DAAC)
GEMS/Water	In-situ	Instantaneous Discharge , Dissolved Oxygen , Temperature, etc	WFS	GEMS/Water (CANADA)
GLOWASIS	Satellite Model(Gridded)	Precipitation, Air temperature	THREDDS	Deltares (Netherland)
ECHO Broker Service	In-situ Satellite Model	Various types of data via ECHO broker	OpenSearch	NASA（GSFC)
CUAHSI	In-situ	precipitation, humidity, discharge, oxygen, etc	REST/WaterML2, WaterOneFlow/WaterML1	CUAHSI (USA)
GEO DAB/ GRDC	In-situ	River Discharge via GEO DAB	OpenSearch	GEO
NOAA/NCEI	In-situ	Air temperature, Precipitation, Air Pressure	THREDDS	NOAA/NCEI

(Adding some new dataset)

2. Updates

2.1 Visitors & Users

- New CEOS water portal site has been available from May 12th,2015.
- Registration User is over 290.



2. Updates

2.2 New Architecture Development

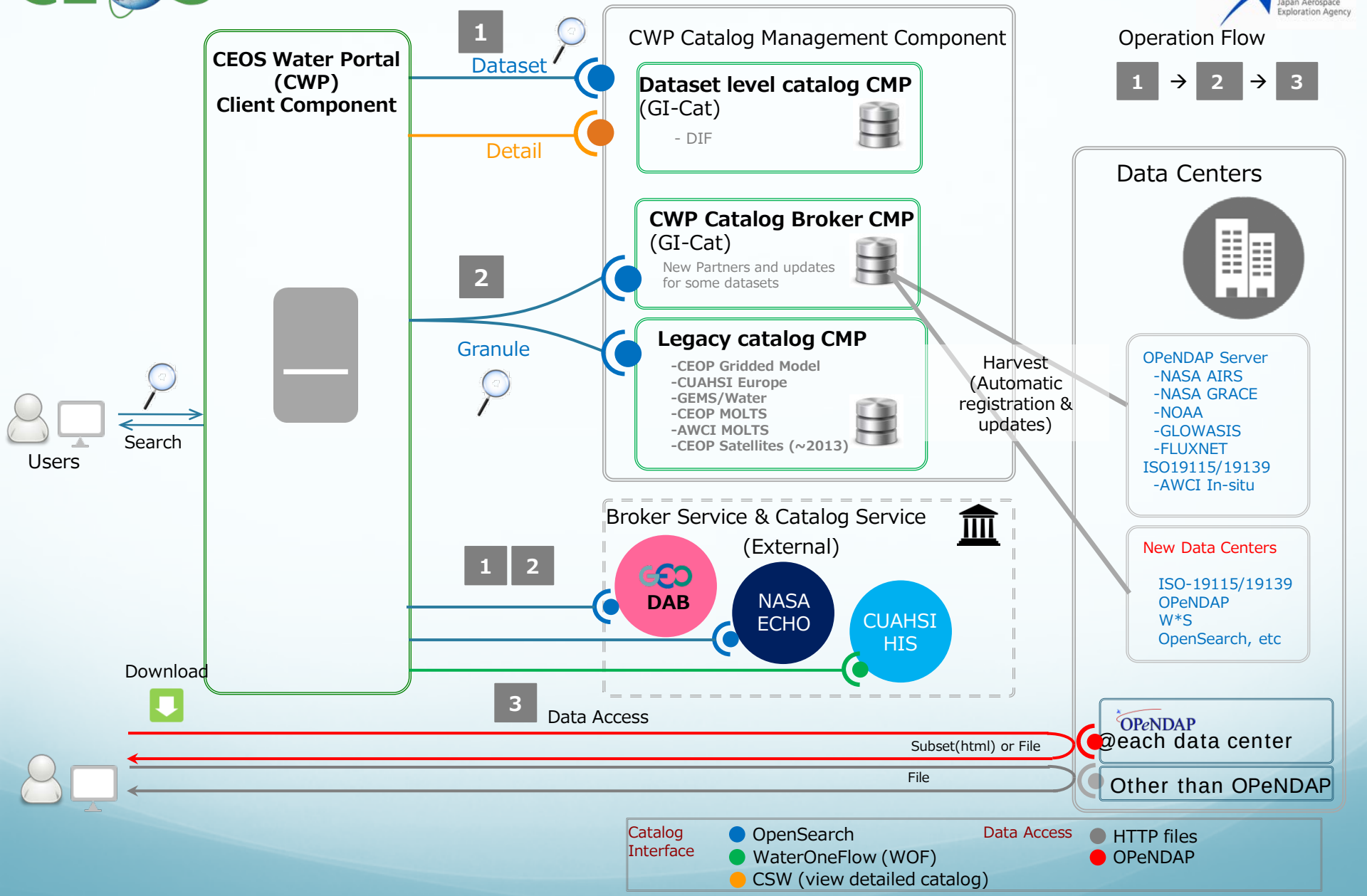
- Purposes

a. Less time and labors on adding data partners

b. Integrated operation flow (search -> download)

c. Easier operation

New System Architecture



Operation Flow

1 → 2 → 3

3. Activity plan in FY2015

a. Integrated with DIAS(*) Catalog system
(the end of Feb. 2016)
- Develop the common dataset level catalog database
- Use GI-cat software

b. Changing the User Authentication Function
(the end of 2015)
- SSO among DIAS
- Using a CAS (Central Authentication Service) software

c. Adding new dataset
(the end of Feb. 2016)
- NOAA/NCEI(National Centers for Environmental Information):
  Adding some In-situ data based on a priority made by prof. Koike.

(*) Data Integration Analysis System :
http://www.editoria.u-tokyo.ac.jp/projects/dias.old/english/index.html

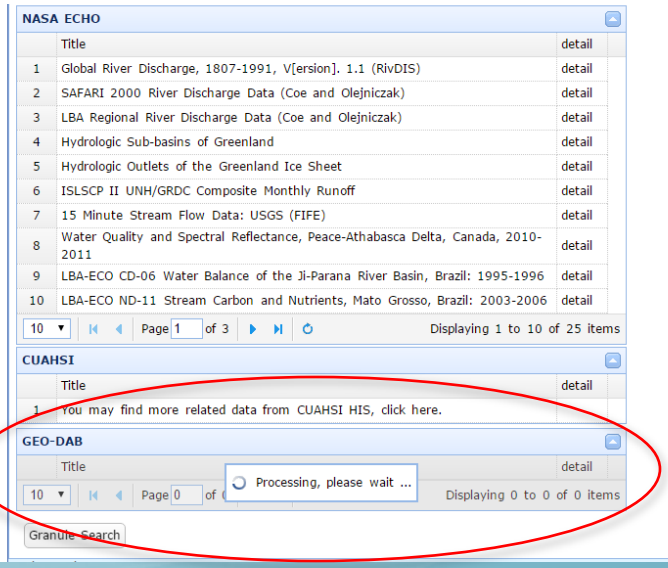
3. Activity plan in FY2015

d. Modifying the User I/F for GEO-DAB response (the end of Oct. 2015)

- According to river discharge catalog data server was integrated to one server, it takes more time to generate the time range view graph.
- Develop the Cache server for archiving the GEO-DAB/GRDC catalog.

It takes several minutes to get the OpenSearch response from GEO-DAB.

Dataset search result image



3. Activity plan in FY2015

e. Choosing a more useful Download URL for users.
(the end of Dec. 2015)

- There are some download URLs in the OpenSearch response provided by GI-cat server which is harvesting the OPeNDAP server.
- However the some download URLs in the response does not use for downloading the data .
- So we will choose the more useful URL for downloading a data for user.

f. Modifying the CEOS Water portal page of WGISS website based on discussion of WGISS-39 (completed)

g. Closing the CEOS Water Portal Project (the end of Mar. 2016)

DIAS will take over the Water portal system operation in FY2016.

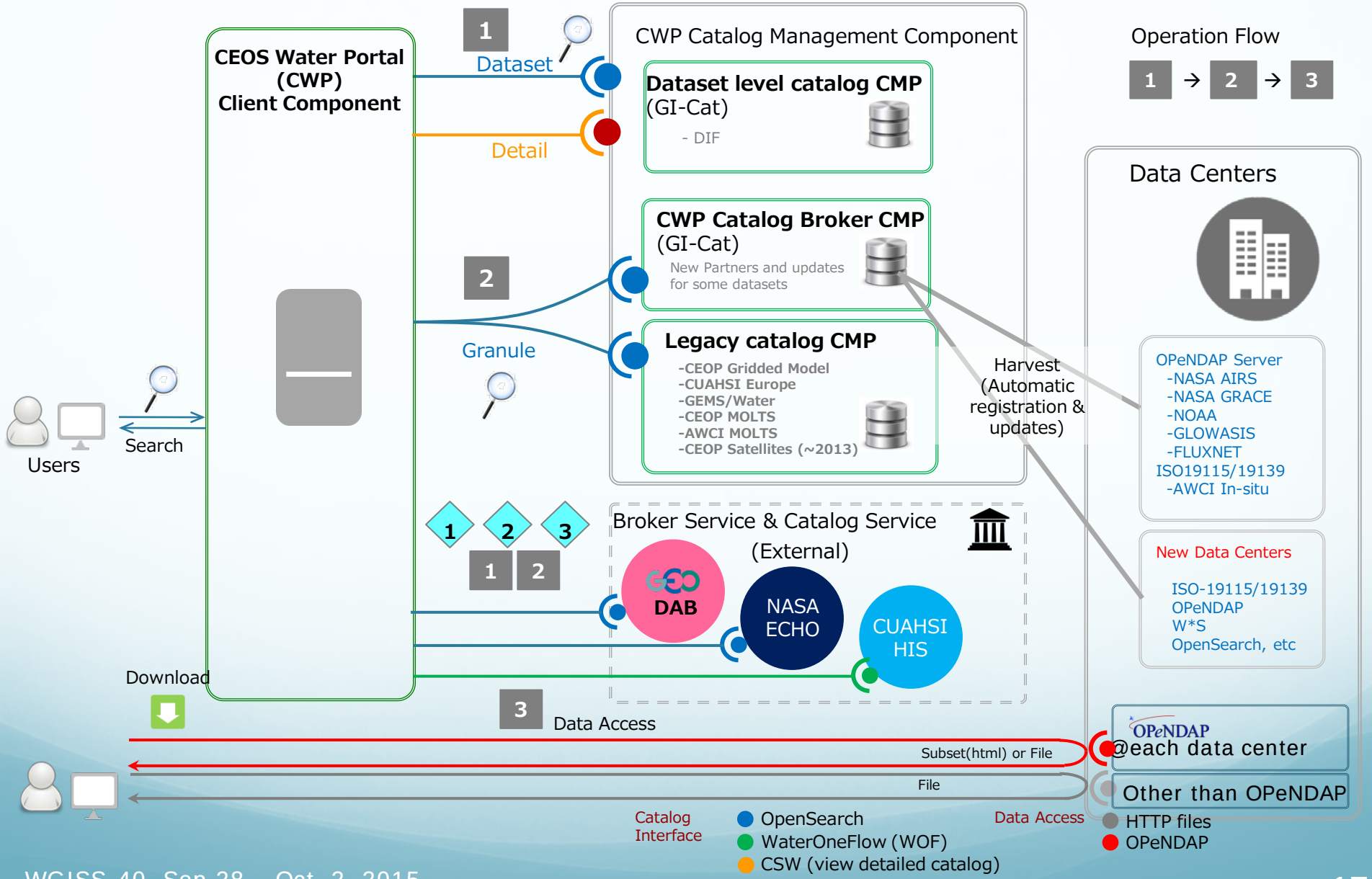
2. Input to the GEOSS Community Portal Discussion

~ Telecon on August 18th~

Satoko Horiyama MIURA

Space Applications & Operations Center
JAXA

1. System Architecture



2. Available Data

Data Partners	Data Types	Variables	Server type
GEO DAB/ GRDC*1	In-situ	River Discharge via GEO DAB	OpenSearch

*1 GRDC = Global River Discharge Center

Registered GRDC Datasets (and its servers) are as follows;

◆Global River Discharge Datasets (GRDC/GEOWOW) - Kisters AG

◆Global River Discharge Datasets (GRDC/GEOWOW) - 52 degree North

3. Implementation

- GEO DAB can be accessed by “OpenSearch”, “OGC Catalog Service for Web (CSW)” and “OAI-PMH”. We selected “OpenSearch”, considering our experience and its simplicity.
- Based on the user requests, our target is GRDC/River discharge data. So, by identifying GRDC data server, response time could be shortened.

Identifying GRDC Data Server (source)

http://production.geodab.eu/gi-cat-StP/services/opensearch?getContent&id=ROOT

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    <q-info xmlns="http://eu.flora-research">false</q-info>
    <e-info xmlns="http://eu.flora-research">false</e-info>
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    <endpoint xmlns="http://eu.flora-research">http://kiwis.kisters.de/KiWIS/KiWIS?datasource=3&amp;</endpoint>
    <harvested xmlns="http://eu.flora-research">true</harvested>
    <u-comment xmlns="http://eu.flora-research">false</u-comment>
    <q-info xmlns="http://eu.flora-research">false</q-info>
    <e-info xmlns="http://eu.flora-research">false</e-info>
    <mag-level xmlns="http://eu.flora-research"/>
    <s-info xmlns="http://eu.flora-research">false</s-info>
    <h-info xmlns="http://eu.flora-research">false</h-info>
    <u-info xmlns="http://eu.flora-research">false</u-info>
</entry>
<entry>
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    <content/>
    <summary/>
    <category label="service" term="hlevel"/>
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```

GRDC/GOWOW 52 degree North

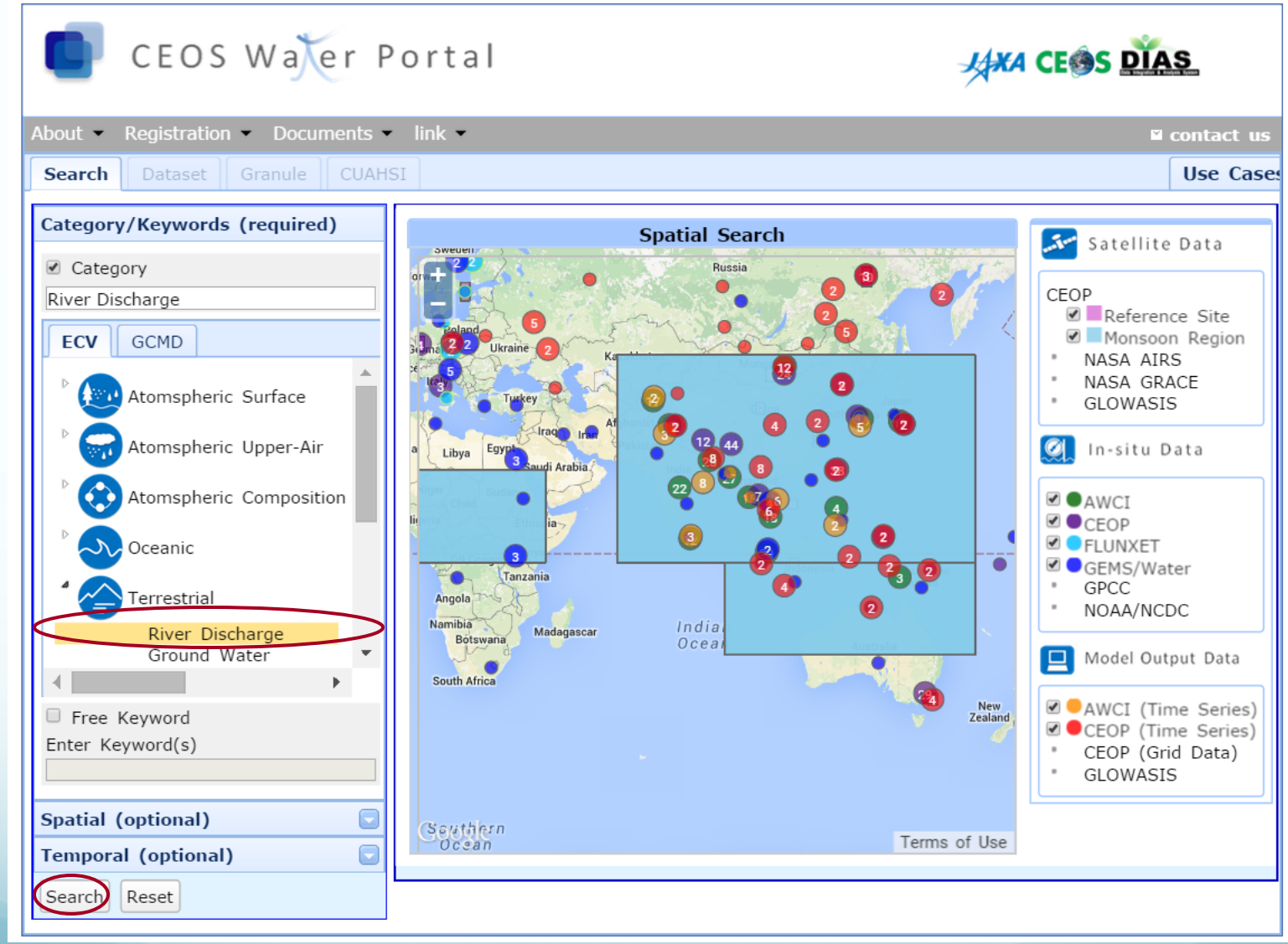
GRDC/GOWOW Kisters AG

GEO DAB Open Search Description Document (OSDD)

<OpenSearchDescription><ShortName>GI-cat</ShortName><LongName>GI-cat OpenSearch Catalog service</LongName><Description>GI-cat interface for the OpenSearch support.
*** Note about the OpenSearch plugin for Firefox toolbar ***.
Url templates with "text/html" type are required in order to enable the Firefox plugin (at least one is required) but the actual returned mimetype
is always GeoAtom. For more info see https://developer.mozilla.org/en/Creating_OpenSearch_plugins_for_Firefox
</Description><Contact>fabrizio.papeschi@cnr.it</Contact><Image height="16" type="image/x-icon" width="16">http://essi-lab.eu/projects/gi-cat-favicon/favicon.ico</Image><Url template="http://production.geodab.eu/gi-cat-StP/services/opensearch?si={startIndex?}&ct={count?}&st={searchTerms?}&bbox={geo:box?}&loc={geo:name?}&ts={time:start?}&te={time:end?}&targetId={essi:identifier?}&parents={essi:parents?}&sources={essi:sources?}&uselim={essi:useLimitation?}&other={essi:otherAccConst?}&lac={essi:legalAccConst?}&luc={essi:legalUseConst?}&legalOp={essi:legalOperator?}&hl={essi:hierarchyLevel?}&gdc={essi:gdc?}&sba={essi:sba?}&searchFields={essi:searchFields?}&handler={essi:queryhandler?}&aggregate={essi:aggregate?}&sensor={essi:sensor?}&outputFormat=text/html" type="text/html"/>
<Url template="http://production.geodab.eu/gi-cat-StP/services/opensearch?si={startIndex?}&ct={count?}&st={searchTerms?}&bbox={geo:box?}&loc={geo:name?}&ts={time:start?}&te={time:end?}&targetId={essi:identifier?}&parents={essi:parents?}&sources={essi:sources?}&uselim={essi:useLimitation?}&other={essi:otherAccConst?}&lac={essi:legalAccConst?}&luc={essi:legalUseConst?}&legalOp={essi:legalOperator?}&hl={essi:hierarchyLevel?}&gdc={essi:gdc?}&sba={essi:sba?}&searchFields={essi:searchFields?}&handler={essi:queryhandler?}&aggregate={essi:aggregate?}&sensor={essi:sensor?}&outputFormat=application/atom+xml" type="application/atom+xml"/>
<Url template="http://production.geodab.eu/gi-cat-StP/services/opensearch?si={startIndex?}&ct={count?}&st={searchTerms?}&bbox={geo:box?}&ts={time:start?}&te={time:end?}&targetId={essi:identifier?}&parents={essi:parents?}&sources={essi:sources?}&searchFields={essi:searchFields?}&sensor={essi:sensor?}&sensorResolutionMax={essi:sensorResolutionMax?}&sensorResolutionMin={essi:sensorResolutionMin?}&sarPolCh={essi:sarPolCh?}&sarPolMd={essi:sarPolMd?}&outputFormat=application/json" type="application/json"/><Query geo:box="-180,-90,180,90" role="example"/><Query geo:box="-20,-10,10,20" geo:relation="overlaps" role="example"/><Query geo:box="-20,-10,10,20" geo:relation="contains" role="example"/><Query geo:box="-20,-10,10,20" geo:relation="disjoint" role="example"/><Query geo:locationString="italy" role="example"/><Query role="example" time:end="2010-01-01T23:39:59" time:start="1990-01-01T00:00:00"/><Developer>fabrizio.papeschi@cnr.it</Developer><Developer>enrico.boldrini@cnr.it</Developer><SyndicationRight>open</SyndicationRight><AdultContent>false</AdultContent><Language>en-us</Language><OutputEncoding>UTF-8</OutputEncoding><InputEncoding>UTF-8</InputEncoding></OpenSearchDescription>

Used Parameters in OSDD

Parameter	Contents
startIndex	Start number of response entry
Count	Maximum hit numbers per one page (or one feed, if using Atom)
searchTerms	Free text
geo:box	Rectangular area specifying “Longitude (West), Latitude(South), Longitude(East), Latitude(North)”
geo:name	Character string specifying search target place
time:start	Search target date/time (start)
time:end	Search target date/time (end)
essi:sources	**Unique ID for each GEO DAB source server**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CUAHSI
Use Cases
Category/Keywords (required)
Category
River Discharge
ECV
GCMD
Atomspheric Surface
Atomspheric Upper-Air
Atomspheric Composition
Oceanic
Terrestrial
River Discharge
Ground Water
Free Keyword
Enter Keyword(s)
Spatial (optional)
Temporal (optional)
Search
Reset
Spatial Search
Russia
Ukraine
Turkey
Libya
Egypt
Saudi Arabia
Tanzania
Angola
Namibia
Botswana
Madagascar
South Africa
New Zealand
Terms of Use
Satellite Data
CEOP
Reference Site
Monsoon Region
NASA AIRS
NASA GRACE
GLOWASIS
In-situ Data
AWCI
CEOP
FLUNXET
GEMS/Water
GPCC
NOAA/NCDC
Model Output Data
AWCI (Time Series)
CEOP (Time Series)
CEOP (Grid Data)
GLOWASIS

CEOS Water Portal

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CEOS Water Portal Catalog service

	entry_Title	detail
1	Surface and groundwater quality data and statistics of Norway collected from the GEMS/Water Global Network	detail
2	Surface and groundwater quality data and statistics of Poland collected from the GEMS/Water Global Network	detail
3	Surface and groundwater quality data and statistics of Mali collected from the GEMS/Water Global Network	detail
4	Surface and groundwater quality data and statistics of Iran collected from the GEMS/Water Global Network	detail
5	Surface and groundwater quality data and statistics of Colombia collected from the GEMS/Water Global Network	detail
6	Surface and groundwater quality data and statistics of UK collected from the GEMS/Water Global Network	detail
7	Surface and groundwater quality data and statistics of Ireland collected from the GEMS/Water Global Network	detail
8	Surface and groundwater quality data and statistics of Belgium collected from the GEMS/Water Global Network	detail
9	Surface and groundwater quality data and statistics of Spain collected from the GEMS/Water Global Network	detail
10	Surface and groundwater quality data and statistics of Austria collected from	detail

10 ▾ Page 1 of 36 Displaying 1 to 10 of 360 items

NASA ECHO

	Title	detail
1	Global River Discharge, 1807-1991, V[ersion]. 1.1 (RivDIS)	detail
2	SAFARI 2000 River Discharge Data (Coe and Olejniczak)	detail
3	LBA Regional River Discharge Data (Coe and Olejniczak)	detail
4	Hydrologic Sub-basins of Greenland	detail
5	Hydrologic Outlets of the Greenland Ice Sheet	detail
6	Monthly Climate Data for Selected USGS HCDN Sites, 1951-1990	detail
7	ISLSCP II UNH/GRDC Composite Monthly Runoff	detail
8	15 Minute Stream Flow Data: USGS (FIFE)	detail
9	Water Quality and Spectral Reflectance, Peace-Athabasca Delta, Canada, 2010-2011	detail
10	LBA-ECO CD-06 Water Balance of the Ji-Parana River Basin, Brazil: 1995-1996	detail

10 ▼ | Page 1 of 3 | Displaying 1 to 10 of 25 items

CUAHSI

	Title	detail
1	You may find more related data from CUAHSI HIS, click here.	

GEO-DAB

	Title	detail
1	Offering for timeseries type 20 - MonthMax(Calculated) with observations at CLAIRBORNE L+D NEAR MONROEVILLE	detail
2	Offering for timeseries type 20 - MonthMin(Calculated) with observations at CLAIRBORNE L+D NEAR MONROEVILLE	detail
3	Offering for timeseries type 30 - YearMean with observations at ABOVE FORT MCPHERSON	detail

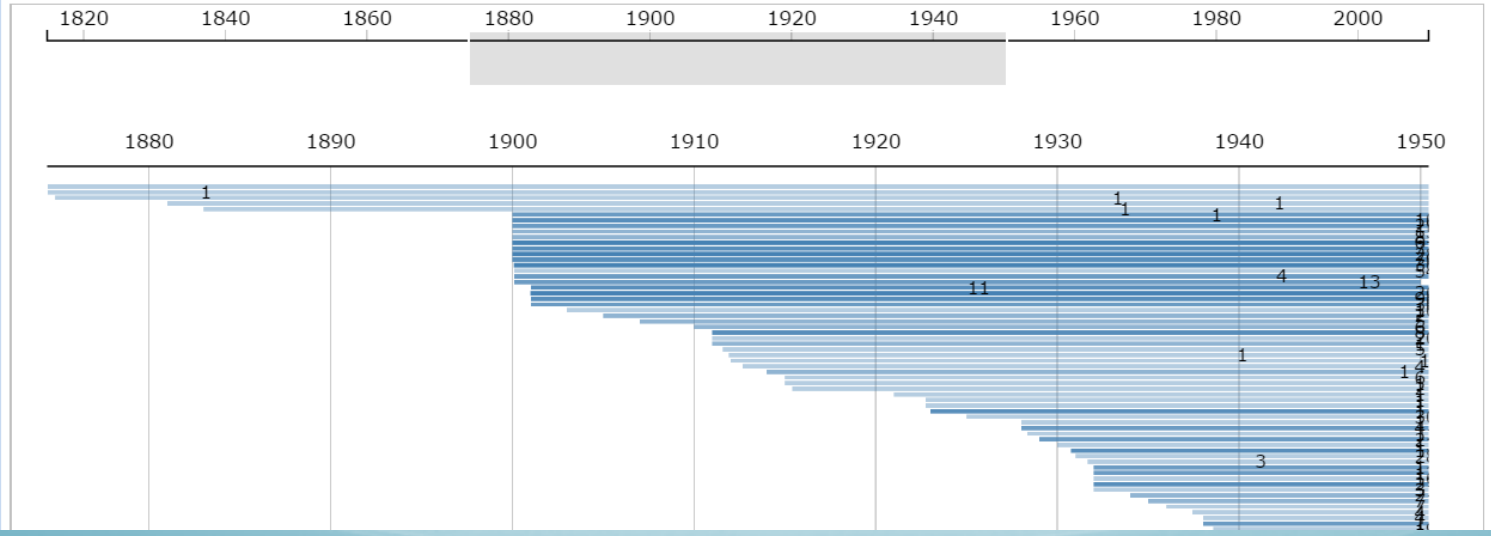
It takes 2~3 minutes to retrieve the GEO-DAB search results.

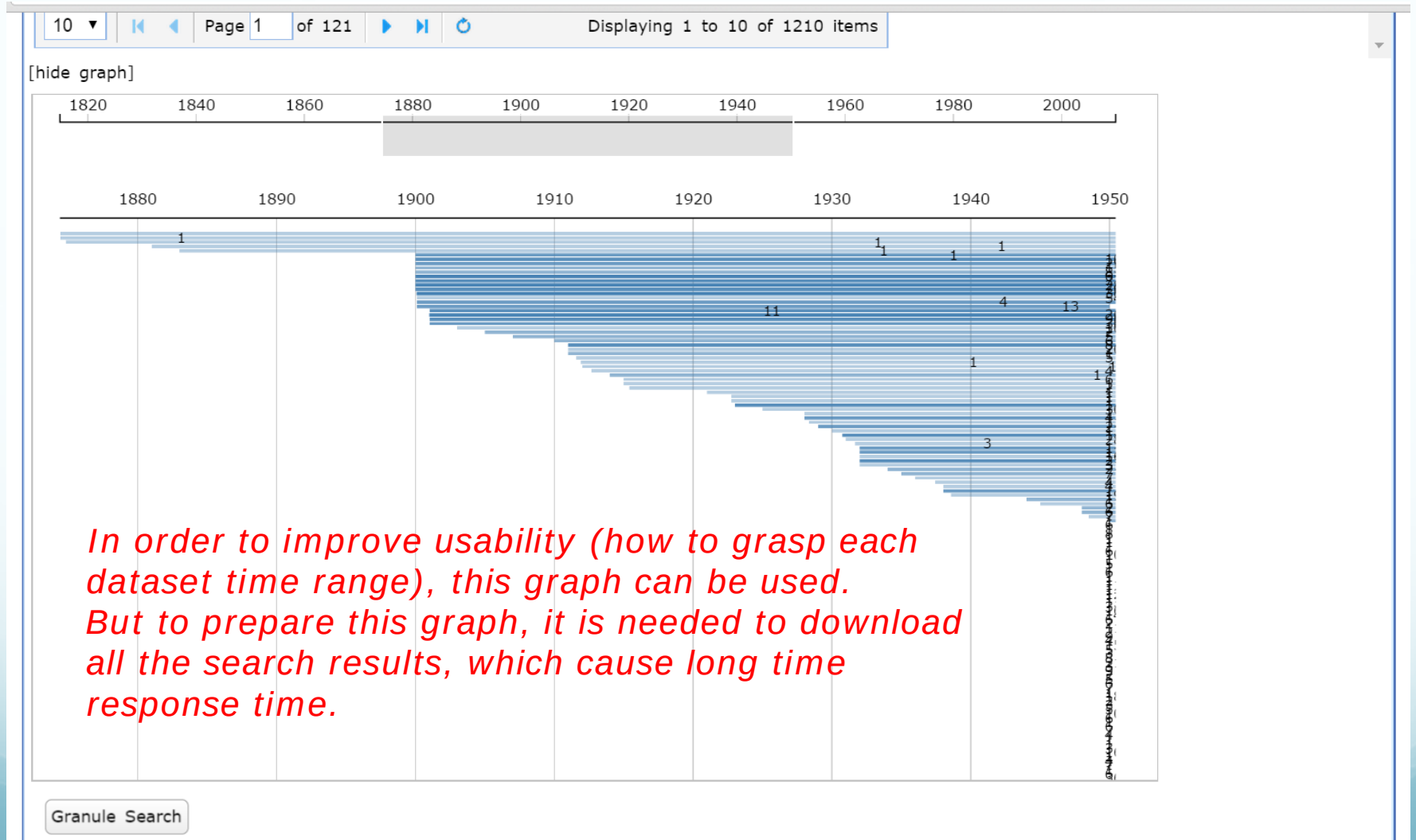
4	Offering for timeseries type 93 - HQ with observations at ABOVE FORT MCPHERSON	detail
5	Offering for timeseries type 90 - LQ with observations at ABOVE FORT MCPHERSON	detail
6	Offering for timeseries type 92 - MQ with observations at ABOVE FORT MCPHERSON	detail
7	Offering for timeseries type 93 - HQ with observations at CLAIRBORNE L+D NEAR MONROEVILLE	detail
8	Offering for timeseries type 90 - LQ with observations at CLAIRBORNE L+D NEAR MONROEVILLE	detail
9	Offering for timeseries type 92 - MQ with observations at CLAIRBORNE L+D NEAR MONROEVILLE	detail
10	Offering for timeseries type 20 - MonthMax(Calculated) with observations at ABOVE FORT MCPHERSON	detail

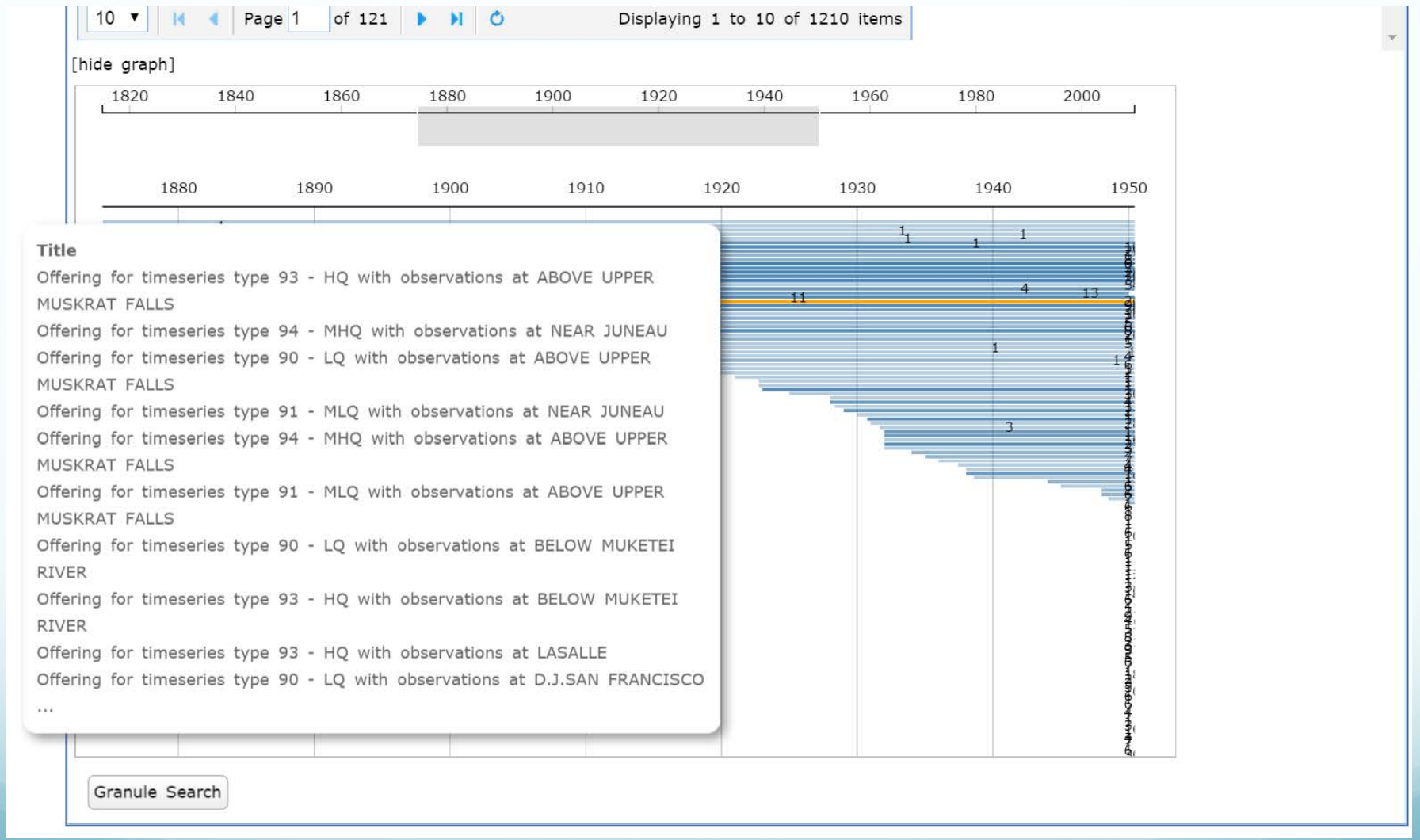
10 ▼ | Page 1 of 121 | Displaying 1 to 10 of 1210 items

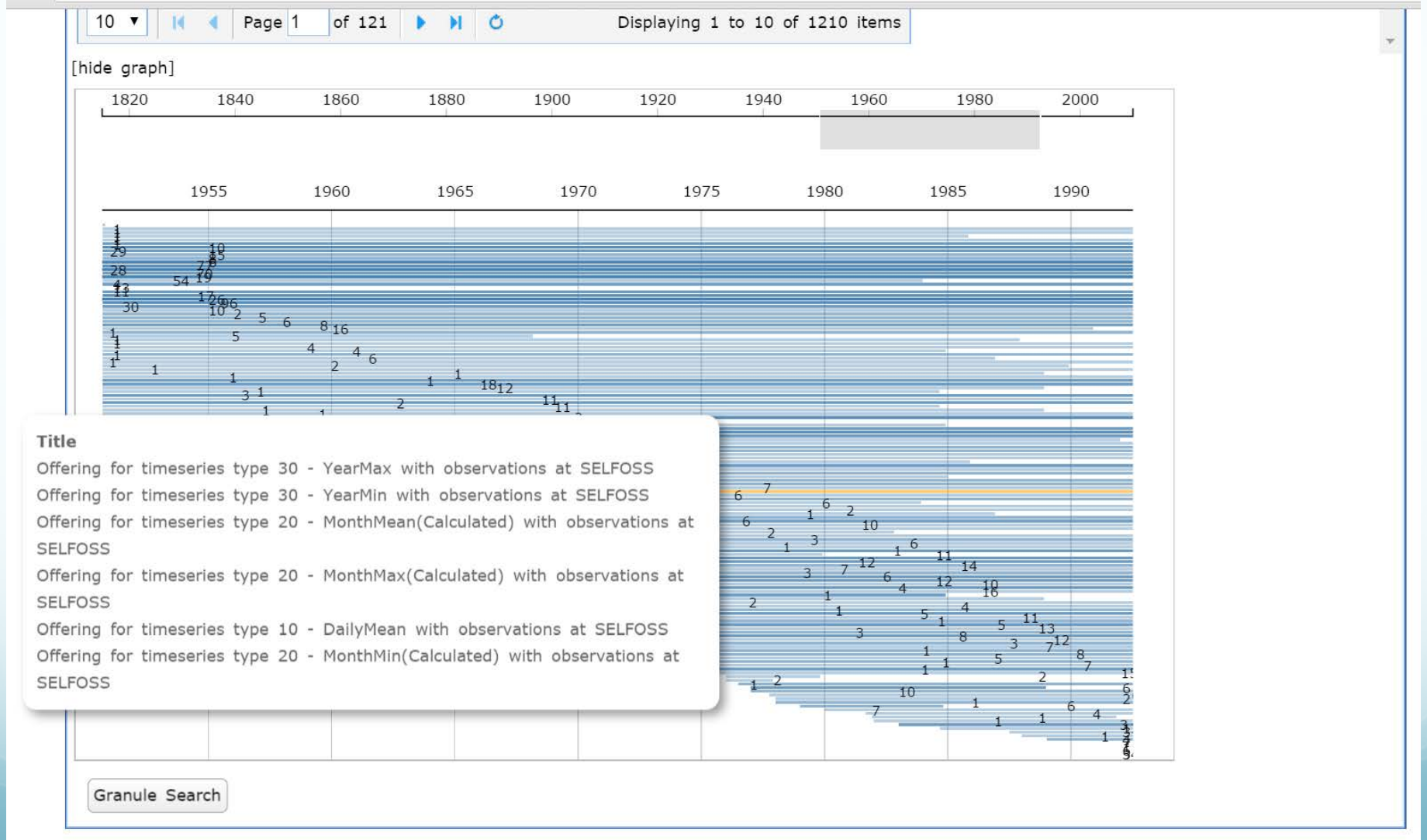
This was "96" in June, 2015.

[hide graph]




10
Page 1 of 121
Displaying 1 to 10 of 1210 items
[hide graph]
1820 1840 1860 1880 1900 1920 1940 1960 1980 2000
1880 1890 1900 1910 1920 1930 1940 1950
In order to improve usability (how to grasp each dataset time range), this graph can be used.
But to prepare this graph, it is needed to download all the search results, which cause long time response time.
Granule Search


10
Page 1 of 121
Displaying 1 to 10 of 1210 items
[hide graph]
1820 1840 1860 1880 1900 1920 1940 1960 1980 2000
1880 1890 1900 1910 1920 1930 1940 1950
Title
Offering for timeseries type 93 - HQ with observations at ABOVE UPPER MUSKRAT FALLS
Offering for timeseries type 94 - MHQ with observations at NEAR JUNEAU
Offering for timeseries type 90 - LQ with observations at ABOVE UPPER MUSKRAT FALLS
Offering for timeseries type 91 - MLQ with observations at NEAR JUNEAU
Offering for timeseries type 94 - MHQ with observations at ABOVE UPPER MUSKRAT FALLS
Offering for timeseries type 91 - MLQ with observations at ABOVE UPPER MUSKRAT FALLS
Offering for timeseries type 90 - LQ with observations at BELOW MUKETEI RIVER
Offering for timeseries type 93 - HQ with observations at BELOW MUKETEI RIVER
Offering for timeseries type 93 - HQ with observations at LASALLE
Offering for timeseries type 90 - LQ with observations at D.J.SAN FRANCISCO
...
Granule Search


10
Page 1 of 121
Displaying 1 to 10 of 1210 items
[hide graph]
1820 1840 1860 1880 1900 1920 1940 1960 1980 2000
1955 1960 1965 1970 1975 1980 1985 1990
Title
Offering for timeseries type 30 - YearMax with observations at SELFOSS
Offering for timeseries type 30 - YearMin with observations at SELFOSS
Offering for timeseries type 20 - MonthMean(Calculated) with observations at SELFOSS
Offering for timeseries type 20 - MonthMax(Calculated) with observations at SELFOSS
Offering for timeseries type 10 - DailyMean with observations at SELFOSS
Offering for timeseries type 20 - MonthMin(Calculated) with observations at SELFOSS
Granule Search

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CEOS Water Portal Catalog service

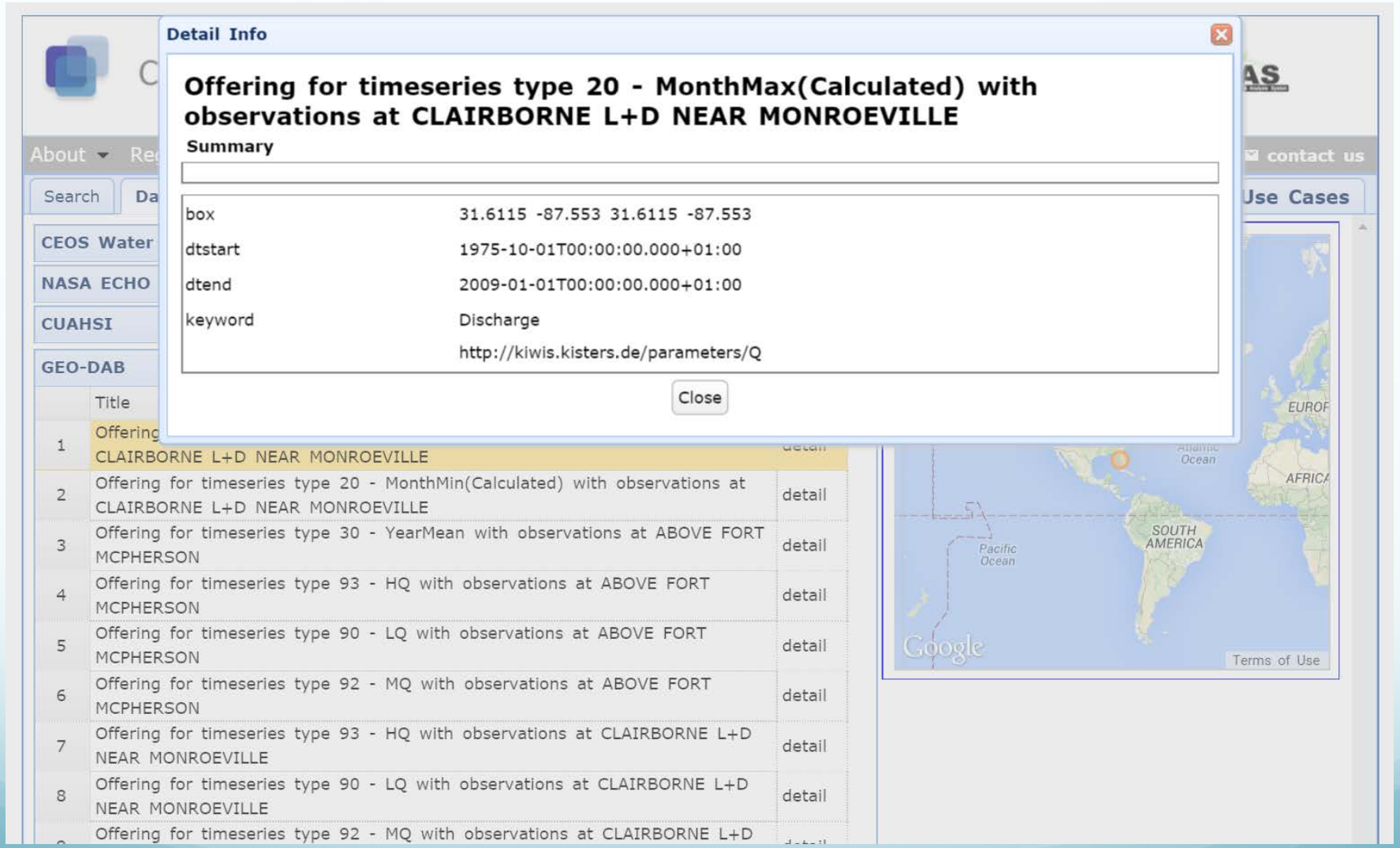
NASA ECHO

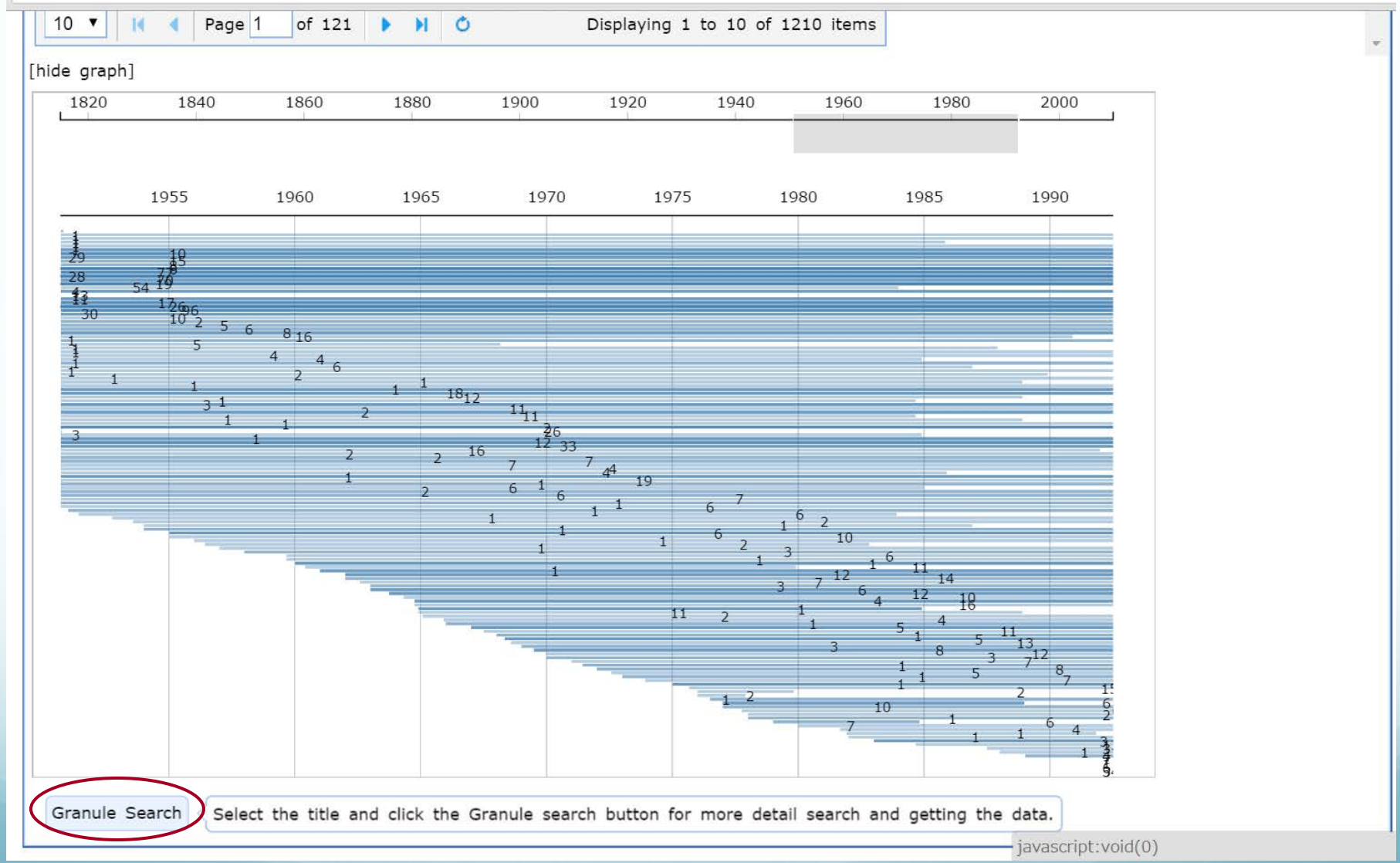
CUAHSI

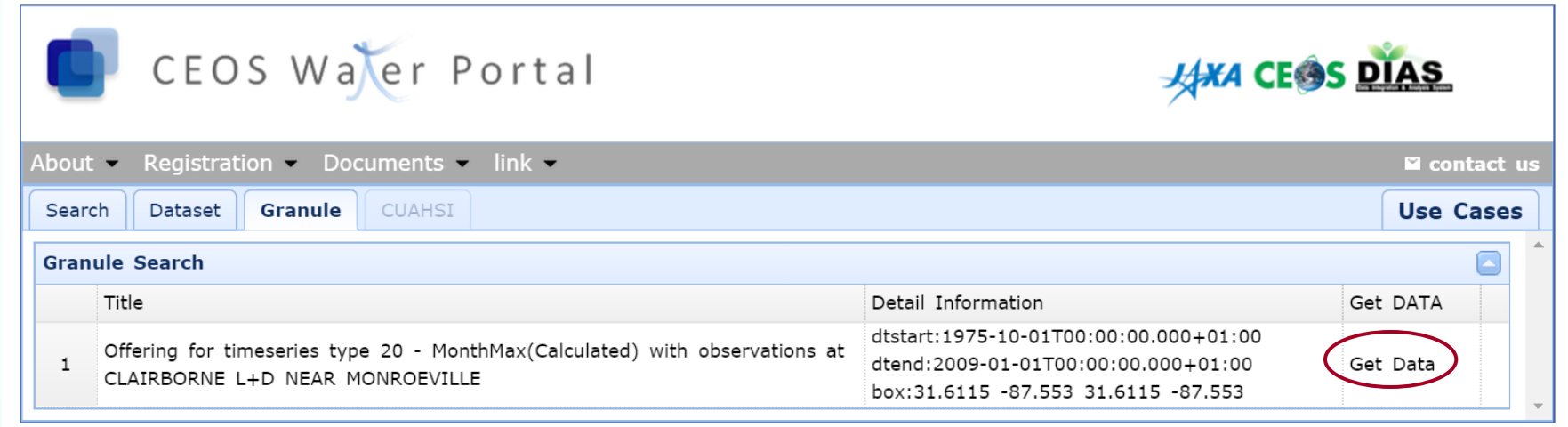
GEO-DAB

	Title	detail
1	Offering for timeseries type 20 - MonthMax(Calculated) with observations at CLAIRBORNE L+D NEAR MONROEVILLE	detail
2	Offering for timeseries type 20 - MonthMin(Calculated) with observations at CLAIRBORNE L+D NEAR MONROEVILLE	detail
3	Offering for timeseries type 30 - YearMean with observations at ABOVE FORT MCPHERSON	detail
4	Offering for timeseries type 93 - HQ with observations at ABOVE FORT MCPHERSON	detail
5	Offering for timeseries type 90 - LQ with observations at ABOVE FORT MCPHERSON	detail
6	Offering for timeseries type 92 - MQ with observations at ABOVE FORT MCPHERSON	detail
7	Offering for timeseries type 93 - HQ with observations at CLAIRBORNE L+D NEAR MONROEVILLE	detail
8	Offering for timeseries type 90 - LQ with observations at CLAIRBORNE L+D NEAR MONROEVILLE	detail
9	Offering for timeseries type 92 - MQ with observations at CLAIRBORNE L+D NEAR MONROEVILLE	detail
10	Offering for timeseries type 20 - MonthMax(Calculated) with observations at ABOVE FORT MCPHERSON	detail

10 ▾ | Page 1 of 121 | Displaying 1 to 10 of 1210 items


Detail Info
Offering for timeseries type 20 - MonthMax(Calculated) with observations at CLAIRBORNE L+D NEAR MONROEVILLE
Summary
box 31.6115 -87.553 31.6115 -87.553
dtstart 1975-10-01T00:00:00.000+01:00
dtend 2009-01-01T00:00:00.000+01:00
keyword Discharge
http://kiwis.kisters.de/parameters/Q
Close
About
contact us
Search
Use Cases
CEOS Water
NASA ECHO
CUAHSI
GEO-DAB
Title
1 Offering CLAIRBORNE L+D NEAR MONROEVILLE
2 Offering for timeseries type 20 - MonthMin(Calculated) with observations at CLAIRBORNE L+D NEAR MONROEVILLE detail
3 Offering for timeseries type 30 - YearMean with observations at ABOVE FORT MCPHERSON detail
4 Offering for timeseries type 93 - HQ with observations at ABOVE FORT MCPHERSON detail
5 Offering for timeseries type 90 - LQ with observations at ABOVE FORT MCPHERSON detail
6 Offering for timeseries type 92 - MQ with observations at ABOVE FORT MCPHERSON detail
7 Offering for timeseries type 93 - HQ with observations at CLAIRBORNE L+D NEAR MONROEVILLE detail
8 Offering for timeseries type 90 - LQ with observations at CLAIRBORNE L+D NEAR MONROEVILLE detail
Offering for timeseries type 92 - MQ with observations at CLAIRBORNE L+D
Atlantic Ocean
Pacific Ocean
SOUTH AMERICA
AFRICA
Google
Terms of Use


10
Page 1 of 121
Displaying 1 to 10 of 1210 items
[hide graph]
1820 1840 1860 1880 1900 1920 1940 1960 1980 2000
1955 1960 1965 1970 1975 1980 1985 1990
Granule Search
Select the title and click the Granule search button for more detail search and getting the data.
javascript:void(0)



Data should be downloaded in WaterML2 format as shown in the next slide, but sometimes does not work.

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</sos:GetObservationResponse>

L&L, Issues, etc (1/2)

1. How to/Manual/Guide are needed for CP developers.
   - From the GEOSS top page, it's very difficult how we(CP) can contribute/connect to the GEOSS portal.
2. Implementation of Opensearch interface is simple and not so difficult.
3. Since CP is (mainly) focused on the specific area (e.g., water, land, biodiversity, etc), using "essi:sources" in the OSDD and decreasing search results is recommended.

L&L, Issues, etc (2/2)

4. Receiving “too many search results” causes several issues on the CP side.
   - Just showing the results as they are, users have lots of difficulties to find their preferable data. As a result, it is very likely that users will not use the CP again.
   - Ranking maybe a good idea, but how to rank?
   - Some GUI tips may be helpful, but the scalability is necessary!

5. Quality control/Service level
   - “Data access” sometimes does not work. The CP has no idea what is wrong (data provider system trouble, interface trouble or CP system failure/bag).
   - “System maintenance information” is not available.
   - Data quality is not guaranteed. Users may want to know the data quality information before downloading/using data.

Feedback from the GCI team and other CPP team members

1. In response to the “Too many results” issue : A number of efforts by the DAB to support user views and rank the relevance of results.
2. On problems access the data : the DAB does some checking but it is costly to be thorough.
3. On data quality : there are pertinent recommendations in both the GEO Data Management and Data Sharing Principles.
4. The large result sets are a problem for many groups and maybe a focus group to develop guidelines to address the issue would be useful.
5. GEOSEC/Osamu used the example of the DIAS-CEOS Water Portal to raise the idea of GEO branding of community portals. A common approach to referencing GEOSS or even a common look and feel for GEO community portals might be recommended.