New in WorldMap Version 1.5

Center for Geographic Analysis, Harvard

1.0 Overview

This document provides guidance for the new Version 1.5 WorldMap features. For information on the other parts of the system please use the Help document on the front page of WorldMap http://worldmap.harvard.edu which includes these items in addition to all other features.

In the new version, when searching for data, you will find many new Layers which reside on other systems, in addition to the standard WorldMap Layers. We are attempting to build a complete registry of public web map services, (both OGC and Esri REST) a task which will take time and the contributions of many, and like all registries of fast growing distributed data sources, (registries of web pages for example) it will become more comprehensive over time.

In this version is also a new capability for building and sharing spatio-temporal gazetteers or place name databases based on datasets loaded to WorldMap. These gazetteers may be queried and accessed from within WorldMap or from outside WorldMap.

2.0 Support

About WorldMap: http://about.worldmap.harvard.edu

WorldMap User Group: http://groups.google.com/group/worldmap-users

HHypermap User Group: https://groups.google.com/forum/#!forum/hhypermap

Contact: You can contact us at: worldmap@harvard.edu.

3.0 Adding Layers to your Map

There a several ways to add Layers to your map. Once you have created a map (or while you are within someone else's map, though you won't be able to save your changes) click on "Add Layers" link at the upper left. You will see 5 tabs:

- 1. **Search** this lets you search for data which others have uploaded to the system as well as many Layers which reside on systems around the world, outside WorldMap.
- 2. **Upload Layer** this is covered in the main documentation.
- 3. **Create Layer** this is covered in the main documentation.
- 4. **Rectify Layer** this is covered in the main documentation.
- Contribute Map Service URL This form http://worldmap.harvard.edu/maps/add endpoint will be made available in a tab in Add Layers. For now please use this link. You must be logged in to submit

a map service URL for loading to WorldMap. Currently URLs submitted will be loaded by hand for quality assurance. It is hoped that this process can eventually be automated.

NOTE: Please provide as much information as you have about the services you submit, the kind of maps they contain, the organization providing it. Also please provide your best estimate for the dates for layers in that service in terms of the year or year range of depiction.

3.1 Search

This new search interface allows one to search for Layers in WorldMap as well as Layers on (potentially) any other public map server in the world. The database of Layers behind the scenes is called the Registry and the system which maintains the Registry and makes the contents available to WorldMap and other system is called HHypermap.

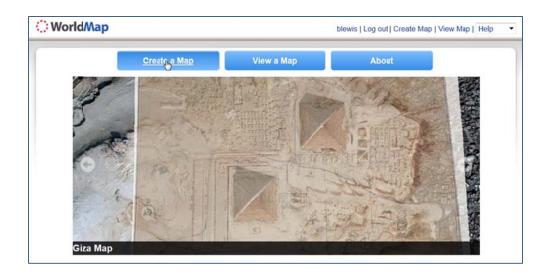
There are two main types of map Layers available for discovery in WorldMap: local Worldmap Layers and remote Layers which are hosted by other servers around the world. Local Layers are geographic datasets that have been uploaded to the WorldMap system. The actual data is stored on the WorldMap server. Because these Layers are local, they have more capabilities than remote Layers do. It is possible for example to change the symbology of local Layers, edit the data and metadata for them, and download them in a variety of formats. Remote Layers on the other hand are not (currently) editable, and symbology cannot be changed. Remote Layers can however be overlayed with other Layers, their transparency controlled, and they can be saved in maps and shared.

The Layer page for remote Layer is now not the same as the Layer page for WorldMap Layers. Currently remote Layers display the page from HHypermap which summarizes what is known about the Layer. The page for WorldMap Layers has not changed.

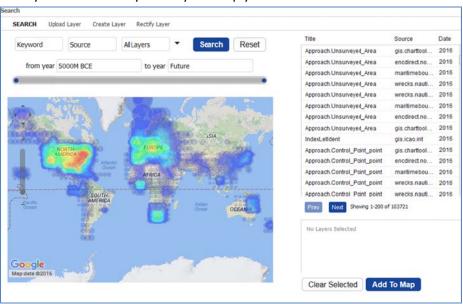
To use the new search capabilities, from a Map, click the "Add Layers" button.



If you don't yet have a Map and would like to create a new one, click "Create a Map" from the WorldMap front page at http://worldmap.harvard.edu.



Once you click "Add Layers" in your Map you will see:



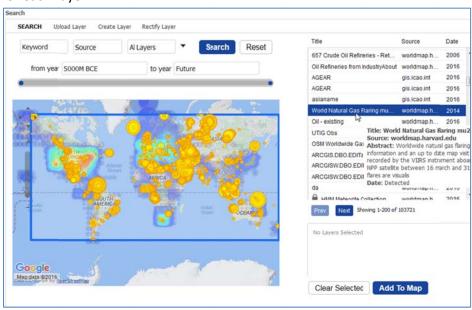
Note: The heatmap represents the distribution of the all local and remote Layers currently in the system. In this instance the total number of local (WorldMap) and remote Layers is 103,721. This number is expected to grow over time as more map servers are added, but could shrink as quality control procedures become more refined. The heatmap displays the relative distribution of Layers for any query. Warmer colors mean more Layers with red the highest, and cooler colors means fewer Layers with blue the lowest. This is to alert the user to the regions where data is concentrated given a particular query.

Mouse over the map and you will see the number of Layers for any location:



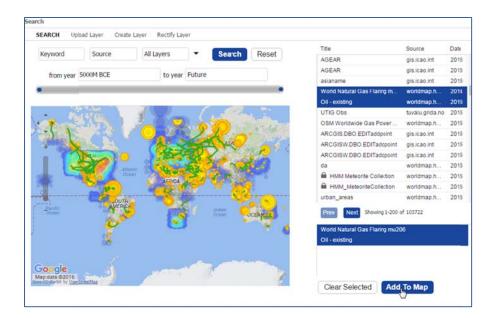
Note: There is a bug in the count readout which we are addressing. The count does not currently include Layers which cover very large areas relative to the current view. For example in the current view, Layers which cover the entire globe are not included in the count.

When the user mouse's over items in the results list on the right, she will see map previews and metadata for each Layer:



Note: All Layers should return a Layer preview but you may find some which do not. Please let us know about any problems you see: worldmap@harvard.edu.

Click on a Layer in the list to add it to the cart. From there it can be added to the Map. Click again on the Layer name to remove it from the cart:

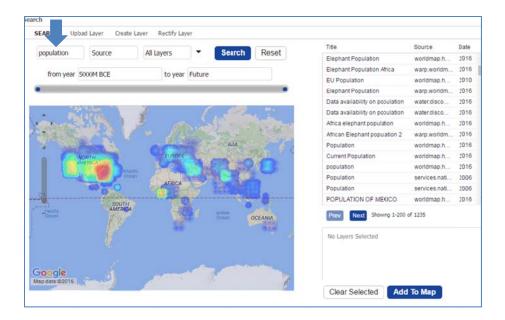


Once the Layers you are interested in are in the cart, click "Add to Map" to load the Layers to your Map:

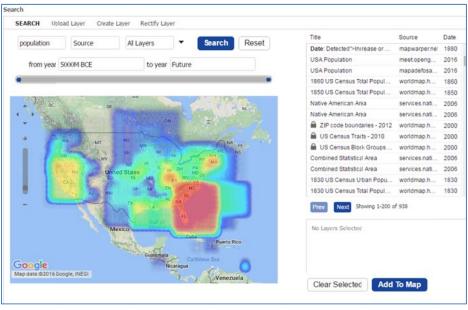


To get back to search click "Add Layers" again.

One can filter in several ways. Here is a filter by "population" which returns 1,235 results.

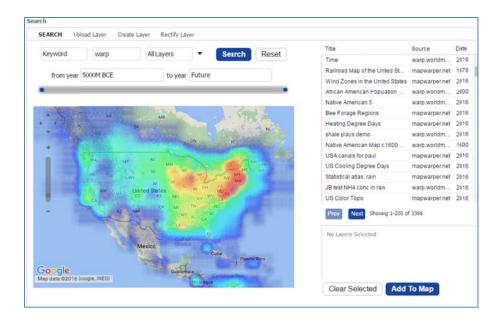


One can filter on geographic area by extent by zooming in on the map:



Here zooming in to the U.S. reduces the number of Layers selected to 938.

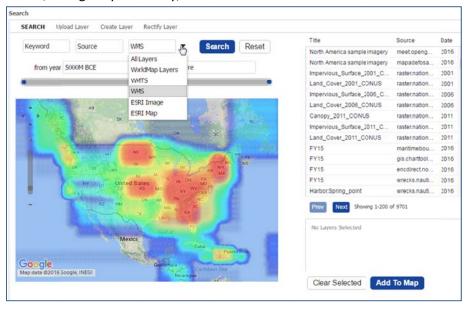
One can also filter by Source which queries against the domain name of the remote map server. For example, using "warp" in Source returns historic map Layers in the "mapwarper.net" and "warp.worldmap.harvard.edu" systems. Searching Source by "NYPL" will return historic Layers from the New York Public Library historic map georeferencing system at "maps.nypl.org".



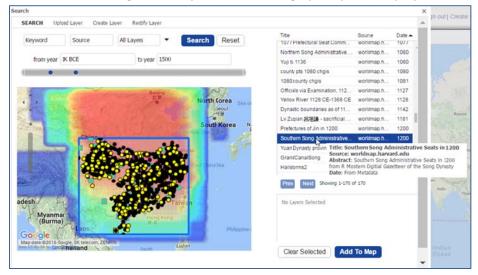
One can also search by service type (use the "All Layers" pulldown menu). "WorldMap Layers" are local Layers. "WMS" is a service format defined by the Open Geospatial Consortium or OGC. "ESRI Image" and "ESRI Map" are service formats defined by the Esri mapping software company.

You don't need to know about map service types to use them effectively so the best setting will most often be "All Layers".

If you need to be able to download data however, choose "WorldMap Layers", most of which are downloadable. All Layers not designated WorldMap Layers are remote layers and currently cannot be edited, changed symbolically, or downloaded.

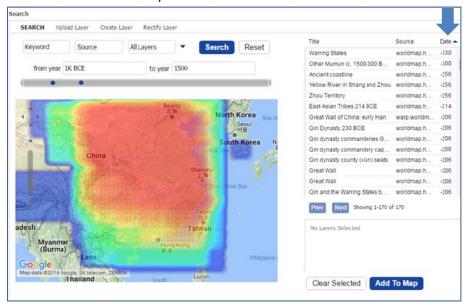


One may also filter by depict date. Here is an example, focused on East Asia, filtered by date range 1000BCE to 1500CE. Hovering over a Layer from the Song dynasty, it is displayed in the map:



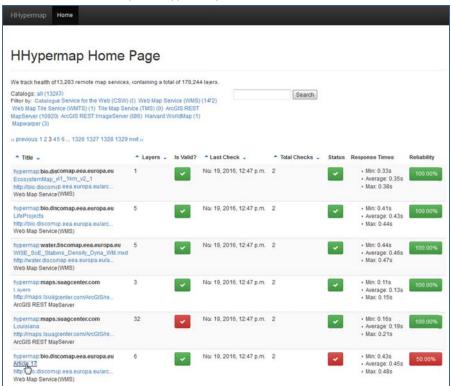
Note: Notice in the metadata for the Layer displayed it says "Date: From Metadata". This means the depict date for the Layer was input explicitly by a person. Some Layers have instead the designation "Date: Detected". This means the date was automatically recognized (using Time Miner software developed by Harvard CGA) within the Layer name or abstract. Most auto-detected dates are correct, but some are not. Please let us know of errors you find worldmap@harvard.edu.

One may sort results by any of the columns in the results list. Click on the column heading to sort. Here is the current view sorted by time:

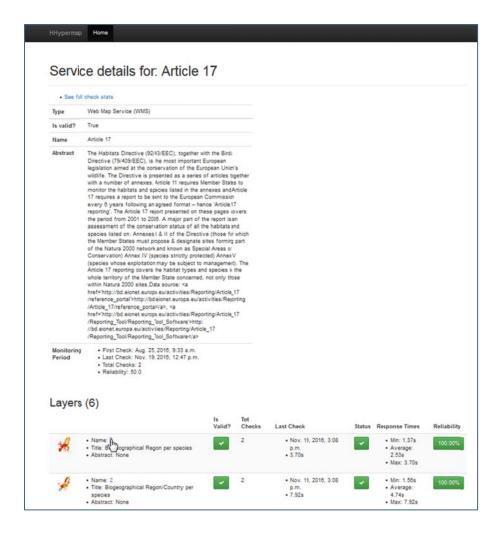


Behind the scenes the HHypermap backend http://hh.worldmap.harvard.edu maintains information on remote services so it can provide access to them via WorldMap and other systems. (HHypermap is a software platform developed by Harvard CGA with a grant from NEH to manage remote map services and

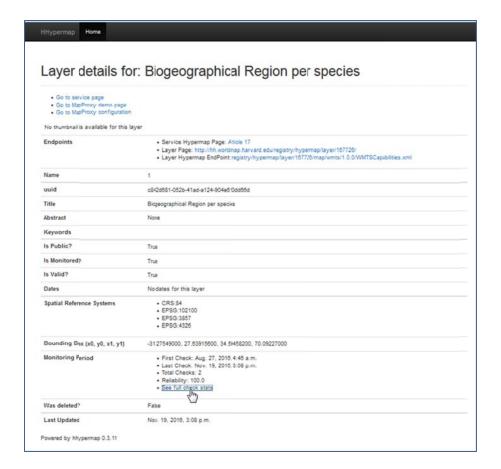
make them useful within mapping systems.) In this view we can see HHypermap is tracking more than 13 thousand remote map services which contain more than 170 thousand map Layers. All of these Layers are not yet available within search, due mostly to display issues relating to the great variety of map server configurations. As software improves over time, we expect the rest of these servers and others to become available for discovery in HHypermap.



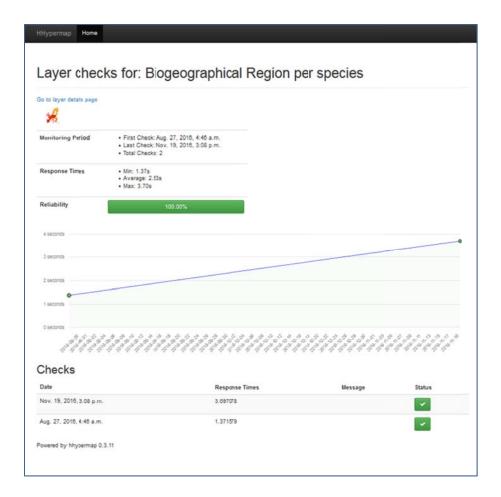
Clicking on a service, brings the user to the Layers within that service:



Clicking on a Layer brings one into the metadata for that Layer.

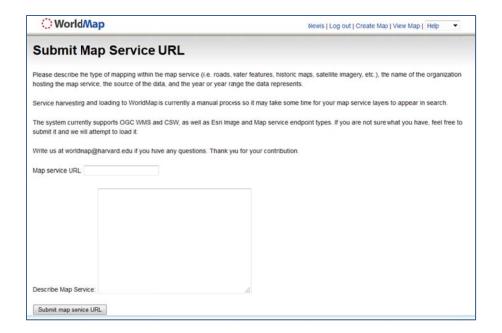


Clicking on "See full check stats" displays the results of any checks which have been made on this Layer. Uptime statistics are gathered for each Layer and service and these are being used to ensure that the Layers in the system are dependable. Once the system has been in production for some time these charts will become more useful.



3.2 Submit Map Service URL

If you know about a map server that is not yet included in WorldMap, and you would like it to be available, please tell us about it: http://worldmap.harvard.edu/maps/add_endpoint. This link will be made available within a "Submit Map Service URL" tab in the "Add Layers" form in the near future.



Once you submit a URL we will add it to WorldMap. Please only submit Esri or OGC type service endpoints (URLs). If you know of a server that you think contains Esri or OGC Layers that you are interested in using but don't know the format of the URL to provide, send us the information you have and we will see what we can do. Feel free to check up on a service you have submitted worldmap@harvard.edu.

4.0 Creating a Custom Gazetteer

Gazetteers in WorldMap are accessible from within the Map page in WorldMap and are also accessible by applications outside WorldMap via a RESTful API.

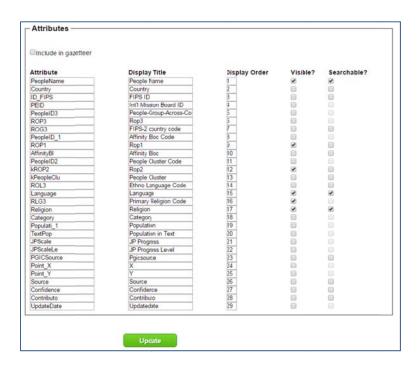
4.1 Adding Content to a Gazetteer

To add content to your own gazetteer you will choose a layer you have already uploaded to WorldMap containing the place name data you wish to add. To start, right click on the Layer in the Map and select "Share Layer". On the Layer page, look to the lower right part of the page where you will see the "Manage Layer".

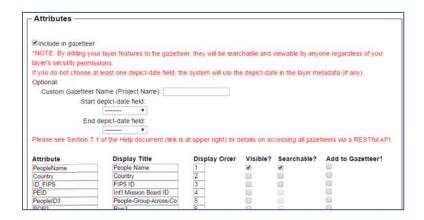


Click on "Update the description of this data".

At the bottom of the metadata update page you will see an option for "Include in gazetteer".



Select "include in gazetteer" and you will see:



Input the name of the temporal gazetteer you would like to create for "Custom Gazetteer Name". Enter the fields containing the start depict-date and the end depict-date.



NOTE: If you only have one date field that will be used. If you do not include any fields, the date within the Layer's metadata above in the metadata form will be used.

rempora	Extent Start Date
Temporal	Extent End Date:

A user may submit multiple Layers to the same custom gazetteer.

Each field value in the dataset submitted will get its own row in the gazetteer. For example, if a Layer has 'full_name' and 'abbreviation' fields that are both added to the gazetteer, then a feature with full name="United States of America", abbreviation="USA" would result in two gazetteer rows.

When a Layer used to add records to a gazetteer is deleted from WorldMap, the records in the gazetteer will also be deleted.

If line or polygon features are used, only the centroid of the line or polygon will be included in the gazetteer.

All features added to a custom gazetteer will also be added to the general WorldMap gazetteer.

Negative dates are supported and are stored both as text and as integers (Julian dates).

NOTE: Any features added to a gazetteer will become public even if the Layer is private.

4.2 Gazetteer API

A RESTful API to the gazetteer which makes it possible for remote applications to use custom gazetteers and the WorldMap gazetteer.

Matching items and their attributes are returned in JSON format (add "/xml" at the end of the URL to get it in XML format). There is a limit of 500 records that the system can return at a time.

Below is the specification for making gazetteer requests:

URL's begin with http://worldmap.harvard.edu/gazetteer/<search_term> followed by any or all or none of the following:

- /<search term>/Service (Possible values include any/all of worldmap, google, nominatum, geonames)
 - Example: Example:
 http://worldmap.harvard.edu/gazetteer/Buena/Services/google,nominatum
- /<search term>/Project/<custom gazetteer name> (Only return results affiliated with a particular custom gazetteer name (bentest3) matching search string "plymouth")
 - Example: http://worldmap.harvard.edu/gazetteer/plymouth/Project/bentest3

- /<search term>/Map/<map_id> (Only return results from Layers on a specific Map. Go to "Share Map" page to find the Map ID number)
 - o Example: http://worldmap.harvard.edu/gazetteer/Roanoke/Map/238
- /<search term>/Layer/<Layer_typename> (Only return results from a specific Layer)
 - o Example: http://worldmap.harvard.edu/gazetteer/Canary/Layer/ports sale confident ggx
- /<search term>/StartDate/<date> (Only return results with a start date <= specified date (or null)
 and end date >= start date (or null))
 - o Examples:
 - http://worldmap.harvard.edu/gazetteer/Xiangwu%20Xian/StartDate/500-01-01
 - http://worldmap.harvard.edu/gazetteer/Xiangwu%20Xian/StartDate/500%20AD
 - http://worldmap.harvard.edu/gazetteer/Xiangwu%20Xian/StartDate/100-01-01%20BC
- /<search term>/EndDate/<date> (Only return results with a start date <= specified date (or null) and end date <= start date (or null)
 - o Examples:
 - http://worldmap.harvard.edu/gazetteer/Xiangwu%20Xian/EndDate/760%20AD
 - http://worldmap.harvard.edu/gazetteer/Xiangwu%20Xian/EndDate/765%20AD

Sample combination query:

http://worldmap.harvard.edu/gazetteer/Xiangwu%20Xian/Service/google/Map/79/StartDate/10%20BC/End Date/1

Any use of multiple parameters must be in this order:

http://worldmap.harvard.edu/gazettee<u>r/<search_string>/Service/Project/Map/Layer/StartDate/EndDate</u>

Any space within in any value such as Search String (see "Xiangwu Xian" example above) must be replaced by "%20" to create a valid request URL.

There is currently an upper limit of 500 results.