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Sounding Better!

# Web Maps

By Bill Bergmann

HYPACK has enhanced its support of web-based charting. The methodology is a bit different than in previous versions, but more powerful and (hopefully) intuitive. The basic process requires 2 steps: defining available web servers then creating a query using a particular server to get the charts.

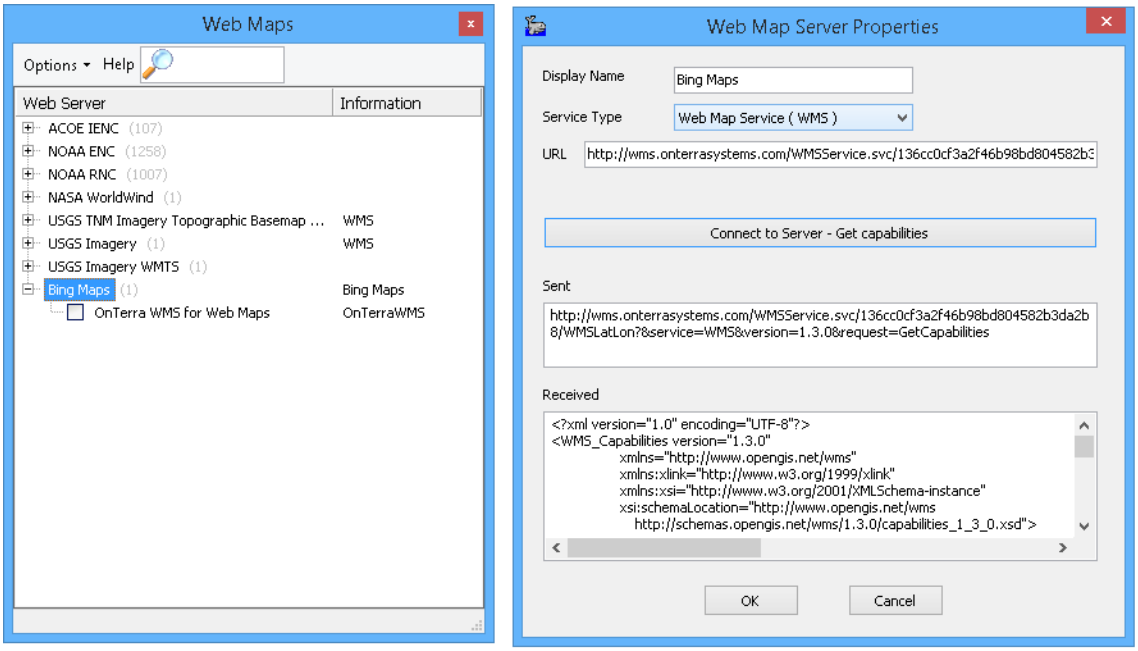
## *WEB SERVERS*

### SETUP

In the HYPACK® Shell, select WMS Web Maps from the View menu to open the Web Maps tab. Here is where you manage ( Add, Delete, Modify ) WMS and WMTS servers. It is also the interface for downloading electronic charts, more about that in the section titled "Map Catalog Servers".

The Web Maps dialog is pre-populated with a few default servers. Add a new server from the options menu or right-click on an existing server and select "Properties". In either case, the Web Map Server Properties dialog opens. Enter a display name to be shown in the server listing. The vital information required to make this work is the type of server (WMS or WMTS), and the URL or address.

*FIGURE 1. Web Maps Tab (left), Web Map Server Properties (right)*




## CONNECTING

The information we collect in this phase is a piece of data known as a capabilities document. This is an XML file that tells HYPACK® how we can retrieve charts from the server, the layers of information available and other pertinent information. Without this document, further processing is impossible. Due to its importance, we have added the Connect to Server - Get Capabilities button. Click it to verify your settings are correct.

The Sent field shows the data we are sending out. The Received area shows the response—either a display of the document or error messages. If you are suspicious about the HYPACK response, you may paste the data in the Sent field into the URL field of any web browser. If you encounter problems, perhaps the error message will be better formatted.

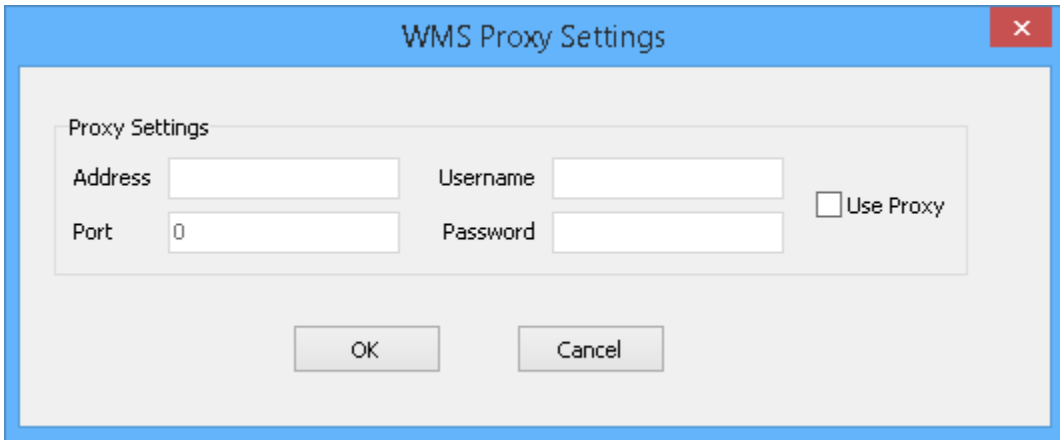
## URLS

The URL is also where you encode any authentication information if required. The Web Server provider supplies this information. We wanted to provide a simple Username and Password field, but there doesn't appear to be a standard against which we can code. For instance, Bing requires a hexadecimal string embedded in the path portion of the URL, while other servers require Username= and Password= parameters or even Servicename= and Client= parameters. It's more work for you, but completely flexible having just a URL string to handle such diverse connection cases.

## PROXIES

HYPACK® now allows connecting to a Server behind a proxy. Select OPTIONS-PROXY SETTINGS in the Web Maps tab to open the WMS Proxy Settings dialog. Check the Use Proxy check box and fill in the Address, Port, Username and Password fields as required.

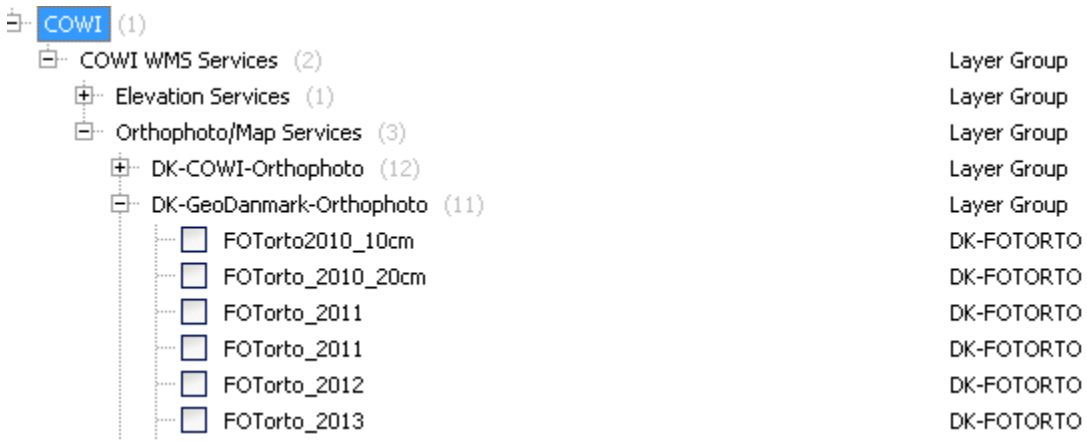
*FIGURE 2. WMS Proxy Settings Dialog*




## LAYERS

A layer describes a piece of information to be included in the web map. Tile Servers (WMTS) always support a single layer only. WMS servers may have multiple layers. All selected layers are combined by the server to produce the final map. We have expanded our support of layers offered by web servers. Previously, we supported layers only directly under the server but, as we encountered more complex servers, we found layers described in nested tree format. You may examine this in the Web Maps tab by expanding the layer tree (clicking the +) to reveal the structure. Below is an example of a server from Denmark named COWI exhibiting this behavior.

*FIGURE 3. Example of a Server from Denmark Named COWI*




# *MAP CATALOG SERVERS*

The former ENC Maps dialog has been integrated into the Web Maps tab. This comprises the ACOE and NOAA Enc and NOAA Rnc servers. Unlike WMS, these sites provide a catalog of premade charts for downloading. Select 1 or more charts, right click and click Download Selected to manually download. To aid the user in finding charts relevant to the project area

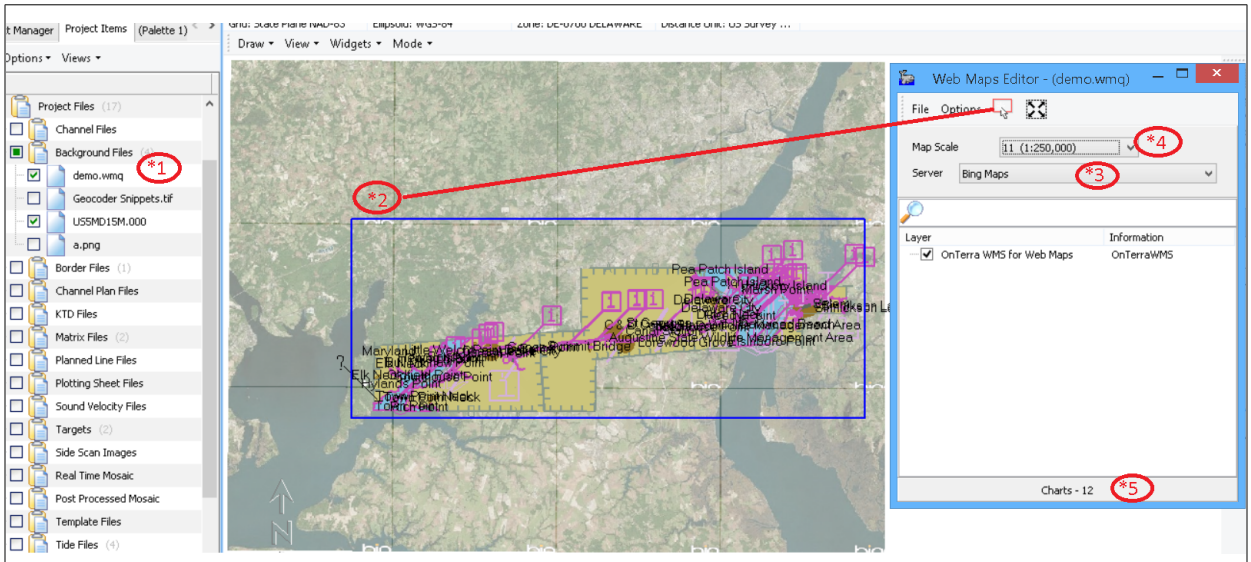
we have added a WMS Filters dialog (Options->Filters...) The Servers and Layers filters will apply to all content in the Web Maps tab and work as one would expect. The Visible in Map Window Only check box will restrict the charts in the tree to those that would show in the current Map Window. This applies only to the Catalog servers. Enabling this check box is a way to see visually the algorithm used by the Add ENC Charts button.

## TIME

Servers change over time - WMS can add or remove supported layers, Catalogs can have updated versions of charts etc. The capabilities document for WMS and WMTS or the catalogue XML for CAT servers are a snap shot in time of the point when they were downloaded. You can manually synchronize your web maps to the latest information by right clicking on a server and choosing the Refresh option. Perhaps in the future we can add automated updating logic if say the capabilities or catalogue is more than a month to two old. Feedback appreciated!

## WEB QUERIES

***FIGURE 4.*** *Anatomy of a Web Query (*.WMQ)*




1. The query shows as an object in Background Files. The group of charts comprising the query is treated as a single file. Enable, Transparency, and Drawing Order options are supported.
2. The area the query relates to is outlined in blue. Any chart at the given scale that intersects this area is downloaded.
3. Select the Server and Layers to be associated with the query. Servers come from the list of servers managed on the Web Maps tab.
4. Set the resolution of maps to download. A higher resolution requires more maps to cover the same defined area.
5. Number of charts in this query based on Area (2) and Scale (4). *Pay attention to this number!* If a huge number of charts is required, adjust your scale or area!

Actually retrieving charts from the web is done via a Web Maps Query object. We have a Web Maps Editor to create and modify this object. This editor is where you define all the

necessary parameters for downloading charts. This includes the Server from which to get charts, the layers to be included in the chart, an area of coverage where the maps are desired, and the scale or resolution of the retrieved charts. When you are done defining the query as desired, select FILE SAVE to create a .WMQ file. The file is added to your Background Charts in the Project Items list and can be manipulated like other image files. To make any necessary adjustments, double-click the object to open the Web Maps Editor.

You may have as many queries as you like added to your project. They may reference different or the same servers. When a .WMQ object is enabled, it processes the query to determine which charts are required. It then scans to see if the charts exist, and if not, initiates a download sequence. Once all charts are downloaded, enabling and disabling this object becomes very quick. You may force a download of charts while in the Web Maps Editor by choosing Download Charts under the Options menu.

When you create a new query, HYPACK® sets the area to the bounds of the active Map Window. Select the Cursor tool in the editor to define your own area by dragging a rectangle in the Map window. The available map scales are such that they match the predefined scales offered by WMTS (Tile) servers. The result is that both WMS and WMTS servers produce maps in the same tiled fashion. The combination of area and scale results in a known number of maps to download. This number can get large very fast if you are attempting to download high resolution maps over a large area. For instance, in the picture above, the query produces 12 maps at scale 11 (1:250,000) to cover the defined area. If I changed the scale to 18 (1:2000), it would require 64,236 maps to cover the area! I tell everyone, *keep an eye on that number at the bottom of the editor!*