Add a data file to GeoMapApp

The basic approach for adding a data file to GMA is listed below, with each step described in detail further down:

1) Use the import options on the local machine to check that GMA can handle the file.
2) Transfer the data file to server seafloor.
3) Add a new menu record for the data file in the SQL table called "gma_menu".
4) Use SQL table "gma_menu_map" to map the new menu to one or more parent menus.
5) Use URL script "gma_menu_list.php" to view the cascading menu structure.
6) Use URL script "gma_menu_list_1.php" to generate a new version of the menu file XML.
7) Transfer the new XML menu file to server seafloor.
8) Switch GMA into DEV mode, test the new XML file.
9) On seafloor, edit the time menu_updated.txt time stamp file.
10) Update the "data_set_news.html" file.
11) Request that the new file, menus and news file are rsynched to the commercial provider.
12) Appendix: How to view a menu, generate an updated menu

Detailed description of the steps
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1) Use the import options on the local machine to check that GMA can handle the file:

Before adding any new data files to the GMA menus, put the file on your local machine and use a File > Import option to import the file in GMA. That will help assess if there are any formatting issues or other errors that need to be fixed before adding the file to GMA.

In this manner, grids, tables, spreadsheets, shapefiles and images can be assessed. If adding a WFS or WMS, use the relevant Import WFS/WMS options to check that the web service works.

When dealing with gridded data files, the GMA import process generates a corresponding shapefile and a set of Z folders that contain the nested resolution grids and images for the imported gridded data file. Keep all of these files and folders together.

For spreadsheets, there are sometimes issues with Excel formatting so we no longer add spreadsheets to the GMA menus. Instead, convert any spreadsheet into a tab-separated ASCII (text) file. That tab-separated file is the one that should be tested here by locally importing it and should be added to the GMA menus.

For any comma-separated or pipe-separated ASCII files, convert them to tab-separated and use that tab file for GMA.

2) Transfer the data file to server seafloor:

Once the file looks good when imported in GMA, it should be transferred to server seafloor. The data files reside in directory /data/mgds/web/app.geomapapp.org/htdocs/data.

In that directory, bathymetry (elevation) data files tend to be in basemaps. Older non-elevation data files including most older tabular data, tend to be in the datasets directory. Recently-added non-elevation data files tend to be in the datalayers directory. Look at existing directory structures to help guide where the new files should be placed.

For gridded data files, transfer all of the shapefile components and the various Z folders and make sure that they remain together. It is not necessary to transfer the original grid file.

For WFS/WMS data, there are no files to transfer - the URL itself points to the remotely-served data.

3) Add a record for the data set in the SQL table called "gma_menu":

This SQL table contains records for all of the items displayed in the GMA menus. Create a record in the gma_menu table for the new data file. For tabular data files, the gma_menu.type field is 2 for a tab-separated ASCII file. For WFS/WMS data sets, ensure that the web_service_layer_name field is filled in. For any data file that is likely to be regularly updated, such as the USGS earthquake catalogues, fill in the data_refresh_date field.

4) Use SQL table "gma_menu_map" to map the new menu item to one or more parent menus:

If a data file fits into an existing menu, fill in the gma_menu_map table to slot it in. The order in which the menu items are displayed is governed by the item_order field.

If a new data file does not readily fit in to an existing sub-menu, first create a new sub-menu by filling in a record in the gma_menu table with only the name, projection, and dms_project fields - all other fields can be nulled. Look at the existing records for examples of sub-menus. Then, map the new file to that new sub-menu and map the new sub-menu to an existing upper-level menu.

5) Use URL script "gma_menu_list.php" to view the cascading menu structure:

This URL opens a web page that displays the GMA menus. Use it to check the position and accuracy of the menu listing for the newly-added data file. See list of root element URLs in the Appendix below.

6) Use URL script "gma_menu_list_1.php" to generate a new version of the menu file XML:

If the newly-added menu item looks good, its root element menu (the highest level menu, such as "data_layers_geophysics.xml") needs to be regenerated so that the new item is included. For that, use the URL script "gma_menu_list_1.php". A copy of the updated root element menu will be saved locally. See the Appendix below for a detailed explanation of that process.

The newly-generated root element menu must be tested. There are two ways to do that: Either, test it locally before transferring it to the server. Or, transfer it to the server then test it. The latter approach is described in steps below. The former approach will now be described here.

To test the new root element menu locally before transferring it to the server, proceed as follows. First,make sure that GMA is in DEV mode (see below for details). Second, go into the local .GMA/menus_cache/menus folder. Copy the newly-generated XML menu file into that folder. Edit this local copy of the XML menu file to change any instance of "app.geomapapp.org" to "app-dev.geomapapp.org" (the global find-and-replace saves time having to search for the newly-added menu item). Re-start GMA in DEV mode. Check that the new menu item loads properly in the map window.

7) Transfer the new XML menu file to server seafloor:

The newly-generated root element menu (e.g. "data_layers_geophysics.xml") needs to be transferred to the server so that it can be tested and included in the public-facing version of GMA. On server seafloor, go into the "/data/mgds/web/app.geomapapp.org/htdocs/gma_menus" directory and make a copy (just in case!) of the existing root element menu. Then, transfer the new version of it from your local machine to this directory.

Note that most of the menus in this directory are no longer used but are kept around for now in case someone is using a really old copy of GMA. At some point the menus that are not called by recent versions of GMA could be moved.

8) Switch GMA into DEV mode, test the new XML file:

In normal operation GMA acesses public-facing menus and content from a remote server which is on the west coast. An internally-looking capability was added to GMA to allow us to test newly-added data files and menus without needing to upload the new content to the public-facing server. That internally-looking mode is called "DEV" mode. When in DEV mode, GMA ignores the remote server and pulls content from the (internal) server seafloor.

To enter DEV mode, go into File > Preferences > Server Options. Select the app-dev server from the drop-down menu (password ^gma123). (That modifies the .GMA > servers > default_server file to point to the app-dev server.) Go into the .GMA local folder and delete the menus_cache sub-folder. Re-start GMA. The word DEVELOPMENT MODE should be displayed in the top bar. The menus_cache folder reappears and will have been populate from menus pulled from the server seafloor.

In .GMA > menus_cache > menus find the XML menu that was updated. Use find-and-replace to globally change any instance of "app.geomapapp.org" to "app-dev.geomapapp.org" (the global find-and-replace saves time having to search for the newly-added menu item).

Re-start GMA in DEV mode. Check that the new menu item loads properly in the map window.

9) On seafloor, edit the time menu_updated.txt time stamp file:

In normal operation, each time GMA is started, it checks the remote public-facing server to see if the time stamp of the menus is more recent than the time stamp for the local copy of the files. If it is more recent, GMA automatically pulls the new menus from the remote server. That time stamp information is stored in file "/data/mgds/web/app.geomapapp.org/htdocs/gma_menus/menu_updated.txt".

Whenever a change to the menu content has been made, however large or small, the time stamp file must be updated. On server seafloor, use "vi -b" to manually update the date within the time stamp file to today's date. The format of the file is like this: "01/30/2018/11:08"

10) Update the "data_set_news.html" file:

This HTML file brings up a web page that displays a list of newly-added data files. The HTML file is not within the GMA directory structure but is, instead, here:
/data/mgds/web/www.geomapapp.org/htdocs/data_set_news.html
And can be viewed internally here:
http://www-dev.geomapapp.org/data_set_news.html

Once the HMTL file has been rsynched to the remote provider, it will be visible here:
http://www.geomapapp.org/data_set_news.html
(It is linked from the GMA home web page and is a link in the upper left pane.)

11) Request that the new file, menus and news file are rsynched to the commercial provider:

At this point, a new data file has been tested and added to the GMA directory structure, the corresponding menu file has been updated and tested, the time stamp file has been updated, as has been the web page that lists new data files. All of these files need to be transferred to the remote public-facing server, on the west coast. This is done by the system administrator using an rsynch process. The rsynch may take many hours if high-resolution grid with many Z tiles was added to GMA.

To initiate the rsynch process, send a request to the system administrator. A test "dry run" may be done - carefully review the dry run log to check that it contains the new items.

Once the rsynch process has finished, delete your local .GMA folder and re-start GMA. It should open in normal operation mode (not DEV mode). Carefully check that the new content is visible and loads correctly.

12) Appendix: How to view a menu, generate an updated menu

With GMA v3.5.3 the original menu structure of GMA was frozen, the former "Basemaps" and "Datasets" menus were merged into a single "DataLayers" menu, the previous format-based menu groupings was replaced with category-based high-level XML menus, and the menu file content was migrated into an SQL database.

The XML menu files reside in this directory:
/data/mgds/web/app.geomapapp.org/htdocs/gma_menus

There are ten menu categories corresponding to ten menu files: "Geophysics", "Geochemistry", "Oceanography", etc. The menu file names begin with "data_layers_". For example, "data_layers_geophysics.xml". An eleventh menu file, named "data_layers_menu.xml", is at the highest level and calls the ten category-based menus.

Here's an example listing of the menu files:

seafloor% pwd
/data/mgds/web/app.geomapapp.org/htdocs/gma_menus

seafloor% ll data_layers*
-rw-rw-r-- 1 andrewg mgds 505683 Jan 30 14:12 data_layers_bathy_land_topo.xml
-rw-rw-r-- 1 andrewg mgds 29900 Dec 6 2016 data_layers_climatology.xml
-rw-rw-r-- 1 andrewg mgds 48028 Nov 14 17:46 data_layers_cryosphere.xml
-rw-rw-r-- 1 andrewg mgds 34664 Jan 30 11:20 data_layers_geochemistry.xml
-rw-rw-r-- 1 andrewg mgds 235210 Aug 15 11:50 data_layers_geology.xml
-rw-rw-r-- 1 andrewg mgds 158322 Jan 26 15:33 data_layers_geophysics.xml
-rw-rw-r-- 1 andrewg mgds   1088 May 31 2016 data_layers_human_impact.xml
-rw-rw-r-- 1 samantha mgds   1443 Sep 1 2016 data_layers_menu.xml
-rw-rw-r-- 1 andrewg mgds 29868 Apr 27 2017 data_layers_oceanography.xml
-rw-rw-r-- 1 samantha mgds 32931 Oct 20 2015 data_layers_planets_moon.xml
-rw-rw-r-- 1 andrewg mgds 10909 Oct 20 2015 data_layers_remote_sensing.xml

The menu components are in the SQL database in the "gma_menu" table. The "gma_menu_map" table allows the menus to be mapped.

A URL-based script called "gma_menu_list.php" is used to display the menu layout in a web browser. That's helpful when rearranging menus or adding new menu items.

Another URL-based script, "gma_menu_list_1.php", is used to extract records from the SQL database tables and build the ten category-based XML files.

Viewing the menus

Use this type of URL to display the menu node UIDs and other details:
http://dev.marine-geo.org/portals/internal/gma_menu_list.php?node_uid=20474&format=html

In this URL, node_uid=20474 is the uppermost DataLayers menu which takes a minute to load. To view other menus, change the node_uid value in the URL. Example: 20463 = Geophysics, 20480 = Geochemistry, 20491 = Geology.

URL options:

- By default, all menus in all projections are listed. Select a particular GMA map view projection by adding "&projection=x" where x is one of g,m,n,s and "g" specifies Virtual Ocean menus; "m" specifies Mercator-only projection; "n" is for North Polar projection; "s" is for South Polar projection.

- Show just the menu names by setting "format=min".

- Menu items displayed in red text are excluded when the XML files are built but are displayed in the web page for completeness. Menu items are turned off in the gma_menu table by setting gma_menu.is_displayed=FALSE. That allows us to, say, temporarily remove something from the menus if its URL becomes invalid.

List of URLs for the menus:

DataLayers:
http://dev.marine-geo.org/portals/internal/gma_menu_list.php?node_uid=20474&format=html
Bathymetry and Land Topography:
http://dev.marine-geo.org/portals/internal/gma_menu_list.php?node_uid=18452&format=html
Climatology:
http://dev.marine-geo.org/portals/internal/gma_menu_list.php?node_uid=20460&format=html
Geochemistry:
http://dev.marine-geo.org/portals/internal/gma_menu_list.php?node_uid=20480&format=html
Geology:
http://dev.marine-geo.org/portals/internal/gma_menu_list.php?node_uid=20491&format=html
Geophysics:
http://dev.marine-geo.org/portals/internal/gma_menu_list.php?node_uid=20463&format=html
Human Impact:
http://dev.marine-geo.org/portals/internal/gma_menu_list.php?node_uid=19681&format=html
Oceanography:
http://dev.marine-geo.org/portals/internal/gma_menu_list.php?node_uid=20476&format=html
Remote Sensing:
http://dev.marine-geo.org/portals/internal/gma_menu_list.php?node_uid=20477&format=html
Planets and Moon:
http://dev.marine-geo.org/portals/internal/gma_menu_list.php?node_uid=20347&format=html

Focus Sites:
http://dev.marine-geo.org/portals/internal/gma_menu_list.php?node_uid=20523&format=html

Overlays Menu:
http://dev.marine-geo.org/portals/internal/gma_menu_list.php?node_uid=20525&format=html

Updating a menu

John created a scripted URL called "gma_menu_list_1.php" that extracts values from the gma_menu and gma_menu_map tables and builds the corresponding category-based XML files. That XML is displayed ina web page which is saved as the menu. Note that the associated scripted URL called "gma_menu_list.php" only shows how the menus will be displayed in GMA's cascading menu structure - it does not build the underlying XML menu.

As listed above, there is one main menu ("data_layers_menu.xml") which calls the other ten category menus ("data_layers_bathy_land_topo.xml", "data_layers_geophysics.xml", etc).

In order to build an XML menu, we need to know its node_uid value and need to assign it a "rootelement" label. The specified rootelement label is automatically placed inside the XML file. The node_uids and suggested rootelement labels are as follows:

node_uid=18452&rootelement=Data_Layers_Bathymetry_and_Land_Topography_Menu
node_uid=20460&rootelement=Data_Layers_Climatology_Menu
node_uid=20475&rootelement=Data_Layers_Cryosphere_Menu
node_uid=20480&rootelement=Data_Layers_Geochemistry_Menu
node_uid=20491&rootelement=Data_Layers_Geology_Menu
node_uid=20463&rootelement=Data_Layers_Geophysics_Menu
node_uid=19681&rootelement=Data_Layers_Human_Impact_Menu
node_uid=20476&rootelement=Data_Layers_Oceanography_Menu
node_uid=20347&rootelement=Data_Layers_Planets_and_Moon_Menu
node_uid=20477&rootelement=Data_Layers_Remote_Sensing_Menu

node_uid=20523&rootelement=Focus_Sites_Menu
(and see special instructions below for creating a new focus_sites_menu.xml file)

node_uid=20525&rootelement=Overlays_Menu
(and see special instructions below for creating a new overlays_menu.xml file)

Using the node_uids and suggested rootelement labels from above, the URLs to build the ten high-level category-based XML menus are below. Included are the associated file names into which the XML is stored (listed here for easier creation of the files). Please the URL into a web browser. When the XML is displayed, save the web page as a file using the corresponding XML file name:

data_layers_bathy_land_topo.xml
http://dev.marine-geo.org/portals/internal/gma_menu_list_1.php?node_uid=18452&rootelement=Data_Layers_Bathymetry_and_Land_Topography_Menu
data_layers_climatology.xml

http://dev.marine-geo.org/portals/internal/gma_menu_list_1.php?node_uid=20460&rootelement=Data_Layers_Climatology_Menu
data_layers_cryosphere.xml
http://dev.marine-geo.org/portals/internal/gma_menu_list_1.php?node_uid=20475&rootelement=Data_Layers_Cryosphere_Menu
data_layers_geochemistry.xml
http://dev.marine-geo.org/portals/internal/gma_menu_list_1.php?node_uid=20480&rootelement=Data_Layers_Geochemistry_Menu
data_layers_geology.xml
http://dev.marine-geo.org/portals/internal/gma_menu_list_1.php?node_uid=20491&rootelement=Data_Layers_Geology_Menu
data_layers_geophysics.xml
http://dev.marine-geo.org/portals/internal/gma_menu_list_1.php?node_uid=20463&rootelement=Data_Layers_Geophysics_Menu
data_layers_human_impact.xml
http://dev.marine-geo.org/portals/internal/gma_menu_list_1.php?node_uid=19681&rootelement=Data_Layers_Human_Impact_Menu
data_layers_oceanography.xml
http://dev.marine-geo.org/portals/internal/gma_menu_list_1.php?node_uid=20476&rootelement=Data_Layers_Oceanography_Menu
data_layers_planets_moon.xml
http://dev.marine-geo.org/portals/internal/gma_menu_list_1.php?node_uid=20347&rootelement=Data_Layers_Planets_and_Moon_Menu
data_layers_remote_sensing.xml
http://dev.marine-geo.org/portals/internal/gma_menu_list_1.php?node_uid=20477&rootelement=Data_Layers_Remote_Sensing_Menu

focus_sites_menu.xml (see special instructions below)
http://dev.marine-geo.org/portals/internal/gma_menu_list_1.php?node_uid=20523&rootelement=Focus_Sites_Menu

overlays_menu.xml (see special instructions below)

http://dev.marine-geo.org/portals/internal/gma_menu_list_1.php?node_uid=20525&rootelement=Overlays_Menu

The XML generated using the script needs to be copied from the web browser and placed into an (ASCII) XML text file, as described below.

Place each URL into a browser. When the XML loads, move the mouse into the browser window and right-click to Save Page As. The default file name for saving comes up as "gma_menu_list_1.php". Rename the file as, for example, "data_layers_geophysics.xml". The saved file is currently stored on the local machine. Before sending it over to the server, copy the file into the .GMA > menus_cache > menus directory and run GMA in DEV mode to check that the menu and its contents are correct (may need to add "-dev" to any URLs to see new content in DEV mode).

Once all the files have been checked, move or temporarily re-name each menu file on the server to get it out of the way then put the new menu there. The menus are stored here: /turf/geoinformatics/web/app.geomapapp.org/htdocs/gma_menus

Update the "menu_updated.txt" file (vi -b menu_updated.txt) to reflect today's date.

Then, when GMA is run in DEV mode, the new menus should be pulled in from the server.

When the menu files and associated data files are next rsynched to the commercial provider, the new menus should become available in regular (non-DEV) GMA mode.

Special instructions for focus_sites_menu.xml:

Since the menus are now driven from the database tables, it immediately becomes possible to generate other menus like the "Focus Sites" menu such that we no longer have to pull dozens of small XML files from the server - we can pull just one new composite file containing all of the Focus Site content. All we need is the node_uid for the highest level within the Focus Site menu structure, and a rootelement label. (For the Focus Site menu, we set node_uid=20523&rootelement=Focus_Sites_Menu.) However, the menu-generating script does not yet know about the Searchable Menus Tear-Off function, so we must for now add it manually. Once the script has generated the XML and has been saved as "focus_sites_menu.xml", open the file and insert the following text block directly beneath the "_LT_Focus_Sites_Menu_GT_" tag or the "_LT_Overlays_Menu_GT_" (which is likely on line 2) (NOTE: Drupal does not display less-than or greater-than signs except when in edit mode, so was not properly displaying the following block of XML code. To get around that, we instead use "_LT_" to indicate a less-than sign and "_GT_" to indicate a greater-than sign. That way, all of the code is at least displayed in non-edit mode. Also, Drupal does not correctly show tab spaces except when in edit mode, so manually tab over the four lines comprising the interior contents of the "label" code). Note also that this text block with correct formatting is in the attached text file and displayed in the attached JPEG:

```
_LT_layer
    name="Click For Searchable Tear-Off Menus"
        command="open_search_tree"
        separator_bar="below"
        proj="sngm"_GT_
    _LT_/layer_GT_
```

Then, re-save the file and transfer it to the server, and check that it looks good in DEV mode.

Special instructions for overlays_menu.xml:

Since the menus are now driven from the database tables, it immediately becomes possible to generate other menus like the "Overlays" menu such that we no longer have to pull dozens of small XML files from the server - we can pull just one new composite file containing all of the Overlays content. All we need is the node_uid for the highest level within the Overlays menu structure, and a rootelement label. (For the Overlays menu, we set node_uid=20525&rootelement=Overlays_Menu.) However, the menu-generating script does not yet know about the Searchable Menus Tear-Off function or about the tick boxes in the Overlays menu, so we must for now add those bits manually. Once the script has generated the XML and has been saved as "overlays_menu.xml", open the file and replace the top 8 lines with the lines in the attached text file.

- See attached overlays_header.txt file.

Then, re-save the file and transfer it to the server, and check that it looks good in DEV mode.

If lots of new menu items are being added, generate some INSERT commands to add the items instead of manually editing the gma_menu and gma_menu_map tables. Example INSERT command pair:

```
INSERT INTO gma_menu (name,data_type,projection,command,units,info_href,url,remote,dms_project) VALUES ('Alaska-Aleutians','Grid','0100','shape_cmd','m','http://dx.doi.org/10.1002/2014GC005684','http://app.geomapapp.org/data/datalayers/geophysics/lithospheric_plates/residual_anomalies/Bassett_Watts_grids/spectral_average_residual_gravity/Aleutians/Residual_gravity_Aleutians.shp','f','MGG');

INSERT INTO gma_menu_map (node_uid,parent_node_uid,dms_project,item_order) VALUES ('20948','20967','MGG','10');
```

Another example of INSERT commands, this time for making new menu categories:

INSERT INTO gma_menu (name,projection,dms_project) VALUES ('Residual Bathymetry (Bassett and Watts, 2015)','0100','MGG');
INSERT INTO gma_menu (name,projection,dms_project) VALUES ('Residual Gravity (Bassett and Watts, 2015)','0100','MGG');

After the menus have been updated and tested, remember to update:

a) The menu_updated.txt file:
/data/mgds/web/app.geomapapp.org/htdocs/gma_menus/menu_updated.txt
(use "vi -b" to edit it).

b) The Recently-Added Data Sets file:
/data/mgds/web/www.geomapapp.org/htdocs/data_set_news.html
Check it at:
http://www-dev.geomapapp.org/data_set_news.html
Once synch-ed, it is at:
http://www.geomapapp.org/data_set_news.html