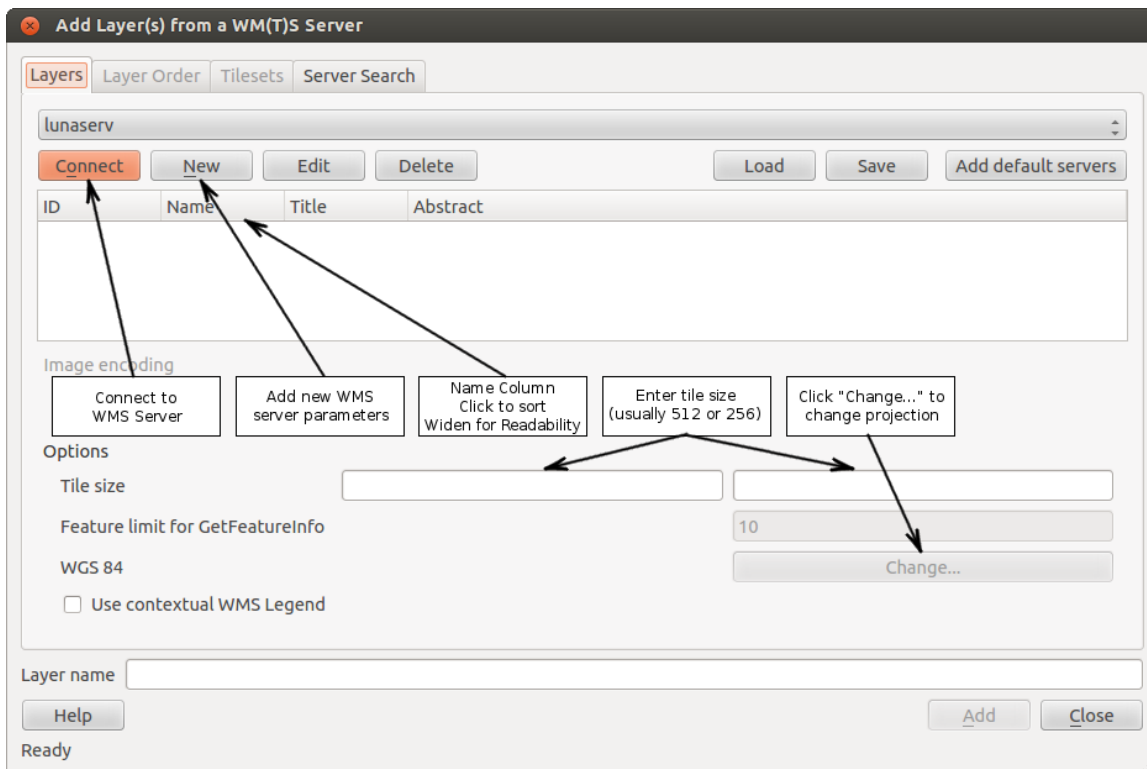# Getting Started with Lunaserv WMS and QGIS

This tutorial is for QGIS versions 2.2 and later.

1. Start QGIS. This can be done either by locating QGIS Desktop in your workstation startup menu, or running the `qgis` command from a command prompt.
2. Using the menu bar at the top of the window, click on "Layer→Add Layer→Add WMS/WMTS Layer". Alternatively, click on the "Add WMS/WMTS Layer" icon on the left side of the page.

3. In the "Layers" tab of the resulting pop-up window:

    a. Click on the "New" button and, in the resulting pop-up window:

        i.In the "Name" field, give a name to the connection, for example "Lunaserv".
        ii.In the URL field type: "http://webmap.lroc.asu.edu/" (without the quotes).
        iii.Click on the "OK" button at the bottom right of the pop-up window.

            Note that this step only needs to be performed the first time, after adding a WMS server, it will be available for future QGIS projects as well.

    b. Click on the "Connect" button.

c. Select the desired layer from the list. For WMS servers that offer many layers, it is often easier to click on the "Name" or "Title" headings to sort the list by that column. For this tutorial, select "luna_wac_global".

d. Tiling can improve performance when interacting with a WMS server. When using a Lunaserv WMS server, a tile size of 512x512 is recommended; although 256x256 is the most common tile size. Type the tile dimensions (X, Y) in the tile size fields below the layer list.

e. When adding the first layer, it is important to decide what projection best meets the project requirements. Lunaserv will advertise only the projections that are most suitable for a given layer. The following steps will select "Moon 2000" (Simple Cylindrical) as an example projection:

 i. Click the "Change..." button at the bottom right corner of the "Layers" tab.
 ii. In the resulting pop-up window, select "Moon 2000".
 iii. Click the "OK" button in the lower right corner of the pop-up window.

f. Click the "Add" button in the lower right of the "Add Layers" pop-up window.

g. Click the "Close" button in the lower right of the "Add Layers" pop-up window.

4. The selected layer should now be visible in the chosen projection. QGIS is now ready for GIS workflows using the WMS basemap.

5. At this point, additional layers can be added, either from disk or from WMS by repeating step 3. To experiment, try "luna_nomenclature", or any of the "luna_pds_rdr_*" layers.

> *Note that multiple layers can be added at one time by pressing and holding the "control" key on the keyboard while clicking desired layers. But, when multiple layers are selected, they will be combined into a single layer and will appear as such in the QGIS "Layers" window, and the multiple layers that have been combined into a single layer can only be turned on and off as a group. If the combined layers need to be turned on and off independently, they must be added individually.*

6. To make measurements and distance calculations select "Project → Project Properties" from the main menu. On the resulting pop-up window:

a. Click on the CRS tab on the left side of the page.

b. Check the "Enable 'on the fly' CRS transformation" checkbox near the top of the page.

c. Now Select the "General" tab on the left side of the page.

d. Verify that the "Ellipsoid" selection box under the "Measure Tool" heading is set to "Moon2000".

e. Verify that the "Canvas Units" are set to the desired units and "Precision" is set properly for this project.

For more information and tutorials about general GIS work in QGIS, visit:
http://www.qgistutorials.com/en/