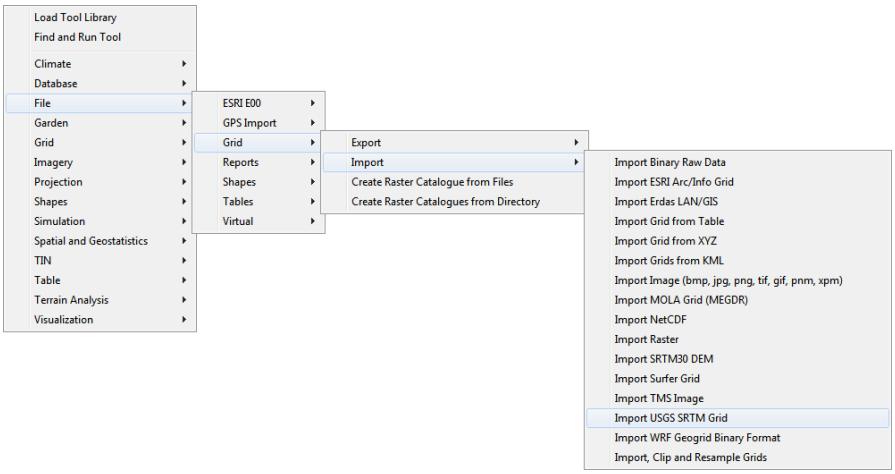
B Note on the use of SAGA GIS

The WAsP Map Editor now supports direct import of SRTM elevation and coastline data; therefore it is not necessary to use SAGA GIS (or similar software) for this task. However, this GIS tool may still come in handy for processing other elevation data sets in grid format. This section contains a brief guide to making such vector maps, using the SRTM data as an example.

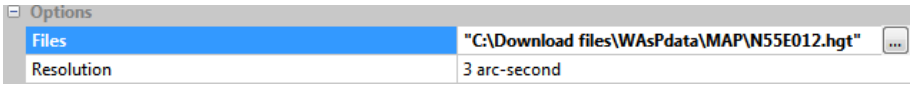
SAGA (System for Automated Geo-scientific Analyses) is a GIS system developed by University of Göttingen (Conrad *et al.*, 2015); the home page is www.saga-gis.org. SAGA GIS can be used to make WAsP height contour (vector) maps from different kinds of gridded (raster) data. SAGA is a Free Open Source Software (FOSS).

Processing an SRTM grid for WAsP use

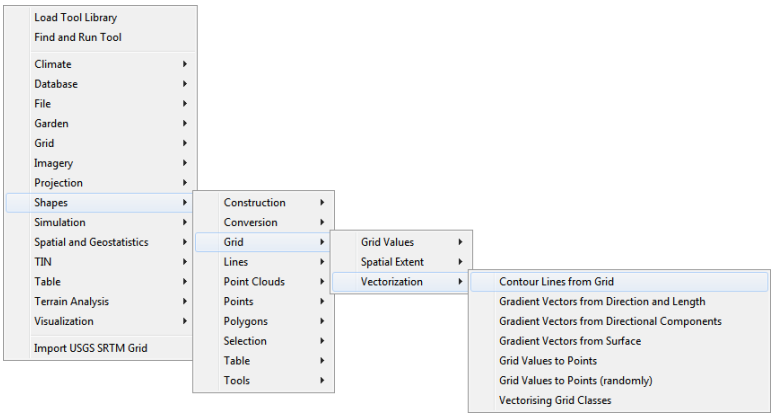
SRTM elevation data can be downloaded from dds.cr.usgs.gov/srtm/ (version 2.1) or e4ftl01.cr.usgs.gov/SRTM/ (version 3, requires login). Once you have downloaded and unzipped a 1°×1° tile, import the grid from the **Geoprocessing** menu:



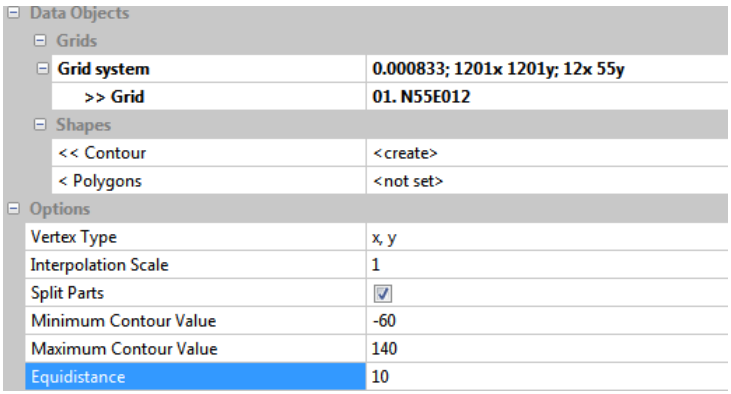
Left-click in the white field next to **Files** and enter or select the grid file name (*.hgt):



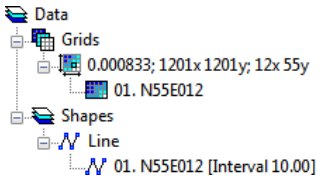
Make the height contours from the **Geoprocessing** menu, selecting the range and height contour interval:



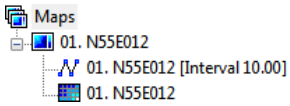
Set the grid system and contour interval in the **Contour Lines from Grid** window:



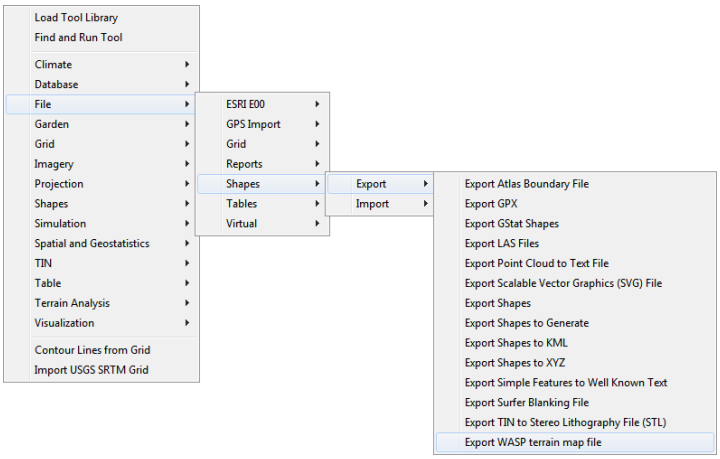
The **Data** workspace (**Tree** view) should now look something like this:



where the **Grids** section contains the SRTM grid and the **Shapes** section the contour lines. Double-click the grid, e.g. "01. N55E012", to display it – same goes for the Shape "01. N55E012". The **Maps** workspace could look something like this:



Finally, export the contours to a WAsP terrain map file from the **Geoprocessing** menu:

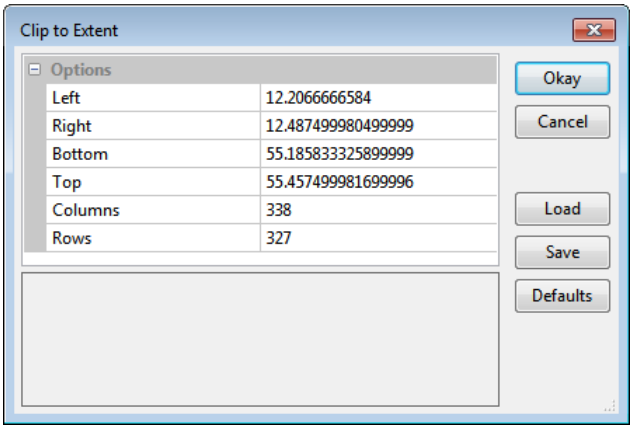


Each SRTM3 grid file covers a 1°×1° tile and contains 1201×1201 cells; an SRTM1 grid file also covers a 1°×1° tile, but contains 3601×3601 cells. This is sometimes too much information too process or too large an area. The imported SRTM grid can be trimmed from the **Geoprocessing** menu:

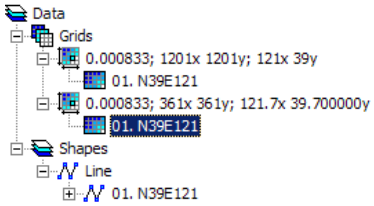
Grid > Grid System > Clip Grids [interactive]

First, show the grid in a **Map** window. Next, start the **Clip Grids [interactive]** tool, select the grid system and grid and click **Okay**. Next, select the **Action** pointer (the black arrow) in the toolbar:

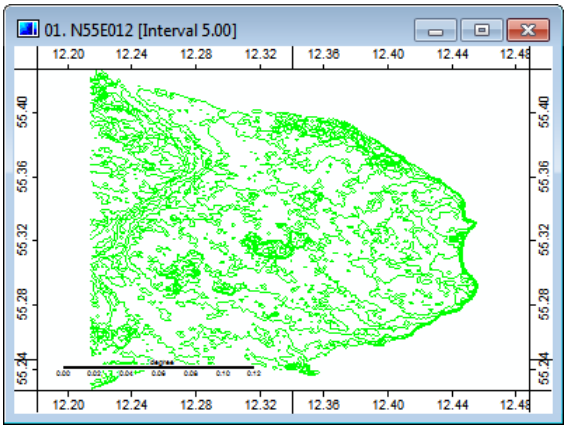
In the **Map** window, drag out (left click and drag) the approximate area for the sub-grid that you would like to extract. A **Clip to Extent** window now pops up:



The sub-grid configuration may be edited further here. Press **Okay** to continue. The **Data** workspace should now look something like this:



The new (sub)grid can be contoured and exported as a WAsP map file as described above.



The coordinates of the exported WAsP map file are geographical latitude and longitude; these must be transformed to a metric coordinate system in the WAsP Map Editor:

1. **Open** the map in the Map Editor.
2. Click **Yes** to switch to geographic Lat-Lon coordinate system, and then **Ok** twice.
3. Next, select **Tools** > **Transform** > **Projection**.
4. Select **Global Projections** > **UTM projection** for the Projection Type.
5. Leave Datum as WGS 1984 (or change to other) global/local datum.
6. Press **Ok** to transform the map coordinates.