#### QGIS / GRASS: An Introduction to Raster Functions ACMLA /CARTO June 2011

 $this .pdf is in colour at: { { http://library.uvic.ca/site/staff/danielbm/documents/AcmlaCartoRasterHandout5.pdf } \\$ 

#### Step I. QGIS/GRASS Raster functions set-up:

A) right-click in Toolbar area; Select: Layers; Manage Layers; Map Navigation; Attributes; (GRASS may not appear)



De-select other tool bars. -Move the tool bars to match the screen shot (with the exception of the GRASS tool bar)

B) if "Raster" appears in the menu bar, this step is not necessary; go to C)
1. manage Plug-ins
2. Filter for GDAL & select (Georeferencer is another plug-in)



("Raster" will now appear in menu bar if it was not there before.)

## C) Add scale bar1. manage Plug-ins2. Filter for Scale Bar & select

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We may have to "fetch Python Plug-ins"; (IF you get this screen; do as suggested); otherwise ignore.



(Ask for assistance anytime!)

#### **II. Merging Raster files**

A) 1. select add Raster & add 021L14\_0200\_deme.dem & 021L14\_0200\_demw.dem (navigate to D:\QGIS\_Workshop\...)

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**B**) Zoom to full extent: (note the "line" between rasters)







D) 1. select the 2 DEMs to merge (from drive" D:\QGIS\_Workshop\...)"): 2. Ctrl-Click to select both of them



-accept the defaults (I've experimented and think the defaults work best) ("Help" from GDAL is available)

# (II. Merging Raster files, con't)E) 1. select output file to Title & Save the merged DEMs as... 2. "Merge21L14ew.tif" (GeoTiff) 3. Load onto canvas

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F) Ctrl-Click to select & then right-click to remove the 2 original unmerged DEM files



#### **III.** Assign Projection to raster file



B) 1. click Select to assign projection to file....2. "Merge21L14ewDEM.tif" just created

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(III. Assign Projection to raster file, con't)C) 1. click Select for Projected Coordinate System 2. Type "26919" & click "find" for NAD83 UTM zone19N (for Que)

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-You may be asked to click "OK" and "Close" again; do so. (EPSG authority IDs are very handy at times.)

**D**) right-click to remove unprojected file "Merge21L14ewDEM"...and...

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(III. Assign Projection to raster file, con't)E) ...1. click on add raster & 2. select projected file "Merge21L14ewDEM 1" to view...

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### **F**) ... the projected file "21L14ewDEM\_1"



-Note the Scale Bar units; we will set this to metres in a moment. -Also, note the "shadow"; we will get rid of it in a few slides. (III. Assign Projection to raster file, con't)G)1. select Project Properties 2.Select General tab 3. select Metres

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(because file "Merge21L14ewDEM\_1" is in metres NAD83 UTM zone 19N)



**H**) -Scale Bar is now in metres.

...Let's get rid of the "shadow"...

#### IV. Clipping a Raster A) select Raster - Clipper



**B**) use cross-hair (cursor) to select a (large) extent (area) of the canvas (excluding the black "outside shadow")



(-Grass-GIS can clip irregular shapes but we will not do it.)





**D**) 1. load the clipped file "Clip21L14ewDEM.tif"





F) right-click to remove "Merge21L14ewDEM\_1" from layers and Clip21L14ewDEM remains



#### V. Shaded Relief (if time permits)

A) install Shaded Relief plug-in

1. select Plugins tak	2. Type in	"Shaded Relief"	in Filter 3	install plug-in
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#### B) Shaded Relief

1. Plug-ins - Shaded Relief (accept defaults) 2. OK 3. save the file "ShadedRelief21L14ew" to a directory folder



(at another time, could change default settings...)

#### V. Shaded Relief of "21L14ew"



VI. Contours from Raster: (if time permits)

A) 1. select Raster–Contours 2. Input raster "21L14ewDEM" 3. Create directory folder for shapefiles 4. decide Contour intervals



-Also decide whether to click Attribute name for the Attribute table to include contour intervals. -#3>You MUST create directory folder for the (various components of shapefiles) -No screen shot: what do think of your contour lines?

#### VII. GRASS functions via QGIS (take away homework?!) A) 1. manage Plug-ins 2. Filter for GRASS & select

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#### **B**) need GRASS (tree) directory

1. click new Mapset 2. Browse to where to create...3. new "GrassDBase" directory folder 4. Name it GrassDBase



(-could name it anything else...)

<sup>(</sup>GRASS layer may be already selected; click OK)

C) 1. create new GRASS Location: "Location 21L14"



### (VII. GRASS functions via QGIS: con't))

**D**) 1. assign Projection to "Location21L14" just created by typing "26919" into search (for NAD83 UTM Zone19N)

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E) set Region: 1. Set current QGIS extent (which is 21L14)



(could set Canada as the region as well)

(VII. GRASS functions via QGIS, con't)) F) 1. create Mapset: "Mapset21L14"



G) new "Mapset21L14" finished...and now...



#### (VII. GRASS functions via QGIS)

H) 1.click open GRASS tools 2. File management - Import into Grass - Import Raster into GRASS form QGIS--click on r.in.gdal.qgis - import loaded raster



i) 1. Import loaded raster ("Clip21L14ewDEM" raster already in QGIS) & create output name: "Grass21L14ewDEM"

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VIII. Manage map colours via GRASS
A) 1. click open GRASS tools 2. Raster – Develop map – Manage map colors - Set raster color from setted tables

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(VIII. Manage map colours via GRASS, con't) B) 1. input raster map "Grass21L14ewDEM": Type of colour table: use drop-down for Histogram equalized grey scale

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(-many other choices possible)

C) Grass21L14ewDEM": Histogram equalized grey scale



Many, many other Raster tools are available in GRASS including creating a ViewShed using "Line Of Sight". (I have a handout if so desired)