# Exercise 6 – Reprojecting and Mosaicing MODIS HDF Data

Most MODIS products are in an Integerized Sinusoidal projection (Versions 1 – 3). However, version 4 products are in a sinusoidal projection. Either way, these can be reprojected to a variety of more common and useful projections using the MODIS Reprojection Tool (MRT). The MRT is excellent and free software that can be found at http://edcdaac.usgs.gov/landdaac/tools/modis/index.asp

This exercise assumes you have downloaded and installed the MRT correctly.
1.) Click the ModisTool Icon on the desktop to start MRT and load all MOD15 data files of day 2002-225 (Figure 1).
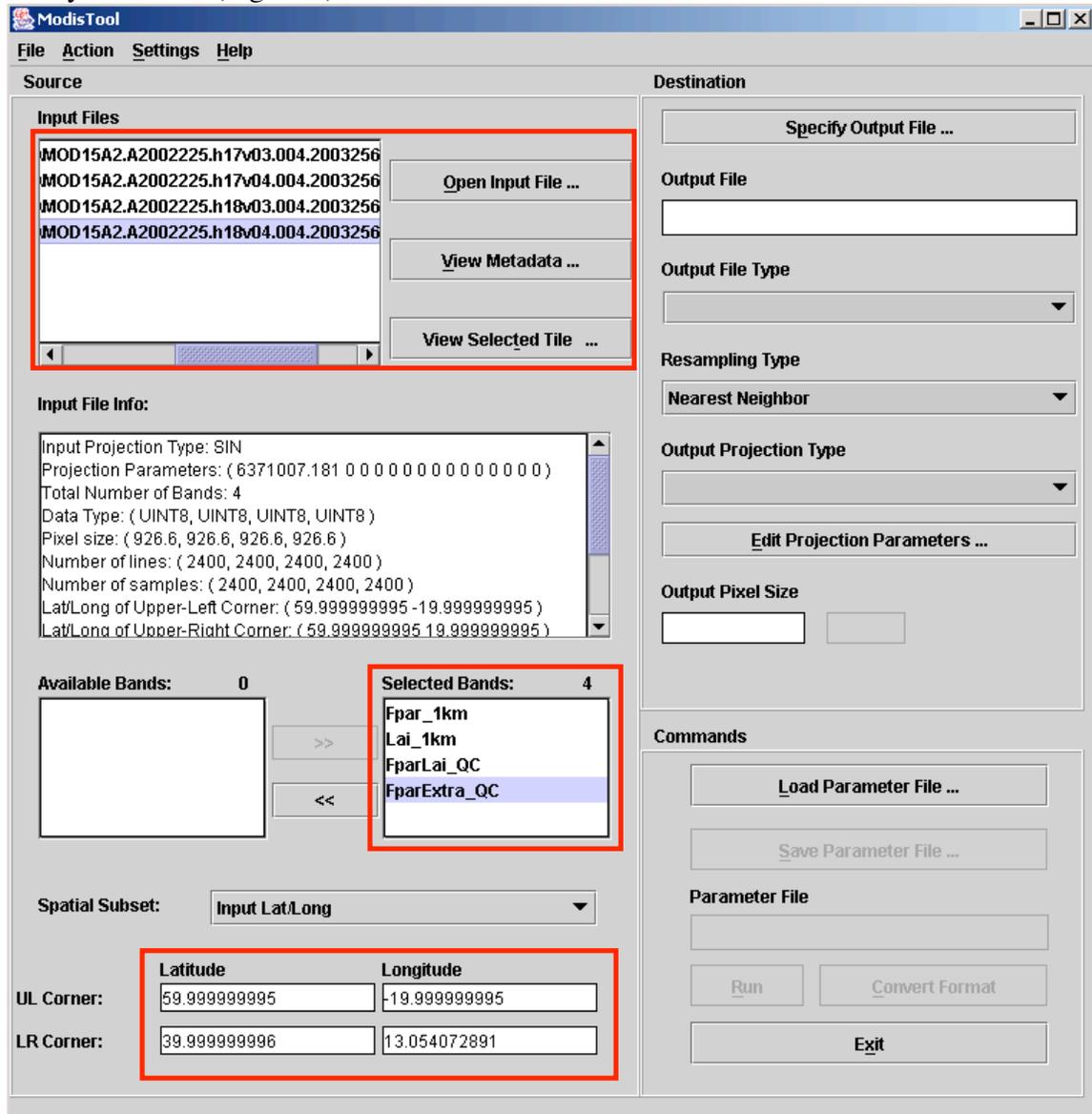


*Figure 1. The MRT graphical user interface (ModisTool) after loading a set of HDF files.*

The MRT automatically recognizes the projection parameters, the geographical location of the MOD15 tiles and the actual image data layers available for reprojection and mosaicing.

2.) Choose the bands desired for reprojection and specify an output file and output file type (Figure 2).

3.) Specify the resampling type and output pixel size . Select Albers Equal Area as the output projection type and specify the projection parameters (Figure 2).
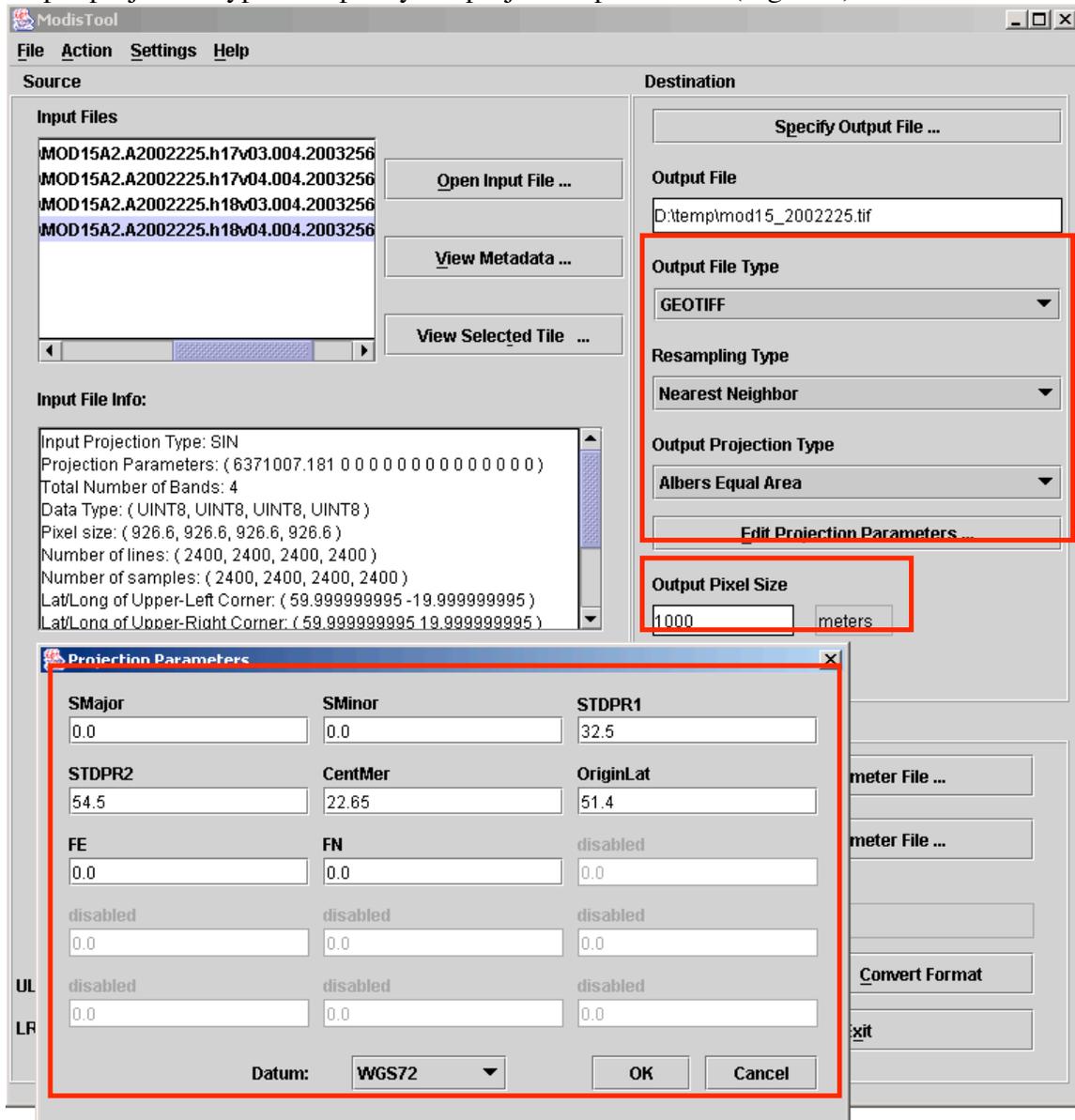


*Figure 2. Setting MRT output file, pixel size and projection parameters*

4.) You may save the parameter file for later use in MRT.

5.) Click 'Run' to start processing. A window will open that will show the processing log and will keep you informed of the progress. This will take a couple of minutes.

6.) Apply the same steps to the MOD15 data of 2003-225

**Batch processing with MRT**:
The ModisTool provided by MRT is an excellent and user-friendly tool to process MODIS data. However, the GUI interface is not so suitable for processing a large number of files and selecting the input and output files manually becomes a tedious process.

This can be easily solved by using MRT on the commandline. The ModisTool is in fact a GUI that calls the underlying commandline programs 'mrtmosaic' and 'resample'. These two programs can also be called manually and a simple shell script can be used to automatically process all files in a directory. For example, the following BASH script processes (mosaicing and reprojecting) all the HDF files in the MOD15 directory of the CDROM to GeoTIFF files.

```bash
#!/bin/bash
# Modify the line above to the location of your BASH interpreter.

# BASH is an open source command line interpreter that is available
# for all UNIX platforms, LINUX, BSD and Mac OS X.
# Note that for running this script on Windows, you need to install
# a UNIX-environment on Windows such as CygWin (www.cygwin.com).

# Make a list of dates for processing
DATELIST="2002225 2003225"

#Loop through the number of dates
for DATE in $DATELIST
do
        # Collect all MOD15 HDF files for a specific date
        HDFFILES=$(ls mod15a2.a$DATE.*.hdf)
        # Write these to a text file
        echo $HDFFILES > mosaicinput.txt
        # Run mrt mosaic and write output to HDF file (extension .hdf!)
        mrtmosaic -i mosaicinput.txt -o mosaic_tmp.hdf
        # Call resample. Values for projection parameters are derived
        # from the prm-file that was obtained using ModisTool. Input and
        # output are specified using the -i and -o options.
        resample -p mod15_predef.prm -i mosaic_tmp.hdf -o mod15_$DATE.tif
done

exit 0
```

**End of Exercise 6**