

Exercises using MODIS 250 m data

1 Command sequence for *wam_rgb_modis*

Here is the command sequence for generating RGB images. More details can be found below in the full document. We assume that you use *C:\tmp* as your working directory. If there is no *C:\tmp* folder then create it. If you use another working directory you need to modify the instructions accordingly. If you plan to do more than one example, use a directory name like *2003_104*, i.e. specify the year and the Julian day.

- Select your working directory (here assumed to be *C:\tmp*) and make sure that the *Wimsoft* folder is in your path. Copy the datasets that you like to process to your working directory (e.g. from the DVD or network drive to *C:\tmp*).
- Open command window, e.g. with *Start-Run* type *cmd*
- Change directory to *C:\tmp*: `cd C:\tmp`
- Test that the WIM/WAM executable programs are accessible; type a name of any WIM/WAM executable, e.g. *wam_rgb_modis*. You should see the command syntax. If not then the path was not set correctly and you need to fix that now.
- Uncompress the data files with the *bzip2* utility, type *bzip2 -d *.bz2*
- Edit the respective *crefl* control file with Notepad or another editor; change the location of the source files and the output file to be your actual directory (e.g. *C:\tmp*). Remember to use double backslashes (\\) in the pathnames.
- Perform atmospheric correction for the sets of bands, separately for each resolution (1 km, Half km, Quarter km). Edit the control file (*log_crefl*.txt*) with an editor to specify the resolution which you want to run. Specify with “1” to run the resolution and with “0” not to run that resolution. Do it separately for each resolution, i.e. ONLY ONE RESOLUTION AT A TIME! Run *crefl* three times: for 1 km, for 500 m (H) and for 250 m (Q), e.g.

`crefl log_crefl_MY_2003_104_0620.txt`

Here *log_crefl_MY_2003_104_0620.txt* is the name of your control file. It is not really necessary to run *crefl* with 1 km resolution to get 250 m RGB data but it is useful to get a small RGB image as an overview.

- Note: the following operation takes long time to execute and is not needed if you don't need accurate geo-location. Create high-resolution geo-location:

`zoom_modis_lat_lon MYD03*.hdf`

For MODIS Terra you would use *MOD03*.hdf*. This command will produce corresponding **.Lat_Lon.hdf* files for each matching *MOD03* or *MYD03* file.

- Create default full extent 1-km RGB image(s) by typing:

```
wam_rgb_modis *.1km_cref.hdf
```

It may take several minutes (or more) to finish. After it is done, you can view the 1-km JPEG image or load the 1-km RGB HDF image into WIM. This is the basic form of running *wam_rgb_modis* that uses all default options. To see all the options type the name of the command (*wam_rgb_modis*) without arguments. For example, the default option is to use the full range of 0 to 255 for each of the R, G and B bands. The full range is good for bright land features. To highlight less bright ocean features you can stretch the RGB ranges and specify different ranges depending on what features you want to highlight. Also, you can save all the bands and experiment with WIM to find the best color ranges.

- Create a new 1-km RGB image(s) by typing:

```
wam_rgb_modis *.1km_cref.hdf 0 150 0 150 0 150 yes
```

This specifies the color range from 0 to 150 for the Red, Green and Blue components. It also specifies (“yes”) to save the 3-band file that you can use to tune the color range the next step. After it is finished, load the 3 images from **_3bands.hdf* file into WIM and find the best color range for each band with *Examine – RGB Image*. Use the MOD03 or MYD03 file for geo-location. Make sure that you load the correct bands for the R, G and B components.

- You can now create the full extent 250-m RGB image(s) by typing:

```
wam_rgb_modis *.250m_cref.hdf 0 150 0 150 0 150
```

We assume here that you want to use the color range from 0 to 150 for the three components. It may take several minutes (or more) to finish. After it is done, load the image into WIM and view it. To highlight less bright ocean features you can stretch the RGB ranges uniformly from 0 to 130 and use, for example, *wam_rgb_modis *.250m_cref.hdf 0 130 0 130 0 130*

- To interactively find the best RGB color stretch save the three individual bands (*yes* argument after the three sets of limits), load them to WIM and create RGB interactively with *Examine-RGB Image*. It is faster to first select a rectangular area and do RGB operation for that area first before doing it for the whole image. You can use the best combination for the other images.
- When studying a certain feature or area you will probably want to have multiple RGB images of the same area and in the same projection. You need to create a target projection file and then all the RGB images can be mapped to the projection in that file. For example,

```
wam_rgb_modis *.250m_cref.hdf 0 130 0 130 0 130 no target.hdf
```

will not save the individual bands (*no* option instead of *yes*) but will map the RGB image to the projection in *target.hdf*. Of course, you need to have a target projection file.