

HDFLook

Some basic instructions on the functionality of the HDFLook software.

HDFLook

1. If you are using a windows machine start cygwin (you should have an icon somewhere on the desktop to do this.)
2. In the window that opens type
export HDFLOOKMAPS=/usr/local/Maps and hit return
export HDFLOOKTMP=/usr/tmp “startx &” and hit return
3. In the new window which opens start the software by typing:
HDFLook
4. Whenever you attempt to open a new window you will see an outline of the window on your screen. Click on your screen to place the outline and fully open the window.

Note: If the windows are too large to see the “Exit” button at the bottom of the window exit the program by closing the window. You may have to restart cygwin and repeat the above steps but use the following command to start HDFLook.

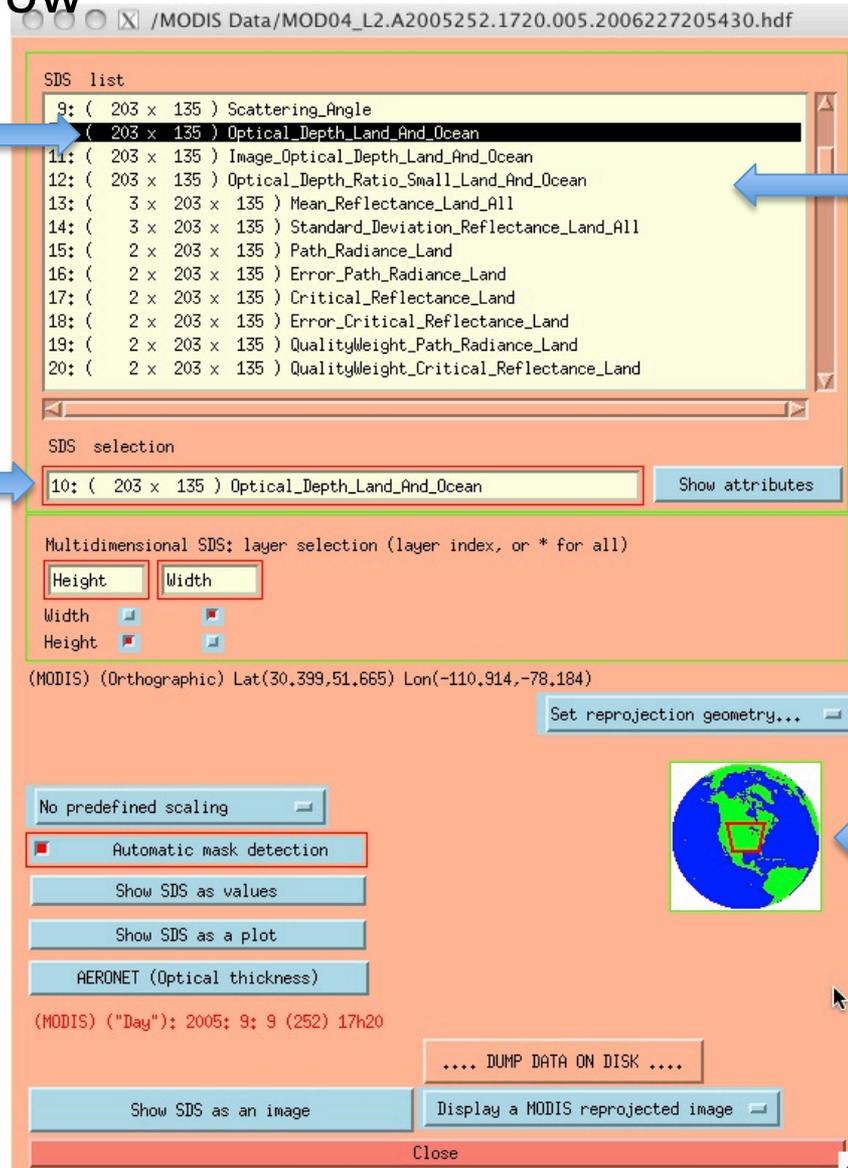
HDFLook –z 80 (80 is just an example
you can use any % size tha works)

HDF_read_files window
will open when you start the software.

Use the buttons near the top
or type the directory you
want in the “Directory” window
to navigate to your file location.



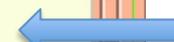
Parameter Selection and Control Window



Parameter Dimensions



Parameter Names



Dimensions and name of selected parameter



Location of selected file



Show Attributes!!!!!!

The screenshot shows the MODIS Data browser interface. At the top, the file path is `/MODIS Data/MOD04_L2.A2005252.1720.005.2006227205430.hdf`. Below this is a list of SDS (Secondary Data Sets) with the following entries:

- 9: (203 x 135) Scattering_Angle
- 10: (203 x 135) Optical_Depth_Land_And_Ocean
- 11: (203 x 135) Image_Optical_Depth_Land_And_Ocean
- 12: (203 x 135) Optical_Depth_Ratio_Small_Land_And_Ocean
- 13: (3 x 203 x 135) Mean_Reflectance_Land_All
- 14: (3 x 203 x 135) Standard_Deviation_Reflectance_Land_All
- 15: (2 x 203 x 135) Path_Radiance_Land
- 16: (2 x 203 x 135) Error_Path_Radiance_Land
- 17: (2 x 203 x 135) Critical_Reflectance_Land
- 18: (2 x 203 x 135) Error_Critical_Reflectance_Land
- 19: (2 x 203 x 135) QualityWeight_Path_Radiance_Land
- 20: (2 x 203 x 135) QualityWeight_Critical_Reflectance_Land

The 'SDS selection' section shows '10: (203 x 135) Optical_Depth_Land_And_Ocean' selected. A red box highlights the 'Show attributes' button. Below this, there are options for 'Multidimensional SDS: layer selection (layer index, or * for all)', 'Height', 'Width', and 'Automatic mask detection' (checked). A globe icon is visible. At the bottom, there are buttons for 'Show SDS as an image' and 'Display a MODIS reprojected image'.

To learn more about the selected parameter
Click “Show Attributes”

This window will open with a description
of the selected parameter

The screenshot shows the 'HDF_attributes(10: Optical_Depth_Land_And_Ocean)' window. It displays the following information:

Set no 9: Rank: 2, 203 x 135
Data set name: 'Optical_Depth_Land_And_Ocean'
Data type: 16-bit integer

SDS attributes

- Number of attributes: 10
- long_name: AOT at 0.55 micron for both ocean (best) and land (corrected) with best quality data(Quality flag=3)
- units: None
- scale_factor: 0.001
- add_offset: 0
- Parameter_Type: Output
- Cell_Across_Swath_Sampling: 5, 1345, 10
- Cell_Along_Swath_Sampling: 5, 2025, 10
- Geolocation_Pointer: Internal geolocation arrays
- _FillValue: -9999
- valid_range: -100, 5000

Global attributes: 8

- HDFEOSVersion: HDFEOS_V2.9GROUP=SwathStructure
- GROUP=SWATH_1
- SwathName="mod04"
- GROUP=Dimension
- OBJECT=Dimension_1
- DimensionName="Cell_Along_Swath"
- Size=203

Two Different Display Functionalities

SDS list

- 9: (203 x 135) Scattering_Angle
- 10: (203 x 135) Optical_Depth_Land_And_Ocean
- 11: (203 x 135) Image_Optical_Depth_Land_And_Ocean
- 12: (203 x 135) Optical_Depth_Ratio_Small_Land_And_Ocean
- 13: (3 x 203 x 135) Mean_Reflectance_Land_All
- 14: (3 x 203 x 135) Standard_Deviation_Reflectance_Land_All
- 15: (2 x 203 x 135) Path_Radiance_Land
- 16: (2 x 203 x 135) Error_Path_Radiance_Land
- 17: (2 x 203 x 135) Critical_Reflectance_Land
- 18: (2 x 203 x 135) Error_Critical_Reflectance_Land
- 19: (2 x 203 x 135) QualityWeight_Path_Radiance_Land
- 20: (2 x 203 x 135) QualityWeight_Critical_Reflectance_Land

SDS selection

10: (203 x 135) Optical_Depth_Land_And_Ocean Show attributes

Multidimensional SDS: layer selection (layer index, or * for all)

Height Width

Width

Height

(MODIS) (Orthographic) Lat(30,399,51,665) Lon(110,911,70,181)

No predefined scaling

Automatic mask detection

Show SDS as values

Show SDS as a plot

AERONET (Optical thickness)

(MODIS) ("Day"): 2005: 9: 9 (252) 17h20

.... DUMP DATA ON DISK

Show SDS as an image

Set reprojection geometry...

Display a MODIS reprojected image

Close

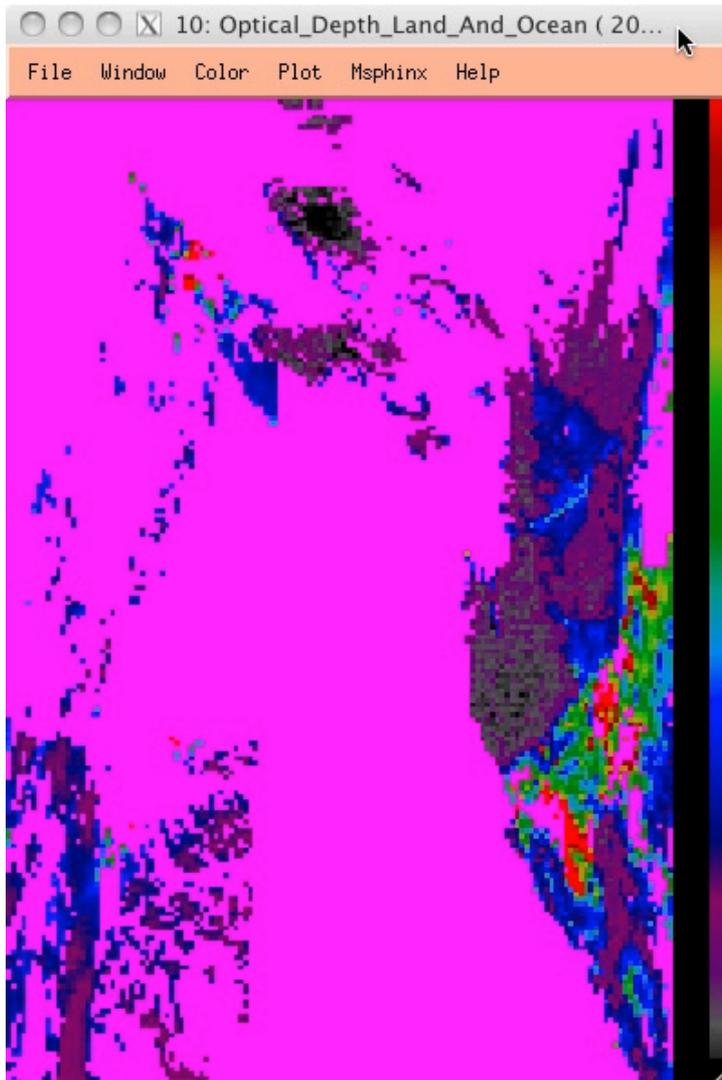
Raw Image Display Controls



Reprojected Image Display Controls



Raw SDS Image Controls



/Smoke_July/MOD04_L2.A2008200.1930.005.2008201110544.hdf

SDS list

- 1: (203 x 135) Longitude
- 2: (203 x 135) Latitude
- 3: (203 x 135) Scan_Start_Time
- 4: (203 x 135) Solar_Zenith
- 5: (203 x 135) Solar_Azimuth
- 6: (203 x 135) Sensor_Zenith
- 7: (203 x 135) Sensor_Azimuth
- 8: (203 x 135) Cloud_Mask_QA
- 9: (203 x 135) Scattering_Angle
- 10: (203 x 135) Optical_Depth_Land_And_Ocean**
- 11: (203 x 135) Image_Optical_Depth_Land_And_Ocean
- 12: (203 x 135) Optical_Depth_Ratio_Small_Land_And_Ocean

SDS selection

10: (203 x 135) Optical_Depth_Land_And_Ocean

Multidimensional SDS: layer selection (layer index, or * for all)

Height Width

Width

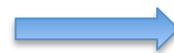
Height

(MODIS) (Orthographic) Lat(34,217,55,629) Lon(-142,939,-107,782)

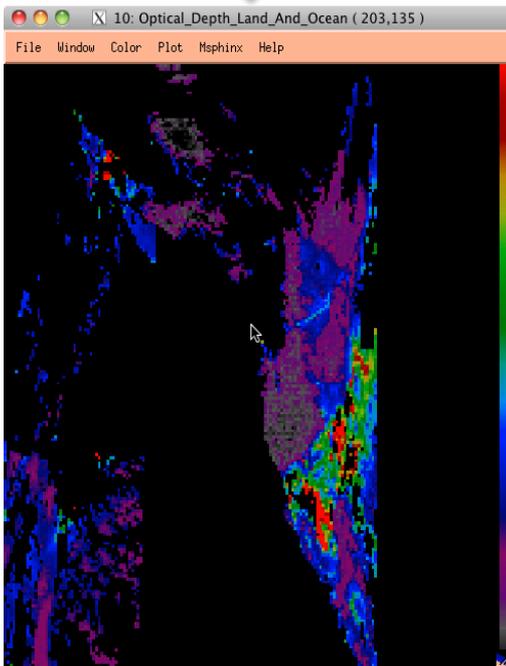
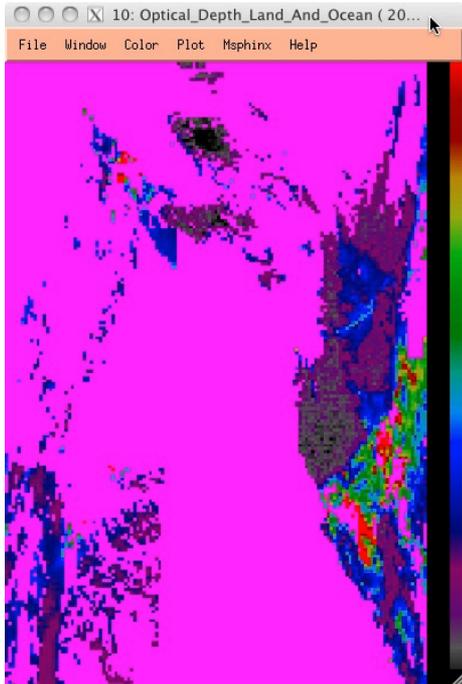
$y = a(x-b)$

Automatic mask detection

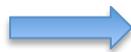
(MODIS) ("Day"): 2008: 7:18 (200) 19h30



Click here to open a raw (not reprojected) image of the selected parameter.



Click on
 “Automatic
 Mask
 Detection”
 to change
 the fill value
 display from
 majenta to
 black



/Smoke_July/MOD04_L2.A2008200.1930.005.2008201110544.hdf

SDS list

- 1: (203 x 135) Longitude
- 2: (203 x 135) Latitude
- 3: (203 x 135) Scan_Start_Time
- 4: (203 x 135) Solar_Zenith
- 5: (203 x 135) Solar_Azimuth
- 6: (203 x 135) Sensor_Zenith
- 7: (203 x 135) Sensor_Azimuth
- 8: (203 x 135) Cloud_Mask_QA
- 9: (203 x 135) Scattering_Angle
- 10: (203 x 135) Optical_Depth_Land_And_Ocean
- 11: (203 x 135) Image_Optical_Depth_Land_And_Ocean
- 12: (203 x 135) Optical_Depth_Ratio_Small_Land_And_Ocean

SDS selection

10: (203 x 135) Optical_Depth_Land_And_Ocean Show attributes

Multidimensional SDS: layer selection (layer index, or * for all)

Height Width

Width Height

(MODIS) (Orthographic) Lat(34,217,55,629) Lon(-142,939,-107,782) Set map addings...

$y = a(x-b)$

Automatic mask detection

Show SDS as values

Show SDS as a plot

AERONET (Optical thickness)

(MODIS) ("Day"): 2008: 7:18 (200) 19h30

.... DUMP DATA ON DISK

Show SDS as an image Show (RGB) image

Close

Set Scaling!!

Select any of the following scalings:

$$y = a(x-b)$$

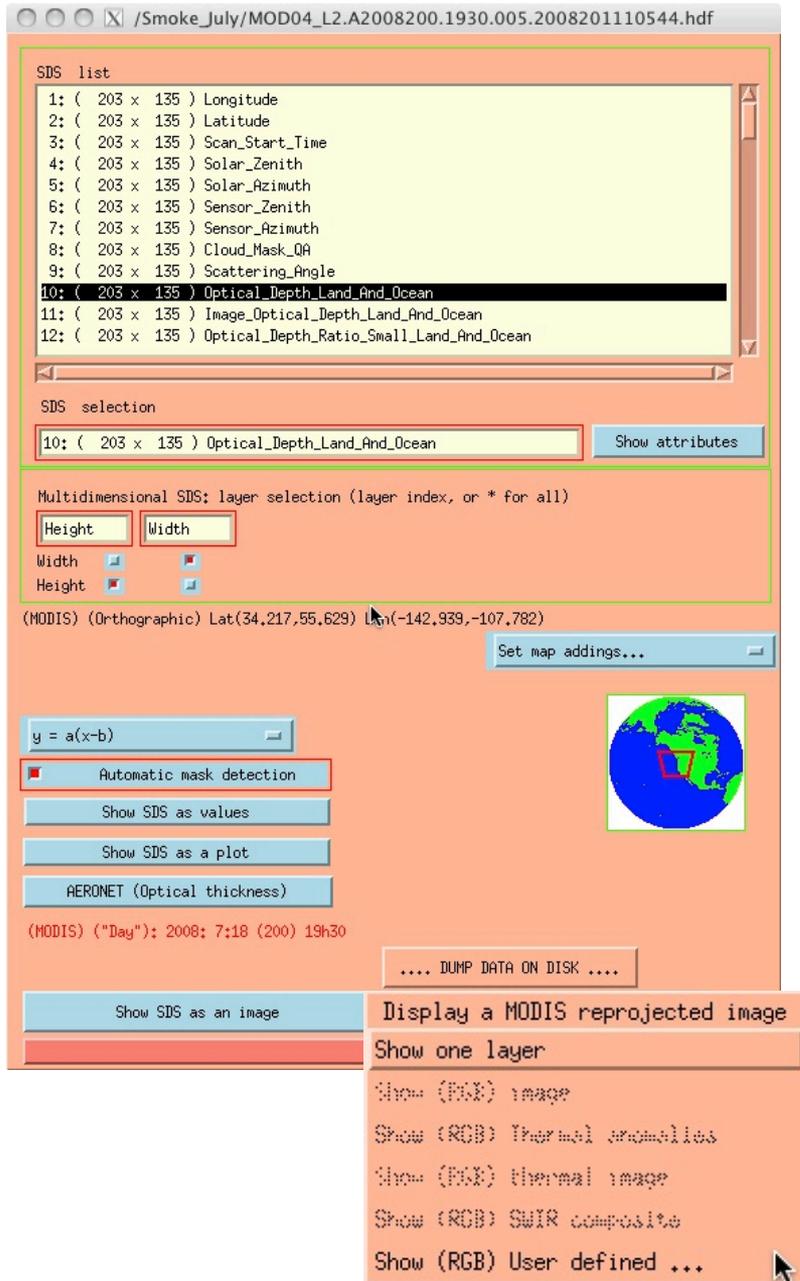
$$y = ax+b$$

$$y = ax$$



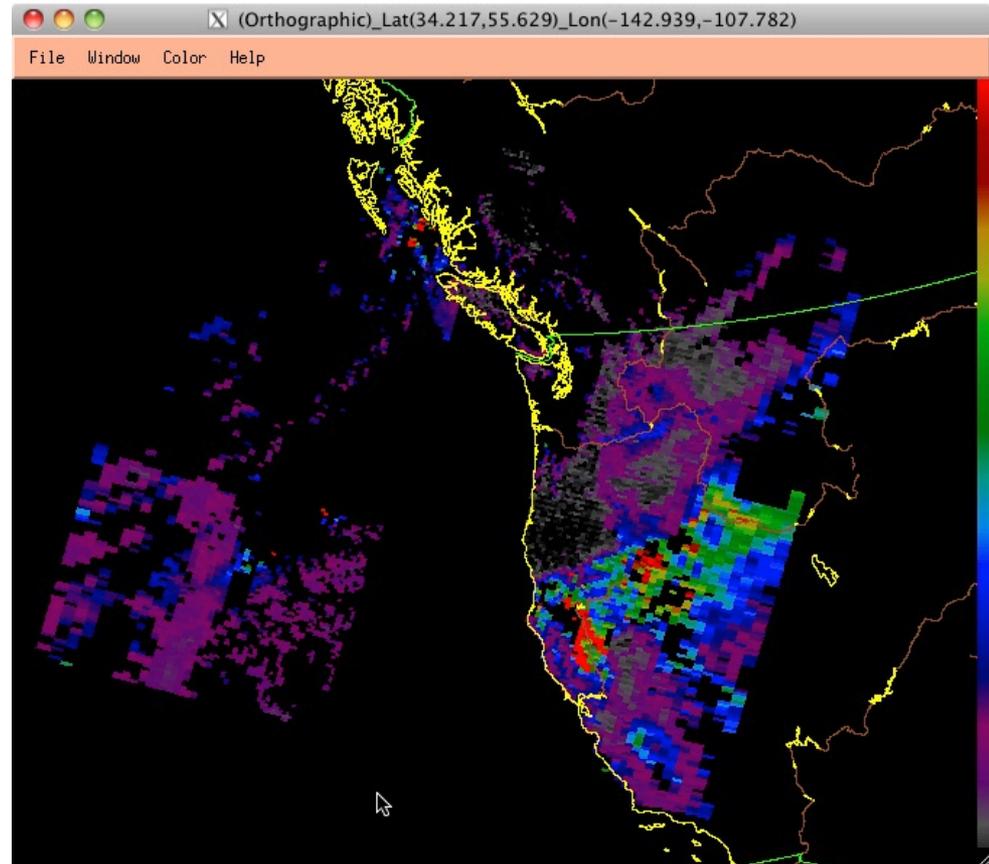
This will not change the display but will change the values from raw numbers to actual parameter values.

Reprojected Image Controls

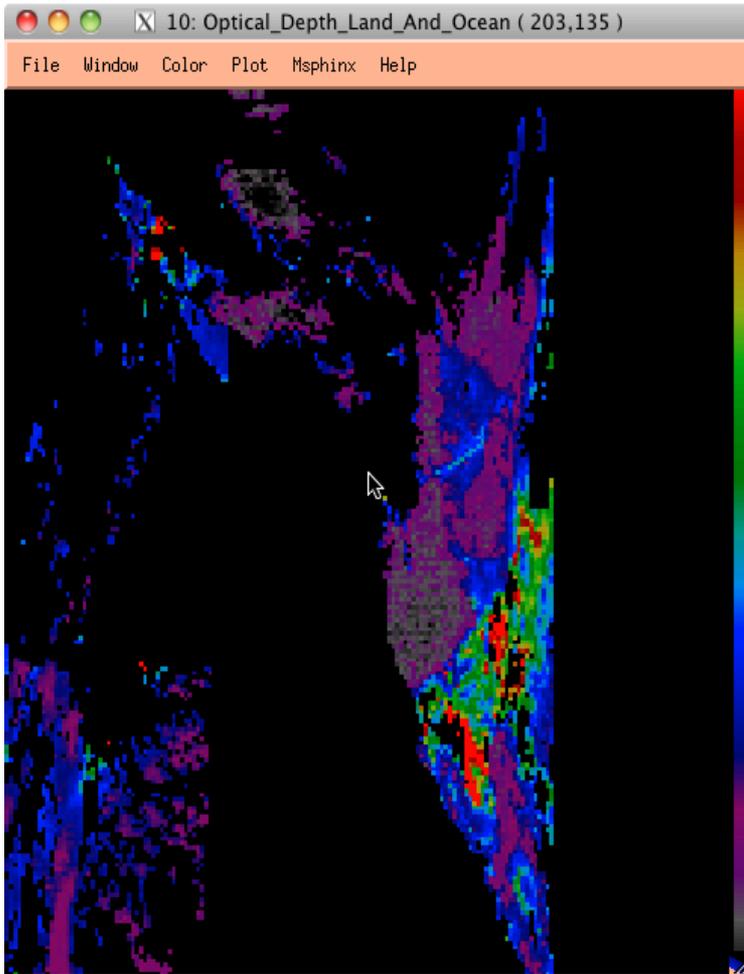


For Level 2 Files:

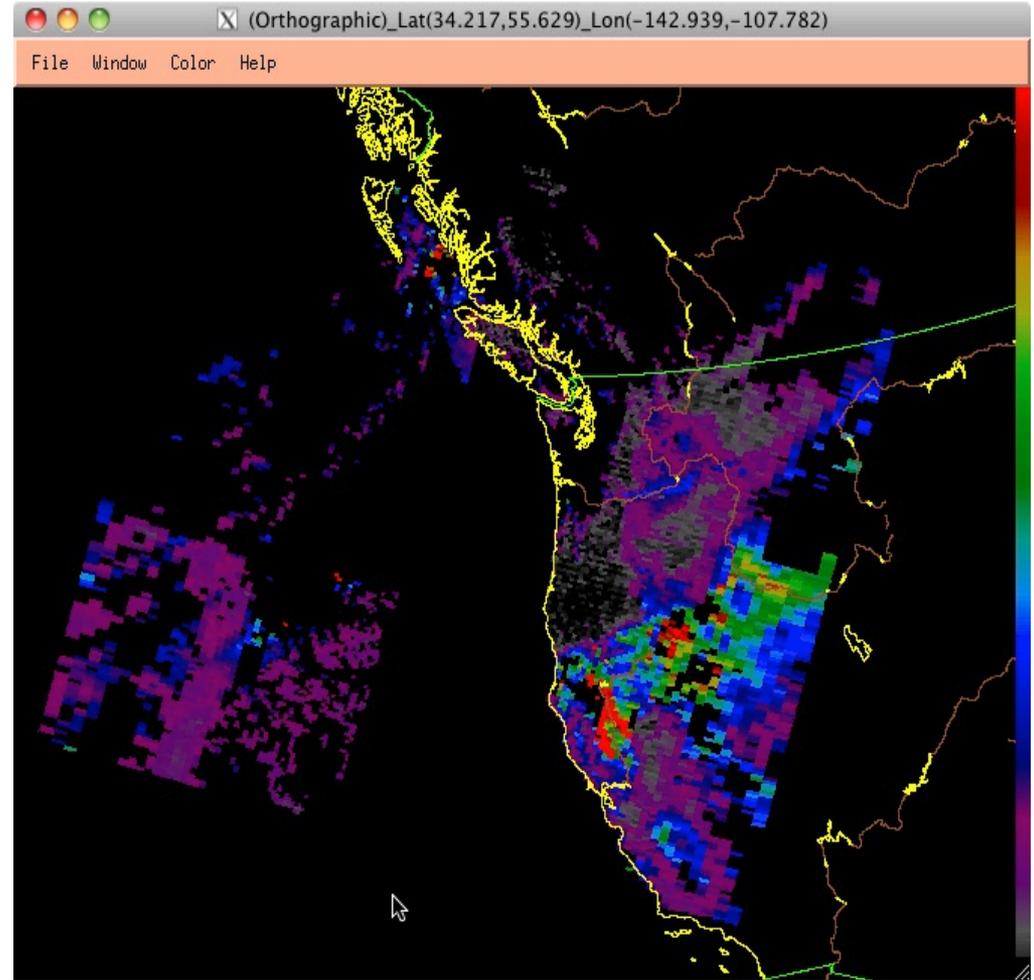
Click and hold the
“Display a MODIS reprojected image” menu
Select “Show one layer”



Raw SDS vs Reprojected Image



The raw image is displayed as simple rows and columns



The reprojected image is stretched to reflect real world geography

RGB Imagery in HDFLook

Load a
MOD02 or
MYD02
Level 1B file

Note that
several of
the available
options in
the menus
will change.

The screenshot shows the HDFLook interface for a file named "/Smoke_July/MOD021KM.A2008200.1930.005.2010245220728.hdf". The "SDS list" panel contains the following items:

- 1: (406 x 271) Latitude
- 2: (406 x 271) Longitude
- 3: (15 x 2030 x 1354) EV_1KM_RefSB
- 4: (15 x 2030 x 1354) EV_1KM_RefSB_Uncert_Indexes
- 5: (16 x 2030 x 1354) EV_1KM_Emissive
- 6: (16 x 2030 x 1354) EV_1KM_Emissive_Uncert_Indexes
- 7: (2 x 2030 x 1354) EV_250_Aggr1km_RefSB
- 8: (2 x 2030 x 1354) EV_250_Aggr1km_RefSB_Uncert_Indexes
- 9: (2 x 2030 x 1354) EV_250_Aggr1km_RefSB_Samples_Used
- 10: (5 x 2030 x 1354) EV_500_Aggr1km_RefSB
- 11: (5 x 2030 x 1354) EV_500_Aggr1km_RefSB_Uncert_Indexes
- 12: (5 x 2030 x 1354) EV_500_Aggr1km_RefSB_Samples_Used

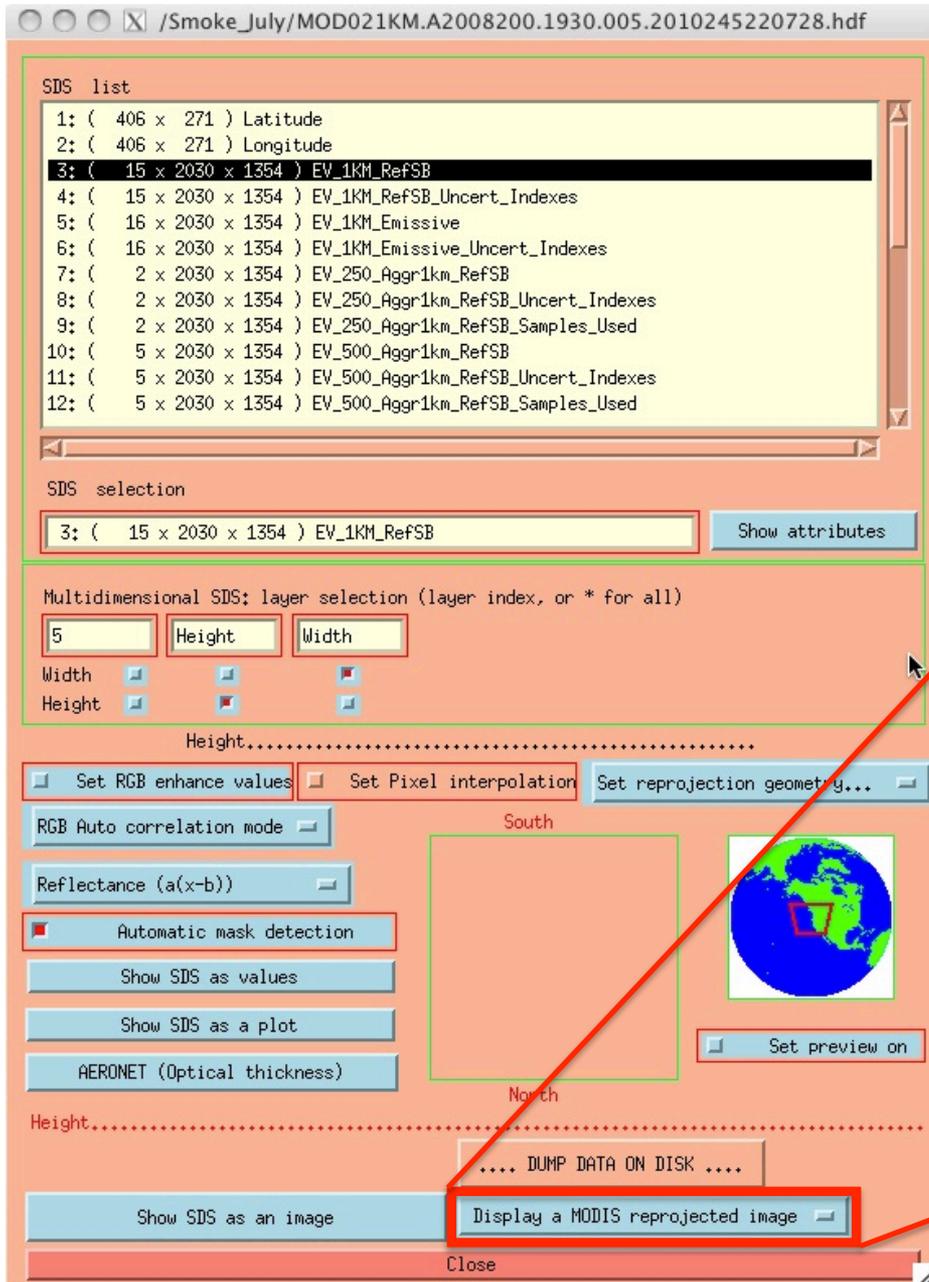
The "SDS selection" panel shows "3: (15 x 2030 x 1354) EV_1KM_RefSB" selected. Below it, the "Multidimensional SDS: layer selection (layer index, or * for all)" panel has "5" entered in the "Height" field, with "Width" also highlighted. The "Height" label is repeated below the field.

The interface includes several control buttons and options:

- Buttons: "Show attributes", "Set RGB enhance values", "Set Pixel interpolation", "Set reprojection geometry...", "AERONET (Optical thickness)", "Show SDS as an image", "Display a MODIS reprojected image", "Set preview on", ".... DUMP DATA ON DISK", "Close".
- Options: "Automatic mask detection" (checked), "Reflectance (a(x-b))", "Show SDS as values", "Show SDS as a plot", "RGB Auto correlation mode", "Set preview on".

A small globe icon with a red box is visible on the right side of the interface.

RGB Imagery in HDFLook

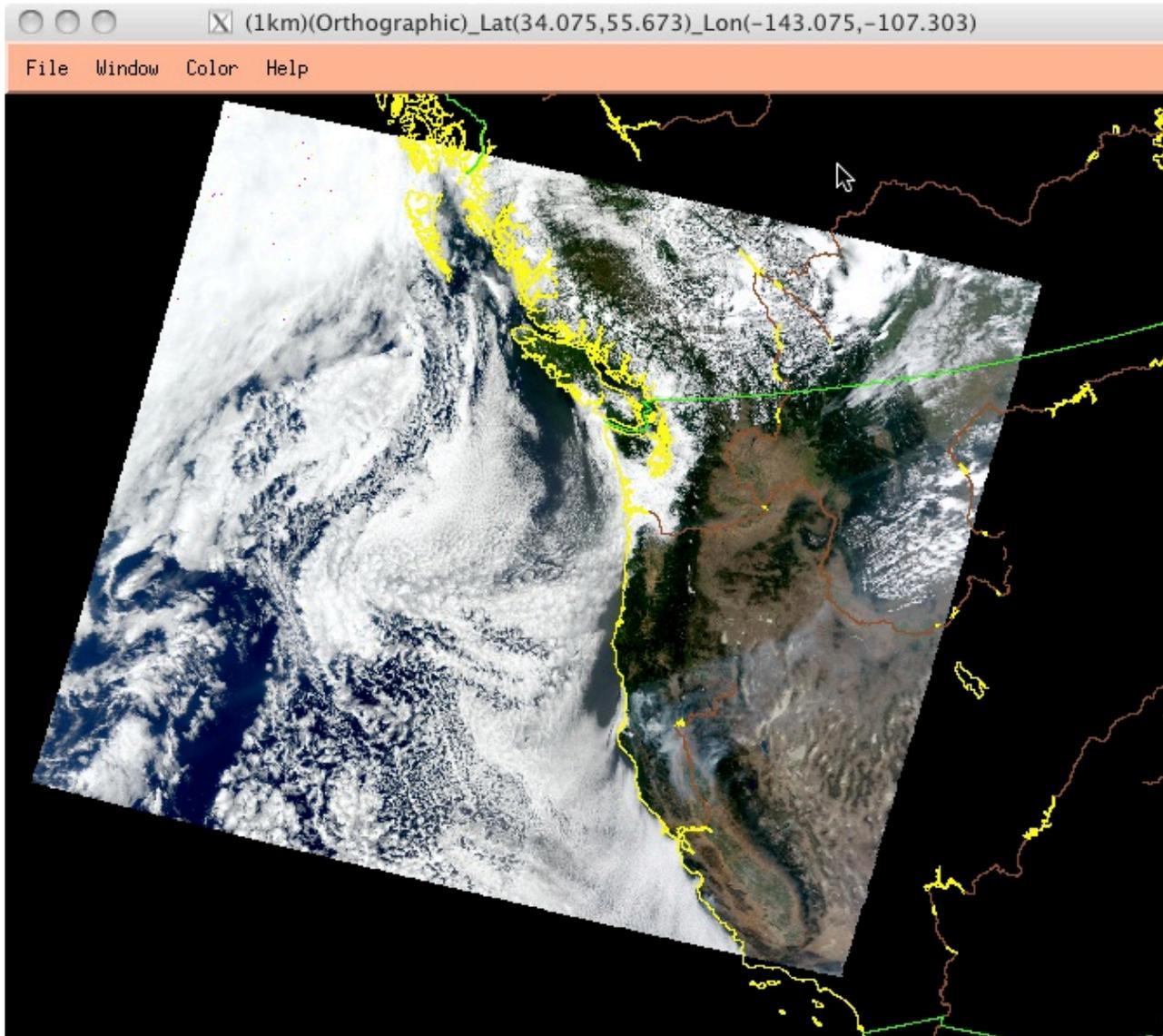


There are several pre-defined RGB options available.

The default RGB is a "true color" image

- Display a MODIS reprojected image
- Show one layer
- Show (RGB) image
- Show (RGB) Thermal anomalies
- Show (RGB) thermal image
- Show (RGB) SWIR composite
- Show (RGB) User defined ...

RGB Imagery in HDFLook



The default RGB is a
“true color” image