

Summary of HYDRA 4.6.4 Commands

In all displays

Shift-right click-drag to zoom in image within display

Right click-drag to move image or roam within display

In HYDRA window

Under File, select the Directory (for VIIRS, ABI or AHI folder,) or File(s) (MO(Y)D02 or a1(t1) for MODIS, AIRS for AIRS, SCRIS for CrIS, SATMS for ATMS) to be displayed.

(1) For VIIRS and MODIS, file selection will result in a listing of spectral bands available, an image of the IR window with coastlines, and a default subset of the granule that will be displayed in a new window upon clicking on display. The subset of the image can be adjusted with a right click and drag. The spectral band can be changed with a left click on another choice.

(2) For CrIS, AIRS, and ATMS, a new window opens showing the spectral band brightness temperatures and a spectral window image showing the data coverage. Left click a drag on the green line in the top display to change the spectral band displayed below.

Left click on spectral band desired (default is IR window)

Shift-left click-drag to highlight subset of image for display

Left click on display at bottom to create Spectral Display. Left click on arrow at right to have option for New Window or Replace/Overlay. First time will default to New Window. Thereafter New will open another Spectral Display Window while Overlay will overlay additional spectral band on original display.

Edit/Remove Dataset will remove any loaded dataset in the HYDRA dataset list

Edit/Remove Combination will remove any dataset created using the Tools/RGB Composite or Tools/Band Math utilities

Tools/RGB Composite will open new display where you have to select the R, G, and B spectral bands desired by left clicking on the color and then on the spectral band. When all three have been selected, left click on Create to add to Dataset tree under Combinations. Left click on Display to see the RGB image.

Tools/Band Math will open new display where you can select bands and operations to be performed on the bands. Select bands desired by left clicking on a box and then on the spectral band. Choose operators by left clicking on the arrows. When you have the equation you want, left click on Create to add to Dataset tree under Combinations. Left click on Display to see the image.

In Spectral and Band Math Displays

Left click-drag to move cursor within display

Left click on bottom left icon (house) to restore original display

When two displays are open, toggle on link button in lower left to link zoom and roam in two displays

Left click on bottom right box (band number) to open range, gamma, reset, and B&W vs color options

Range can manually set BTmin (rmin) and BTmax (rmax). Range entries can be typed in to enhance low or high reflances or BTs.

Gamma can be adjusted to stretch the dynamic range. It is a non-linear mapping from color to value. For infrared $color_value = BT^{**}gamma$. For visible when $gamma = 0.5$, this is the square root enhancement popular with VIS.

Reset restores the dynamic range to the min and max values in the display.

Color options include gray (BTmax is black, BTmin is white), inverse gray, rainbow (BTmax is red, BTmin is blue), and inverse rainbow

Tools/Transect left click-drag to change end point of transect. Transect can be opened in several separate displays simultaneously.

Tools/Scatter left click in first image for x-axis then left click in second image for y-axis of scatter plot

Tools/Capture to do a screen capture of the current image in the display window. Choices are JPEG or KML formats.

Settings/coastlines toggles the map off and on

Settings/min/max toggles scene minimum and maximum value location and value off and on

Settings/probe readout toggles the probe off and on

Settings/color bar turns the scene color bar, embedded in the image, off and on

In Scatter Display

Selecting purple, green, and blue points (with box or curve) in ScatterPlot will show the associated pixels in the Spectral or BandMath displays; conversely selecting pixels in Spectral or BandMath displays will show the associated points in the ScatterPlot.

Left click on points to create density scatter plot; toggle back and forth between points and density

Left click on stats to see stats for purple, green, and blue selections.

In AIRS, CrIS, or ATMS SDR (Sensor Data Record) Display

Select the file(s) to be displayed (AIRS for AIRS, SCRIS for CrIS, SATMS for ATMS).

Move the green line in the spectrum (left click drag) to change the spectral band displayed below.

When viewing the AIRS/CrIS/ATMS spectrum, zoom using shift- left click–drag. Restore to full spectrum using control-left click.

When viewing AIRS/CrIS/ATMS spectral band image left click drag to move cursor within image (note if VIIRS data over same area is open then cursor will move in both VIIRS and CrIS/ATMS images; same for AIRS and MODIS)

Click on Tools to have the option for Transect, Scatter, and FourChannelCombine. In FourChannelCombine the colored lines have to be moved (left click drag) to the desired wavenumber (GHz). Expanding beyond two spectral bands is initiated by completing the mathematical operator desired in the FourChannelCombine equation.

When viewing AIRS or CrIS profile retrievals (temperature, water vapor, and ozone can be found under the parameter), transect and scatter (under Tools) can be used in the same way as before.

In the AIRS or CrIS Retrvl Display left click and drag on the green line in the vertical profile to change the altitude of the parameter being displayed.

The red cursor in the CrIS Retrvl Display will move in synch with the red cursor in CrIS or VIIRS or ATMS spectral band displays; the blue cursor moves independent of any cursor in the other images.

Viewing Level 2 Products

Under File, select the CLAVRx file or files (clavrx*.hdf) for VIIRS cloud products, ACSPO SST (*STAR-L2P_GHRSST-SST*) Sea Surface Temperatures or AHI Level 2 cloud products (geocatL2) to be displayed

Left click on product parameter desired. Options are:

CLAVRx Cloud Products

| | |
|-----------------------|----------------------------|
| Cloud_Type – | Cloud Type (10 categories) |
| Cloud_Phase -- | Cloud Phase (5 categories) |

Cloud_Mask -- Cloud Mask (4 categories)
Cld_Top_Press -- Cloud Top Pressure in hPa
Cld_Top_Temp -- Cloud Top Temperature in Degrees Kelvin
Cld_Top_Hght -- Cloud Top Height in meters

ACSPO SST

SST -- Sea Surface Temperature in Degrees Kelvin

GEOCAT Level 2 Cloud Products for AHI

Cld_Top_Hght -- Cloud Top Height in meters
Cld_Top_Press -- Cloud Top Pressure in hPa
Cld_Top_Temp -- Cloud Top Temperature in Degrees Kelvin
Cloud_Mask -- Cloud Mask (4 categories)
Cloud_Phase -- Cloud Phase (5 categories)
Cloud_Type -- Cloud Type (10 categories)

MODIS Level 2 Cloud Products (MO(Y)D06*.h5 or a1(t1).yyddd.hhmm.mod06.hdf

Cloud_Optical_Thickness -- Cloud Optical Thickness (daytime datasets only)
Cloud_Effective_Radius -- Size in microns
Cloud_Top_Pressure -- Cloud Top Pressure in hPa
Cloud_Top_Temperature -- Cloud Top Temperature in Degrees Kelvin
Cloud_Fraction -- Cloud fraction in 5x5 pixel region (0-100)
Cloud_Phase_Infrared -- Cloud Phase (4 categories)