VIMS Browse Image Interpretation Key

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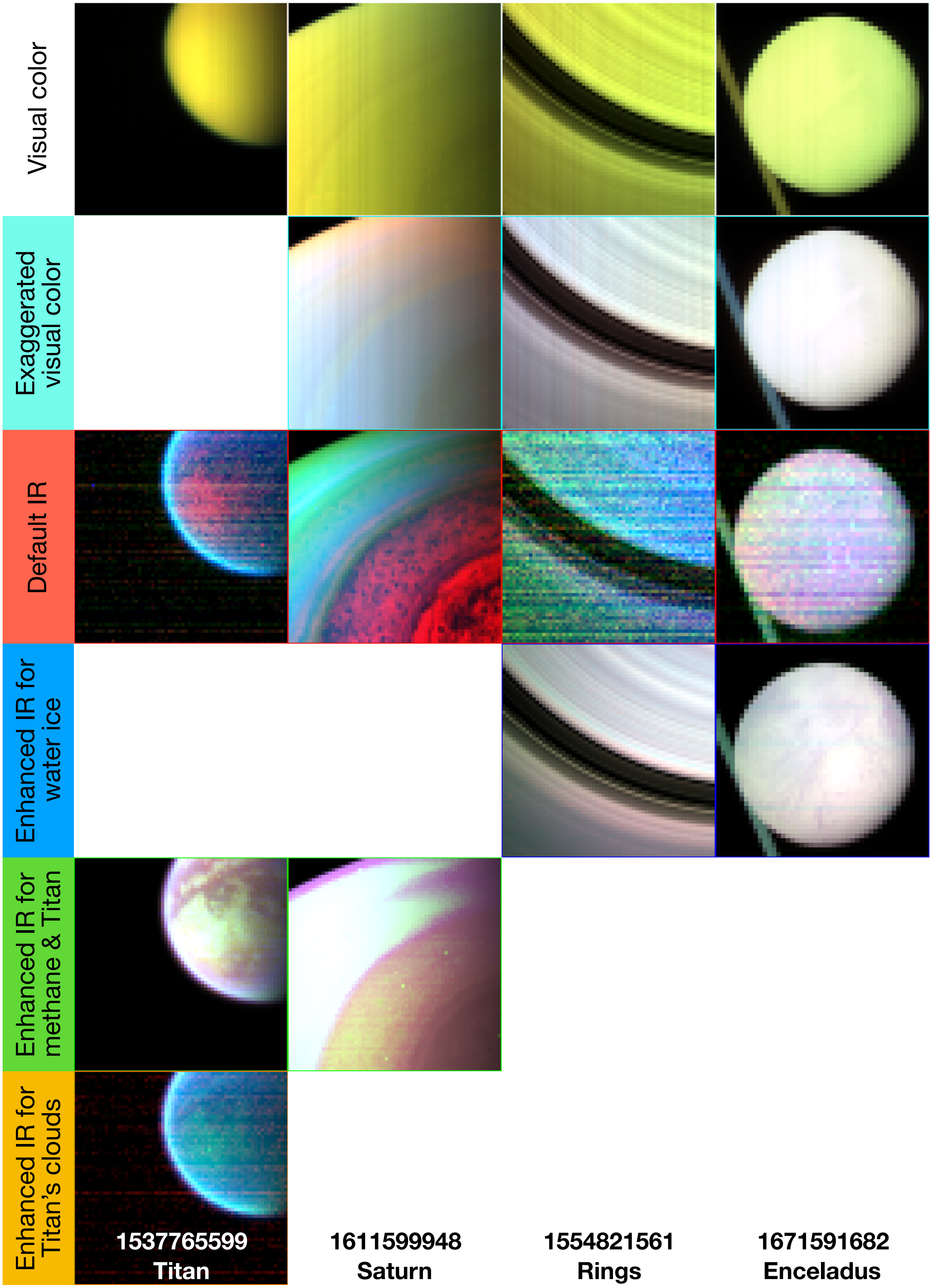
VIMS browse images provide a quick view of the the contents of each spectral image cube. Because each cube contains up to 352 spectral channels, whereas a color image can only consist of red, green and blue (RGB) intensities, these images only highlight a tiny subset of the information contained in a VIMS data file.

Each browse image contains up to four panels, each bounded by a thin color frame. That color indicates the type of information encoded within the panel:

Frame Color	Purpose	Applicable Targets
White	Visual color	All targets (if VIS channel was active)
Cyan	Exaggerated visual color	All targets except Titan
Red	Default IR	All targets
Blue	Enhanced IR for water ice	Rings and icy satellites
Green	Enhanced IR for methane and for Titan's surface	Saturn and Titan
Orange	Enhanced IR for Titan's clouds	Titan
Gray	Time series plot	Ring and atmospheric stellar occultations

Individual panels are omitted if the corresponding channel (VIS or IR) is off for that particular observation. The tiles are arranged to fit optimally inside a square image; the arrangement chosen depends on the number and shape of the individual panels.

Examples of each can be found in the table on page 2. Further details about how to interpret each image panel follow.


Visual color
Exaggerated visual color
Default IR
Enhanced IR for water ice
Enhanced IR for methane & Titan
Enhanced IR for Titan's clouds
1537765599
Titan
1611599948
Saturn
1554821561
Rings
1671591682
Enceladus

White	Visual color	All targets (if VIS channel was active)

These panels are intended to show a rough representation of what the human eye would see. Red, green and blue channels correspond roughly to the color response bandpasses of the human eye. However, because these VIMS files are un-calibrated, be aware that many images have a strong yellow tint.

Cyan	Exaggerated visual color	All targets except Titan

These panels exaggerate the content of the VIMS visual channel. Blue corresponds to ~ 0.35 microns (near-UV); green to ~ 0.55 microns (middle of the visual band), and red to 0.89 microns (near-IR, in a methane absorption band). Each color channel is normalized to the same range of intensities, so images of a body that is neutral in color will appear gray. For bodies that have a bluish or reddish slope, that color will be exaggerated. Regions containing methane generally appear greenish. Different sizes of water ice grains, as well as different types of contaminants, tend to change the slope of the ice spectrum around 0.55 microns; these can also produce subtle color variations.

Red	Default IR	All targets

These panels show general aspects of the target's IR spectrum. Blue maps to ~ 1.8 microns (methane absorption band), green to ~ 3.0 microns (water absorption band), and red to ~ 5 microns (dominated by thermal emission). As a result, methane tends to appear green-blue, whereas ice is usually extremely dark (as is evidenced by noisy images). Also, Titan's clouds are transparent in the red channel so surface features become visible.

Blue	Enhanced IR for water ice	Rings and icy satellites

In these panels, blue maps to the mean of the range 0.9-1.3 microns, where ice is bright. Green intensity varies in proportion to the ratio of the 2.2 micron peak to the 0.9-1.3 band. Red maps to the shape of ice's 2-micron absorption band, with darker red values corresponding to a deeper band. Images are normalized to a uniform gray, so reddish tints indicate a shallower absorption band and green tints indicate a higher 2.2 micron peak.

Green	Enhanced IR for methane and for Titan’s surface	Saturn and Titan

These panels show the land forms on Titan clearly, and they also show variations in the methane in Saturn's atmosphere. Blue maps to the mean of two methane peaks near 1 and 1.3 microns (which are also holes in the absorption of Titan's atmosphere). Green

maps to ~ 2.01 microns and blue to ~ 2.8 microns. Colors are normalized independently, so that the overlaid red, green and blue channels each contain the full range of contrast from nearly black to nearly white.

Orange	Enhanced IR for Titan's clouds	Titan

These panels map red, green and blue to bands where the atmosphere of Titan is relatively opaque: red is the mean of 1.2 and 1.5 microns; green is ~ 2.1 microns and blue is 4-4.8 microns. Colors are normalized independently, so that the overlaid red, green and blue image channels each contains the full range of contrast from nearly black to nearly white.

Gray	Time series plot	Ring and atmospheric stellar occultations

Occultation mode data are stored as cubes, with time increasing first in the "sample" direction (rightward in the images) and then in the "line" direction (downward). This matches the ordering of words on a page. An example is shown below.

The blue and red intensities of each pixel are proportional the to the mean signal in the ranges 0.9-2.9 microns and 3.4-5 microns, respectively. The green intensity is based on the depth of the ice band at 2.9-3.1 microns. All three bands are normalize to the same value, so the image should appear to be a uniform gray except for subtle tints related to any wavelength-dependent variations in the occulted signal.

In addition, the mean intensity in each line is marked by a red, green or blue pixel, with values of zero at left and values of full intensity at right. In this way, the image also shows a crude, "sideways" profile derived from the occultation, with time increasing downward and intensity increasing toward the right.