

PDS Review of EPOXI observations of Mars

Calibrated HRIV and MRI images

dif-m-hriv-3/4-epoxi-mars-v2.0

dif-m-mri-3/4-epoxi-mars-v2.0

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HRIV DOCUMENTATION

Spacecraft Mission and Instrument:

- Narrow-band filter images (350-950 nm) of Mars taken by Deep Impact High Resolution Visible CCD (HRIV)

Observation Sequence:

- Images taken on 20-21 November 2009 over a 24-hour period
- Images taken hourly at 350, 750 and 950 nm
- Images taken every 15 minutes at 450, 550, 650 and 850 nm

Geometry:

- Range was 1.04 AU
- Phase Angle of 37°
- Scale of 310 km/pixel
- Diameter of Mars is 22 pixels on the 512x512 sub-framed image

Calibration:

- Calibrated data in units of $W/m^2/ster/\mu m$ with conversion to I/F provided

Background and supporting data complete and sufficient to perform scientific work.

HRIV DIRECTORY STRUCTURE

Main Directory:

calib/

catalog/

data/

document/

DOWNLOAD/

index/

aareadme.txt <- Nice that this is shown on directory page

dataset.html <- Not explained, somewhat cryptic name

voldesc.dat

data/ Directory:

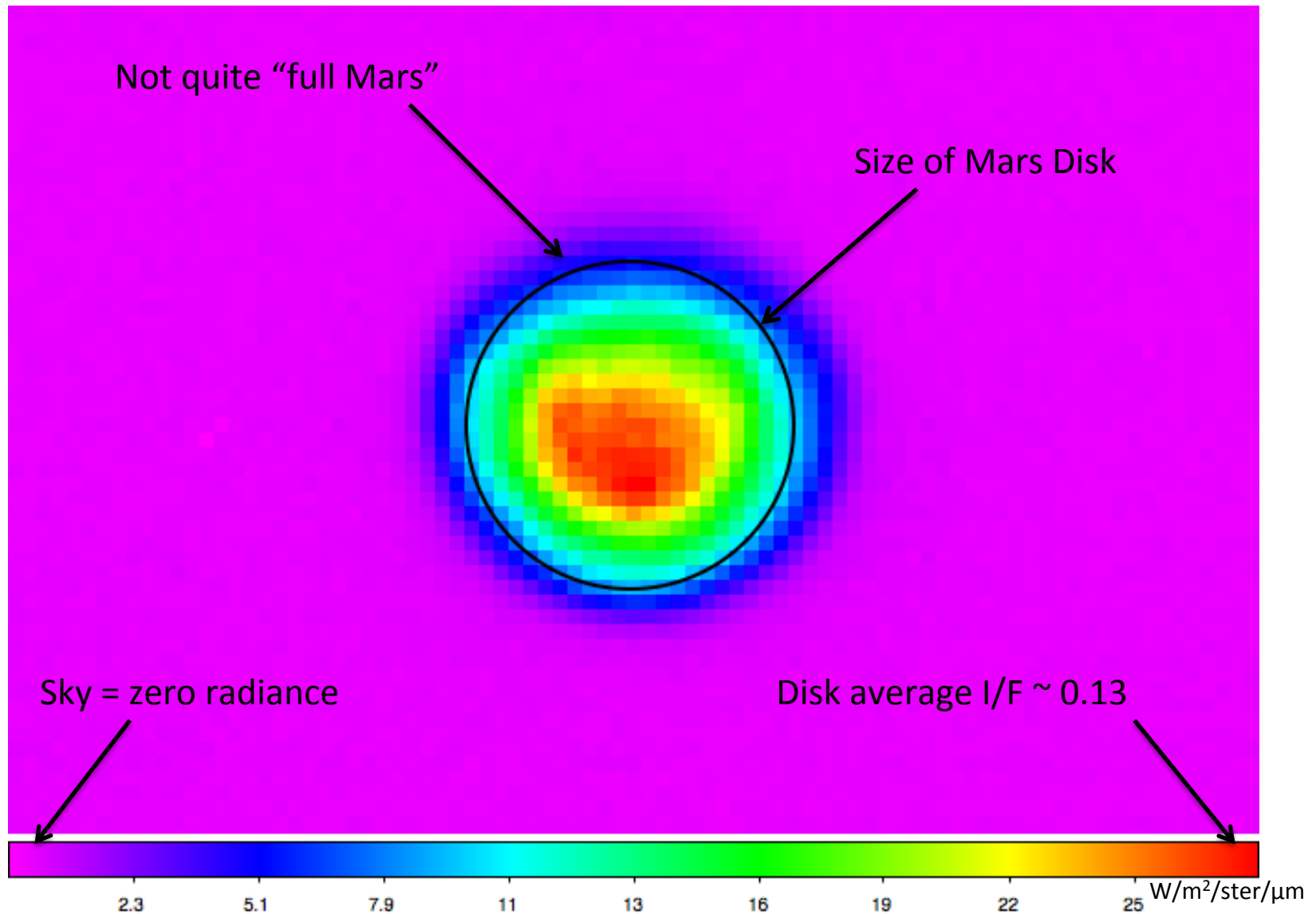
rad/

radrev/

Data further organized by year/doy/

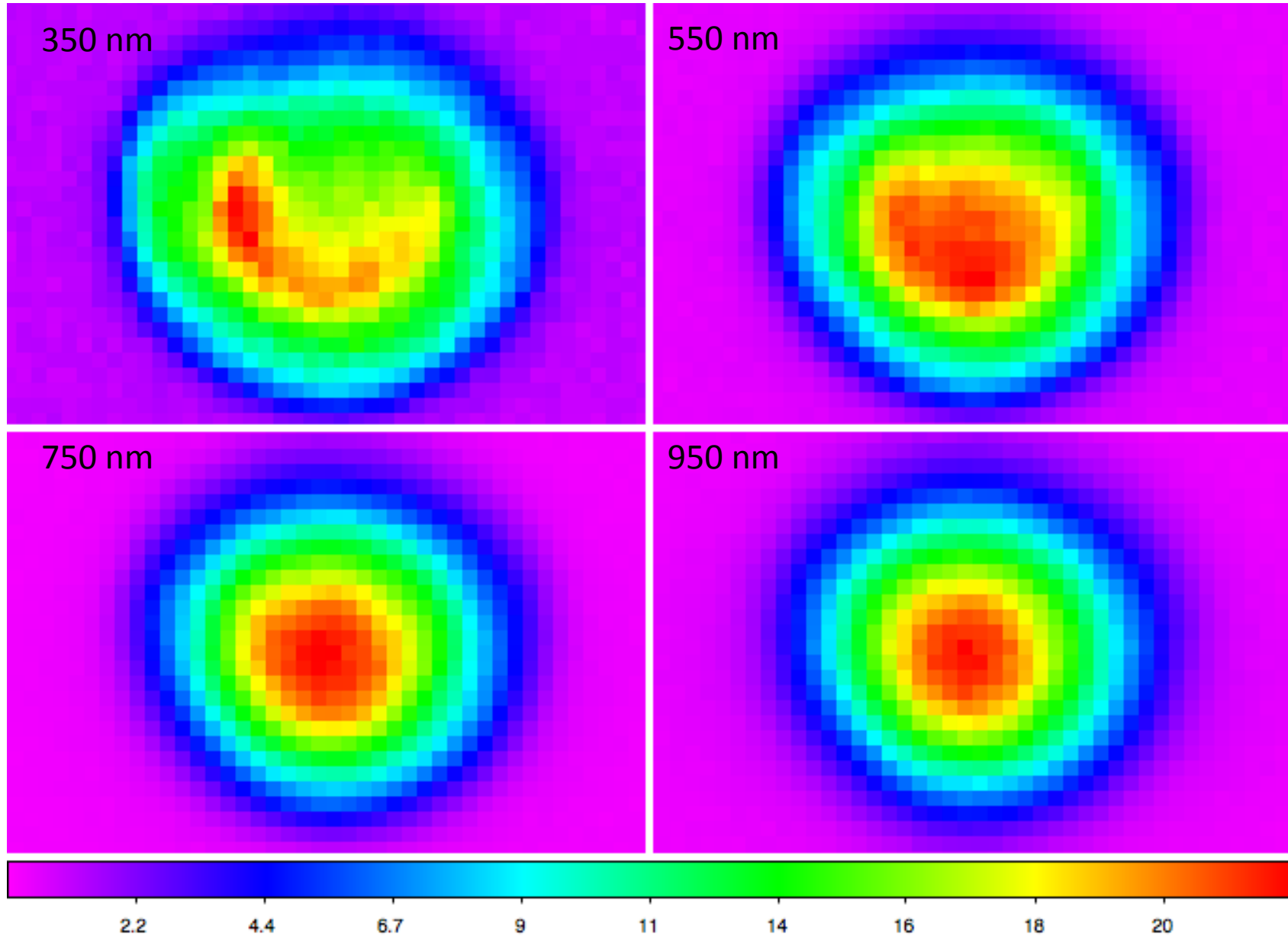
Other than “dataset.html”, directory structure was as expected for a PDS archive. All necessary files and directories were present. Organization of data was easy to understand and navigate, especially with aareadme.txt shown. HTML homepage very helpful as well.

Sanity Checks



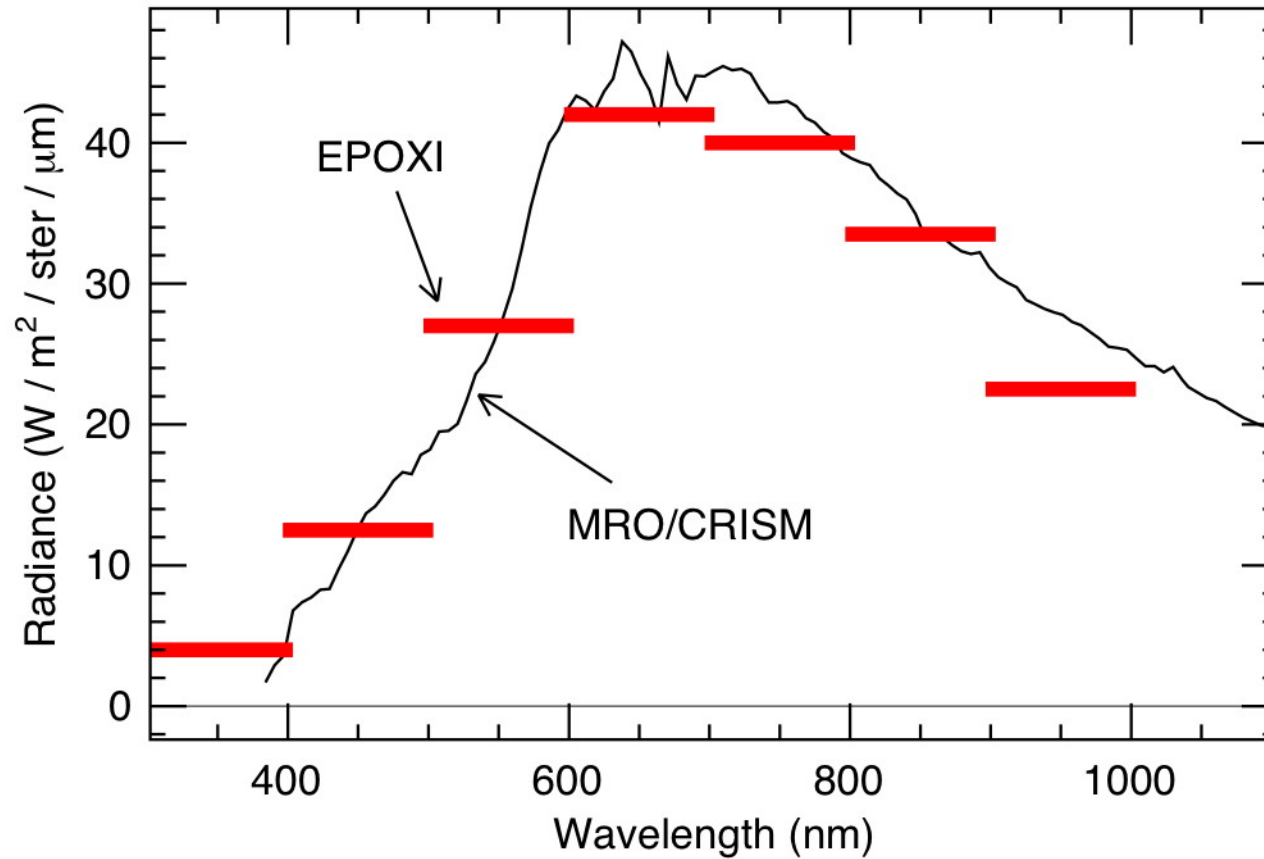
I was able to read, display and manipulate the HRIV images without problem.
Basic parameters of image appear reasonable.

Wavelength Dependence



As expected, more structure at shorter wavelengths (especially violet)

Check against Spacecraft Observation



Wavelength dependence and absolute radiance consistent with observation from MRO/CRISM Vis/near-IR spectrometer

MRI DOCUMENTATION

Spacecraft Mission and Instrument:

- Calibrated 750-nm filter images of Mars taken by Deep Impact Medium Resolution Visible CCD (MRI)

Observation Sequence:

- Images taken on 20-21 November 2009 for a 24-hour period
- Images taken every 30 minutes as context for HRI IR spectrometer observations

Geometry:

- Range was 1.04 AU
- Phase Angle of 37°
- Scale of 1557 km/pixel
- Diameter of Mars is 4+ pixels on the 512x512 sub-framed image

Calibration:

- Calibrated data in units of $W/m^2/ster/\mu m$ with conversion to I/F provided

Background and supporting data complete and sufficient to perform scientific work.

MRI DIRECTORY STRUCTURE

Main Directory:

calib/

catalog/

data/

document/

DOWNLOAD/

index/

aareadme.txt <- Nice that this is shown on directory page

dataset.html <- Not explained, somewhat cryptic name

voldesc.dat

data/ Directory:

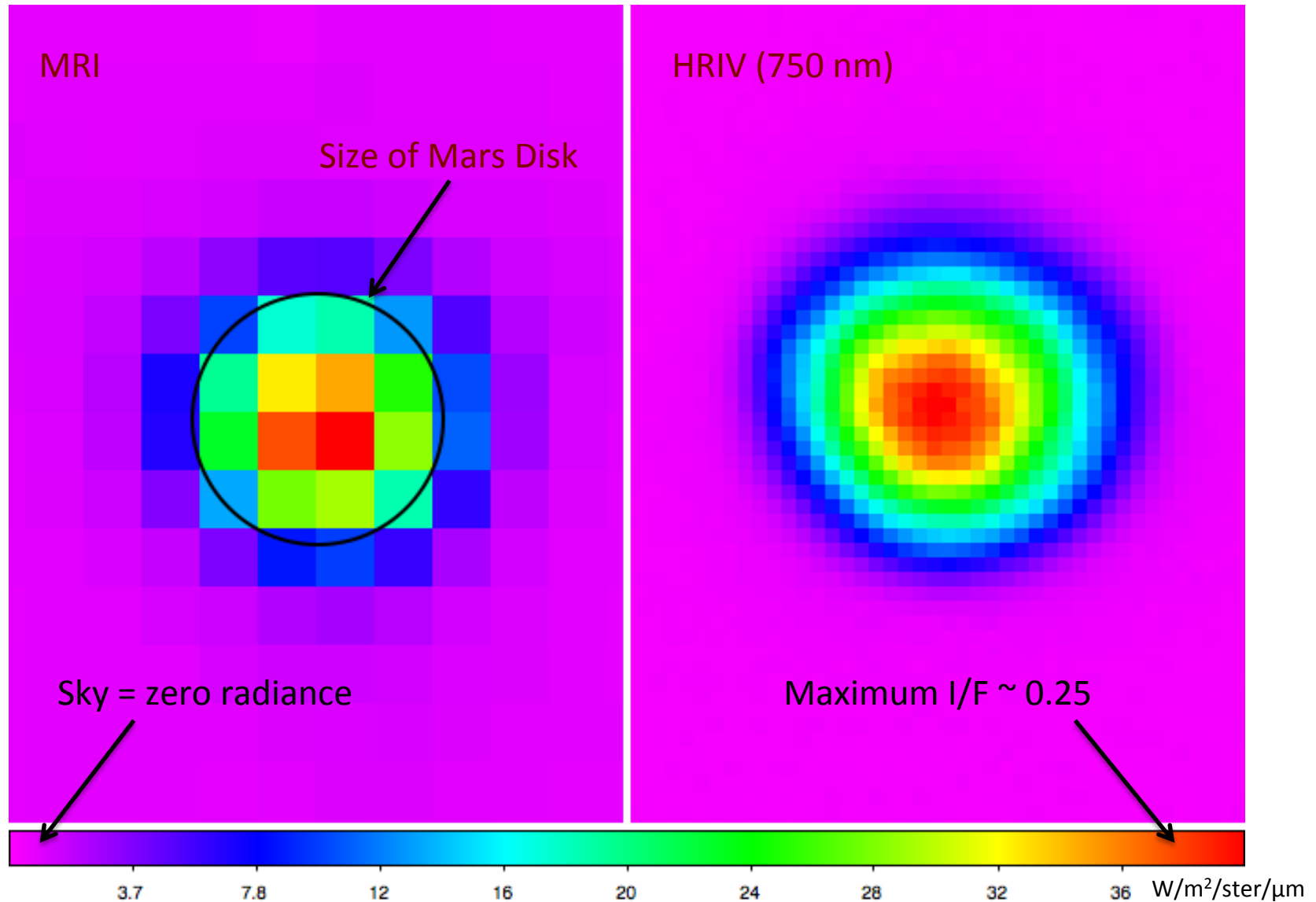
rad/

radrev/

Data further organized by year/doy/

Other than “dataset.html”, directory structure was as expected for a PDS archive. All necessary files and directories were present. Organization of data was easy to understand and navigate, especially with aareadme.txt shown. HTML homepage very helpful as well.

Comparison of MRI with HRIV



I was able to read, display and manipulate the MRI images without problem.
MRI and HRIV images look similar given different pixel size.

CONCLUSIONS

File Structure:

- All files appear to be in place
- Data structure easy to understand and navigate

Documentation:

- Sufficient documentation for scientific work

Data:

- Calibrated (reversible), and calibrated versions of image data available
- Necessary calibration images and data available
- Support files available

Image Quality:

- Calibrated image data pass sanity checks
- Calibrated radiance is consistent with spacecraft observations of Mars

Submitted PDS archive of EPOXI HRIV images of Mars in excellent shape and ready for acceptance.