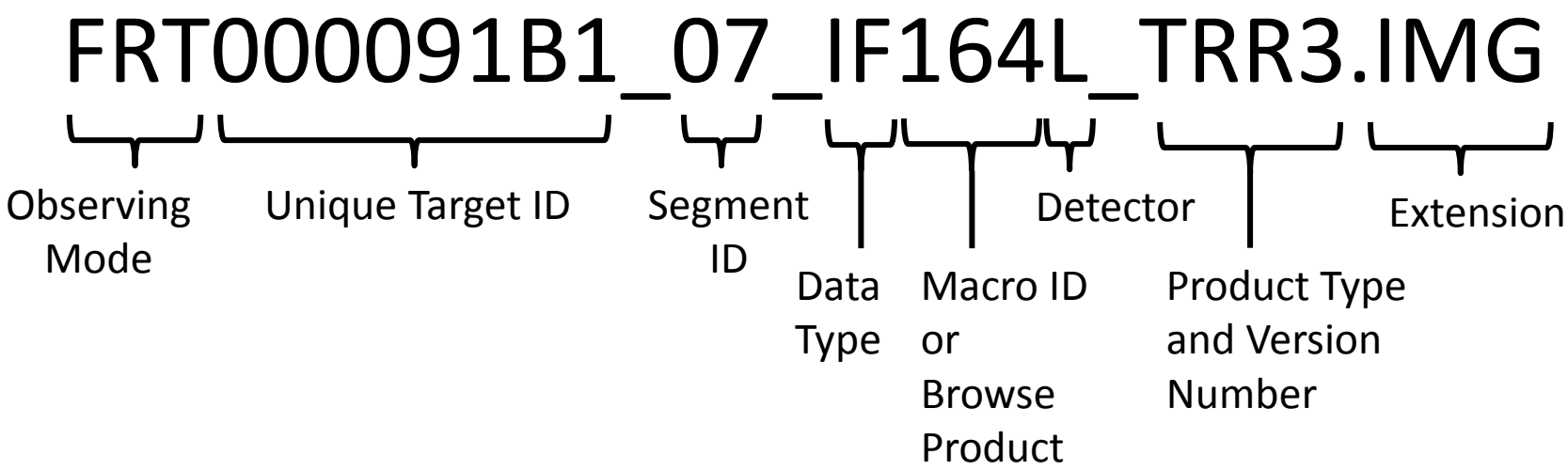
CRISM File Naming Convention

Secret Decoder Ring

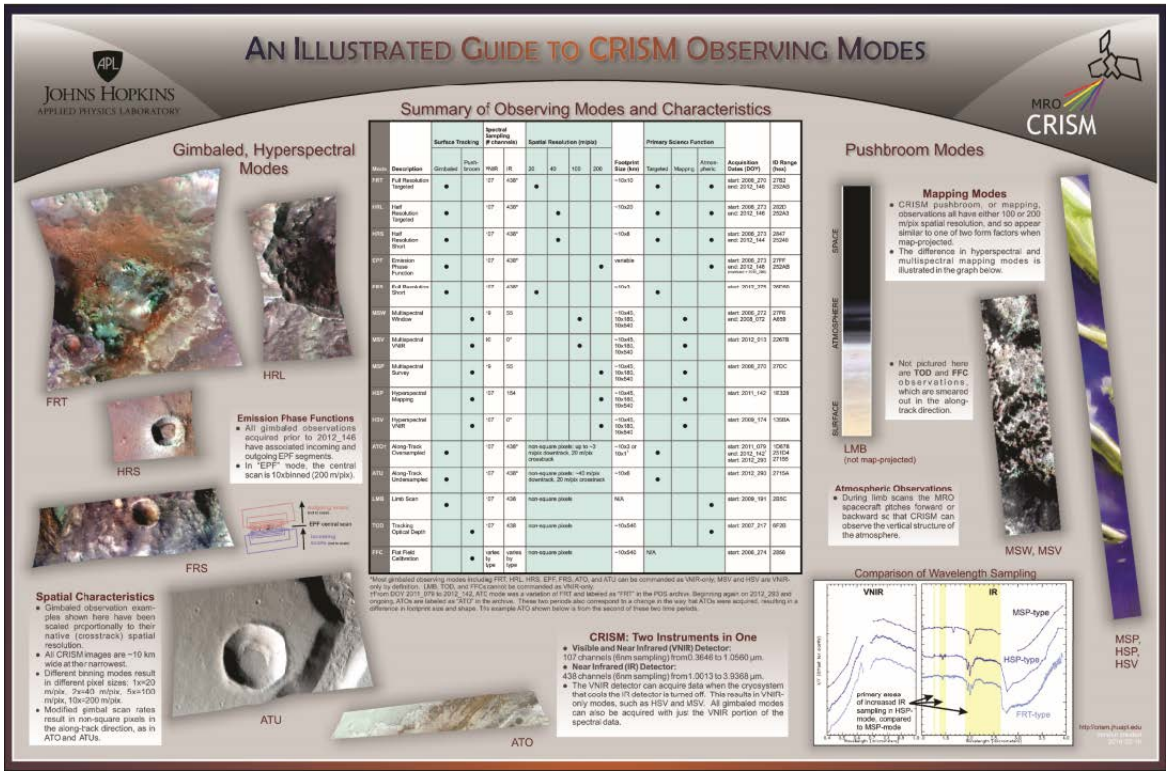

FRT000091B1_07_IF164L_TRR3.IMG
Observing Mode
Unique Target ID
Segment ID
Data Type
Macro ID or Browse Product
Detector
Product Type and Version Number
Extension

FRT000091B1_07_IF164L_TRR3.IMG

Observing Mode

3-letter code that describes the spatial and spectral configuration:

- **Targeted:** FRT, HRL, HRS, EPF, FRS, ATU, ATO
- **Mapping:** MSP, HSP, MSW, MSV, HSP, HSV
- **Special:** LMB, TOD
- **Calibration:** CAL, FFC



See also: http://crism.jhuapl.edu/instrument/images/observing_modes_poster_v5.pdf

FRT000091B1_07_IF164L_TRR3.IMG

Unique Target ID

- **Unique for each image set**
- **8-digit hexidecimal**
- **Sequential in time**
  - except for limb scans (LMB) and certain special observations which are all “00002nnn”-series

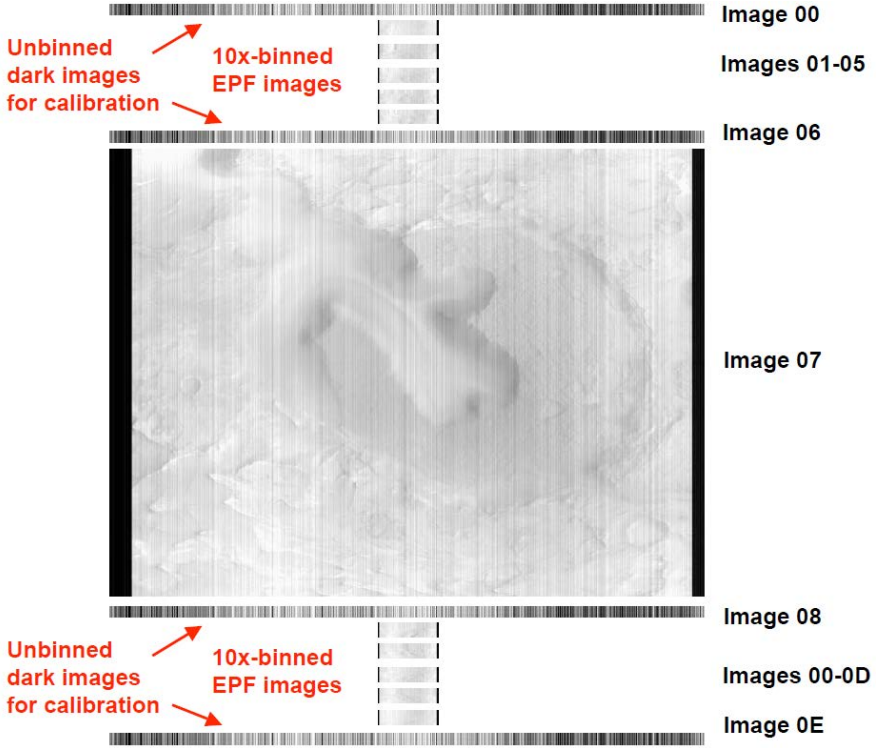
FRT000091B1_07_IF164L_TRR3.IMG

Segment ID

Each targeted image is a set of images:

- Darks
- Incoming and outgoing emission phase function (EPF) images
- Central swath
  - For FRT, HRL, HRS modes: segment **“07”**
  - For FRS, ATO, and ATO modes, segment **“01”**

Each mapping observations can include 1-4 science observation + darks



FRT000091B1_07_IF164L_TRR3.IMG

Data Type

Data Type is a 2-letter code tied to calibration level :

EDRs
- **BI** = bias measurement
- **DF** = Dark field measurement
- **SP** = Sphere measurement
- **SC** = Scene measurement

TRDRs
- **RA** = radiance on sensor
- **IF** = I/FDDR

DDRs
- **DE** = Derived information

TERs and MTRDRs
- **IF** = corrected I/F
- **BR** = browse product
- **SU** = summary parameters, unrefined
- **SR** = summary parameters, refined
- **IN** = data processing and traceability information
- **WV** = wavelength information

FRT000091B1_07_IF164L_TRR3.IMG

Macro ID or
Browse Product

- Usually this **3-number** code refers to the internal macro that executed to acquire the observation.
- In the case of browse products, it is a **3-letter** code that describes the type of product: **CAR, CHL, CR2, FAL, FEM, FM2, HYD, HYS, IC2, ICE, IRA, MAF, PAL, PFM, PHY, TAN, TRU, VNA**

AGU Journal of Geophysical Research: Planets 10.1002/2014JE004627

Table 3. Updated Browse Product Definitions and Descriptions

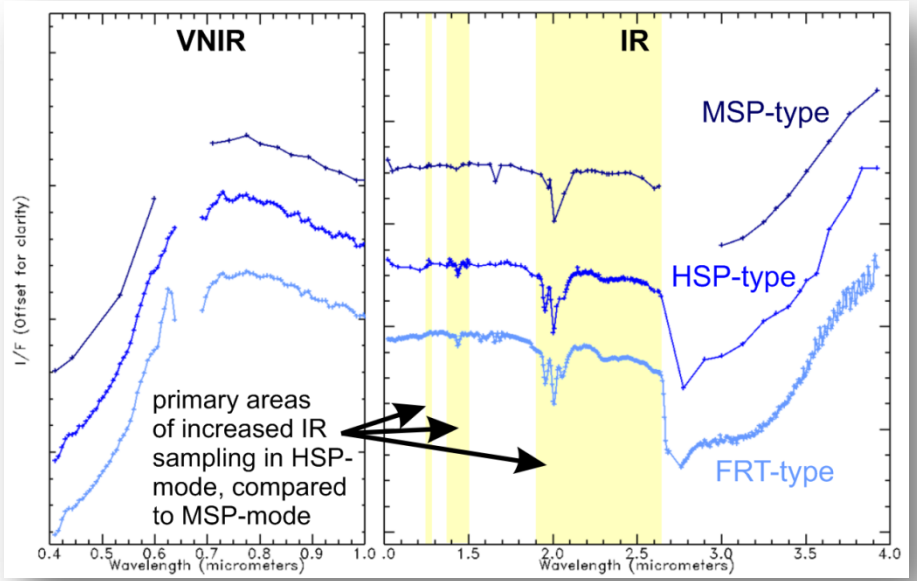
Abbreviation	RGB Components	Significance and Interpretation
		VNIR Browse Products
TRU	R600 R530 R440	From "true color." An enhanced true color representation of the scene, derived from I/F after correction for atmospheric and photometric effects.
VNA	R770 R770 R770	From "VNIR albedo." Shows photometrically corrected I/F at 770 nm and may be used to correlate spectral variations with morphology.
FEM	BD530_2 SH600_2 BDI1000VIS	From "Fe minerals." Shows information related to Fe minerals and represents the curvature in the visible and near-infrared wavelengths related to iron. FEM is particularly sensitive to ferric and ferrous mineral absorptions, as well as negative slopes due to dust coatings or compacted dust texture. Red colors indicate nanophase or crystalline ferric oxides, green colors are usually a result of textural effects, and blue colors are usually dust-free or more mafic surfaces.
FM2	BD530_2 BD920_2 BDI1000VIS	From "Fe minerals, second version." Shows complementary information related to Fe minerals. The FM2 browse product is particularly sensitive to olivine and pyroxene, as well as nanophase ferric oxide and crystalline ferric or ferrous minerals. Red colors indicate the presence of nanophase ferric oxides, green colors suggest coarser-grained Fe minerals (particularly low-Ca pyroxene), and blue colors are often dust-free or more mafic surfaces.

See **Table 3 in Viviano-Beck et al. (2014)** for a concise description of all CRISM summary parameter browse products and common interpretations for the colors observed.

FRT000091B1_07_IF164L_TRR3.IMG

Detector

- **Indicates which CRISM detector the data refers to:**
  - **S** = Visible-near infrared (0.4 - 1 µm)
  - **L** = Infrared (1 - 4 µm)
  - **J** = Joined (0.4 - 4 µm)
- Only TER/MTDR products are “Joined” to cover the full wavelength range



FRT000091B1_07_IF164L_TRR3.IMG

Product Type and Version Number

3-letter code plus version number:

- **EDR** = Experimental Data Record
  - Raw DN
- **TRR** = Targeted Reduced Record
  - Also called TRDR
  - Calibrated to radiance, I/F
- **DDR** = Derived Data Record
  - Reconstructed attitude knowledge
  - e.g., lat, lon, *i*, *e*, *g*
- **TER** = Targeted Empirical Record
  - Joined (VNIR+IR) corrected I/F, summary parameters, and browse products - just like MTRDRs but not map-projected
- **MTR** = Map-projected Targeted Record
  - Also called MTRDR
  - Map projected and joined (VNIR+IR) corrected I/F, summary parameters, and browse products

FRT000091B1_07_IF164L_TRR3.IMG

Extension

PDS-delivered data files (not extras) may have the following extensions:

- **.IMG**
  - Floating point
  - Open using ENVI or any PDS-compliant software
  - MTR .IMG products are compatible with ArcGIS
- **.PNG**
  - Portable network graphic
  - Byte-scaled, 3-color composite
  - 4th channel carries transparency layer
- **.LBL**
  - PDS label file (required for PDS-compliant software)
- **.HDR**
  - ENVI header file (required for ENVI or ArcGIS)
- **.TAB**
  - Text file containing wavelength information

What files do I need when I want to…

View a Browse Product

- Choose the browse product(s) of interest
  - Use 3-letter code – see slide 7
  - For example, for mafic minerals choose MAF
- Use any image viewing software to **open .PNG files**

Load a MTRDR browse product into ArcGIS

- Choose the browse product(s) of interest
  - Use 3-letter code – see slide 7
  - For example, for mafic minerals choose MAF
- In Arc, Add Data and choose ***BR*J_MRR3.IMG file**
  - Make sure associated .HDR file is in the same directory
- RGB composite will load automatically
- Use Layer Properties to adjust symbology, transparency, etc.

Load a MTRDR summary parameter cube into ArcGIS

- In Arc, Add Data and choose ***SU*J_MRR3.IMG file**
  - Associated .HDR file will need to be in same directory
- Use Layer Properties, Symbology to choose displayed parameters:
  - Choose a single summary parameter and apply a stretch and color ramp if desired
  - Choose 3 parameters for an RGB composite, apply appropriate per-band stretches
  - 65535 is the background value

Process a TRDR using the CRISM Analysis Toolkit (CAT)

- Open ***IF*_TRR3.IMG** in ENVI
  - Associated .HDR file will need to be in same directory
- Follow standard CAT procedures

View or Analyze corrected I/F spectra

- We recommend staying in detector space for in-column ratioing
- Open corrected I/F cube in ENVI or other compatible software:
  - ***IF*TER3.IMG** and .HDR
- To link or compare to the summary parameter cube, also open:
  - ***SR*TER3.IMG** and .HDR (or "SU" for unrefined parameters)
- If you process your own L- or S-detector images using the CAT, you will have different filenames

Make my own custom browse product

- Open the ***SR*J_MRR1.IMG** (or your own summary parameter cube) in ENVI or compatible software
  - Associated .HDR file will need to be in same directory
- Select and load 3 summary parameters as an RGB
- Apply appropriate stretches
- Save byte-scaled rendering from the Image window using Save Image As, Image File, 24-bit color
  - For loading into Arc, choose File Type = ENVI; this will write out a .HDR file that retains map projection information
  - For presentations or general viewing, choose File Type = PNG, JPG, etc