Dataset: **Spectral images of the Moon acquired the High Resolution Infrared Spectrometer (HRII). Calibrated Spectra v1.0** **Web-Folder:** holdings/dif-l-hrii-3_4-epoxi-lunar-cals-v1.0	
Wavelength (dataset.cat)**:** 1.05–4.8-micron spectra (calibrated)	
Instrument (dataset.cat)**:** High Resolution IR Spectrometer (HRII)	
Target (dataset.cat)**:** Moon	
Data sets (dataset.cat)**:** several	29 December 2007 through 18 December 2009
Description (dataset.cat): This dataset contains calibrated, 1.05- to 4.8-micron spectral images of the Moon acquired the High Resolution Infrared Spectrometer (HRII) from 29 December 2007 through 18 December 2009 during in-flight instrument calibrations for the EPOXI mission. These data were used by Sunshine et al. (2009).	
Reviewer(s):	Lucas Paganini (primary) Neil Dello Russo (secondary)

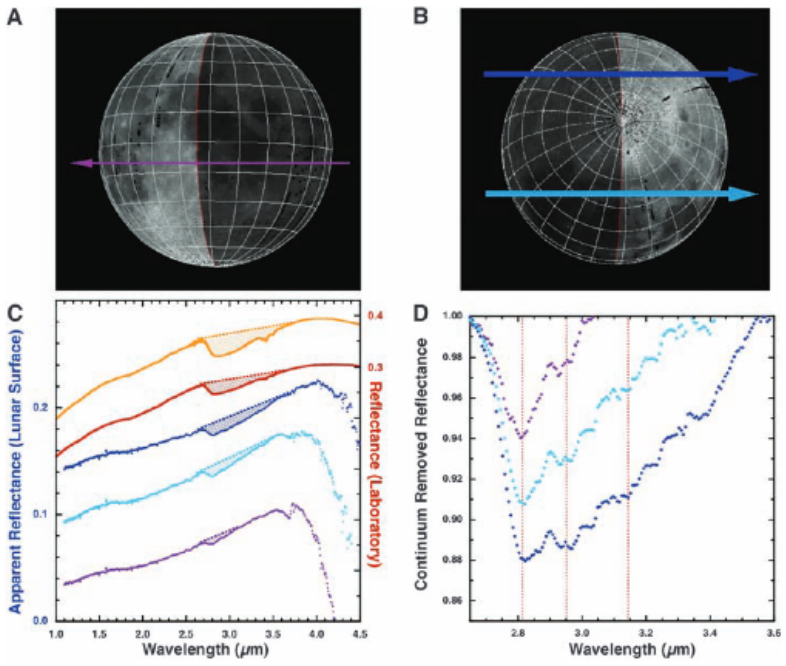

Fig. 1. High signal-to-noise reflectance spectra of the average response along a chord of the Moon acquired as Deep Impact scanned rapidly across the Moon. **(A)** Location of the equatorial chord (purple arrow) acquired on 29 December 2007 over a 750-nm Clementine basemap (15° grid). Arrow width indicates size of spectrometer slit. **(B)** Locations of two chords acquired on 2 June 2009 at mid-latitudes toward the morning (cyan arrow) and evening (blue arrow) sides. **(C)** Spectra of the three chords as compared to laboratory data of two lunar soils (14259, red; 62231, orange). Continua over the 3-μm region (dashed) reveal absorptions due to hydration (shaded regions) similar to hydration features in the laboratory data (some, if not all, of which is terrestrial in origin). **(D)** Continuum-removed spectra of the 3-μm regions of the Deep Impact chord spectra. The three major OH and H_2O absorptions near 2.8, 2.95, and 3.14 μm are indicated (dotted red lines).

Sunshine et al. (2009)

1) Directory structure:

catalog/: √
calibration/: √
document/: √
index/: √
data/: √

Full description:

```
/                  Top level of volume
 |
 |-- AAREADME.TXT      This file
 |
 |-- VOLDESC.CAT       Description of the logical contents of this volume
 |
 |--/CALIB/            Directory containing calibration files
 |
 |--/CATALOG/          Directory containing PDS catalog files providing overviews of the mission, instrument, and
dataset
 |
 |--/DATA/             Directory containing calibrated data products
 | |
 | |--/RADREV/         Reversibly calibrated spectra in radiance units
 | | |
 | | +--/YYYY/         Multiple year directories, as needed
 | |   |
 | |   +--/DDD/        Multiple day-of-year directories
 | |     |
 | |     |-- *.FIT     FITS file, 2-D spectral image with four extensions
 | |     +-- *.LBL     PDS label, one for each FITS file
 | |
 | +--/RAD/            Irreversibly calibrated spectra in radiance units
 |   |
 |   +--/YYYY/         Multiple year directories, as needed
 |     |
 |     +--/DDD/        Multiple day-of-year directories
 |       |
 |       |-- *.FIT     FITS file, 2-D spectral image with four extensions
 |       +-- *.LBL     PDS label, one for each FITS file
 |
 |--/DOCUMENT/         Directory containing documents most useful understanding this dataset
 |
 |--/EXTRAS/           Directory containing an image (There is no EXTRAS/ folder)
 |
 +--/INDEX/            Directory containing PDS index files
```

Consistency	Directory structure is complete.
Notes	• Please note the flat-field data were mostly saturated at long wavelengths • Due to a minor error in the lunar calibration sequence, a series of HRII dark frames were not recorded. A retest to acquire the missing HRII darks was scheduled for 16-17 January 2008. • (More drawbacks are described in dataset.cat)

2) Catalog files (catalog/catinfo.txt)

File	Status	Comments
CATINFO.TXT	√	Descriptive.
EPOXI.CAT	√	Descriptive.
DIF.CAT, HRII.CAT	√	Descriptive.
DATASET.CAT	√	Descriptive.
REF.CAT	√	Descriptive.

Notes: No observed omissions. Good description of each dataset:

Phase and Calibration Activity	Obs Date/DOY	Target	Exposure ID Start	Exposure ID Stop
Cruise 1				
Lunar Calibration	2007-12-29/363	Moon	1000005	1070000
Cruise 2				
HRII Lunar Flats&Radiometry	2009-06-01/152	Moon	1000000	1000000
	2009-06-02/153	Moon	1000000	1000076
HRII Lunar Antisat Fltr&Rad	2009-06-09/160	Moon	1000000	1000519
HRII Lunar Flats/Rad Cal#1	2009-12-05/339	Moon	1000000	1000076
HRII Lunar Flats/Rad Cal#2	2009-12-12/346	Moon	1000000	1000076
HRII Lunar S.Pole Rad	2009-12-18/352	Moon	1000000	1000002

```
Lunar Calibration:  On 29 December 2007 as the spacecraft approached
  Earth, the three science instruments used the Moon as a target to
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3) Documentation (document/docinfo.txt)

Consistency	Directory structure is complete. Information is descriptive.
Notes	None.

4) Addition browsing (browse/)

Consistency	Nonexistent.
Notes	–

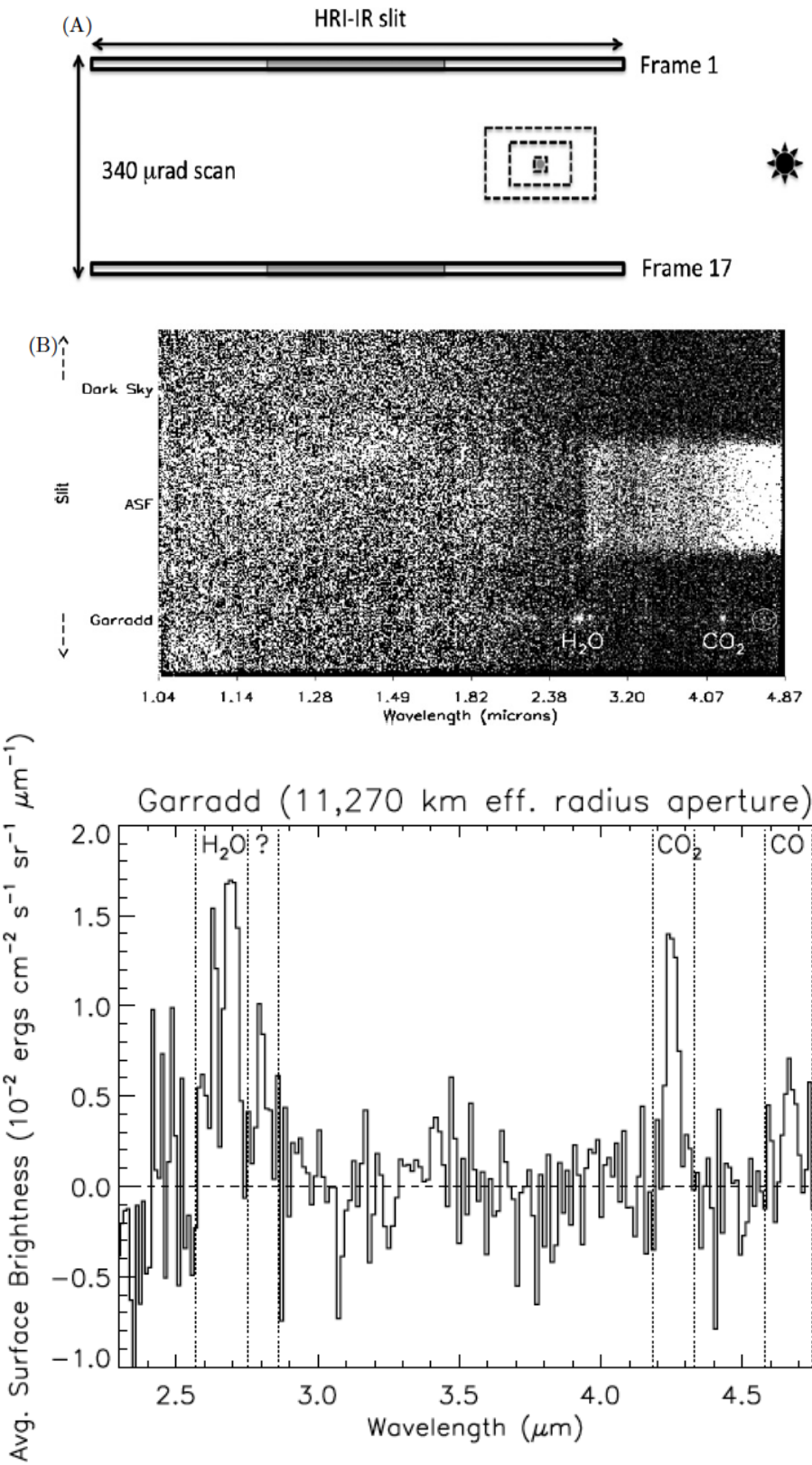
5) Data (data/)

Folder	Status	Comments
RADREV	√	Calibrated but uncleaned data in units of radiance (calibration steps can be reversed to get back to the raw DN) – **Level 3 data**. Units of radiance as

		Watts/(meter² steradian micron)
RAD	√	Calibrated and irreversibly cleaned data in units of radiance – **Level 4 data**. Units of radiance as *Watts/(meter² steradian micron)*

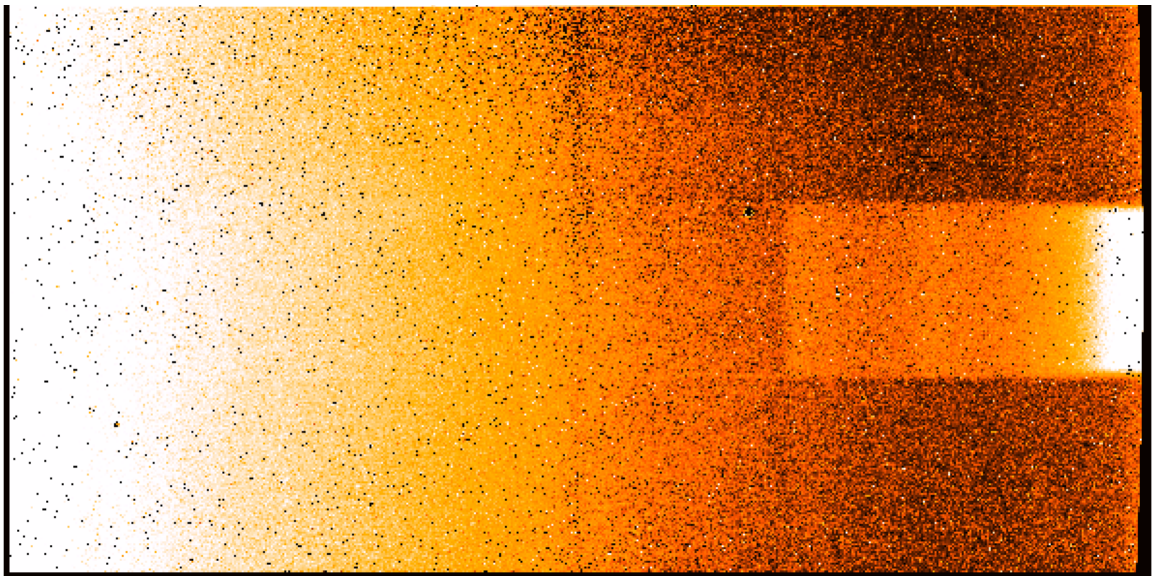
Consistency	Directory structure is complete.
Notes	• Combined frame sizes (512x256 pixels^2, 512x126 pixels^2,…), corresponding to different science/calibration objectives • **Data should be separated by frame size (science/cal)** • Extension 0: Radiance • Extension 1: Quality map (data flags) • Extension 2: Wavelength (micron) • Extension 3: Resolution per pixel • Extension 4: Signal-to-noise ratio

Example of cometary data (Feaga et al. 2014):

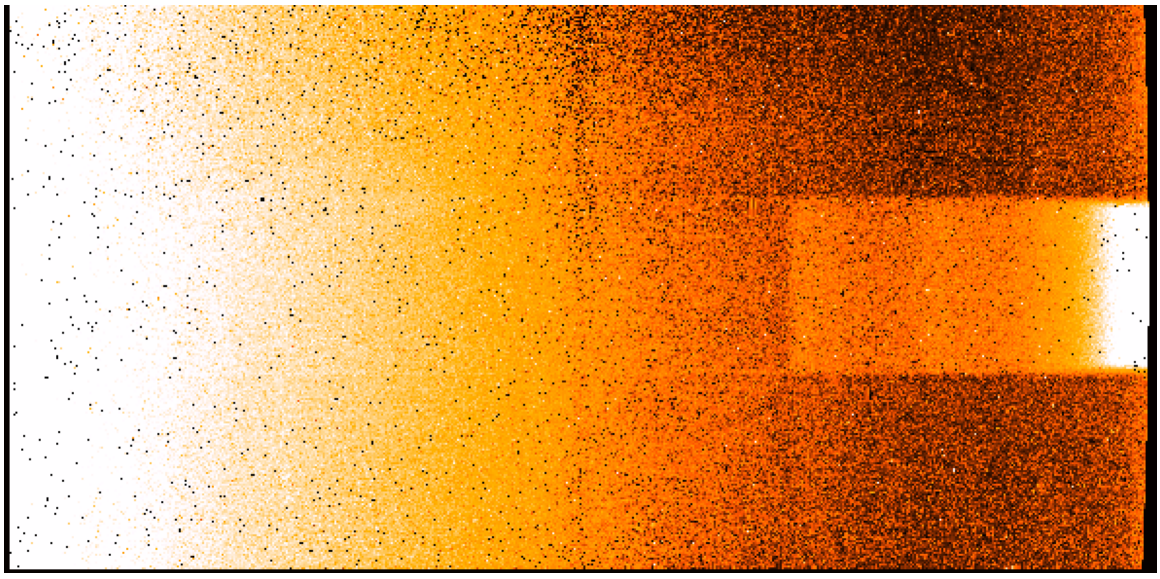


Examples

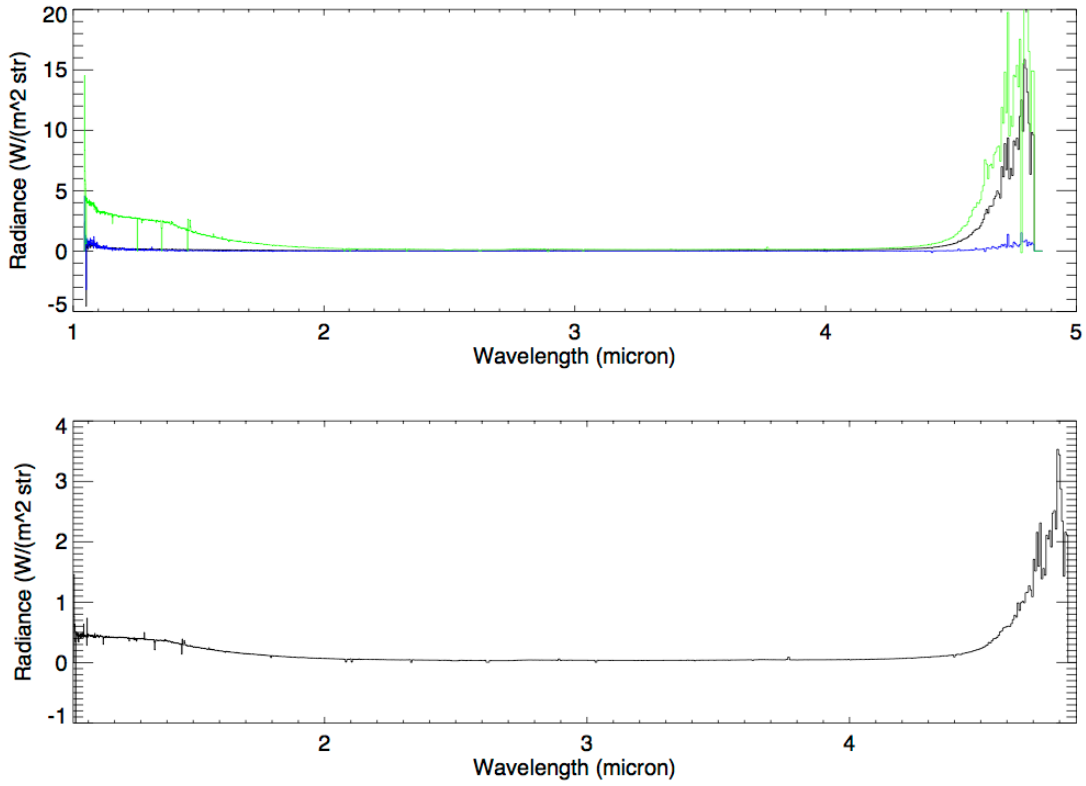
RADREV:



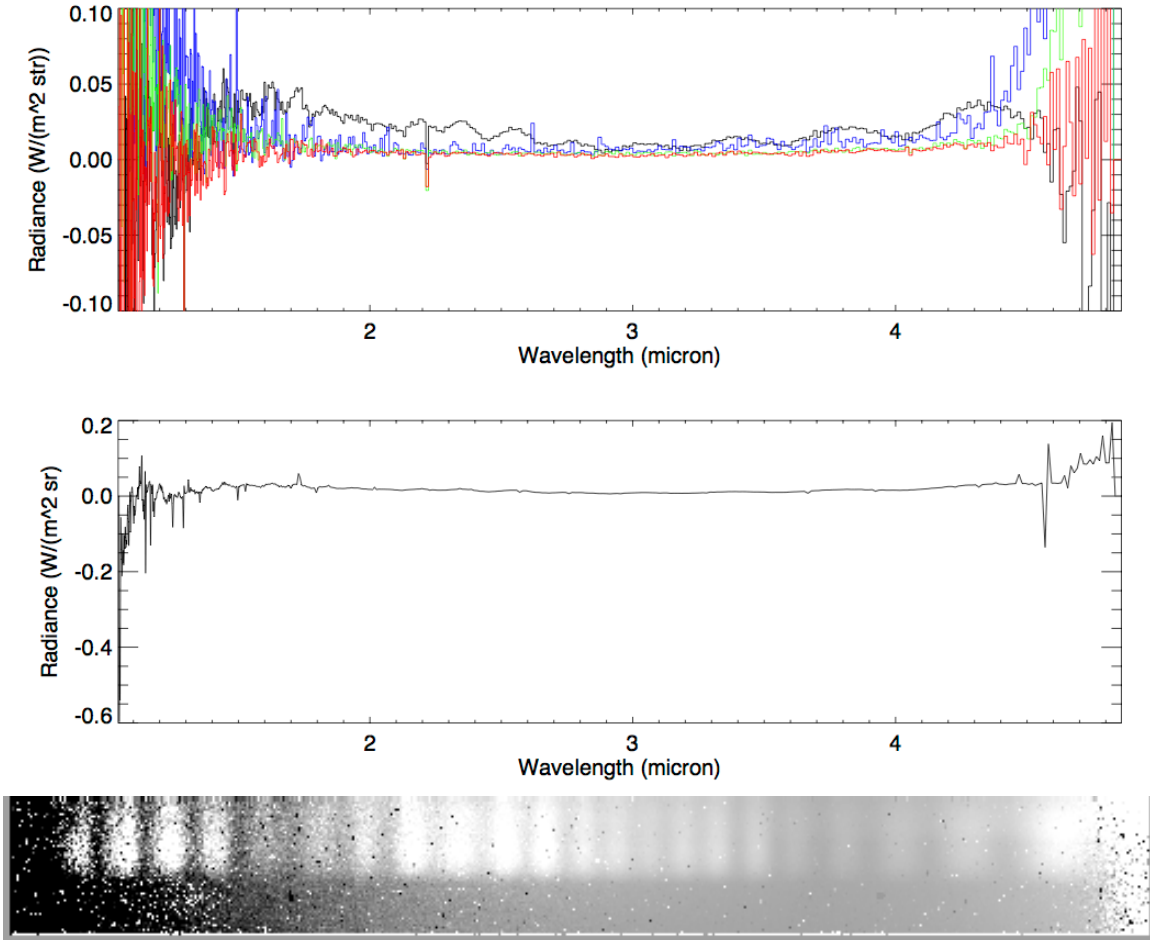
RAD:



Spectral samples from current database (selections due to different frame sizes):



Folder: dif-l-hrii-3_4-epoxi-lunar-cals-v1.0/data/rad/2007/363. Note: y-axis unit is *W/(m² sr micron)*



Folder: dif-l-hrii-3_4-epoxi-lunar-cals-v1.0/data/rad/2009/352/
HRII Lunar South Pole Radiometry - Upper: black, blue, red and green represent scans 1, 2, 3 and 4. Middle: spectrum of 16 stacked frames (11-pix integration). Bottom: stacked (16) frames. Note: y-axis unit is *W/(m² sr micron)*

Final comments	• Data are mixed within a given RAD folder. It would benefit from some organization and labeling. But they probably follow previous standards • Check if the features observed in the stacked image represent a (real) physical effect • Bad pixels observed in single frame images

6) Remaining directories (geometry, software, extras)

Consistency	Nonexistent.
Notes	–