Usability of CASSINI data:
an initial assessment based upon … a single opinion, anecdotal, and not with a systematic approach

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Data Usability Issues

- Status of calibration
- Efficacy of documentation
- Ease of use
  - Above and beyond what is accepted by PDS
  - Taking CDAP (Cassini Data Analysis Program) proposers as the 'end users' of the data products

CDAP

In general:

- A CDAP panel must have team members familiar with the data sets to assess whether a proposal is convincing in its 'use' of the data
- A large number of CDAP proposals come in, in which the authors do not exhibit extnsive knowledge of the data
- People seemingly the best predisposed for success at CDAP are:
  - team members,
  - auxilliary team members
  - team associates

CDAP

- In principle, authors must request team member support for the data analysis in a proposal (to be considered competitive)
  - In practice this leads to overcommitted Co-Is
  - Discrimination against those science questions not of interest to the team (and a sense of being locked out if that team member is not interested)
- Some CASSINI instrument teams have been funded through CDAP to address higher order products that were beyond the commitment to PDS:
  - ISS (2007): Modeling Photometric properties of dust in Enceladus' Plume
  - ISS & CIRS (2007): Maps of Bolometric Bond Albedo
  - CAPS (2008) (Ion moments at Titan)

Summary

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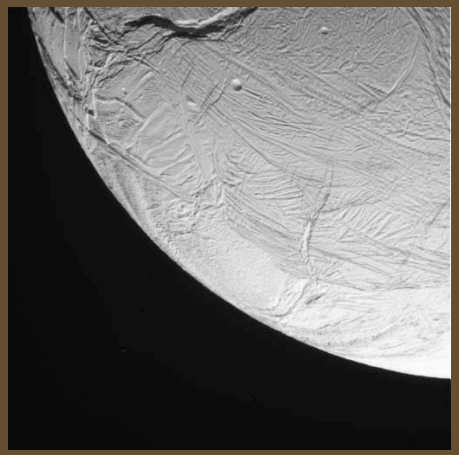
RS	occulations - no derived	EDRs	?	N	~	no derived products
I: images are available on different sites						
CD: a CD can be ordered - no other online product is available						
E: errata is provided						
doc: online documentation is provided separate from the CD						
soft: software for visualization or calibration is provided						

ISS

- In general, few issues
  - I have found the Cassini data to be very useful indeed.
  - The PDS interface is fine but the user needs to be aware of occasional irregularities.
    - If an image of a satellite was not targetted by ISS (e.g., nav), then it sometimes is labeled as SKY and the search engine will not find it. these are rare, but it helps a lot to use the JPL website Raw image search engine to verify that all frames have been identified.
  - I downloaded the Calibration tools directly from PDS,
  - Required a few minor questions answered by ISS team members, the programs are up and running on my lovely MAC.
  - uncertain whether the calibrations are correct, been updated, or are being implemented properly.
    - they seem to be good but residual patterns appear at the 1-2 DN level, not enough to impact my work significantly but slightly troublesome.

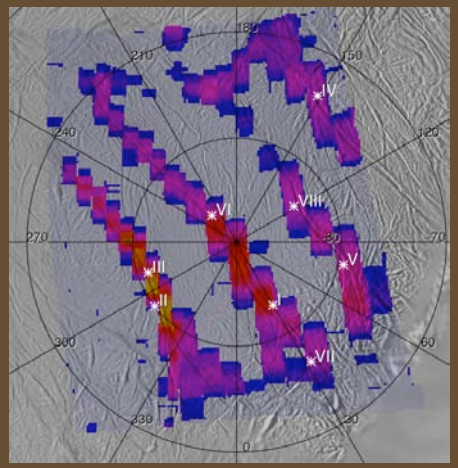


CIRS

- In general, main issue is calibration

New issues:

- A) Interference from Reaction wheels (never part of the game plan)
  - Mitigated by special 'DsCALs'
- B) other electrical interference



UVIS

- No assessment

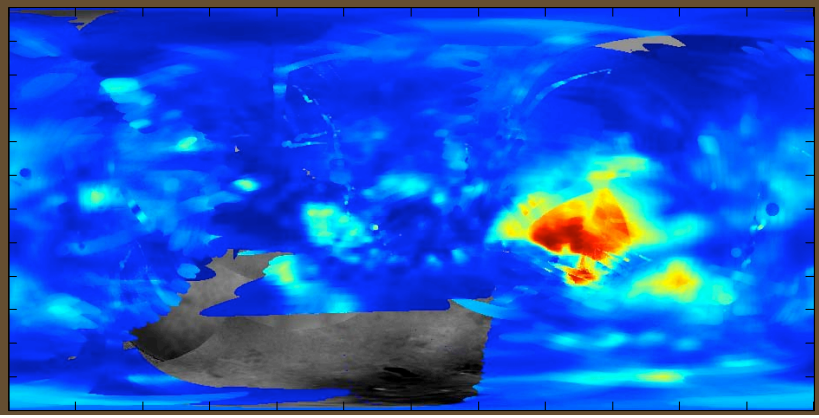
VIMS

- Serious Issues with 'ease of use'
- I logged onto the PDS website to search the VIMS data set. All that is available are EDRs (raw data). Now, I admit I did a quick search, but I specifically looked for calibrated data or information about data calibration. I was unable to find any documentation on the subject of calibrated VIMS data. So, if you don't have a connection to the VIMS instrument team, it would be very very difficult to propose to use this data set in a credible fashion, as there seems to be no publicly available information on the performance of this instrument.

- Comments: PI
- Each user must familiarize themselves with the VIMS data cube for themselves
- Takes a good 60 days to gain a level of proficiency
  - External users ought to propose for such time in order to be credible in using VIMS
- The science is all in how the cubes are calibrated, how they are 'read'. A good scientist gets their hands dirty with the data analysis process.
- He expects potential users to approach any team member, and if that team member thinks the science is interesting, then they will help with the tasks involved.

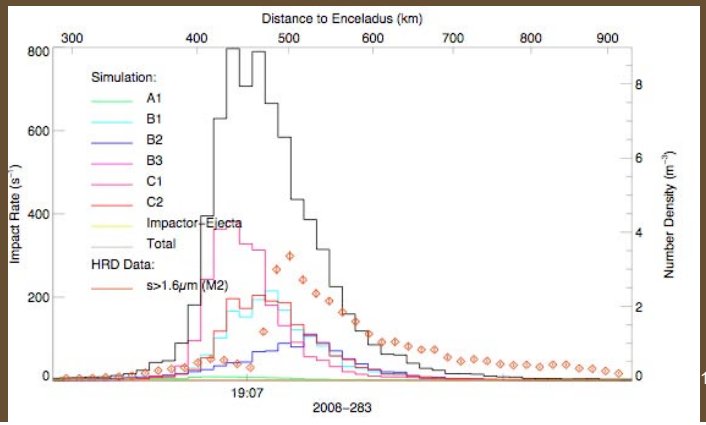
Radar

- No issues



CDA

- PDS content for CDA carries this warning: "Some values described in the PDS label... could not be provided in [these volumes] and are set to their missing constant value. PLEASE CONTACT THE CDA TEAM BEFORE USING THE DATA FOR AN UPDATE OF THE CONFIDENCE LEVEL.

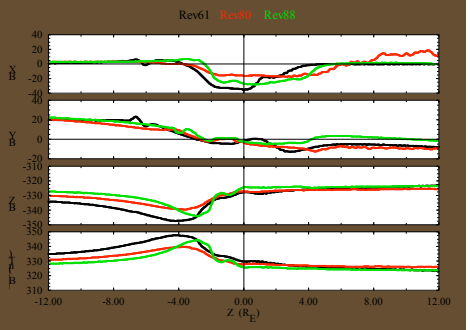


CAPS

- Available: Spectrograms (counts)
  - Allows visibility into where the data 'is'
- Electron and Ion 'Moments' contain the following critical plasma information:
  - Velocity
  - Density
  - Temperature
- Moment calculations are not products that CAPS is contracturaly obligated to provide, but agreed to produce in 'gentleman's agreement'
- Electron Moments
  - Forthcoming with software to be developed in the next 90 days
- Ion Moments
  - Involve a lot of hand work and assessment of s/c pointing
  - Forthcoming in a timeframe longer than 90 days
  - As with CDA - conveying 'confidence' in any given data timeframe, to the end user, is an issue.
- MAPS community satisfaction with these products to be re-assessed at Jan. 2009 PSG.

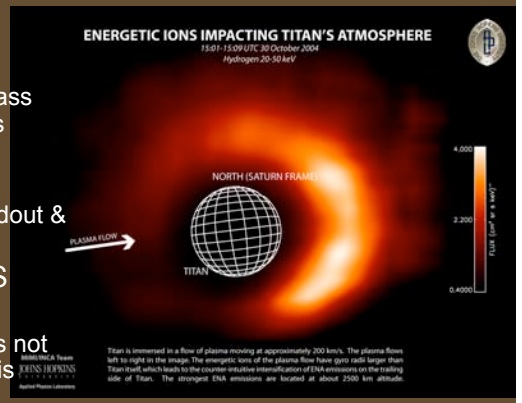
MAG - a 'dual system' magnetometer

- Calibration steps have changed with the failure of the Vector Helium subsystem
- But the calibration has been fixed as of Oct PSG, and all parties are now satisfied.
- Vector Helium Magnetometer
  - Little problems with 'drift'
  - This subsystem failed in 2006
- Flux-Gate Magnetometer
  - Must be frequently calibrated for 'drift'



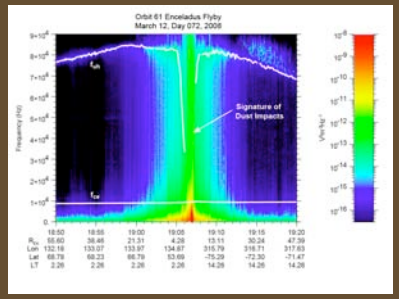
MIMI

- No issues
- Available:
  - CHEMS: energy & mass per channel & images
  - LEMMS: counts per channel
  - INCA: counts per readout & images
- Depends upon CAPS pointing.
  - So if CAPS pointing is not well characterized, this data set is affected.



RPWS

- No issues
- Available products:
  - frequency/time spectrograms
  - High res wave-form data
- The archive seems to be straightforward to use, documentation is available online, software to visualize the data also online



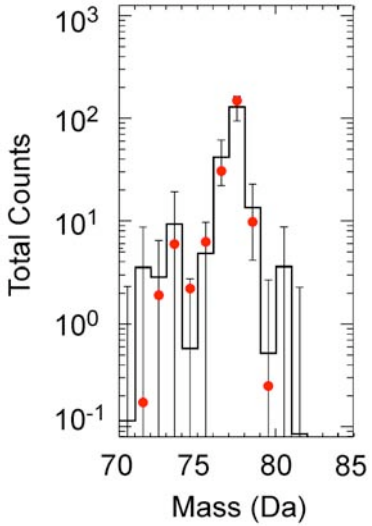
Radio Science

- No assessment

INMS

- No assessment, but a few typos indicate there may be hidden problems
- Available Products: raw data and level 1A products (counts)
- Normal issues with mass spectrometers include calibration. I didn't assess the calibration documentation but noted that the documents online at the PDS mixed up INMS and CAPS information. Also, no INMS team member contact is listed for this data set, since there is an error in the URL. It was not readily evident that the calibration was updated on a regular basis, and the most recent cal file was dated April, 2005.

-cja-



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- PDS products are found across many websites - leading to some confusion.
  - Images on one site, spectra, software on another
- Some 'immature' products make a contribution to the general product count.