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Hands on space environment data

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Observations

- More than 50 years of in-situ solar wind plasma and magnetic field observations.
- Several formats and methods for original data storage.

- That is why we prefer to use homogeneous calibrated data sources, like CDAWed and OMNIweb

Space Physics Data Facility

- Main site:

  http://spdf.gsfc.nasa.gov/data_orbits.html

- SPDF OMNI web

  http://omniweb.gsfc.nasa.gov/

  – OMNI data (spacecraft-interspersed, near-Earth solar wind data)
  – Deep space data (Voyagers, Pioneers, Ulysses, Cassini..)
  – Interfaces for comparing multi-source data

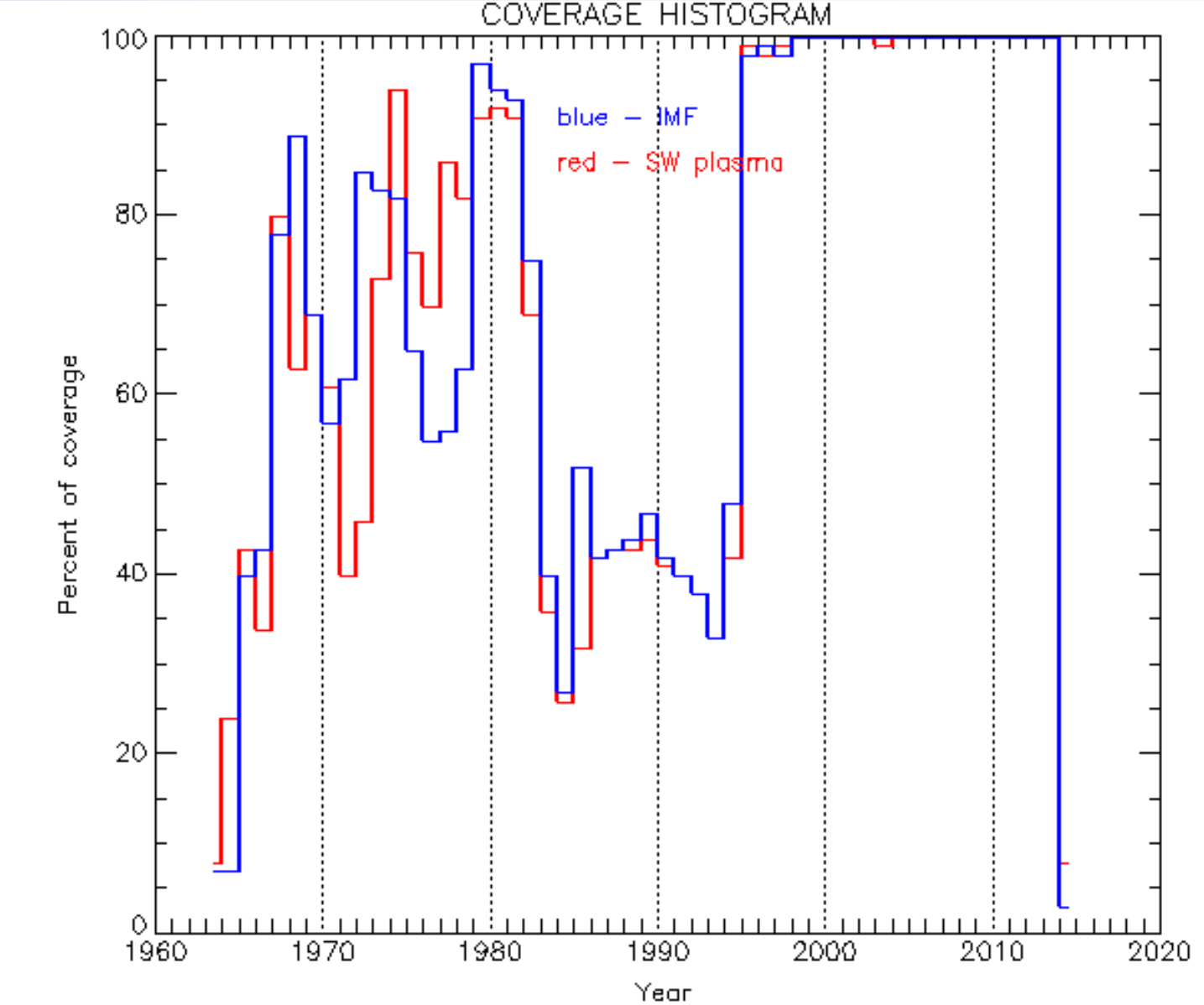
OMNI data

- OMNI data is a collection of satellite and ground based observations since 1960s.
- Time-shifts of higher resolution data to expected magnetosphere-arrival times are done for data from spacecraft in L1 orbits (ISEE 3, Wind, ACE), prior to taking hourly averages.
- 1min, 5min, 1h, 1day, 27 day resolutions.
- Data coverage depends on parameter and resolution
- One of the most important Space Climate databases!

List of spacecrafts

- IMP 1 (Explorer 18)
- IMP 3 (Explorer 28)
- IMP 4 (Explorer 34)
- IMP 5 (Explorer 41)
- IMP 6 (Explorer 43)
- IMP 7 (Explorer 47)
- IMP 7 (Explorer 47)
- IMP 8 (Explorer 50)
- IMP 8 (Explorer 50)
- AIMP 1 (Explorer 33)
- AIMP 2 (Explorer 35)
- HEOS 1 and HEOS 2
- VELA 3
- OGO 5
- Merged LANL VELA
- Merged LANL IMP
- ISEE 1
- ISEE 2
- ISEE 3
- PROGNOZ 10
- WIND
- ACE
- Geotail

OMNI 1h data coverage



OMNI web

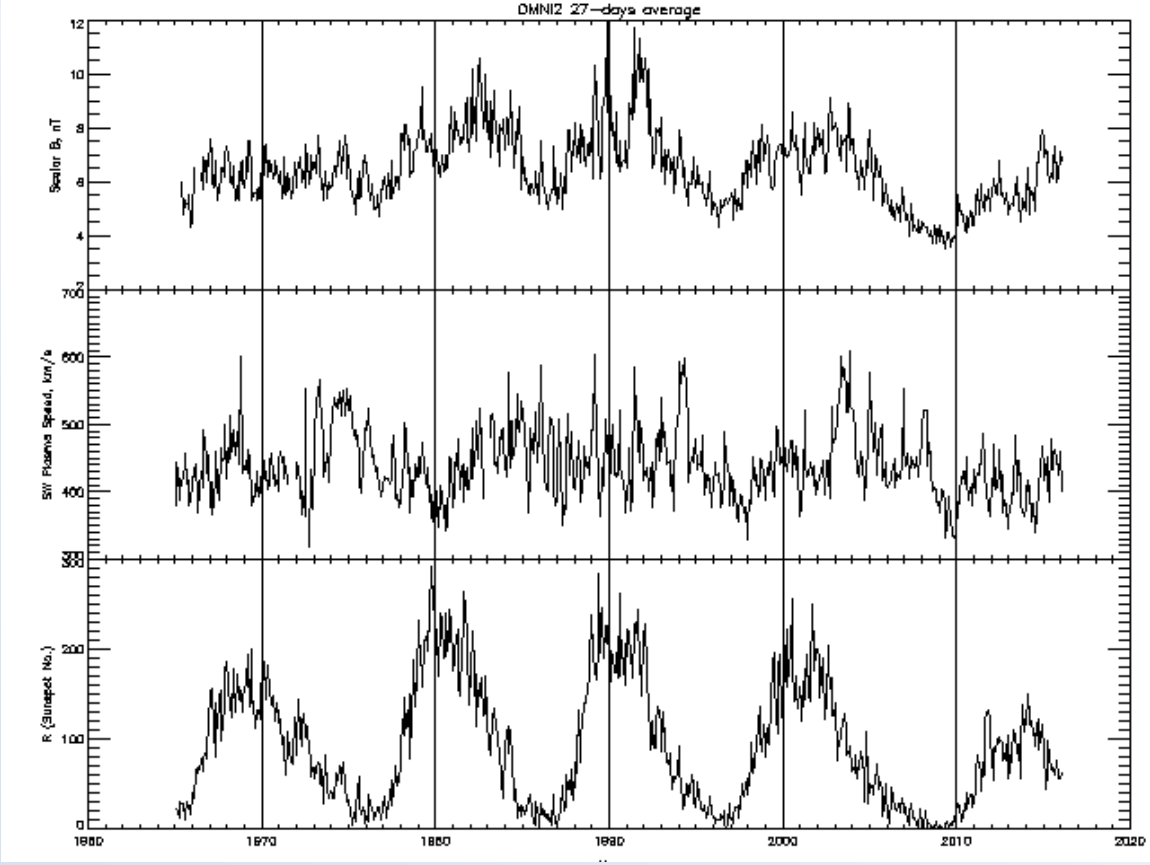
- OMNI web
- http://omniweb.gsfc.nasa.gov/hw.html

- FTP acces
- ftp://spdf.gsfc.nasa.gov/pub/data/omni/

- Plots and listing for low resolution data
- http://omniweb.gsfc.nasa.gov/form/dx1.html

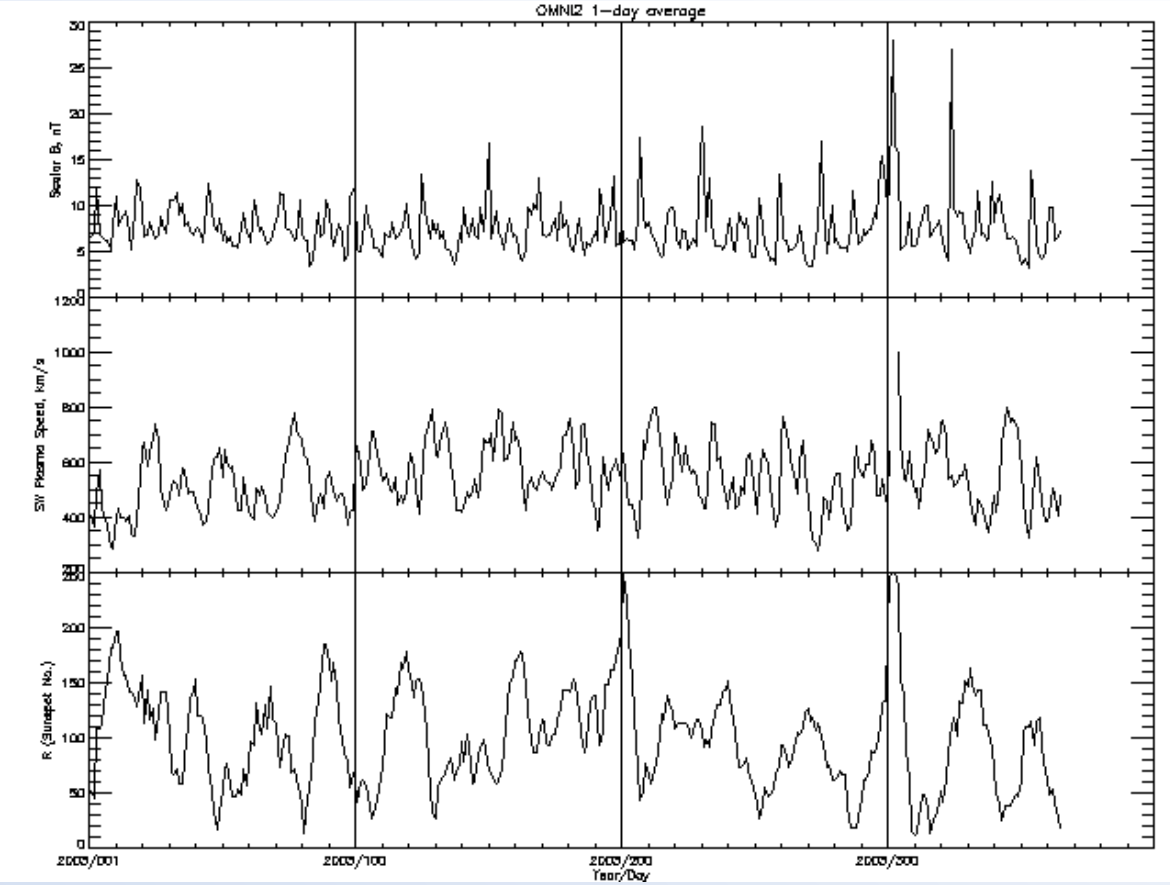
- Plots, 1 min
- http://omniweb.gsfc.nasa.gov/form/omni_min.html

Example 1



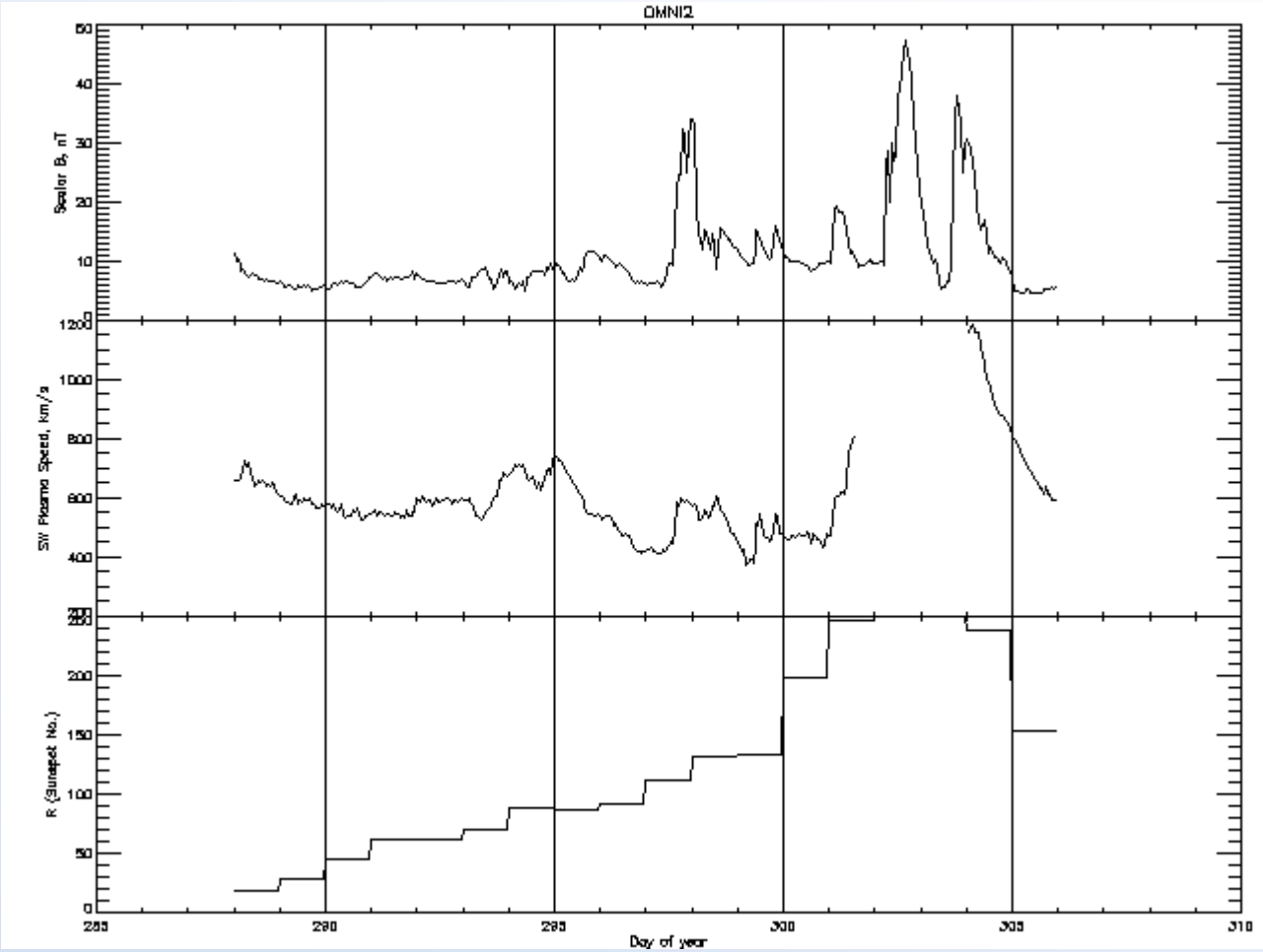
- 27 day averages of HMF magnitude, solar wind velocity, and sunspot number

Example 2, locating Halloween storm



- Daily averages of HMF magnitude, solar wind velocity and sunspot number in 2003

Example 2, locating Halloween storm



- Hourly averages of HMF magnitude, solar wind velocity and sunspot number in 2003/10/15 – 2003/11/01