



# Monitoring the INTEGRAL satellite

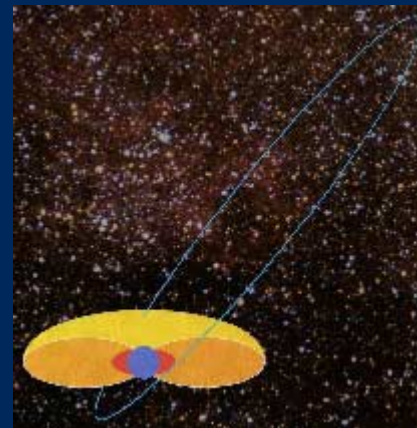
Mathias Beck

INTEGRAL Science Data Centre



# The INTEGRAL Mission

- The INTERnational Gamma Ray Astrophysics Laboratory (INTEGRAL) is a scientific mission of the European Space Agency (ESA).
- To be launched by a Russian Proton rocket on 17-Oct-2002 from Baikonur/Kazakhstan.





# The Instruments

Four Instruments:

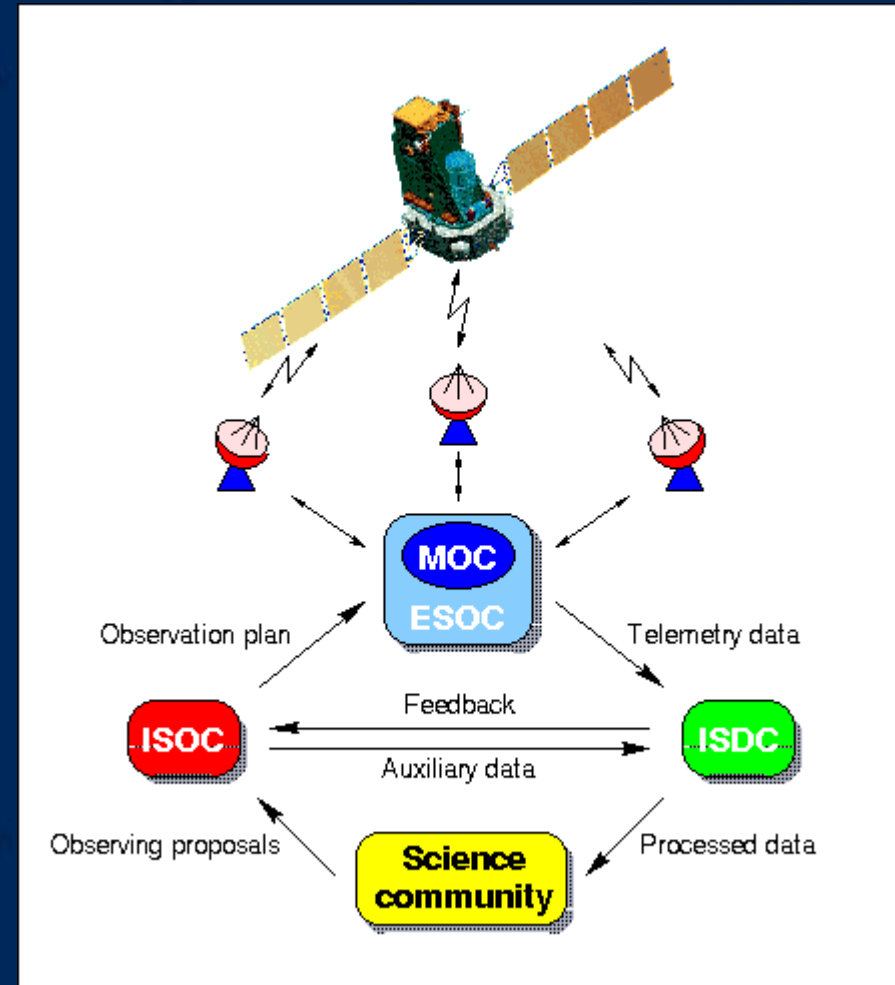
- Spectrometer (SPI)
- Imager (IBIS)
- X-ray monitor (JEMX)
- Optical monitor (OMC)





# The INTEGRAL Ground Segment

- Science Operations Centre
- Mission Operations Centre
- Science Data Centre
- Instrument Teams





# Science Data Centre

- Consortium of a dozen institutes in Europe and the US.
- Prime responsibilities:
  - Detection of Gamma Ray Bursts
  - Detection of Transient Sources
  - Provision of 'standard' data products to user community (archive)



# Data Processing

- Data rate of some 100 kBit/s from the satellite → A few TB of data products over mission lifetime (2-5 years)
- Data processed in 'near real-time' as well after consolidation period (10 days)
- Data format: Flexible Image Transfer System (FITS) – standard format for astronomy



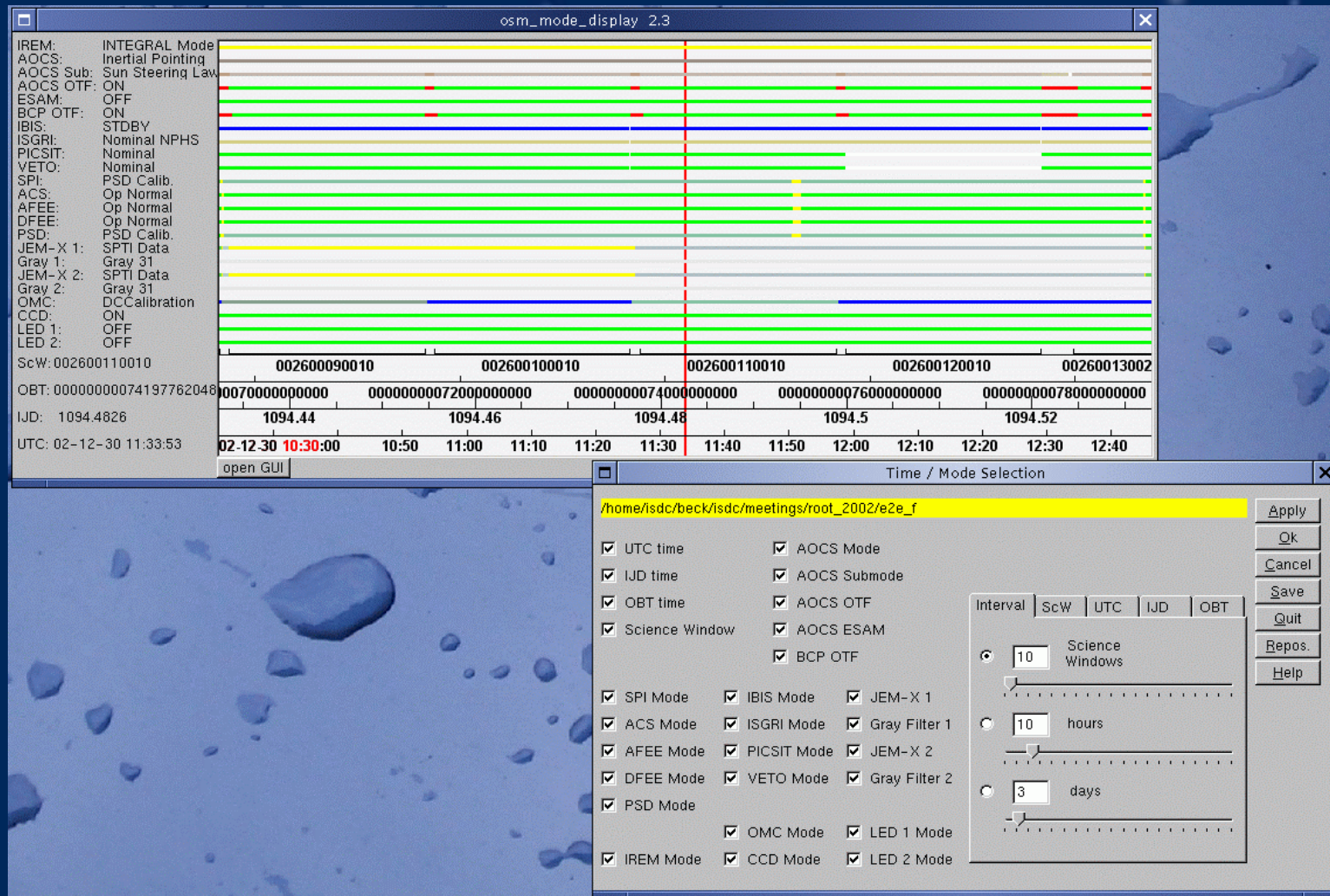
# ROOT @ ISDC

- ROOT at ISDC used for
  - 'high-level' analysis scripts gluing together 'Analysis Executables (ftools)'
    - Interfaced CINT with all support libraries (data I/O, parameter handling, logging etc.)
  - Interactive Operations Status Monitoring (IOSM)
    - Intensive use of ROOT graphics classes
    - Possibility to save and re-load user defined display configurations



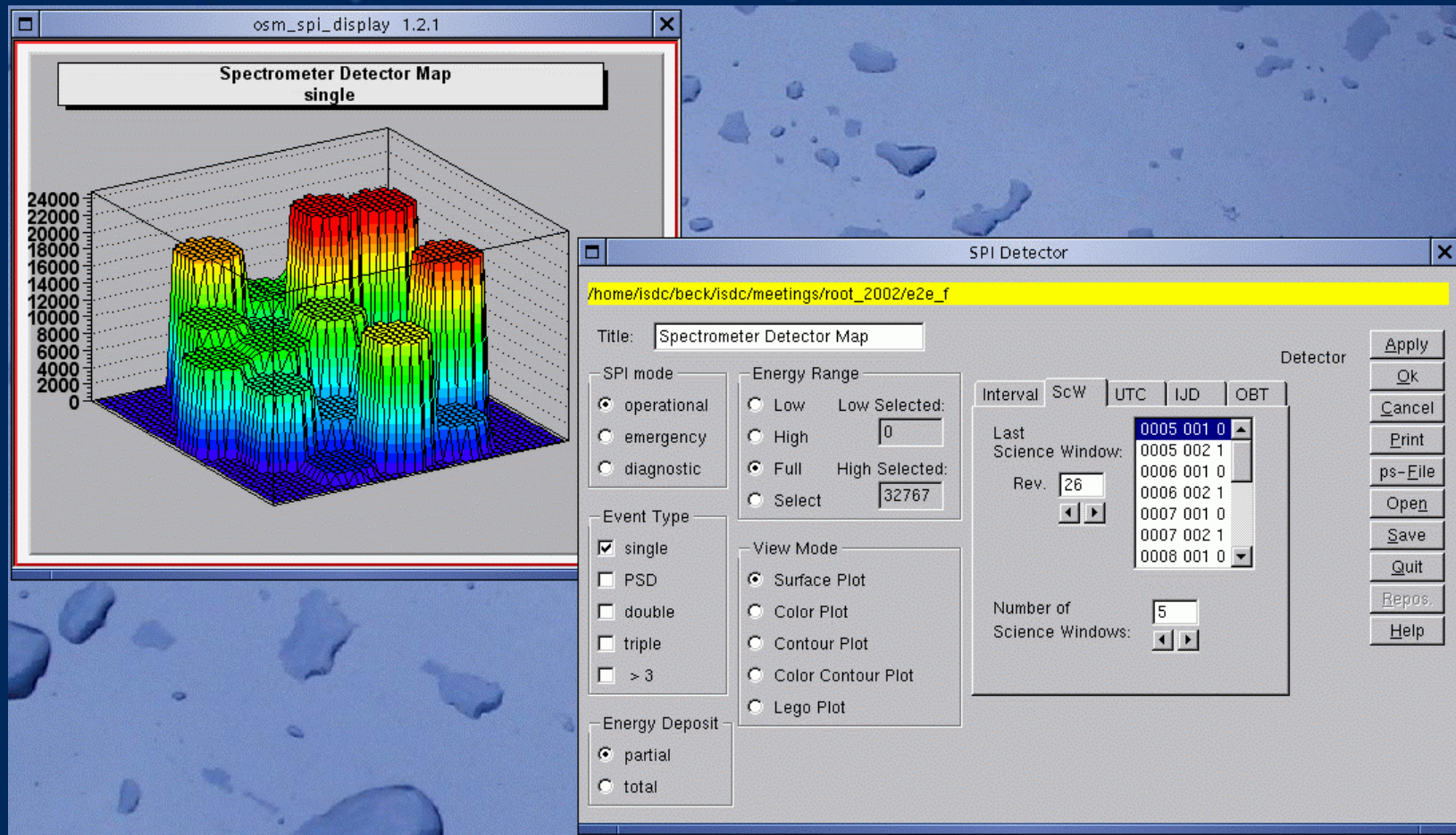


# Example of IOSM display

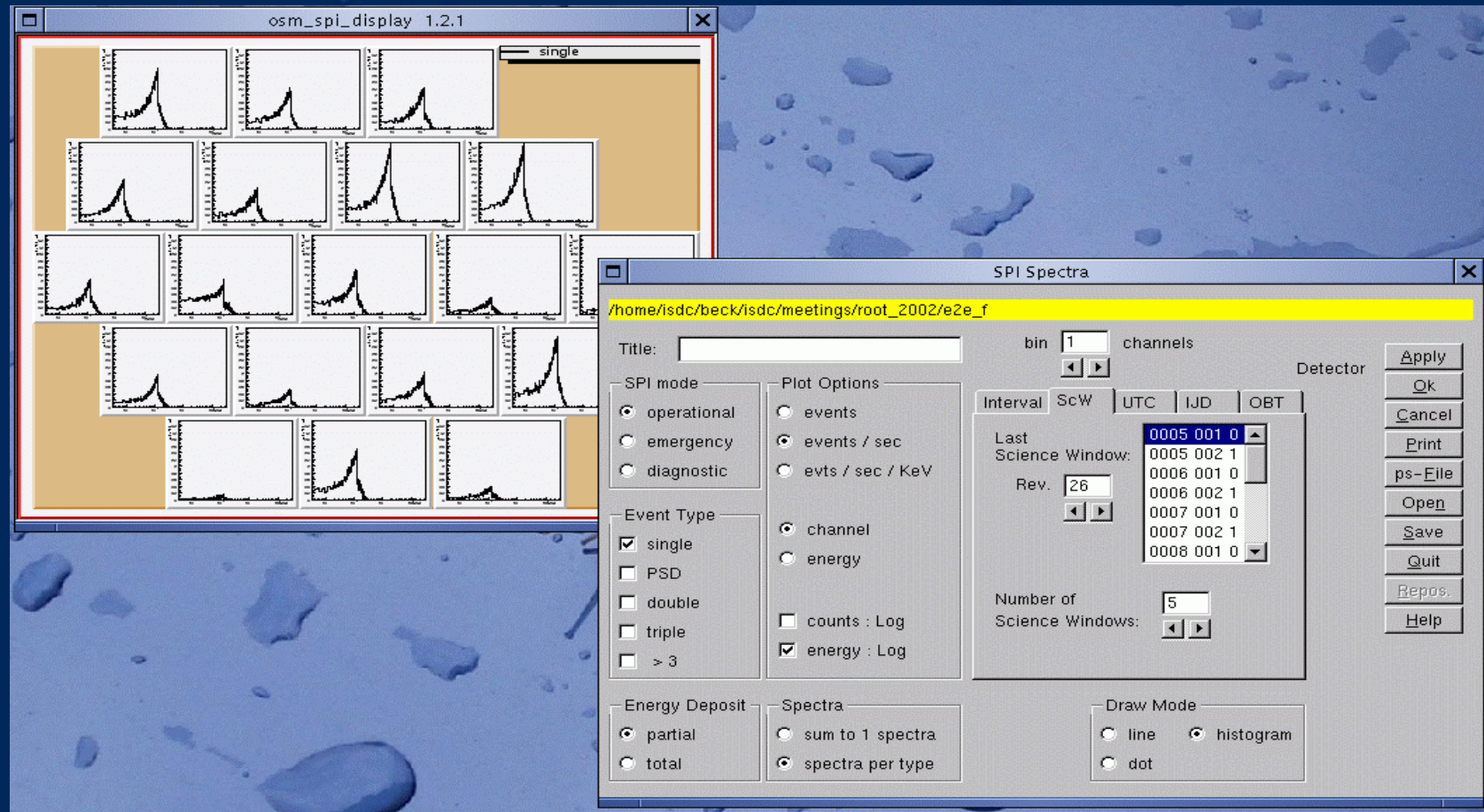




# More examples

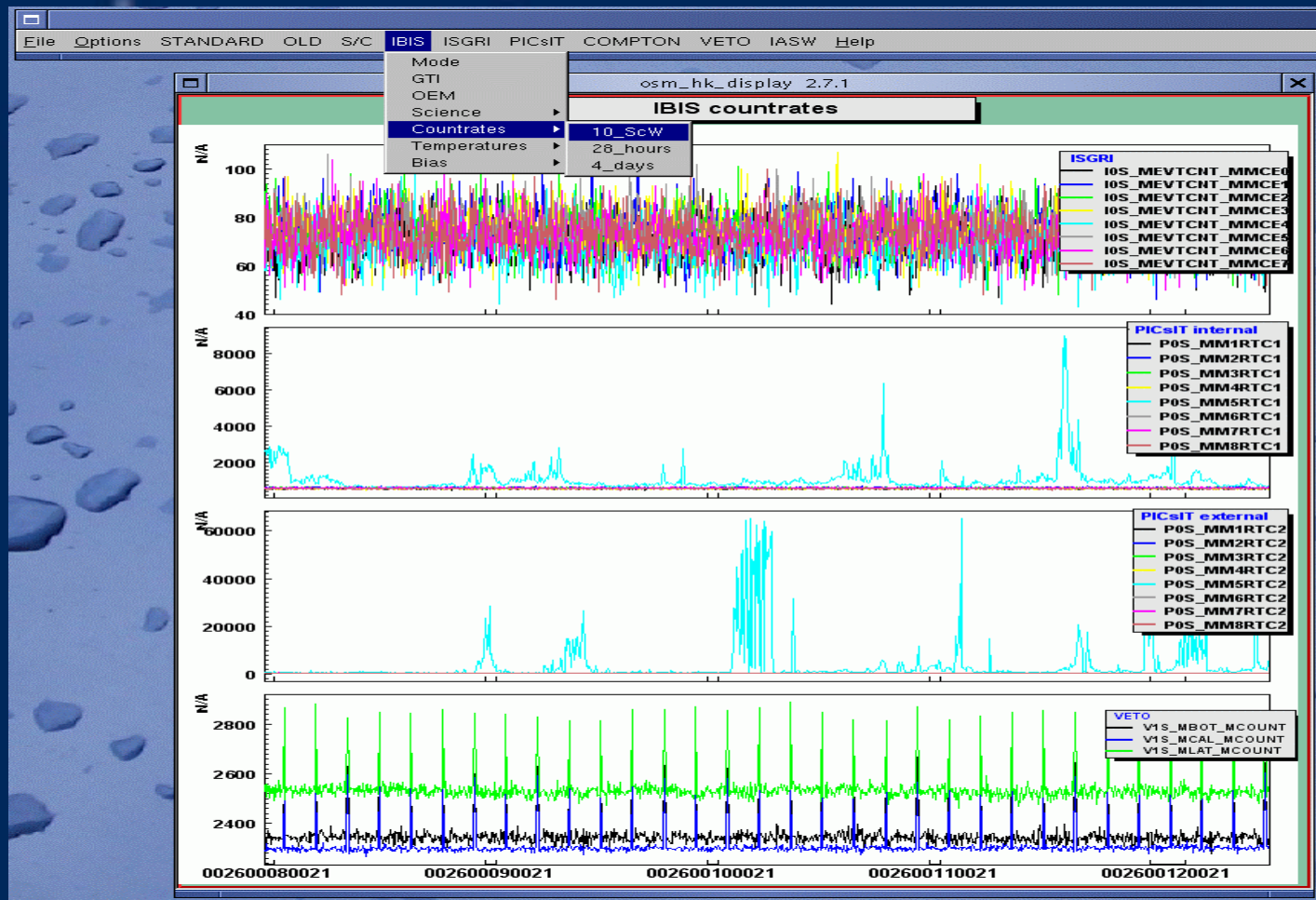


# More examples





# A last example





# Future development

- astroroot (see presentation by R. Rohlfs)
  - Provide non-ISDC specific functionalities to astronomical community
- Use of GRID for data analysis for parallel processing on multiple nodes



# The End

- of my talk is the start for an exciting time for ISDC staff and INTEGRAL users
- Launch on October 17, 2002 at 04:41 UT
- <http://isdc.unige.ch>

