Calibration Status and Requirements

G. Lichtenberg

Overview

- Overall status
- Dark correction concept
- Requirements on key data
- Requirements on data processing
- Requirements on Delta SODAP
- Conclusions

Overall status (I)

- Detector characteristics are mainly as expected from on-ground
- Internal light sources are stable
- No contamination of detecors 1 – 6
- All states are functional

Overall status (II)

- Outstanding problems:
  - Ice in channels 7 & 8
  - Dark correction concept
  - Polarisation correction
  - PPG correction
  - Spatial stray light
  - Data distribution
  - Wavelength calibration

Dark correction concept (I)

- Problems encountered:
  - Non-linear PPG effect (ch. 8)?
  - Thermal background dependent on time (ch. 7,8)?
  - Stray light

Dark correction concept (II)

- Alternative concepts
  - Dedicated darks for each PET/Co-add combination
    - Would solve problems with non-linearity and changing temperature
    - Huge impact on DP, mission planning and maybe science
  - Increase only the number and/or frequency of measurements
- Before a decision we need further analysis of the data

Requirements on key data (I)

- Adjustment of WLS reference?
- Correction of channel 8 spectral calibration (data are available)
- Transfer of knowledge (mandatory!):
  - Changes to key data will come out of science results
  - Scientists will work continously with SCIA data over the mission life time (contrary to people from the industrial side)

Requirements on key data (II)

- Smoothed or unsmoothed key data?
- Polarisation coordinate system used in the key data vs. that used in the data processor
- Procedure to adjust key data to different temperatures that could be applied in the future

Requirements on data processing

- Incorporate WLS dedicated dark in the processing chain (mandatory!)
  - WLS measurements are done in ‘hot’ mode in the IR channels thus nominal darks cannot be used
  - a dedicated dark exists but is not used by the DP
- Adjust the DP to cope with changing transmission and/or changing detector temperature

Requirements on Delta SODAP

- New extended icing test to establish:
  - start of ice build-up
  - effect of heater pulses on detector temperatures over the whole orbit
- Additional measurements for dark correction?

Conclusions

- For the most part the calibration concept is OK, SCIA is in good shape
- Details need to be worked out in 3 categories:
  - Measurements needed for calibrations (especially decontamination procedure)
  - Data processor algorithms and the incorporation of measured data/key data
  - Key data changes