SCIAMACHY Solar Irradiance Investigations Level 1b Version 9.01

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SQWG-3 Final Presentation

SCIAMACHY Solar Irradiance Investigations

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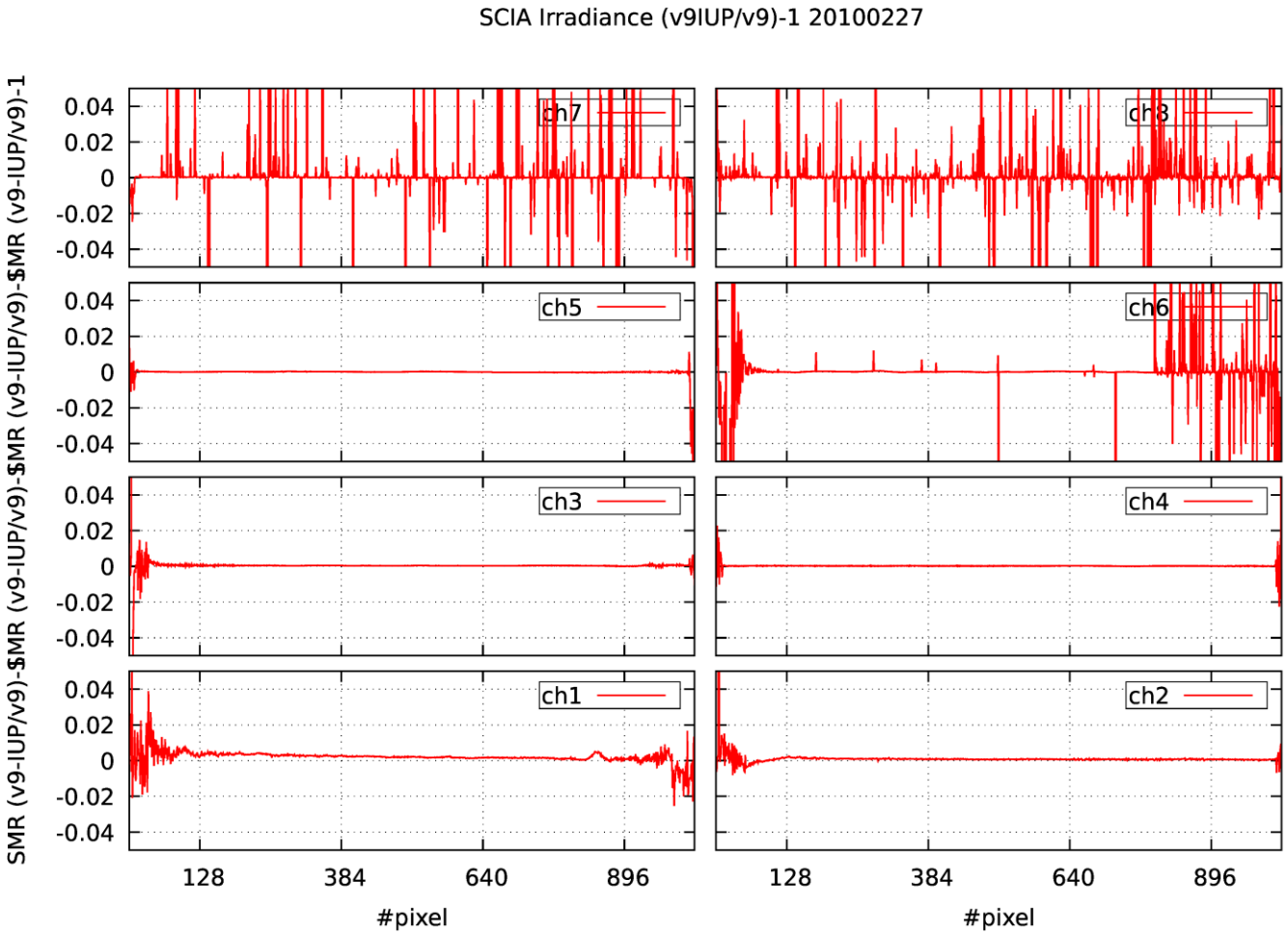
Verification with IUP reference implementation

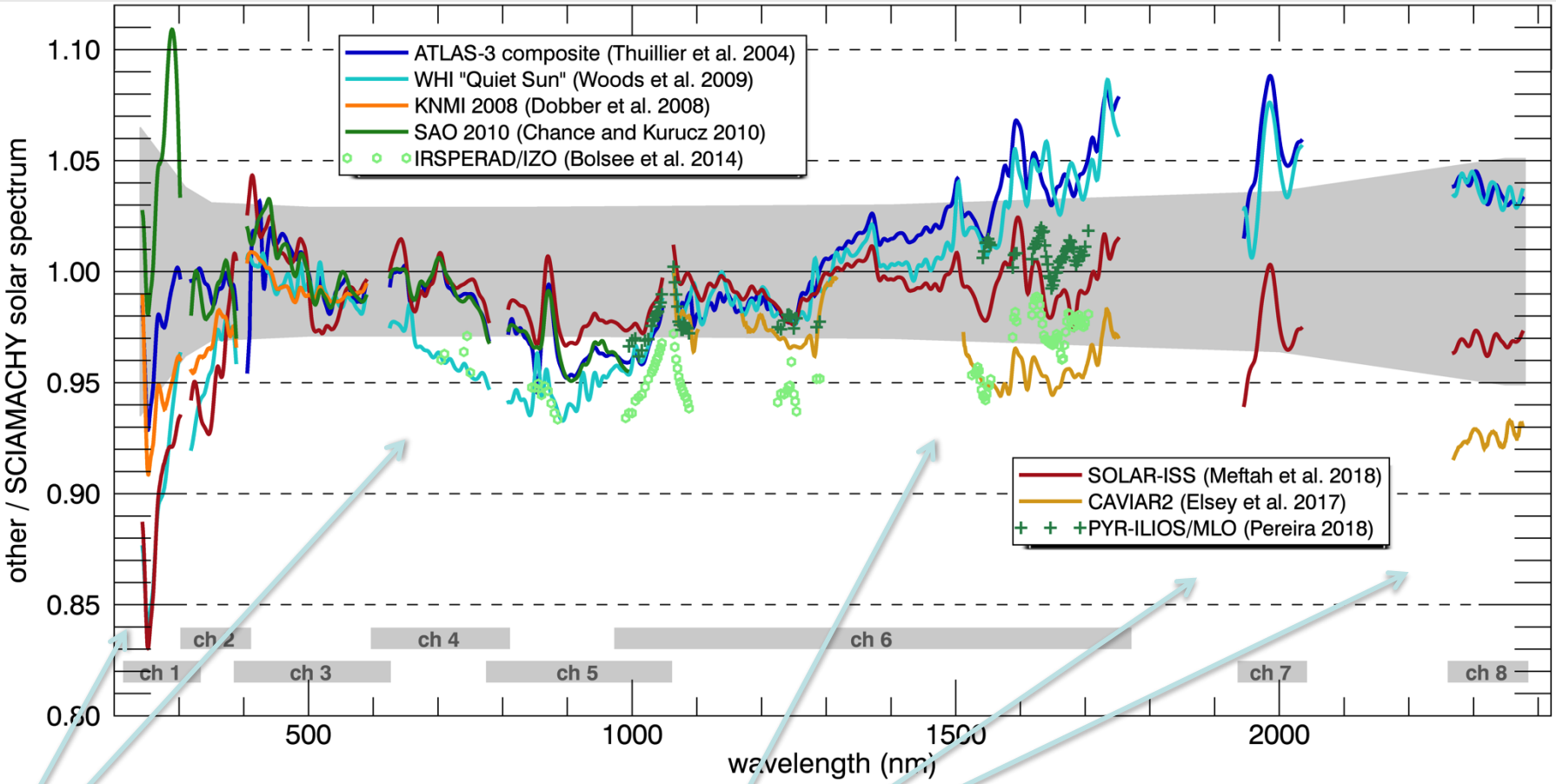


Example 27 Oct 2010.

- IUP implement.:
  - L1B V8 for memory/non-linearity, leakage cur., straylight, wavelength cal.
  - V9 keydata
  - ref. mirror model
- Very good agreement
  - except bad pixels/ overlap
- PPG issue V9.00 fixed.
- **V9.01 has been verified!**

Validation SCIAMACHY solar reference spectrum

Figure: Ratio other solar reference spectra to SCIAMACHY SSI 27 Feb 2003; convolved by 10 nm Gaussian; 1 AU correction



- <350 nm: larger variations
- 350 – 1400 nm: mostly within 3%
- 800 – 1000 nm: SCIAMACHY higher

- NIR : up to +/- 6% wrt. ATLAS-3/SIM and CAVIAR agreement with SOLAR-ISS and PYR-ILIOS/MLO
- first time reasonable results for ch. 7 / ch. 8

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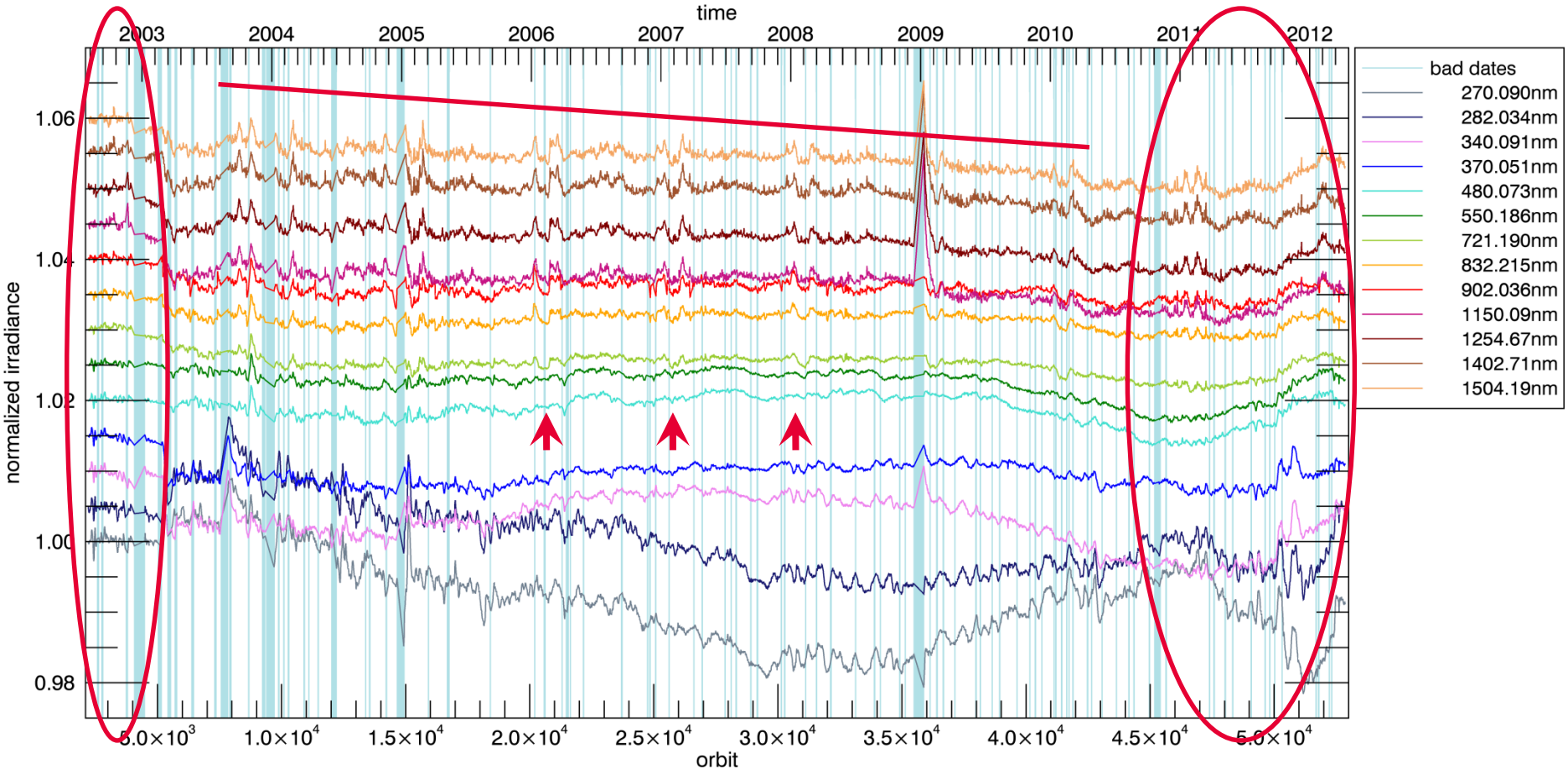
SCIAMACHY SSI Time Series V9.01



- SCIA Solar Spectral Irradiance (SSI)
  - L1b V9.01, selected wavelength
  - 1 AU corrected
  - vertically shifted

- Remaining issues:
  - Jump before Feb. 2003
  - After ~2010, results are less stable
  - Minor seasonal pattern remain
  - Negative slope in chanel 6

Conclusions

- SCIAMACHY L1b-V9.01 has been verified with the IUP reference implementation.

- The SMR spectrum 27 Feb 2002 has been validated with independent solar spectral irradiances.
- Very good agreement (within 3 % for most spectral regions) with independent recent SSI measurements.

- The time series shows a reasonable degradation correction with some issues.

- Further revision of degradation correction in *FDR4ATMOS* project foreseen.