
Homogenisation of reflected solar fluxes from CERES TRMM and METEOSAT 7

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Overview

- ▶ status MSG & GERB
- ▶ GERB - *like* and CERES RSF (SW) data
- ▶ Results
 - Relative azimuth dependency
 - Viewing zenith dependency
- ▶ Conclusions

atus MSG

- ◆ MSG (carrying SEVIRI and GERB) scheduled for launch on 13th August 2002.
- ◆ Switch-on SEVIRI foreseen in September 2002.
- ◆ End of SEVIRI commissioning period foreseen in spring or summer 2003.

Status GERB

- ◆ Ground segment flight readiness will be discussed at GIST meeting next week.
 - Option 1: start GERB operation at end SEVIRI commissioning period
 - Option 2: start GERB operation in September 2002 use METEOSAT 7 as imager
 - » GERB on MSG-1 at 10 degrees longitude, METEOSAT 7 at 0 degrees
 - » SEVIRI header information to RAL in special format
 - » CERES ADM 's need to be included (on-going)

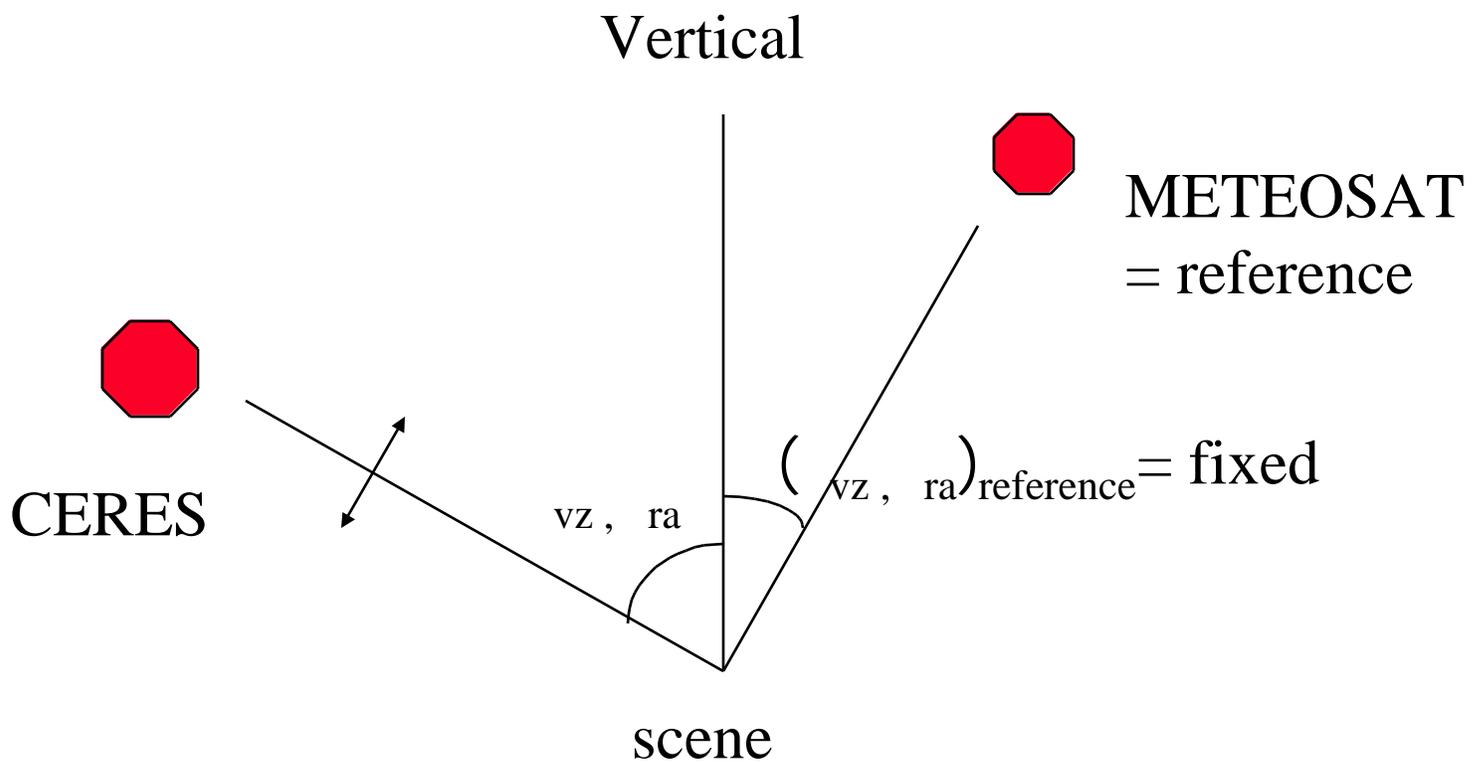
Used data

ERB - *like* derived from METEOSAT 7 during
ne, July and August 1998.

Radiance to flux conversion: RMIB scene id + ERBE-1
RPM ADM

5F edition 2A from CERES instrument on TRMM
tellite (RAPS days)

Variation of CERES RSF with viewing angles

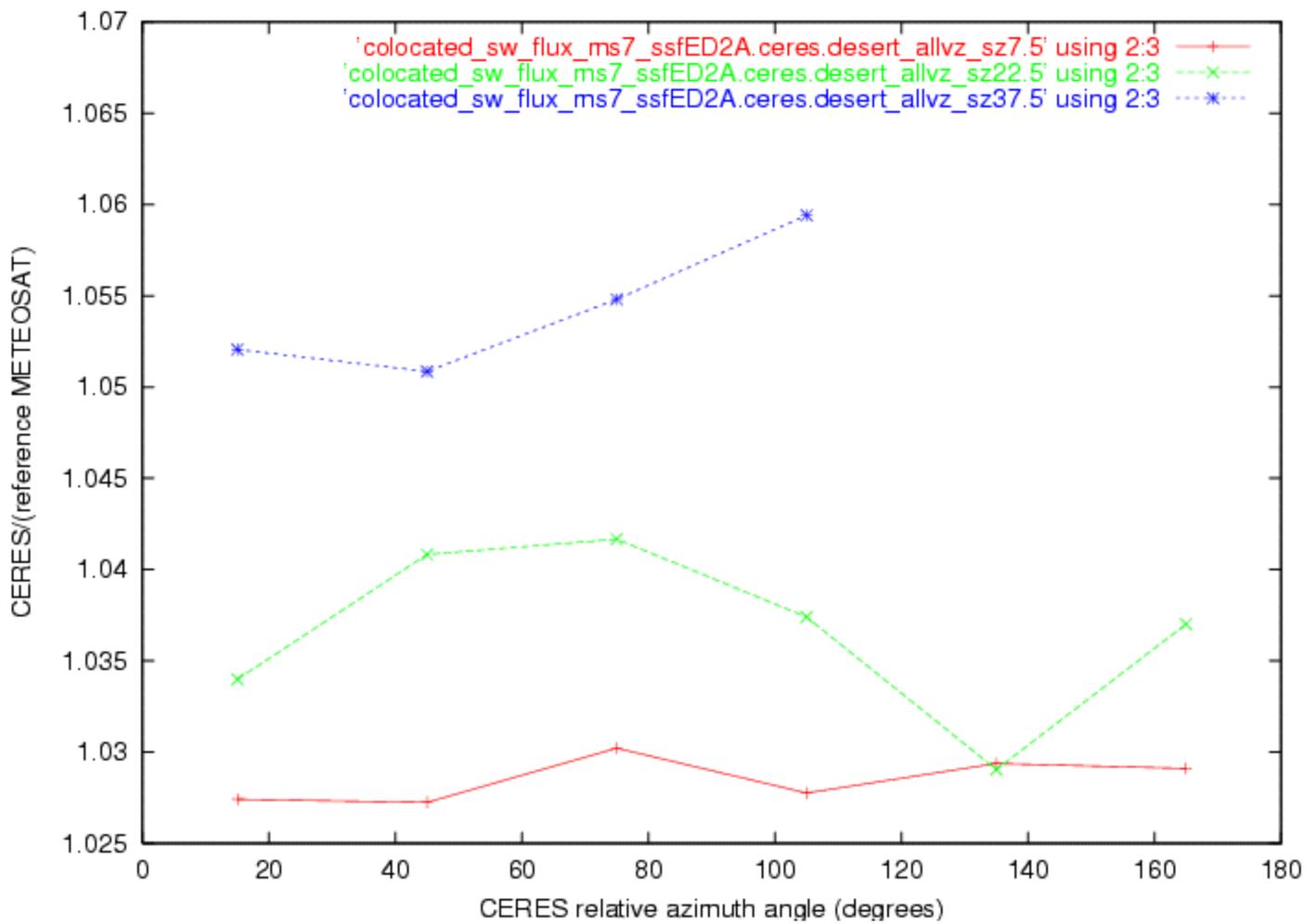


$$S / \text{ref. MET} (vz, ra) = \frac{\text{RSF}_{\text{CERES}}(vz, ra)}{\text{RSF}_{\text{MET.}}(vz, ra)_{\text{reference}}}$$

Relative azimuth dependency of CERES RSF

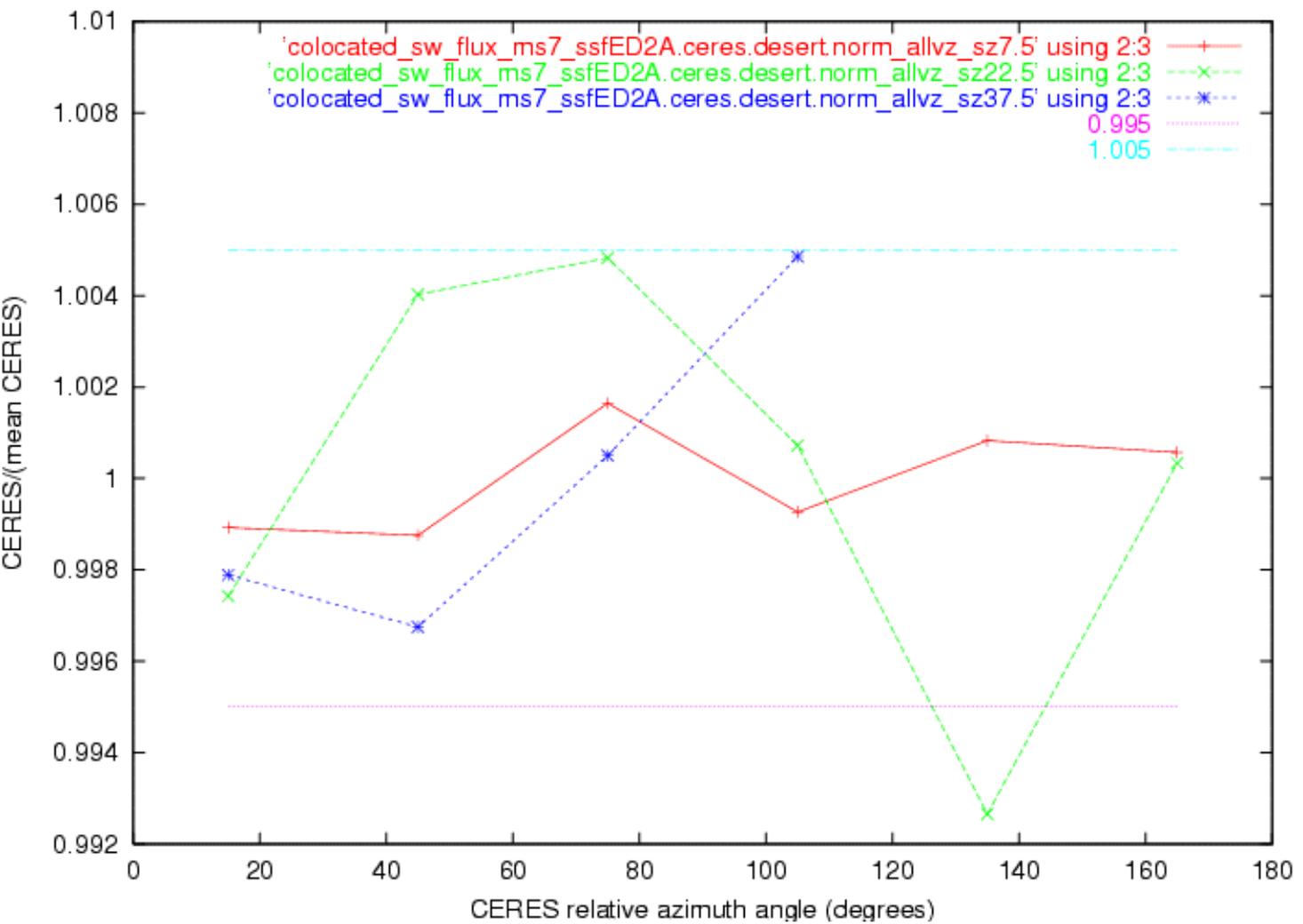
- ▶ Analysis done for CERES viewing angle intervals:
 - $\theta_{vz} : [0^\circ-180^\circ]$
 - Relative azimuth $\theta_{ra} : [0^\circ-15^\circ], [15^\circ-30^\circ], \dots$
- ▶ Separate analysis for:
 - surface scene types: desert, land, ocean
 - solar zenith angle intervals: $[0^\circ-15^\circ], [15^\circ-30^\circ], \dots$

Desert



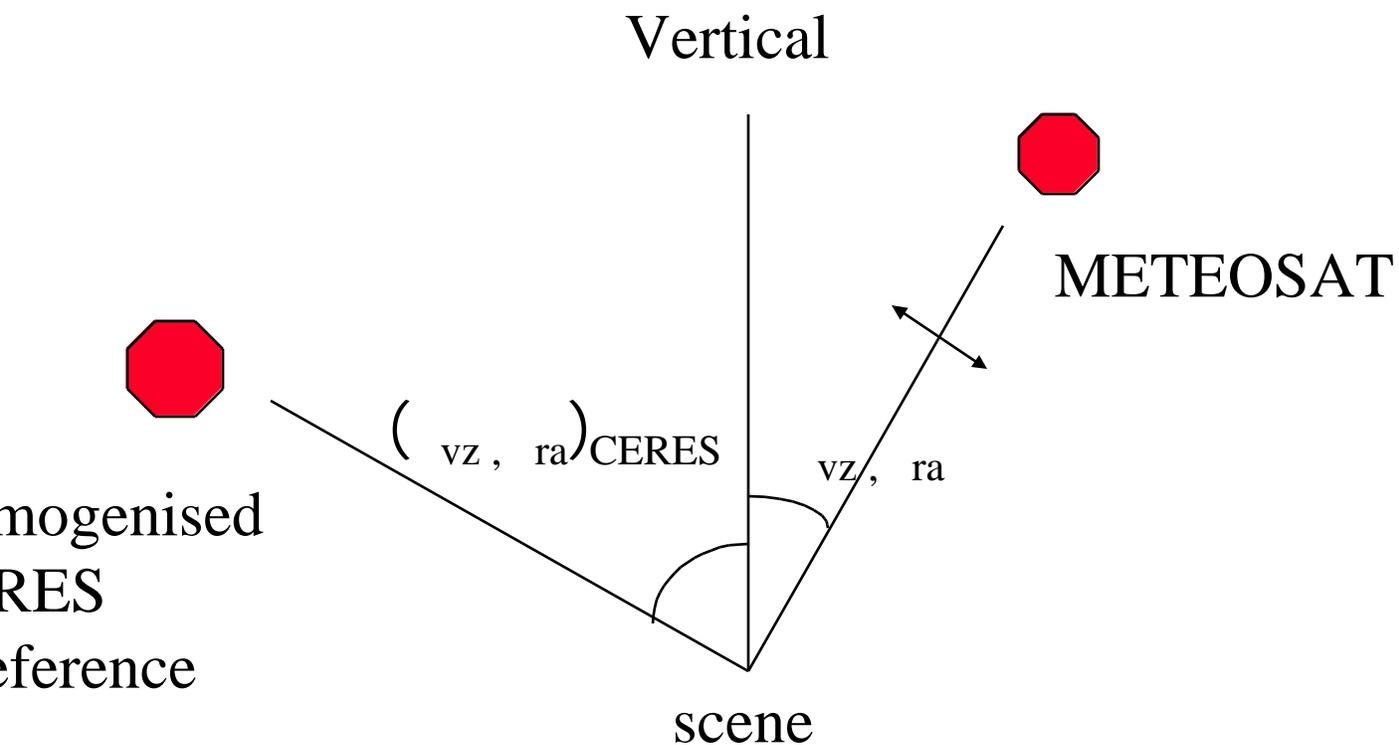
team meeting, CoI presentation, Williamsburg, May 2002

Desert, after normalisation



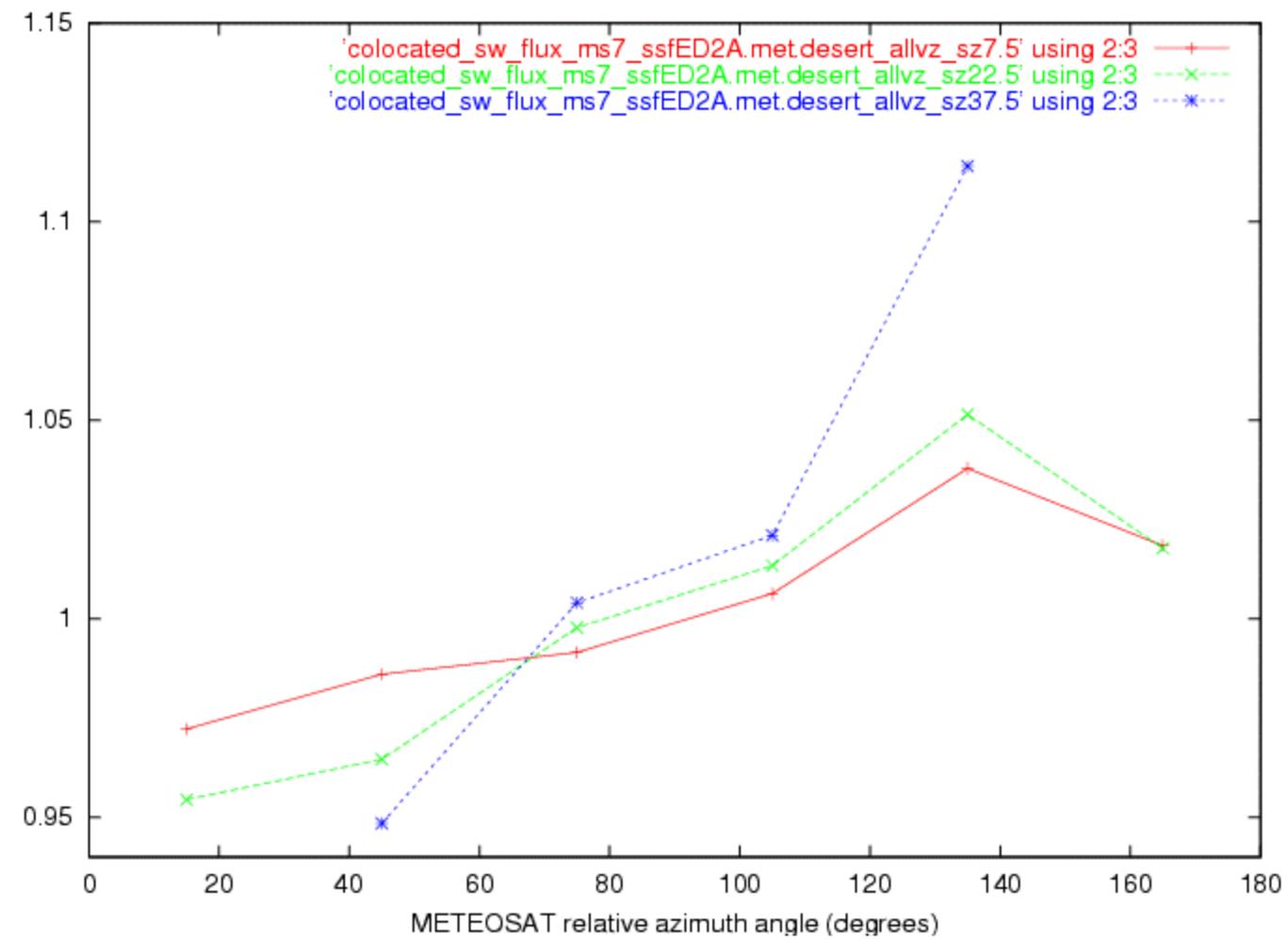
team meeting, CoI presentation, Williamsburg, May 2002

Variation of METEOSAT RSF with viewing angles



$$\frac{\text{mean CERES } (vz, ra)}{\text{hom. RSF}_{\text{CERES}}(vz, ra)} = \frac{\text{RSF}_{\text{MET.}}(vz, ra)}{\text{hom. RSF}_{\text{CERES}}(vz, ra)}$$

Desert

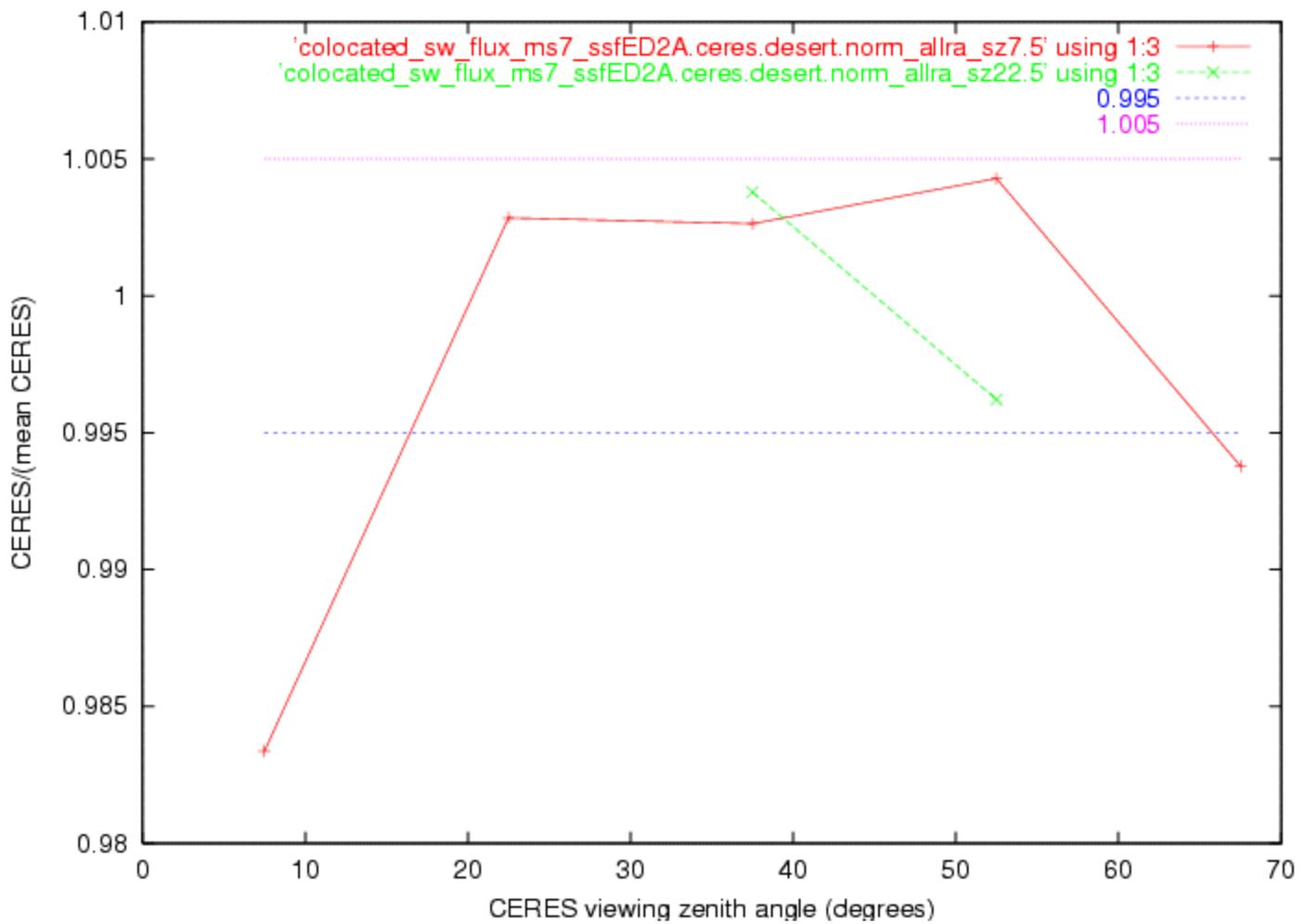


team meeting, CoI presentation, Williamsburg, May 2002

Viewing zenith dependency of CERES RSF

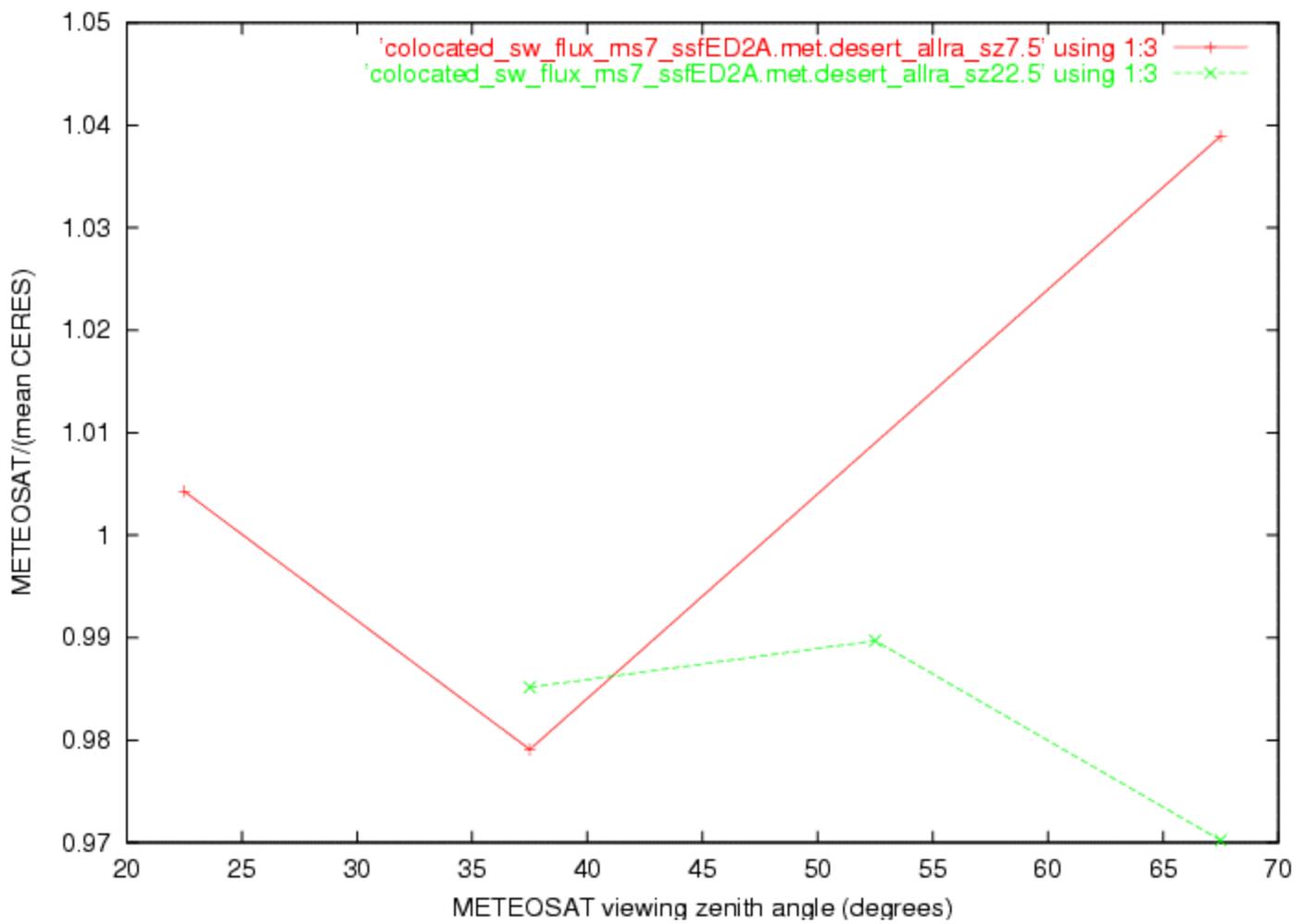
- ▶ Analysis done for CERES viewing angle intervals:
 - Viewing zenith ν_z : $[0^\circ-15^\circ], [15^\circ-30^\circ], \dots$
 - τ_a : $[0^\circ-180^\circ]$
- ▶ Separate analysis for:
 - surface scene types: desert, land, ocean
 - solar zenith angle intervals: $[0^\circ-15^\circ], [15^\circ-30^\circ], \dots$

CERES, desert



team meeting, CoI presentation, Williamsburg, May 2002

METEOSAT, desert



team meeting, CoI presentation, Williamsburg, May 2002

Conclusions

- ◆ CERES SSF edition 2A and RMIB METEOSAT 7 fluxes have been compared for high sun over desert and land
- ◆ For the CERES SSF edition 2A:
 - the error with viewing angles is mostly within 1 %
 - for near nadir view a bias of -1.5 % is measured.
- ◆ For the RMIB METEOSAT 7 flux
 - a systematic error $> 10\%$ as a function of relative azimuth is measured.