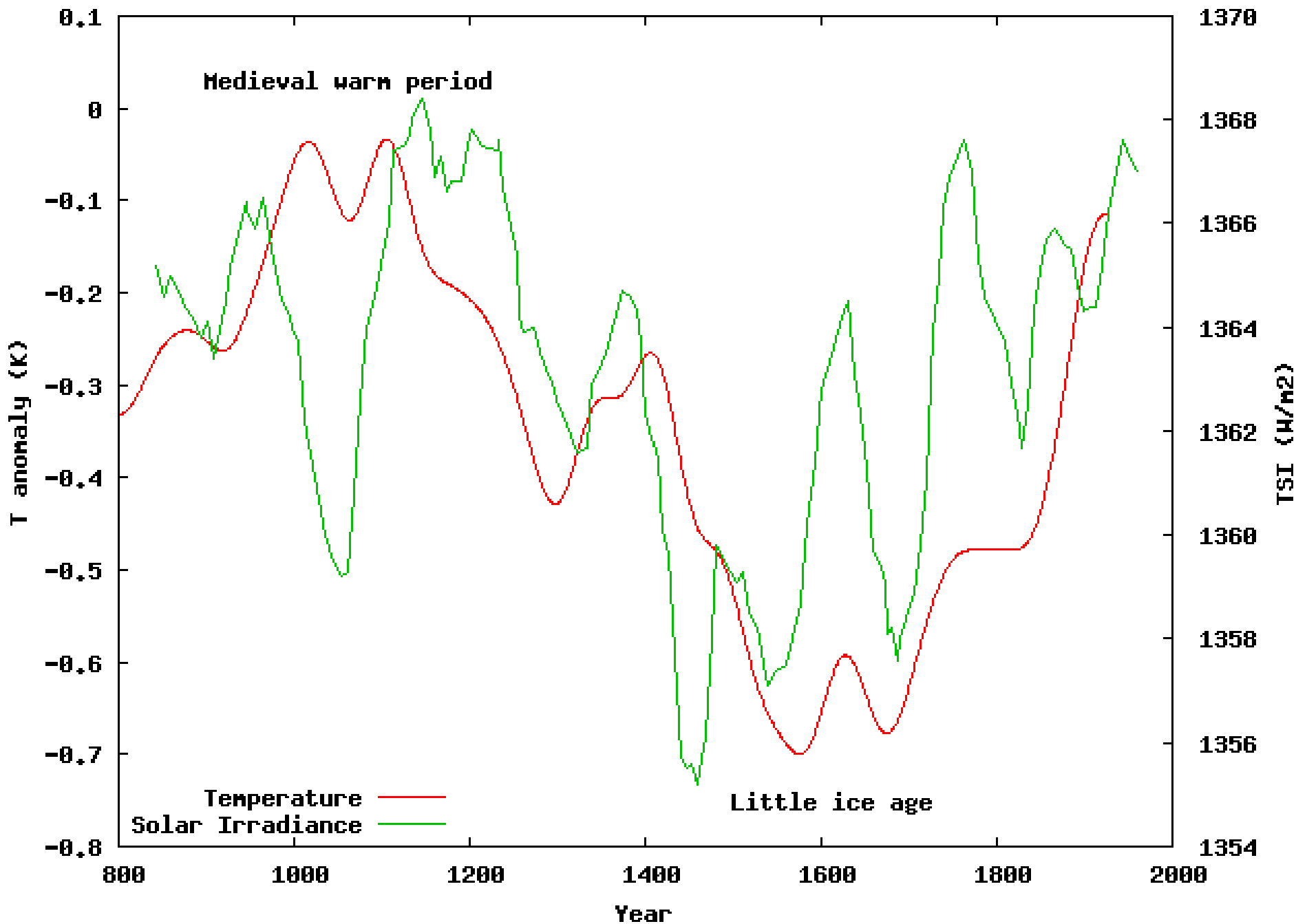

Measurement of the Total Solar Irradiance over cycle 23: results from DIARAD/VIRGO

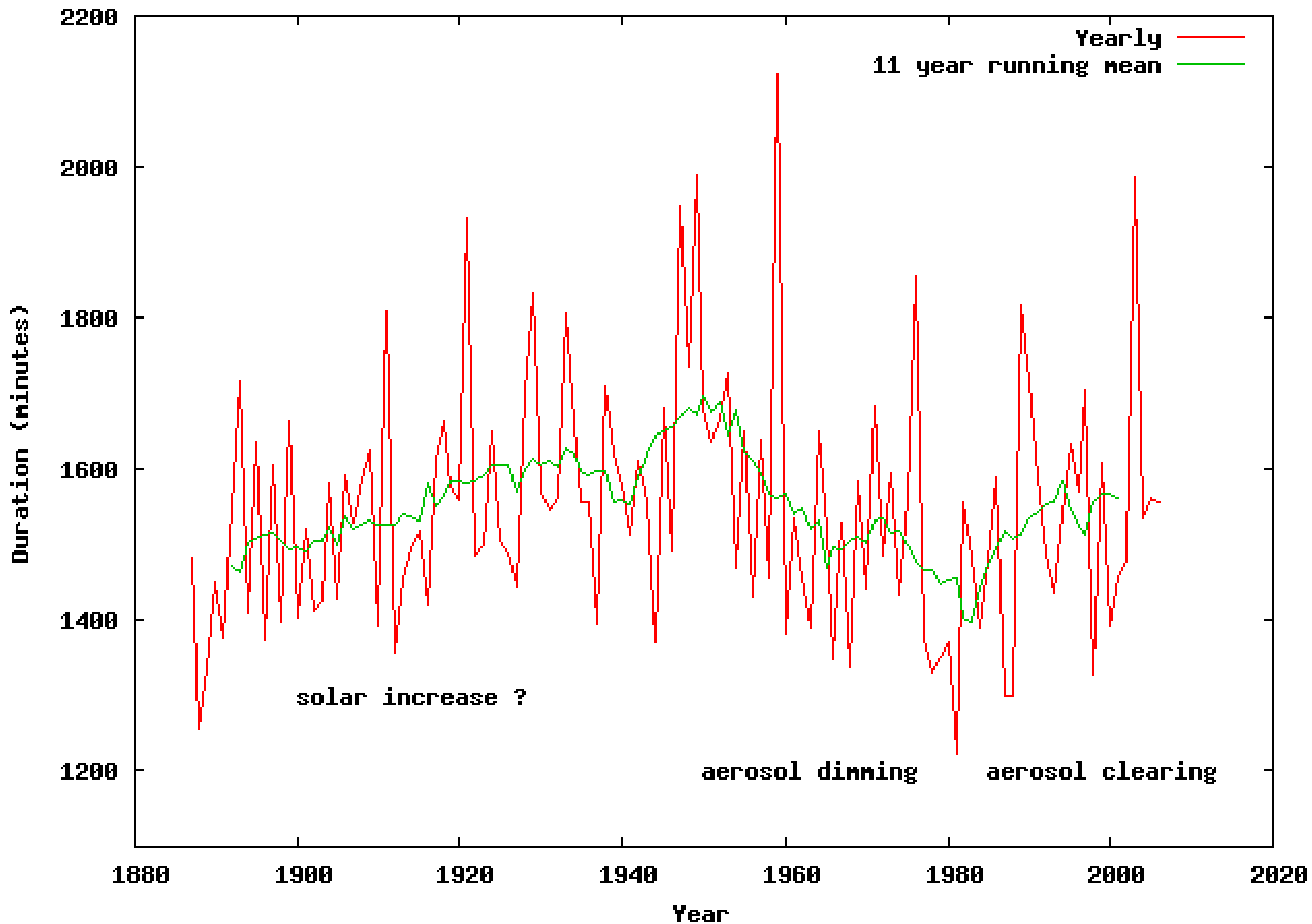
S. Dewitte, S. Mekaoui, D.
Crommelynck

Royal Meteorological Institute of
Belgium

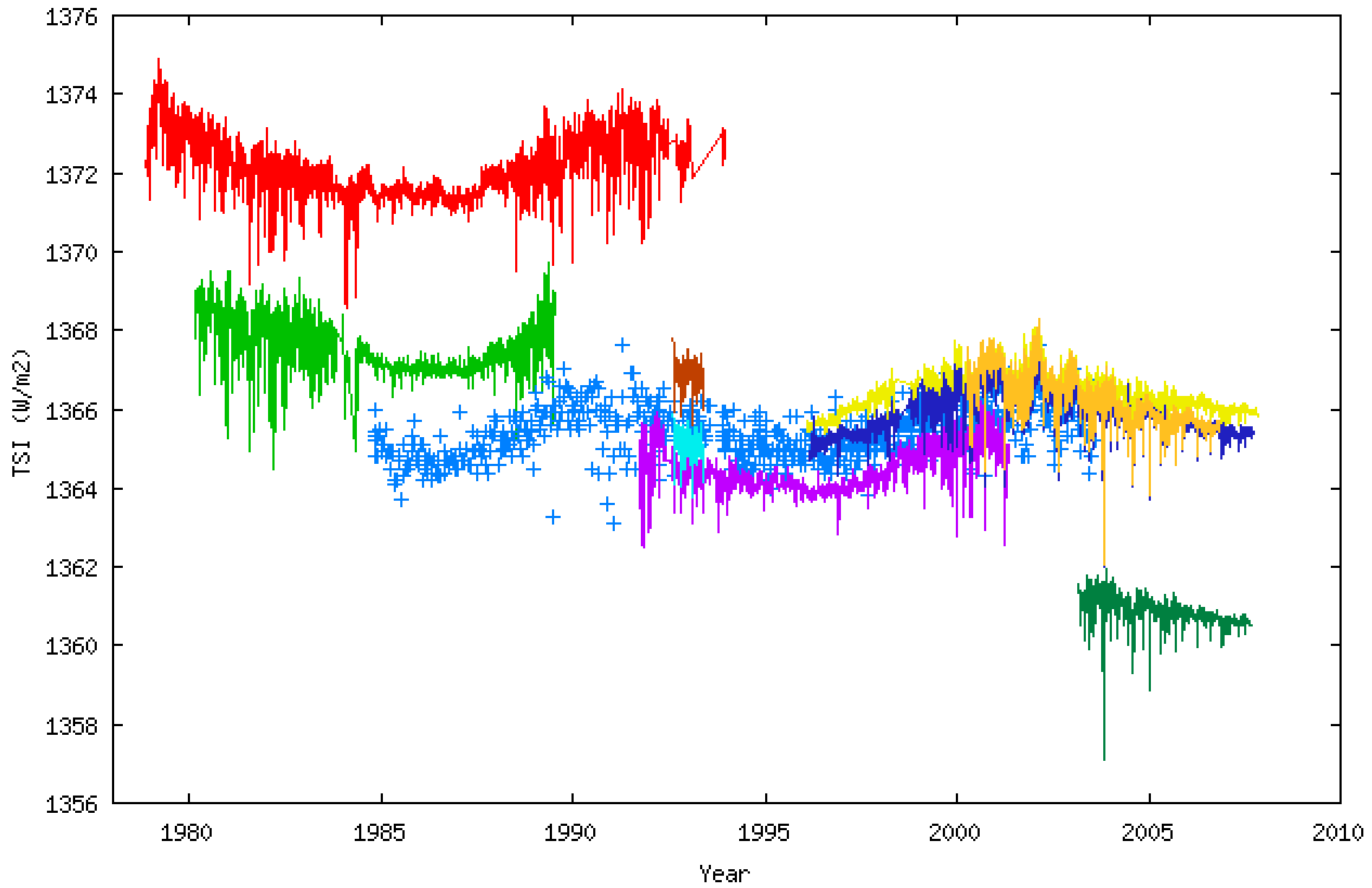
Hoberg temperature and Bard TSI reconstruction



Campbell-Stokes sunshine duration in Ukkel, Belgium



Independent measurements Total Solar Irradiance



ERB/Nimbus7
ACRIM1

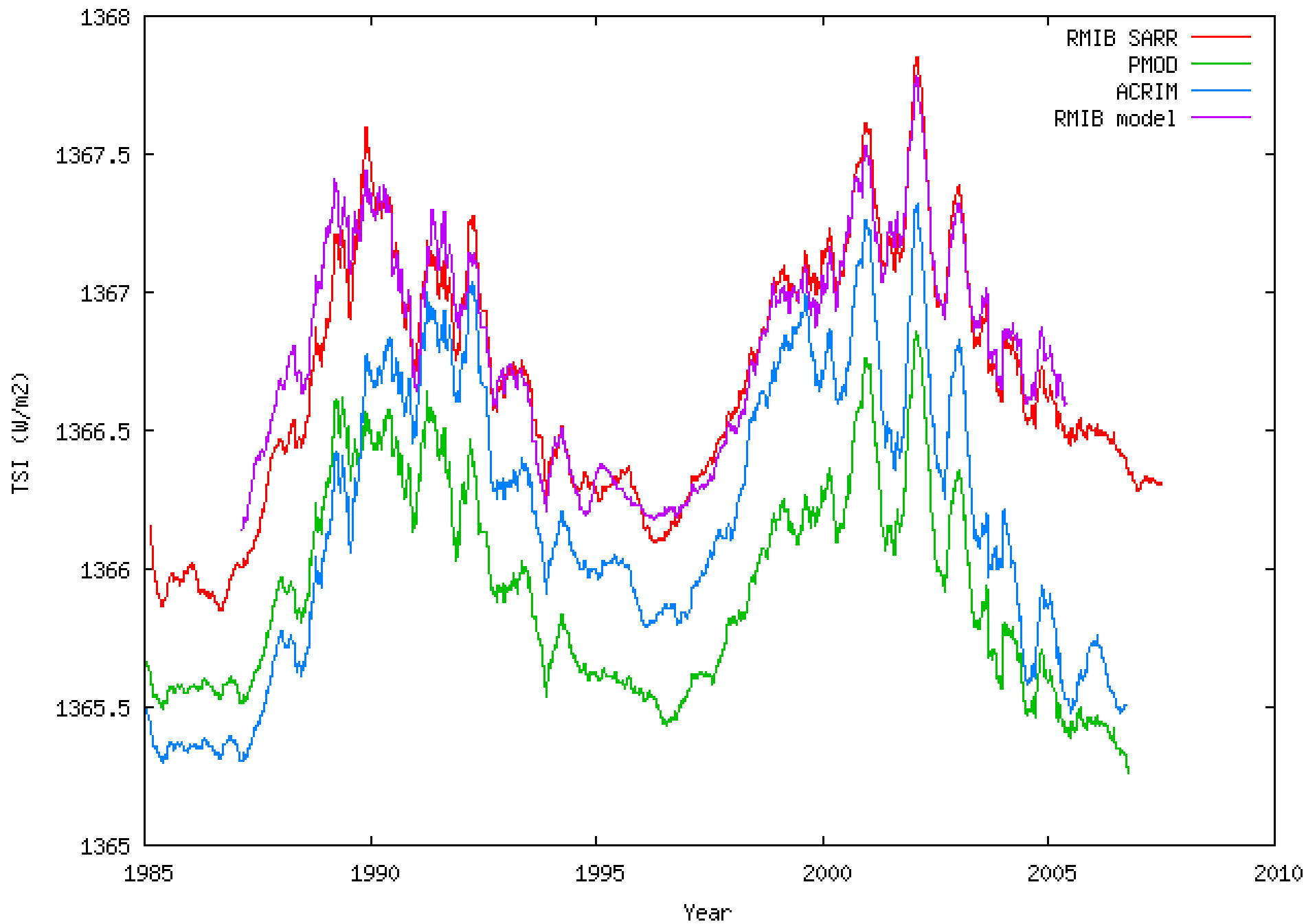
ERBS
ACRIM2

SOVA1
SOVA2

DIARAD
PMO06

ACRIM3
TIM

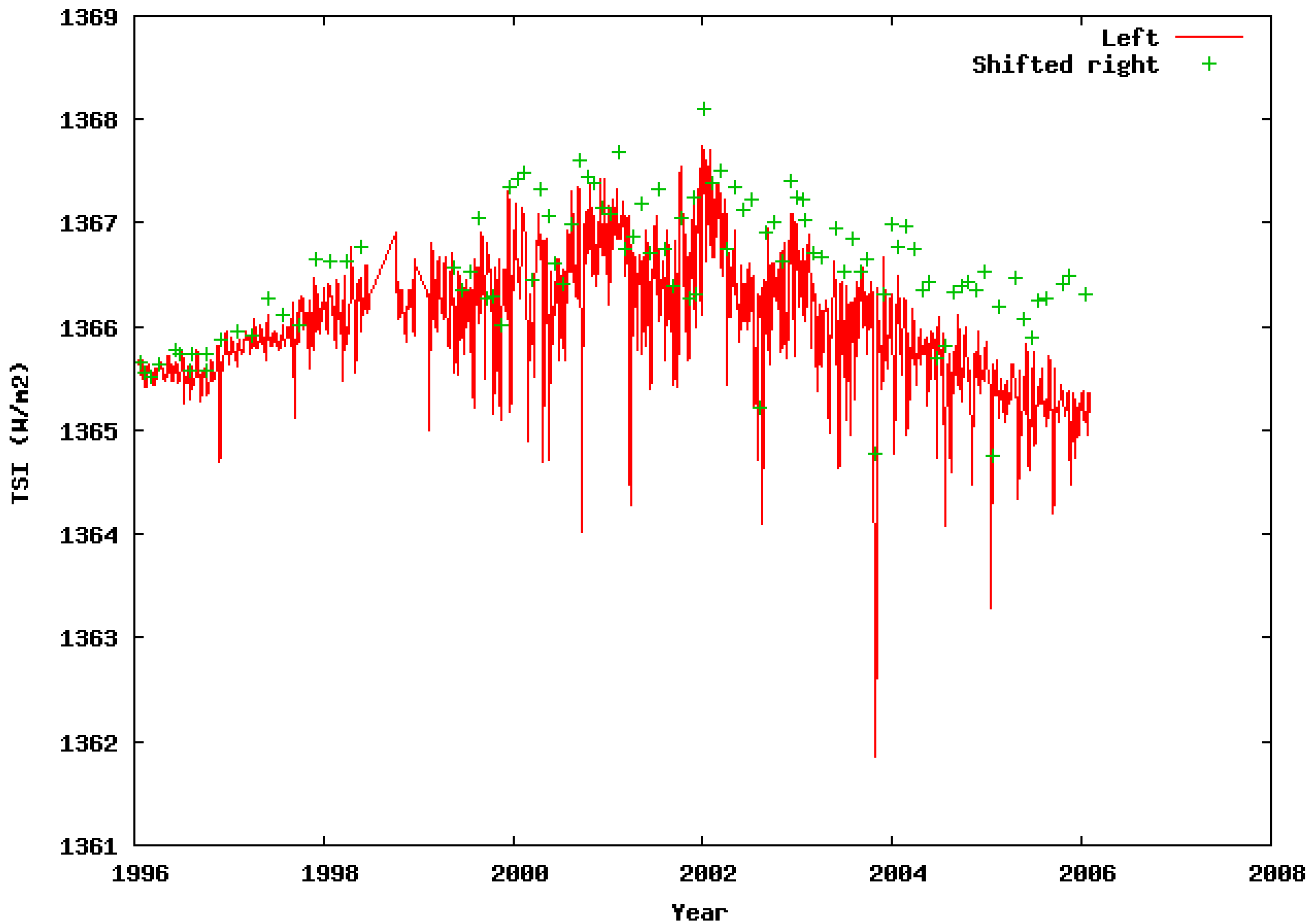
121 day running mean of TSI composites



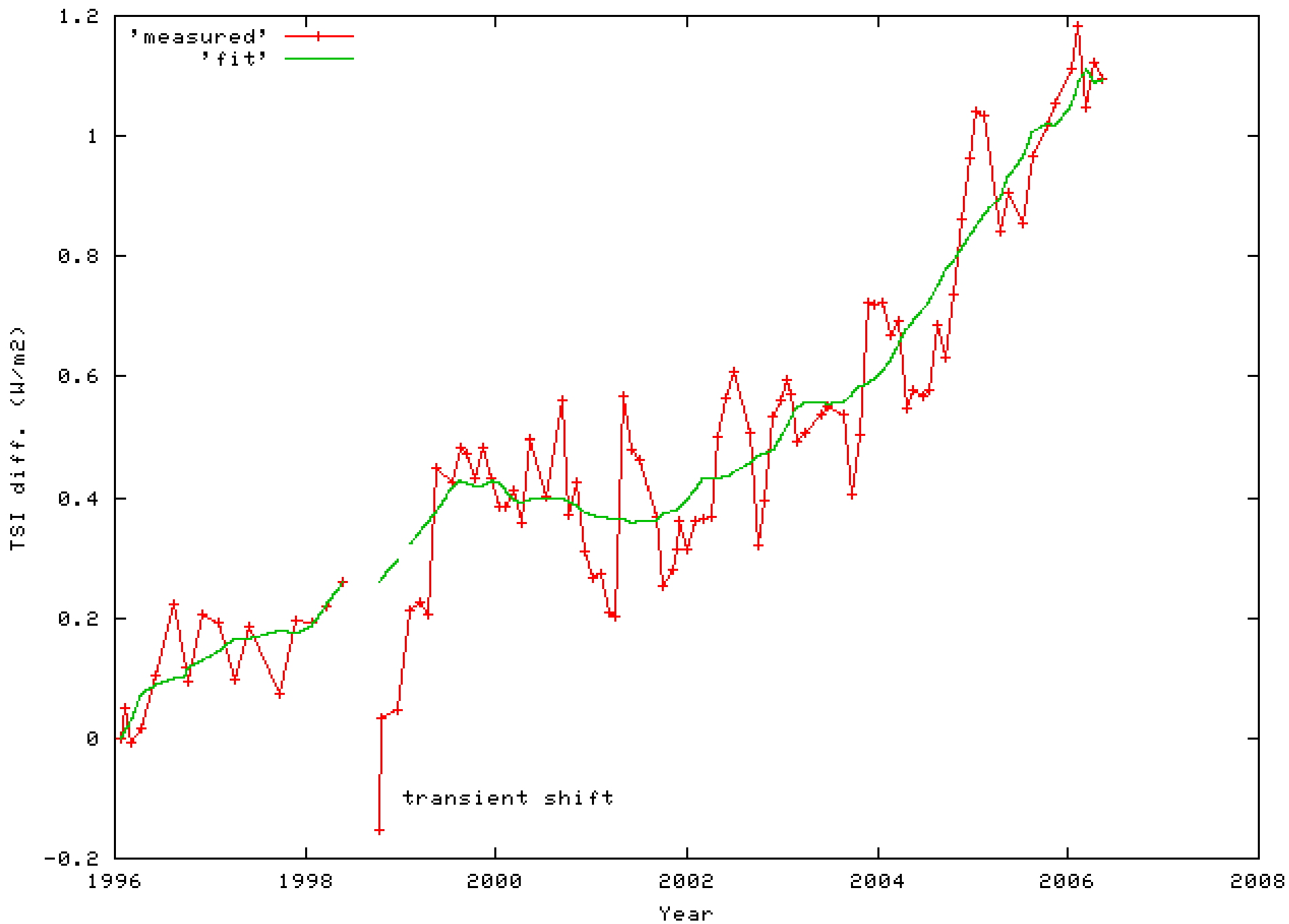
Current solar cycle 23

- ◆ 2 continuously measuring VIRGO radiometers with backup for ageing correction:
 - DIARAD Left + Right(backup)
 - PMO06V A + B(backup)
- ◆ DIARAD: lowest ageing + nominal shutter operation
- ◆ Other independent series: ACRIM 2 + ACRIM3, ERBS + TIM

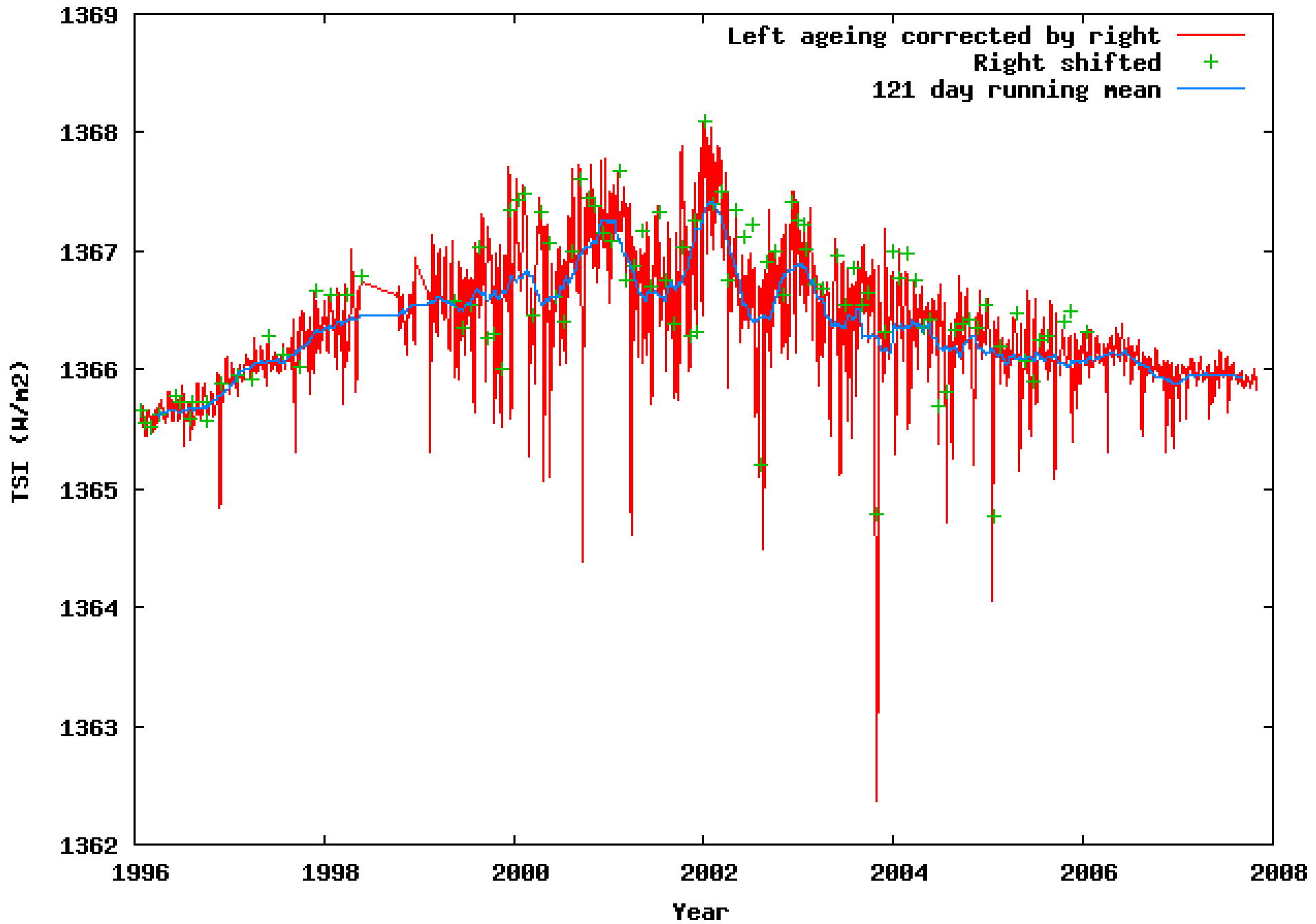
DIARAD level 1 TSI



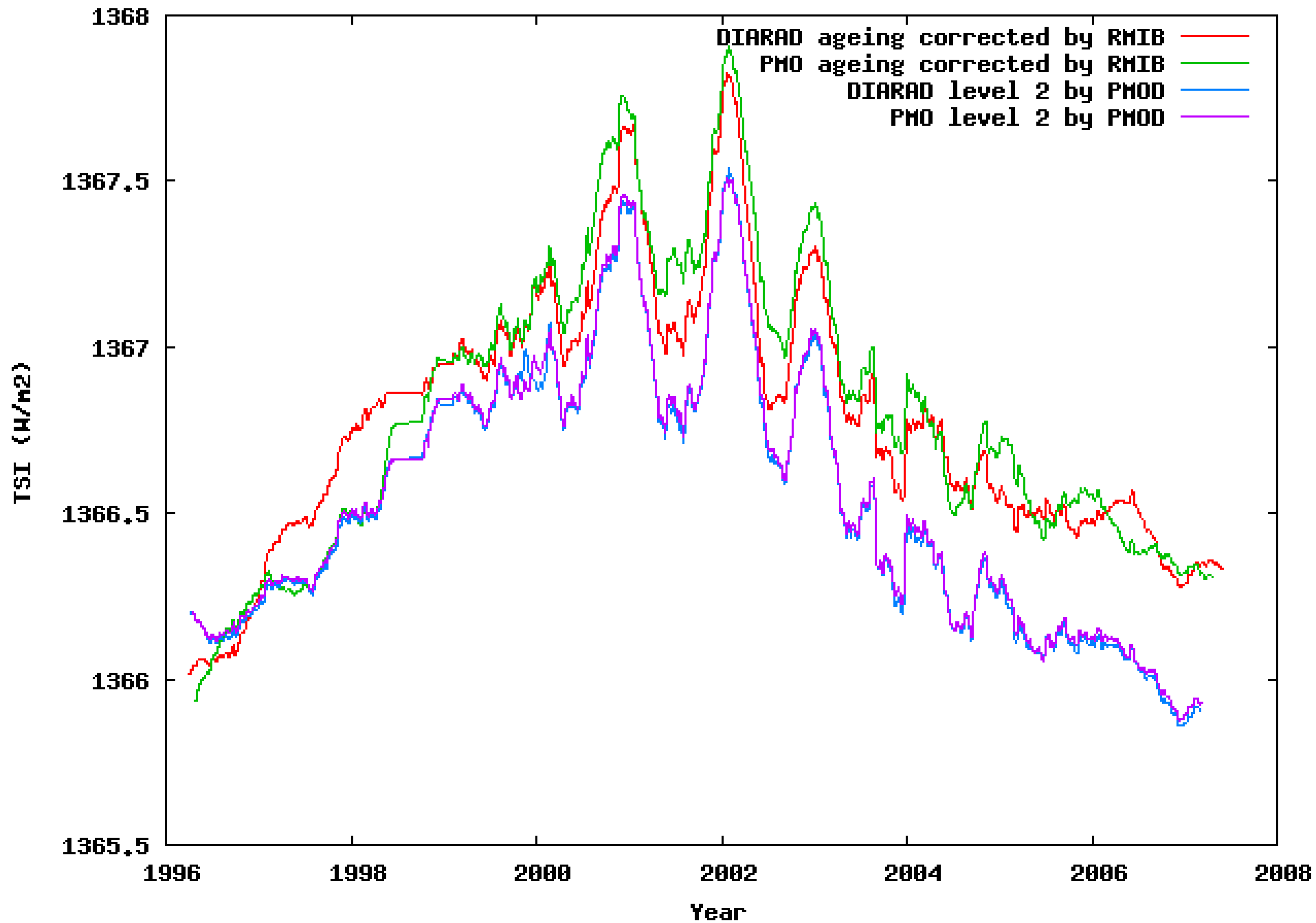
DIARAD Right minus Left TSI



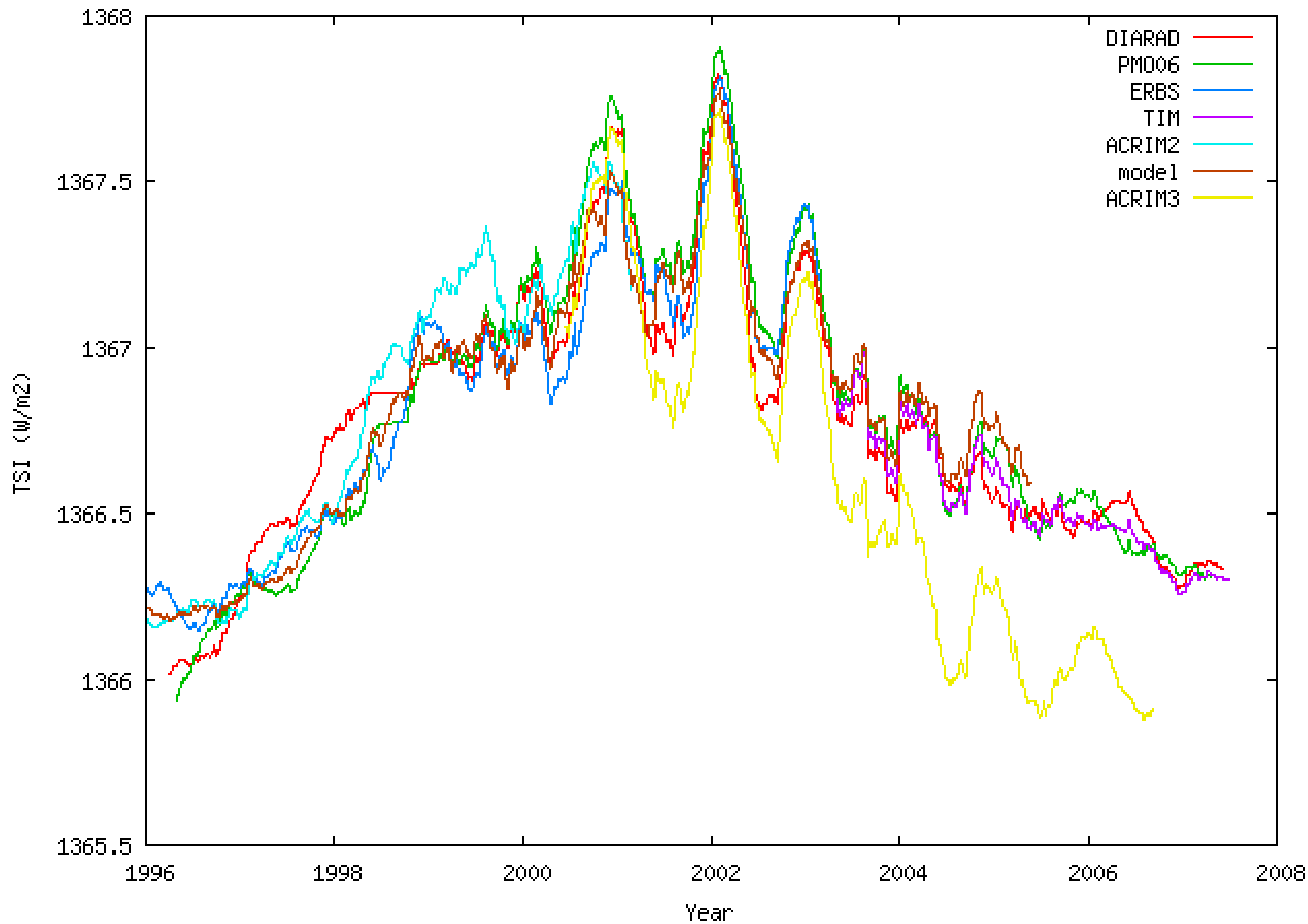
DIARAD level 2 Total Solar Irradiance



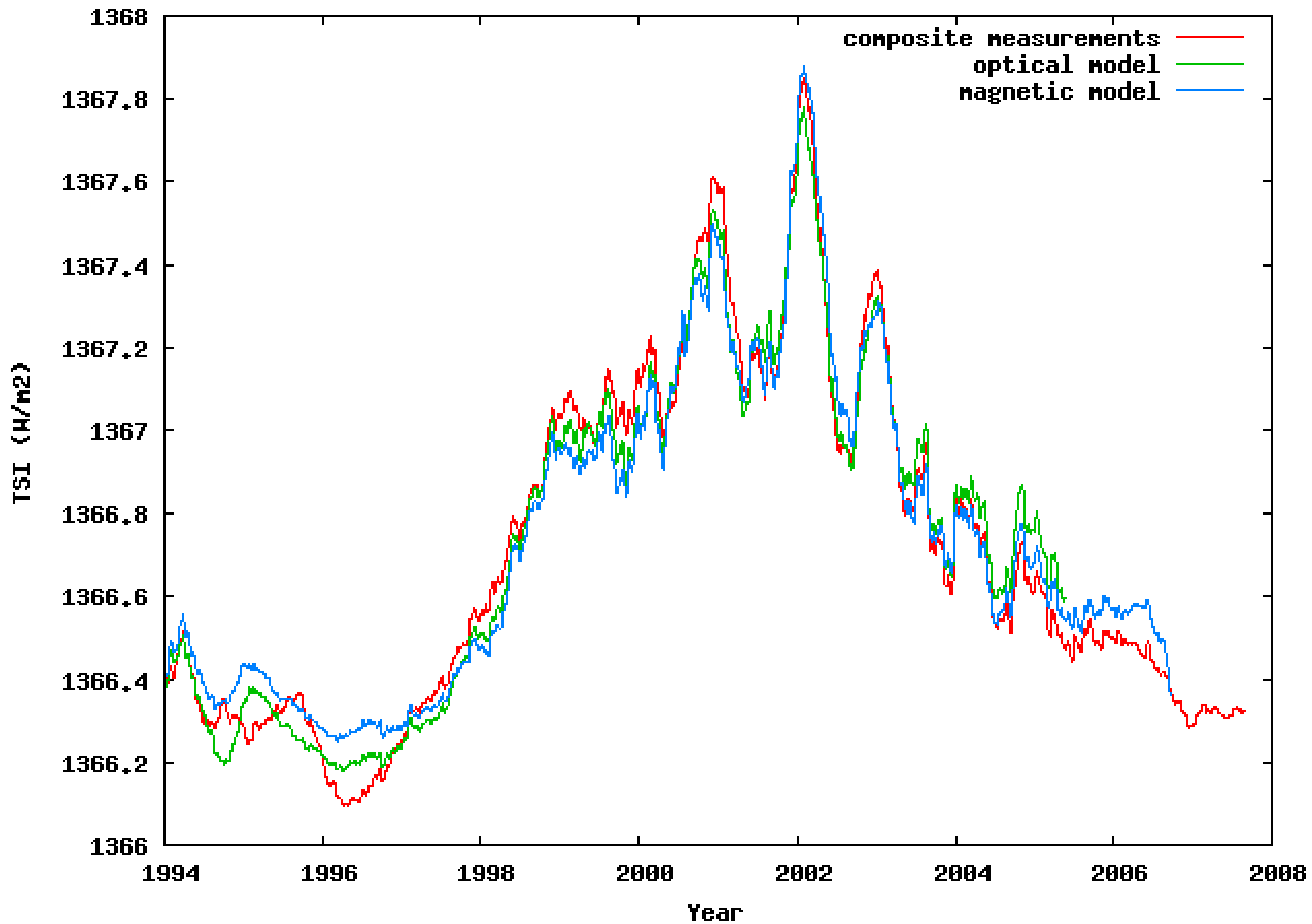
Different versions of VIRGO TSI measurements after adjustment absolute level



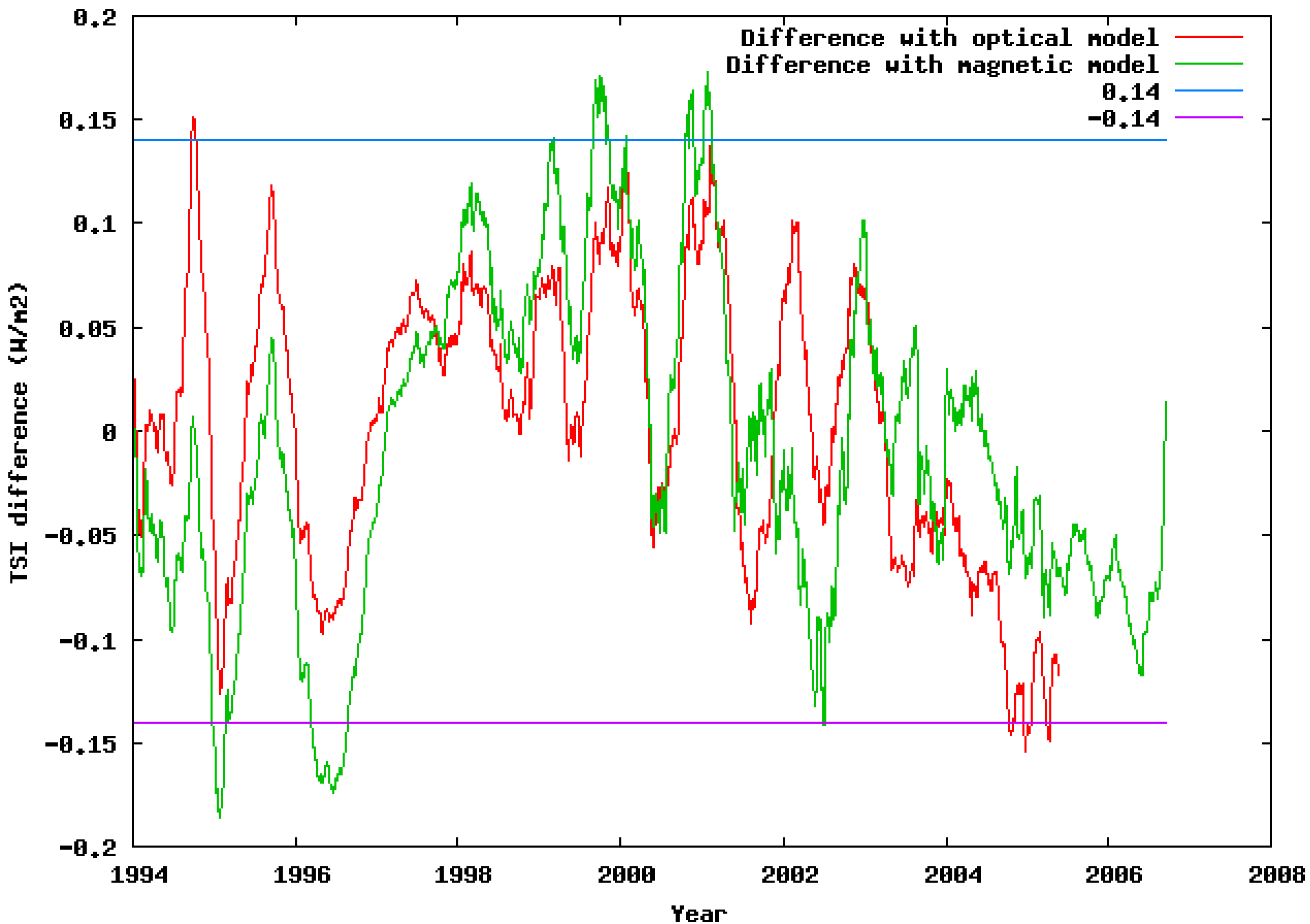
TSI instruments: 121 day running mean



121 day running mean cycle TSI: end cycle 22 + cycle 23



Difference composite TSI measurements with models, 121 day running means



Conclusions

- ◆ DIARAD/VIRGO: continuously measuring TSI instrument with lowest ageing during cycle 23.
- ◆ DIARAD and PMO06 agree well using only ageing corrections.
- ◆ Good agreement with other radiometers except ACRIM3.
- ◆ Good agreement with models assuming no solar minimum TSI variation.

Reference

- ◆ S. Mekaoui, S. Dewitte, 'Total Solar Irradiance measurement and modelling during cycle 23', Solar Physics, 2007, DOI: 10.1007/s11207-007-9070-y
- ◆ Modelling: see poster S. Mekaoui