DIARAD/VIRGO ageing correction on SOHO

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Team

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- Team RMIB :
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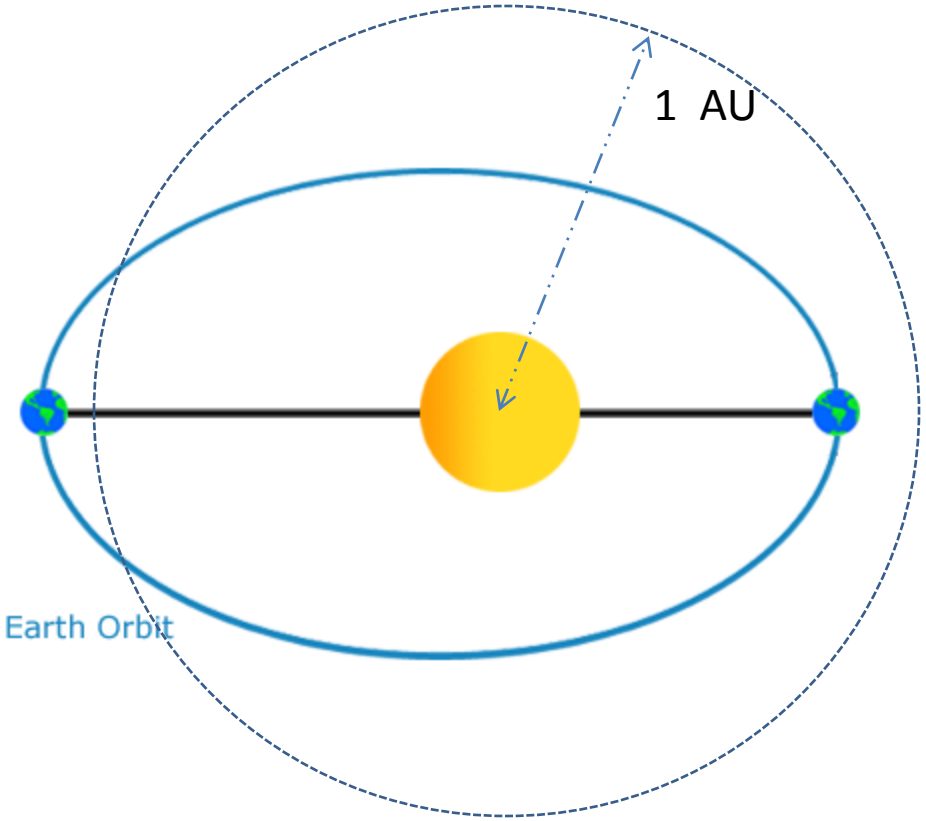
  Pierre Malcorps: Mechanics
  Joel Pierrard: Electronics
  Sami Bali: Software, electronic, tests, ground segment
  Annette Hautecoeur: support

- DIARAD projects and concept were designed and initiated by Dominique Crommelynck.

OUTLINES

- Definition TSI
- Objectives
- Instrument Description
- Instrument Principle
- Ageing Correction
- Conclusion

Total Solar Irradiance

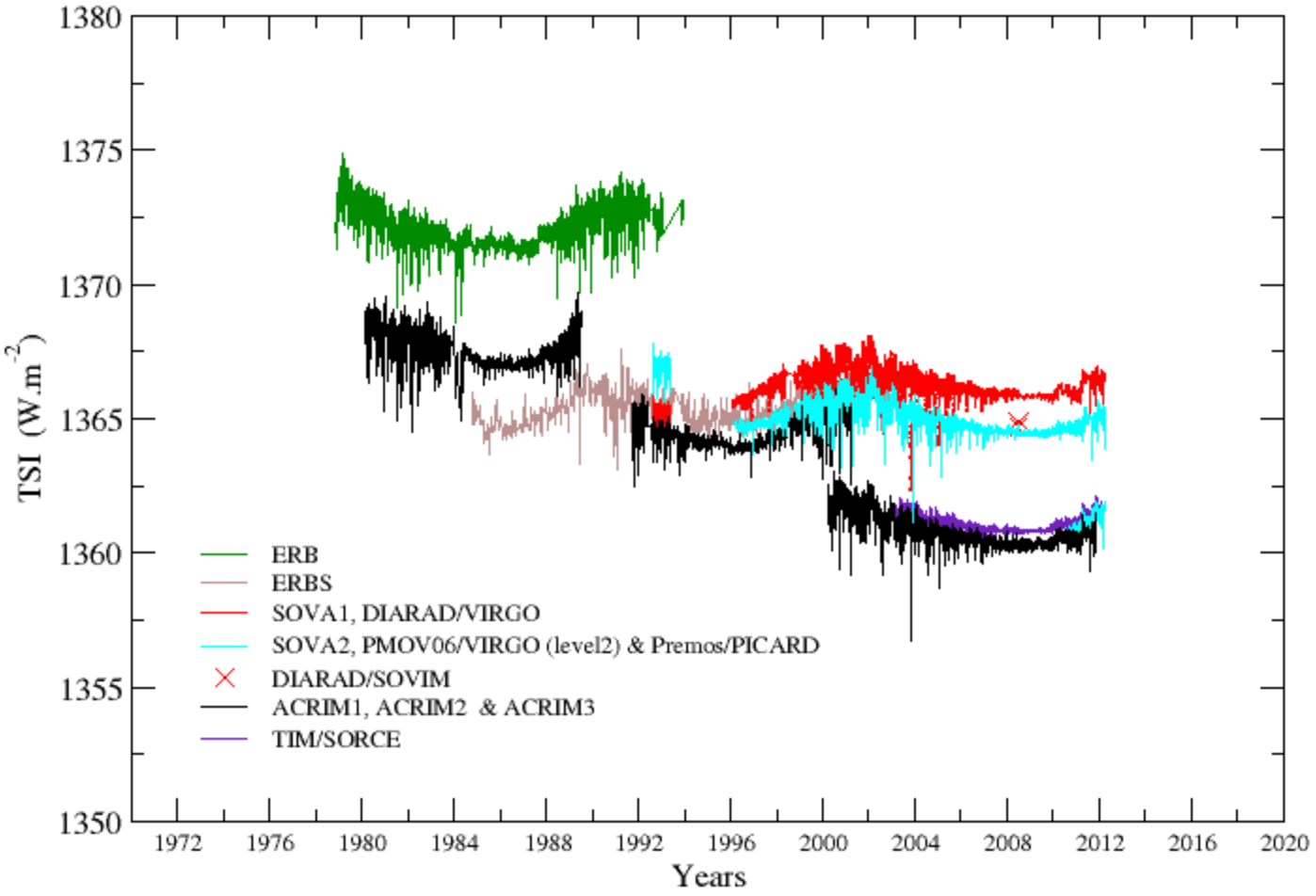


Objectives

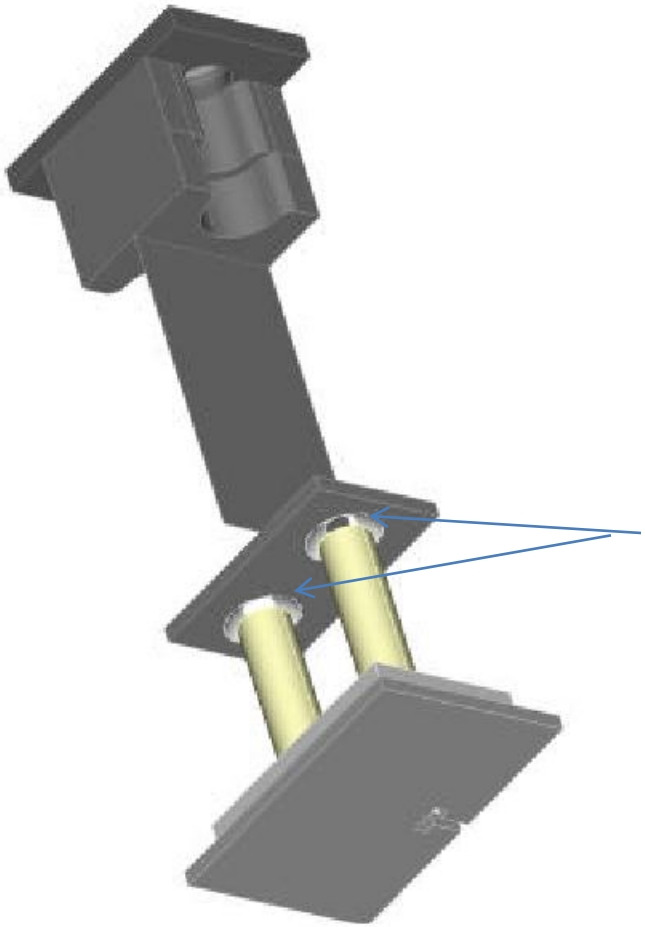
Measure the TSI with a repeatability of 100 ppm over 17 years.

Absolute value of the TSI is now an open issue.

TSI absolute value is now an issue?

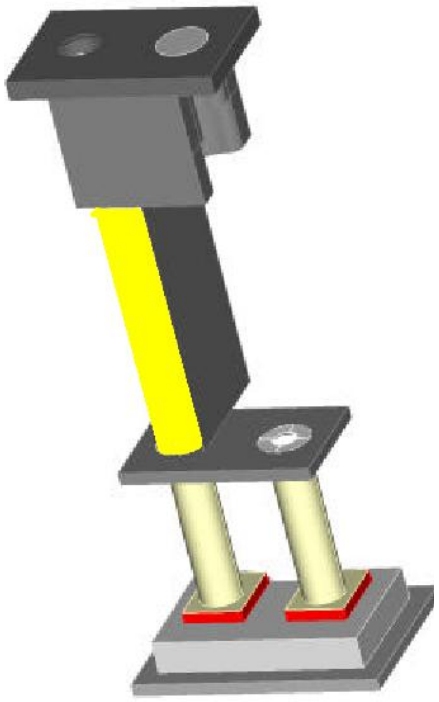


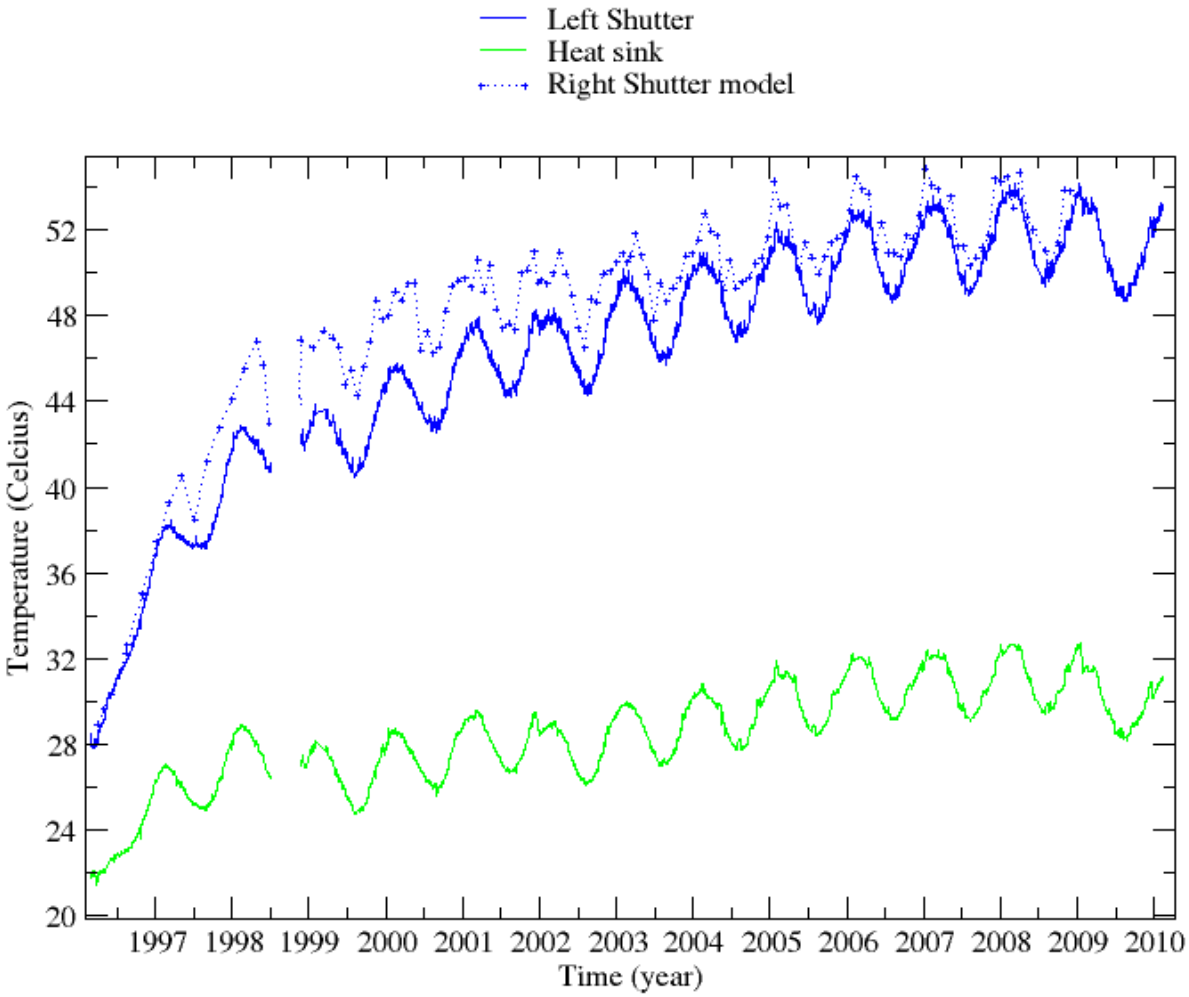
DIARAD/VIRGO Description



Precision apertures are spherical mirrors

DIARAD/VIRGO Principle

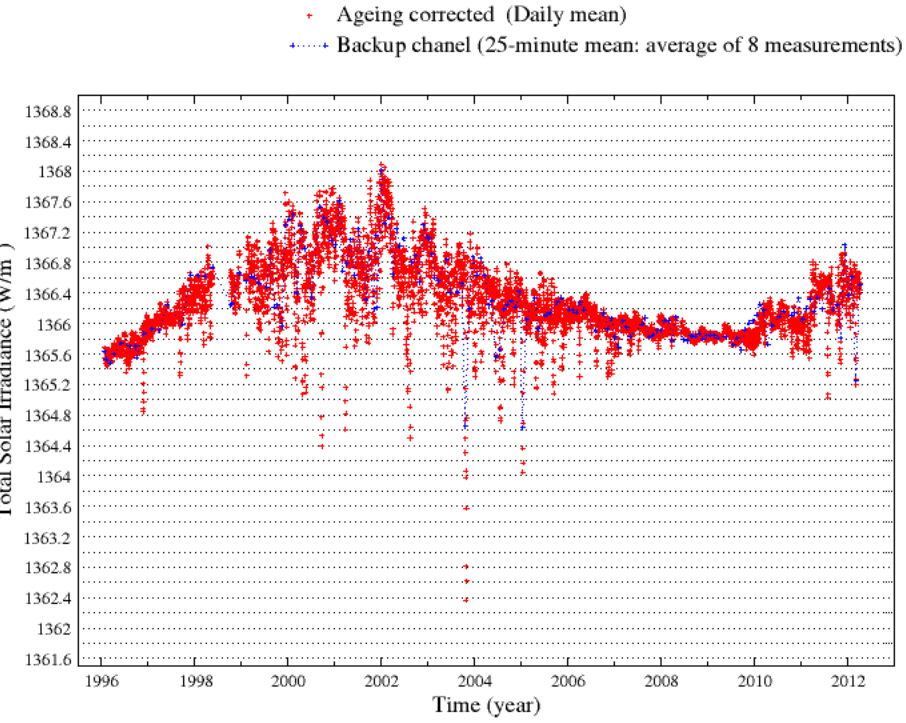


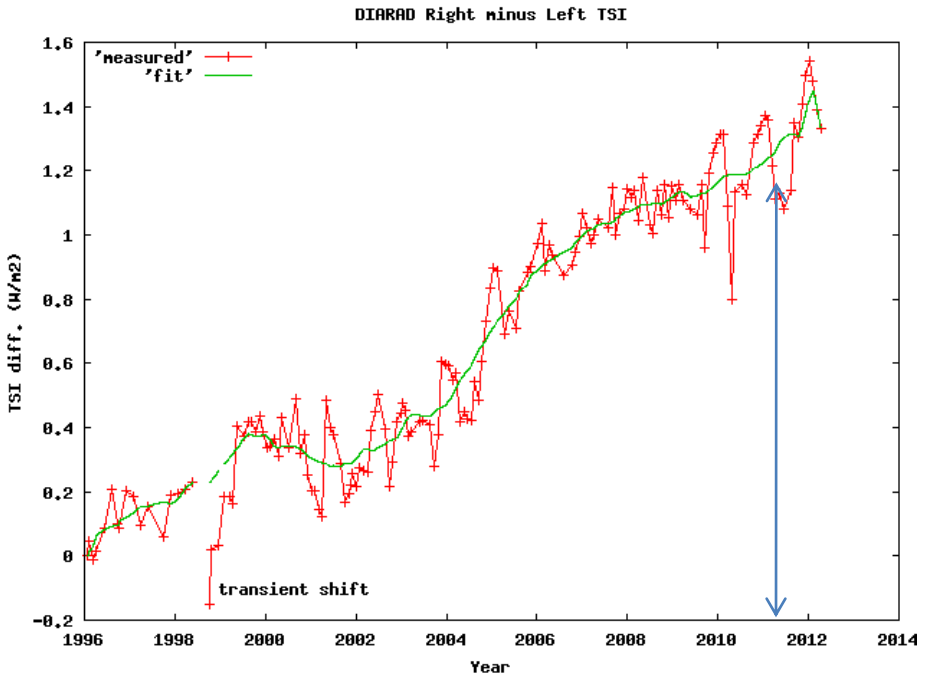


Exposure Ageing Correction

Left channel total exposure 8 years

Right channel total exposure 3 days



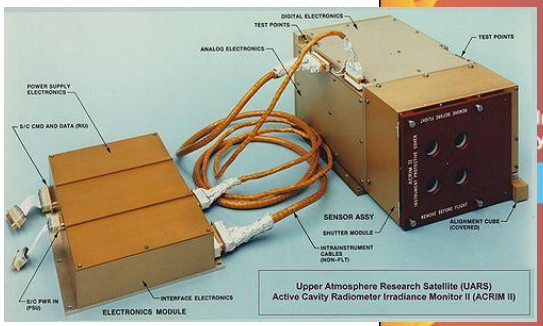


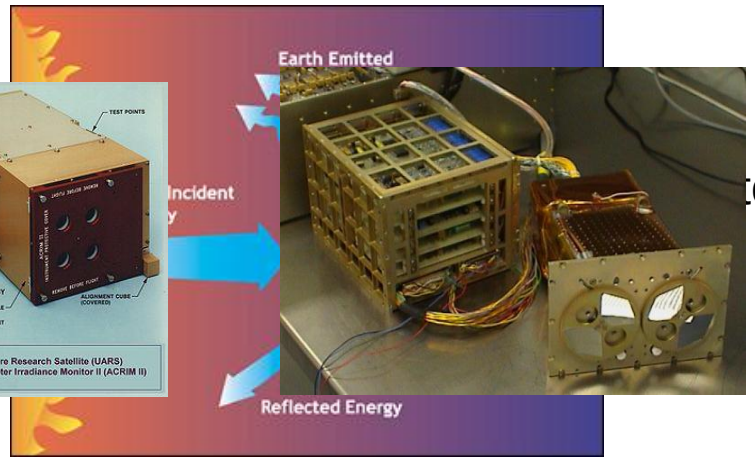
Conclusion

- DIARAD/VIRGO absolute value is around 1365 W/m²
- Two side by side symmetrical cavities
- Ageing monitored by exposing one channel continuously (8 years total exposure) and comparing with a backup identical channel (3 days total exposure)
- Difference between measurements up to 1.5 W/² after 17 years of measurements
  No significant change in the TSI value between the minima of cycle 23
- Additional ageing correction?
  C.Fröhlich applies additional non exposure dependent corrections.
  Not possible to check.

Total Solar Irradiance (TSI)

Definition





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