

The second International Pyrgeometer Comparison (IPgC-II)

27 September-15 October 2015

PMOD/WRC, Davos

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Measurement Platform at PMOD/WRC

38 Pyrgeometers

- 7 Eppley PIR
- 22 Kipp&Zonen CG(R)4
- 9 Hukseflux IR20



2 ACP

4 IRIS



Campaign overview

12 shaded / 26 unshaded positions

All but one ventilated

8 Pyrgeometers on operator data acquisitions

30 on PMOD/WRC DAQ

All Pyrgeometers were characterised in the PMOD/WRC blackbody

Measurements stored as 1-minute averages.

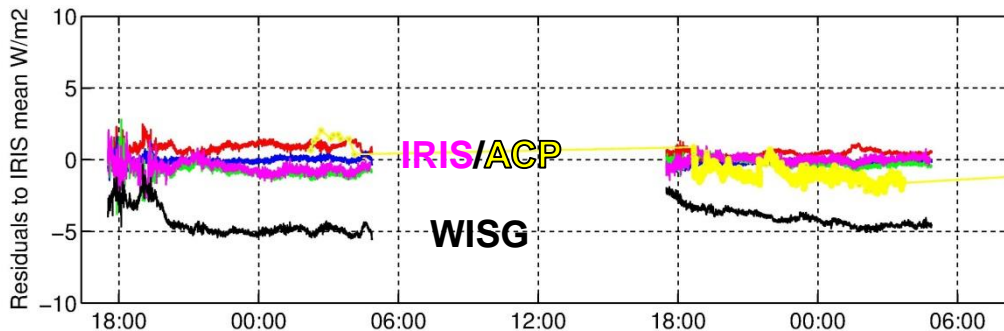
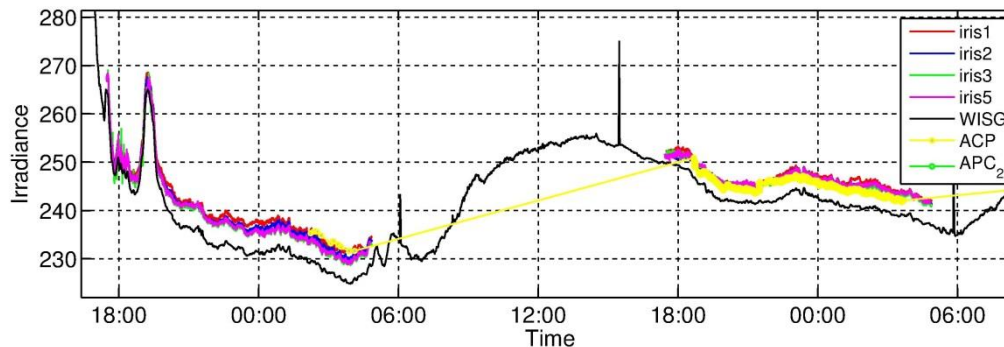
Analysis using the extended Albrecht formula:

$$E = \frac{U}{C} (1 + k_1 \sigma T_{BODY}^3) + k_2 \sigma T_{BODY}^4 - k_3 \sigma (T_{DOME}^4 - T_{BODY}^4)$$

WISG Blackbody

IRIS-ACP-WISG intercomparison during IPgC-II

2 clear nights: 29-30 September 2015



➤ ACP-IRIS $< \pm 2 \text{ Wm}^{-2}$

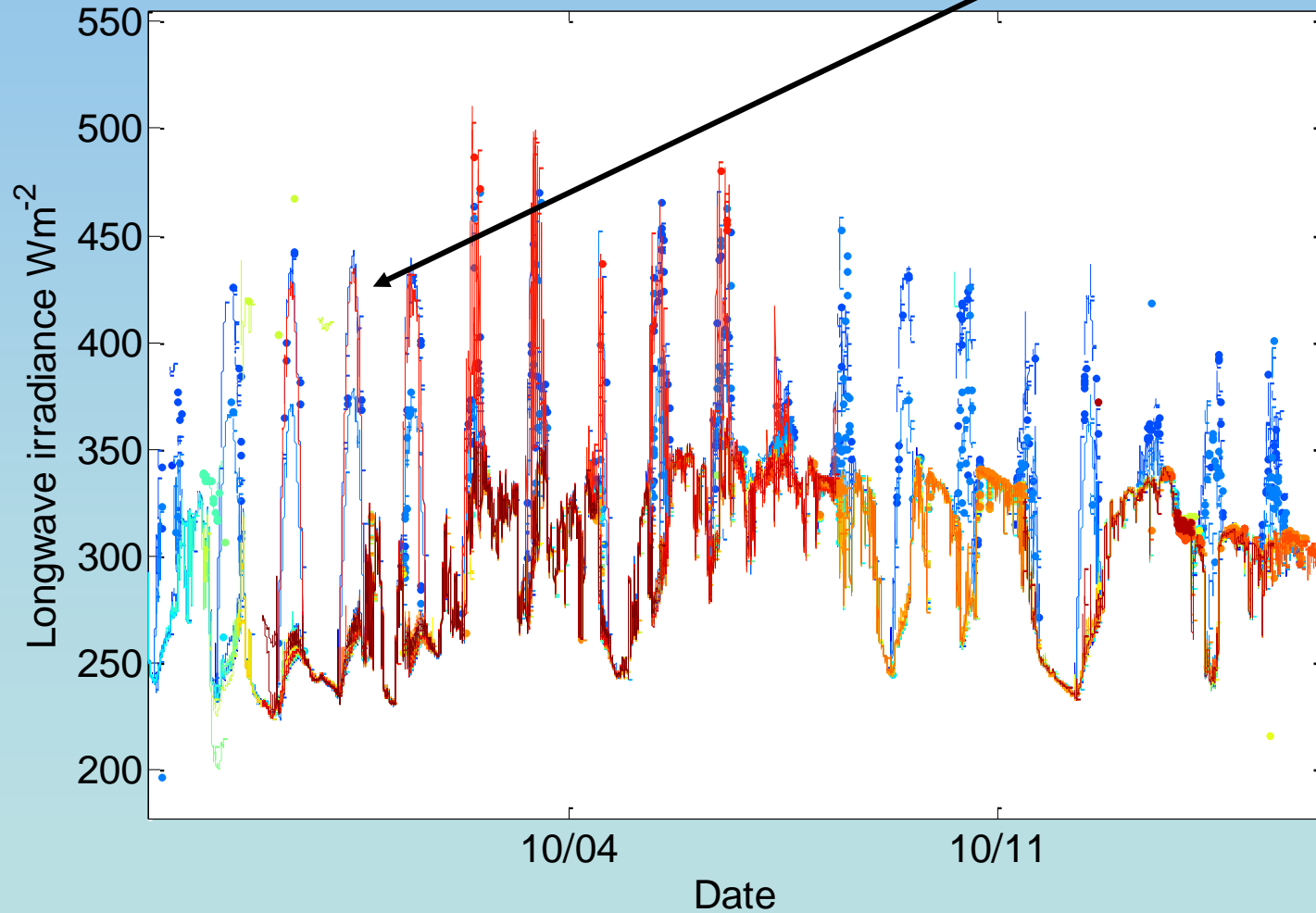
➤ WISG-IRIS/ACP = -5 Wm^{-2}

The difference WISG to IRIS/ACP published in Gröbner et al., 2014 is confirmed during IPgC-II

Measurements of all pyrgometers

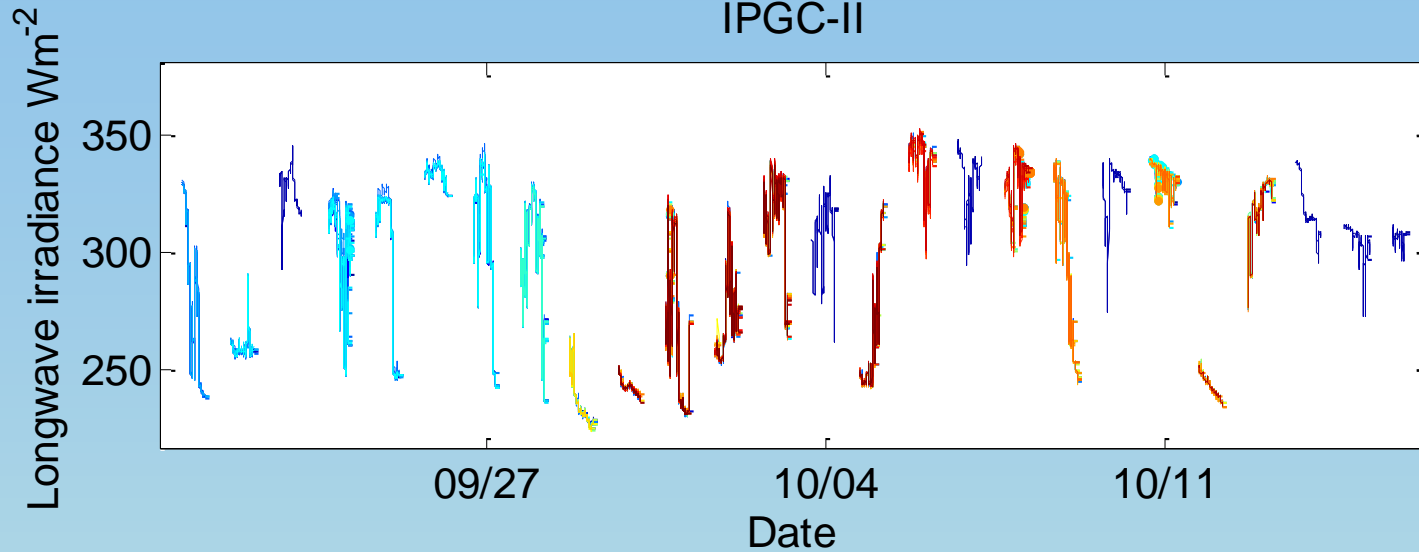
3 Pyrgometers
without solar-
blind filters

IPGC-II

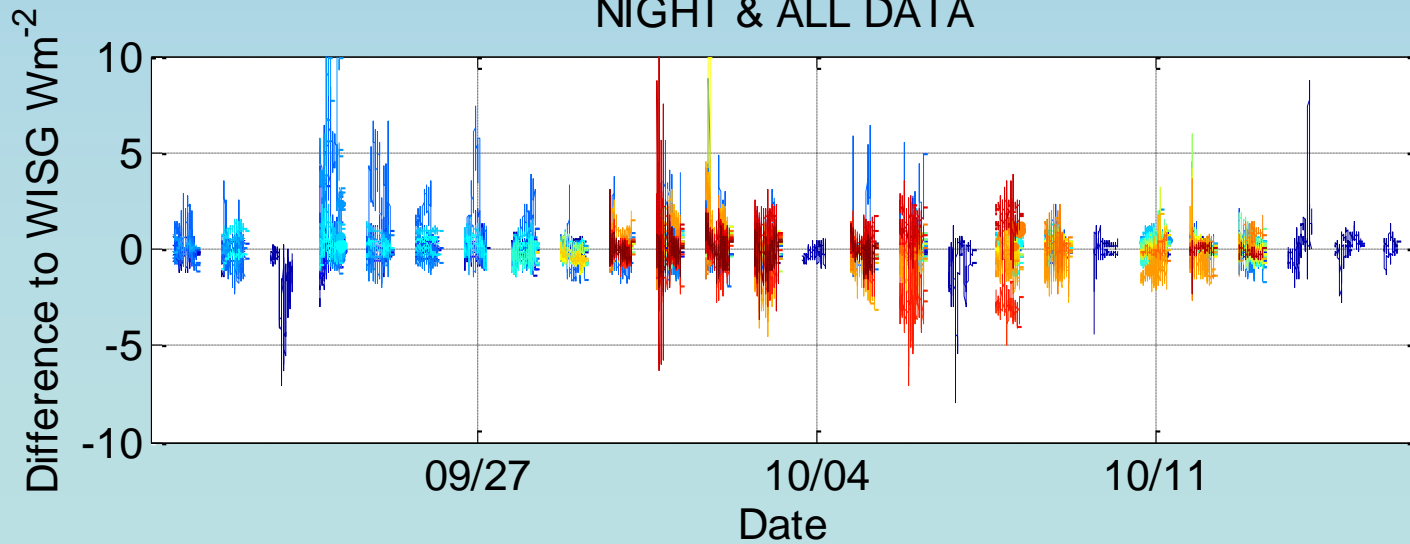


Night measurements

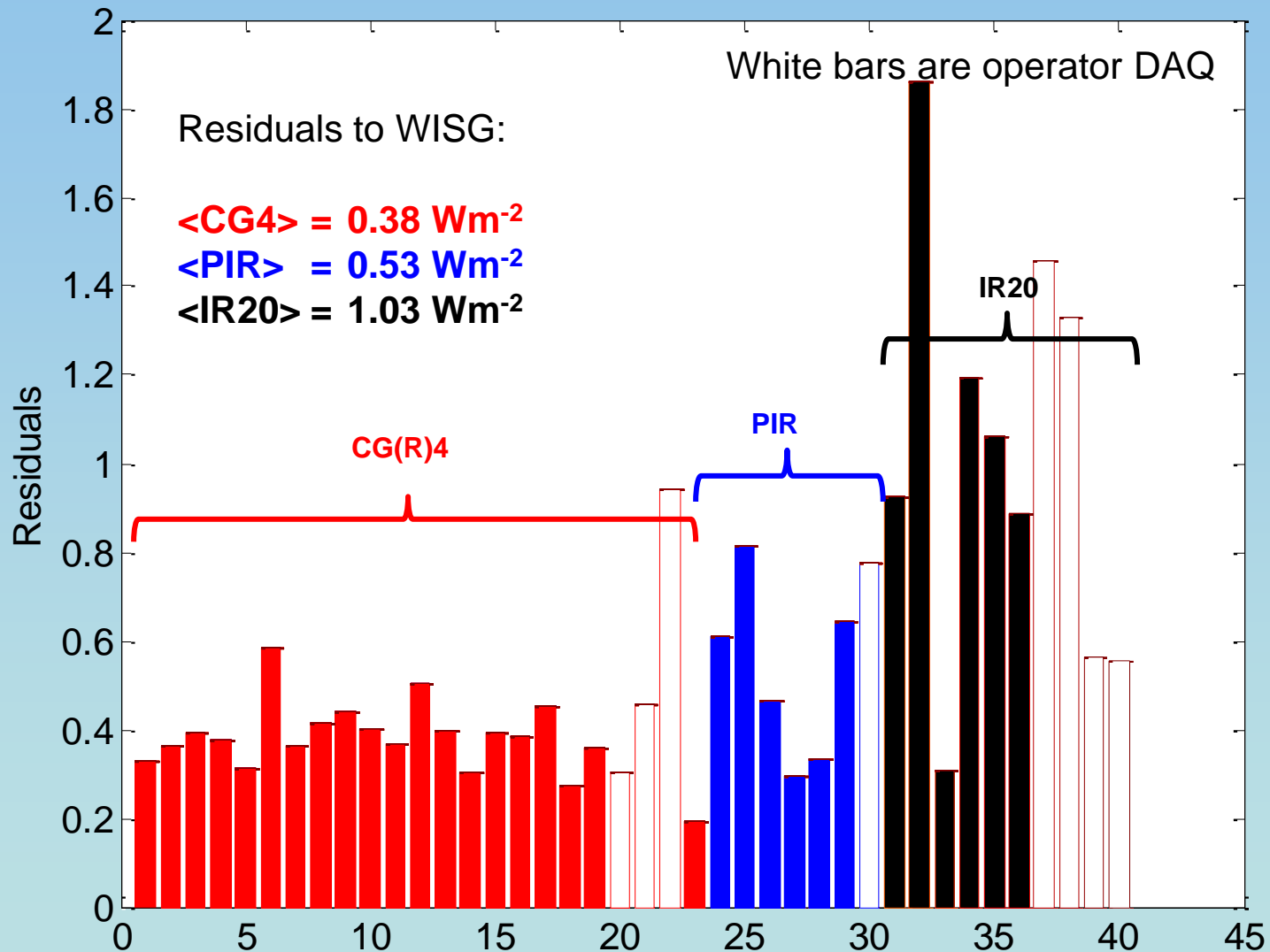
IPGC-II



NIGHT & ALL DATA

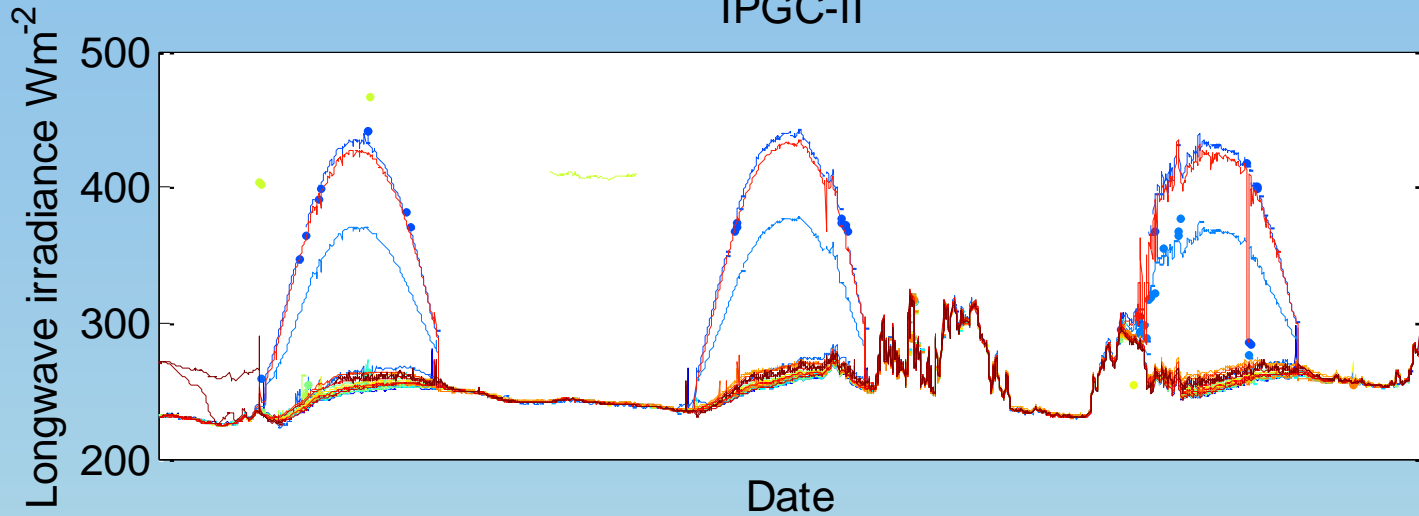


Residuals to WISG (after calibration)

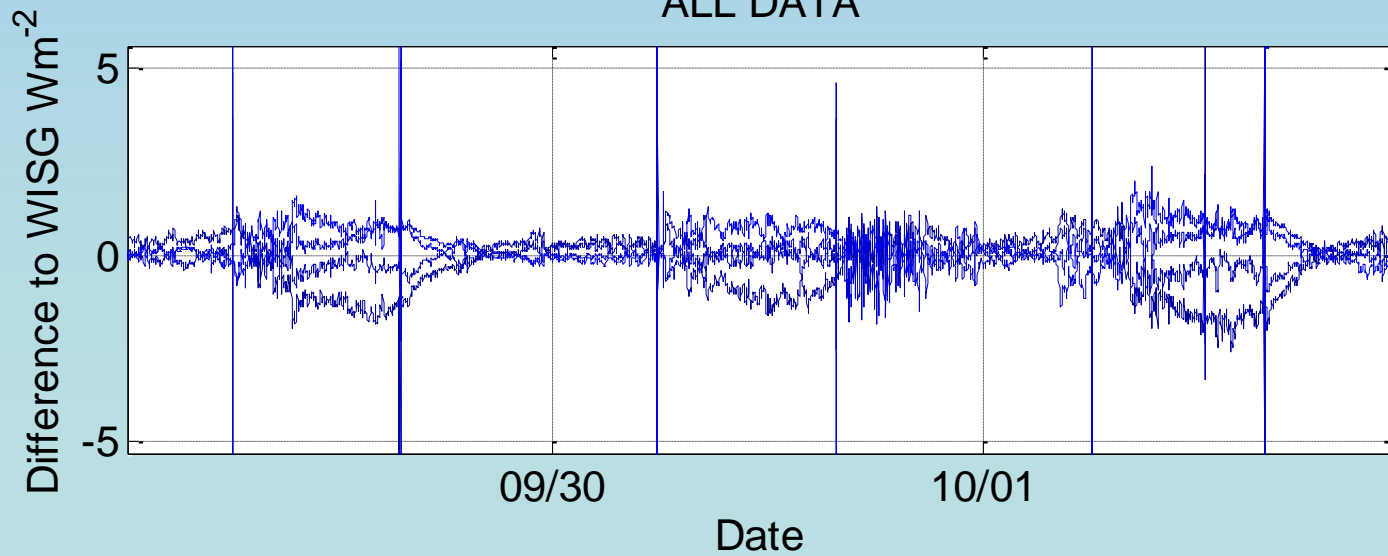


Daytime measurements WISG

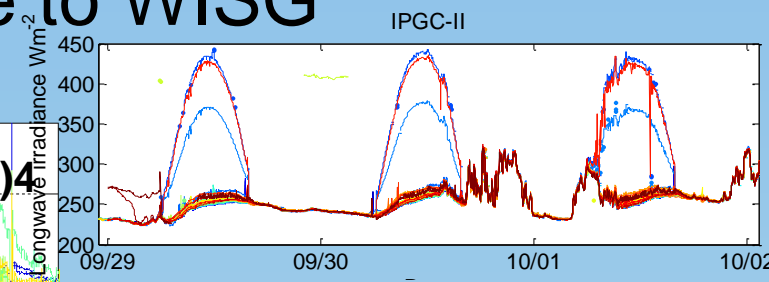
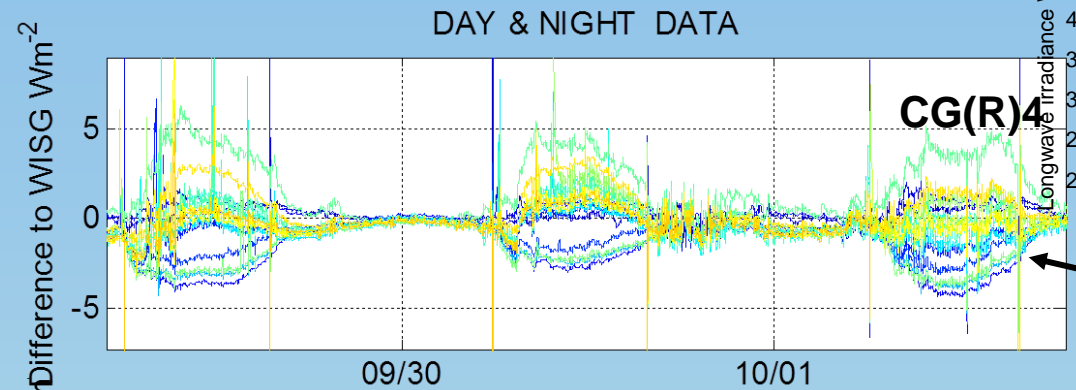
IPGC-II



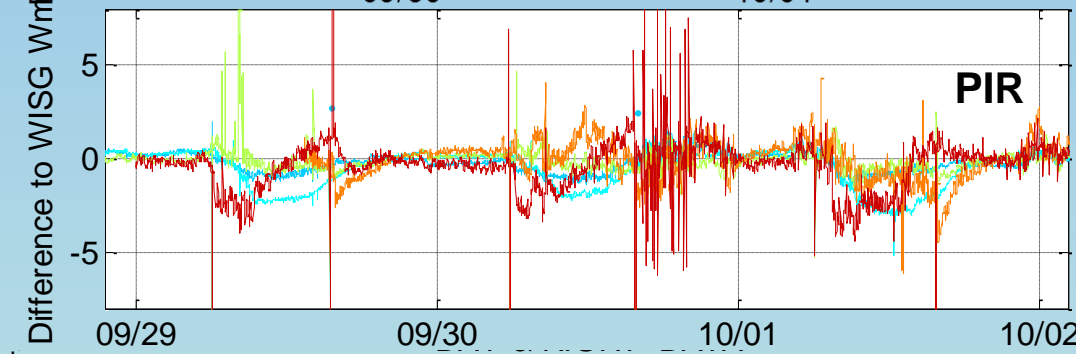
ALL DATA



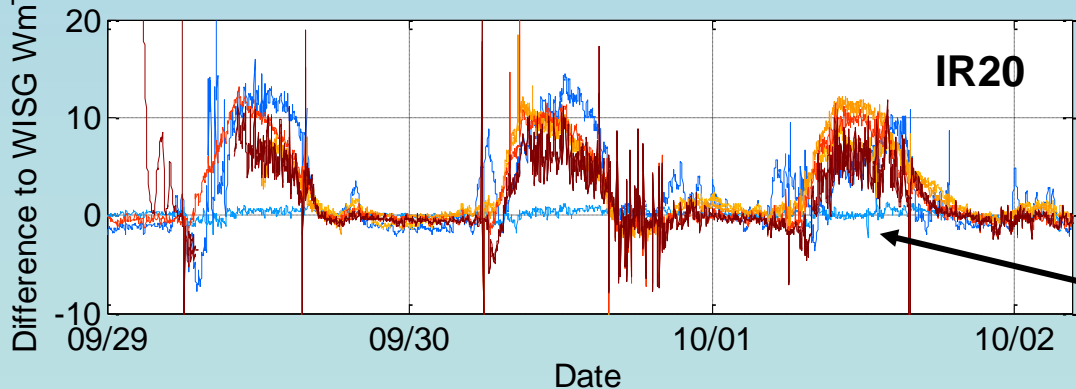
Daytime measurements relative to WISG



4 shaded

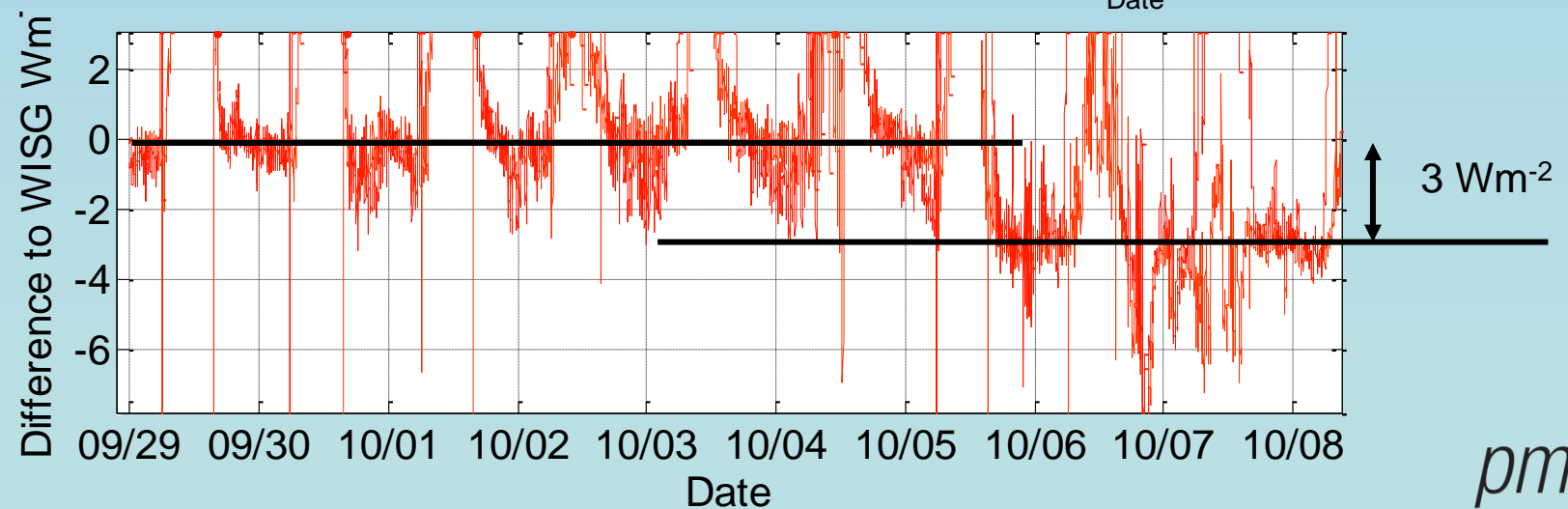
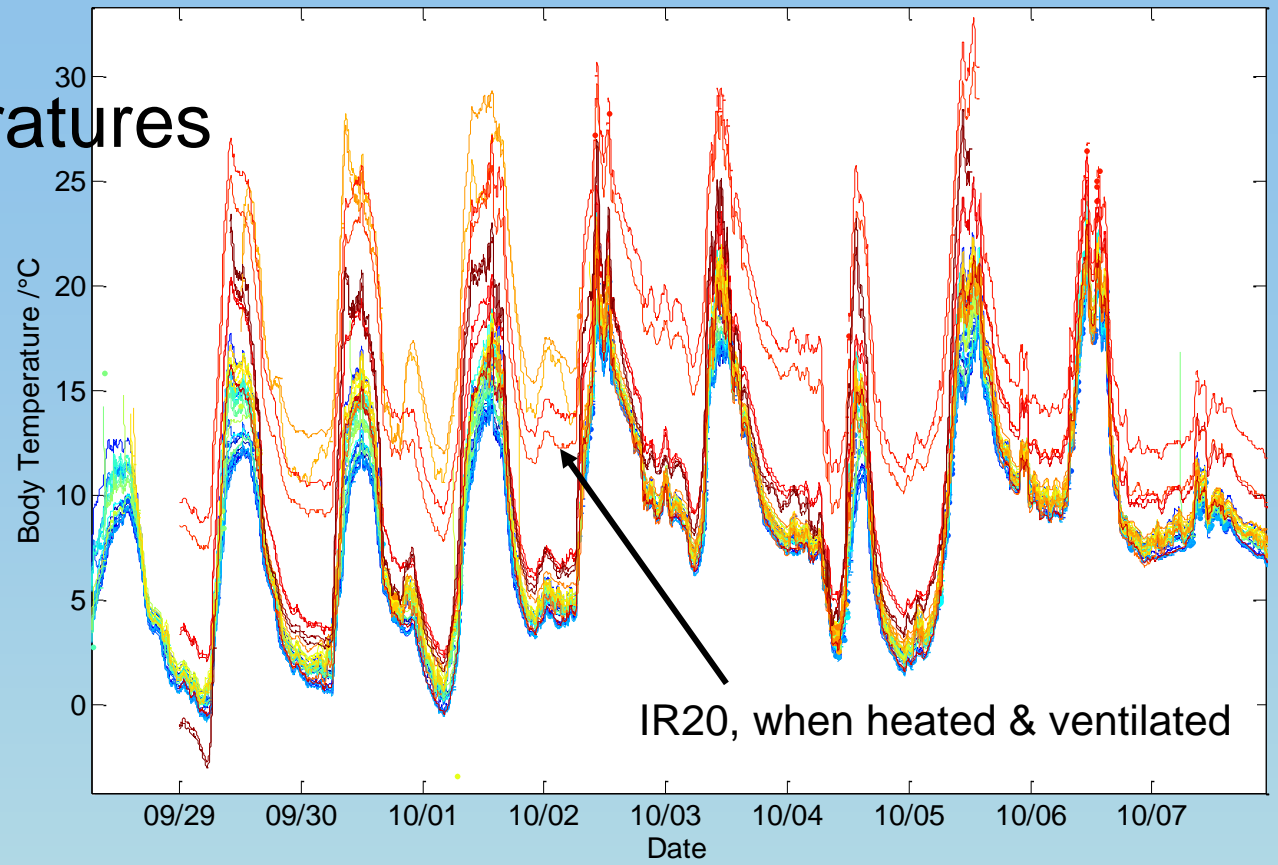


3 shaded / 2 unshaded

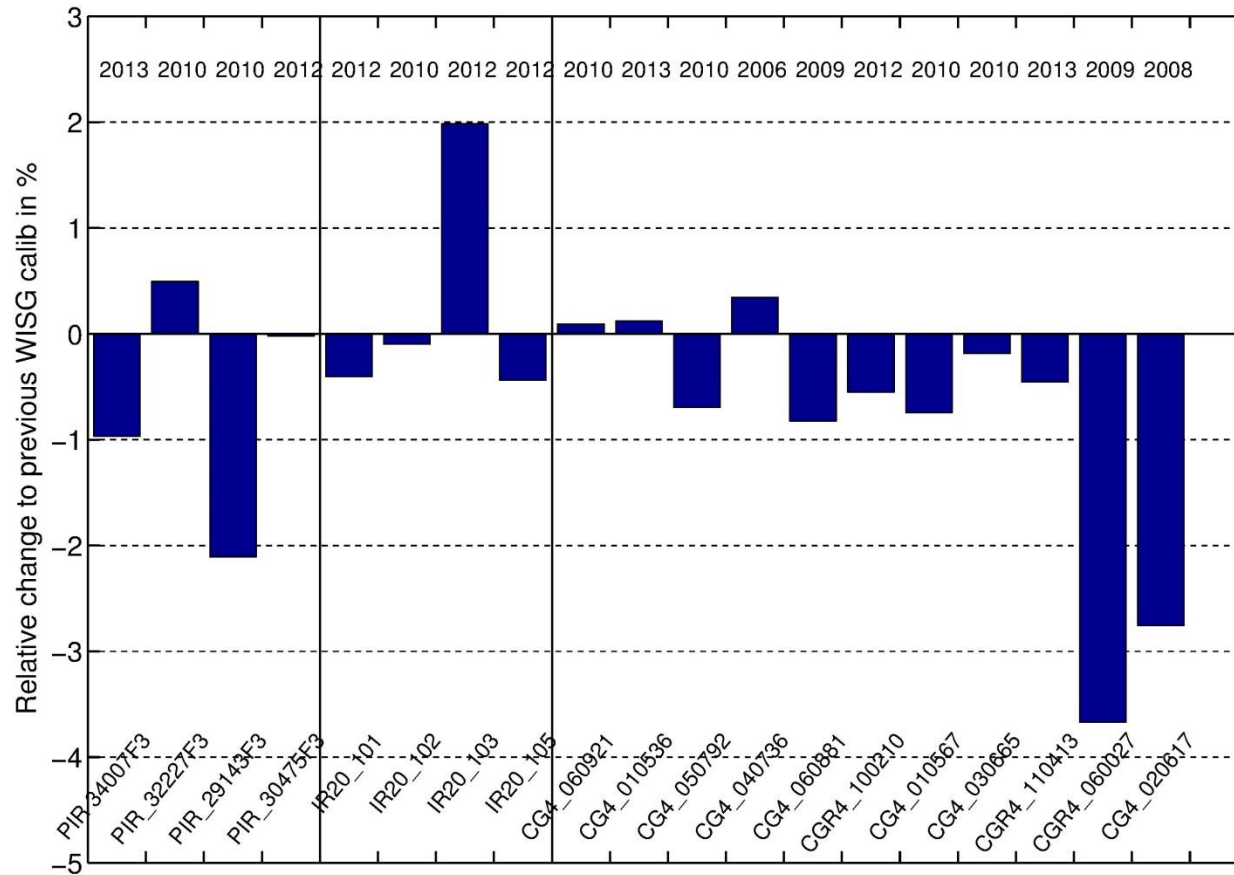


New Type T2

Body temperatures



Comparison to previous calibrations



Still much left to explore

- Analyse individual instruments
- ...Instrument types
- Day and Night effects
- Shade/unshade experiment
- Laboratory / WISG Calibrations
- Correlations with regard to ambient conditions (temperature, water vapour, ...)

Share IPgC data (for example from Working group IR)