

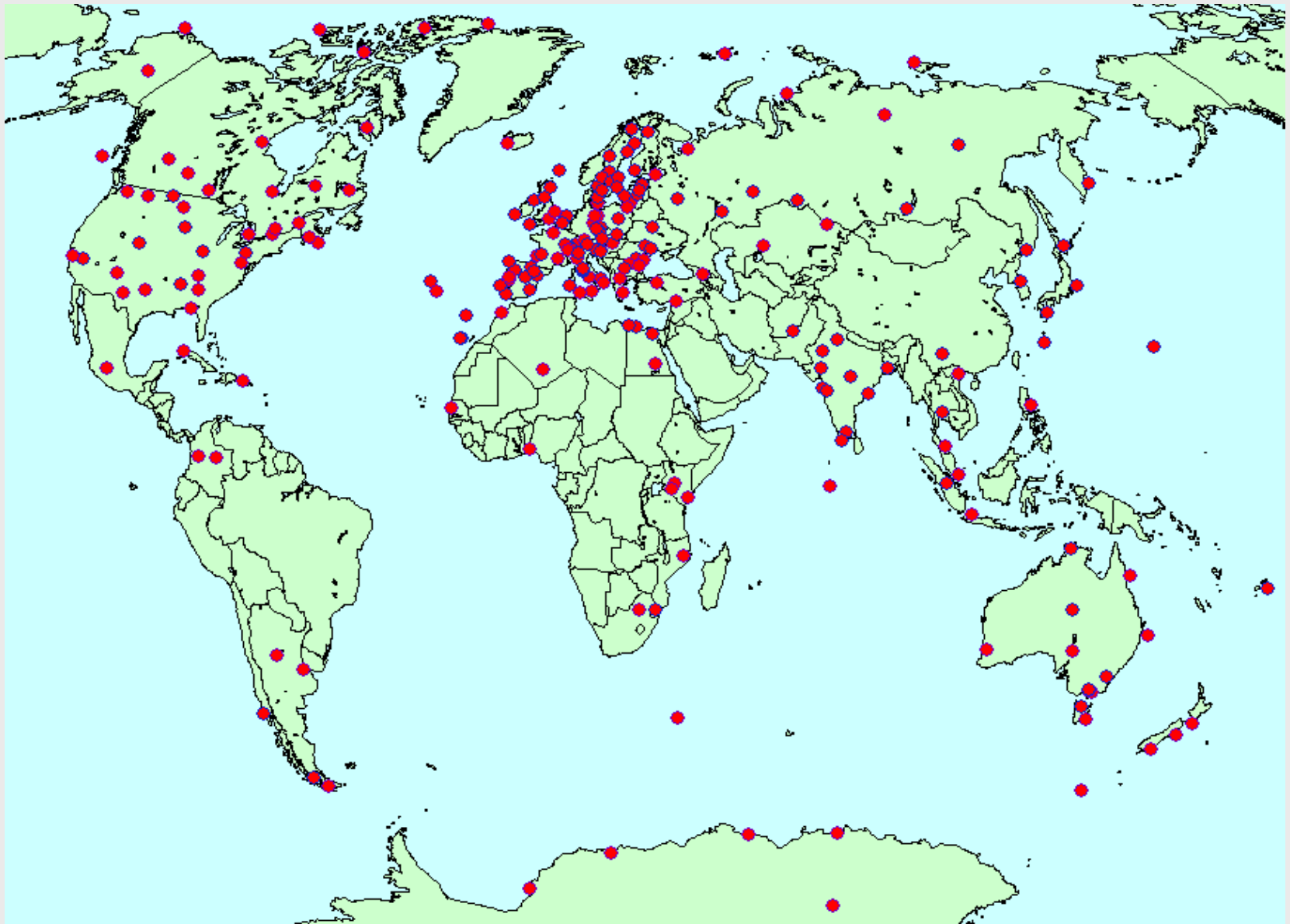


QUALITY CHECKS of RADIATION DATA at WRDC.

In Brief

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WRDC: GAW stations



Number of stations – 227



Quality Control (QC) at the WRDC

- ✓ *Physically meaningful limits*
- ✓ *QC procedures applied to daily and monthly totals*
- ✓ *Compare calculated and actual totals*
- ✓ *Checks of hourly and daily values within pre-defined ranges*
- ✓ *Checks values which may exceed irradiance at TOA*
- ✓ *QC of values higher than those of probabilistic and climatological levels*
- ✓ *Correlation of data time series with neighbour sites*
- ✓ *Homogeneity Analysis (HA) of time series*
- ✓ *Build up of Metadata for 1500 Stations from archive incl. GAW*



Global radiation

Diffuse radiation

**Sunshine
duration**

Monthly means of daily totals

15 years and more

less 15 years

Statistical analysis

**Student t-test,
Wilcoxon test,
Wald-Wolfowitz test,
Fisher test**

**Standard
normal
homogeneity
test**

metadata

Visualization

**Station time series
of radiation and
sunshine duration
normalized data**

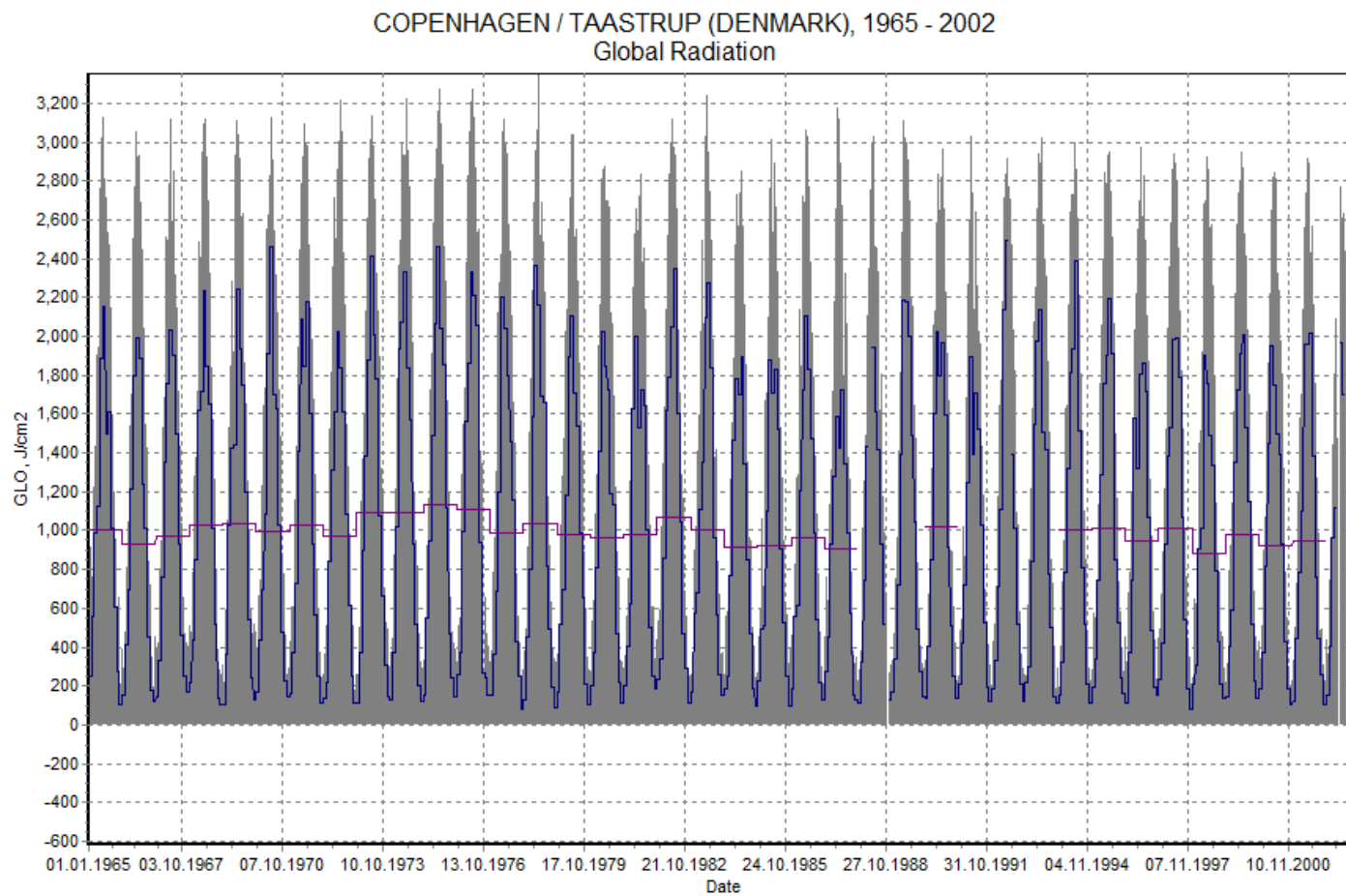
**Neighbouring station
time series
of radiation and
sunshine duration**

**Difference time series
of radiation and
sunshine duration
normalized data**

**Difference time series
between
the candidate station
and a neighbour station,
if $r > 0.7$**

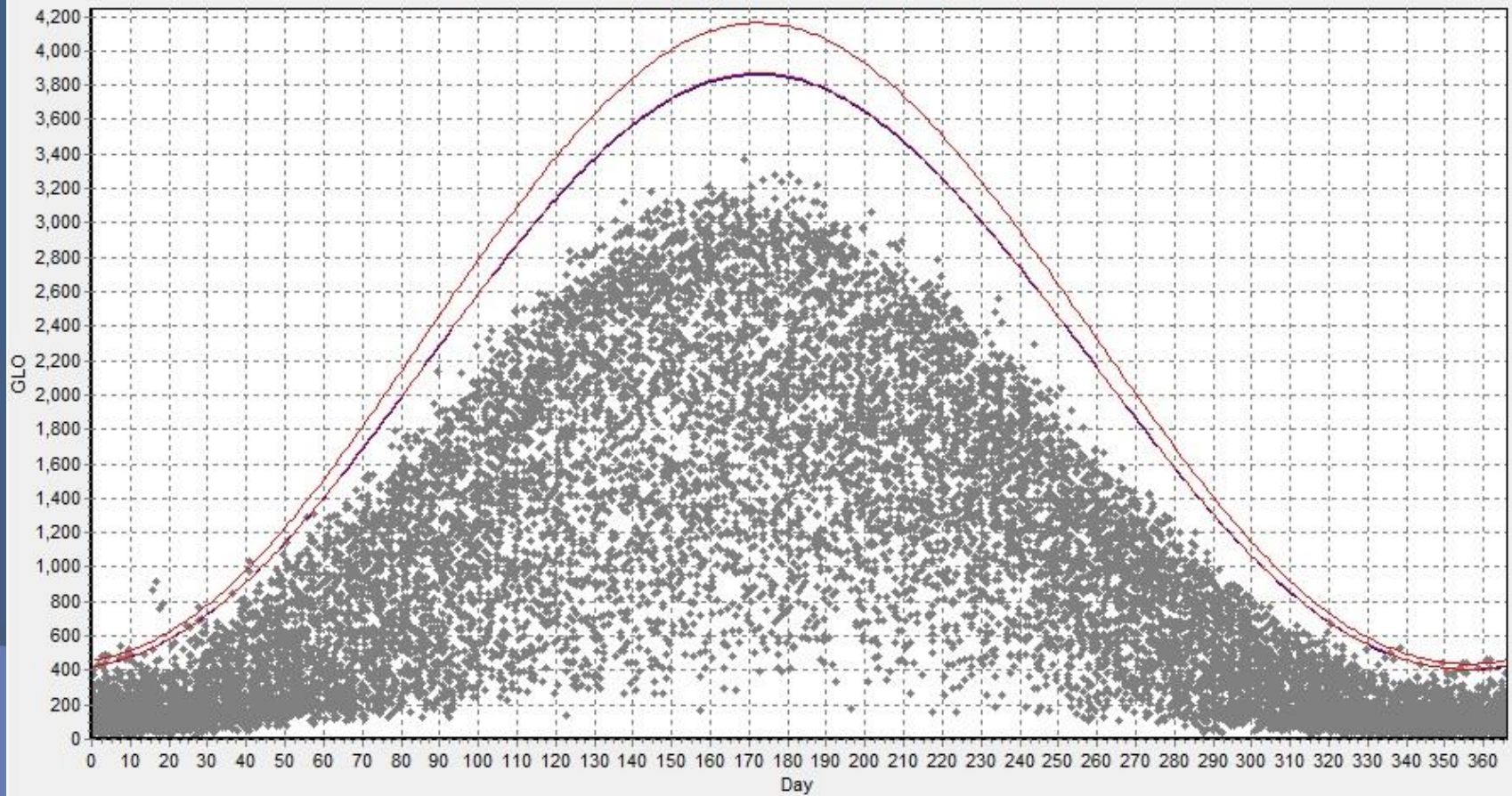
Three graphs showing visual QC of data arrays

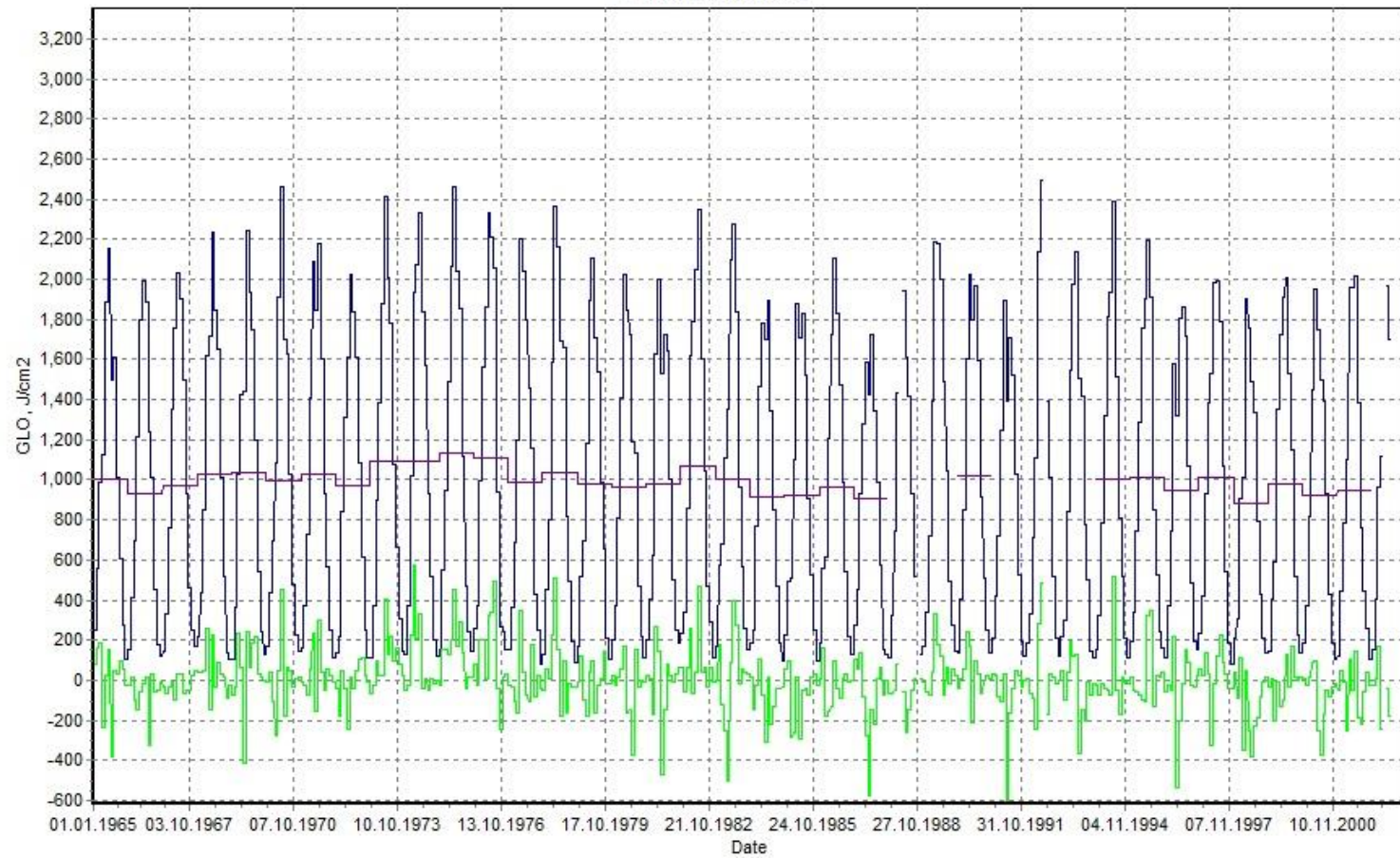
- 1 Time series of global radiation for many years: daily and year averages (red)
- 2 Seasonal behavior of global data, curves (red) TOA irradiance and 95% of it.
- 3 Monthly data for each year, year averages (red) and residuals (green) as difference between monthlies for each year and the averaged over all years.





COPENHAGEN / TAASTRUP (DENMARK), 1965 - 2002
Latitude=55°40'N Longitude=12°18'E Altitude=28m



COPENHAGEN / TAASTRUP (DENMARK), 1965 - 2002
Global Radiation

WAJIMA

JAPAN

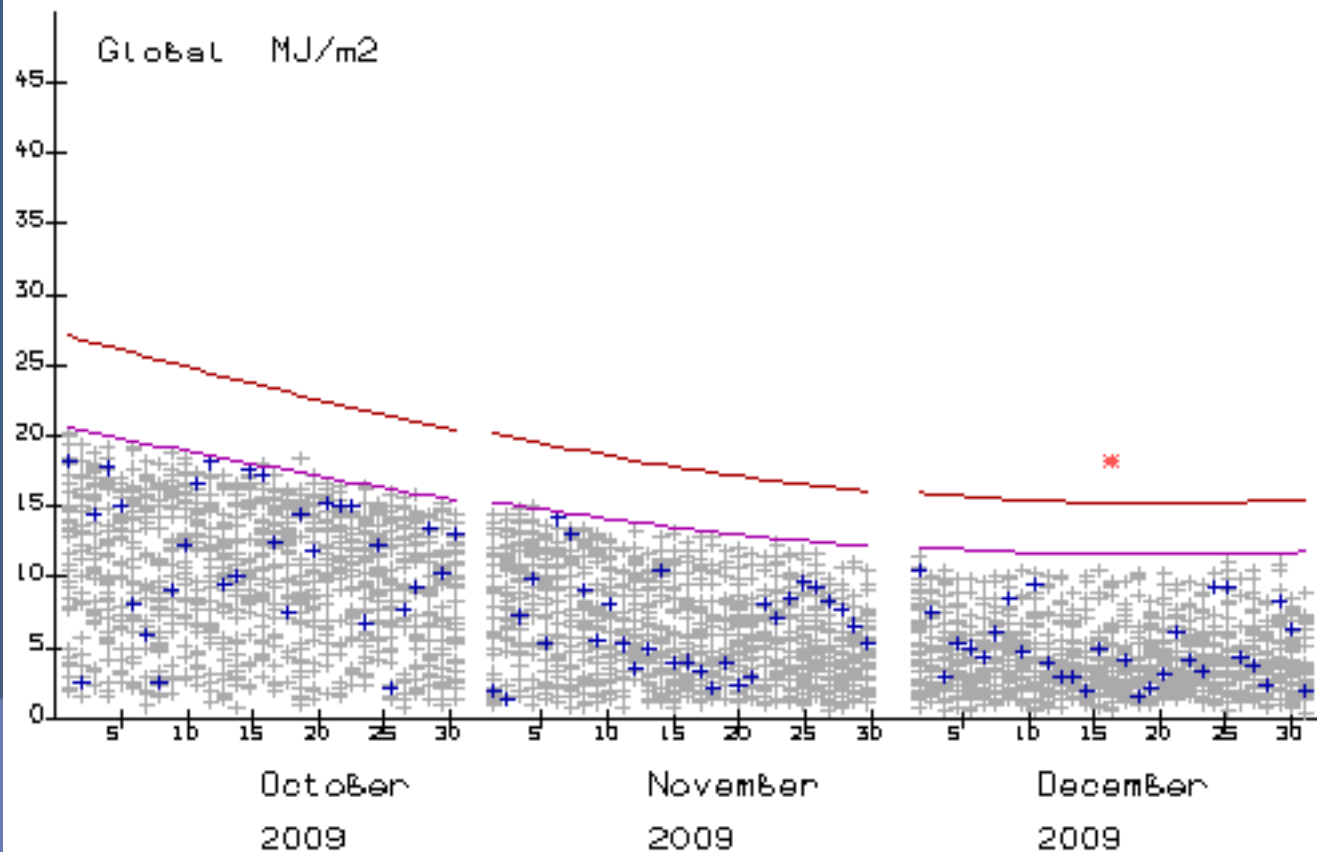
1972 - 2010

Lat 37 24

Lon 136 54

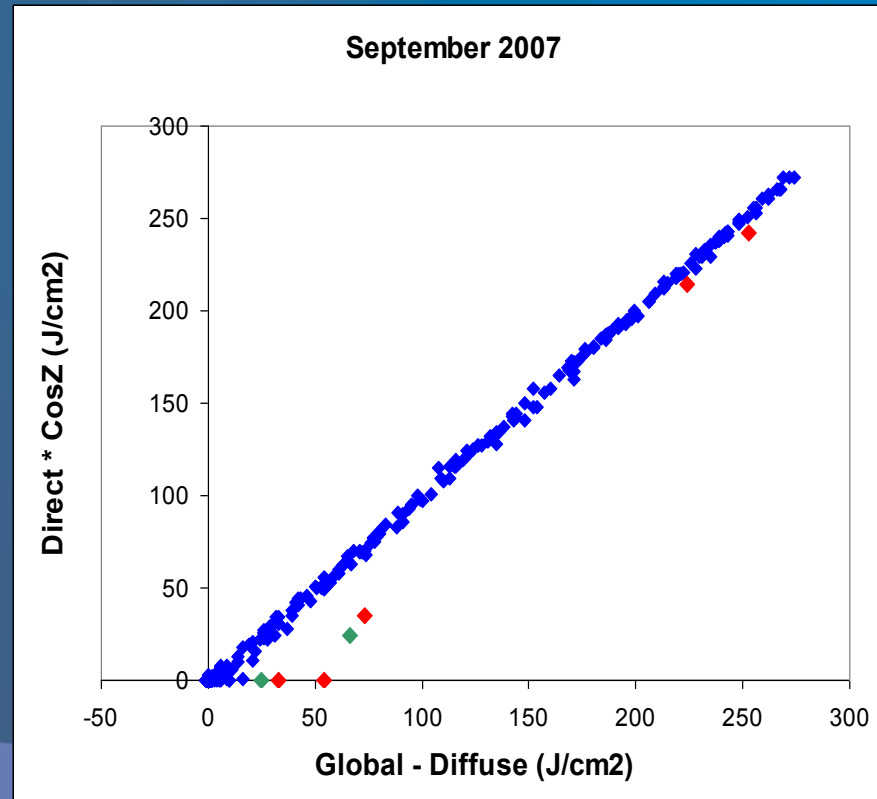
Alt 5

16/12/2009/1824





An Example of Flagging of solar radiation data Davos-Dorf



Flagging of MeteoSwiss (red)

Flagging of WRDC (green)