Intercalibration between MTSAT-1R IR4 (3.8 um) and AIRS
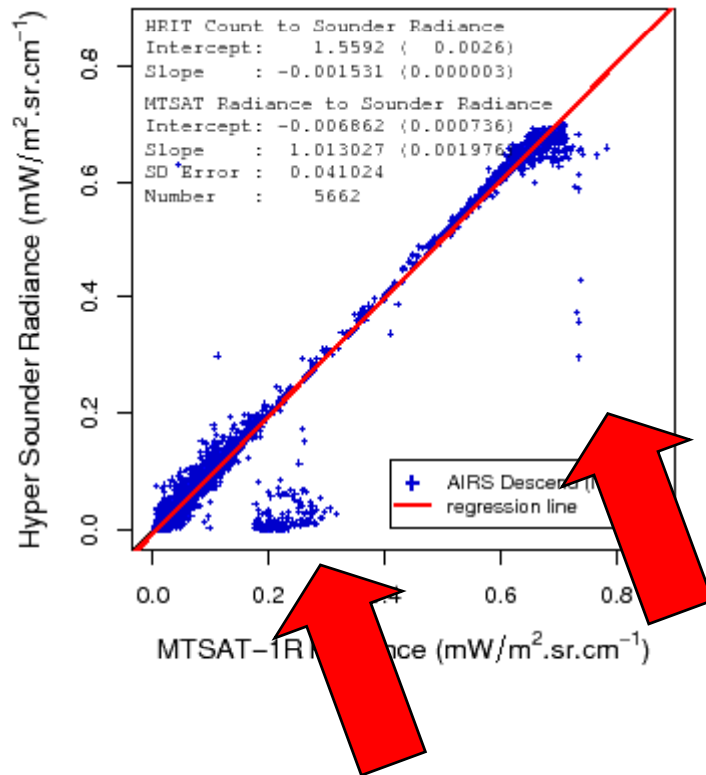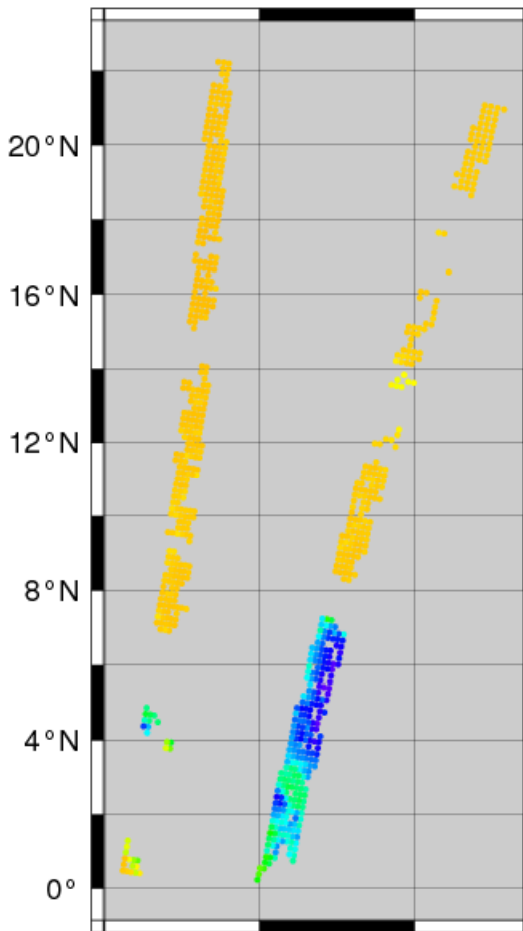
September 2008
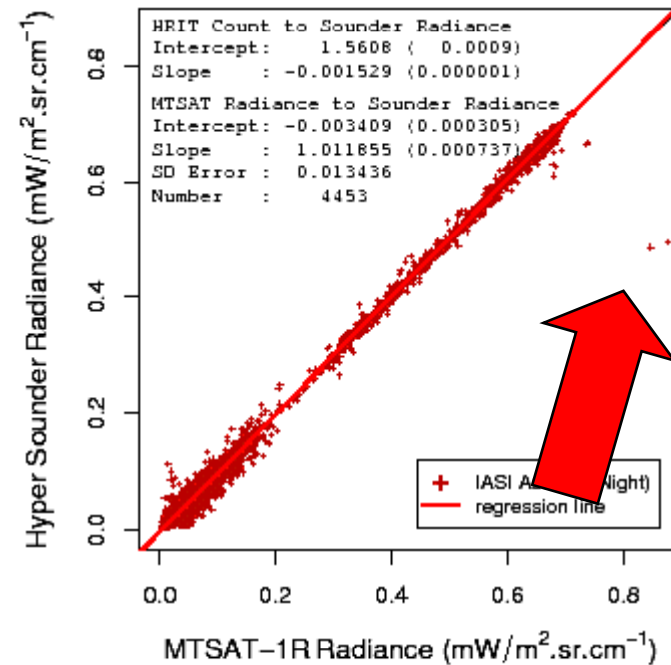
Comparison at 15:15utc 22 Sep 2008 (around midnight)
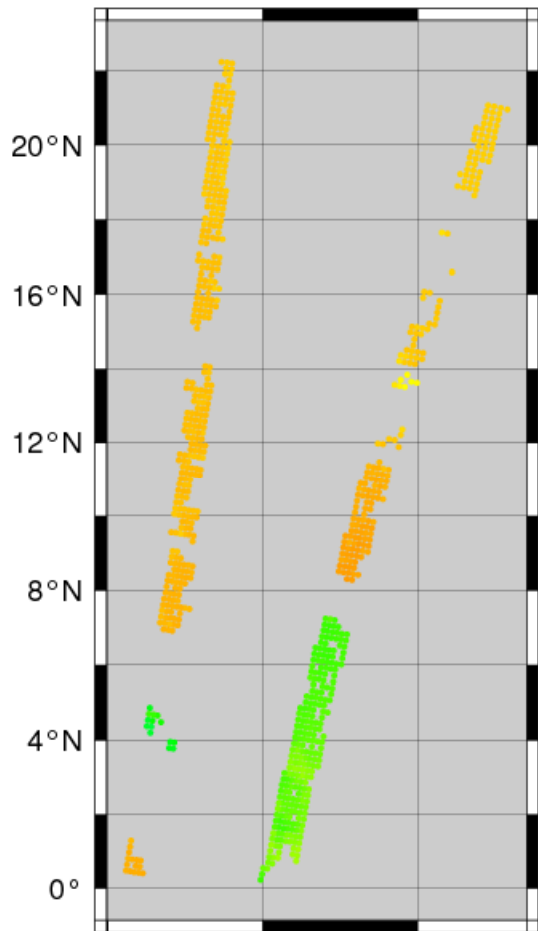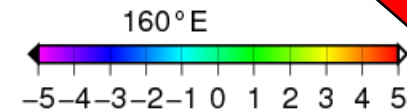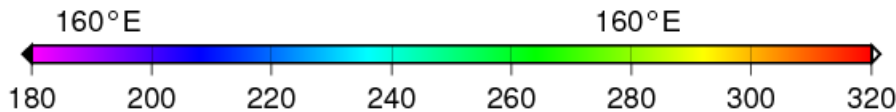
MTSAT-1R IR4 (3.8um) Image
at 15:15utc 22 Sep 2008
(around midnight)

Comparison Area

Sun
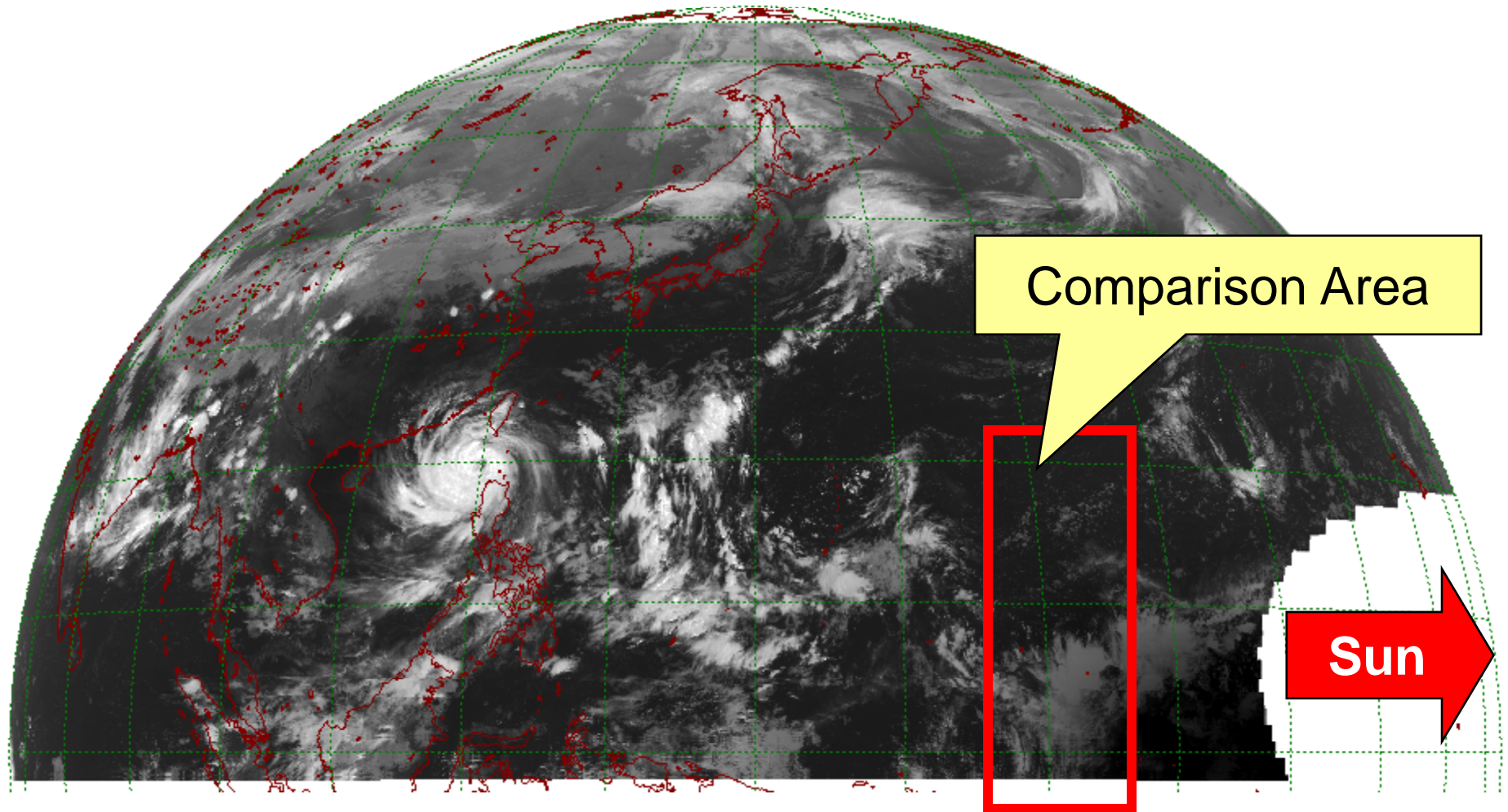
Which Regression?
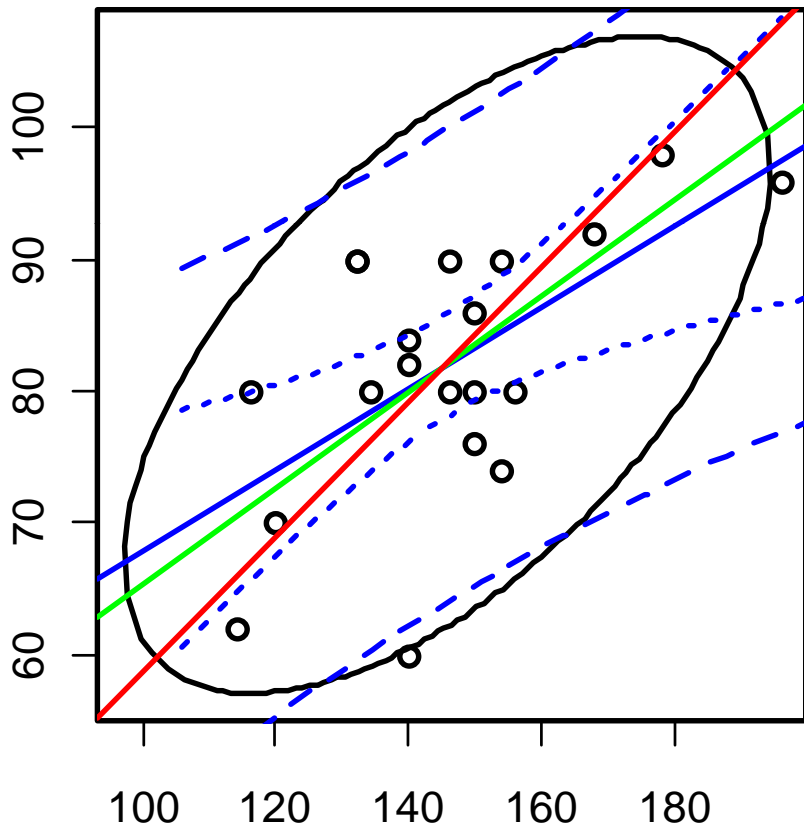
- **Regression by least square**
  - Assuming no error in X
  - $Y = aX + b$ is not equivalent to $X = a'Y + b'$

- **Major Axis regression (MA)**
- **Reduced Major Axis reg. (RMA)**
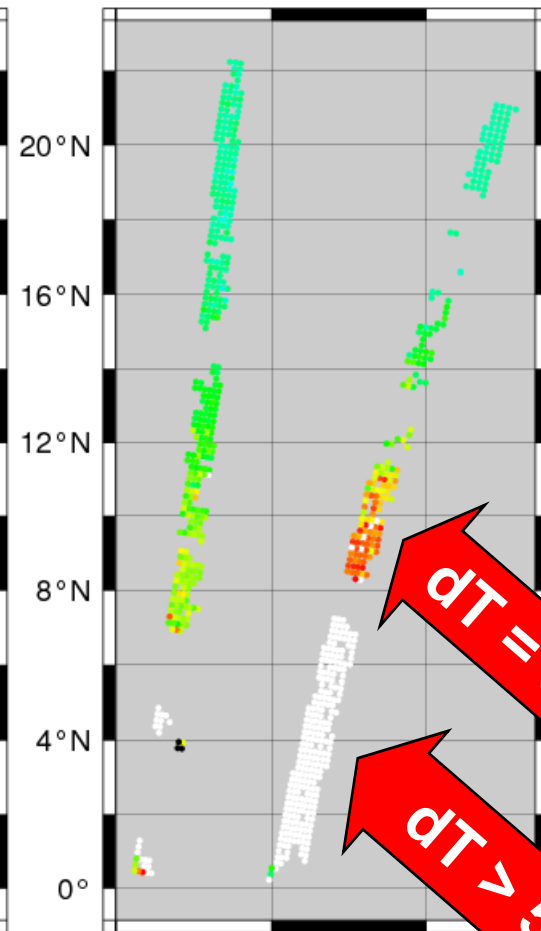 - $Y = aX + b$ is equivalent to $X = a'Y + b'$

- Anything else?

from http://aoki2.si.gunma-u.ac.jp/R/
(written in only Japanese)

Three Ways of Calculating a Regression

Least Square　　　　**Major Axis**　　　　**Reduced Major Axis**

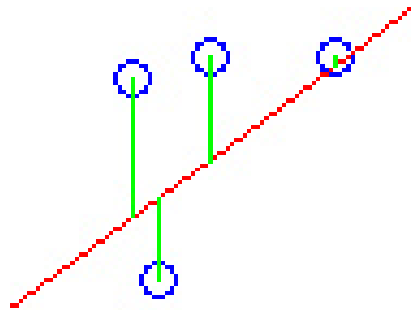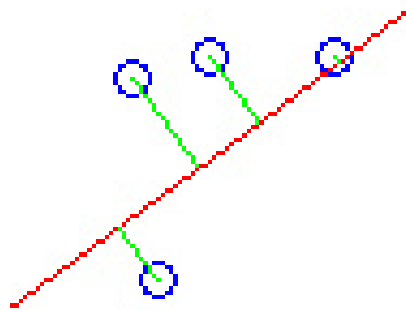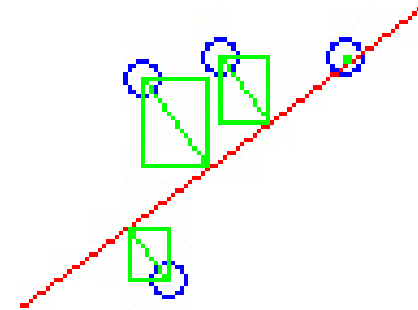Least squares regression is appropriate when there is uncertainty only regarding the y-variable. If both variables are subject to sampling and measurement error, major axis or reduced major axis regression is recommended. In the first two cases, the sum of the squared distances indicated by the green lines is minimized. In the final case, it is the areas of the triangles bounded by the horizontal and vertical green lines that are summed and minimized.

Plans

- Not to use solar affected MTSAT image around midnight

- Investigate which is better, MA or RMA

- Revise statistics code
  - Modularization
  - Compute GEO – LEO, instead of LEO – GEO

- Review spectral compensation for IR4 (3.8 um)
  - Spectral band of IR4 is too wide

- Intercalibration since MTSAT-1R operation

- Review AIRS/IASI consistency (CGMS Action 12)