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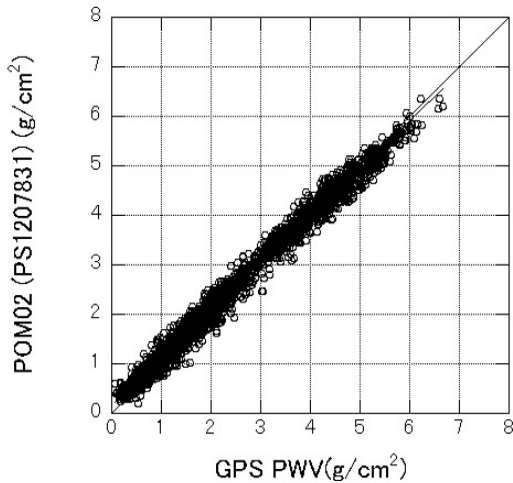


Figure 1. Comparison between GPS and POM-02 derived PWV (precipitable water vapor).

#### POM-02 and GPS PWV in 2011

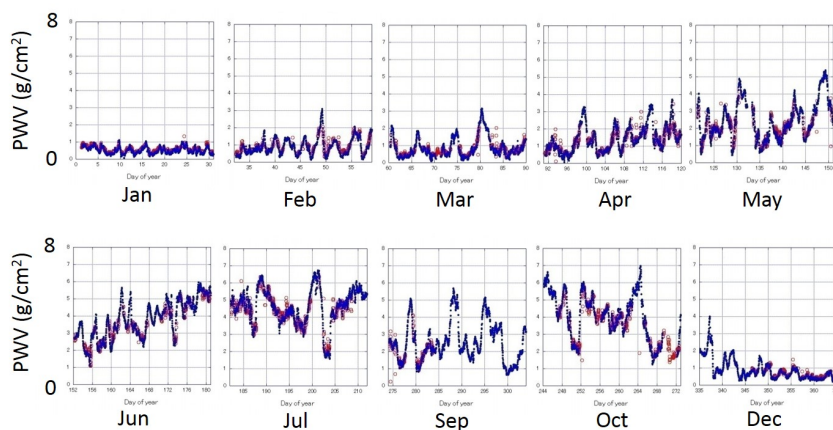


Figure 2. Time series of 30 minute averaged PWV derived from POM-02 (red open circles) and GPS (blue solid circles) data recorded in 2011 at Tsukuba, Japan.

- To retrieve the columnar precipitable water vapor amount from sun-sky radiometers, the POM-02 940-nm channel was calibrated using the Langley method, which accounts for gas absorption.
- The relation between column water vapor and atmospheric transmittance at 940 nm was determined using simulation data, and the results were used to retrieve column water vapor.
- This method was applied to data collected at Tsukuba, Japan, in 2011 and compared with global positioning system receiver (GPS).
- A comparison of POM-02 and GPS results showed a bias error of  $0.09 \text{ g cm}^{-2}$ ; the root mean square error was  $0.179 \text{ g cm}^{-2}$ ; and correlation coefficient  $r = 0.996$ .