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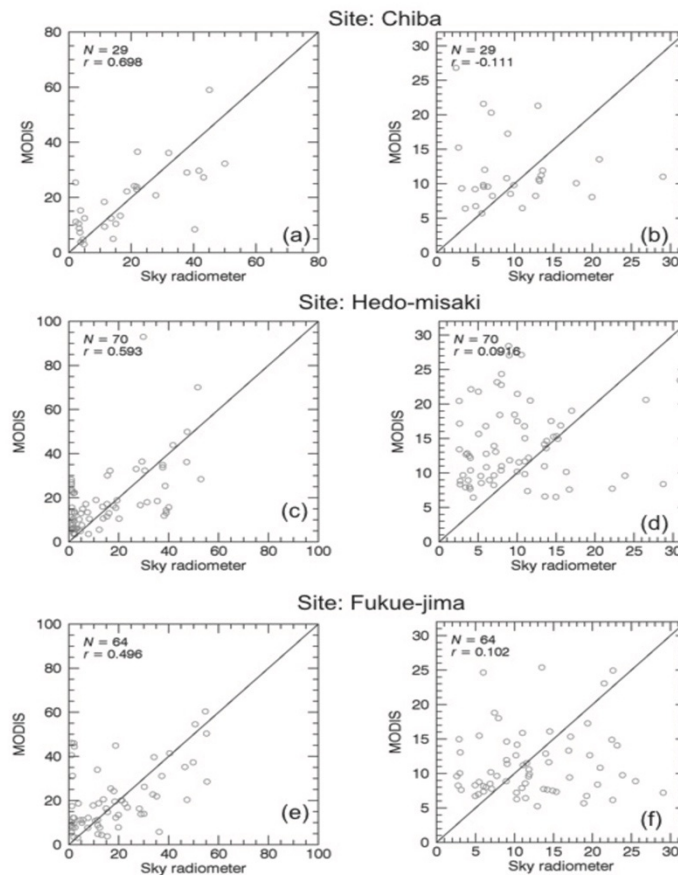


Fig.1. Comparison of cloud optical depth COD (left panel) and cloud-particle effective radius Re (μm ; right panel) between MODIS (TERRA+AQUA) and sky radiometer for Chiba (upper), Hedo-misaki (middle) and Fukue-jima (lower) sites of SKYNET.

- The study implements long-term surface observed radiation data (pyranometer observed global flux and sky radiometer observed spectral zenith transmittance data) of multiple SKYNET sites to validate water cloud optical properties (cloud optical depth COD and effective radius Re) observed from space by MODIS onboard TERRA and AQUA satellites and AHI onboard Himawari-8 satellite.
- In general, CODs from both satellite sensors are found to overestimated when clouds are optically thin. The Re values from the sky radiometer and satellite sensor are generally poorly correlated than COD values.
- Among a number of factors (spatial and temporal variations of cloud, sensor and solar zenith angles), the solar zenith angle (SZA) is found to have an impact on COD difference between reflectance based satellite sensor and transmittance based sky radiometer.
- The difference in Re between the sky radiometer and satellite sensor is negatively correlated with COD difference between them.