README for MAX-DOAS Observation as of 29 March 2013

Data owners:

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Platform:

R/V Mirai

Cruise Code:

MR11-07

Observation Method:

MAX-DOAS (Multi-AXis Differential Optical Absorption Spectroscopy) is a technique measuring UV/Visible hyperspectra of scattered sunlight at several different elevation angles. The raw spectra are analyzed based on the DOAS method to derive the differential slant column density (DSCD) of the oxygen collision complex (O2-O2 or O4) and NO2, using QDOAS software (http://uv-vis.aeronomie.be/software/QDOAS/). Vertical column densities (VCDs) are retrieved by using custom VCD conversion software (Y. Kanaya, test121216.exe).

Daytime data only. The measured spectra were selected with a criterion for the elevation angle to be within ±0.2°of the target elevation angle and averaged every 1 minute.

Data Format:

The following parameters are archived as ASCII format in “max_mr1107_aer476_c.dat”.

Day number since January 1st [UTC]
Hour of day [UTC]
Aerosol optical depth (AOD) at 476 nm (unitless)
residual (el=3)
residual (el=5)
residual (el=10)
residual (el=20)
residual (el=30)
O4 DSCD (1e40 molecules2 cm-5, el=3) as QDOAS output, used after dividing by 1.25
O4 DSCD (1e40 molecules2 cm-5, el=5) as QDOAS output, used after dividing by 1.25
O4 DSCD (1e40 molecules2 cm-5, el=10) as QDOAS output, used after dividing by 1.25
O4 DSCD (1e40 molecules2 cm-5, el=20) as QDOAS output, used after dividing by 1.25

O4 DSCD (1e40 molecules2 cm-5, el=30) as QDOAS output, used after dividing by 1.25
error in O4 DSCD (1e40 molecules cm-5, el=3)
error in O4 DSCD (1e40 molecules cm-5, el=5)
error in O4 DSCD (1e40 molecules cm-5, el=10)
error in O4 DSCD (1e40 molecules cm-5, el=20)
error in O4 DSCD (1e40 molecules cm-5, el=30)

The following parameters are archived as ASCII format in “max_mr1107_no2_c.dat”.

Day number since January 1st [UTC]
Hour of day [UTC]
NO2 vertical column density (molecules cm-2)
residual (el=3)
residual (el=5)
residual (el=10)
residual (el=20)
residual (el=30)
NO2 DSCD (molecules cm-2, el=3)
NO2 DSCD (molecules cm-2, el=5)
NO2 DSCD (molecules cm-2, el=10)
NO2 DSCD (molecules cm-2, el=20)
NO2 DSCD (molecules cm-2, el=30)
error in NO2 DSCD (molecules cm-2, el=3)
error in NO2 DSCD (molecules cm-2, el=5)
error in NO2 DSCD (molecules cm-2, el=10)
error in NO2 DSCD (molecules cm-2, el=20)
error in NO2 DSCD (molecules cm-2, el=30)

Remarks:

Since MAX-DOAS is a remote sensing technique, further improvement in data quality is anticipated. It is recommended to contact Takashima before use for publication.

Contact Point:

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