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MAX-DOAS measurements of atmospheric trace gases during the SHIVA campaign

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As part of the EU funded FP-7 project SHIVA (SHIVA - Stratospheric Ozone: Halogen Impacts in a Varying Atmosphere) several measurement activities took place in the Western Pacific in autumn 2011. One of the main objectives of SHIVA is to investigate emission strengths, transport path ways and chemical transformation of VSLS from the ground towards the stratosphere.

Here we mainly report on Multi Axis Differential Optical Absorption Spectroscopy (MAX-DOAS) measurements of the trace gases IO, BrO, NO_2, O_3, HCHO and CHOCHO. They were carried out during the research cruise SO-218 aboard RV Sonne between Singapore and Manila from November 15 to November 29, 2011. An additional setup was installed in the
same time period on Bohey Dulang Island (4°36'N, 118°47'E) close to the East coast of Borneo. The geometry of ground-based MAX-DOAS provides high sensitivity for trace gases in the lower troposphere. Radiative transfer models (RTM) are used to calculate atmospheric vertical trace gas columns and profiles. Retrieved trace gas profiles are interpreted by means of complementary data and finally compared to results from recent campaigns in the same area (e.g. TRANSBROM) and to satellite data.

First analysis show significant amounts of IO (around 4 ppt) in air masses around Bohey Dulang Island probably due to seaweed cultivation in this area. For BrO no levels above the detection limit (0.6 to 1 ppt) could be derived.