ABSTRACT

Glyoxal is the smallest α,β-dicarbonyl compound. Sources of Glyoxal are formed by the oxidation of HCHO. Contrary to HCHO, no direct sources are expected. This makes CH2O a good indicator of the VOC richness.

INSTRUMENTATION

The GOME-2 (Global Ozone Monitoring Experiment) instrument is mounted on the MetOp satellite. GOME-2 was launched into a synchronous orbit in October 2006 and has been providing operational data since March 2007. It consists of a series of UV/visible spectrometers capturing the light reflected by the Earth's surface and atmosphere. GOME-2 is very similar to GOME instrument but incorporates spectral resolution (40 x 80 km²), a wide scanning width (1920 km), which provides a better global coverage (within 1.5 days).

RESULTS

The graph to the left depicts the composite map of the Vertical Column Density of CHOCHO calculated for the period 3.4.2007 - 30.6.2008. Certain areas appear to have enhanced vertical column values of CHO CHO indicative of the ongoing photochemistry. South America, Africa, India, Indonesia and Asia are among the regions where high values of CHO CHO are found. At higher latitudes, moderate values of CHO CHO are observed, for example, over Russia, Siberia and Antarctica. Notably, high column amounts of CHO CHO are also observed above water suggesting enhanced biomass activity. Due to the short lifetime of CHO CHO, these high values are expected to originate from the region sources of the precursor VOCs.

EXPERIMENT

The vertical columns (VC) of glyoxal are calculated with the Differential Optical Absorption Spectroscopy (DOAS) by subsequently applying the air mass factor correction (AMF), calculated with the radiative transfer model (SCIATRAN) to the short columns (SC). The latter is the integral amount of absorber averaged over all light paths. DISORT was retrieved at the blue spectral range. In specific, the spectral window between 435 and 457 which includes a sharp peak at 450nm, is chosen for the analysis. The absorption cross sections of O₃, H₂O, O₃, photolysis, a set quadratic polynomial are included in the fitting procedure.

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