



Global distribution of tropospheric Sulfur Dioxide monitored by satellite instruments

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Satellite remote sensing is a powerful tool along with several advantages over other conventional measurement techniques. Satellite instruments give us opportunity to observe the whole globe with same instrument and to discriminate the spatial and temporal variations.

The prerequisite for the investigation of global SO₂ budget from space is the development and improvement of a SO₂ retrieval algorithm. This exhibits a major challenge, because the weak SO₂ absorptions have to be analysed around 312 nm where strong O₃ absorptions and Rayleigh scattering significantly affect the atmospheric radiative transfer and spectroscopy. However, the retrieval method, its limitations, difficulties and their solutions are discussed in detail.

Differential optical absorption spectroscopy (DOAS) technique is used to retrieve tropospheric SO₂ column amounts from Satellite based observations of spectrometers GOME and SCIAMACHY. In this Study Spatial distribution and temporal trends in SO₂ emissions on global basis are investigated. Especially SO₂ emissions from different sources such as volcanoes, power plants, metal ore smelting industry and biomass burning are studied separately and are partly quantified.