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Global atmospheric methane, carbon dioxide and carbon monoxide as retrieved from SCIAMACHY near-infrared nadir observations

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Carbon dioxide (CO₂) and methane (CH₄) are the two most important anthropogenic greenhouse gases and carbon monoxide (CO) is an important air pollutant. SCIAMACHY on ENVISAT is the first satellite instrument whose measurements are sensitive to concentration changes of these "carbon gases" at all altitude levels down to the Earth's surface where their source/sink signals are largest. Several groups have developed retrieval algorithms to retrieve the vertical columns or column-averaged mixing ratios of these gases from the SCIAMACHY spectral measurements in the near-infrared / shortwave infrared spectral region obtained in nadir viewing mode. Here an overview is given about the status of this activity. The focus will be on the first three years of ENVISAT (2003-2005) and on comparisons with global models.