Climatology and comparison of ozone from ENVISAT/GOMOS and SHADOZ/balloon-sonde observations in the southern tropics

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In this paper, the stellar occultation instrument GOMOS is compared with ozonesondes from the SHADOZ network. We only used nighttime O3 profiles and selected 8 Southern Hemisphere stations. 7 years of GOMOS datasets (GOPR 6.0cf and IPF 5.0) and 11 years of balloon-sondes are used in this study. A monthly distribution of GOMOS O3 mixing ratios was performed in the upper-troposphere and in the stratosphere (15–50 km). A comparison with SHADOZ was made in the altitude range between 15 km and 30 km.

In the 21–30 km altitude range, a satisfactory agreement was observed between GOMOS and SHADOZ, although some differences were observed depending on the station. The range for monthly differences generally decreases with increasing height and is within ±15%. It was found that the agreement between GOMOS and SHADOZ declines below ~20 km. The median differences are almost within ±5%, particularly above 23 km. But a large positive bias was found below 21 km, in comparison to SHADOZ.

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