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Secondary ozone peak in the troposphere over the Southern Space Observatory, Brazil (1996 - 2000)

Show affiliations

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Atmospheric soundings (in troposphere and lower stratosphere) to measure ozone and meteorological profiles have been made at the Southern Space Observatory, Brazil (29.4S, 53.8W) since 1996. In this work, a total of 50 launchings between November 1996 and December 2000 are analysed. All of them achieved at least the tropopause level, which local average altitude is around 17.5 km. Around 54 % of the soundings show a secondary ozone peak in the troposphere. The secondary ozone peak average altitude is 3,362 m, but the peaks occurrence spreads over the range 0.9 - 6.1 km. The ozone partial pressure average in this altitude range is $19.5 \pm 3.5 \mu \text{ hPa}$ without the peaks, while the peaks only have an average of the $38.8 \pm 10.6 \mu \text{ hPa}$. The peaks seasonal distribution is uneven, with occurrences mainly in November, with 10 events, and December, with 7 events, meaning 91 % and 70 % of the monthly soundings, respectively. Both these months and January are the months with maximum biomass burning in the region of the Rio Grande do Sul State for the same period (1996 -- 2000) according to NOAA-12 satellite data. These could indicate that the sources of the secondary peak are due to biomass burning events.

Publication:

35th COSPAR Scientific Assembly. Held 18 - 25 July 2004, in Paris, France., p.3475

Pub Date:

2004

Bibcode:

2004cosp...35.3475P

