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Ozone profiles retrieved from SPICAM/Mars-Express stellar occultations, and interpretation using the LMD Mars Climate Model

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Stellar occultations data obtained from SPICAM/Mars-Express (UV channel) have been analysed. Using its 250-nm absorption band, ozone vertical profiles are retrieved for different latitudes, longitudes, local time (night-time) and seasons, in the altitude range 30 to 70 km approximately. An ozone layer is observed in this altitude region, but its presence is strongly seasonal dependent. This nocturnal layer is not present after the northern spring equinox, but grows during spring (Ls=0 to 30°).

With the LMD Mars Climate Model, which includes the computation of the atmospheric composition, an ozone layer has also been predicted at night, for given seasons (Lefevre et al, JGR 109, 2004). We will discuss the mechanisms explaining the formation of this ozone layer. Then model and observations will be compared, and we will analyse agreements and discrepancies as a function of season, local time, and localisation. Some possible interpretations will then be discussed.