



The Solar Rotation Signal in OSIRIS Stratospheric Ozone Measurements

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The intensity of solar radiation reaching the Earth's atmosphere varies over the 25 to 35 day solar rotation period. Tropical ozone profiles from the Optical Spectrograph and InfraRed Imager System (OSIRIS) are used to investigate the effect of changes in solar ultraviolet flux on stratospheric ozone concentrations during three time periods: 2002-2015, 2003-2008, and 2009-2015. These time ranges cover the end of solar cycle 23 and the beginning of solar cycle 24. A solar rotation signal in the ozone time series is observed above 40 km for all time ranges. The maximum correlation between ozone and solar flux is 0.33 during solar cycle 23, but drops to 0.15 during solar cycle 24. Results from solar cycle 23 were consistent with those from other instruments, confirming the validity of using OSIRIS data to analyze the effect of solar rotation on stratospheric ozone. This provides a larger data set and insight on the relatively weak solar cycle 24 that can be used in future climate modelling.