

SOLAR ACTIVITY FORCING OF STRATOSPHERE AND TROPOSPHERE

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Studies on the influence of solar activity in the 11-year cycle in temperature, pressure and wind at 7 selected levels, each in the troposphere and stratosphere at 5 degree latitude and longitude regions over the northern and southern hemispheres have been carried out using ERA40 data for the period 1957-2002. The response of temperature to the solar activity, representing the 10.7 cm solar radio flux in the stratosphere is found to be relatively stronger compared to the dense layers in the troposphere. In both the troposphere and stratosphere, atmospheric pressure is found to be sensitive to solar changes. The effect of the solar signal can be seen in the circulation pattern of the troposphere and stratosphere. Seasonal study on the effect of solar activity on the wind pattern of both the troposphere and stratosphere also has been attempted. The study indicates that during the period of high solar activity, there exists an external forcing on the Earth's atmosphere, with more changes in the stratosphere than the dense troposphere where the weather phenomena occurs.

Solar cycle, stratosphere, troposphere

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