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Impact of Atmospheric Tides on Climate Models

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ABSTRACT
The main factor that determines the weather on the surface of the earth is the time variation of the position overhead sun. This single factor determines the time of the day or night, variation of the surface temperature, prevailing wind direction and therefore, precipitation, weather and climate at any location on the earth surface. The locus of this position can always be accurately determined astronomically and therefore it is possible to predict most weather parameters using weather models.
Current climate models may be used to generate forecasts which have high degree of reliability. However, for prolonged periods, the reliability decreases significantly. Furthermore, most models may not be used to replicate past climates. While it is possible to explain the causes of some past weather anomalies it is not entirely possible to forecast future ones with considerable certainty.
In this work, the effects of enhanced atmospheric tides resulting from unique solar-lunar geometries as well as those of known solar activities influencing the atmosphere will be investigated with a view to establishing their impact on forecast generated using climate models. The purpose is to increase the time-space reliability of the models.
Enhanced atmospheric tides is seen to increase the height of the Hadley cell as well as decreasing the latitudinal base on which the cell is located. Because the spatial-temporal occurrence of an enhanced atmospheric is time-dependent, its effect on climate and weather parameters can accurately be predicted.