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TIMED/SABER Observations of mesospheric inversion layers over Southern Africa

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Abstract content
   (Max 300 words)

Mesospheric inversion layer (MIL) refers to the phenomenon of the temperature-gradient inversion from negative to positive that is frequently observed as a thermal structure in the mesosphere and the lower and middle atmosphere. Due to the importance of our comprehensive understanding of middle and upper atmospheric dynamics, it is now accepted that the study of MILs is essential. For instance, a positive temperature gradient at the bottom of a MIL enhances the atmospheric stability and reduces vertical mixing, while a negative gradient may lead to an atmospheric convective instability and enhance development of turbulence at the top of MIL. Moreover, MILs have a profound impact on the propagation of gravity waves (GWs), as well as the mean circulation in the middle atmosphere. Therefore, the present study will present seasonal and inter-annual variation of the MILs over the Southern Africa (centered at 30°S, 25°E) using vertical temperature profiles measured by the Sounding of the Atmosphere using Broadband Emission Radiometry (SABER) which is one of the four instruments on board the Thermosphere Ionosphere Mesosphere Energetics and Dynamics (TIMED) satellite.

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