



Evidence for Dynamical Coupling of Stratosphere-MLT during recent minor Stratospheric Warmings in Southern Hemisphere

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The mesosphere-lower thermosphere (MLT) response to extremely rare minor sudden stratospheric warming (SSW) events was observed for the first time in the southern hemisphere (SH) during 2010 and is investigated using the meteor radar located at King Sejong Station (62.22°S, 58.78°W), Antarctica. Three episodic SSWs were noticed from early August to late October 2010. The mesospheric wind field was found to significantly differ from normal years due to enhanced planetary wave (PW) activity before the SSWs and secondary PWs in the MLT afterwards. The zonal winds in the mesosphere reversed approximately a week before the SSW occurrence in the stratosphere as has been observed 2002 major SSW, suggesting the downward propagation of disturbance during minor SSWs as well. Signatures of mesospheric cooling (MC) in association with SSWs are found in the Microwave Limb Sounder (MLS) measurements. SD-WACCM simulations are able to produce these observed features.