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What is the latitudinal extent of southern-hemisphere polar mesosphere summer echoes (PMSE)?

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The existence of PMSE in the Southern Hemisphere has recently been confirmed using HF radar (Ogawa et al., 2002), MST radar (Morris et al., 2004), and a Dynasonde (Jarvis et al., 2005) following earlier observations using MST radar (Woodman et al., 1999). These studies have spanned the geographic latitudes 62.1°S (Machu Picchu), 68.6°S (Davis), 69.0°S (Syowa), and 75.5°S (Halley Bay). However, the growing array of Southern Hemisphere SuperDARN radars offers the opportunity to extend the spatial coverage of PMSE observations using the detection algorithm developed by scientists at the University of Electro-Communications, Japan. A better understanding of the occurrence and intensity of PMSE against latitude in the Southern Hemisphere is needed to facilitate a comparison with the higher spatial coverage? northern PMSE record. Such a study would contribute to the ongoing debate as to whether PMSE can provide a proxy for mesosphere temperature, and thus shed light on the existence of any interhemispheric asymmetry or otherwise in the polar mesosphere regions. The argument for different polar mesosphere environments has been fuelled, in part, by the reported lack of Southern Hemisphere PMSE observations (Woodman et al., 1999). We discuss PMSE observations above the high-latitude station Davis, Antarctica (78.0°E, 68.6°S geographic; 74.6°S magnetic) using a 55 MHz MST radar during the 2004-2005 austral summer. We present the characteristics and morphology of PMSE events above Davis, in order to select a suitable interval during the 2005-2006 austral summer, for a Southern Hemisphere SuperDARN PMSE campaign. It is anticipated that the operators of ground instruments capable of observing PMSE and/or related middle atmosphere layered phenomenon, i.e., polar mesosphere clouds (PMC) or noctilucent clouds (NLC), would also participate in the proposed campaign.

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