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RETRIEVAL OF ATMOSPHERIC TEMPERATURE PROFILES  
BY A SCANNING MICROWAVE SPECTROMETER

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The Nimbus-6 satellite carries a Scanning Microwave Spectrometer (SCAMS) experiment. The five frequency bands observed are near 22.2, 31.6, 52.8, 53.8, and 55.4 GHz. The calibration system permitted preflight calibration to an accuracy of  $\sim 1$  K. In orbit, small empirical corrections were made to the calibration constants to obtain agreement in the mean of SCAMS measurements with computations based on conventional data analyzed by the National Meteorological Center (NMC). Global maps of temperature profiles were retrieved from the SCAMS measurements by a statistical method. Using the NMC analysis as the verification, RMS errors in level temperatures range from  $\sim 2$  K to  $\sim 4$  K, depending on altitude. Errors for layers of octave extent in pressure are uniformly  $\sim 2$  K. Theoretical computations show that additional spectrometer channels would improve temperature sensing performance.