Title: Comparative Analysis of Bright Band Data from TRMM and Ground Radar Data in Malaysia

Author/Authors: Abayomi Isiaka O. Yussuff, Nor Hisham Khamis

Abstract: Good knowledge of the formation and recognition of the bright band is necessary to determine the location of the melting layer. This is partly because the melting layer is one of the major hydrometeors (others include as rain, hail, and cloud) responsible for signal degradations along the slant-path, in the tropical regions of the world. These may result in signal fading, amongst others, which may lead to errors in slant-path attenuation predictions. This paper involves the comparative analysis of radar data sourced from both ground 3D RAPIC bistatic radar and space-borne precipitation radar above the Malaysian air space. For this research work, the terrestrial meteorological radar data were sourced from the Meteorological Department of Malaysia, while the satellite radar data were obtained from the near-real-time TRMM Multi-Satellite Precipitation Analysis (TMPA-RT) version 7 products. Frozen hydrometeors are observed to exhibit peculiar characteristics in terms of increased radar reflectivity as they fall from the sky, transiting from solid to liquid, and manifesting in the popular bright band signature. The melting layer is the region where melting occur, just below the 0? isotherm height. It is a major factor responsible for the problems being encountered in characterization and modelling of microwave signal propagation along the earth-space link.