

A Brief History of Collaborative Study on Equatorial MLT Dynamics using Meteor and MF Radars in Indonesia

TSUDA, Toshitaka^{1*} ; DJAMALUDDIN, Thomas² ; YATINI, Clara² ; BUDIYONO, Afif² ; VINCENT, Robert³ ; REID, Iain³

¹Research Institute for Sustainable Humanosphere (RISH), Kyoto University, ²Indonesian National Institute of Aeronautics and Space (LAPAN), ³Department of Physics, University of Adelaide

In the tropics active cumulus convection generates various atmospheric waves, such as Kelvin waves, planetary waves, tides, and gravity waves. The wave energy and momentum are transported upward through propagating of these waves. Wave-mean flow interactions are crucially important for understanding of dynamical processes in the equatorial atmosphere, including the formation of peculiar long-term variations such as quasi-biennial oscillation (QBO) and semi-annual oscillation (SAO) in both the stratosphere and the MLT (mesosphere and lower thermosphere) region (70-120 km).

We constructed a total of five meteor and medium frequency (MF) radars in Indonesia since 1992 under close collaboration between RISH, LAPAN and the University of Adelaide. The MLT radar network has been expanded in India, Central and Eastern Pacific, and China. These radars have clarified the behavior of atmosphere dynamics in the MLT region. This paper gives an overview of our collaborative studies as well as highlights of scientific achievements using the MLT radar network

Keywords: mesosphere and lower thermosphere, equatorial atmosphere, atmospheric waves, meteor radar, medium frequency radar, Indonesia