

Interhemispheric Coupling Study by Observations and Modelling (ICSOM)

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Recent observational and modelling studies suggest that the Northern and Southern Hemispheres of the earth atmosphere are potentially coupled by the Lagrangian mean flow in the mesosphere modulated by waves interacting with the mean flow. However, observations of modulated wave and flow fields which are needed for quantitative understanding of the interhemispheric coupling are not sufficient. Simultaneous observations of gravity waves at various locations are most important because they are a main driver of the Lagrangian mean flow in the mesosphere. Therefore we will examine the interhemispheric coupling of the earth atmosphere through a combination of simultaneous observations by networking the MST radars over the world and high-resolution model simulations of the observed atmosphere. This is treated as an official activity of SCOSTEP/VarSITI/ROSMIC. The first international campaign was performed in 22 January-17 February 2016. Two minor stratospheric warmings that occurred in the Arctic were successfully captured. The second one was a minor warming by its definition but the temperature at the North Pole increased by about 70 K in two days at 10 hPa. Seven MST radars over the world and many complementary observations were performed by more than 30 participants in eight countries. Preliminary results from this campaign will be reported and future directions of the project will be discussed.

Key words: international campaign, interhemispheric coupling, MST radars, high-resolution models