

# **Intra-seasonal Scale Variability of Asian Summer Monsoon**

## **Anticyclone from Climate Chemistry Model and Satellite Data**

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Intraseasonal variability of Asian summer monsoon anticyclone (AMA) plays an important role in transport into stratosphere. Studies using dynamical field have shown that AMA shows Quasi-Bi-Weekly east-west oscillation between Tibetan plateau mode (TM) and Iranian plateau mode (IM). In this study, we investigated the relationship of the dynamical and chemical variability in the UTLS associated with the bi-modal oscillation using WACCM model, both specified dynamics and fully interactive runs. Satellite data from MLS CO and O<sub>3</sub> data, IASI CO and O<sub>3</sub> data, OMI O<sub>3</sub> data are also evaluated to compare the information of variability from the nadir and limb sounding data. CO and O<sub>3</sub> are used as boundary tracers to study the impact of convective transport to the Upper troposphere and Lower Stratosphere (UTLS) during the monsoon season. The model analyses show that both air mass confinement and shedding can be seen in the UTLS during the process. There are positive CO anomaly and negative O<sub>3</sub> anomaly in the UTLS associate with the center of the anticyclone. The satellite data also show the TM and IM mode of the anticyclone in the chemical tracers but are less consistent than the SD-WACCM due to their sampling limitation. Comparisons of the nadir viewing and limb viewing satellite measurements will be discussed.

Key words: Intra-seasonal Scale Variability, Asian Summer Monsoon Anticyclone, WACCM, satellite data