



Presence of quasi 27-day oscillations in the atmosphere

M. C. Liang (1,2), K. F. Li (3), and Y. L. Yung (3)

(1) Academia Sinica, Research Center for Environmental Changes, Taipei, Taiwan (mcl@rcec.sinica.edu.tw), (2) Graduate Institute of Astronomy, National Central University, Jhongli, Taiwan, (3) Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, USA

We analyzed multiple years of the FORMOSAT-3/COSMIC GPS radio occultation, MLS, AIRS, and NCEP Re-analysis 2 data. Here we report temperature variations in the atmosphere from the middle troposphere to mesosphere. Spectral analysis shows that the dominant powers are associated with the annual and semiannual (depending on altitudes and latitudes) cycles, followed by ~ 60 , 27, and 13.5-day variations. ~ 60 -day oscillation may be related to MJO. A likely source of the 13.5 and 27 days is solar forcing, originating from the rotation of the Sun. Such short-term periodic forcing and response can potentially provide a useful constraint for studying climate variability.