



Influence of atmospheric waves on the formation and maintenance of

Yuhji Kuroda

Meteorological Research Institute, Climate Research Department, Tsukuba, Japan (kuroda@mri-jma.go.jp)

The formation and maintenance of the subtropical jet during the Northern Hemisphere winter was examined using new analysis method that can isolate the responses to specific forcings within meteorological data. It is found that atmospheric waves play a crucial role in the climatological maintenance, the month-to-month, and the day-to-day variabilities of the jet. Climatologically, stationary waves, which reach up to 1.4 m/s/day, are the greatest accelerator of the jet core, whereas synoptic waves decelerate the jet core. For the month-to-month variability of the jet, stationary waves are the primary driver of the jet, followed by synoptic waves. On the other hand, Low-Frequency Transient (LFT) waves, whose frequency falls between stationary and synoptic waves, act to suppress the variability. However, synoptic waves play a key role in creating the variability on a monthly scale, whereas stationary waves work only for the maintenance of the jet. Regarding the day-to-day variability of the jet, the most important driver of eddies originates from the interference between synoptic waves and the mixing of stationary and LFT waves.