

CHARACTERISTICS OF SAO AND AO IN EQUATORIAL MIDDLE ATMOSPHERIC TEMPERATURE PATTERN

AMITAVA GUHARAY¹, Debashis Nath², Pitambar Pant¹, Bimal Pande³, Kavita Pandey³

¹ Aryabhata Research Institute of observational sciences (ARIES), Nainital, India,

² National Atmospheric Research Laboratory (NARL), Gadanki, India

³ Dept. of Physics, DSB Campus, Kumaun University, Nainital, India

More than 10 years (1998-2008) of data from a low latitude station, Gadanki, India (13.5° N, 79.2° E), has been utilized to measure middle atmospheric temperature pattern, using lidar and TIMED/SABER, which exhibits the presence of semi-annual oscillation (SAO) and annual oscillation (AO). AO component is stronger in mesospheric region (80-90 km) and SAO is dominant at stratospheric altitudes (30-50 km). Overall, AO possesses higher amplitude ~ 6 K, and SAO shows relatively less amplitude ~ 1-2 K. AO at 90 km, has its crest around summer solstice, and the same at 80 shows peak around winter solstice with a downward progression speed ~ 1.67 km/month. SAO propagates downward with an average phase speed ~ 7 km/month and its phase maximizes around equinox and solstice at 50 and 30 km, respectively. Observed SAO has also shown seasonal asymmetry in the peak.

Semi-annual and Annual oscillation, Middle atmosphere, lidar and TIMED/SABER observations.

Amitava Guharay, Aryabhata Research Institute of Observational Sciences (ARIES), Nainital, India, e-mail: amitava@aries.res.in