

Tides and Quasi-two-day waves observed in Wuhan and their comparisons with those in Adelaide during 2002 and 2003

J.Xiong(1), W.Wan(1), B.Ning(1), L.Liu(1), R.A.Vincent(2) and I.Reid(2)

(1)Institute of Geology and Geophysics, Chinese Academy of Sciences, China, (2)Department of Physics and Mathematical physics, University of Adelaide, Adelaide, Australia (Contact Email:xjg@mail.iggcas.ac.cn)

Tides and Quasi-two-day waves are some most important waves in the mesosphere. The observations by a meteor radar have been used to analyzed tides and quasi-two-day waves in Wuhan. The results by a MF radar in Adelaide, which is almost symmetrical with Wuhan about the equator, are compared with those in Wuhan. During about two years' observations, the amplitudes of diurnal tides were quite closed to each other. For example, the tides in two sites were strong in spring and autumn, but weak in summer and winter. The phase differences show that the dominated diurnal tide components may be symmetry in spring and autumn but anti-symmetry in winter. And the phase differences of zonal and meridional tides were all about 3-5h, no dominated component can be distinguished from the results. For the semidiurnal tides, amplitudes in Wuhan were a little greater than in Adelaide. We can only find dominated symmetrical mode in the summer of 2002 but not 2003. In other seasons, the symmetrical or anti-symmetrical modes did not appear as regularly as the diurnal tides. The quasi-two-day waves have intra-annual variations, for example, in 2003, the waves are much weaker than in 2002. Quasi-2-day waves are highly correlative for the burst cases. In the winter 2002, the quasi-two-day waves were all quite strong in Wuhan and Adelaide, but no dominated symmetrical or anti-symmetrical components are found from their phase differences. The estimated horizontal wave number may from 2-5, especially 3. In summer (NH), the periods of waves were less than 48 hours but greater than 48 hours in winter.