

EGU21-14578

<https://doi.org/10.5194/egusphere-egu21-14578>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Quasi-two-day waves at 53°N latitude

Maosheng He¹, Jeffrey, M. Forbes², Guozhu Li^{3,4}, Christoph Jacobi⁵, and Peter Hoffmann¹

¹Leibniz Institute of Atmospheric Physics, Kühlungsborn, Germany (he@iap-kborn.de)

²Ann and H.J. Smead Department of Aerospace Engineering Sciences, University of Colorado, Boulder, CO, USA,

³Beijing National Observatory of Space Environment, Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing, China,

⁴College of Earth and Planetary Sciences, University of Chinese Academy of Sciences, Beijing, China,

⁵Institut für Meteorologie, Universität Leipzig, Germany

The quasi-two-day wave (Q2DW) is the strongest and most widely-studied planetary wave occurring in the mesosphere. Existing observational analyses are based on either single-satellite or -station approaches, which suffer from temporal and spatial aliasing, respectively. The current work implements and develops dual-station approaches to investigate the mesospheric Q2DWs and their nonlinear interactions with tides using winds from two longitudinal sectors at 53°N latitude. An 8-year composite analysis reveals seasonal and altitude variations of Q2DWs and their secondary waves (SWs) from nonlinear interactions with tides. The Q2DWs maximize in local summer, whereas their 16hr and 9.6hr SWs appear more in winter.