Atmospheric Chemistry and Physics Discussions

Atmos. Chem. Phys. Discuss., referee comment RC1
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Comment on acp-2022-112

Anonymous Referee #1

Referee comment on "Significant enhancements of the mesospheric Na layer bottom below 75□km observed by a full-diurnal-cycle lidar at Beijing (40.41°□N, 116.01°□E), China" by Yuan Xia et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2022-112-RC1, 2022

This is an excellent paper that describes the observation of significant amounts of atomic Na between 70 and 75 km altitude near Beijing in December 2014. The observations are quite surprising given the chemistry of Na at this low altitude, which under normal circumstances should rapidly deplete atomic Na, first by oxidation and then creating stable Na compounds that are eventually absorbed by meteoric smoke particles. However, these authors show rather convincingly that a strong planetary wave is responsible for transporting the Na to such low altitudes. The paper is well-written, logically organized, adequately referenced and the data are competently analyzed and interpreted. I recommend the paper be published in its current form.