



Contribution of CSU Na lidar on upper atmospheric science

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Abstract:

It was fluorescence lidar conclusively revealed the counter-intuitive thermal structure in the uppermesosphere and lower thermosphere (MLT) region of the atmosphere with winter warmer than summer. When first noticed, I was amazed with excitement and lost at the same time, not knowing where to turn. Surprisingly, as I hope to show, it is possible to gain a conceptual appreciation of the prevailing temperature and horizontal wind structure of the entire atmosphere (ground to 110 km) with the knowledge of college physics and to understand why is summer colder than winter in the MLT. I will then show case examples of lidar enabled MLT sciences, such as coupled tidal perturbations, understanding of bore waves, and the long-term temperature changes based on the 28-year-long database, which clearly shows the inter-connectedness of different atmospheric layers as well as anthropogenic influences. At the last part of the talk, I will show the importance of cluster instrumentation, followed by a mention of the ongoing comprehensive atmospheric profiling lidar project and the global Meridian Project of China.

主办：空间天气学国家重点实验室