



## **Characteristics of “C” sodium layer in lower thermosphere (105-120 km) at Haikou (19.99.00°N, 110.34°E), China**

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The atmosphere sodium layer normally occurs in mesopause (80-105 km) but rarely in lower thermosphere region (>105 km) in low latitude. While, in this paper, at Haikou (19.99.00°N, 110.34°E), we observed a kind of peculiar sodium layer in lower thermosphere—thermospheric ‘C’ sodium layer (TCSL) in lidargram; its sodium density profile developed over time and seemed like ‘C’ shape. It is the first time to discover ‘C’ sodium layer in lower thermosphere region (105-120 km). It takes evidence to the study of sodium atoms occurring in thermosphere. Based on Haikou lidar data, we obtained 14 TCSL events during 180 nights from March 2010 to August 2012. Most of the apogees of the TCSLs heights are higher than 108 km. A TCSL event lasts several hours and composes of several ‘C’ structures; every single ‘C’ lasts only ~5-30 min. All the TCSLs occurred at spring and summer, and generally appear near midnight (22:00-00:00 LT). The TCSL appears to be related with thermospheric Es, winds and field-aligned ionospheric irregularities (FAI).