General comments:

A reasonable mechanism of Nas layer enhancement in MLT region by lower atmospheric electric field was proposed in this manuscript, based on the observation date of several kinds of detection tools. This paper also provided a detail process how lower atmospheric electric field influences the ionized and neutral components in the upper atmosphere. This research is so novel and the similar reports are quite little up towards now. Consequently this manuscript fitted the scope of ACP at the moment in my point of view, however the mechanism of Nas layer enhancement in this manuscript needs to be further analyzed in the proceeding steps.

Specific comments:

1. In Fig.1a, the peak density of Nas is more than 12000 cm^{-3} on 97.75 km at 14:40 UT (line 142). But it can be seen from Fig.1b, the peak density of Nas at the same time is only about 5000 cm^{-3}. Although the sodium density in Fig.1a and Fig.1b were given by two different kinds of lidars, the large difference of the density is difficult to be understood as these two lidars almost located at the same site. Is this large difference caused by the different resolutions or reversion methods? Authors should re-calculate the density in Fig.1a and Fig.1b, and give reasonable values.

2. In the Discussions, a clear causal chain is given by the authors: the lightning strokes induced the overturning of the electric field, and then induced the ionospheric disturbances, as well as Nas. However, it can be seen from Fig.2a: there is an enhancement in the Es layer from 13:20 to 14:20, and the origin of this enhancement was not explained or discussed in the manuscript. Is it caused by lightning as proposed by Johnson and Davis (GRL, 2006) ? As the main contribution of this manuscript is to propose a new mechanism of Nas layer enhancement by lower atmospheric electric field, I suggest that Authors could explain or discuss the enhancement in the Es layer from 13:20 to 14:20.

3. From the progress of Nas in Fig.1a：The density of Nas increases with height drops after the Nas height lower than 100 km. A maximum of Nas is present at 97km around 13:30, and later the density of Nas decreases. But another maximum of Nas is present again around 14:20 (almost the same height), and the authors think that this Nas is produced by the overturn of low-altitude electric field.

According to Plane’s theory, when the Es drops below 100 km, Na ions in the Es are rapidly neutralized to form Nas. As the height decreases, the rate of Na ion neutralization increases. And so there's Nas maximum at about 13:20 UT around 97 km. Later, the Nas gradually weakened due

to excessive consumption of Na ions. But for the bigger Nas around 14:20, there needs to be an implicit condition if the ions in the Es contribute. That is, Na ions in the Es increased at 13:30. This may be due to the addition of surrounding sodium ions resulting in Es increase. So there may be a possible mechanism: A reversal of the electric field adds sodium ions nearby, and these ions enhance Es. And then the sodium ions in the Es are neutralized to form Na atoms, with Es weakened.

Technical corrections:

1. From line 22 to line 26 in the abstract: rewrite this long sentence.
2. From line 47 to line 49, “the metal layers (especially the sodium layer), which located between about 80~110 km, could possibly act as a window to detect the MLT parameters by means of fluorescence resonance lidars.” please add the corresponding reference.
3. And from line 49 to line 51 please also add the reference.
4. At the end of Line 64, please consider the word “candidate” whether is proper or not.
5. The author should pay much attention to the tense of the manuscript，the past tense shall be used when giving background information in the Abstract and Introduction, when describing methods used, and when presenting and discussing results. There

are indeed quite a lot of such serious problems throughout all the manuscript. If possible, please ask a native speaker for help.

6. Line 137, please consider about the abbreviation “T/W lidar” as it appeared there for the first time.
7. Please change the line 162 as “in accord with our previous reports WHICH shown that an Nas higher than 96 km tended to be…
8. Line 182, Based on the ABOVE observations
9. Line 215 also POINTED out by the vertical red dashed line.
10. Line 234 could be changed to “It is worth mentioned that…”
11. Line 254 could be changed to “The electric field could change through within two distinct ways as below:”
12. Line 291-292: “mainly concentrating in two ranges about (35.8^{o}N, 118.1^{o}E) and (25.1^{o}N, 113.8^{o}E).” please rewrite this sentence.
13. Line 302 could be changed to “Afterwards, no strong stroke WAS detected again in the discussed area. ”
14. Line 311-313 the caption of Figure 5 (a)~(l): please unify the tense of verbs and pay attention to the English writing again as I remind.
15. Lines 335-336, “similar to how moving cars will crash in a traffic accident in the car in front suddenly turns back or brakes” Please rewrite this sentence within much more scientific aspect.

16.Line 338, are you sure by three steps? Please check it.