

## ***Interactive comment on “Preliminary results from the total lightning detector-cum-mini weather station installed at the Calcutta University” by Subrata Kumar Midya et al.***

### **Anonymous Referee #1**

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The paper presents lightning activity in a region of interest using a lightning detector-cum-mini weather station. The analysis of lightning data includes both IC and CG lightning. The authors emphasized the importance of understanding of the detail characteristics of severe pre-monsoon thunderstorms over Gangetic West Bengal locally known as Nor'westers which bring considerable damages to human lives, properties, agriculture, power grids and electronics devices. The findings of the study could be used for early warning of such kind of thunderstorms. The study necessitates steps toward accurate warning of thunderstorms in the region for mitigation of damages caused by them and also focussed on the possibility of short-term prediction of the severity of the storm. More such studies within a network and long term monitoring could lead to

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accurate warning.

The paper also presents variation of wet component of atmospheric refractivity to point out onset and removal of monsoon in the region. It is observed that refractivity remains at a higher level with less fluctuations during the period of monsoon but sharply decreases with significant fluctuations at the time of withdrawal of monsoon. This study of monsoon in the region is very relevant and crucial since with the monsoon starts the cultivating season.

Highlights:

- » Initial results from the total lightning detector cum mini-weather station are presented.
- » Total lightning characteristics of two pre-monsoon severe thunderstorms are studied here in details which has not been done before for the region.
- » Total lightning count increased before peak wind and positive CG lightning count increased by 5% for the severe thunderstorm.
- » Study of atmospheric refractivity index reveals monsoon arrival and withdrawal signature.

Comments:

→ Wind speed shown in Figure 3, whether they are geo-located or measured separately (how far from the thunderstorm cell?).

→ How is the peak wind speed related to lightning?

→ In the present analysis 17th April is chosen due to the severity of the thunderstorm on that day. According to Figure 2, there were more lightning activity on 22nd, 26th and 30th April. How was the wind character on those days?

→ Sharp decline in the refractivity plot is considered in this paper as the withdrawal signature of the monsoon. But the variations of refractivity plot does not indicate onset

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of monsoon. It is suggested to plot the variations over the whole year. Also, if possible, can include a few year's data for the definitive conclusion of the withdrawal signature.

→ Increase the text size of the labels and titles in the figures from 2 to 6.

→ In Figure 3, Top and down panels are slightly overlapped.

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