

550.371:550.386

COMMENTS ON A NOTE ON 'WIDTH OF THE ELECTROJET OVER SOUTH INDIA'

In a recent note, Pisharoty and Srinivasan (1962) have studied the position of the electrojet over south India by making use of the observations of Pramanik and Hariharan (1953) and following the method of Onwumechilli (1959). They have stated that the axis of the electrojet is slightly to the south of the dip equator and that the half width of the electrojet is equal to its height which is about 110 km. In this connection the following issues are relevant.

According to Chapman (1956) "the electrojet is a local intensification of the S current system during the day, along the magnetic equator". Theoretical work of Martyn and Baker (1953) has shown that the electrojet phenomenon which was earlier thought to be anomalous, is consistent with the dynamo theory of the S field. The S variation is a function of magnetic latitude and geographic and geomagnetic latitudes have no direct connection (Chakravarty 1954, Raja Rao 1962). Therefore, it would have been more appropriate if the authors had taken magnetic latitude into account in their work.

It has been stated that the axis of the electrojet is slightly to the south of the dip equator and the half width as felt on the ground will be about 154 km. From Table 2, the centre of the electrojet is defined by $\Delta H_j / \Delta H_j (\max) = 1$, and its periphery by $\Delta H_j / \Delta H_j (\max) = 0.5$. This half width will be about 154 km. Kodaikanal where dip value is 3.5° N is at a distance of 203.5 km from the centre of the electrojet (assuming the latter to be -1° to the south of the dip equator, as the authors have stated that the electrojet is slightly to the south of dip equator). Thus according to the authors, Kodaikanal is outside the electrojet effect and Annamalaiagar where dip value is $5^\circ 22'$ N is very much beyond the influence of the electrojet. But continuous records of horizontal force obtained for a few years at those two places show that both these places are within the electrojet. Therefore, the findings of the authors are not borne out by facts.

Also in a recent paper Kotadia (1962) has shown from a study of the critical frequency of the sporadic E that the half width of the electrojet over south India is about 5° (dip) in sunspot minimum and 7° (dip) in sunspot maximum. This appears to be reasonable and is more consistent with magnetic observations.

I am of the opinion that the observations on which the authors have based their conclusions are not adequate for a quantitative study and also are not comparable as they were not taken simultaneously at all places.

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