551.594.5 : 550.385(548)

SEASONAL VARIATION OF NIGHT TIME Pi_2 MICROPULSATIONS AT KODAIKANAL

Ever since Angenheister (1912) first noticed a characteristic damped pulsation at the start of a geomagnetic bay disturbance, several investigations have been carried out on irregular pulsations in the geomagnetic field during the last half-a-century under various names. The nomenclature for geomagnetic pulsations is now standardised (Jacobs *et al.* 1964) and irregular damped oscillations in geomagnetic field with periods in the range 40-150 sec are designated as Pi_2. The status of the knowledge on Pi_2 micropulsations has been reviewed from time to time (Jacobs and Westphal 1964; Triotskaya 1967; Orr 1973; Campbell 1973). It is widely considered that Pi_2 micropulsations have their origin in the interaction of the solar wind with the earth's magnetosphere (Rostoker 1967; Siato and Sakurai 1970; Smith 1973).

In this brief communication we report the seasonal variation of the occurrence of Pi_2 micropulsations during night time at Kodaikanal (Geomaglat. 0.6°N) using the normal run magnetogram data (from Watson Variometer Sensitivity 6.4γ-11.4γ/cm, chart speed 15 cm/hour) over a period of three years, from July 1972 to June 1975. It is to be emphasised that our recording system is not ideally suited for the study of Pi_2 micropulsations in view of its low sensitivity and low time resolution. However, we have noticed from careful examination of magnetograms that they are adequate for the study of Pi_2 micropulsations, especially their occurrence. With this understanding our analysis mainly consisted in noting down the time of occurrence of Pi_2 pulsations on every night from careful visual examination of the magnetograms. In view of the low sensitivity of the system, we have been able to take into consideration only those Pi_2 micropulsations whose amplitude is greater than 1γ so that it can be dentified visually.

Fig. 1 shows the monthly variation of the occurrence of Pi_2 pulsations over the combined period July 1972-June 1975. It can be clearly seen that there is a semi annual variation in the occurrence of Pi_2 pulsations at Kodaikanal, with maxima around Summer (May, June, July, August) and Winter (November, December, January, February) months, and minima during equinoctial months (March, April, September, October). This feature can also be seen from Table 1 wherein the seasonal variation is presented.

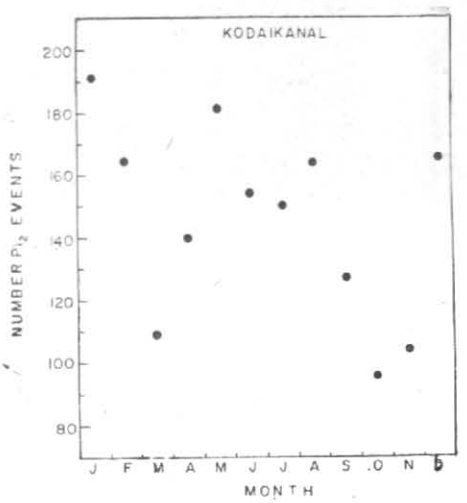

Fig. 1. Monthly variation of the occurrence of Pi_2 micropulsations at Kodaikanal over the combined period July 1972 to June 1975

TABLE 1

Seasonal variation of Pi_2 occurrence at Kodaikanal during the combined three years period from July 1972 to June 1975

Season	Number of Pi_2 occurrences
Summer	649
Winter	624
Equinoxes	472

A comparison of the above result with earlier work indicates a latitudinal dependence of the seasonal variation in the occurrence of Pi_2 pulsations. To elaborate, Siato and Matsushita (1968) reported that the occurrence of Pi_2 pulsation at Onagawa (Geomaglat. 28.3°N) is a maximum during equinoxes for periods when sunspot number is declining or at a minimum. On the other hand, Sarma (1966) reported that there is no marked seasonal variation in the occurrence of Pi_2 pulsations at Hyderabad (Geomaglat. 7.9°N). The present study stresses the need for a detailed study of Pi_2 micropulsations at a number of stations cover-

ing a wide latitude range in a particular longitude belt for better understanding of the latitudinal dependence of the seasonal variation in the occurrence of Pi_2 micropulsations.

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4 January 1977

REFERENCES

Angenheister, G.	1912	Gottingen Nach. Ges. Weiss, 568.
Campbell, W. H.	1973	*J. atmos. terr. Phys.*, **35**, 1147.
Jacobs, J. A., Kato, Y., Matsushita, S. and Triotsakaya, V. A.	1964	*J. geophys. Res.*, **69**, 180.
Jacobs, J. A. and Westphal, K. O.	1964	*Physics and Chemistry of the earth*. Ed. L. H. Ahrens *et al.*, **5**, 158.
Orr, D.	1973	*J. atmos. terr. Phys.*, **35**, 1.
Rostoker, G.	1967	*Can. J. Phys.*, **45**, 1319.
Sarma, Y. S.	1966	Proc. IQSY Symp. NPL, New Delhi, 505.
Siato, T. and Matsushita, S.	1968	*J. geophys. Res.*, **73**, 267.
Siato, T. and Sakurai, T.	1970	Sci. Rep; Tohuku Univ. Service, 5, **20**, 49.
Smith, B. P.	1973	*Planet Space Sci.*, **21**, 831.
Triotskaya, V. A.	1967	*Solar Terrestrial Physics*, Ed. J.W. King and E.S. Newman, Acad. Press Inc. N.Y., Chap. 7.