

Micropulsation Measurements in California and Alaska

In recent years there has been increased interest in micropulsations of the Earth's magnetic field¹⁻⁴. As a part of a study of the micropulsations with periods of 10-30 sec., stations were established near Borrego, California (33° 21' 5" N., 116° 17' W.), and near College, Alaska (64° 42' N., 148° 29' 5" W.). Horizontal coil antennas of 2-m. diameter and 21,586 turns were used. The associated amplifiers had three db. band pass points at 0.04 and 0.4 cycles per second and a limiting sensitivity of 0.02 γ .

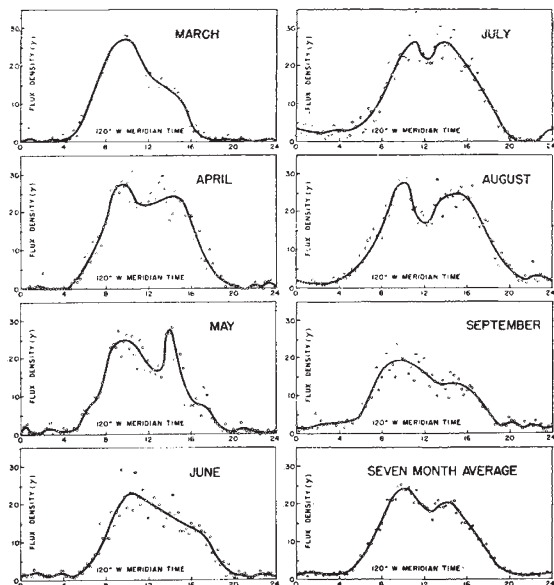


Fig. 1. Average diurnal behaviour of micropulsations, California, 1958

Fig. 1 illustrates the average diurnal behaviour for 15-min. r.m.s. amplitudes measured from March until September, 1958, in California. Fig. 2 illustrates micropulsations in California and Alaska for comparable times. There were twenty-three such coincident active groups of micropulsations in six days' operation (Table 1). Large night-time storms in

Table 1. COINCIDENCES OF GROUPS OF OSCILLATIONS IN ALASKA AND CALIFORNIA. 150° W. MEAN TIME

Month and Day	Alaska Time Start	Calif. Time Start	Alaska Time Peak	Calif. Time Peak
August 23	1539?	1540	1539?	1542
	1605?	1602	1606?	1604
	1733?	1733	1733?	1734
	1750?	1751	1750?	1751
	1806?	1807	1806?	1807
August 24	0217?	0217	0220?	0218
	0554?	0553	0555?	0554
	0659?	0659	0701?	0701
	0750?	0751	0751?	0753
	1120?	1119	1121?	1120
August 25	1125?	1125	1126?	1125
	0340	0341	0341	0341
	2110	2111	2111	2111
August 26	2343?	2341	2344	2342
	0236	0236	0237	0236
	1852	1851	1857	1853
	1944	1944	1944.5	1944.5
	2024	2024	2024	2024
August 27	2035	2035	2037	2035
	2318	2319	2320	2320
	0836	0838	0838	0840
	0856	0857	0857	0858.5
	1651?	1653	1652	1654?

Alaska gave oscillations ten or fifteen times larger than California. Day-time activity amplitudes were similar at the two stations.

In Alaska it was noted that times of great micropulsation activity were accompanied by short-wave blackouts. Also during the dark hours, large micropulsations attended visible auroral displays. One occasion of simultaneous oscillations of the 3814 A. auroral line and small micropulsations was observed.

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W. H. CAMPBELL*
B. NEBEL

Institute of Geophysics,
University of California,
Los Angeles.

* Present address: Geophysical Institute, University of Alaska, College, Alaska.

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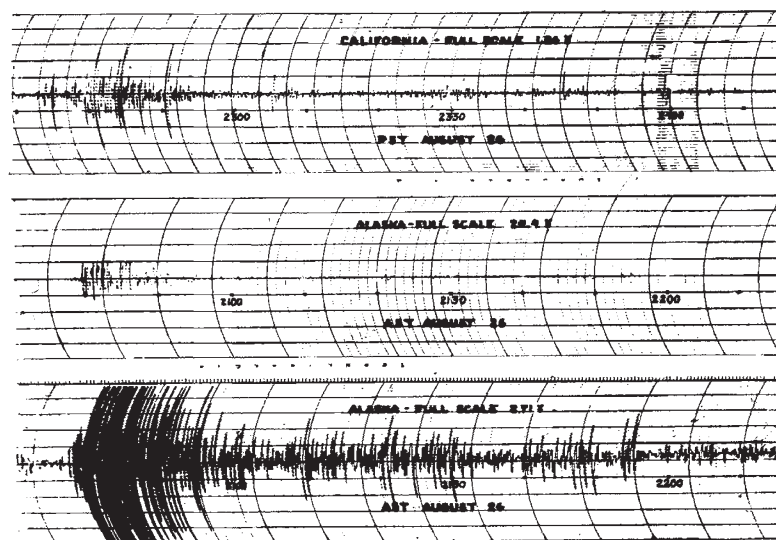


Fig. 2. Simultaneous observation of micropulsations in California, and Alaska