THE MASS DISTRIBUTION OF THE SIKHOTE-ALIN METEORITE SHOWER: NEW DATA. I.A. Stroganov, A.V. Korotchantsev, and C.A. Lorenz - Vernadsky Institute of Geochemistry and Analytical chemistry, Moscow, 117975, Russia

Here we report on a study of the region of the Sikhote-Alin meteorite fall. The study was carried out by expeditions of the Committee on Meteorites of the Russian Academy of Sciences from 1990 to 1997. The expeditions explored the scattering ellipse area situated at a distance of 3-5 km, north of the crater field (Fig.1). The places of finding of meteorite fragments were put on the 1:25 000 topographical map using GPS.

The studied area is located north of the region investigated in 1975-1987 [1, 2]. This area of 1.7 km^2 has a shape of an irregular polygon elongated along the axis of the scattering ellipse (Fig. 1). The borders of the area are dependent mainly of the relief. Only 0.48 km^2 of the area was completely studied with high sensitive metal detectors. The total mass of 2369 collected meteorite fragments is 298.9 kg.

Our research show that the mass distribution of collected fragments corresponds to the logarithmic law with the maximum in the interval of 50-100 g (Fig. 2, Table). The majority of the fragments has the weight in the range of 10-500 g. The fragments of 500-1000 g weight are less abundant. Occasionally, >3 kg fragments are present. The biggest found piece has a weight of 7 kg. The distribution of the meteorite fragments in the studied area is not even. For example, in the area #1 1.5-3 kg fragments were found only, whereas in the area #2 and #3 1-50 g fragments were collected only (Fig.1). The deviations from the general mass distribution in the scattering ellipse point to a multiple destruction of the Sikhote-Alin meteorite body in the atmosphere.

The average surface density of meteorite material for the studied area is estimated to be 0.62 g/m^2. This value could reflect an expected drop of the density in a distant area as compared to the frontal area, where the density is 1.54 g/m^2 [2]. However the low value could be related also with an incomplete finding of meteorite fragments and, therefore, represents rather a low estimate of the surface density.

A detailed study of the mass distribution of Sikhote-Alin meteorite fragments are in progress.

REFERENCES: [1] Krinov E.L, Tsvetkov V.I. (1979) *Meteoritika*, v. 38, p. 19-26 (in Russian). [2] Tsvetkov V.I. (1978) *Meteoritika*, v. 37, p. 25-36 (in Russian). [3] Tsvetkov V.I. (1987) *Meteoritika*, v. 46, p. 3-10 (in Russian)

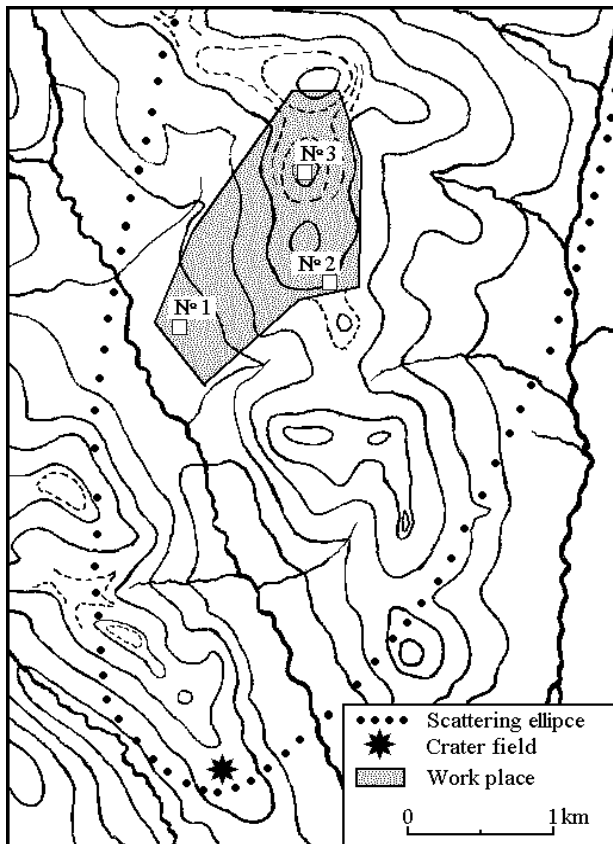THE SIKHOTE-ALIN METEORITE SHOWER: Stroganov, I.A. et.al.

Fig. 1. The schematic map of the region
of Sikhote-Alin meteorite shower.

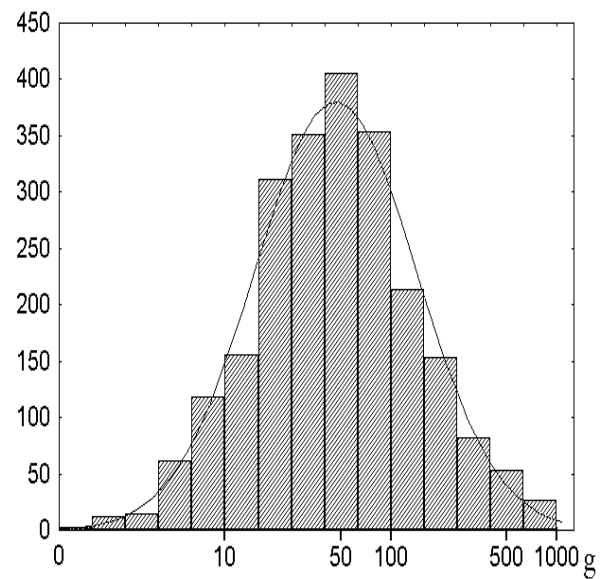**Fig.2.** The plot of mass vs number of meteorite fragments.

Table 1. The mass distribution of Sikhote-Alin meteorite fragments.

N	Mass	Number	Average	St. deviation
1	<10 g	188	5,93	2,39
2	10 - 20	318	14,76	2,90
3	20 - 30	290	24,27	2,87
4	30 - 40	239	34,15	2,87
5	40 - 50	188	44,27	2,94
6	50 - 100	558	70,30	14,19
7	100 - 200	310	137,51	27,76
8	200 - 500	179	300,58	82,50
9	500 - 1000	50	676,94	127,73
10	1000 - 2000	38	1390,79	268,18
11	2000 - 5000	7	2637,14	519,28
12	>5000	4	6400,00	406,20