

IS THERE THE CLUSTERING OF COSMIC-RAY EXPOSURE AGES OF H CHONDRITES AT 30 MYR? V.A.Alexeev. Vernadsky Inst. of Geochem. and Analyt. Chem., USSR Acad. Sci., Moscow, USSR

Distribution of cosmic-ray exposure ages of H chondrites has well known clear peak at 6-7 Myr. Perlmutter and Muller [1] have used the data of Crabb and Schultz [2] and have noted clustering of exposure ages of H chondrites at 30 ± 6 Myr. This peak is appeared in the distribution on logarithmic age scale. The occurrence of this peak in the distribution on linear age scale is questionable. Authors [1] have suggested that big number of the H chondrites were created at this time (30 ± 6 Myr ago) during comet "storms".

We have analysed distributions of the exposure ages of about 600 H and L chondrites. Procedure of calculation of exposure ages is given in [3]. Fig. 1 shows the obtained results. We can see the broad "peak" at 20-30 Myr not only for H but also for L chondrites and model [4] of L chondrites on logarithmic age scale.

Distribution of the ages of L chondrites was approximated by exponential curve [5]: $N_t = N_0 \exp(-t/\tau)$. It was found by the least-squares method the parameters of curve; the value of τ is equal to $34(+5, -4)$ Myr. Distribution of ages of the H chondrites (without meteorites into the 6-7 Myr peak) was also approximated by exponential curve, and value of τ was found equal to $29(+4, -3)$ Myr. The τ is the life-time of meteorites in the cosmic space. The τ 's of the H and L chondrites were obtained identical within one-sigma errors.

Such exponential curve is transformed to curve with broad maximum at transfer from linear to logarithmic age scale. Analysis have shown (Fig. 2) the maximum is located at $t = \tau$ (the number of meteorites must be of course the same under each curve). The change of shape of (background) exponential curve at the change of age scale (from linear to logarithmic) is apparently the main cause of appearance of artificial peak in the region of 30 Myr.

References:

- [1] Perlmutter S. and Muller R.A. (1988) *Icarus*, 74, 2, 369-373.
- [2] Crabb J. and Schultz L. (1981) *Geochim. et Cosmochim. Acta*, 45, 11, 2151-2160.
- [3] Alexeev V.A. (1991) *LPS XXII*, 11-12.
- [4] Alexeev V.A. Are there any clusterings of the cosmic-ray exposure ages of L chondrites. This volume.
- [5] Alexeev V.A. Exposure ages of L chondrites. This volume.

Figure captions:

- Fig. 1. Distribution of cosmic-ray ages (t , Myr) of H (1,4) and L (2,5) chondrites on linear and logarithmic age scales. 3,6 - model distribution of L chondrite ages. The dotted lines correspond to one-sigma standard deviation.
- Fig. 2. The transformation of exponential curve approximating of the histogram of any data at transfer from linear (1) to logarithmic (2) scale.

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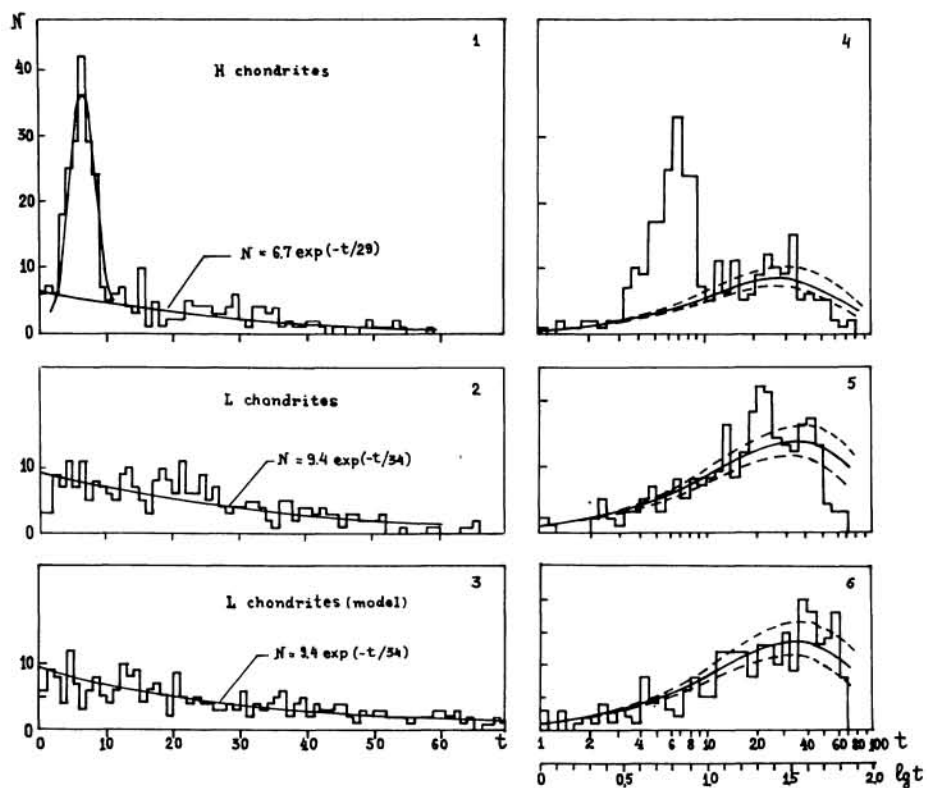


Fig. 1

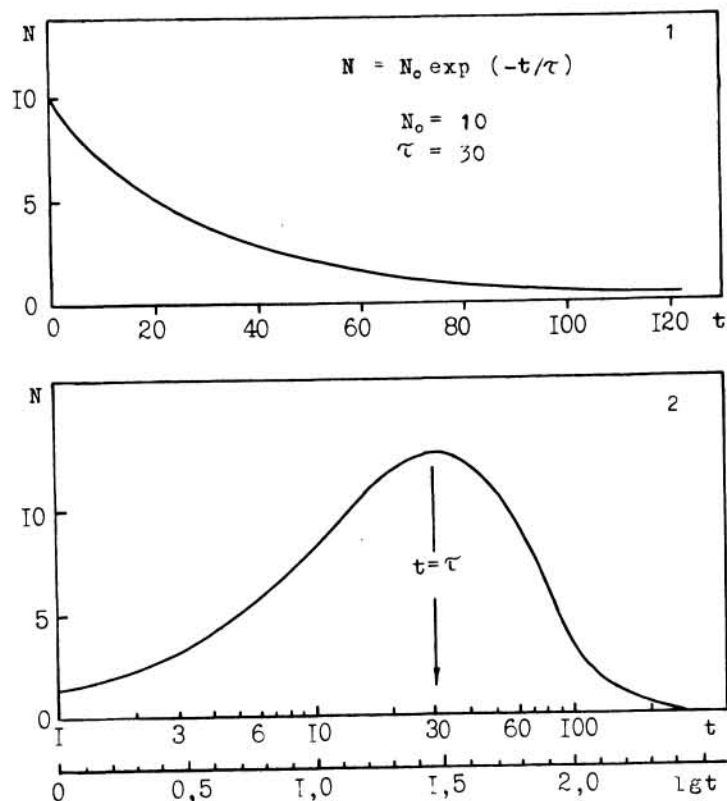


Fig. 2