interval $dM$. The differences exceed standard errors and are caused by different, theoretical assumptions involved.

It can be concluded that magnitude-frequency relations for various regions can be compared only if the following principles are respected:

1. The sets must be statistically complete, comparably numerous and must cover approximately the same observation period.
2. The classification quantity, magnitude or energy range, classes and first of all the method of calculation must be identical.

Disregarding these principles may lead to artificial differences in parameters and, consequently, to erroneous conclusions.

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References


ESTIMATE OF THE TIME INTERVAL OF ACTIVITY OF VOLCANOES
OF THE BASALT FORMATION OF THE LOWER JESENÍK MTS. BASED
ON PALAEOMAGNETIC DATA

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Summary: Virtual geomagnetic poles, corresponding to the directions of primary remanent magnetization of the neovolcanic occurrences studied in the Lower Jeseník, form a close group which is positionally considerably removed from the present geographic pole. By comparison with some published data on the extent of the secular variation of the geomagnetic field, a conclusion was drawn that the assumption of a practically simultaneous generation of the considered volcanites (over a period of about one third of the longest secular variation cycle) is at least twice as probable as the assumption of an expressive difference in their age.

1. INTRODUCTION

In the course of the palaeomagnetic research into the basalt formation of the Lower Jeseník (for a more detailed report see [1]), the directions of the primary remanent magnetization $J_0$ of the basalt rocks of the Inner Sudeten series of volcanoes were reproduced. With the exception

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of the Břidličná locality (which will not be considered further) inverse directions of \( J_0 \) (Fig. 2) correspond to all localities investigated (Fig. 1). This means that the corresponding neovolcanites, which are geologically attributed to the youngest phase of neovolcanism in the Bohemian Massif, were created in the period prior to the last change of geomagnetic polarity [2].

Just like the mean \( J_0 \)-directions, the corresponding virtual geomagnetic poles (in the sense of [3]) also form a comparatively close group (Fig. 3) which is, however, positionally considerably removed from the present geographic pole. The envelope of the ovals of confidence, denoted by a dashed line, bounds the pole region \( Q' \). The data in Figs 2 and 3 form a basis for a consideration of the time interval of volcanic activity in the Inner Sudeten series of the Lower Jeseník volcanoes (provided the sampled volcanic material represents the said activity sufficiently). The consideration is based on the comparison of the data obtained with some of the data published on the extent of the secular variation of the geomagnetic field.

![Map of localities](image)

Fig. 1. Situation of the localities in the Inner Sudeten series of volcanoes of the basalt formation of the Lower Jeseník. ZI — Zlatá lípa, SH — Slezská Harta, Bři — Bílečice, VR — Velký Roudný, Kř — Křišťanovice, Vo — Volárna, Rá — Rážová, Me — Mezina, Vs — Venušina sopka, Uv — Uhliřský vrch, Bř — Břidličná, 1 — lava, 2 — pyroclastics, 3 — tuffites.

### 2. PROBABILITY OF SHORT-TERM VOLCANIC ACTIVITY

Some of the data on the secular variation found especially from palaeomagnetic research [3—17, etc.] are taken into consideration in this section. One may assume that the secular variation in the late Tertiary and Quaternary was considerable and that the virtual geomagnetic poles deviated from the geographic pole in random directions not infrequently by as much as 30°. However, the results of the investigations indicate at the same time that the mean virtual geomagnetic pole, which has been computed from a sufficiently large set of poles corresponding to the same region and selected at more or less uniform time intervals over a period of at least 10,000 years, is positionally very close to the geographic pole. It can be expected that the density of virtual poles in a set of this type will decrease with the distance from the geographic pole.

The time required for the cooling of a part of a lava flow from which samples have been taken, in an interval of temperatures significant for the generation of thermoremanent magnetization, is comparatively short (several years). The direction of thermoremanent magnetization, which corresponds to the direction of the geomagnetic field at the time of cooling, is, therefore, affected by the secular variation of this field.