



## **The isotopic chemistry of basalts as a tool to inferring their origin and dynamics**

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The isotopic chemistry of the ocean floor basalts is usually interpreted in terms of a mixture of different primitive end-members, the reservoirs of which are speculated at different depths. We show how such a feature can also be explained in terms of a different melting-depth of every basalts. The observed phenomena result from a combination of the effect of the total available prime endogenous heating and of the temporal evolution of its upward propagation. Such entire process can be modelled, up to some extent, in terms of equation-of-state by relating to each other the prime heat supply, the melting depth, the lava fluidity, and the bathymetry or topography of the emplaced magma. According to the rationale here presented, geomagnetic phenomena, the axial bathymetry of mid-ocean ridges and their variation *vs.* latitude, and the isotopic chemistry of basalts, ought thus to be closely correlated with one another. Basically all observations can be interpreted in terms of a chemically spherically isotopic Earth, differentiated only *vs.* geocentric radial distance, and of a spatial variation of the prime endogenous heat supply.

Ocean basalts can be conveniently distinguished into five main categories ("*clusters*"), every one of which is speculated to correspond to a typical range of prime heat supply. For such purpose, a database of isotopic measurements downloaded from Internet is investigated taking into account the temporal evolution of the magmatic history at every site. The geographical distribution of the isotopic signature, and the time-variation and evolution of such isotopic characterization at every site, ought to allow for rejecting incorrect interpretations.