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A parameter estimation approach in interpreting fission track ages: a case study of Corsica, France

B. Székely (1,2), G. Molnár (1,2), M. Danišík (3), J. Kuhlemann (3), W. Frisch (3)

(1) Christian Doppler Laboratory, Institute of Photogrammetry and Remote Sensing, Vienna University of Technology, Vienna, Austria, (2) Dept. of Geophysics and Space Science, Eötvös University, Budapest, Hungary, (3) Institute of Geoscience, University of Tübingen, Tübingen, Germany (balazs.szekely@ipf.tuwien.ac.at)

Variscan part of the western Mediterranean island of Corsica (France) has been found an ideal area for low-temperature thermochoronological studies, because of the relatively simple tectonic situation and the more or less homogeneous lithological setting. A number of authors have published apatite fission track age data for the area in question, and the resulting age pattern is partly unexpectedly complex. Zones of gradual change of fission track ages are mixed with groups of young ages (around 17 Ma), whereas in the south extremely old ages (exceeding 90 Ma) have been found. In most of the cases the error bars of the measurements are narrow, so the results are considered to be accurate. On the other hand some juxtaposed samples show remarkable differences that cannot be interpreted with effects of the different elevations.

In a previous study two buffer zones of thermal influence has been identified around the assumed positions of Miocene rifting systems. Since the position of the two systems is oblique to each other, the assumed thermal effect of the two rifts may explain the chess-table pattern.

Considering this model as extendable one, in our approach a polynomial fit is calculated to the data to explain the complex spatial distribution of fission track ages. As a result we obtained low residuals (measured age minus calculated age) with some exceptions. The calculated pattern based on the estimated parameters shows remarkable coincidence with the previously assumed rift zones, though the model had only the

input of the fission track ages. Further studies will be carried to include the age errors in the calculation to reduce the effects of the possible outlier ages.