ages. These are interpreted to represent cooling in the source region within mainly a Variscan high-grade metamorphic, gneissic block. However, the few Jurassic to early Cretaceous ages suggest the presence of a possible Jurassic/early Cretaceous accretionary wedge, and the early late Cretaceous ages argue for an important tectonothermal event in the source region. These new data suggest that the Rhenodanubian Flysch Zone includes fans which represent the filling of synorogenic foredeep. The ages constrain, furthermore, that erosion of an orogenic continental wedge played a significant role.
Finally, the variable single grain $^{40}Ar/^{39}Ar$ ages within one samples indicate that multigrain concentrates may be meaningless because of possible mixtures of micas with different ages.

A plate tectonic model of the Alps constructed from Atlantic data

NEUGEBAUER, J.

Geologisches Institut der Universität Tübingen, Sigwartstr. 10, 72076 Tübingen, joachim.neugebauer@uni-tuebingen.de

The rotations of the plates involved in the evolution of the Alps can be determined to a large extent from the magnetic anomalies of the Atlantic Ocean. Most of the time the Mediterranean plates follow the Atlantic plates Africa, Iberia, and W.Europe. Only a few extra rotations are needed, and these are confined by available space and geological arguments. Complications arise during the eoalpine and neoalpine collisions when the collision zone was strongly deformed and extrusions occurred. For control of the model, we introduce palaeomagnetic declination arrows: All Permian, Mesozoic, and Cenozoic primary declinations of the Mediterranean plates must be orientated in N-S direction in the model. A series of palaeogeographical maps will demonstrate the correct orientations of the declinations and illustrate the evolution of the Alps from the Triassic Pangea situation to the final orogen.
The plates involved in the orogen are W.Europe, Briançonnais on the northern side, Adria and its marginal plates Austroalpine-W.Carpathia, Pelso, Ivrea in the south, and Tisza. Special features of the model are: (1) Adria is linked to Africa except for a small extra rotation of about 9°. (2) The Meliata units are parts of the Tethys obducted in the Upper Jurassic from the E onto the margins of Pelso and Austroalpine-W.Carpathian plate. The continuation of the obducted units are found in the Dinarides and Hellenides. (3) The eoalpine (pre-Gosau) collision take place between the marginal plates of Adria and Tisza far off the W.European margin. Palaeomagnetic data indicate that the Austroalpine-W.Carpathian plate was strongly rotated by this event. (4) The S.Penninic Ocean was maximally 400-500 km wide. (5) The neoalpine collision was a two stage orogeny: First, the continental margin on the European side was overriden in Eocene and Oligocene times. Then, in Miocene time, further convergence of Africa and W.Europe induced extrusion to the W and E.

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NEUROTH, H.

Niedersächsische Staats- und Universitätsbibliothek Göttingen, SSG-FI Projekt, Papendiek 14, D-37073 Göttingen, neuroth@mail.sub.uni-goettingen.de

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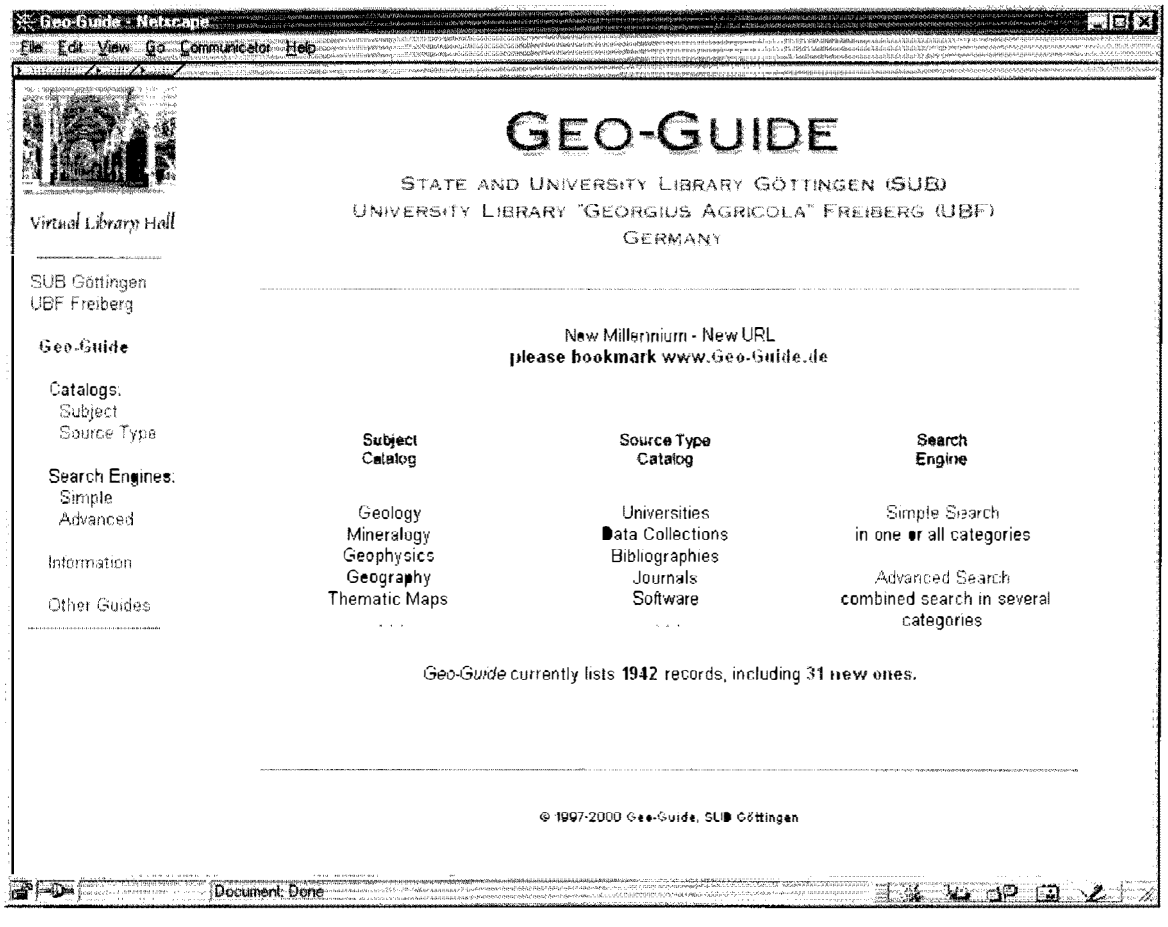

Fig.