

## **Fission track Thermochronology of the Jabal Akhdar and Saih Hatat Infra-Ophiolitic Windows and the Denudation of the South-Eastern Oman Mountains Belt**

O. Saddiqi\*, G. Poupeau\*\*, A. Michard\*\*\* and B. Goffé\*\*\*

\*Département de Géologie, Université Hassan II Aï n Chok, Casablanca, Morocco. [saddiqi@facsc-achok.ac.ma](mailto:saddiqi@facsc-achok.ac.ma) \*\* UMR 5025 of CNRS, Université Joseph Fourier, Grenoble, France. [poupeau@ujf-grenoble.fr](mailto:poupeau@ujf-grenoble.fr) \*\*\* Laboratoire de Géologie, Ecole Normale Supérieure, Paris, France. [michard/goffe@enstatite.ens.fr](mailto:michard/goffe@enstatite.ens.fr)

We analysed the fission tracks record in apatites and zircons from the infra-ophiolitic metamorphic units of the two basement windows of Saih Hatat and Jabal Akhdar, in the Oman Mountains belt. 16 samples were taken at altitudes varying from 15 to 1,200 m a.s.l.

In the upper blueschists units the zircons central ages are in the range 89-96 Ma, while in the deeper eclogitic units they are younger, 66-72 Ma. Taking into account petrologic and other isotopic (K-Ar,  $^{40}\text{Ar}/^{39}\text{Ar}$ ) ages, we estimate mean cooling rates of  $\sim 10^\circ\text{C}/\text{Ma}$  for blueschists units and  $\sim 50^\circ\text{C}/\text{Ma}$  for eclogitic units, corresponding respectively to exhumation rates of  $\sim 1$  and  $4.5$  mm/a.

Apatite fission track ages vary from 40 to 55 Ma, irrespective of the metamorphic grades of the units dated. Mean confined track lengths vary from 13.1 to 13.7  $\mu\text{m}$ . Optimisations with the Gallagher Monte Trax model suggest first a decrease in the cooling rate to  $10^\circ\text{C}/\text{Ma}$  (equivalent to a denudation rate of  $0.3$  mm/a) during the late Maastrichtian-Paleocene times followed by an Eocene-Oligocene roughly isothermal period coeval to a slow subsidence of the eroded belt. A weak Miocene-Pliocene reheating contemporaneous to the Zagros compression phase precedes the final Plio-Quaternary cooling stage characterized by a mean  $10^\circ\text{C}/\text{Ma}$  cooling rate. Isostatically assisted erosion was probably the only denudation agent during the Paleocene and Plio-Quaternary

uplift episodes.