VU university *amsterdam*

PhD position f/m

Thermo-Europe: Dating and quantifying vertical motions, erosion rates and sediment fluxes in the SE Carpathian system: applying low thermal geochronometry
For 1,0 fte

Vacancy number 1.2009.00259

The department of Isotope Geochemistry, Institute of earth Sciences, Faculty of Earth and Life Sciences, VU University Amsterdam, has a vacancy for a PhD studentship. This project is part of the European Science Foundation (ESF) EUROCORES TopoEurope program, financed by participating European Member Organizations (national science foundations and organizations), and external partners. The objectives of TopoEurope at large are to assess processes that control continental topography development, related geohazards and the vulnerability of the environment to intensified land use and to explore and understand the coupling between deep Earth and surface processes, addressing topography (de)formation and active source to sink relationships in space and time. The PhD position at the Isotope Geochemistry group is part of ISES, one of the six top research centers in the Netherlands, and NSG, the interuniversity Netherlands Research School Sedimentary Geology.

We offer a research and training program for in total 6 PhD's and 2 post-docs at 11 research institutes in 7 European countries. The collaborative research program (CRP) Thermo-Europe is focussed at the following aims and objectives:
(a) acquisition of new thermochronologic data on denudation rates and seismic data on sediment-flux from selected key areas;
(b) development of new methods to increase the resolution of the thermochronologic record;
(c) development of quantitative interpretational techniques that permit us to extract information on relief development and transient exhumation rates;
(d) investigation of the potentially coupled effect of climate-induced and tectonic variability in exhumation rates.

The target area is the Alpine mountain belt system in Europe with special emphasis on the history of denudation and relief development in the last 10 Myr.
We offer a cross-disciplinary process-oriented research program integrating and developing thermochronologic techniques, approaches and modelling tools to obtain new high resolution data-setsand quantitive modelling-based interpretative tools. The CRP encompasses sharing and exchange of expertise between the network partners and training and transfer of knowledge programs. The program is designed that teams will also work together on joint tasks, deliverables and publications. In this case the team of several PhD students and researchers will work in low thermal geochronometry (fission-tracks – (U-Th)/He and $^{40}Ar/^{39}Ar$ geochronology).

Research Project
In order to reconstruct the complete Middle Pleistocene-Holocene morphotectonic and paleoclimatic evolution of the SE Carpathians, it is necessary to know the amplitude and timing of vertical movements affecting the orogenic system from the Transylvania hinterland until the Focşani foreland Basins. Quaternary uplift is obvious from observation of the 9º ENE-ward tilting of the Lowermost Pleistocene strata and uplifted river terraces, which cover equally the external nappes and foreland basin .
The poorly constrained age signals between 1 and 6 Ma obtained in parts of the orogen and in the foreland are intriguing in relation to the climatic changes occurring in that time period. Climate change might have causing strong variation in erosion rates and sediment fluxes. The onset of the Mediterranean Messenian crisis could also be of importance and although a direct link to the Mediterranean Messinian crisis senso strictu is perhaps difficult, yet a significant sea-level drop certainly would have had a major impact on the erosion history. The occurrence in the foreland of non-reset and reset detrital He-dates, as young as 1 Ma, clearly show an increase of erosion rates and sediments delivered in the sedimentary basins. However erosion rates and sediment deposition have varied in space and a process causing recent erosion must have brought the buried sediments to the surface.

Since the tectonic-climate link is poorly understood after the late Miocene continental collision, more low-T thermochronology dating is needed. Here we propose to obtain detailed information on timing and volume of sediment flux. This will allow the distinction between tectonic and climatic processes that operated in this region. The data will be used as input for integrated lithospheric-surface numerical model studies.
An extensive set of samples is already available offering the candidate a flying start right form the beginning.

Tasks
The PhD student is expected to:

- Participate actively in and contribute to the TopoEurope Thermo-Europe trainings and exchange programme;
- Perform low temperature geochronometric analyses and modelling;
- To contribute to tasks of the Isotope Geochemistry Group including for example assist in teaching and pr activities, and in some laboratory responsibilities;
- To have an excellent motivation, and social skills;
- To write manuscripts and a dissertation.

Requirements
The candidate must have an Msc degree obtained in Earth Sciences, experience and positive attitude for instrumental analytical techniques and lab work, and proven skills in writing and presentations.

Further particulars
The position (PhD Researcher) will be available at the Vrije Universiteit Amsterdam in the Isotope Geochemistry Group. The appointment will be available initially for 12 months and will be extended with 30 months based on a full-time employment, with the possible extension of additional 6 months The appointment should result in submission/publication of 2-3 manuscripts in international peer reviewed top scientific journals and a dissertation after 3.5 years.

Salary
The salary is € 2.042,- gross per month in the first year to € 2.612,- in the fourth year (salary scale 10), based on a full-time employment. You can find information about our excellent fringe benefits of employment at www.vu.nl/nl/werken-bij-de-vu/vacatures/index.asp..

Additional information
Further information on the project can be obtained from the head of the Isotope geochemistry department Professor Dr. P.A.M. Andriessen, Phone +31(20) 59 87340, e-mail: paul.andriessen@falw.vu.nl

Application
Written applications should include a curriculum vitae, names of two academics references, course transcripts and copy of the MSc diploma and certified translations of these documents in the English language where appropriate, and a motivation of interest in this specific position. Please mention the vacancy number in the e-mail header or at the top of your letter and on the envelope. Send your application before November 6, 2008 to the VU University Amsterdam, Faculty of Earth and Life Sciences, attn. dr. J.M.R.M. Neutelings, Managing Director, De Boelelaan 1085, 1081 HV Amsterdam, The Netherlands. It is also possible to apply by e-mail to: falw-vacatures@falw.vu.nl.

Any other correspondence in response to this advertisement will not be dealt with.