

Constraints on radiochronometers behaviour during metamorphism deduced from the study of eclogites from Norway and eastern China

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When performing geochronological dating, the main question which has to be resolved is: “What are we dating?” The answer to this simple question hides the true interpretation of the geochronological data and thus their pertinent utilisation to decipher geodynamical processes. When dealing with metamorphic rocks there are two main processes about radiochronometers behaviour which have to be truly understood: How is a chronometer reset in the course of a metamorphic event (what are the processes of isotopic reequilibration) and when is a chronometer set to function (when does it closed). Originally the temperature has been the only parameter considered as influential on the radiochronometers behaviour (i.e. closure temperature theory). This theory state that when a rock heats up over a specific temperature, the chronometer is reset to “zero”, and when a rock cools down under this specific temperature, the chronometer is set to function. Based on this principle, thermochronological studies have been carried out to deduce, for instance, exhumation rates of UHP rocks. However there are many reports in literature of cases studies departing from this theory and it is now generally accepted that many other parameters will affect the radiochronometers behaviour (i.e. Intrinsic parameters: rock chemistry, modal composition, granulometry etc...; Extrinsic parameters: deformation, fluid circulation, heating or cooling rate etc...). During this talk, the behaviour of the Rb/Sr system in the course of metamorphism will be discussed through two examples: The Bergen Arcs eclogites (Norway) and the Sulu eclogites (China). The first example will allows us to discuss the processes of isotopic reequilibration during high pressure metamorphism and the second the processes of isotopic closure.