

Università degli Studi di Milano - Bicocca Dipartimento di Scienze dell'Ambiente e della Terra



AVVISO DI SEMINARIO

Giovedì 6 giugno 2019 alle 14:30 Aula U4 - 05 (edificio U4, piano terra)

Tackling the missing tile of Earth's habitability through geological times: new avenues in the understanding of the deep volatile cycling



Dr. Francesca Piccoli – Università di Berna (CH)

Piccoli, F., Brovarone, A. V., & Ague, J. J. (2018). Field and petrological study of metasomatism and high-pressure carbonation from lawsonite eclogite-facies terrains, Alpine Corsica. Lithos, 304, 16-37.

Subduction zones are one of the most vibrant geodynamic settings where volatile elements such as C, S, and halogens are transferred from shallow reservoirs to lithospheric mantle, giving place to a complex geochemical cycle that is still poorly understood. However, quantification of volatiles fluxes between the exosphere (atmosphere/oceans) and the lithosphere through subduction zones is fundamental if we are to understand the evolution of the atmosphere and ocean with geological time. Actually, fluid released form the subducting oceanic plate can transfer massive quantities of volatile species from the slab to the shallow crust and hydrosphere. Therefore, the fate of metamorphic fluids has a leading part in the deep volatile cycle.

In this talk, I will introduce these concepts and then focus on the most intriguing natural processes associated fluid release, percolation and fluid-rock interactions at subduction zones. I will introduce the process of rock carbonation at high-pressure conditions, with a focus on the reconstruction of the "hydrology" of subduction zones by means of stable isotope geochemistry and mass balance analysis. Additional topics, such as redox conditions prevailing upon dehydration reactions and consequences on fluid speciation, will be also introduced.

Il seminario sarà in Italiano - Seminar will be given in Italian