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DIPARTIMENTO DI GEOSCIENZE

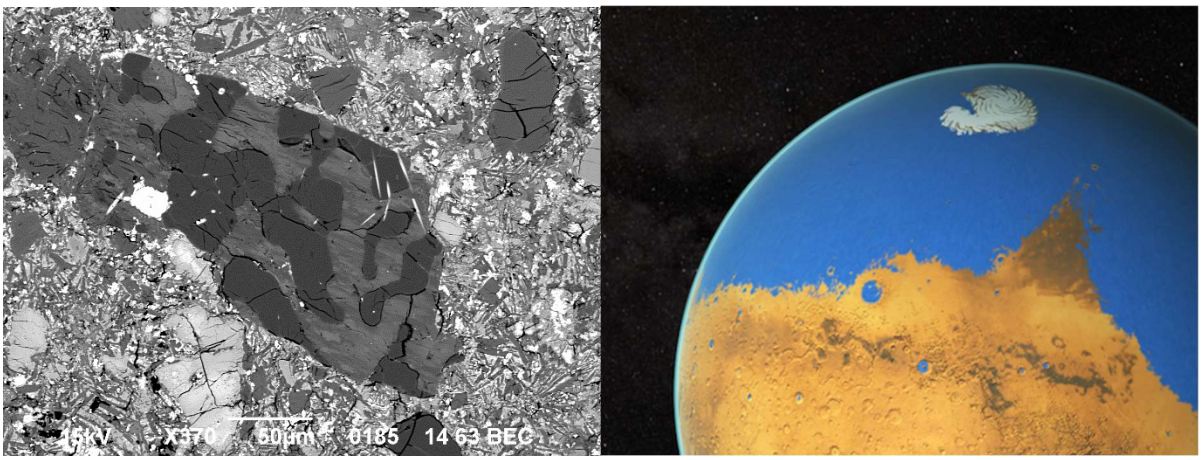
Seminario

How unique is our home planet? Geochemical evidence for an ancient subduction zone on Mars

Thursday, 5th March 2026 – 16:30, Aula 1F

Relatore:

Prof. Frank E. Brenker – Schwiete Cosmochemistry Laboratory,
Goethe University, Frankfurt



Left: BSE image of a graphic granite from Mars © SCL; Right: Ocean on planet Mars covered with an ancient ocean © NASA's Goddard Space Flight Center

Habitable Earth seems a rather unique place in our Solar System. Comparing processes like plate tectonics at different planetary bodies will help to better understand mechanism on our home planet. Although some moons of Jupiter show evidence for icy plate tectonic processes, recent plate tectonics sensu stricto is limited to Earth. However, it is unclear if this is valid throughout its entire life time. Water on the Earth´s surface seems an important driving force for plate tectonics as it might help to effectively cool the aging lithosphere. As more and more evidence for a widespread ocean on Mars came to light plate tectonic like processes should have occurred within the early few billion years of Mars evolution, after the planet was substantially cooled. If the conditions were suitable to initiate subduction is still an open question.

The finding of the first and only sedimentary meteorite from Mars nick-named "Black Beauty" might offer a chance to search for geochemical indicators of subduction. In this talk I will show the first geochemical signature ever recorded for the existence of an ancient subduction zone on Mars.

Proponente: **Anna Barbaro**