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# ABSTRACT BOOK

a cura della Società Geologica Italiana



The Geoscience paradigm:  
resources, risks and future perspectives



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Pillow-lavas and pillow-breccias covered by red-green radiolarian cherts and reddish marly limestones (Middle-Upper Jurassic) in the Timpa delle Murge ophiolitic sequence (Pollino Massif, Basilicata) (Photo courtesy of G. Prosser).

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## **Carbon dynamics in the chestnut forests of Lazio (Central Italy): insights from the critical zone**

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Chestnut managed land is an agroforestry's good that plays an important role in the carbon cycle as well as providing habitats for a wide range of animal species, chestnut crop, timber and soil stabilization and preventing erosion.

Lazio region (Central Italy) is covered by 600.000 hectares of forests and 6% of those are chestnuts forest with a life cycle of ~30 years. The volcanic areas of Anticolana Valley and Cimini Hills are a fertile substrate that, developing a symbiosis with chestnut, increase the local carbon sequestration. Also for these reasons the abovementioned areas covered by chestnut forests were listed in the Natura 2000 network for the environmental protection.

In this study, a representative and georeferenced sampling has been carried out in the two areas to provide the evaluation of the physical and chemical characteristics of the soils, with the aim to delineate the soil quality as well as how the carbon sequestration occurs in the two involved domains. In particular, with a coupled elemental and isotopic ratio mass spectrometer analysis (EA-IRMS): total (TC), organic (OC), inorganic carbon (IC) and total nitrogen (N) contents and the relative isotopic signatures ( $\delta^{13}\text{C}_{\text{TC}}$ ;  $\delta^{13}\text{C}_{\text{OC}}$ ;  $\delta^{13}\text{C}_{\text{IC}}$ ;  $\delta^{15}\text{N}$ ) were measured to quantify in  $\text{Mg ha}^{-1}$  the Carbon stock and the Carbon dioxide equivalent ( $\text{CO}_2$  eq.).