Special Issue

Surface-Deep Earth Interactions: From Integrated Datasets to Landscape Evolution and Geodynamic Modeling

Message from the Guest Editors

Dear colleagues,

Mountain ranges, sedimentary basins, volcanic arcs and nearly all major geological features testify fluxes of geological materials occurring at and across the Earth's surface. Interactions between the Solid Earth and the Fluid Earth are thus ubiquitous. Correspondences between global climatic and tectonic changes throughout the Earth's history fostered our understanding of the evolution of mountain ranges, rock exhumation, basin evolution, and the geological carbon cycle. However, limited temporal resolution in the geological archives prevents a clear recognition of the causative relationships behind such changes. Which mechanisms control the coupling between surface and deep Earth processes? Which are the characteristic timescales and magnitudes of the feedbacks involved? Answering these questions is still a challenge and relies on landscape evolution and geodynamic modeling to integrate multidisciplinary datasets. This special issue gathers contributions regarding the continuously growing body of observational constraints and advances in coupled surface and deep Earth processes modeling, thereby increasing opportunities to progress in this research.

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Understanding the Earth's origin and its bio-geological evolution, the multiple implications of the geosciences (as a coherentset of interconnected disciplines), and the sociocultural and ethical interdisciplinary approaches, will be crucial for a better understanding of Nature, and also for undertaking scientificallybased political decisions.
We are committed to drive *Geosciences* to a position in which it is recognized for its high-quality, cutting-edge research and scientific influence, and strongly encourage and invite your participation and manuscripts.

Editor-in-Chief

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