Organics in the Earth and beyond

Niveau d'étude
Master 2

ECTS
3 crédits

Volume horaire
26h

Période de l'année
Semestre 3

Présentation

DESCRIPTION

The global carbon cycle, at the heart of major climatic and biogeochemical balances, is not limited to exchanges between the atmosphere, hydrosphere, and surface biosphere. The last decade has highlighted the importance of the deep carbon cycle, still largely unknown, which plays a crucial role in the storage, transformation, and redistribution of carbon within the Earth's envelopes, notably in
organic form, even at high pressures and temperatures. Earth's dynamics – subduction, metamorphism, volcanism, hydrothermalism – control these transfers and, in turn, influence the composition of the atmosphere and the climate on a geological scale. By inducing the abiotic (without the intervention of living organisms) formation of organic compounds and by shaping the chemical disequilibria necessary for all biological activity, this Earth's dynamics is also key to the habitability of our planet.

This course proposes to explore this deep and organic dimension of the carbon cycle on Earth and beyond, and in particular the link between fluid-rock interactions and abiotic organic synthesis in different terrestrial and extraterrestrial contexts. It also revisits the state of knowledge in petroleum geochemistry, and especially the methods of characterization of organic matter now applied to the deep and organic carbon cycle.

OBJECTIFS

- Understanding the redox dynamics of carbon in deep environments (terrestrial and extraterrestrial) and the links with fluid-rock interactions, particularly hydrogen production.
- Becoming familiar with recent knowledge acquired on the deep carbon cycle.
- Knowing a wide range of characterization techniques (principle and applicability) for organic matter within rocks.

HEURES D'ENSEIGNEMENT

Organics in the Earth and beyond	Cours Magistral	22h
Organics in the Earth and beyond	Travaux Dirigés	4h

PRÉ-REQUIS OBLIGATOIRES

Pour en savoir plus, rendez-vous sur > u-paris.fr/choisir-sa-formation

Informations non contractuelles. Les formations sont proposées sous réserve d'accréditation ministérielle délivrée tous les 5 ans.
Dernière mise à jour le 02 juin 2025

Basic knowledge in organic geochemistry is useful but not mandatory.

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