Geophysical Research Abstracts
Vol. 20, EGU2018-7207, 2018
EGU General Assembly 2018

From Fires to Oceans: Dynamics of Fire-Derived Organic Matter in Terrestrial and Aquatic Ecosystems

Cristina Santin (1) and Samuel Abiven (2)

(1) College of Science, Swansea University, UK (c.santin@swansea.ac.uk), (2) University of Zurich, Zurich, Switzerland (samuel.abiven@geo.uzh.ch)

Fire-derived organic matter is ubiquitous on Earth. It can be found in soils, sediments, rivers and oceans. In this wide range of environments, fire-derived organic matter, also known as pyrogenic carbon (PyC), represents a key component of the organic matter pool, and, in many cases, the largest identifiable group of organic compounds. PyC is also one of the most persistent organic matter fractions in the ecosystems, and its study is, therefore, particularly relevant for the global carbon cycle. From its production during fires to its transfer into soils, sediments and waters, this PyC goes through different transformations, both abiotic and biotic. Contrary to early assumptions, PyC is not inert and interacts strongly with the environment: evidence of microbial decomposition, oxidation patterns and interactions with minerals have been described in different matrices. PyC travels across these different environments and it is modified chemically and physically, but remains persistent.

In this poster we will present the Research Topic 'From Fires to Oceans: Dynamics of Fire-Derived Organic Matter in Terrestrial and Aquatic Ecosystems' that we are currently editing in the international journal Frontiers in Earth Science. The aim of this Research Topic is to advance the dialogue between the different PyC disciplines and to integrate knowledge of research fields that traditionally have a low level of information exchange. Currently, 11 research papers are already published and another 6 are being evaluated. They cover a range of topics from PyC production, transformation and degradation in different ecosystems, to PyC mobilization in both terrestrial and aquatic systems and PyC accumulation in soils and sediments. In addition to original research, this research topic also includes a review on the functions of PyC in terrestrial ecosystems and a perspective piece on the terminology and methods used in pyrogenic carbon research.