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Spatial and temporal variations of Particulate Organic Matter from Moselle River and tributaries: A multimolecular investigation

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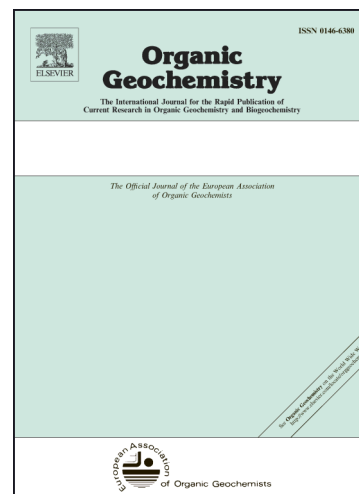
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1 Spatial and temporal variations of Particulate Organic Matter from Moselle

2 River and tributaries: A multimolecular investigation

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7

8 **ABSTRACT**

9 The spatial and temporal composition of organic matter (OM) was investigated in the Moselle
10 watershed (Lorraine, France). The spatial composition was studied using different stations
11 along the river and four tributaries. In addition, one anchor station was used in order to better
12 understand the temporal OM composition during different hydrologic regimes and seasons.
13 The first part of the organic characterization consisted of the extraction of the lipidic OM with
14 an automatic extractor. The extracts were analyzed for their lipidic fatty acids (Lip-FAs),
15 polycyclic aromatic hydrocarbons (PAHs) and sterols using gas chromatography-mass
16 spectrometry (GC-MS). The insoluble fraction was also analyzed with thermochemolysis-GC-
17 MS (TMH-GC-MS) using tetramethylammonium hydroxide (TMAH) and lignin phenols,
18 permethylated deoxy aldonic acids and refractory fatty acids (Ref-FAs) were analyzed. The
19 results showed that one station, (Florange station) on the small Fensch stream tributary
20 displayed variations in the composition of the molecular OM with higher microbial markers
21 (C_{16:1}, C_{18:1w7}, C_{18:1w9}, coprostanol) inputted to the highly industrialized and urbanized areas in
22 this small sub-catchment. The other stations showed rather similar organic composition (Lip-

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