

Evidencing the contrasted impact of urbanized rivers inputs on coastal sediments geochemistry: insight from Toulon bay (France) and St-Georges Bay (Beirut, Lebanon)

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Mediterranean Sea (MS) is a semi-enclosed sea divided into two basins: the Occidental and Oriental basins. Hosting high population density, they both are exposed to numerous anthropogenic activities that contaminate the surrounding environment with pollutants such as trace metals (TM). TM can accumulate in sediments due to their known affinity for particles. But, they cannot be only considered as a final sink as numerous (bio)geochemical processes influence TM sedimentary mobility which can turn sediments into secondary source of contaminants for the surrounding ecosystem. In this study, we investigate TM contamination in two contrasted Mediterranean sites: Toulon Bay (N-W of MS, France) and St-Georges Bay (E of MS, Lebanon), next to significant coastal agglomerations of ~0.5 M (Toulon) and ~2M (Beirut) inhabitants, hosting harbors and urbanized coastal rivers (Las River and Beirut River, respectively) and submitted to numerous anthropogenic pressures. Sediment cores were collected in 2016 at both coastal sites along transect in the particles deposit area of these rivers, treated under N₂ to retrieve porewaters and solid fraction. Samples were analyzed for main physical parameters (pH, Eh), organic/inorganic carbon, main diagenesis tracers and major/minor/trace elements. Previous studies have showed that Toulon bay sediments were strongly contaminated due to the 2nd WW as well as present activities. Obtained results suggested that recent Las River inputs tend to dilute sediments contamination in the bay even if its contribution is non-negligible for few elements. Sediments from St-Georges Bay appeared to be impacted by several anthropogenic activities transported through Beirut River. Additionally, early diagenesis contrastably affects TM mobility in the sediments of these two environments.