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Dissolved organic matter fluxes, quality, and biogeochemical processing in Eastern Mediterranean coastal wetlands

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Located at the interface between aquatic and terrestrial environments, coastal margin ecosystems are hot spots of biogeochemical transformation and exchange. Dissolved Organic Matter (DOM), introduced to coastal environments mainly through river run-off and wetland discharges, plays a key role in a broad range of processes and climate-related biogeochemical cycles. Yet, published studies on the quality, composition, photochemical and microbial processing of DOM in coastal waters and wetland ecosystems of the Eastern Mediterranean are extremely scarce. Here we present new data on the composition, optical properties and dynamics of the coloured component of DOM, CDOM, in various rivers, deltas and coastal wetlands of the Eastern Mediterranean that vary widely in environmental characteristics and carbon sources. Measurements of hydrologic, water quality and physicochemical parameters, DOM molecular weight distribution, stable carbon isotope analysis, and detailed CDOM absorption and fluorescence spectroscopy analyses were performed on samples collected along river transects from the freshwater end-member to the coastal zone. These results provide new and important information on the fluxes, quality and transformation pathways of the exported terrestrial organic matter and its effects on Eastern Mediterranean coastal water photochemical processes, biogeochemistry and ecosystem functioning.