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natural vs anthropogenic sources and the influence of the terrestrial input at the sea offshore the Sarno River (Naples Bay, Italy)

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Southeast Naples Bay represents a wide continental shelf environment with terrestrial sediment supply mainly from the Sarno River. The Sarno river basin, including about 500 km² of the alluvial plain, is located in Campania Region (SW Italy) between the volcanic complex of Somma-Vesuvio (on the NW), the Sarno Mts. (on the NE), the Lattari Mts. (on the S), the Tyrrhenian sea (on the W) and the Picentini Mts. (on the E). Currently, the Sarno river, partially used for irrigation, is affected by an extreme environmental pollution as a result of the outflow of industrial waste. Consequently, the area of the Naples Bay is influenced by sediment loads derived from the Sarno River (Albanese et al., 2013; De Pippo et al., 2006).

Seventy-one samples collected by van Veen grab) along a transect (long about 9 km) perpendicular to the coast has been used to evaluate: 1) the relative influences of parent lithology and anthropogenic effects offshore the Sarno river in the Southeast part of Naples Bay; and 2) the extension of the influence of the river in the submarine area. Different environmental indicators were selected for the contamination assessment such as total nitrogen (TN) and phosphorus (TP), total organic carbon (TOC), grain size of particles, metals, priority polycyclic aromatic hydrocarbons (16 USEPA, PAHs), total petroleum hydrocarbon (TPHs), volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), pesticides (OCPs) and organotin compounds (OTs).

Two different statistical techniques, Principal Component Analysis and factorial Analysis of Variance (ANOVA), allowed us to recognize areas with different pollution features. The results of this study compared to the published onshore data permitted us to evaluate natural *versus* anthropogenic sources and to delimit the influence area of the Sarno River supply into the Naples Bay.

References:

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- De Pippo, T., Donadio, C., Guida, M., & Petrosino, C. (2006) The case of Sarno river (Southern Italy). Effects of geomorphology on the environmental impacts. *Environmental Science and Pollution Research*, 13(3), 184–191.