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Specialization Area: **Analysis and Environmental assessment**
Research Area: **3.4 Matter flow across frontiers**



PhD project: Subterranean Estuaries in the Ría de Vigo: hidden sources of solutes to coastal waters

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Summary: The indiscriminate use of fertilizers in agriculture, together with industrial and urban sewage, are the origin of the widespread contamination of groundwaters with nitrate and other solutes. In aquifers with a hydraulic connection with coastal waters, nutrients are released via submarine groundwater discharge (SGD). SGD includes both the terrestrial aquifer groundwater and the recirculated seawater through the sediment. Thus, SGD can alter the composition of coastal ecosystems and their services provided to humans. In SGD exit zones, groundwater and seawater meet underground, creating the so-called subterranean estuaries (STEs). STEs have high biogeochemical reactivity that can significantly enhance or mitigate solute concentrations transported by SGD prior to discharge. This ability is especially important in the Ría de Vigo, where bivalve culture and extraction are dependent on the good environmental status of coastal waters. Moreover, climate change compromises the STEs, thus altering their ecosystem services. The main objective of this PhD thesis is to evaluate the ecosystem services provided by STEs of the Ría de Vigo through the study of their biogeochemical reactivity and microbial community.

