

Seminar “Ocean, Ice and Atmosphere”,
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A Hidden Connection Between Land and Sea: Submarine Groundwater Discharge Between Local and Global Scales

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Submarine groundwater discharge (SGD) is an important pathway for terrestrial fluids, solutes, and associated constituents to the ocean. As a diffuse and temporally variable flux, SGD has multiple impacts at the land-sea interface, influencing coastal biogeochemistry, nutrient dynamics, and ecosystem health. Despite its significance, the process remains difficult to constrain, not only due to its spatiotemporal heterogeneity but also because of missing reliable observational tools applicable across scales.

In this talk, I will provide an overview of the controls that govern the magnitude of SGD and its impacts in coastal ecosystems. Additionally, I will present methodological advances to improve its detection and quantification, highlighting both the potential and limitations of existing methodologies. The presentation aims to stimulate discussion of future directions for research and monitoring strategies to better constrain fluxes of SGD in coastal systems.