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Königshafen Submarine Groundwater Discharge Network (KiSNet)

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Submarine groundwater discharge (SGD) as a pathway for water and chemical constituents between land and ocean is a rather young topic. For a long time it has been neglected by the scientific community and coastal managers. However, it has increasingly attracted attention since the turn of the millennium. Yet, SGD is mostly investigated either by terrestrial or marine disciplines although a broader, interdisciplinary approach would benefit SGD research. Moreover, so far reported SGD flux data at local to regional scale are a) hardly comparable as, to our best knowledge, only a few, mostly isolated studies directly compared available SGD methods in a quantitative fashion and b) flux data contain large uncertainties, either because they were up-scaled from local discrete (point) measurements to regional scales or because they were derived from modelling/ budgeting of regional or even global matter fluxes despite the known high spatial and temporal variability.

In order to pave the way for a more standardized and interdisciplinary SGD research that would reduce inherited measurement/ extrapolation uncertainties, the Königshafen Submarine Groundwater Discharge Network (KiSNet) seeks to contribute through three concrete aims:

- forming an interdisciplinary group of SGD experts to initiate and intensify collaborative ties across disciplines
- improving individual methodologies by groundtruthing through interdisciplinary intercomparison, which includes a focus on spatial and temporal variability, and
- providing a method catalogue which outlines optimal combinations for qualitative and quantitative SGD investigations that may serve as basis for future standardized SGD research.

The network will convene at the bay of Königshafen on Sylt, Germany, during two different points in time. Each time, all members of the network will apply qualitative (remote sensing, marine and terrestrial ground-based geophysics, biological indicators and socio-scientific methods) and quantitative (seepage meters, temperature rods, natural tracers, numerical simulation) methods from terrestrial and marine disciplines to investigate SGD synchronously and provide a robust basis to tackle above mentioned aims.

Here, we will outline exact procedures, methods and anticipated results the network will produce

and provide an overview on future actions the network anticipates.

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