

Table S1. The main objectives, methods, contaminants and environmental issues applied and investigated at the SGD sites in the Baltic Sea as identified and mapped in this review [1]. The first four examples from Denmark, Finland, Germany and Poland shown in italics are described in more detail in the text.

SGD SITE / recent publications	Country	Study objectives	Applied methods	Investigated environmental issue	Conclusions
<i>Horsens Fjord Estuary (HF)/[2], (Figure 2, 6)</i>	<i>Denmark</i>	<i>SGD documentation and environmental impacts of fresh SGD on biodiversity</i>	<i>Hydro(geo)logical (water balance) modelling, hydroacoustics, ²²²Rn water column analyses, coring, Porewater geochemistry</i>	<i>Potential nitrate loading to Horsens Fjord</i>	<i>No nitrate loading from investigated SGD was identified</i>
<i>Hanko Peninsula (HP)/[3,4] (Figure 2, 5)</i>	<i>Finland</i>	<i>SGD documentation and quantification, environmental impacts of SGD</i>	<i>Seismics, hydroacoustics, georadar geological and hydrological modelling, ²²²Rn surveys, coring</i>	<i>SGD impacts on biogeochemical processes and microbial communities. Li, S and Sr isotopes</i>	<i>SGD has significant impacts on biogeochemical processes and microbial communities</i>
<i>Eckernförde (EF)/[5,6] (Figure 2, 4)</i>	<i>Germany</i>	<i>SGD documentation and environmental impacts of fresh SGD</i>	<i>Seepage meters, ²²²Rn, Radium mass balances, hydroacoustics, Porewater and water column chemistry</i>	<i>Nutrients (N and P) loading</i>	<i>Nutrient discharges are limited and not significant compared to other sources</i>
<i>Puck Bay (PB)/[7,8] (Figure 2, 7 and 8)</i>	<i>Poland</i>	<i>SGD documentation, quantification of discharge, acidification, ecological impacts</i>	<i>Hydroacoustics, porewater profiling</i>	<i>Ecological impacts of SGD and the dissolved contaminants incl. metals, nutrients, pharmaceuticals etc.</i>	<i>Potential acidification may impact calcifying invertebrates</i>
<i>Bay of Wismar (BW)/[9] (Figure 2)</i>	<i>Germany</i>	<i>Freshwater impact on coastal marine waters and ecosystems</i>	<i>Hydroacoustics, Mult-tracer study in water and cored sediments</i>	<i>Impact of fresh SGD on coastal ecosystems</i>	<i>Further studies are needed to estimate SGD nutrient inputs</i>
<i>Gulf of Gdansk (GG)/[10] (Figure 2)</i>	<i>Poland</i>	<i>Effect of Gas and freshwater seepage in deep (> 70 m) and broad (50 m) pockmarks about 20 km offshore</i>	<i>Hydroacoustics, geochemistry and microbiology of cored sediments</i>	<i>Impacts of freshwater and gas seepage on the local marine ecosystem</i>	<i>Freshwater and greenhouse gas (CH₄ and CO₂) discharge affects microbial communities</i>
<i>Gulf of Gdansk (GG)/[11] (Figure 2)</i>	<i>Russia</i>	<i>The significance of gas and saline groundwater discharge at depths up to more than 100 m</i>	<i>Hydroacoustics and geo- and hydrochemical profiling</i>	<i>Effects of gas and groundwater discharge on sediments and seawater</i>	<i>Saline groundwater and methane discharge along faults affect</i>

					seawater significantly
Laholm Bay (LB)/[12] (Figure 2)	Sweden	documentation and environmental impacts of fresh SGD	Visual observations, electric, hydroacoustic and seismic soundings, seepage meters, salinity profiling	Nitrate loading to Laholm Bay	The nitrate loading at investigated SGD sites is insignificant
Forsmark (F)/[13] (Figure 2)	Sweden	Documentation and quantification of SGD rates and potential impacts of coastal nuclear power plants	Ra, $\delta^{18}\text{O}$ and $\delta^2\text{H}$ isotopes, salinity	Potential impact of radioactive waste repositories in fractured hard rocks	A significant part of the investigated SGD is recirculated seawater
Fifång Island (FI), / [14] (Figure 2)	Sweden	documentation and environmental impacts of saline SGD	Rn surveys, sediment coring and profiling, Groundwater dating	Past and present influence of SGD on the coastal environment	Saline SGD documented

References

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