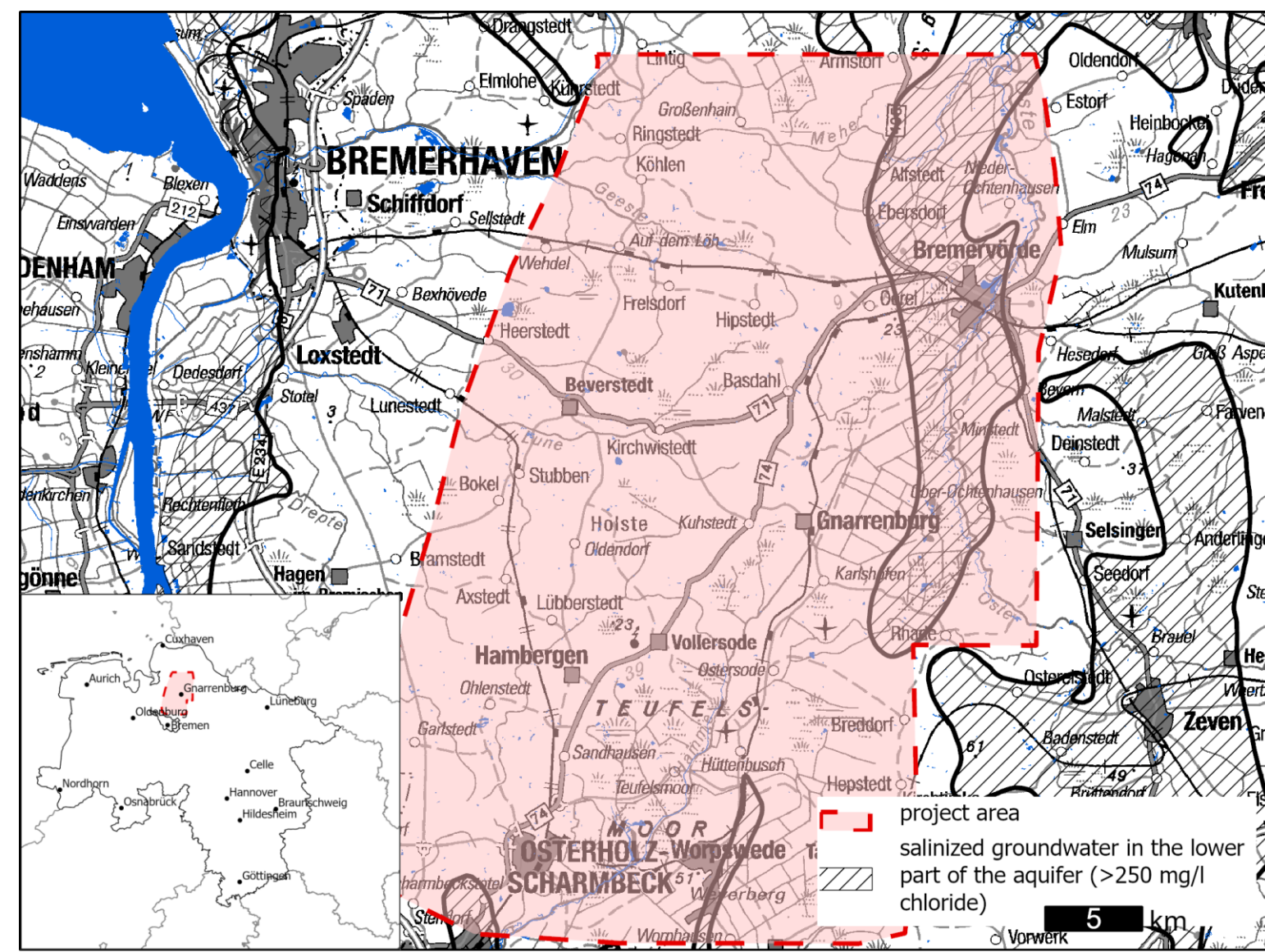


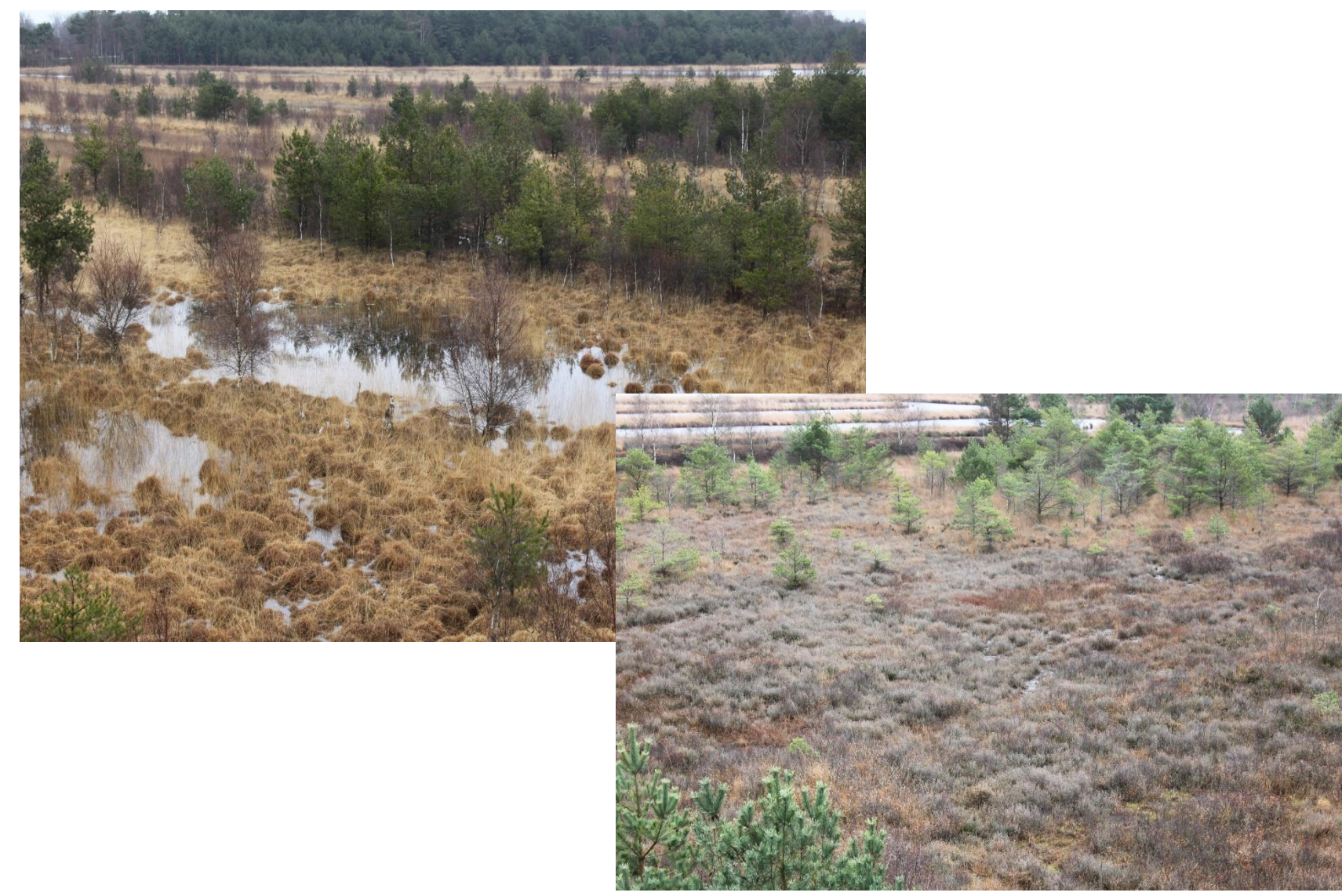


### Pilot summary

Managed groundwater recharge especially on peat land is known to benefit the regional water balance and carbon sequestration. The pilot area includes the Gnarrenburg peat land and the Bederkesa geest area in the northeast of Lower Saxony. At the northeastern part of the study site the deeper groundwater is salinized (chloride > 250 mg/l) and thus not usable for drinking water supply. Climate change is expected to negatively impact groundwater quality and amount. Therefore, we combine different MAR (Managed Aquifer Recharge) strategies like rewetting of peat lands and infiltration in the geest area to study possible positive effects on the groundwater resources. The groundwater system of the project area will benefit from the rewetting of the peat land. Additionally, as peatlands are a sink of carbon dioxide, renaturation will lead to a surplus of bound CO<sub>2</sub> in the subsurface. We assume that the rewetting and the rise of the groundwater level will push down the saline groundwater which is located about 100 m beneath the surface.



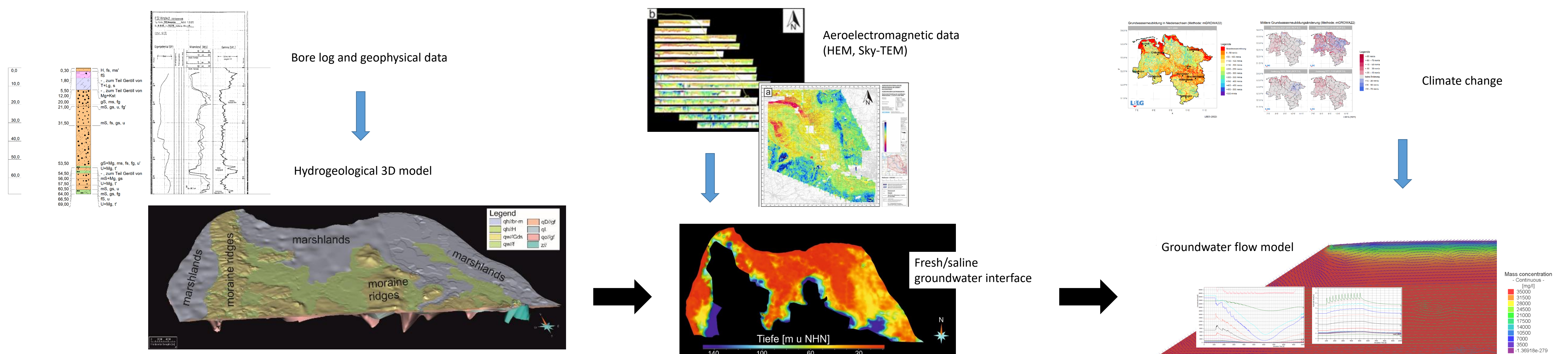
Project area „Geest Adaptation“



Impressions from the Gnarrenburg peat land (credits: N. Aldag)

### Activities

We will acquire geophysical data using airborne electromagnetics (AEM) and georadar (LIAG). Based on AEM data the current position of the fresh/saline groundwater interface (SFI) will be determined. Furthermore, the geophysical data will be combined with bore log data to generate a detailed hydrogeological 3D model. Both results will be used as input for a comprehensive groundwater flow model, which will simulate the effect of climate change on the groundwater system and especially on the SFI. The effect of climate change on groundwater is simulated using changing recharge rates according to Lower Saxony's climate ensemble based on the actual IPCC report.



### Governance

The LBEG as geological survey of Lower Saxony provides (hydro-)geological information for the public and advises federal ministries on hydrogeological topics. These information about the subsurface or groundwater quality and quantity are very important for e.g. local water suppliers and the agricultural sector. Therefore, regular meetings with stakeholders (water suppliers, farmers, water and soil boards) are compulsory. Their expertise and ideas are an important input for a successful project outcome. We continuously inform the public about relevant intermediate results of the project e.g. by press releases. As a subordinate authority of Lower Saxony's Ministry of Economics the LBEG acts as link between stakeholder and government and can effectively communicate results of the Blue Transition project on a national level.

**Auftakt zum Verbundprojekt „Blue Transition“: LBEG beteiligt sich an EU-weiten Untersuchungen zum nachhaltigen Umgang mit Grundwasser**

Die Untersuchungen werden unter anderem Grundwasserfließgeschwindigkeiten, die kurzfristige Erhöhung des Grundwasserstandes im Projektgebiet sowie die Veränderung des Grundwasserstandes im Vergleich zu anderen Gebieten in der Region erheben. Die Untersuchungen werden unter anderem durch die Messung von Grundwasserständen, die Messung von Grundwasserfließgeschwindigkeiten, die Messung von Grundwasserständen im Vergleich zu anderen Gebieten in der Region erheben. Die Untersuchungen werden unter anderem durch die Messung von Grundwasserständen, die Messung von Grundwasserfließgeschwindigkeiten, die Messung von Grundwasserständen im Vergleich zu anderen Gebieten in der Region erheben.

