

First lessons learnt on salt water intrusion

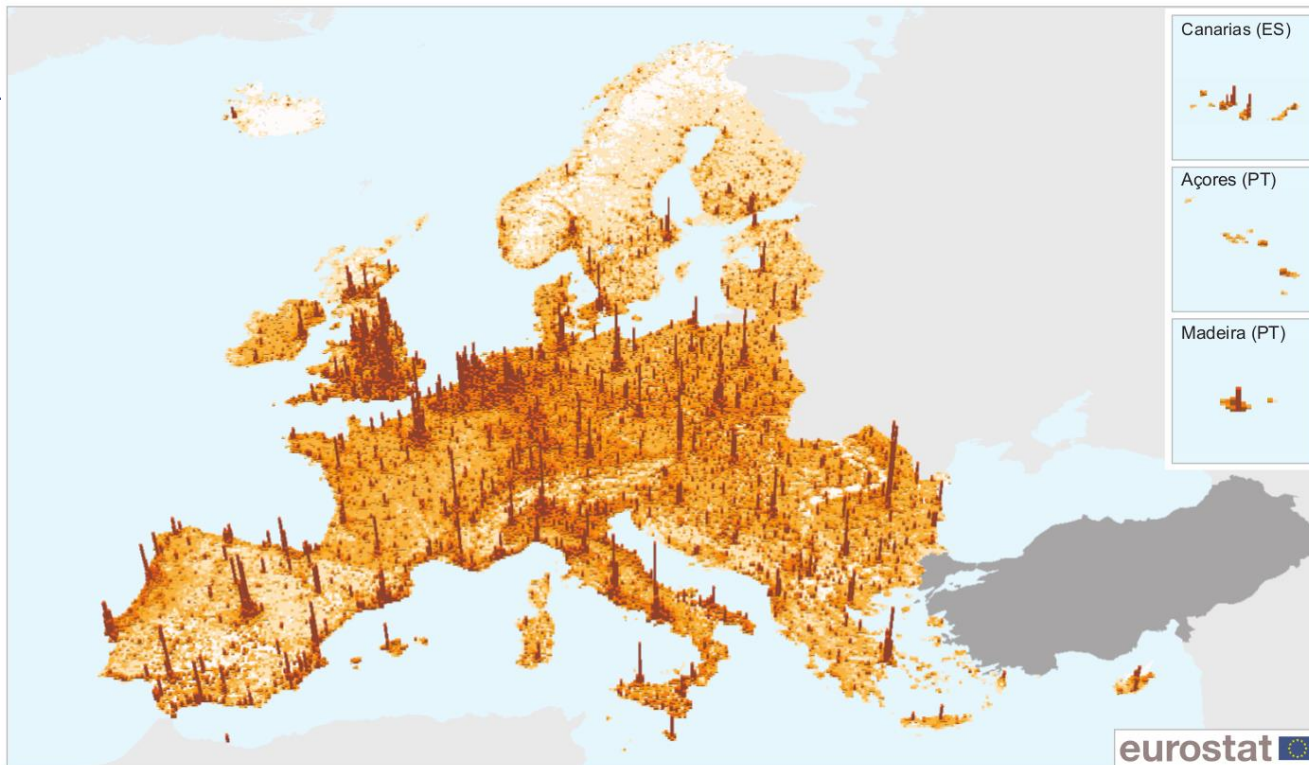


photographer: Yves Adams

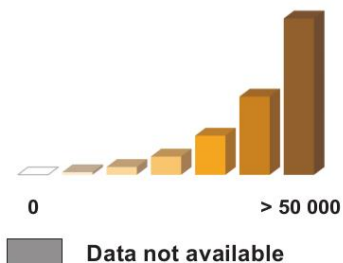
Dieter Vandeveld
Flanders Environment Agency
di.vandeveld@vmm.be

8/05/2019

Population density based on the GEOSTAT population grid, 2011
(number of inhabitants/10 km²)



(number of inhabitants/10 km²)



Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat — GISCO, 06/2017

Note: the GEOSTAT population grid is normally based on the number of inhabitants per 1 km²; for the sake of clarity in this 3D map it has been aggregated to show the number of inhabitants per 10 km². Guadeloupe (FRA1), Martinique (FRA2), Guyane (FRA3), La Réunion (FRA4) and Mayotte (FRA5): not available.

Source: JRC, Eurostat, GEOSTAT population grid 2011

Source: eurostat

What is salt water intrusion ?

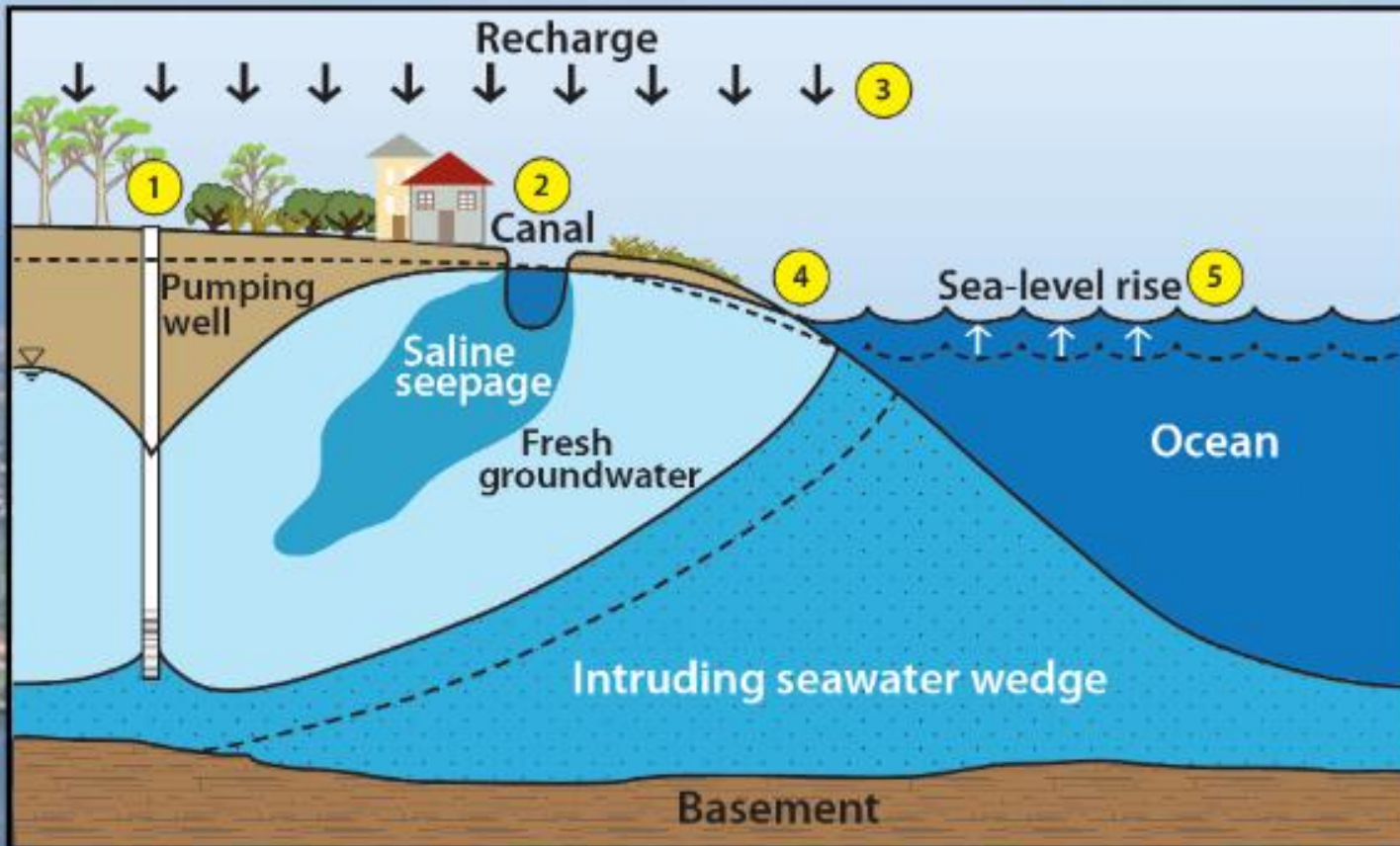
Salt water intrusion = the replacement of fresh groundwater by water that has a high salt content. Therefore salt water intrusion affects water quality and water usage.

The challenge is shared by all of the **coastal parts of the North Sea Region** (NSR). It is investigated in the following pilots: [UK-2](#), [BE-1](#), [BE-2](#), [NL-1](#), [GE-1](#), [GE-2](#), [GE-3](#), [DK-4](#)

Mechanisms?



Seawater intrusion mechanisms



- Original condition
- Modified condition
- 1 Excessive pumping
- 2 Land-use change (e.g. canal development)

- 3 Reduction in recharge
- 4 Overtopping, caused by sea-level rise, storm surges, and tsunamis
- 5 Sea-level rise

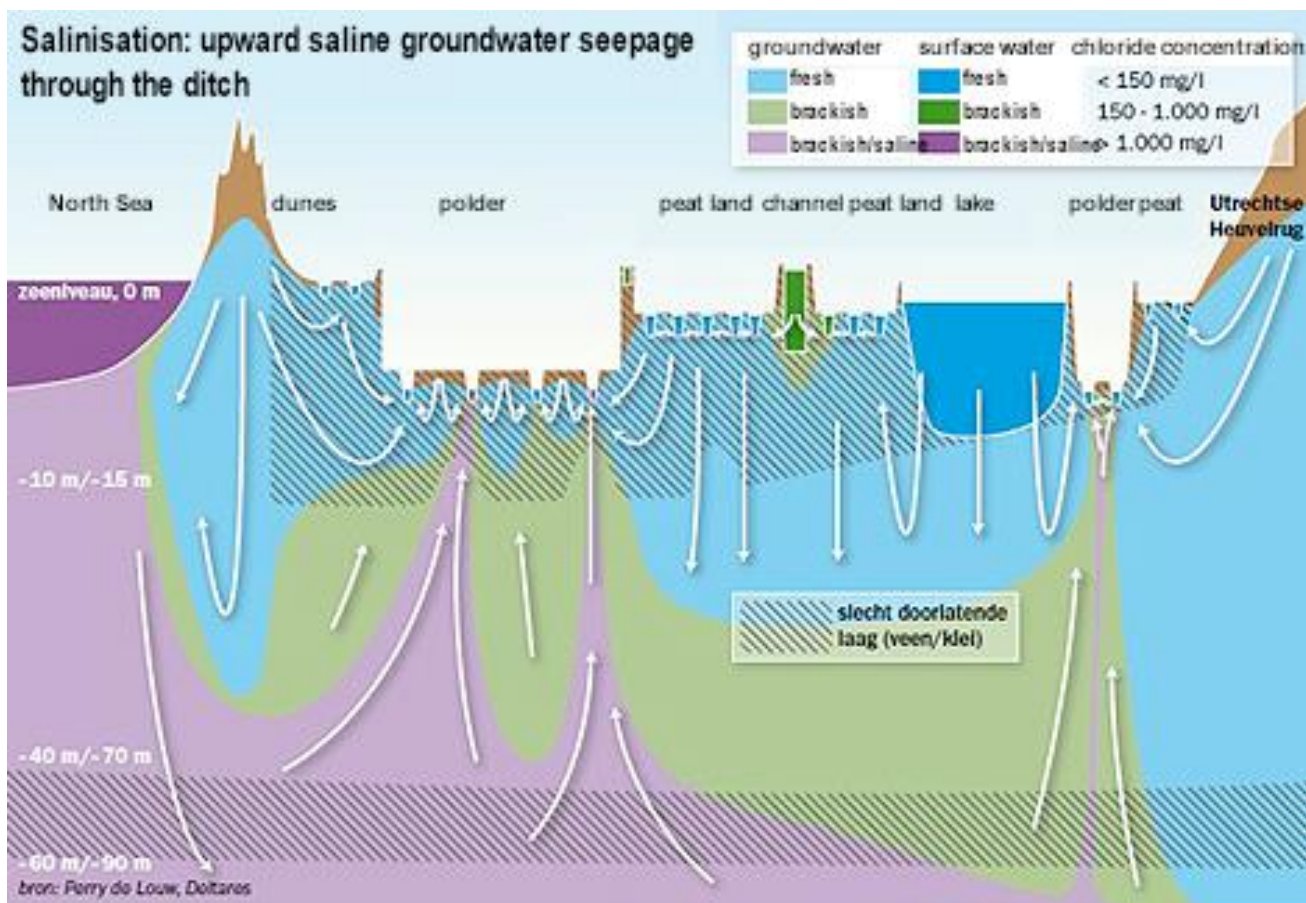
"Understanding Seawater Intrusion" (Poster designed by Adrian D. Werner; Peta E. Jacobsen & Leanne K. Morgan)

What is the impact of salt water intrusion?

- Contamination of fresh groundwater resources → impact on access of fresh drinking water
- Contamination of fresh surface water due to saline seepage → impact on surface water use (irrigation, drinking water, ecology, ...)
- Deterioration of soil
- Crop yield losses
- economic and social impact on rural and urban communities
- impact on the ecological health of streams

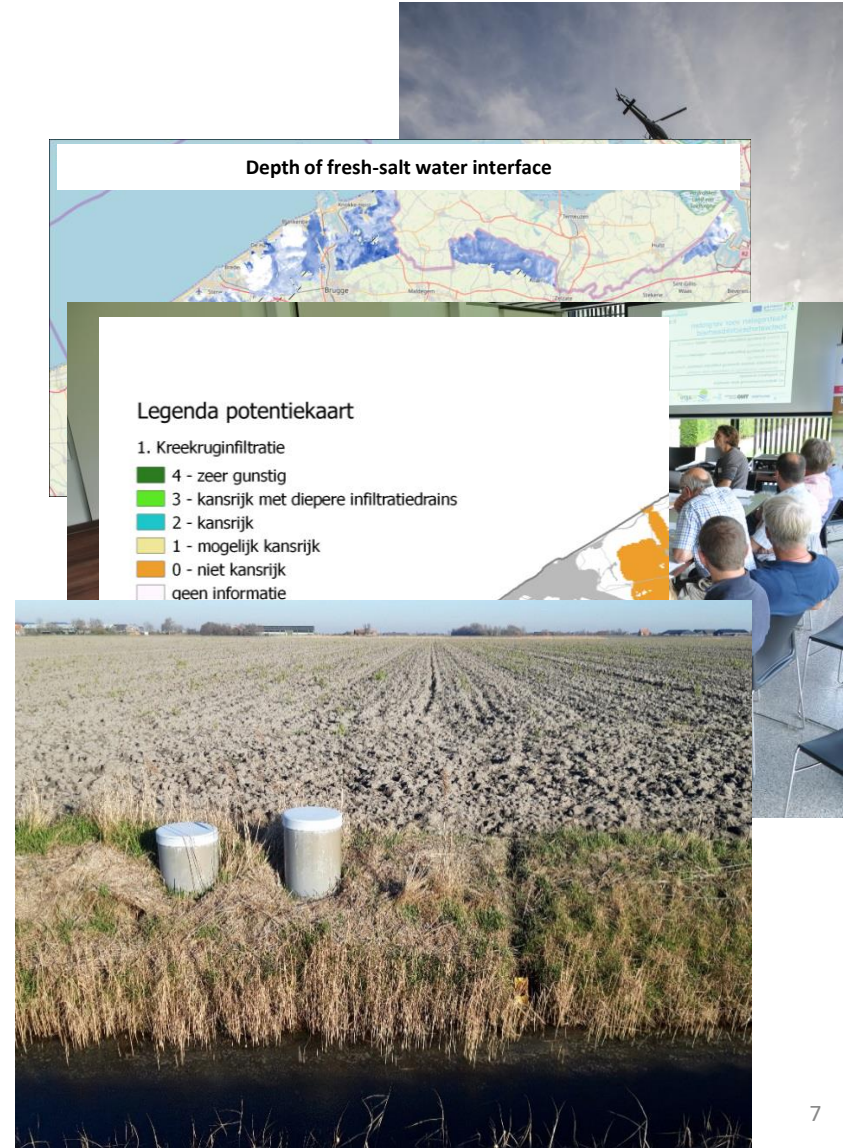


What is the impact of salt water intrusion?



What is the added benefit of TOPSOIL?

- Adoption of **innovative solutions** (e.g. airborne EM)
- A more accurate interpretation of the challenge by **combining new information with existing data** (e.g. salinity map)
- Improvement of the understanding of the challenge by holding **stakeholder consultations**
- to identify and manage the need for the development of **new services** (e.g. potential maps for measures)
- to identify best practices by **sharing knowledge and experience** (e.g. salt water intrusion workshop Bremen, visit of pilot projects in the Netherlands)



Key recommendations

- development of short and long term **strategies** on water shortage and risk of salt water intrusion
- **flexible legislation** that allows the implementation of innovative measures
- **indicators** on salt water intrusion to support policy/decision making
- **transboundary agreements** about the provision of fresh surface water to coastal areas facing saline seepage during dry periods



Thank you

