GO-FRESH - Promising measures local freshwater supply

Knowledge for Climate, HSZD3.2

GO-FRESH: Geohydrological Opportunities FRESH water supply

General

Full proposal Valorisation of promising measures for local freshwater supply in the Southwestern Delta

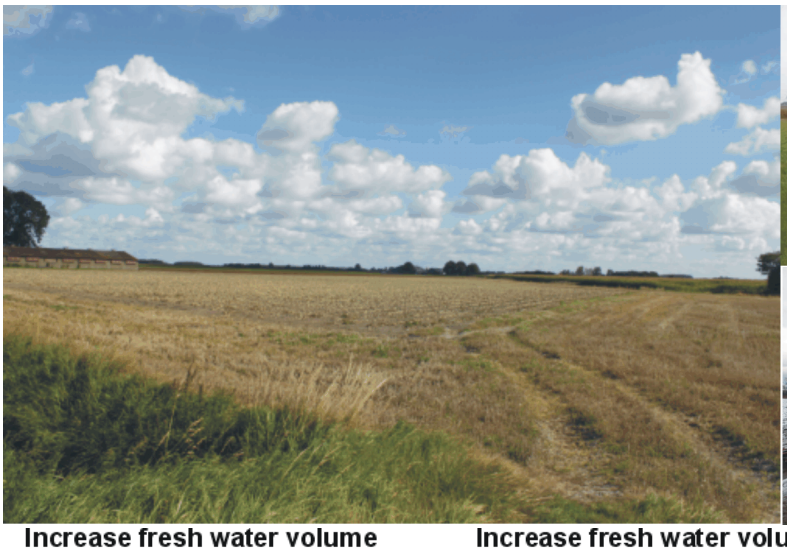
Abstract

In the SW delta, the agricultural sector is confronted with growing impacts of water shortage and salinization. The Province of Zeeland is aware of the negative influence on the socio-economic development. The agricultural sector (ZLTO) and municipalities (e.g. Schouwen-Duiveland) consider a reliable freshwater supply as one of the key issues for future development and sustainable growth. On a national level, strategies to reduce freshwater demand and increasing freshwater supply are being developed within the Delta Programme..
Our project's main goal is to improve the use of existing fresh groundwater resources and create new freshwater reserves, thereby increasing regional self-sufficiency and reducing dependence on external freshwater supply. Research already takes place on theoretical feasibility of possible measures. Building on this knowledge, the research goals are:

1. to investigate which measures actually 'work' in practice, and
2. to analyse whether such measures are economically feasible.

We want to develop showcases of three promising technologies which increase local or regional water supply. Basically, two showcases are set up on aquifer storage and recovery (ASR), utilizing the potential of sandy creek ridges for water storage. These showcases are located in 1) Zuid-Beveland (The Freshmaker concept) and in 2) Walcheren (Creek Ridge Infiltration Test, infiltration via drainage). The third showcase is optimizing the freshwater volume in shallow rainwater lenses with a pilot on Schouwen-Duiveland (Drains2Buffer). Integration of new knowledge, stakeholder participation and opportunities for practical implementation in the region (including economic feasibility analysis) will take place in two parallel work packages.

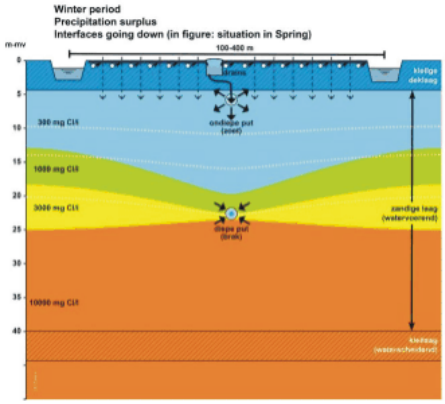
The Drains2Buffer showcase involves the installation of drain tiles at a depth of 1.2 m below ground level, which is 0.5 m deeper than the current drainage depth, and the horizontal drain separation is reduced from 10 to 5 m. The new tile-drainage system allows the discharge of deeper and more saline groundwater from the mixing zone during rain events while the rainwater lens is growing by the recharge of infiltrated rainwater until a new equilibrium is reached.



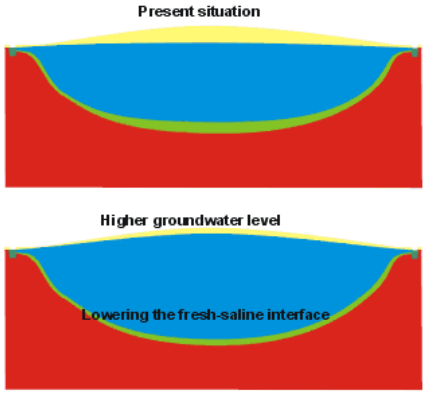
Increase fresh water volume in creek ridge by injection of fresh surface water and extraction of saline groundwater

Increase fresh water volume in creek ridge by passive infiltration via drainage

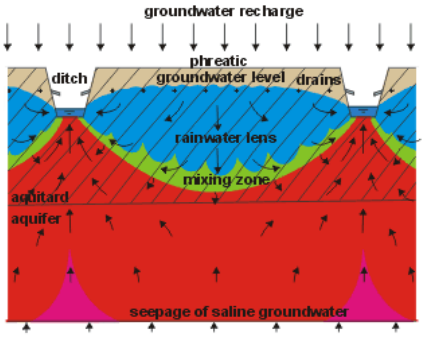
Maintain fresh water volume in shallow rainwater lenses by smart deep controlled drainage



The Freshmaker



Creek Ridge Infiltration Test



Drains2Buffer

The province of Zeeland, ZLTO, the Water Boards Scheldestromen and Brabantse Delta, the municipality Schouwen-Duiveland and STOWA all contribute to the project, from a financial contribution to inserting local expertise, arranging permits and taking care of small water management measures.

Activities

2012 11 21 Start sandy creek ridge pilot Serooskerke Walcheren (part 1)

2012 11 Start construction Freshmaker Zuid Beveland

2012 12 07 Foto-impression installation additional monitoring devices Serooskerke

Carlos Ruiz Celaá'-price on TIAC2012-congres for: Local Climate Proof Fresh Groundwater Supply: an adaptation water management strategy with national impact

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