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Enabling Delta Life

Water-Energy-Food Nexus

Strategic Focus of Deltares

Geoff. Toms

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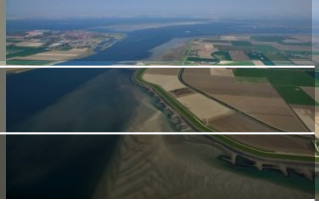

- Marine and Coastal Systems
- Inland Water Systems
- Subsurface and Groundwater Systems
- Geo Engineering
- Hydraulic Engineering

- *Software*
- *Facilities*

800 staff in The Netherlands
Regional Office in UAE
Geoff. Toms

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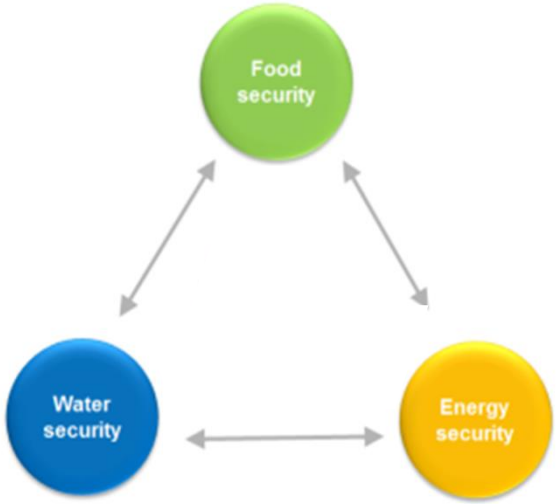
Water-Energy-Food Nexus – what is it about?



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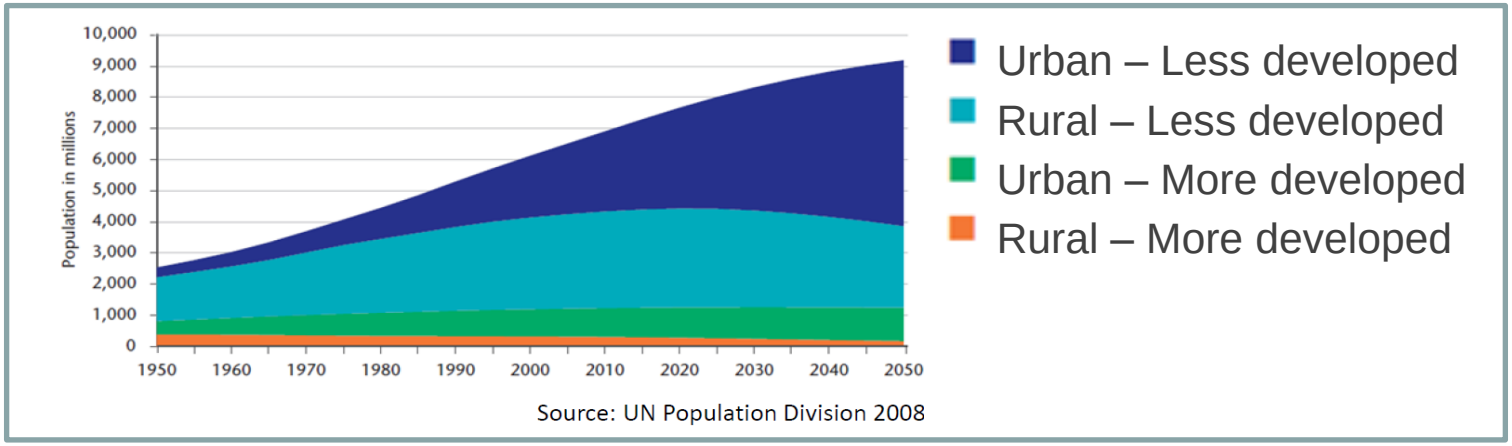
Global challenge

- World population increases from 7 billion to 9 billion **in 2050**



Without new policy: **rapid increase in pressure on resources**

- **Water**: demand is projected to increase by 55% globally
- **Energy**: energy demand by 80%, while GHG emissions are to be reduced
- **Food**: agricultural production needs to rise by 70%

➢ **Business as usual is NOT an option**

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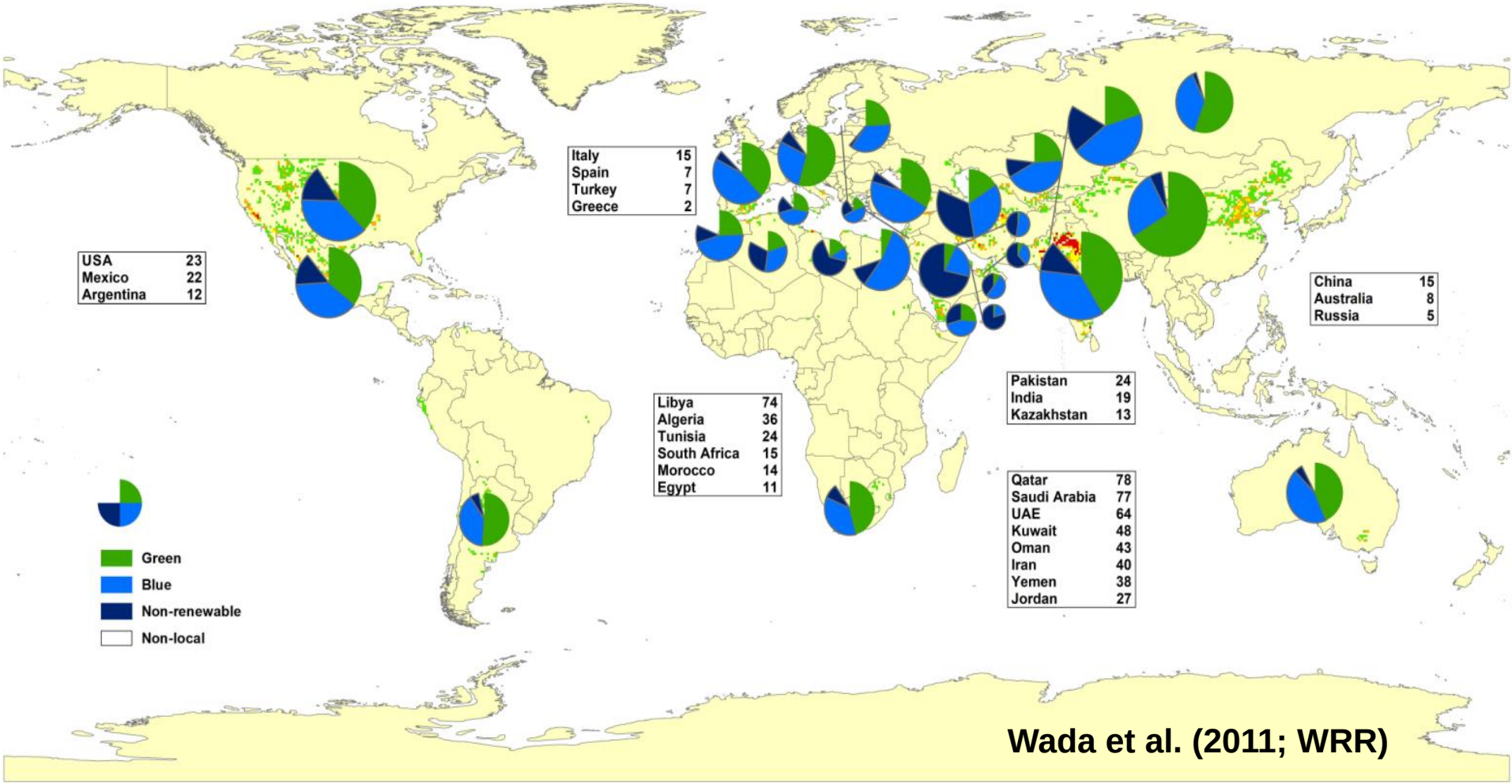
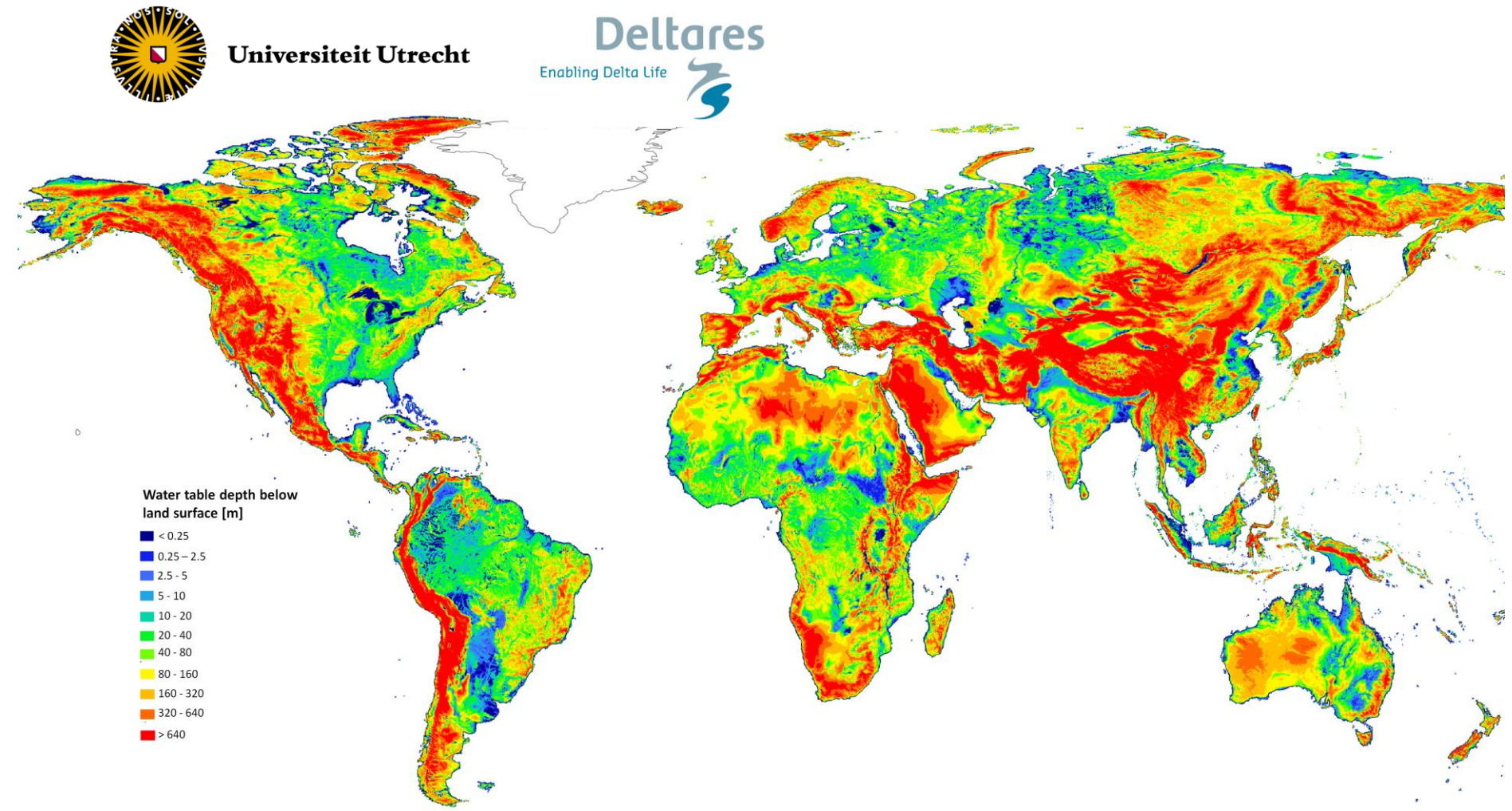
Example: Food security in relation to water resources



> 20% of the global irrigation comes from non-renewable groundwater resources

Example: Global modeling of Groundwater Table Depths



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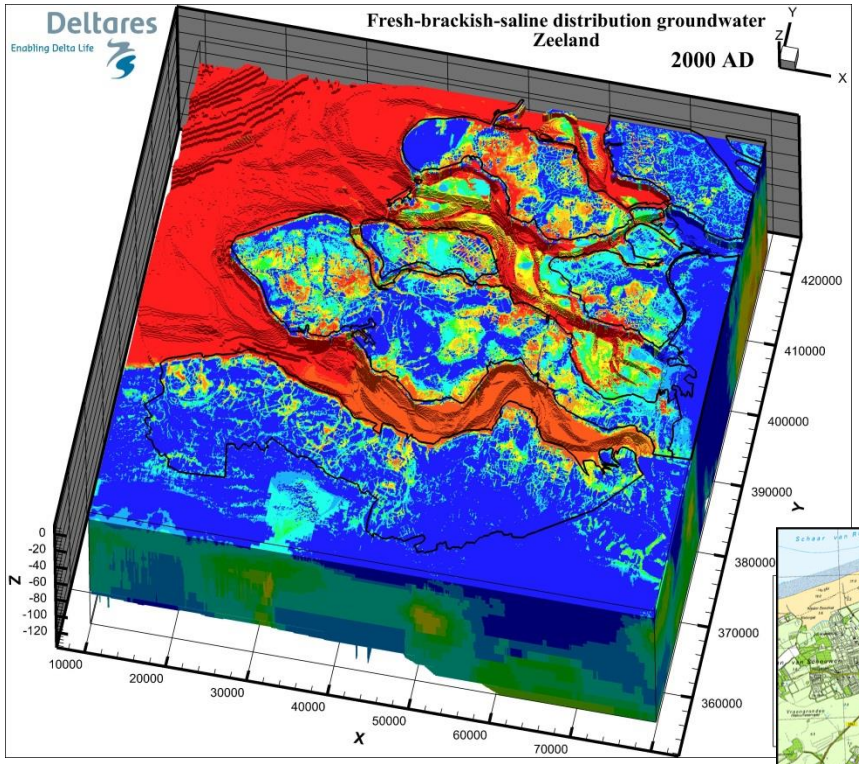
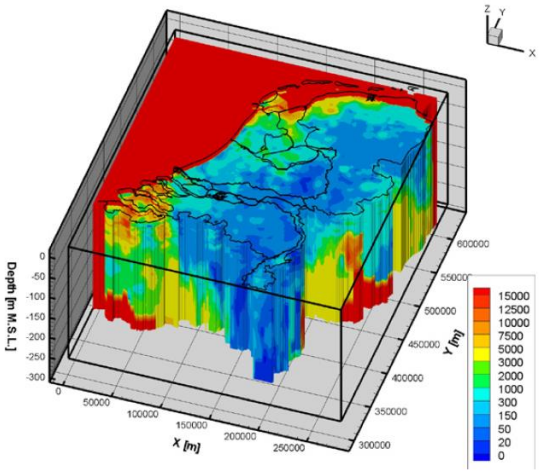
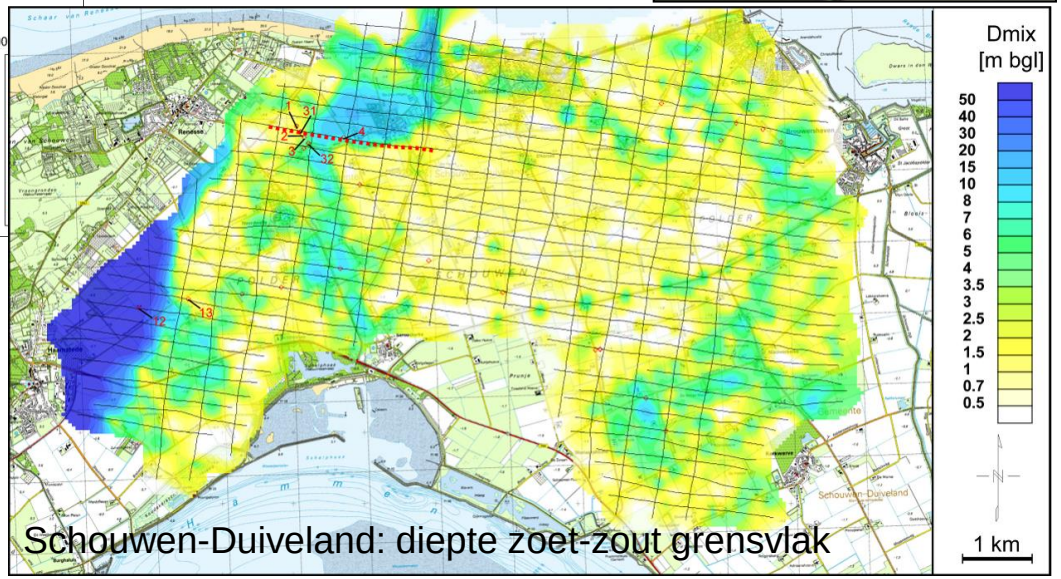
Remote sensing: mapping depth of salt groundwater

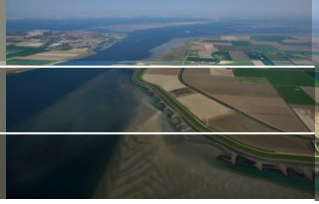






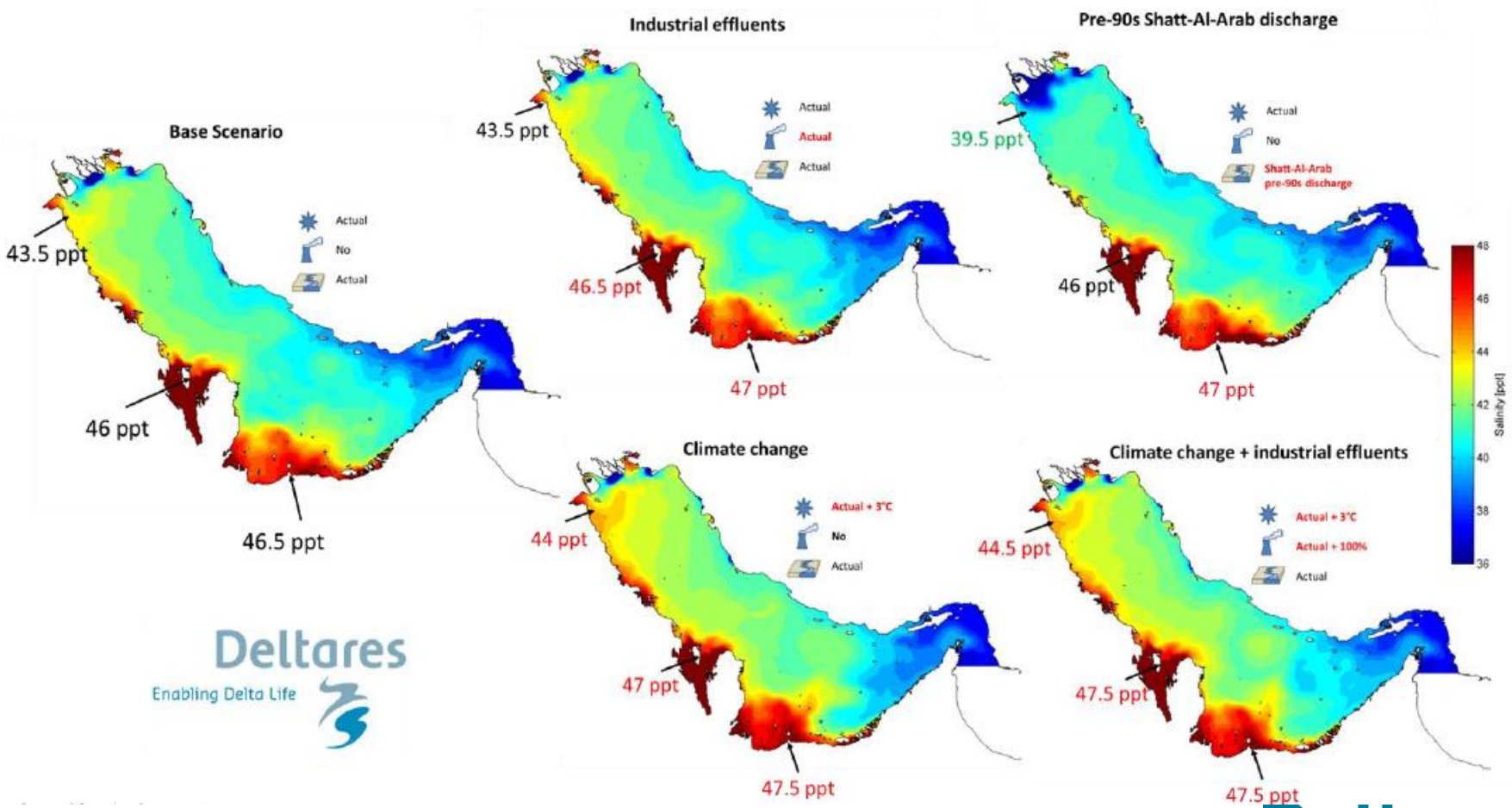
Schouwen-Duiveland: diepte zoet-zout grensvlak

Desalination impacts…



Answering questions about effects of Climate Change and Desalination on the Arabian Gulf with Delft3D Numerical Modelling

Indicative salinity distributions



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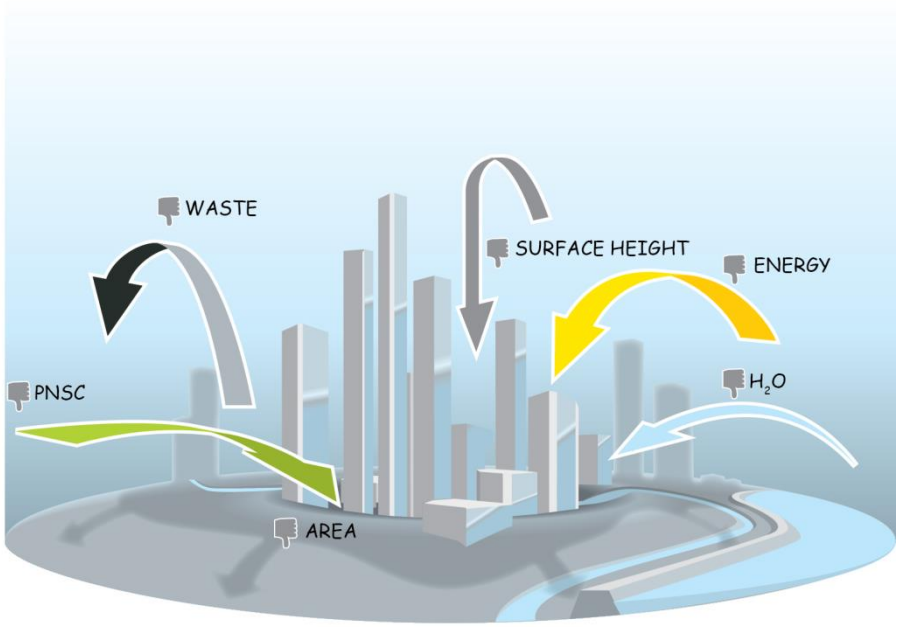
Changing the metabolism of cities

Minimization of input of energy, water, area, food
Minimization of output of heat, air pollution, CO2, methane, water pollution, subsidence



Traditional situation

Sustainable situation

THANK YOU!

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