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Water management in a more saline future: Are there solutions in our water system?

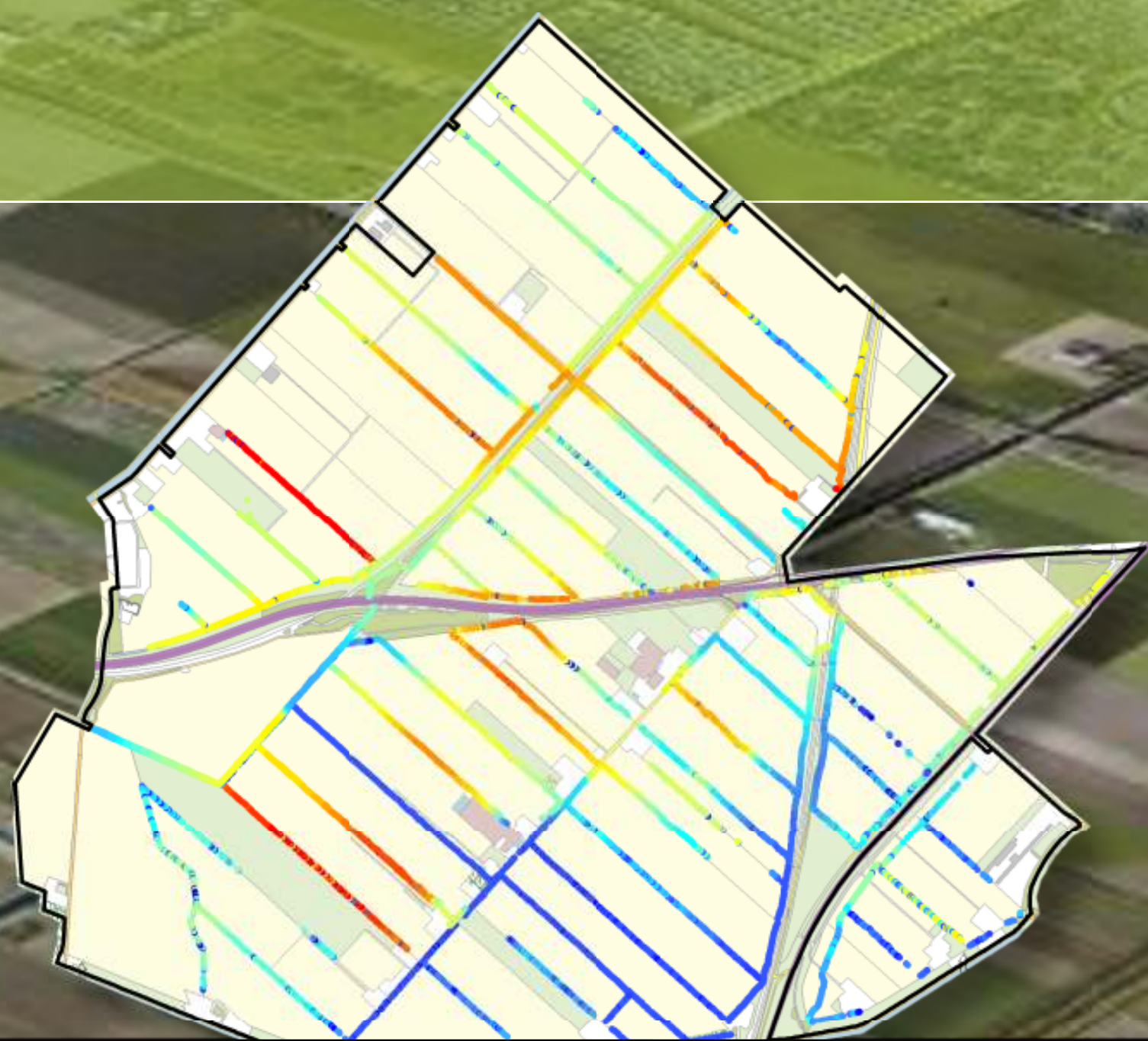


Fig 1: Detailed "EC-routing" evidences clear spatial patterns in salinity of surface water (blue < 0.5 mS/cm, red > 8 mS/cm). Intake water is limited to the main water courses and is gradually mixed with brackish seepage.

Schermer

- isolated 40m ditch and adjacent field
- direct measurement of fluxes (drains, seepage, intake), soil- and groundwater, meteorology¹
- continuous measurement EC

local / field scale

Research questions: from societal to scientific

- What adaptation strategies are best fit to cope with a drier and more saline future?
- What is the future fresh water demand?
- Gw-sw interaction during dry summers?
- Spatio-temporal variation in salt load?
- How to describe system quantitatively incl. uncertainty?
- How will climate change affect the system?

(sub-)catchment scale

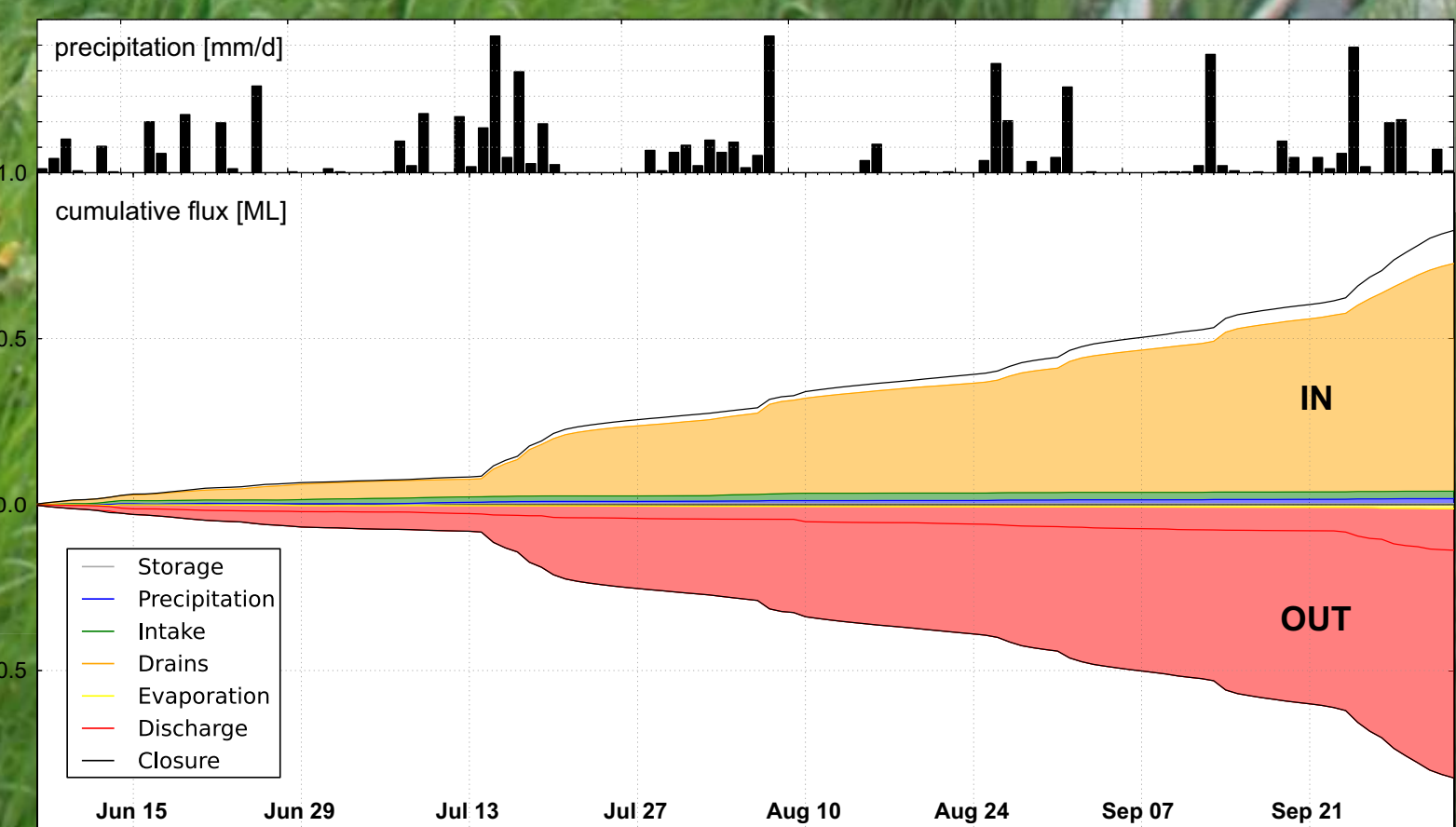


Fig 6: Cumulative water balance of research ditch

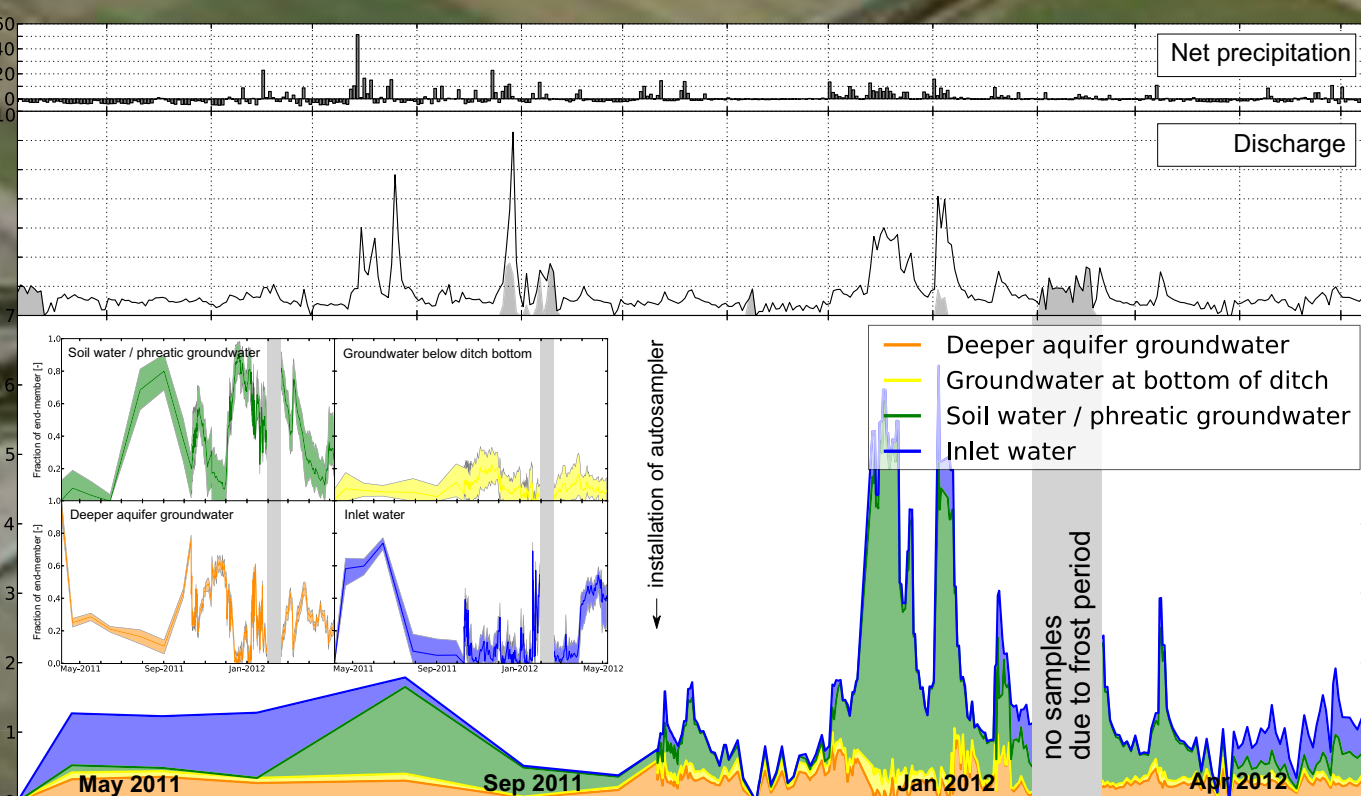


Fig 2: Hydrograph separation based on tracers: pref. seepage dominates dry periods, soil water dominates discharge events. Inset shows associated uncertainty



Fig 3: Low-tech measurement of intake flux: amounted to over twice the established value

Haarlemmermeer

- 10 km² subcatchment
- investigating water origin by env. tracers
- uncertainty in end-member mixing models
- continuous EC measurements
- "EC-routing" along all ditches (> 70km)

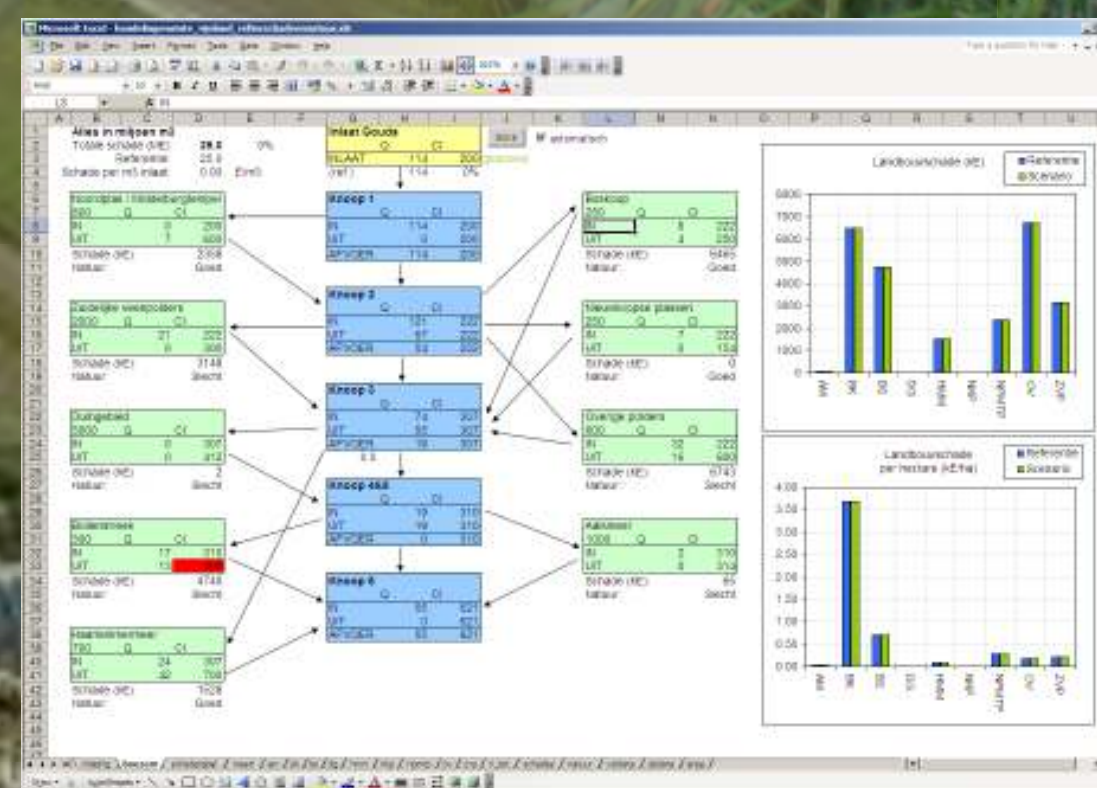


Fig 4: **Eureyeopener**. Excel instrument to optimize fresh water availability on catchment scale

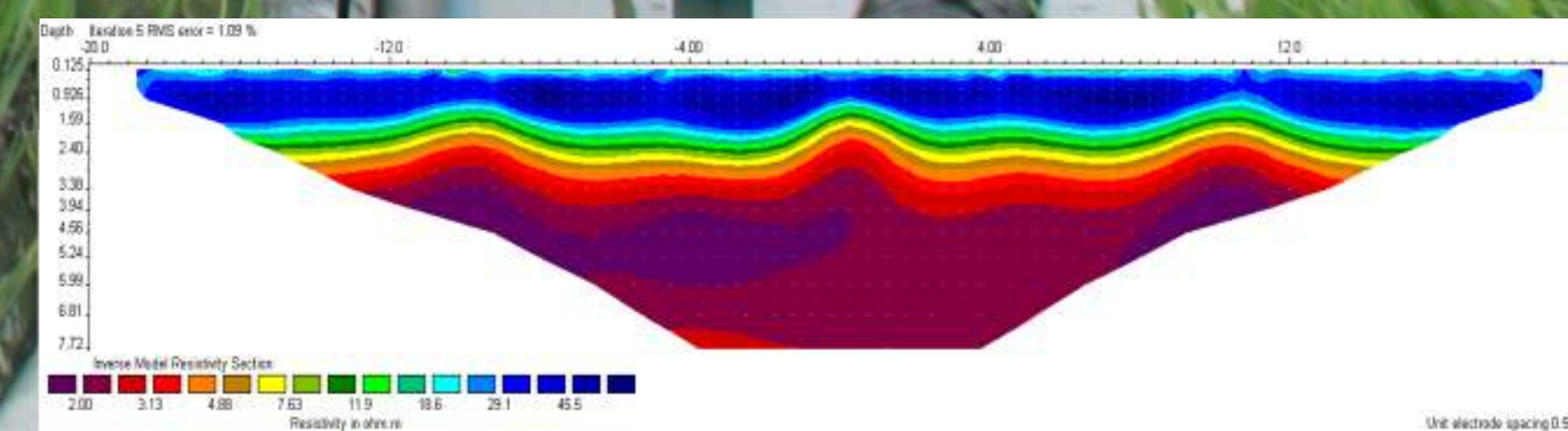


Fig 5: CVES result shows shallow occurrence of brackish groundwater, and upconing near tile drains

Background photo: Floating evaporation pan in research ditch: are open water evaporation formulae applicable to ditches?

¹ The Schermer field site was instrumented together with the Acacia Water / VU / Allera / Deltares project 'Alternatieve vormen van duurzaam bodembeheer en waterbeheer door en voor agrariers', financed by SKB, prov. Noord-Holland, Hollands Noorderkwartier and LTO-N.