

General Comments

I find this a very interesting paper to read. It shows that with intensive monitoring, a good evaluation of water budget of a complex area such as a polder can be made. So the paper is interesting both from a methodological point of view as for the results as such. Besides its relevance in Dutch polders, the paper has its value in other similar areas, for instance Belgian polder areas.

The work clearly indicates the importance of boils for the surface water salinisation. This is a mechanism which was not considered being so important until recently. Consequently, the paper provides very useful quantitative data on this salinisation process.

The model for calculating the fluxes and used assumptions are well described. I also appreciated the section on parameter uncertainty and sensitivity. This is an added value to the discussion and to the results from the modelling.

Specific Comments

P154 – 11-6: Authors speak of spatial variability of fluxes and composition. Seasonal variation at a location is less important (perhaps because of the managed water levels and drainage)?

P158: water infiltrated in the Boezem to the groundwater and which is drained in the polder (not the Q_a component) is considered in the Q_{grw} component? Why is Q_b considered as a separated component, it is also some kind of seepage from the groundwater? To stress its importance?

P155 – 122 – fig2: the fig gives the location of boils in the polder. On p157, it is given that the total number of boils is unknown. How do we have to understand this? Boils are map in the some areas of the polder and other not (for instance southern part of the polder, fig 2).

P156: Water is pumped from the polder in the Boezem which is on a higher level. This means that part of the water in the Boezem reinfilters? So why is then the Boezem at a higher level? This is needed to evacuated the water to sea during low tide?

P156: Did I understood well that during dry periods (when it is said that water is admitted in the polder), groundwater levels are too low (although it is a low-lying polder)?

P156 – 126 – fig 2: Is there a particular reason that there are no observation wells between ditches?

P159 – 124: is d_n not the distance between the level of H_{AQ} and $h_{grw,i}$ instead of the thickness?

P161 – eq 8: There is a winter and summer term of the Boezem water admission. Doesn't that have to be one term which changes according to it?

P167 – 113-26: Concentration is related to depth, as is also shown on figure 1. Is this figure one a conceptual drawing or are the isolines drawn on more or less the right (mean) depth? So these boils “extract” water from relatively deep, 20 to 30 m?

Technical Corrections

P160 – 11: it would be clearer if q_{ditch} and q_{dr} are defined (in words) directly after equation 2 where they are first mentioned.