

The paper “Catchment conceptualisation for examining applicability of chloride mass balance method in an area of historical forest clearance” by Guan et al. addresses a very interesting and potentially very useful method to infer chloride equilibrium or non-equilibrium in catchments with land use change history, based on the CMB and relatively simple hydrological conceptualizations. Similar work has to my knowledge not been published before and in spite of the relatively simplistic hydrological conceptualizations the method suggested has quite some potential to help understanding recharge processes.

In general the paper is well structured, methods well explained and the logical reasoning seems to be largely consistent and sound. Although the paper is quite well written, I would nevertheless encourage the authors to have it proofread by a native English speaker.

I would recommend the paper to be accepted for publication with minor revisions. In the following a detailed list of some minor comments and suggestions:

P7027, L19: Please indicate at what time scale recharge rate and chloride input rates can be dealt with as constant.

P7028, L6: The first method considered by who? Please also mention other methods.

P7028, L12: Please add a reference for high spatial variability in coastal regions

P7030, L.4: Maybe consider calling it “Storage change ΔS ” or similar instead of “net recharge R_n ”, in order to avoid confusion.

P7030, L.7: Please clarify why an overestimation could occur. Are there other processes involved besides transpiration?

P7031, L1: Please justify the assumption that chloride concentrations are the same in base flow and recharge. Isn't this again a matter of the averaging time scale we are looking at? If so please indicate it.

P7031, L.9: Where and how is C_t for subsurface water transfer determined?

P7031, L.11: Why does water O/I of type III and IV catchments have to be significantly larger than that of type I or II? Can water transfer not also include net water loss from a catchment?

P7031, L.20: If water flux and C_t are known, shouldn't it be possible to define them, beside precipitation, as second input and therefore allowing the use of CMB?

P7032, L.5: What about combinations of the six presented conceptual models? Wouldn't for example a catchment with losing stream, water transfer and leaching (or any other combination) be thinkable?

P7034,L.19: Was only one EC-Cl⁻ relationship used for the analysis or a different for each catchment? If only one was used please justify, as one would assume different underlying soil and rock chemistries.

P7035,L.15: “Although...” please rephrase sentence.

P7035,L.20: What are the other regression variables?

P7039,L.10: Please justify the range of 25-125 mg/l. Although the authors assumption that recent recharge water should show lower concentrations seems sound, the chosen range still seems somewhat arbitrary.

Table 1 and 3: Precipitation should always be reported as a rate. I suppose in this case the authors are referring to as mm/yr – please change units and indicate over which time scale this is the average (e.g. observation period or long term average). Same is true for streamflow and Cl load and deposition

Figure 2: To ensure easier readability of the figure maybe consider removing the 1km DEM from the large figure as it does not any essential additional information.