

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1
<https://doi.org/10.5194/hess-2020-501-RC1>, 2021
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Comment on hess-2020-501

Anonymous Referee #1

Referee comment on "Aquifer recharge in the Piedmont Alpine zone: Historical trends and future scenarios" by Elisa Brussolo et al., Hydrol. Earth Syst. Sci. Discuss.,
<https://doi.org/10.5194/hess-2020-501-RC1>, 2021

Aquifer recharge in the Piedmont Alpine zone: Historical trends and future scenarios

General comments

The manuscript send by Brussolo et al. provides a study and information of water potential for drinking water supply in the catchment area that belongs nearly 2.3 million inhabitants. The past, present and future state of the water potential is studied. Brussolo et al. provides a methodology that accounts for precipitation, temperature, snow melt and actual evapotranspiration. Climate change scenarios are predicted by RCM (RCA4). I think this study serves the local policy very well and will benefits the local measurements of future usage of water consumption as they also mention in conclusions "This study constitutes a knowledge basis which helps for a better informed management, infrastructural and supply decisions for the study area considered..." Brussolo et al concluded that "...our methodology could be extended also to other regions". The methodology presented here is not very novel and I encourage the authors to look much more detail in the scientific literature about the models that have been used in the prediction of water potential in local, regional and even continental scale. Authors do not provide any background about previous studies of methods that have been used in the past 20 years. For example page 2, 30, they list impacts of CC impacts on hydrological cycle but do not provide any references of previous studies.

The main objective is to estimate future change and variability of precipitation, AET and drainage (recharge) locally. This kind of assessment is more or less day-to-day job nowadays which means that novelty with respect to scientific research should be emphasis more clearly in this study. If they like to present a novel method or approach, and use this region as an example, they need to clearly state how this method/approach improves the previous ones that have been used. If the goal is to assess water potential of this region, then they need to come up with the outcome that is not noted in previous studies (in similar environment) and clearly emphasis this outcome. Unfortunately I did not recognize this. I encourage authors to get back on board, and revise the paper in the sense that it could focus more on the methodology and clearly state the novelty of it, or if the focus is more on the region itself, the novelty of simulations results need clearly state and what are new findings that could attract readers, not only from this region but also elsewhere. The results need (in both cases) to discuss in depth and compare with previous findings.