Hydrology and Earth System Sciences Discussions

Hydrol. Earth Syst. Sci. Discuss., referee comment RC2
https://doi.org/10.5194/hess-2021-615-RC2, 2022

Comment on hess-2021-615

Anonymous Referee #2

Referee comment on "How do inorganic nitrogen processing pathways change quantitatively at daily, seasonal, and multiannual scales in a large agricultural stream?" by Jingshui Huang et al., Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2021-615-RC2, 2022

The study aims to combine high-frequency water quality measurements with a hydrochemical model to improve understanding of dissolved inorganic nitrogen dynamics in a large stream.

The presented results showing how DIN changes from daily to interannual scales together with underlying pathways are convincing and well presented.

What is not clear, however, is the benefit of using combined high-frequency data and a hydrochemical model. It seems to me that HF data are purely used to validate model estimates of GPP. If there is an information gain resulting from using this combined approach, it is not clear in the paper. Perhaps contrasting model validation with high- vs low-frequency data would visualize this gain?

If the model can be equally well validated using low-frequency data, what is the benefit of using high-frequency data? This point needs to be clarified by the authors.

Minor things:

Line 10, either stream or river

Do not use abbreviations in the abstract

'We assume that discharge at station HAD is also valid for station GGL because no lateral flow contributes to

the reach between the two stations' – how can you be sure? It is a long stretch of 2.7 km.

Discussion title Seasonal role shift and multi-annual performance – is not clear

Line 301 N has a round-trip ticket to - ?