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# Review of "Global water resources knowledge gaps" by Wu et al.

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Referee comment on "Structural gaps of water resources knowledge in global river basins" by Shuanglei Wu et al., Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2021-137-RC1, 2021

The authors have analysed papers categorised in the WoS under Water Resources and limited the analysis to articles that deal with river basins or catchments in a broad sense. They then looked for connections between disciplinary fields of WRM and analysed the connections between these fields and how they developed over time. They then classified the patterns of interconnection, or lack thereof into knowledge structures with the following names: Isolated, Innovative-inclined, Legacy-inclined and Centralised. To me, these classifications have hardly any explanatory power. I have gone through the description several times, but I fail to see what these terms actually mean or imply in relation to WRM. I can't see whether they have a positive or negative connotation. To me, Isolated and Centralised sounds rather negative; Innovative-inclined sounds positive; and Legacy-inclined may be both positive or negative, depending on one's perspective. That in recent years more basin studies are legacy-inclined may be evidenced by the data, but I have difficulty to see what it means.

I do understand that this is a data-mining exercise, and that the authors did not necessarily familiarize themselves with the field of Water Resources Management and its development over time. I recommend looking at the paper on "Evolving water science in the anthropocene" (https://hess.copernicus.org/articles/18/319/2014/) and the huge body of papers that have recently been published under the IAHS research initiative "Panta Rhei", e.g. "Global perspectives on hydrology, society and change", Hydrological Sciences Journal, 61:7, 1174-1191, (DOI:10.1080/02626667.2016.1159308).

By taking river basins as the entree point, I fear the authors have missed a huge body of conceptual and global research. Not all WR research is done at river basin level. Much happens at the global scale, national scale, policy scale or conceptually.

By choosing to analyse traditional disciplinary fields, such as: Agricultural irrigation; Erosion and sedimentation; Water pollution and treatment; Surface water and groundwater management; Ecological degradation; Droughts and floods; Climate variability and change; the results obtained are hardly pointing towards stronger societal linkages. I miss emerging new fields, such as: demand management; decentralisation; participation; international water law; .... and new technologies such as Remote Sensing, New observation technology, Global modelling, Artificial intelligence, .... If you look for

traditional terms, you are bound to find traditional results.

Section 4. Discussion and Conclusion, is hardly a discussion. It is rather a set of three recommendations where certain lines of research are "encouraged": 1) investigation of "new" river basin phenomena; 2) spatial diversity of Water Resources research; and 3) strengthening collaborations with social sciences. These are rather obvious and general recommendations and hardly a discussion. The conclusion that "the stationarity of the water resources knowledge system persist" is not supported by the large body of work that is recently being produced as a result of and as part of the "Panta Rhei" initiative. This large body of work is hard to detect if one constrains oneself to the 95 most studied river basins in the world and the connections to traditional fields.