

Review of: "Effect of an improved agricultural irrigation scheme with a hydraulic structure for crop cultivation in arid northern Afghanistan using the Soil and Water Assessment Tool (SWAT)"

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This article introduces a study on the water allocation issue in an Afghan basin, the Balkhab River basin (BRB), under the background of water shortage. This article evaluated the current water allocation scheme implemented in the BRB and found that the current scheme is unreliable and cannot meet the water demand for crop growth during certain months, such as March, April, July, and August. The authors proposed to build a dam reservoir in the midstream area of the BRB to store excess water during winter and flood seasons. Personally, I think this article is very interesting. It tells the story of an inland river basin fighting drought, which has a wide range of readers around the world. However, I cannot say that the article is well-written and organized, and there are still some unclear expression, grammatical problems. For example, in the abstract, the authors directly describes the research results of the BRB, but lacks a basic and brief introduction of the BRB. Readers may not be able to understand these results only from the abstract. A few questions and suggestions are listed below.

1. This article focuses on the water allocation issue in the downstream area of the BRB, but the authors do not show the spatial coverage of the downstream area in Fig. 1b, which may cause some confusions. In addition, the green dots in Fig. 1b is marked as downstream irrigation canals, which makes me confused, shouldn't the irrigation canals be lines? Also in Fig. 1b, there are 11 irrigation canals, but the authors stated that there are "101 traditional and engineered irrigation canals" in the main text. Why are they different?
2. Some details may be better moved to the supporting information, such as Table 1 and Fig. 2.
3. Fig. 6 shows the impact of building a reservoir in subbasin 10 on the streamflow at subbasin 7. I have several questions: (1) is the streamflow after irrigation canal diversion or before diversion? (2) what does the 20% loss mean? is it the irrigation canal loss? and how does it affect the SWAT simulation? (3) what is the maximum storage of the reservoir, and how is it determined? Because the storage capacity of the reservoir determines its influence on the streamflow. I suggest that the results in Fig. 6 be summarized into a table (similar to Table 6) and the comparison will be more clear and intuitive.
4. In the Section "Effects of the dam reservoir", the authors mentioned "a dam control structure" used to store water during the winter and flood periods, but didn't give any details about the structure. Fig. 7 in this section is also confusing. What do "actual" and "plan" mean? If "actual" or "plan" represents a scenario with the dam structure, how are the water allocation values calculated?

