

General comments:

This is a very interesting paper reconstructing the natural outflow of the San Francisco Bay-Delta system, showing that the water was simply transferring from natural vegetation usage to artificial uses like agriculture, industry, domestic and others, that the total outcomes did not change much due to humans. It means that the redistribution of water in California's Central Valley is not a major cause for the declined native aquatic species. According to this paper, the socio-economic development in this area has just replaced the natural vegetation by beneficial uses and did not significantly affect the outflow of this system. The former analysis based on "unimpaired" flow as the "natural" flow is not convincing for that the impact of alternations such like channels and levees are not yet excluded, which leads to overestimated "natural" flow. These findings can be very important for reconsidering the water resources planning, especially when dealing with the ecosystem protection issues.

Of course this paper applies a very simple conventional water balance method and use scenario-based analysis to demonstrate above points, but with consideration of the data availability and the simple idea it follows, this method is basically convincible. The problems in this work, as the authors themselves have realized, is also the reliability of the data as well as the simplification of the system. Bad processing of these may result in less convincing conclusions. For example in this study, one points I believe can be further elaborated or clarified.

It is about the assumption of the natural vegetation covers based on multiple sources. There is vagueness in the context about to what degree this underestimation of the natural vegetation uses can impact the calculation of the "natural" Delta outflow. In Sect. 3, there are some explanation about the data sources that may underestimated some vegetation types. The "CSU Chico" study is the key about the fundamental information of the natural vegetation configuration. An original figure of vegetation covers from this study and comparing it with Fig. 4 can be helpful. And also, because that the CSU Chico study might be a main source of the underestimation of some types of vegetation covers, I think it is important to know is there any information in those sources and maps that can help to ensure the errors to be indifferent. It is noticed that in page 3866, the last paragraph of Sect. 4, the authors briefly discussed about the assumptions. I believe this part can be improved if the authors can give a more detailed analysis. Otherwise, the "unchanged Delta outflow", which is the point in this paper, may be owing to the assumptions in the methods or the data sources used rather the facts, even that we now know the former analysis indeed overestimated the natural outflow.

Generally, I believe this paper is worth publishing in HESS if the key vagueness of the natural vegetation issue can be clearly clarified in a convincing way and it can be an important contribute to scholars who used to take the idea that the reduced freshwater due to humans uses is a main cause of the ecosystem declines as the common sense.

Specific comments:

1. Abstract – p.3849 Line 7: Confused statement. This paper is arguing that the annual average Delta outflow is not decreasing due to development. Thus the reduction in annual average Delta outflow does not exist and should be excluded from the causes of the ecosystem declines, according to this study.

2. Sect. 3.2 – p. 3854 Line 23-27: Dubious. Is that true that the long-term groundwater storage did not changed significantly? The massive replacement of natural vegetation cover by artificial landscapes usually changed the surface infiltration and thus may resulted in declining groundwater level. This simplification may lead to ignorance of the most important factors that may contribute to the reduction of the Delta outflow. Please give some measures or data about the historical groundwater table variation to clarify that this point.
3. Sect. 3.4.3 – p.3862 Line 12: Why case 4 is necessary? Why there isn't a case that it is rainfed grassland in Sacramento and Delta Basins and mix of perennial grassland and vernal pools in San Joaquin Basin?
4. Sect. 3.4.3 – p. 3863 Line 15-24: Is the grasslands in Case 7 and 8 are constant or variable? Are they used to compare with Case 1 and 4? This should be clearly stated and may be important. If this is it, why not add more cases to compare with case 5 and 6 to explore impact of the foothill hardwoods and wetland at individual years level? Aren't the case 5 and 6 are more closely represent the natural conditions?
5. Sect. 3.4.3 – p. 3864 Line 1-4: Same question as 3. Why specifically wetlands in San Joaquin Basin are assumed as rainfed grasslands as case 8. Why no case 9 that Sacramento and Delta basins with rainfed grasslands? I am not very familiar with the study areas, what's the difference between these two regions that makes the authors focused just on changing settings in San Joaquin Basin?
6. Sect. 4 – p. 3864 Line 23: I did not find the numbers of 29.6 and 30.8 in Tab. 5. It seems according to Tab. 5, the total water use are respectively 30.4 and 29.7 billion m^3yr^{-1} for case 5 and 6. And excluded the aquatic surface, the natural water use in this two cases should be 30.1 and 29.4 billion m^3yr^{-1} . Is this a mistake? BTW, I notice that the sum of water use by grassland-vernal pool and wetlands is 74%(40%+34%) of the supply, that these natural vegetation types are classified as independent types in Tab. 3. I wonder why it is larger than the total water use, which is 60% of the supply.
7. Sect. 6 – p. 3869 Line 13-14: Same as 1. If the annual average freshwater outflow reduced, it still may be cause of the ecosystem declines.