

Comments on manuscript entitled “Spatial distribution of oxygen-18 and deuterium in stream waters across the Japanese archipelago” by Katsuyama et al.

In this manuscript the authors use a dense network of surface water isotope data across Japan, combined with precipitation isotope data, to show spatial pattern of surface water isotopes and their controls, the validity of surface water sample as a proxy for precipitation isotopes in aiding in the improvement and refinement of isotope hydrology and research of other fields in this region.

The manuscript is well organized and written, and the interpretations seem to be reasonable given the available data. Therefore I would like to suggest the editor to accept the paper after clarifying some minor issues below:

1. Given the important influence of the geographical parameters (e.g., ELV) on the surface water isotope distribution, it would be better to show a topographic map that helps reader to understand your analysis. To this end, you may add DEM information in your Figure 3.
2. For your interpolated isotope maps, they are not highly visualized based on contour maps, I would recommend instead some color-shaded maps.
3. In section 3.3, the authors should briefly explain the reason why the d -values of precipitation have such a seasonal pattern. If moisture sources are a dominant control on the seasonal variation in d values of precipitation and stream water, so the spatial difference in d values may be a reflective of the seasonal balance of precipitation input. As the authors pointed out, late snowmelt may affect the difference in d values between river water and precipitation on the on the Sea of Japan side. But this may be not the whole truth. The groundwater and surface flow recharged from winter precipitation may also contribute to this difference?
4. The difference in d -value between precipitation and streamwater may also reflect the balance of precipitation and evaporation. The streamwater isotopes on the on the Sea of Japan side have smaller slopes and intercepts (for example, in the regions of F and G shown in Table 2). The evaporation may also have a strong influence on these differences. The authors should check this factor.

Some minor comments:

Page 10904:

5. Line 3: ‘...a data set by compiling...’
6. Line 23: ‘...research questions in a wide range of fields at large scales’

Page 10905:

7. Line 9: ‘which integrating’ should be ‘which integrates’
8. Line 10: ‘and using’ should be ‘and uses’
9. Line 12: ‘rainfall isoscape’ should be ‘precipitation isoscape’
10. Line 14: remove ‘However’
11. Line 16: ‘they do not discuss’

12. Line 20: 'These changes' mean what? 'The hydrological changes are...'?
13. Line 26: 'of river water'
Page 10906:
14. Line 1: In my opinion, you can say '...spatially dense stream water isotope network...' rather than '...spatially dense stream water isoscape...'
15. Line 4: 'd18O and d2H isoscapes of...'
Page 10907:
16. Line 1: 'were analyzed for both 18O and 2H'
17. Line 9: 'precipitation inputs'
18. Lines 19-22: Only 18O was measured here? If so, you should state it.
Page 10908:
19. In section 2.3, why are only MAP and MAT data of 2000 year selected?
Page 10909:
20. Line 15: 'the linear regressions are applied...'
Page 10910:
21. Line 3: 'are reflected in the isotopic compositions...'
22. Line 19: I am somewhat confused with the logical relationship of the sentence 'The smallest values....'.
23. Line 20: Maybe you should have a reference for d excess here.
Page 10911:
24. Lines 24-25: This sentence is difficult to follow and does not flow well.
Page 10912:
25. Line 3: 'effects on precipitation isotope'
Page 10914:
26. Line 9: Fig 6 rather than Fig 7.