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Open Access Earth System Science Data Discussions

Interactive comment on "31 years of hourly spatially distributed air temperature, humidity, and precipitation amount and phase from Reynolds Critical Zone Observatory" *by* Patrick R. Kormos et al.

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Response to comments from Referee 3: 31 years of hourly spatially distributed air temperature, humidity, and precipitation amount and phase from Reynolds Critical Zone Observatory - ESSDD

Line number references are to the original manuscript unless otherwise noted.

General Comments

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Discussion paper

This manuscript clearly describes the 31-year dataset of spatially distributed air temperature, relative humidity, precipitation amount and phase, as well as dew point temperature for a mountain west watershed in USA. This watershed is designated as a Critical Zone Observatory and is located in the rain-snow transition zone that has experienced shifting due to climatic change. The presented dataset is extremely important to climate change, hydrology, and ecology related research and can make contribution to understanding climatic change response in the rain-snow transition zone. In addition, the dataset stored in the server mentioned in the manuscript meets the standard of uniqueness, usefulness, and completeness and can be readily accessed and extracted in the methods described in the manuscript. In short, the manuscript is well structured, concise, and well written, and should be acceptable for publication with minor revisions. I have a number of specific comments and technical corrections below that authors are advised to consider to enhance the manuscript.

We thank the referee for a thorough review and comments that will improve the impact of this paper.

Specific comments

1. Fig. 1: the figure shows the locations of stations and elevation range, which is very clear. I would suggest authors perhaps include an inset map showing the location of RCEW in USA for general readers who are not familiar with the watershed.

We have included a location map of the CONUS as suggested as follows.

2. Fig. 2: consider a different location to place the legend, perhaps above the figure. The current legend does cover part of figure between stations: rc.usc-121, rc-128 and rc.tg-167b, even though they do not have data coverage in that period, which might not be clear to readers.

We have modified figure 2 as suggested.

3. Sect. 3: in the section, instrumentation is briefly described; I know that instrumenta-

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tion has been changes for such a long period, is it a possible to include a table showing the instrumentation for the presented variables: air temperature/relative humidity, precipitation? The instrumentation table could include a summary for instrument or method used for measurement, instrument height.

Unfortunately, there are is a general lack of records kept describing what instrument was installed where and when. These instruments were replaced continuously as funding allowed, and as instrument advancements were proven reliable. All of these instruments are approximately 3 m. We have included the following sentence on page 5 line 2:

"Measurements of these variables have been made at approximately 3m."

4. Page 4, Line 3: If I understand this correctly, you describe catchment elevation controls precipitation, vegetation community and land use gradients, and you end the sentence with reference to Figs. 1, 5a that show only elevation gradient. I note you show precipitation gradient in Fig. 5b and 6b as examples. Is there a map showing vegetation community and land use gradients? If you do not want to include the map of vegetation community and land use, perhaps place (Figs. 1, 5a) differently; suggested change: "Catchment elevation ranges from 1100 to 2244 masl with a mean of 1529 masl and (Figs. 1, 5a),. . .". We have made this change as suggested and note that vegetation data are available and described on page 4 line 14.

Technical Corrections: 1. Page 1, Line 14: Please fully spell the month "1 Oct. 1983 to 30 Sept. 2014" as "1 October 1983 to 30 September 2014". Done.

2. Page 1, Line 15: Please fully spell the month "1 Oct. to 30 Sept." as "1 October to 30 September". Done.

3. Page 1, Line 16: Please change "rain snow" to "rain-snow"; this keeps the consistence with rest text. Done.

4. Page 1, Line 18: Team reference follows chronological order and not alphabetical,

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please place Nayak et al before Klos et al. Done.

5. Page 1, Line 18: Please change “rain snow” to “rain-snow”; this keeps the consistence with rest text. Done.

6. Page 1, Line 19: Feiccabrino et al., 2012 is missing from the References section, please add it. We have removed this reference from the text as suggested by Referee 1.

7. Page 1, Line 20: Cayan et al., 2001 is missing from the References section, please add it. We have removed this reference from the text as suggested by Referee 1.

8. Page 1, Line 21: Please add a word “zone” after “rain-snow transition”. This is to be consistent with rest text. Done.

9. Page 1, Line 21: Please consider rewrite “mid-elevations ranging from 1500 – 1800 m” as “middle-elevations ranging from 1500 to 1800 m”. Done.

10. Page 2, Fig. 1: some of suggested changes as follows: a. Missing label for rc.usc-138044, not labeled in the Fig. 1, but it is listed in Fig. 2, perhaps it is the blue do northeast to rc.usc-l21. We have inserted a label for this station.

b. rc.ng-098c is presented in Fig.1 but it is presented as rc.ng-098 Fig. 2; which one is it? It’s rc.ng-098. Names are consistent between figures 1 and 2.

c. According to Fig. 2, rc.usc-d03 has only air temperature, but Fig. 1 shows it has relative humidity as well. Does it have relative humidity? Yes. The figure is now corrected.

d. Consider label placement for rc.usc-j10, perhaps move it southwest to the precipitation, air temperature, relative humidity dots. Done.

e. Missing label for rc.tg-167b, perhaps it is one west to rc.tg-167. Done.

f. Consider label placement for rc.tg.rme-rmsp, perhaps move it southwest to the pre-

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cipitation, air temperature, relative humidity dots. Done.

g. The caption for Fig.1: You present dots showing the location of many stations in the figure. ". . .the location of instruments used to measure. . .". Should it be ". . .the location of stations used to measure. . ."? You present dots showing the location of many stations in the figure. Done.

11. Page 3, Line 9: Mote, 2003 is missing from the References section, please add it. Done.

12. Page 3, Line 11: Please change "data set" to "dataset"; I know both are interchangeable, but choose one to use for the consistence with rest text. Done.

13. Page 3, Line 13: Enslin et al. in prep is missing from the References section, is it possible to add it? We have replaced this with the appropriate reference.

14. Page 4, Line 2: in abstract, RCEW is said to be 237 km2, which one is it? Thanks for catching it. The actual lidar derived area is 238.22 km2. We have changed both of the previous numbers to 238.

15. Page 4, Line 3: Please change masl to m.a.s.l. (meters above sea level) in the first instance, then change masl to m.a.s.l. in the second instance. Done.

16. Page 4, Line 5: Missing period after (Figs. 1, 5a). Change "Figs. 1, 5a" to "Fig. 1 and 5a". This is according to journal's house standards. Done.

17. Page 4, Line 7: Delete extra period after (June July August). Done.

18. Page 4, Line 7: Typo: change ". . .upper elevations or RCEW. . ." to ". . .upper elevations of RCEW. . .". Done.

19. Page 4, Lines 7-8: Please change "snow dominated" to 'snow-dominated" and "rain dominated" to "rain-dominated". This is to be consistent with rest text. Done.

20. Page 4, Line 11: Typo: change "Vegetation cover in the lower elevations of RCEW

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are. . .” to “Vegetation cover in the lower elevations of RCEW is. . .”. Done.

21. Page 4, Line 12: “More northerly aspects are commonly more productive and have denser vegetation.”. The sentence sounds a little awkward and consider revision: “Northerly aspects are commonly more productive and have denser vegetation.”. Done.

22. Page 5, Line 18: change “figure 2” to “Fig. 2”. Done.

23. Page 5, Line 29: Please change “data set” to “dataset”; I know both are interchangeable but choose one to use for the consistence with rest text. Done, but paragraph modified.

24. Page 5, Lines 29 and 32: Please change “rain snow” to “rain-snow”; this keeps the consistence with rest text. Done, but paragraph modified.

25. Page 6, Line 1: change “figure 4” to “Fig. 4”. Done.

26. Page 6, Line 1: Please change “rain snow” to “rain-snow”; this keeps the consistence with rest text. All occurrences are changed.

27. Page 6, Line 2: Please change “10 m” to “10m”; this is according to journal’s house standards. Done.

28. Page 6, Line 4: Please change “(Marks et al., 1999)” to “Marks et al. (1999)”. Done.

29. Page 6, Line 12: Please change “Fig. 5a. and f.” to “ Fig. 5a and f”. This is according to journal’s house standards. Done.

30. Page 6, Fig. 5: Typo: “21 January, 2001” should be “21 January 2002” according to text. Done.

31. Page 9, Line 16: Please change “data set” to “dataset”; I know both are interchangeable, but choose one to use for the consistence with rest text. Done.

32. Page 9, Line 18: Please change “rain snow” to “rain-snow”; this keeps the consis-

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tence with rest text. Done.

33. Page 9, Line 19: suggested change: ". . .most sensitive environments in the mountain western U.S; the rain snow transition zone." to ". . .most sensitive environments in the mountain west US: the rain-snow transition zone." Done.

Interactive comment on Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2017-82, 2017.

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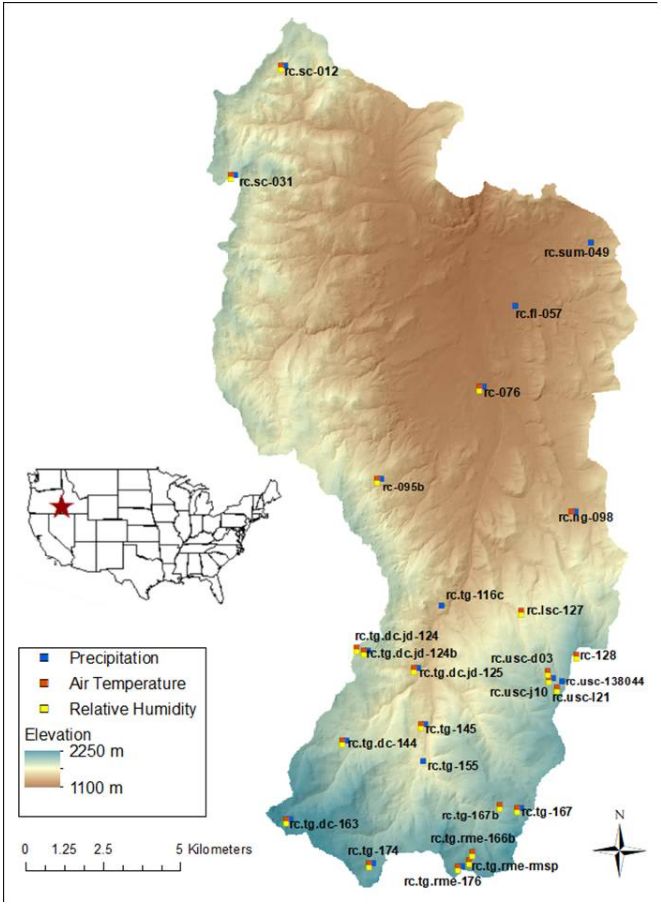

Fig. 1. Figure 1 Revised

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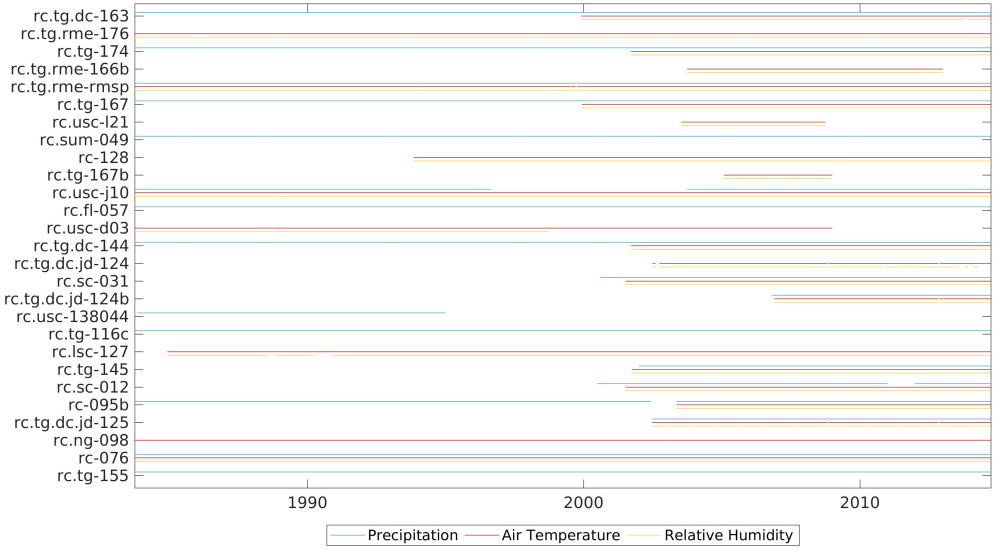

Fig. 2. Figure 2 Revised

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