Hydrology and
Earth System
Sciences

Discussions

Interactive comment on "Principle components of thermal regimes in mountain river networks" *by* Daniel J. Isaak et al.

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Specific comments: Lines 37-40: Sentence does not read well. Suggested revision "Knowledge of the local thermal regime, based on the annual sequence of temperatures characteristic to specific locations within a river network, is key to understanding natural conditions and diagnosing anthropogenic impairments." Lines 62-64: Suggested revision "While that may bring..., most warm stream...correlated with each other and therefore redundant. If redundancy is also reflected across a broader..." Paragraph beginning line 146: Be explicit that these time series refer to water temperatures, as later on in the manuscript air temperatures are also used. Section 3.1 – Does one need to specify that the study assumed stationarity in the data, in order to generate temperatures for 365 days based on five-year time series? Line 207 – Please provide

a summary of the environmental gradients; it may be worth including a table on these. Line 212 – Please explain why the thermal year started on 1 December. In South Africa, we typically use 1 October – 30 September for the Hydrological year, but I am aware that this varies regionally, being based on the onset of the highest discharge season. Line 218 – "sites, an S-mode" Line 234 – It would make more sense to me to represent the thermal gradient per 100m. This would be a useful figure in defining a water temperature lapse rate. For air temperatures, this is typically expressed as something like 0.7°C per 100m. Line 253 – Figure 4a Line 257 – insert Figure 4c Table 1 – write US in full; standardise on number of decimal points down columns (also applies for Table 3). Figure 2 – I like this figure! Please include the range of R2 values, and I would recommend that the caption explicitly describes the month(s) with the highest thermal gradient. Figure 4 – caption revision to say "...show principal component scores for axes 1-2...". Please also check there are no other occurrences of "principle". Figure 7 – "...and discharge (c-f)" References: Carlisle et al. 2017; Fuhrman et al. 2018; Isaak et al. 2016b; Josse and Husson 2012; Steel et al. 2017 not cited in text. Inconsistencies in citations: Line 51 – Rieman et al 2015a; Line 80 Piechota 2001 or 1997?; Line 84 Gallacher 2016 or 2017?; line 90 Trumbo et al. Not referenced; line 175 – correct to R Development Core Team; Line 205 correct to SAS Institute Inc.; line 326 – spelling of Nusslé; line 352 – Jackson et al. 2017 or 2018?

Table 3 not cited in text.