Hydrology and
Earth System
Sciences

Discussions

Interactive comment on "Working backwards from streambed thermal anomalies: hydrogeologic controls on preferential brook trout spawning habitat in a coastal stream" *by* Martin A. Briggs et al.

Anonymous Referee #2

General comments:

The paper presents an extensive field data analyzed to identify the controls of preferential brook trout spawning sites. The data has not only been obtained for this particular study but represents a synthesis of newly acquired and existing data. However, the different data types as well as their location and timing of the collection make it hard to follow the story. My impression is that this is not because of the data as such but largely how it is presented. First I would have expected a rigorous evaluation of the factors that characterize the three preferred spawning sites such as EC, temperature

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and oxygen and GW discharge and how these conditions are different from the other GW discharge sites which are not used for spawning. However, there is no synthesizing figure or table or section where I can learn about this. The results section is mostly a description of the individual results of the different methods. The second part of the paper should then look into the regional geological setting that ultimately determines the conditions at the spawning sites. I suggest the restructure the paper, clearly following the objectives the authors state in their introduction. They provide an excellent guideline for the entire paper. Additionally, many figures lack spatial reference or use non-unique references. For example in Fig. 4 and Fig. 7 the x-axis seem to start it different locations. Figure 5 has no x-axis at all. Please see also my specific comments below. Overall I found it very hard to keep track of which measurements have been conducted where and when.

Specific comments:

Figures: Generally, I recommend using consistent symbols and consistent spatial reference. Otherwise it is hard to recognize spatial setup. E.g.: in figure 6 spawn zones 1 2 3 are blue, red and green; figure 7: red, red blue; figure 8: blue green purple. Figure 1: Please indicate where b and c are located in a Figure 4: The decreasing order of the x-axis is confusing Figure 5: x-axis missing, What is Loc 15? Figure6: Would it harm to show boxplots instead of the time series? The exact timing of the variations does not seem to play a role. Figure 7: x-reference seems different from Figure 4 l.128: maybe explain which methods are lumped under the term 'geophysical remote sensing' l. 156-160: These objectives are absolutely reasonable but they are not reflected in the structure of the results or the discussion section. Just an example: the discussion starts with heat tracing. Why? It should be about the Spawing sites l. 508: The effects of shear stress and bed material seem to be important. So I wonder why this has been been considered as factors controlling spawning site preference. Both can be measured.

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