**Biogeosciences
Discussions**

Interactive
Comment

Interactive comment on **"Surface flow types, near-bed hydraulics and the distribution ofstream macroinvertebrates"** *by* **M. A. Reid and M. C. Thoms**

Anonymous Referee #1

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General Comments: This is a very well-written paper describing a study that tests the validity of using visually assessed water surface patterns/surface flow types to infer heterogeneity in river near-bed hydraulics, substrate type and macro-invertebrate community characteristics and investigates relationships between these variables. This mix of topics makes the subject matter highly relevant to the scope of Biogeosciences.

The paper provides novel data and uses a range of sophisticated statistical approaches to demonstrate the strength of relationships between water surface pattern near-bed hydraulics, substrate type macro-invertebrates. These findings provide some confidence that rapid visual assessments of surface flow type can be used to infer eco-

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logically relevant habitat heterogeneity within streams. The paper also provides new information on the single and combined influences on invertebrates of the measured hydraulic and substrate valuables, and highlights the value of incorporating three dimensional velocity and turbulence measures. These findings add to existing knowledge and provide a novel indication of the importance of turbulence at right-angles to the downstream direction of flow on macro-invertebrate community structure.

The paper is generally very clear and concise and all tables and figures are necessary and informative. The literature is used appropriately to frame the issues and discuss the findings.

The methods and assumptions are valid but not all methods are described clearly enough to allow reproduction by others. In particular, the methods on macro-invertebrate sampling and processing lack sufficient detail on sampling methods, species identification and the basis for functional feeding group assignment. See specific comments below for details.

The discussion is well-organised, insightful, and addresses the three questions posed in the introduction.

Specific comments:

Lines 9-13 on p. 1180: I would like some more details on the invertebrate sampling and processing described in these lines. Namely, (i) addition of details on the area sampled by the Surber sampler and its net mesh size (e.g. in brackets at the end of the sentence finishing on line 10), (ii) a description of how the whole sample was enumerated and whether the taxa richness data relates to the whole sample or the 200-count sub-sample, (iii) literature sources (or other information) used to assign taxa to functional feeding groups, and (iv) information on the taxonomic level to which identifications were taken (including information mentioned in the results on line 6 in p. 1184) should be included here.

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