

Interactive comment on “Perspectives and ambitions of interdisciplinary connectivity researchers” by Eva Nora Paton et al.

Anonymous Referee #2

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This article proposes an original study on the structuring of the community of researchers working on the concept of connectivity. The interest of this article is not to be satisfied with a synthesis of previous work in what would be a new synthesis article. Indeed, this article proposes a questionnaire survey of researchers in the community to highlight the potential for interdisciplinary interactions. In this respect, it deserves to be published, but some additional information will have to be provided.

Introduction Page 1, lines 19-22. While the introduction is very long, this definition of connectivity and the description of its potential applications are very short. A few more lines should be added to show how connectivity helps to describe how environmental systems work (from the articles you cite). Here you can highlight some of the results already achieved by the scientific community. If the introduction becomes too long, you

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can shorten it and create a separate “state-of-art” section. Page 2 line 8 to Page 3 line 6, This section could be cut and paste in a specific section entitled “integration of interdisciplinary knowledge: state-of-art”.

Section 2 This section is quite interesting, especially the 4-Perspective Concept Grid. However, each of subsections 2.1, 2.2, 2.3, 2.4. would benefit from further examples. In the case of section 2.1, the example on queueing would benefit from some additional explanation. Lines 13 to 20 remain at a level too general for this type of paper. I suggest that the sentence in brackets at the end of the section be deleted and that this section be completed with some examples of vocabulary problems addressed in the Bracken & Oughton article. This article is a little old and could be completed by more recent review articles:

Bracken LJ, Wainwright J, Ali GA, Tetzlaff D, Smith MW, Reaney SM, Roy AG. 2013. Concepts of hydrological connectivity: Research approaches, pathways and future agendas. *Earth-Science Reviews* 119: 17-34. DOI:10.1016/j.earscirev.2013.02.001

Bracken LJ, Turnbull L, Wainwright J, Bogaart P. 2015. Sediment connectivity: a framework for understanding sediment transfer at multiple scales. *Earth Surface Processes and Landforms* 40: 177-188. DOI: 10.1002/sp. 3635

Cossart E, Viel V, Lissak C, Reulier R, Fressard M, Delahaye D. How might sediment connectivity change in space and time? *Land Degrad Dev.* 2018;29:2595-2613. <https://doi.org/10.1002/lqr.3022>

Callegaro, C., and Ursino, N. (2018) Connectivity of Niches of Adaptation Affects Vegetation Structure and Density in Self-Organized (Dis-Connected) Vegetation Patterns. *Land Degrad. Develop.*, 29: 2589-2594. <https://doi.org/10.1002/lqr.2759>.

The latter is particularly interesting to show a scientific crossover between ecology and hydrology.

Page 4, lines 23-24. Here again, the drafting remains at a too general level. Give

examples of "particular disciplinary viewpoint" in the connectivity framework.

For subsection 2.4, the question raised is very interesting. Here again, I invite the authors to better explain the challenges of knowledge transfer to stakeholders. Perhaps we can mention here the efforts made by several authors to produce connectivity metrics that are perfectly adapted to land use planning applications. Here is a selection of publications that can feed these perspectives:

Tannier C., Bourgeois M., Houot H., Foltête J.C., 2016. Impact of urban developments on the functional connectivity of forested habitats: a joint contribution of advanced urban models and landscape graphs. *Land Use Policy* 52: 76-91.

Foltête J.C., Girardet X., Clauzel C., 2014. A methodological framework for the use of landscape graphs in land-use planning. *Landscape and Urban Planning* 124: 140-150.

Clauzel C., Girardet X., Foltête J.C., 2013. Impact assessment of a high-speed railway line on species distribution: Application to the European tree frog (*Hyla arborea*) in Franche-Comté. *Journal of Environmental Management* 127: 125-134.

Section 4 I am surprised that the questions of modelling, development and calculation of indices/metrics are not developed in the discussion or in the results. Great efforts are being made by the community for these developments and cross-fertilization between disciplines is emerging. Based on the sub-press article by Heckmann et al (which you quote), and the results of your survey (you have two specific questions on the indices in Table 1), a specific paragraph on these indices should be developed. What are they created for? How? Are there any cross-fertilization between scientific disciplines? In general, we do not guess enough in this section what the results of your survey by questioning were.

Sub-section 4.2 This sub-section is difficult to understand. This is to describe Figure 3, which is itself very complex. It is difficult to understand how Figure 3 was constructed, how the terms in it were chosen, etc. I invite the authors to help readers to read this

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figure correctly, perhaps also by reviewing the individual results of the survey that was conducted. This could make it possible to make the interpretation of the results of this figure more concrete.

In conclusion, this article has great potential. Since its interest lies in the construction of a survey of community scientists working on connectivity, it is regrettable that the results of this survey are not sufficiently highlighted. I invite the authors to do so, in particular by developing section 4 and helping to ensure that figures 3 & 4, rich but complex, are properly read.

Interactive comment on *Hydrol. Earth Syst. Sci. Discuss.*, <https://doi.org/10.5194/hess-2018-445>, 2018.

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