# Review of: "Responsible Geosciences, or Geoscience Literacy for Urbanites"

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Potential competing interests: No potential competing interests to declare.

Dear Martin,

in general, I agree with the main message of the article, but I think it is somehow unclear and could be enforced by providing more practical examples and stressing the role of the scientific community in doing this. Here are a few suggestions:

- *'inhabitants of urban environments, colloquially referred to as urbanites, should be geoscience literate.'* I agree, but it might be good to distinguish between other target groups (e.g. policymakers, land use planners, representatives of civil society, construction companies, tourists).

- The link with sustainability is, in my opinion, a bit generic and not sufficiently explained. This could be enforced to explain how the ways of urban living might be more sustainable. Mentioning SDGs might come to help to clarify this point. The Sendai objectives could also be mentioned, given the strong relation between disaster risk and the achievement of SDGs (disasters cause strong impacts on communities and disrupt the work done to achieve SDGs).

- Since emphasis is given on the engineering aspects, I would mention the limits of the engineering approach. The article says that *'urban environments are built to protect people from geoscientific phenomena.'* However, engineering works modify urban realm in ways that are unexpected and lead to cascading impacts (e.g. in case of occurrence of an hazardous phenomenon, some infrastructure might be damaged and cause cascading impacts). So it's quite important that each intervention is pondered by a multi-disciplinary team to grasp all the implications. This connects to the need for a systemic approach also in geoscience literacy, which is mentioned. However, I think also the scientific community should work on this in order to be more effective in developing geoscience literacy actions.

- Since the urban realm is constantly changing, the geoscience literacy should be something that is done at different timescales including the long-term. Maybe some examples of literacy activities that operate at shorter and longer term could be provided.

-- *"As insights show [34][35][36], this systemic ignorance poses a formidable risk for modern societies, a risk that needs to be addressed and mitigated by professionals in the field of geosciences."* In the field of disaster risk, the knowledge of local communities who are living close to, for example, rivers or active volcanoes, is increasingly considered to develop risk mitigation measures and increase societal resilience. I think that the concept of geoscience literacy should also

involve the mutual learning (e.g. between scientific community and from local communities who know very well some phenomena). Also, I would expand a bit on the term 'ignorance'. In some cases, I would mention that there are different degrees of awareness/knowledge instead and reference works that assessed geoscience-related knowledge of specific groups on different topics.

- The example of river basin and water use is good, and I think some more references might be provided after this sentence *'Operating a river basin upstream, downstream and in a city involves value-driven choices, opportunities and risks for different social groups and often impacts distant constituencies'.* Many conflicts are currently arising in the field of sustainable river management and are exacerbated by the extreme events (floods, drought). Since you refer to different social groups you could make some examples here.

- The example of meteorology is for sure interesting, but I would mention some challenges. For example, the existence of multiple weather forecast sources, including some long-term weather forecasts which are not always very reliable. Also, in the field of weather predictions, there was a debate on the weather forecasts format (deterministic or probabilistic) and how to communicate the associated uncertainty. Regardless the good predictions, are we sure that people really understands weather forecasts and the limitation associated to it? I think the effectiveness of weather-related communication could be discussed a bit more also with examples on how they do/did that.

- *"by applying geoscience expertise, the well-functioning of the urban realm requires professionals who design, build, and govern social-ecological systems on a planetary scale. Those professionals need a public that can understand them because of being reasonably geoscience literate."*. Yes, and I think it is also important for professionals to engage with communication/dissemination/capacity building activity (and perhaps I would mention trans-disciplinarity and mutual learning so it's clear that we do not mean a purely top-down approach). I think the paper could mention more examples of this.

I wish you all the best with the ongoing work,

Chiara