

Review of Metois et al, "Deep oceanic submarine fieldwork with undergraduate students, an exceptional immersive experience (Minerve software)".

General Overview

This paper, by Metois *et al.*, describe a teaching experiment conducted at University of Lyon with a group of third year's undergraduate. It aims at providing a new VR experience to learn and experiment tectonics on a virtual field. The chosen example of a sub-marine outcrop is perfectly representing the challenge that VR will allow to overcome, such as the accessibility of the outcrop, which is situated abroad (in the Lesser Antilles in the Caribbean Sea) and underwater by ~1200m.

While the overall content would rather better fit a teaching-oriented journal like "Geoscience Communication" than "Solid Earth", it still falls well into the editorial line of the special issue. Specific examples of such VR fieldwork and/or remote teachings are still scarce (e.g., PlanMap planetary mapping winter school), and this work is a very welcome sight to support the ongoing effort to develop new way of teaching and diffusing geosciences, including the possibility presented by the authors to involve a guest specialist that is not physically present.

The author specifically present the dataset, their origin and the foreseen use as a mapping and tectonics interpretation exercise. They also present three different cases in which the students are 100% remote (using web-based resources, particularly representative of the Covid situation), and two *in situ* VR experiences, with and without a teacher. It comes out that student are quite supportive of the VR-based teachings, providing they are a supplement to "real in person" classes, which is expected from other experiments of the same kind. Nevertheless, it provides and proves that VR brings a strong added value when it comes to learning Geosciences.

Overall, the manuscript is well written and provides sufficient elements to get a good idea of the outcome of this experiment and invite us to participate in such efforts. I would therefore strongly recommend publishing this article in this form, providing minor corrections in the wording (see following).

Specific comments

The overall intent of the experiment, while rushed as explained by the authors because of the Covid pandemic breakout, relies on a strong premise and allows to get a solid understanding of what to expect from such practice. The choice of the object was also pertinent.

Initiation to controls and having the student look at the artifacts to prevent misinterpretation is a very good point.

As one feedback points out, maybe the social distancing and mandatory wear of a facial mask were also setbacks that prevent the student to be completely comfortable. This assertion should figure in the conclusive lines of 4.2 as the Covid situation is mentioned and should be more considered regarding this experience.

Technical corrections; Detailed comments on the manuscript

Figures:

- Figure 2 is a little small, and the color choice doesn't help getting a good idea of what is illustrated. I recommend using more contrasted colors.

Corpus of the manuscript:

- Line 40: Describe "AUV" acronym
- Line 53: inverse "inspect" and "interactively" words (adverbs come first)
- Line 59: add "degree" after "License"
- Line 63: replace "slow" by "low"
- Line 70: Please keep consistency. You wrote in Line 59 ("3rd" and here "third", as well as "undergraduate", or "license". Please keep the same terminology, possible the undergraduate third year so that foreign readers could understand which students you are talking about
- Line 76: Timeline is written as a single word without hyphen
- Line 200: Prefer "students that suffer motion-sickness induced by VR" to "student that get sick in VR" as it relates the actual condition
- Line 201: Replace "colleague" by "classmate" (students are not colleagues)
- Line 206: Rephrase "With an [...] guidance" for clarity
- Line 262: Replace "colleague" by "classmate"