

Marine Laval

Review: Monitoring cliff erosion in the Chaleur Bay, Quebec,
from Terrestrial Laser Scanning data

Summarize the main results of the article in a few sentences:

This study is based on the monitoring of cliff erosion through Terrestrial Laser Scanner (or Lidar) along Caplan River in Chaleur Bay of Quebec, during 2014 to 2018. The cliff has four layers of different erosion regimes rate. The bottom one (the abrasion layer) made of fractured sandstone, helps mechanical and chemical erosion (waves, wind). Higher the central layer link to the abrasion layer with a transition layer, is made of massive boulders. These boulders are difficult to erode, but fall locally. Moreover rockfalls propagate to theirs neighbors. Finally the last and top layer, has small rock fall due to the presence of soil.

Answer the following questions about the structure of the paper:

Overall content:

1. Is the overall purpose of the study and /or central question clear?

The central question, how cliff erosion works in Chaleur Bay is clear, and well explains in the Abstract and Introduction.

2. Does the interpretation of the findings answer the overall question of the paper?

Yes, she analyses cliff profiles layer by layer, to understand erosion processes.

3. Is every paragraph and sentence in the paper relevant to the overall question?

- *"Erosion in the Chaleur Bay, in the Gulf of the Saint Lawrence River, has been generating interest for a few decades (Fraser et al., 2012)".*

She doesn't explain why erosion in Chaleur Bay is interesting in this sentence. (Introduction section)

4. Are there portions of the text that could be omitted?

- *"Figure 0.2 is a profile of the cliff generated at the location of arrow 1 on Figure 0.1"*

It can be put inside the legend of Figure 2, and just write (Figure 2) after the previous sentences (Discussion section).

- *"The point clouds resulting from the cloud-to-mesh computation are shown in Figure 0.1"*

Is not necessary, and Figure 1 can be site to the next sentences (Results section).

5. Is the overall organization of the paper clear and effective?

The result section does not present all results of the paper, and some are presented inside the discussion section. Maybe results need to be gathering in the result section or all merged with the interpretation.

Moreover Figure 1 legend contains some interpretation, that can be inside Result or Discussion section text.

*"The legend is in meters and shows accretion in green (corresponds to an unexpectedly large error, **due for example to the removal of vegetation on the compared cloud but not on the reference one**), fixed zones without erosion in white, including our error margin, and erosion in a gradient from yellow to red (from smaller to greater erosion)."*

Individual sections:

1. Does the title adequately represent the content of the paper?

Yes, the title summarizes succinctly the purpose of the study, where it takes place and the methods used.

2. Does the abstract clearly and concisely summarize the paper and state the main results? Does it contain all needed information (context, need, task, object, findings and conclusion)?

Yes

3. Does the introduction provide enough context to the readers? Does it state the need for the work? Does it state clearly what has been done to address it?

The introduction provides enough contexts: Location, geology, erosion process known, of the study site; and materials used.
However the goal of the study explain in paragraph 2, needs to come after all the context, near the end of the introduction. And the paragraph 1, get into too much details for the beginning of the introduction.
The interest of the study for the erosion in the Chaleur Bay lacks a bit.

4. Does this paper put the progress it reports in the context of existing published work? Is there adequate referencing and introductory discussion?

Yes, except for: *"Erosion in the Chaleur Bay, in the Gulf of the Saint Lawrence River, has been generating interest for a few decades (Fraser et al., 2012)."* Where the reference is not necessary, because we do not know what *"has been generating interest"*.

5. Are the material and methods used in the study clearly explained? Can you point out what is special, unexpected, or different in the approach compared to existing published work? Does it contain too many technical details?

Material and methods are clearly explained

6. Is the results sections(s) clearly and concisely written? Are there logical and smooth transitions between sections, subsections and between paragraphs?

The first result (figure 1), is not really used (maybe not enough mentioned in the text) and isolated from the others results. But the rest of the results are fluid.

7. Does the conclusion clearly state the most important outcome of the work? Does it address the questions stated in the Introduction? Does the conclusion just summarize the results or does it interpret the findings and explain what they mean?

The conclusion summarizes the main result, and to go further the study needs to be compared with others studies.

8. Are the interpretations and conclusions adequately supported by the evidence presented? That is, are the assumptions valid, is the methodology sound, is the evidence adequate, and do the conclusions logically follow?

Yes

9. Are all parts of the text, references, graphics and tables necessary for the new results and main points to be understood?

Maybe reference to Figure 1 missed in the text. All figures presented are necessary to understand the paper.

10. Are the graphics and tables clear and their captions self-explanatory?

The horizontal and vertical scale of Figure 1 lacks, and we cannot read erosion rate values.

The legend of Figure 3 is not really clear, I needed to read it several time, to understand it.

In general, legends are not enough synthetic.

• Sentences and Wording

1. Can you find grammatical mistakes?

No

2. Can you point to sentences that loose you (too long/complex) and do you have suggestions for improvement?

No, it is okay

3. Are generally the action in verbs, characters in subjects and subjects near verbs? Can you find counter-examples? Can you point out misused nominalizations?

"~~In~~ fall and spring, ~~contribute to cliff erosion~~, when the ice-foot is not yet consolidated at the bottom of the cliff, these mechanical agents can break the sea-ice and throw ice pieces towards the cliff, ~~which contributes to cliff erosion~~."

"~~The data were collected by placing~~ a Terrestrial Laser Scanner (TLS) ~~collected the data~~ on each station one by one, and ~~scanning~~ ~~scanned~~ the portion of the cliff in front of that station."

"We choose to focus on ~~"the big fall"~~, a notable erosion event which occurred during our study period ~~and which we call "the big fall"~~ "

4. Is the writing cohesive? Does it flow well? Is the part of the sentence that links to the previous sentence at the beginning or the end?

Yes

5. Are the paragraphs coherent? Do the first and last sentences of paragraphs match? Can you find counter-examples?

Yes

6. Is there an abusive use of passive voice?

No

7. Can you find a lot of useless words/phrases?

"Lastly, ~~the cliff is also subject to the action of~~ gravity on blocks, ~~which~~ can cause different sorts of rockfall : fall of an overhanging boulder, rockslide on an inclined layer, rock or debris fall, etc"

"~~This is so that~~ every part of the cliff is scanned at least twice with a different angle, ~~thus~~ ensuring all parts of the cliffs are being scanned, ~~so that this leaves~~ living no "dead zones" empty of data points"

"~~This profile shows~~ the different vertical layers of the cliff, ~~which~~ are subject to different types of erosion (Figure 2)"

8. Can you find complex words that could be replaced by simpler ones?

No

9. Can you find too complex subjects?

No

10. Can you find inadequately used adverbs/ repetition/ excessive hedging?

No at all

11. Is the use of tenses (past/present/future) adequate?

Yes

- **Other comments?**

Sometimes sentences are too long with some useless words, but this paper is easy to read and to understand.

Another thing, is the useless use of abbreviation, like: *"University of Quebec in Rimouski's (UQAR) or laboratory for the dynamics and integrated management of coastal risks (DGIZC)"*, because it is not use somewhere else in the paper.

Moreover the abbreviation of *"Terrestrial Laser Scanner (TLS)"*, it not either used when we need it in the text.