

Reviewer: Kathryn Clark

ESurf Discussions

An index concentration method for suspended load monitoring in large rivers of the Amazonian foreland

Santini et al., 2019

Accept with minor revisions

I really enjoyed reading this paper and learning about the intricacies of proper river SS concentration sampling in large Amazonian rivers. It is evident that the authors have utilised a vast amount of empirical data coupled with a very comprehensive theoretical overview and application. It is evident that a lot of time and effort went into this paper and it was a pleasure to be able to review it.

General Comments

I imagine this type of paper is aimed at specific scientists who know a lot about the topic already. You might be able to reach a wider audience if you remind readers what the terms mean in the sentence, so they don't have to keep flipping to the terms section. For example, page 11 line 7: possibly repeating what ADCP stands for. Another place a term reminder would help could be in the captions on figures. For example, in the caption for figure 11 it might be good to remind readers what h stands for.

Also, there are a lot of stand alone sentences rather than paragraphs throughout the manuscript. Possibly some formatting thought-out could be useful.

The tables and figures were very well done.

During my PhD I collected water samples at the side of the river in the Madre de Dios river, near the Los Amigos tributary. My team collected a water sample every three hours for two weeks, thus it wasn't possible to go to the middle of the river. How useful are these samples for representing the SS concentration of the river?

Specific comments

Abstract

Line 22: for the α definition the index and average are switched compared to the terms list

Line 26: choice of using washload over fine. Maybe include washload in the terms section

Line 31: this model *can* be coupled, suggested change to *could likely*, since this wasn't demonstrated in the paper.

Introduction

Page 2

In the first paragraph maybe make specific reference to increase erosion and thus variability in river suspended load?

Line 1: possibly include: climate variability, *specifically extreme rain events*.

Line 7: At least in rivers there would be references to help make this statement stronger.

Page 3

Line 22: I found it quite a challenge to keep up with what all the terms mean. I would let readers know that there is a terms list in the supplement.

Materials and Methods

Page 5

Line 30: should the line read: water level vs discharge and *concentration* index vs mean concentration?

Page 9

Line 23: is the fine particle range 0.45 rather than 0.4um?

Results

Page 11

Lines 22, 23: The grammar of this sentence needs work. If needs a *then* in the sentence.

Page 13

Line 25-27: Isn't it the reverse, that it's important to accurately calculate the concentration of the sand fraction because it is so variable? If the authors want to keep the sentence about the fines, then maybe say: in order to accurately capture the small variations in ϵ , accurate sampling is key.

Page 14

Line 9: Should this be referring to figure 6 rather than 7?

Line 18: Check that this is the proper figures reference for this text.

Line 25: suggested grammatical change: very *small* rather than very *low*.

Line 25/26: suggested grammatical change: Then considering the *poor* contribution. I would suggest changing it to read *small* contribution.

Line 26: possibly change from low *waters* to low *runoff*.

Discussion

Page 15

Line 6: should authors refer to equation 18 when it's not used in the paper?

Where is figure 8b referenced?

Page 17

Line 5: where is the Rouse number compared to particle size?

Where is figure 10 referenced?

Page 19

Line 2: Suggested removal of repeated "the concentration"

Line 2: Should "result" read as "results"

Line 9: Should q_{ss} just read as q_s ?

Page 20

Lines 9-12: If this is the only statement made about the usefulness of remote sensing, I would modify the text in the abstract.

Appendices

Page 35

Line 13: should the fines be from 0.45 to 0.63um?