

Interactive comment on “Hydrological differentiation and spatial distribution of high altitude wetlands in a semi-arid Andean region derived from satellite data” by M. Otto et al.

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General Comments

I had only minor critiques of this paper (see specific comments and technical corrections below). This research provides new tools for the study of these wetlands, which is of interest to a number of different disciplines and has clear hydrological implications. These are shown in the authors’ descriptions of the relationships between precipitation and snow and the extent of HAWA. These implications could be strengthened with a sentence or two on some specific ways that hydrologists interested in these wetlands could use this data and procedures (see final specific comment). The methods were

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clear and lead logically to the results they found; similarly, the results supported the authors' conclusions that these methods for remote sensing are extremely useful in the study of HAWA. The title for this paper is appropriate and the abstract is clear and provides a good summary of the findings. Most of critiques were due to lack of clarity in some points, which could be easily fixed with additional clarifying sentences, and a number of grammatical errors. The supplementary figure was helpful in guiding the reader through the multi-step processing and provided an excellent reference. Overall, this paper describes helpful new procedures for assessing wetlands using remote sensing and requires only minor edits.

Specific Comments

The last sentence in abstract very hard to understand and needs to be re-written.

Page 1293: Is it necessary to have both paragraph and bullet outlined summary of types of HAWA? One or the other are needed, but not both – perhaps a table would be more helpful than the bulleted points.

Page 1298, line 9: Why are the land uses are described again in a detailed manner, rather than referring back to the descriptions earlier? This sentence should be removed.

Page 1299, lines 16 to 20: The purpose of this equation should be foreshadowed further – the exact point of it is not clear at all at this point in the paper.

Page 1300, lines 4 to 6: This sentence is extremely unclear and, it needs to be re-worded. As is, it seems to say that this mapping design is the conceptual basis for Landsat, which makes no sense and I don't believe was the point of the authors.

Page 1300, lines 25 to 28: This final sentence should come before explaining the differences in NDII. As it is now, it was difficult to understand why these different subtypes were being identified.

The difference between HAWA subtype and subclass could be explained a bit better.

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I'm pretty sure that subtype is just a further classification of the subclass. However, from some of your descriptions, I felt like it implied that subtype is what you used in your remote-sensing classifications, whereas subclass is the more general and accepted classification of HAWAs. One sentence stating this clearly, and possibly a slight reiteration here and there would greatly clarify this aspect of the paper.

Page 1304, lines 8 to 11: I was a little confused about what area you were talking about here, because the percentages don't add up to 100 and the area doesn't add up to the total area of 11000 km². You need to explain why this is, because it was not clear.

Page 1305, lines 7 to 9: This sentence was difficult and should be pre-empted with a sentence stating explicitly what your goal is in performing these procedures. You've stated that we need better time consistency, so it would be helpful to say something like "in order to address this using NDVI data. . ."

The conclusion could have a few more specifics about potential future work of hydrologists using this data; for example, exploring this apparent gradient of HAWAs or predicting how climate change could influence the types and distributions of HAWAs. Both of these are alluded to, but could be made more explicit. This would make the paper more interesting to hydrologists and emphasize the importance of these findings.

Technical Corrections

Page 1288, line 19: "relation", not "reletation"

Page 1288, line 23-24: "dependencies on", not "dependencies to"

Page 1289, line 23: this sentence needs a semi-colon

Page 1290, line 30: "temporarily" should be "temporally"

Page 1293, lines 15-16: this sentence does not make sense.

Page 1293, line 8: "free" should be "three"

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Page 1296, line 10: should “extend” be “extent”?

Page 1296, line 11: should “digitalized” be “digitized”?

Page 1297, line 4: this sentence should begin, “A thousand. . .”

Page 1297, line 20: “data exist” rather than “data are existing”

Page 1298, line 18: “bases” should be “based”

Page 1298, line 26: “regarding precipitation”, not “regarding to precipitation”

Page 1300, line 5: it says “Landsate”

Page 1302, line 11: “due to low vegetation content”

Page 1305, line 5: “ready to use”, not “ready to uses”

Page 1305, line 17: “neither. . . nor” should be “either. . . nor”

Page 1306, line 25: The exclamation point is unnecessary

Page 1308, lines 8 to 9: this should begin “the number”

Page 1308, line 13: this should be “the updated version”

Page 1308, line 15: This sentence is extremely unclear – what does “HAWA evolution” mean?

Page 1309, line 3: this should be “the smallest”

Page 1310, line 7: “seams” should be “seems”

Page 1310, lines 16 to 18: this sentence is grammatically incorrect and, subsequently, difficult to understand

Page 1311, lines 2 to 3: Again, this sentence is grammatically incorrect

Page 1311, line 15: should be “widespread”, not “white spread”

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Page 1311, line 23: this should be “scientifically sound” rather than “scientific sound”

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 1287, 2011.

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