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# ***Interactive comment on “The Amazon Tall Tower Observatory (ATTO) in the remote Amazon Basin: overview of first results from ecosystem ecology, meteorology, trace gas, and aerosol measurements” by M. O. Andreae et al.***

## **Anonymous Referee #2**

Received and published: 29 May 2015

This manuscript states that it provides an overview of the first results from the Amazon Tall Tower Observatory (ATTO). The ACPD short title is "ATTO overview".

Ongoing and future ATTO results will be an incredible addition to Amazonian science. That said, the manuscript in its present form in my own view does not do justice to the project, and I give a rating of "fair" to this ACPD manuscript.

The present version of the manuscript appears to me to lack a simple statement as to its purpose. Why do we need this manuscript? The absence of this motivational

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statement makes preparation of the review quite difficult because I do not know exactly what criteria to evaluate in deciding if the authors have achieved their purpose.

Based on the title, a logical inference is to formulate criteria based on the quality of a description of the need for a tall tower and a presentation of early results. The actual manuscript, however, is much different from such criteria, especially with regard to the description of a need.

Here are some suggestions:

1. Foremost, there should be a description of the tall tower and its motivation. The actual manuscript emphasizes long-term measurements. This is not a new theme for Amazonia. Those efforts have been under way through many projects, most notably LBA for climate change as well as multiple forestry studies.

2. The motivation for the tall tower is really marginalized in the actual manuscript. Only the sections on turbulence (sections 4.2.x) provide some intellectual motivation for the tallness of the tower. I think instead the introduction should do this job. Why do we need a 325 m tower and what do we get out of it? The manuscript does not presently answer this question. As an example, how about to show the fetch of a 325 m compared to shorter towers in Amazonia, and how about to discuss what that means for a definitive answer about CO<sub>2</sub> uptake or release?

3. This manuscript does not discuss measurements from the tall tower. The manuscript states that the tall tower will be completed in 2015. Again, the entire motivation for the manuscript is not clear.

4. The introduction of the manuscript reads like a review paper, a book chapter, or perhaps the introduction to a proposal, rather than a research article. ATTO itself is not mentioned until the end of the long introduction, at which point a list of 9 objectives is summarily presented. How about a complete deletion of the present introduction with a re-work toward a clear motivation for what a tall tower can and will accomplish (this

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is what is novel), with a downgrade on emphasis of longterm measurements (which are needed but not novel, i.e., this idea is common place and there are various type of long-term measurements already underway for years to decades at other sites).

5. Parts of section 2 are strange for a research article. Sections 2.2, 2.3, and 2.5 seem to be drawn from a narrative of a travel report. I would suggest for consideration that these sections can be entirely removed and that the manuscript would be focused and improved in consequence.

6. Subsections of section 3 are highly heterogeneous in content and quality. Some of them go into much more detail than would be needed in an overview paper, such as repeating in full paragraphs what are standard operating procedures for instruments and techniques (e.g., consider using just a single reference in place of a paragraph). In my view, section 3 should only going into details about aspects that are unique and different to ATTO.

7. Section 4 relates to results and discussion. Again, these sections are highly heterogeneous in presentation and quality.

7a. Section 4.2.4 is an example of what in my view was really done well. This section provides new information based on measurements that are specific to the ATTO site. Sections 4.2.5, 4.2.6, and 4.2.7 are also exemplarily positive in that they provide new and specific information about the ATTO site that promise to be useful as studies there continue in the future, as well as interesting at present to a reader. Each of these sections has a nice concluding take-home statement for the reader about ATTO specific information.

7b. Let me now give an a negative example. Section 4.1.2 essentially provides no research information. It should be deleted.

7c. My quick review is that helpful, informative sections with new research results include: 4.3.2 and 4.3.3. Sections that really do not say anything by way of new data or

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new insights compared to existing literature (as cited in the manuscript itself) include: 4.3.1, 4.3.4, 4.3.5, 4.3.6, 4.3.7, and 4.3.8.

7d. Figure 1 is essential. Figure 2 seems extraneous. And so on. Are 35 figures justified? Or could a very nice job be done with half as many or fewer? Some of the figures represent statistical studies of a full season (which seems appropriate to an overview manuscript) while other figures seem anecdotal to a single or a few days studies (which seems inappropriate to an overview manuscript).

7e. I expect the authors will disagree on some of my classifications of good and bad examples and provide good explanations, but I think they will agree with at least some of the classifications and recognize in all cases opportunities for significant improvements. My point here is not really to attempt to be directive in any way about what should stay in or what should go out in a seriously revised manuscript. Rather, I hope that the authors will make revisions with an eye toward cutting the length of the text significantly and focusing on what is really new and different for an overview of the first results from ATTO. The manuscript probably would have benefited from a few more rounds of internal revisions before being sent to peer review. I would encourage the new flavor of the manuscript to emphasize why a TALL tower is motivated or interesting.

The ATTO project will be a source of excellent observations and associated science in the years and decades ahead. It would be valuable to the ATTO community for this first manuscript to be really streamlined and focused if it is to continue to ACP so that it can be of a final quality equal to the ATTO project itself. Please accept my criticisms in that context.

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Interactive comment on Atmos. Chem. Phys. Discuss., 15, 11599, 2015.

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