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Interactive comment on “Variations in optical properties of aerosols on monsoon seasonal change and estimation of aerosol optical depth using ground-based meteorological and air quality data” by F. Tan et al.

Anonymous Referee #2

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Atmospheric Chemistry and Physics Discussions Reviewer Report – September 2014

Tan et al., Variations in optical properties of aerosols on monsoon seasonal change and estimation of aerosol optical depth using ground-based meteorological and air quality data

This paper describes development of a model for predicting AOD at an island site in the Southeast Asian Maritime Continent, using regression techniques trained on surface meteorological parameters. The model is evaluated relative to sun photome-

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ter measurements. There are binding studies referenced for developing an improved model (Tan et al., 2014; cited multiple times), though this appears to be gray literature. The topic is of importance regionally, as urban air quality is a significant day-to-day factor in Southeast Asia. Development of these sorts of models is becoming fairly common place, as regional scientists attempt to characterize aerosol physics and transport mechanisms. The topic is, therefore, suitable for consideration by ACPD. The manuscript is complete, though there are issues with its construction. Tables and figures are clear and legible.

I initiate this review with the benefit of having seen Reviewer #1's comments. I will echo many of that person's commentary, though my summary recommendation to the Editor is that this paper be returned simply for Major Revision. Whereas many papers suffer from credibility, clarity and myriad other potential issues, I do not believe that this paper merits an outright rejection on any of those standards. The manuscript is simply over-written. The author appears to be a young scientist (multiple references to self, though limited to what appears conference abstracts). The paper very much reads like that of a young scientist looking to impress. There's nothing wrong with that. The paper simply needs a thorough edit to focus and refine content. There are senior scientists on the author list. Oversight is necessary here. I'm attaching a full technical edit to help the process. However, someone needs to step in and provide some guidance. It wouldn't take but an afternoon's work, and this paper would be more than acceptable for ACP.

The science narrative needs to be simplified. As Rev#1 says, there is no real reason for the discussion of typing. There are other papers (see Omar et al., 2005) that use AERONET data for typing aerosols, and they use far more information than is accomplished here, with just AOD and AE. In fact, starting with the highly confusing title through the introduction, a proper motivation for this study is mostly lacking. Its not enough to just say that 'other people have done this'. Why are you interested in developing such a model? Why is this unique to Penang and Malaysia? Who will use

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it? Why will it make a difference? Why should the community recognize this unique application? Such discussion should then lead to a proper hypothesis about the merit of model development, and then a description of the methods and experimental design necessary to reach a conclusion.

The development and evaluation of the model is the core of the paper. The work here is of merit, and is worthy of publication. Recast the discussion to focus on and highlight these strengths. Trim unnecessary context. Less is more. Of note, however, please consider Toth et al. (2014 – ACP), as there is a discussion there of the impact of the vertical distribution of aerosol, as profiled from lidar, on interpretation of passive remote sensing measurements.

I look forward to reconsidering this manuscript. Good luck.

Please also note the supplement to this comment:

<http://www.atmos-chem-phys-discuss.net/14/C6669/2014/acpd-14-C6669-2014-supplement.pdf>

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 19747, 2014.

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