Atmos. Meas. Tech. Discuss., 4, C1553–C1555, 2011
www.atmos-meas-tech-discuss.net/4/C1553/2011/

Atmospheric Measurement Techniques Discussions

Interactive comment on "Where do we need additional in situ aerosol and sun photometer data?: a critical examination of spatial biases between MODIS and MISR aerosol products" *by* Y. Shi et al.

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Received and published: 9 September 2011

The subject of the paper is relevant for AMT and points out a very important issue. Nevertheless, after reading it, I am not sure that the title is appropriate and I am still wondering what should be the actual objective of the paper.

The paper is focused on a comparison between MODIS (DT and DB methods) and MISR aerosol products. Figure 1 is very interesting but when the authors say that it shows reasonable correlations between retrievals, I disagree. Both sensors are in fact providing different AOD's for several sites and it is also confirmed at global scale on

Figure 2. I think that there are enough data to analyze/understand the differences and propose explanations/solutions. There were previous studies (Mishchenko et al., 2010) that presented similar trends ; Kahn et al. (2011) made several suggestions to clarify the situation. Are they today sufficient? I know that there is a controversy between the teams but the present work can contribute to the debate. It looks to me that the authors cannot ignore the corresponding papers ; they should be at least quoted.

I think that a deep analysis of the algorithms is first needed. Can we expect to have a better consistency between the data sets over AERONET sites? How can we improve the satellite inversions ? I am not convinced we currently need additional measurement as long as the present discrepencies are not fully explained. First of all, the two data sets have to be made consistent ; then if differences still occur, it means that the aerosol properties over the corresponding areas are unusual. In that case, AERONET measurements are required for expending the aerosol data base.

The paper is well written and could be published after minor revisions (I am not going to duplicate the very detailed comments of the two other reviewers). It contains interesting results ; nevertheless, considering papers published previously, it does not address the key issue. Adding AERONET sites will not reduce the discrepancies that already exist between the two data sets. The authors have to be careful for not sending a misleading message.

Kahn R. A., M. J. Garay, D. L. Nelson, R. C. Levy, M. A. Bull, D. J. Diner, J. V. Martonchik, S. R. Paradise, E. G. Hansen, L. A. Remer, and D. Tanré, 2011, Response to "Toward unified satellite climatology of aerosol properties. 3. MODIS versus MISR versus AERONET", J. Quant. Spectro.Rad. Transf. 112, 901-909, doi:10.1016/j.jqsrt.2009.11.003. Mishchenko, M.I., L. Liu, I.V. Geogdzhayev, L.D. Travis, B. Cairns, and A.A. Lacis, 2010. Toward unified satellite climatology of aerosol properties. 3. MODIS versus MISR versus AERONET. J. Quant. Spectro. Rad. Transf. 111, 540-552, doi:10.1016/j.jqsrt.2009.11.0003.

Interactive comment on Atmos. Meas. Tech. Discuss., 4, 4295, 2011.