

## ***Interactive comment on “ Smoke injection heights from agricultural burning in Eastern Europe as seen by CALIPSO” by V. Amiridis et al.***

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We would like to thank the reviewer for his valuable comments that have really helped us prepare a much improved version of our paper.

Considering the CALIPSO retrievals, we have excluded the conversation regarding the level 2 automated products from the new paper version, where we just present our retrievals. The main reason that we insist on using level 1 profiles instead of level 2 products is the flexibility that the level 1 CALIPSO product provides to us, giving us the ability to appropriate average spatially the profiles for better collocation of CALIPSO and MODIS data. These comments have been added in the new version.

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The reviewer suggests that the fact that attenuated backscatter profile is constant with height, does not exclude cases where smoke could be advected from distant fire plumes rather the near-by ones. We fully agree with this argument. In the current stage of the review process, and by attributing the injection height to the collocated MODIS pixel, we tried to explain variations of the injection height with FRPs using atmospheric stability and wind shear data. None of the parameters helped us explain this variability. We have realized that the CALIPSO retrievals that we used in the paper can be attributed also to fires away from the pixel under study. For example, if CALIPSO happens to view just a few hundred meters upwind of a source, it may not see smoke, and is unlikely to see any smoke injected to higher elevations. Also, if CALIPSO views a plume far from the source, it would be difficult to assess whether any smoke observed above the ABL had been lofted by initial plume buoyancy or by the subsequent action of other dynamical processes. All the above discussion has been included in the new version of our paper.

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Interactive comment on Atmos. Chem. Phys. Discuss., 10, 19247, 2010.

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