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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Cold smoke: smoke-induced density currents cause unexpected smoke transport near large wildfires" *by* N. P. Lareau and C. B. Clements

Anonymous Referee #1

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Review of : Cold Smoke: Smoke-induced density currents cause unexpected smoke transport near large wildfires, by N.P.Lareau and C.B.Clements

This paper presents observations of smoked-induced density currents from large wildfires. Observations include in-situ measurements, mobile Doppler lidar, satellite images and photographies. They allow to analyze accurately the dynamics of the density current induced by the differential temperature between smoked and clear area of the PBL. This constitutes a very convincing study, and it appears that the smoked-induced density currents could be very common near wilfires, considering photographies of other fires. It constitutes therefore a reference paper, as it is the first time that we get

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clear evidence of smoked induced density currents. The case is very well documented and could be a nice case of modelling exercise, like Fireflux experiment. This also demonstrates that it is absolutely necessary to take into account smoke radiative effects in models, as gravity currents can modify significantly the dynamics of the PBL, and the propagation of wildland fires. This is also a well written paper. I would only propose to add the scale of wind vectors on Fig.4a.

From my point of view, the manuscript can be accepted as is.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 17945, 2015.