

Interactive comment on “A case study of the radiative effect of aerosols over Europe: EUCAARI-LONGREX” by A. R. Esteve et al.

Anonymous Referee #1

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This study uses irradiance observations from the 2008 EUCAARI-LONGREX aircraft campaign to examine the aerosol radiative forcing over Europe. Using a radiative transfer model (Edwards and Slingo) combined with observations and assumptions, the authors estimate diurnally averaged RF. The authors do a thorough and careful job of laying out the assumptions made in their closure study. Further they determine the uncertainty associated with their various modeling assumptions on the final estimation of RF. The most interesting finding of this study is that the spectral resolution of their radiative transfer model has a part (17-21%) impact on their uncertainty in radiative forcing, suggesting that more simplified RF models used by climate models may have resolution-imposed errors that are quite significant. This study is well written and clear; I find it acceptable for publication in ACP. Minor issues are listed below.

Page 1 Line 12: “in a case of” → “for a case of” Page 1 Line 14: “for the spatial
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and temporal variability and measurement uncertainties” → “given the spatial and temporal variability of the observations and their measurement uncertainties” All pages: Need spacing between paragraphs; may be an issue with ACPD. Hard to read this way. Page 6 Line 18 (and thereafter): “re-analysis” → “reanalysis”

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2015-953, 2016.