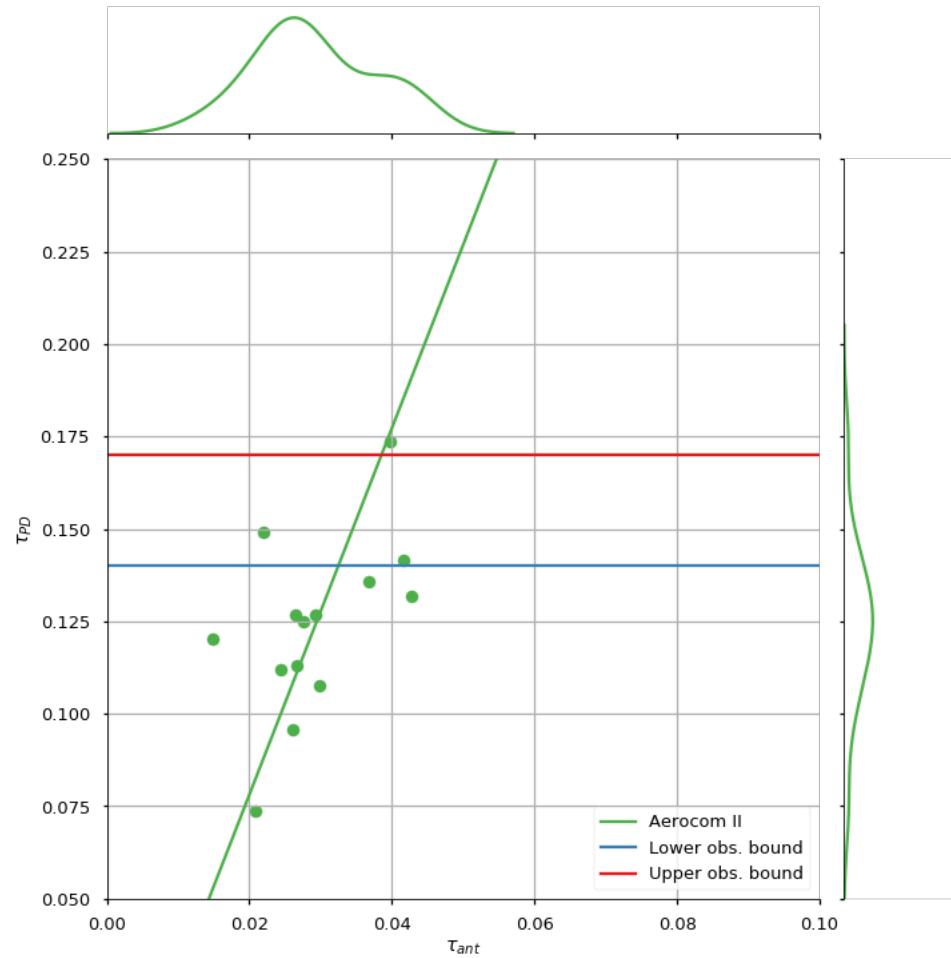


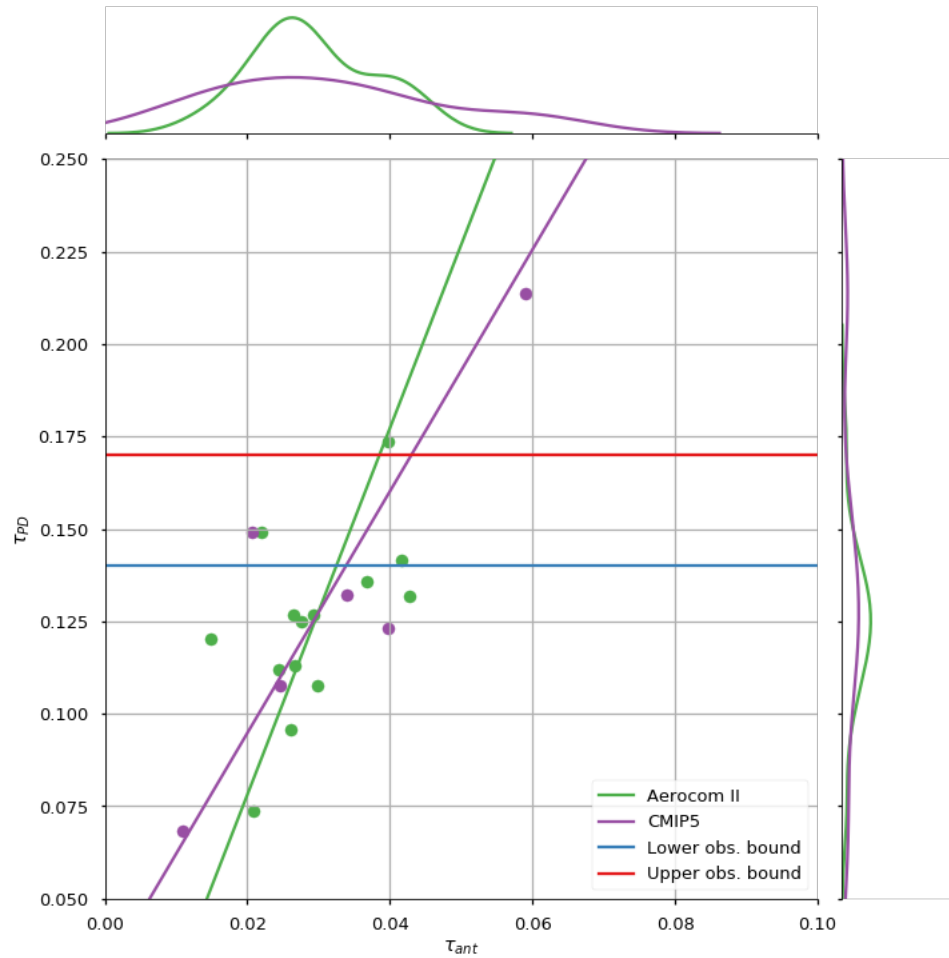
# Constraining uncertainty in aerosol direct forcing

D. Watson-Parris, N Bellouin, L. Deaconu, N.  
Schutgens, M. Yoshioka, L. A. Regayre, K. J. Pringle, J.  
S. Johnson, K. S. Carslaw and P. Stier

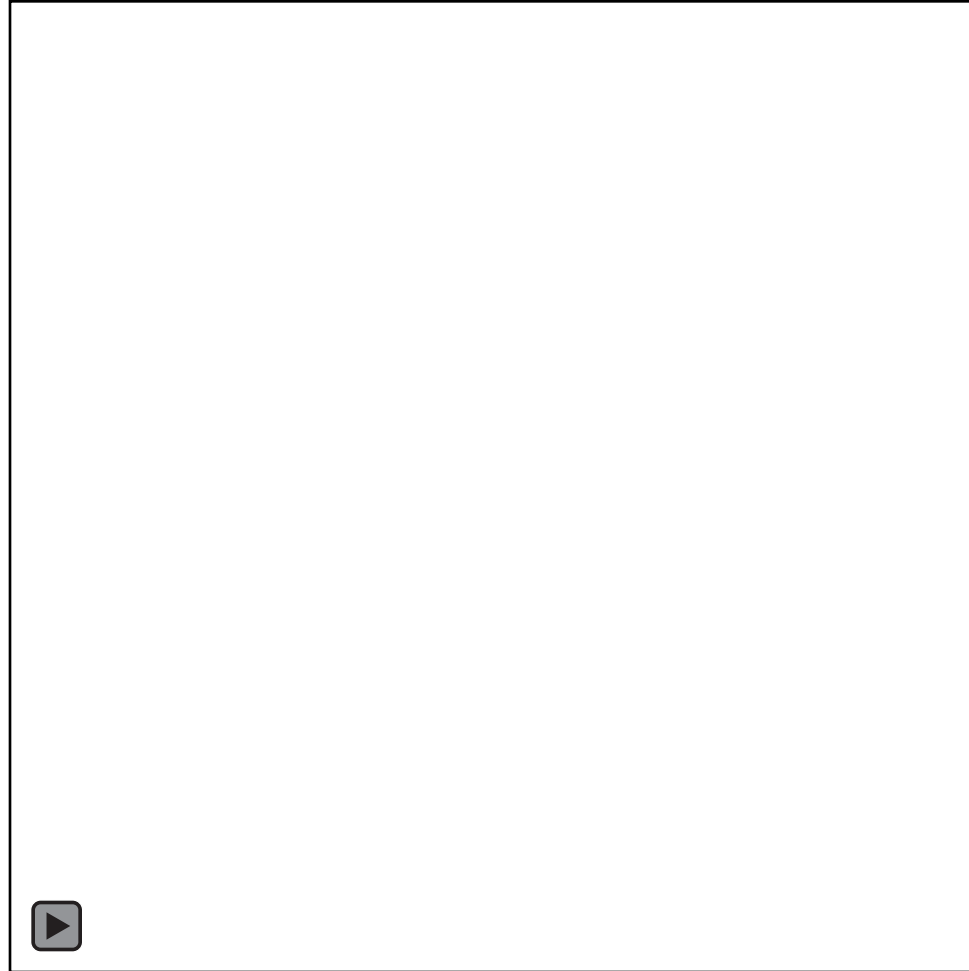
# Anthropogenic AOD



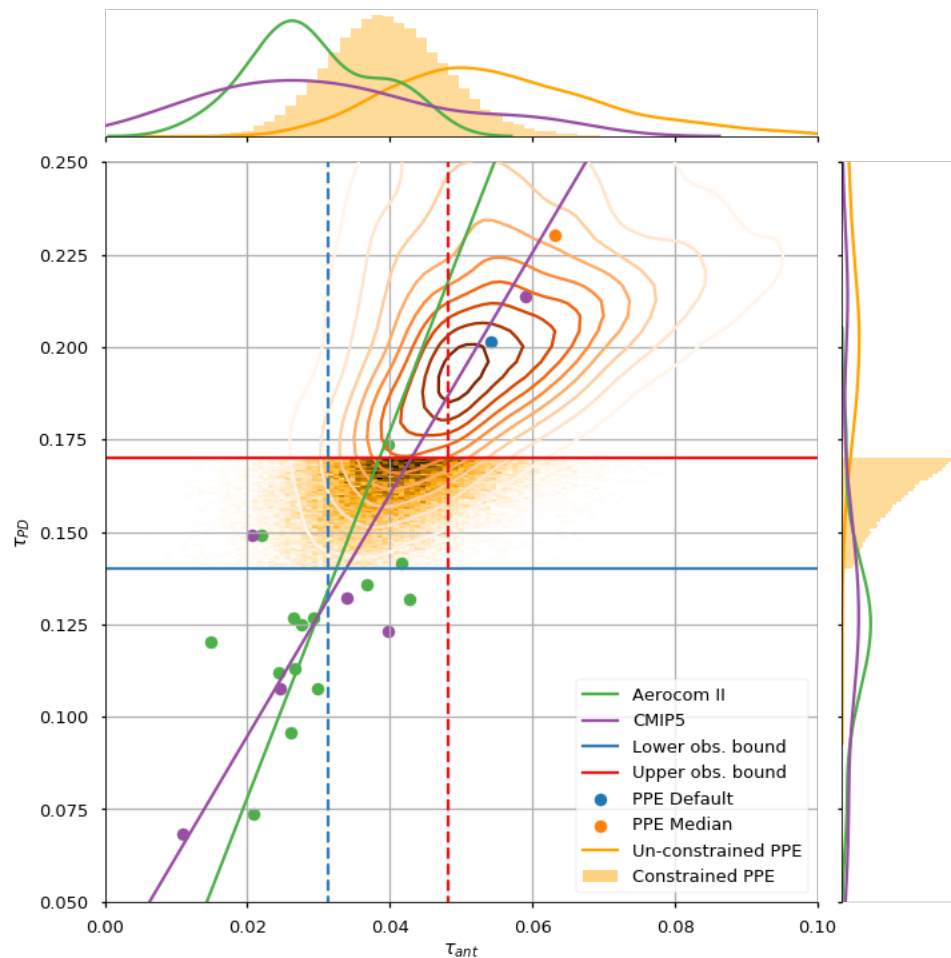
# Anthropogenic AOD



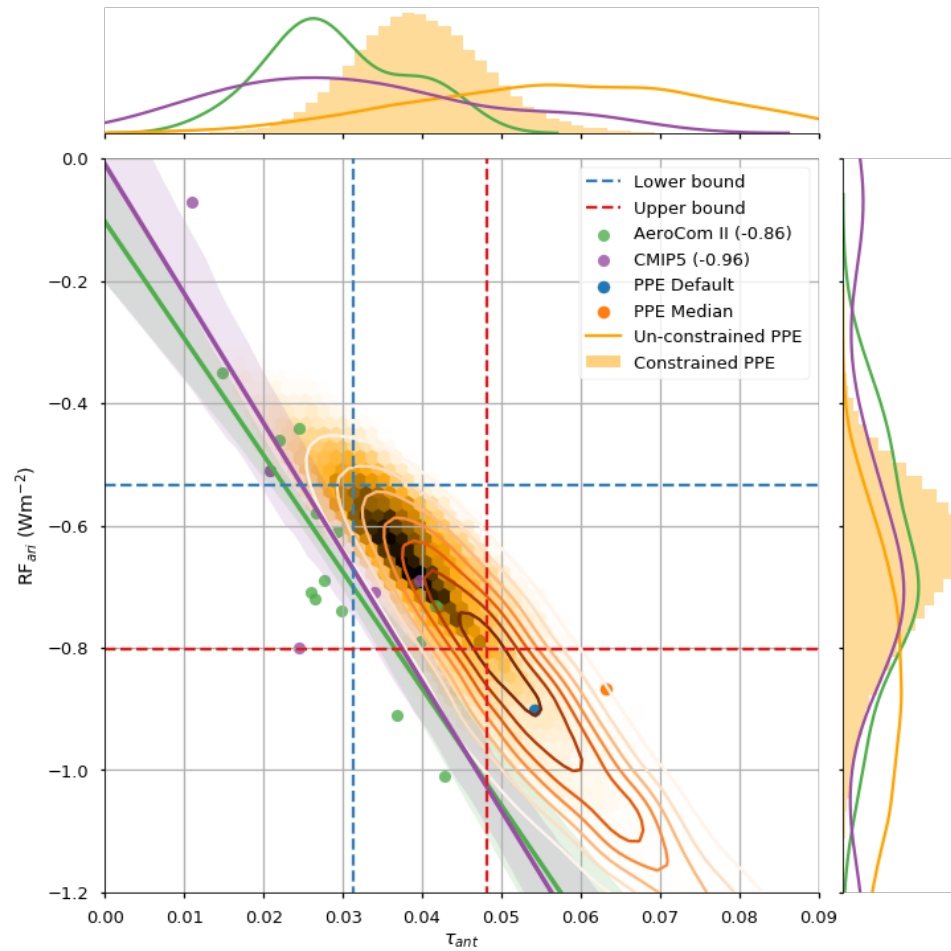
# Anthropogenic AOD



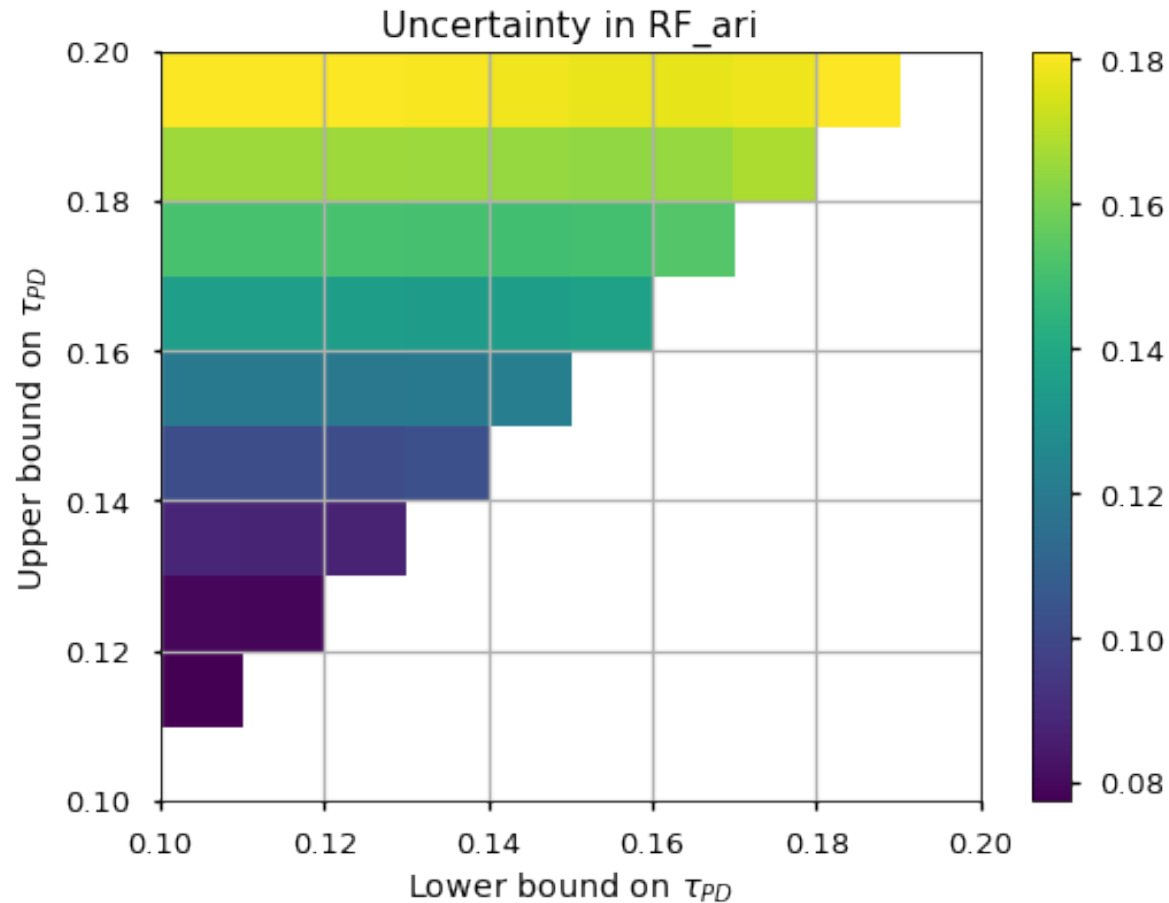
# Anthropogenic AOD



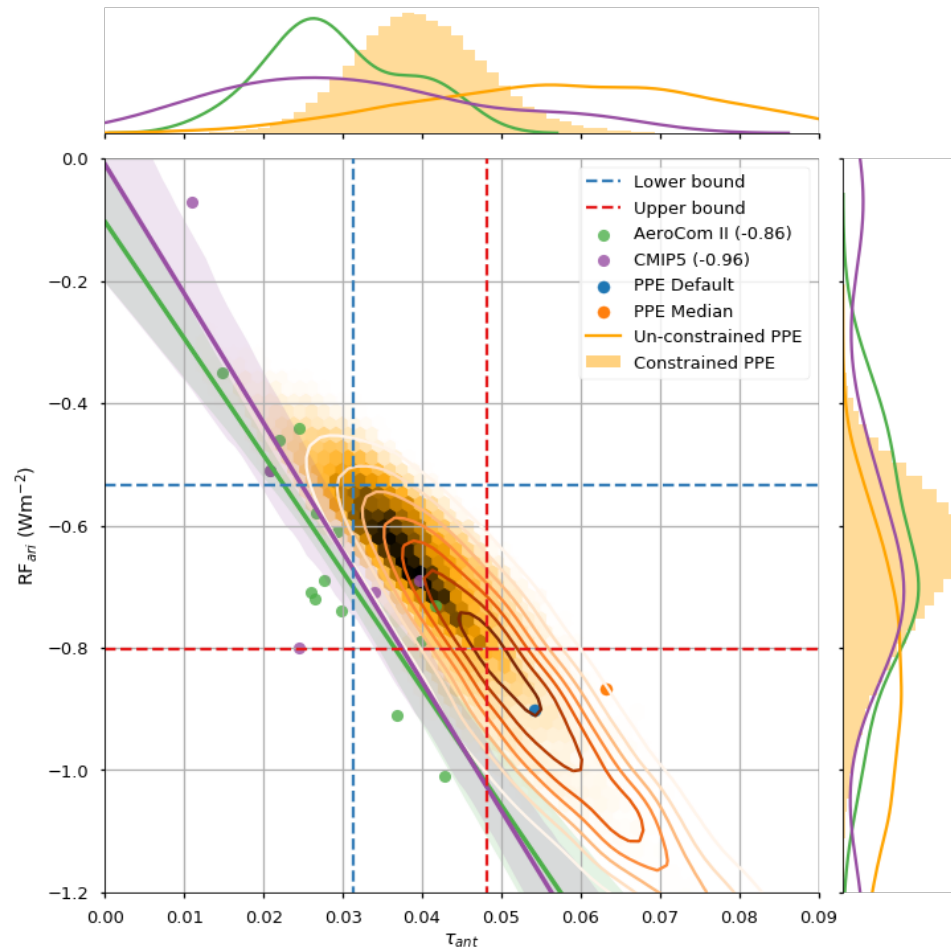
# Clear-sky RFari



# What if our bounds are wrong?

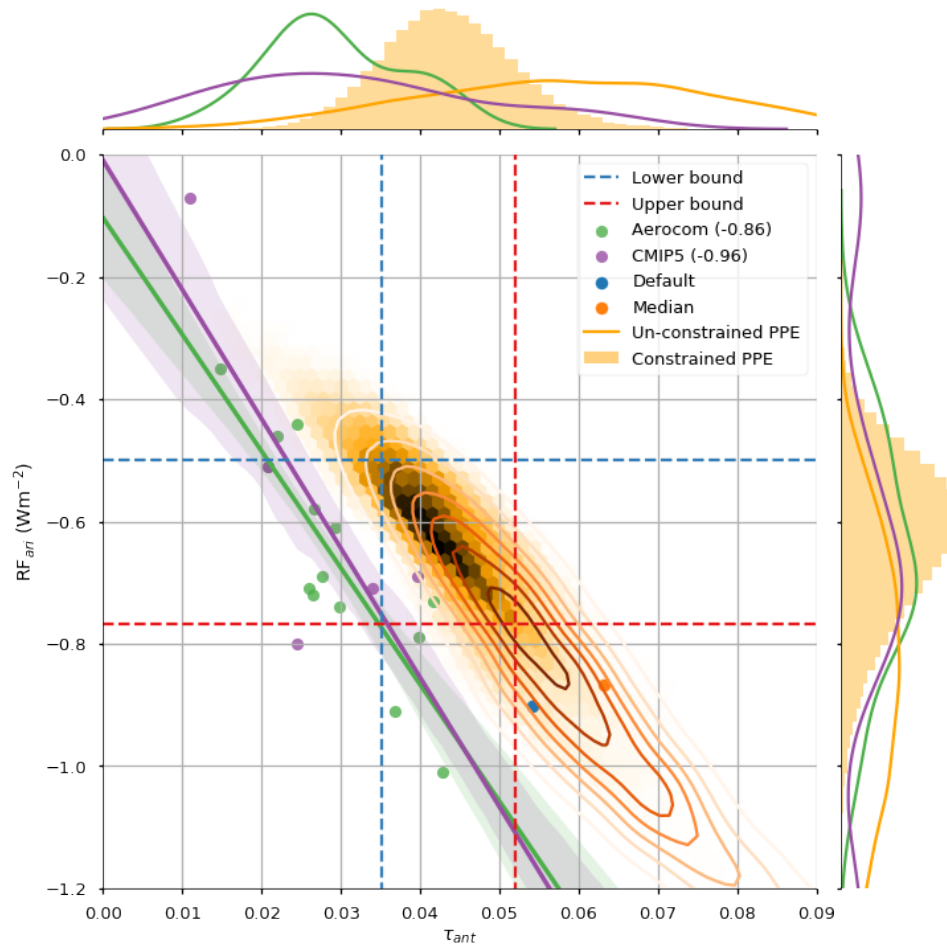


# What about absorption?





# What about absorption?



# What about absorption?

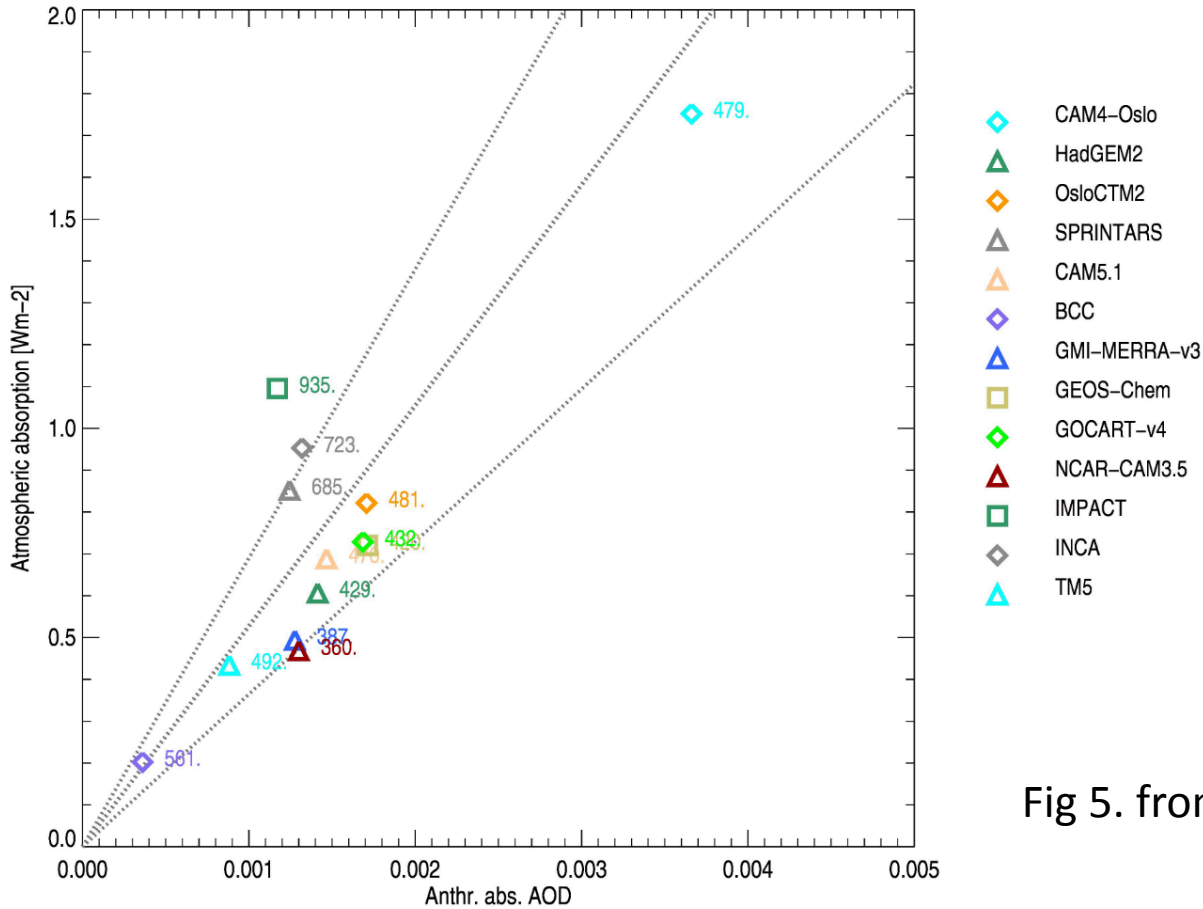
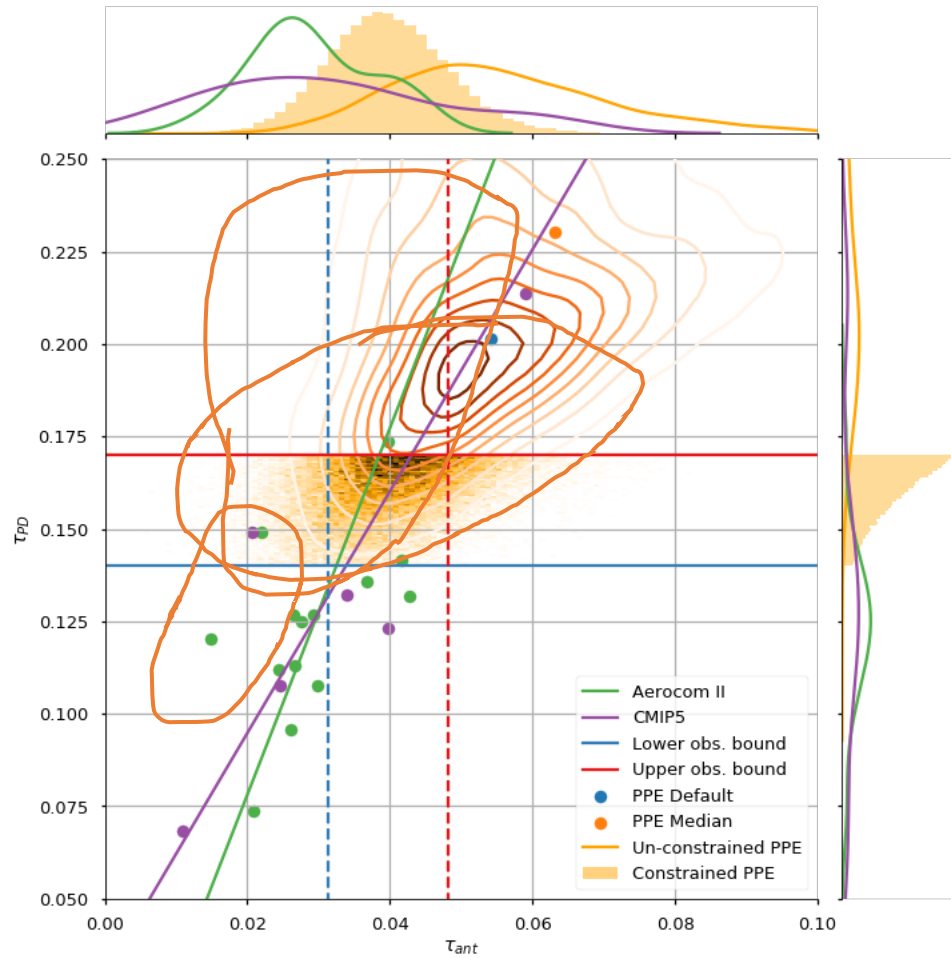


Fig 5. from Myhre et al. 2013

# What about the other models?



# Summary

- Constrained anthropogenic AOD to 0.03-0.05 using a relationship between AOD and anthropogenic AOD
- This leads to a clear-sky  $RF_{\text{ari}}$  estimate of  $-0.67 \pm 0.13$   $\text{Wm}^{-2}$  in our PPE, in good agreement with AeroCom
- We will explore contribution of absorption using a separate PPE that includes radiative properties
- Outstanding questions:
  - Why is there still such a spread in modelled AOD? Can we explore this?
  - Can we improve our observational range on AOD?

