Mixing state and optical hygroscopicity – can they be disentangled, or is the confusion a good thing?

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Modeling b_{ext} as a function of RH

AMS sub-micron NR composition

+

SP2 black carbon

+

SMPS sub-micron size distribution

+

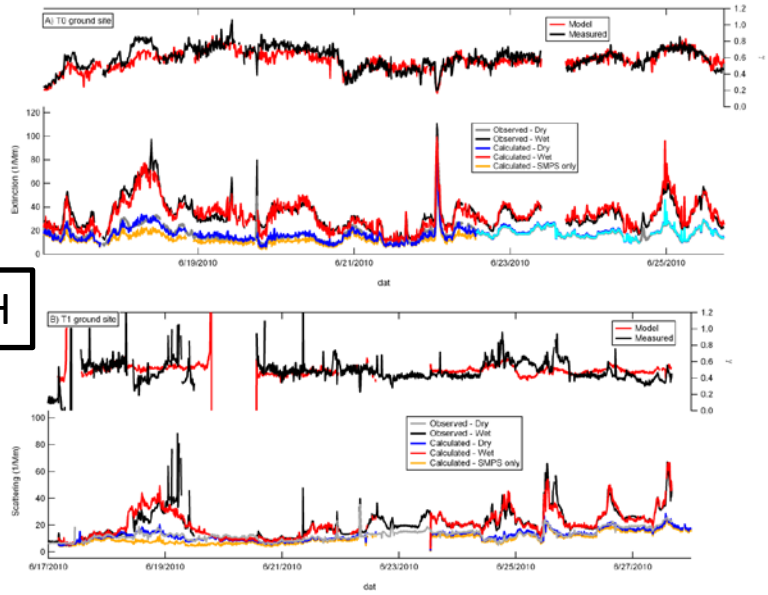
APS super-micron size distribution

+

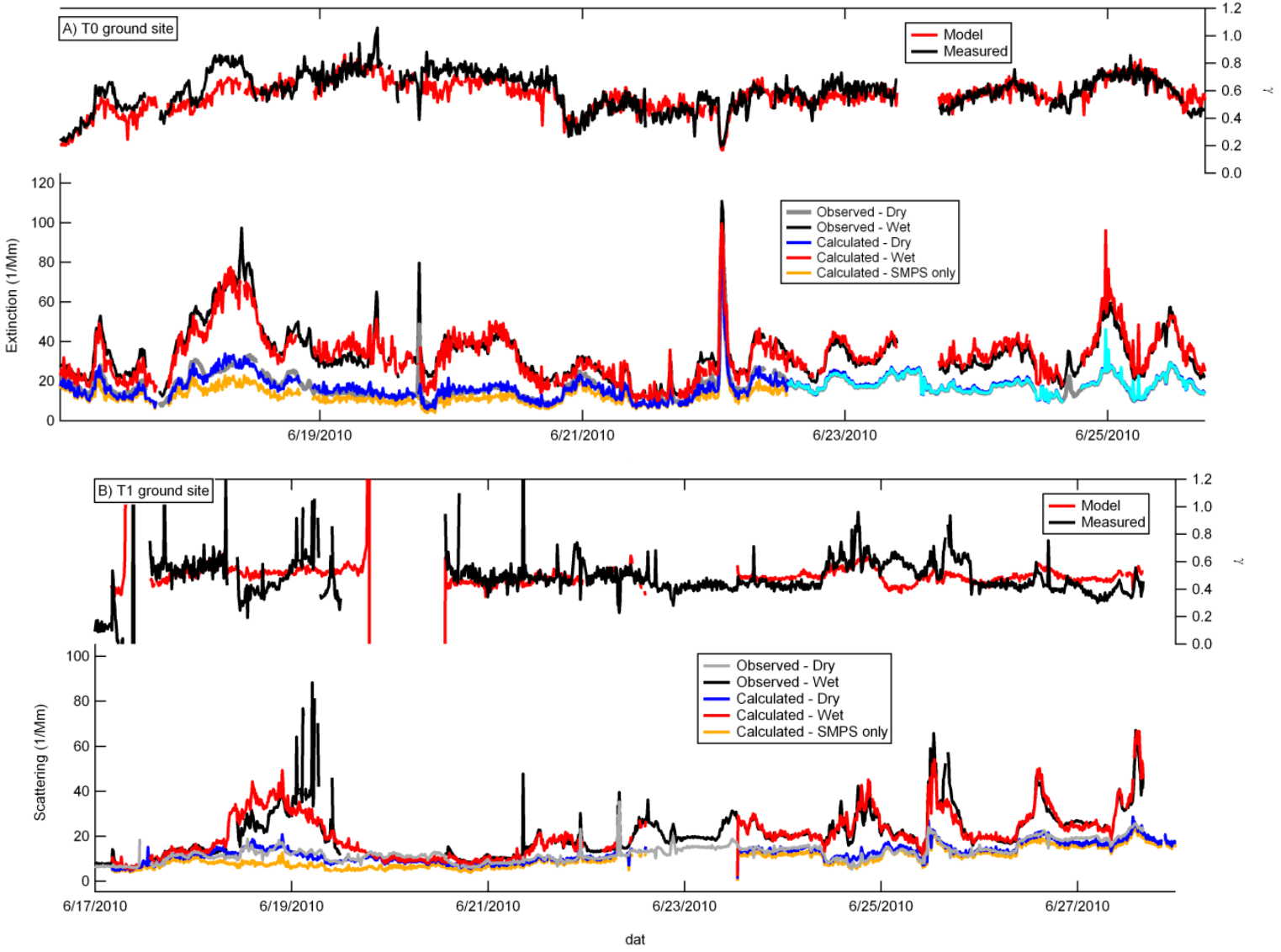
Petters and Kreidenweis kappa formalism

low RH

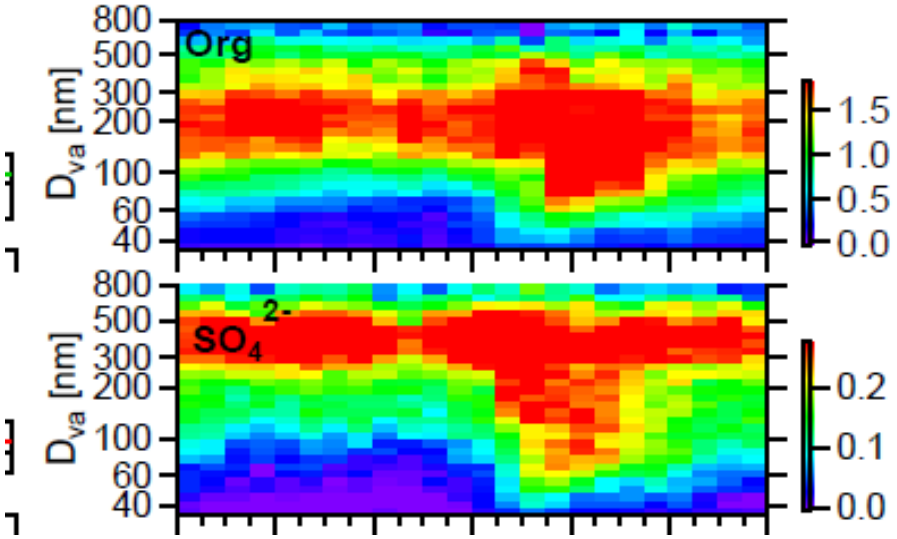
high RH



Modeling b_{ext} as a function of RH

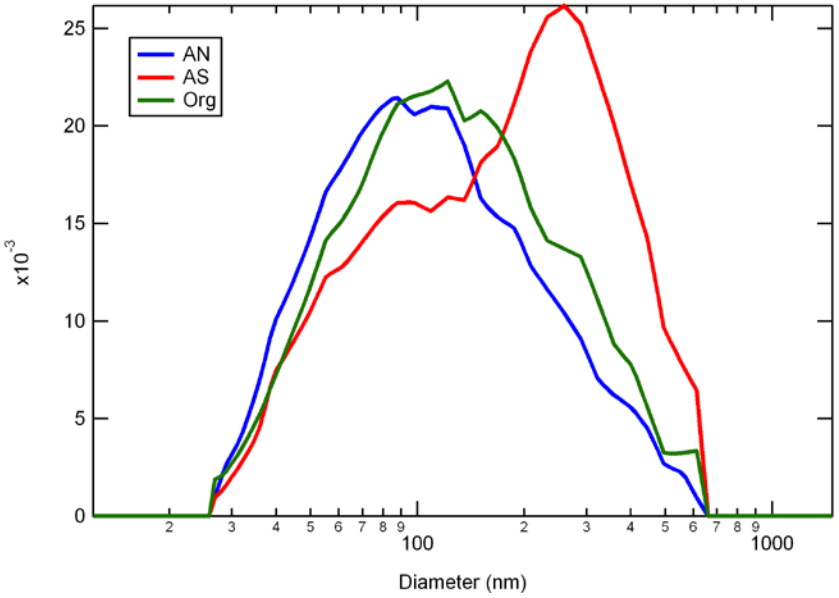


A fly in the ointment

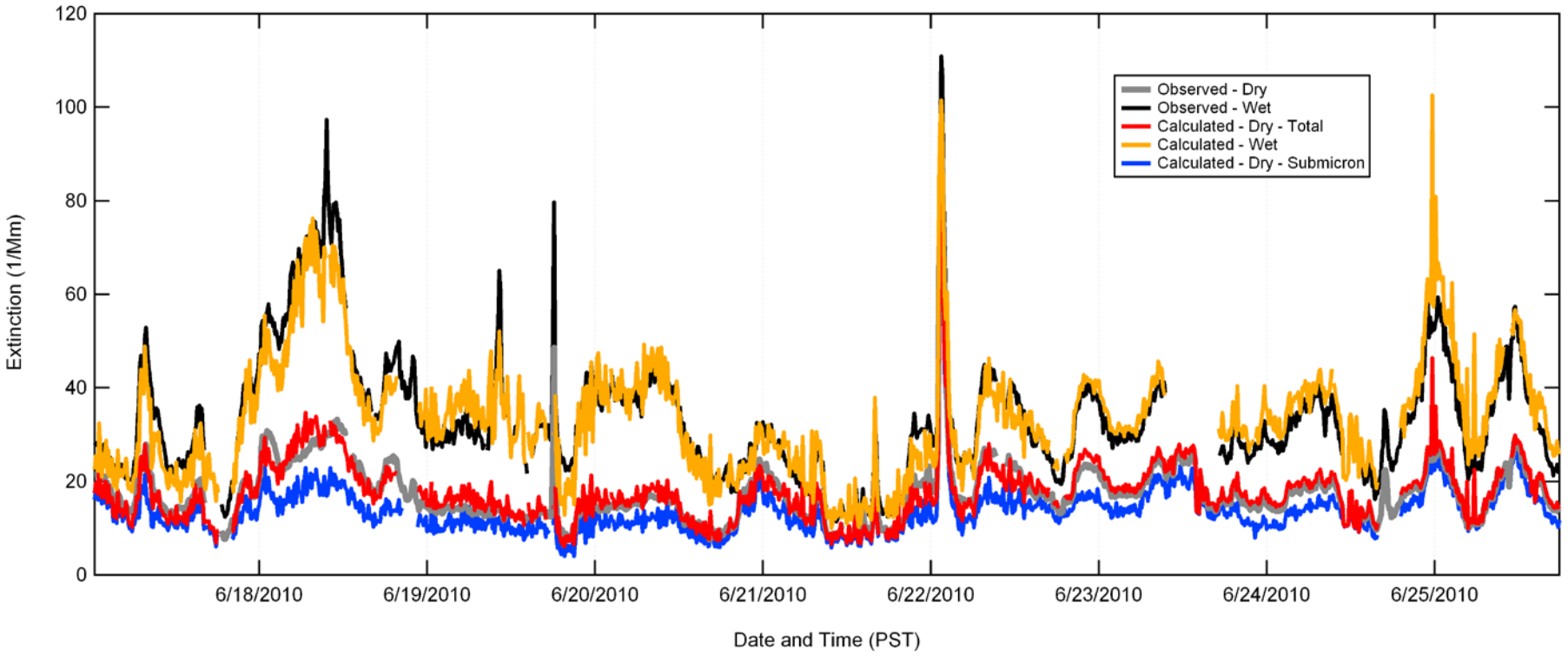


AMS (and SPLAT II) say that different components have different size distributions (unlike our simple assumption)

So, use the diurnal distribution (average) to obtain normalized size distribution for our components.



Internal, with size coaxing



But is this right? Shouldn't we be using SPLAT II for T0 and AMS for T1?
And what if it is an external distribution?
And what about those darn super-micron particles?