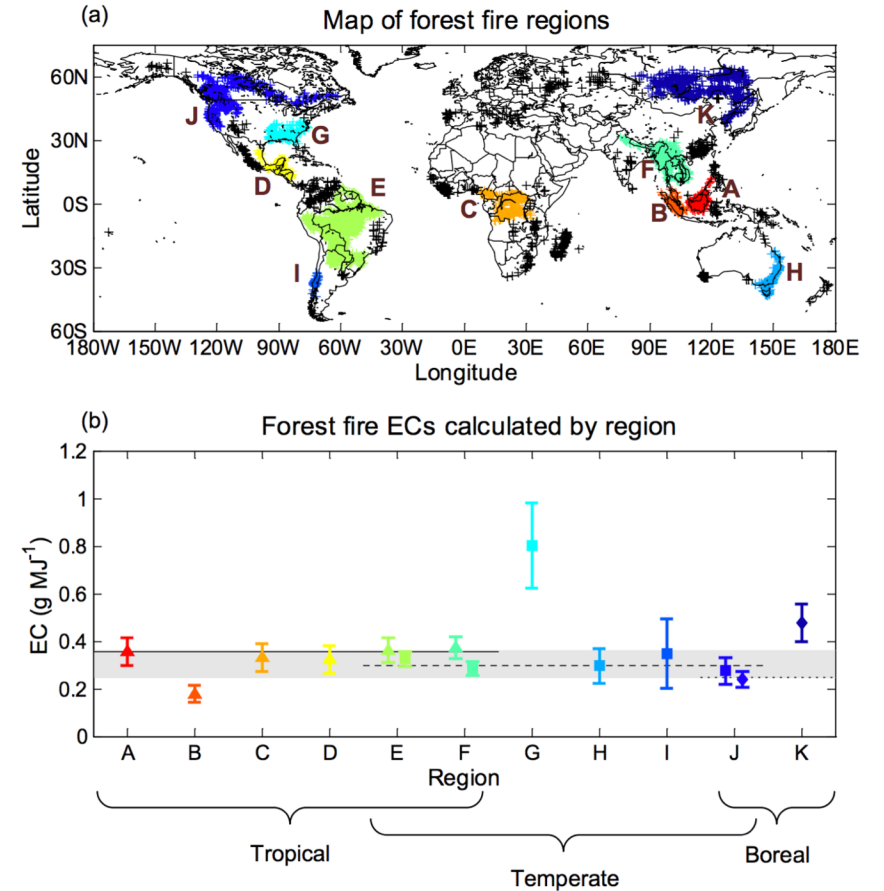


Linking satellite, ER-2, and *in situ* gas-phase measurements of NO₂

satellite remote sensing

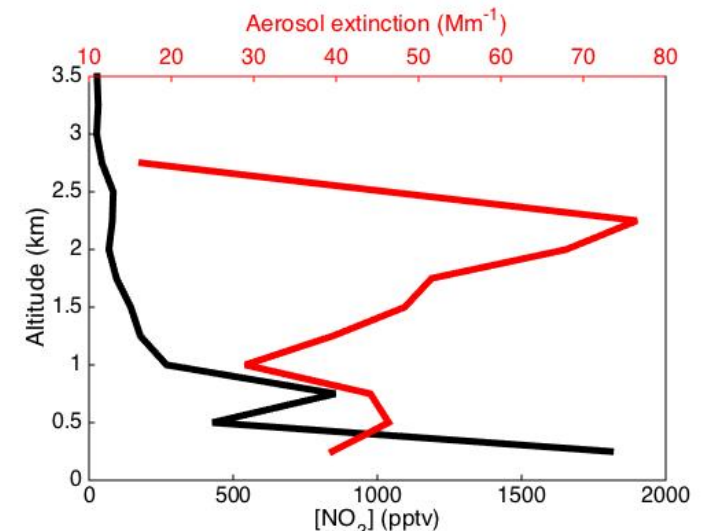
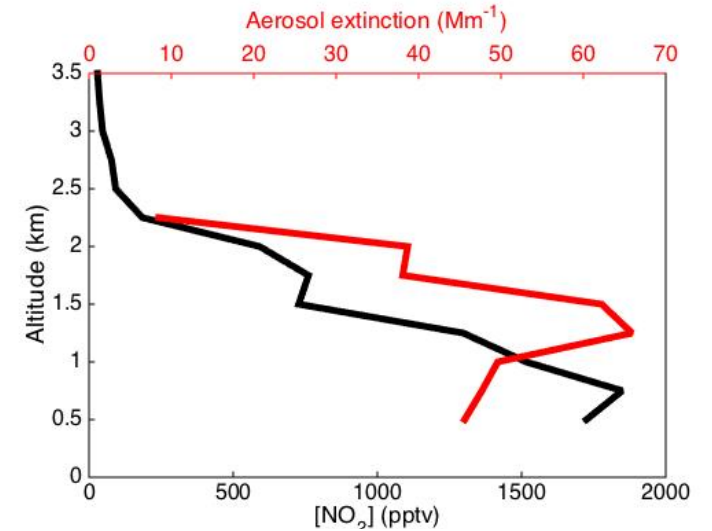
- Large spatial coverage
- Requires *a priori* profiles to calculate AMF



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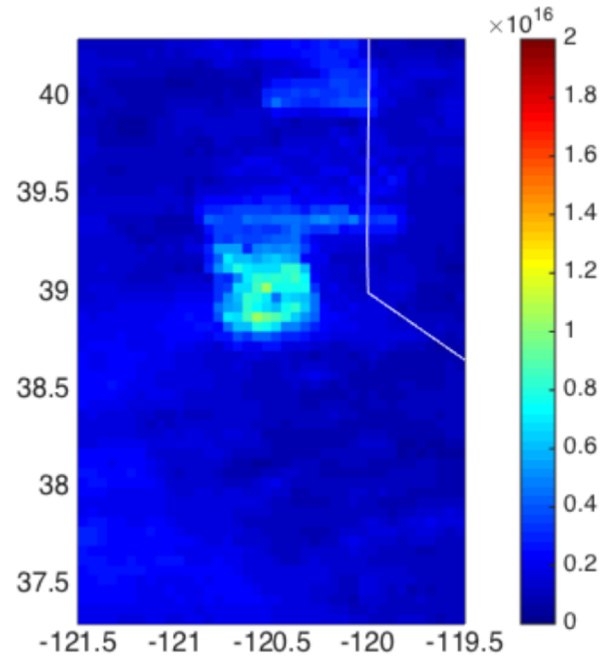
in situ aircraft measurements

- Detailed, but relatively few data points
- Vertical profiles inform *a priori*
- Use for satellite validation

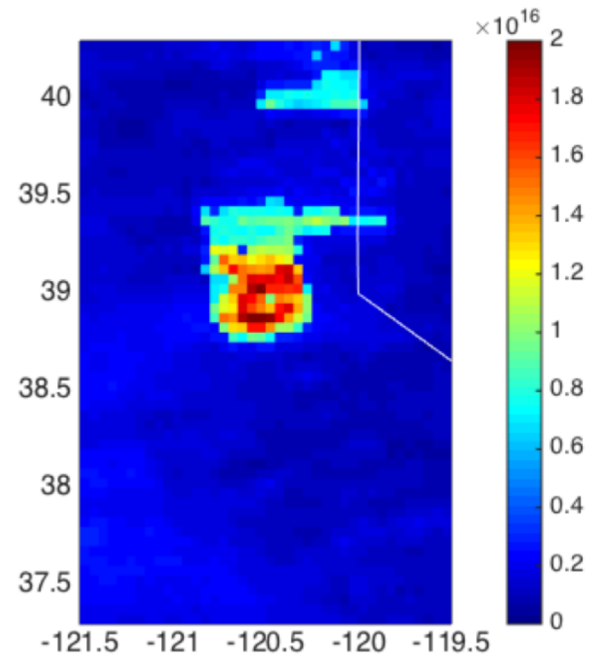
Aircraft measurements from DISCOVER-AQ

Effect of a *priori* profile on NO_x emissions from fires

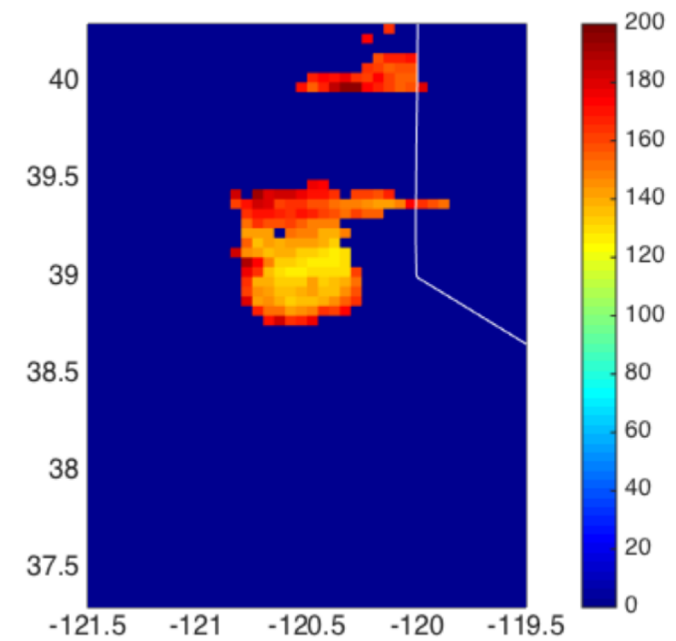
- Scale a typical rural NO_2 profile to give a VCD equal to that observed over a typical biomass burning event by assuming all additional NO_2 would be in bottom 1 km



BEHR NO_2 VCDs over King Fire, 09/2014

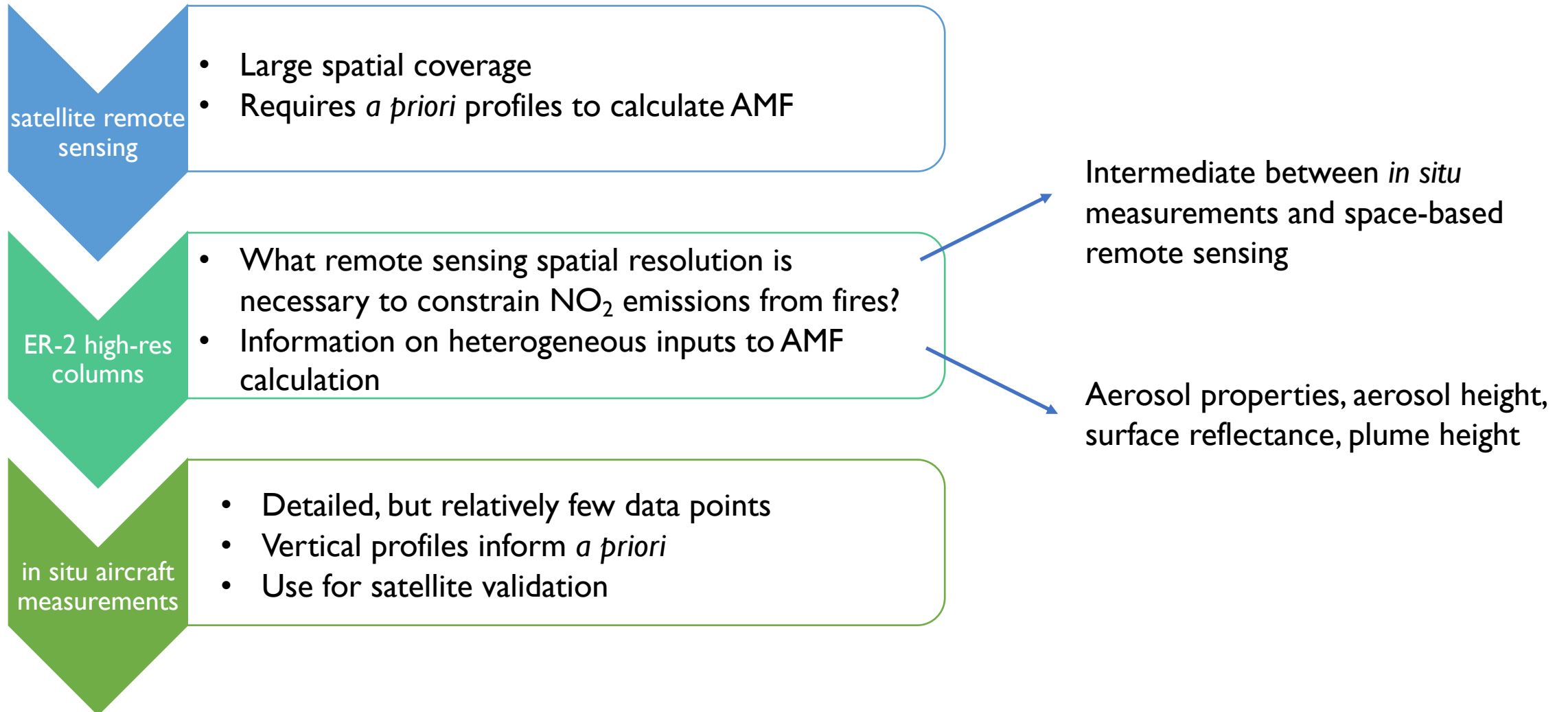


Apply an *ad hoc* scaling factor the *a priori* profile



Percent difference

Linking satellite, ER-2, and *in situ* gas-phase measurements of NO₂



Linking satellite, ER-2, and *in situ* gas-phase measurements of NO₂

satellite remote sensing

- Large spatial coverage
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ER-2 high-res columns

- What remote sensing spatial resolution is necessary to constrain NO₂ emissions from fires?
- Information on heterogeneous inputs to AMF calculation

in situ aircraft measurements

- Detailed, but relatively few data points
- Vertical profiles inform *a priori*
- Use for satellite validation

Inform our understanding of the lifetime and chemistry of NO_x in fire plumes