Feedback loop with implications for regional/global climate, local hydrology and agricultural practices in ecologically vulnerable tropical regions.
In clean conditions, as the Earth’s surface warms throughout the day, air rises, clouds form, and rain commences.

In polluted conditions, the Earth’s surface warms less throughout the day, less clouds form, and less rain falls.

Tosca et al. (2015), GRL
WILDFIRE + CLIMATE GLOBAL IMPLICATIONS

Martin, Kahn, & Tosca (2018), JGR
Vast majority of plumes are in Africa (but, very small fires)
- Most fires on the planet occur between July and September (dominated by signal from southern Africa)
- Smoke from wildfire generally does not make it above 2km, with some notable exceptions
- Substantial fraction of plumes in high latitudes inject above the planetary boundary layer
- Most plumes in tropics/subtropics are low-altitude injection events
- Canada/Alaska seem to experience more high-injection plumes than Siberia?
- Implications for climate?
RADICAL COLLABORATIONS
DESIGN PROCESS vs. SCIENTIFIC METHOD

**Design Process:**
- Understand
  - Empathize
  - Learn
  - Listen
- Ideate
  - Explore
  - Visualize
  - Imagine
- Prototype
  - Test
  - Observe
  - Propose
- Refine
  - Polish
  - Implement
  - Deliver

**Scientific Method:**
- Hypothesize
  - Question
  - Propose
  - Imagine
  - Explore
- Experiment
  - Measure
  - Research
  - Analyze
- Conclude/Theory
  - Publish
  - Discuss
  - Present