Panel 3: Smoke from Wildland, Prescribed, and Agricultural Fires

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Fire Hot Spot Detections by Season
MODIS 2017

Photo Jen Croft; JFSP TASMEE, Fishlake National Forest, Utah
Decision Support Tools for Wildland Fire

- MODIS, VIIRS, GOES-16/17
  - Product: 2018 CA Fire EI
  - Persistence Assumption
  - Source (Smoke) Apportionment
    - Mueller et al. 2020

- GOES-16 FDC, FRP
  - Product: GOES Fire and Smoke Tool (GoFAST), Fire Behavior
  - Custom Modeling for Air Resource Advisors
    - Li et al. 2019

- CALIPSO, CATS, MAIAC, MISR
  - FRP, Plume Rise Methods
    - Vertical Allocation (!)
    - Support Aviation, Visibility

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- Support Aviation, Visibility

- NASA FEER Algorithm

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- Data Fusion
  - AOD, AQ Model, Surface Obs
  - Health Impact Analyses

Need: Data in Real-Time

https://wildlandfiresmoke.net
Remote-Sensing: Plume Top, Vertical Plume Extent

Cloud-Aerosol LiDAR with Orthogonal Polarization (CALIOP)

Multi-angle Imaging SpectroRadiometer (MISR)

Cloud-Aerosol LiDAR with Orthogonal Polarization (CALIOP)

Multi-Angle Implementation of Atmospheric Correction (MAIAC) MODIS Collection 6

Mallia et al. 2018 – Gaussian Vertical Distribution

Mohammad Al-Hamden, NASA

Hands-on Smoke Modeling (BlueSky Playground v3)

Mika Tosca, NASA, School of the Art Inst. of Chicago
Smoke Source Apportionment
Supporting wildfire management for resource benefit

- Satellite Data Need: Information about the aerosol type – new or fresh smoke?

- MODIS & VIIRS for fires < 12K acres
- GOES-16 for 18 Wildfires > 12K acres

Mueller et al. 2020
What is a polar orbiting versus geostationary satellite?
What are the instruments on commonly used satellites?
What are the products from these instruments?

Thank you!
Daegan Miller (University of Wisconsin),
Mark Fitch (National Park Service),
Pawan Gupta (NASA ARSET)
NASA HAQAST

https://www.airfire.org/projects/haqast/2017NorthernCAWildfiresTT/training