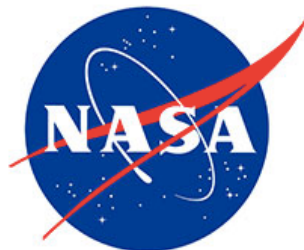
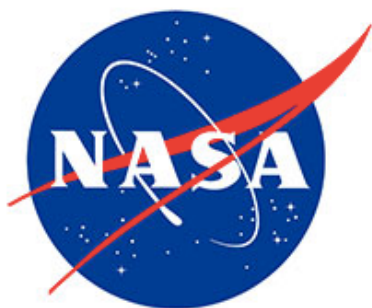


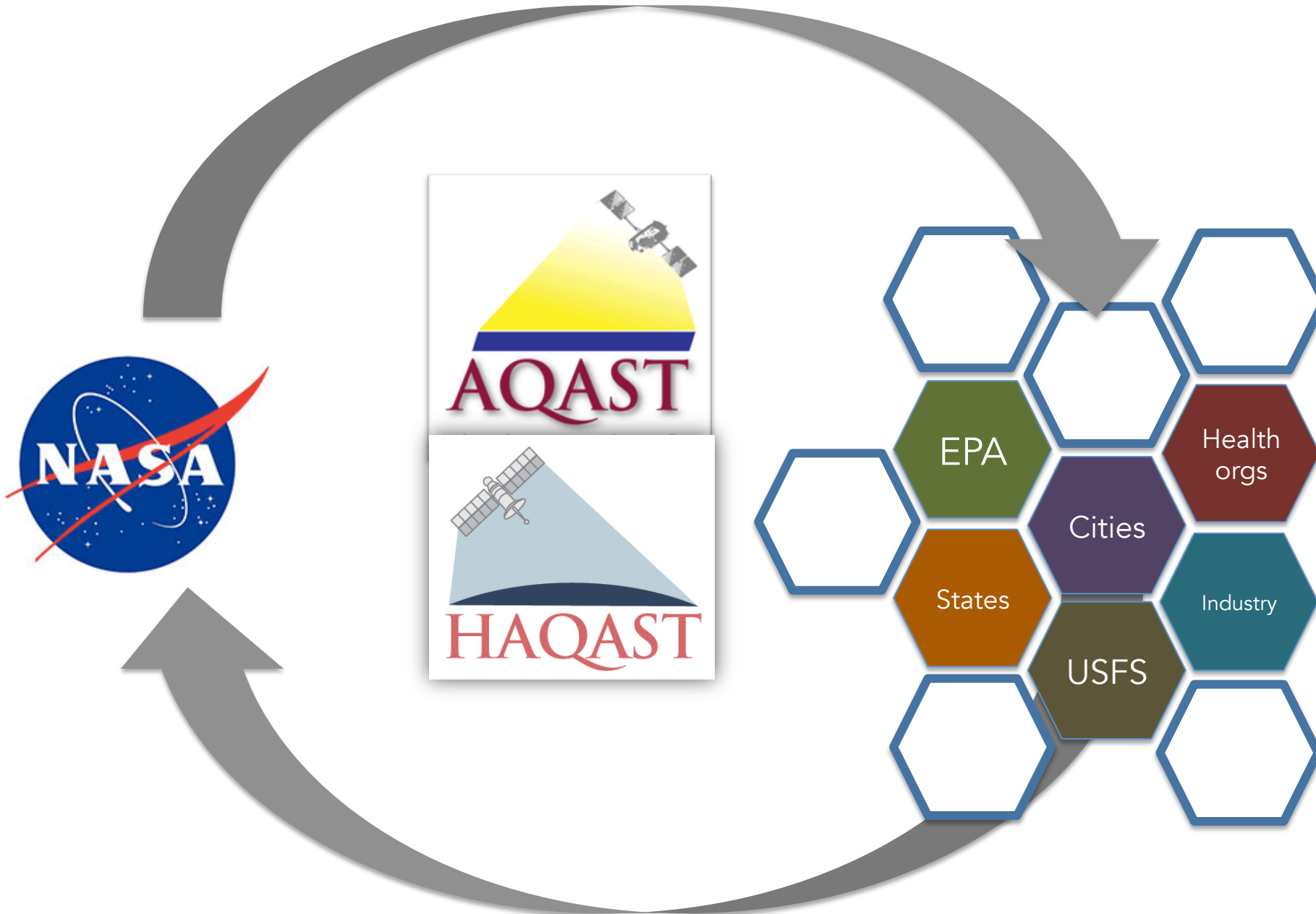


How HAQAST is connecting NASA Science with Air Quality and Public Health Applications

Tracey Holloway, Daegan Miller & Rhianna Miles
Leadership Team, NASA HAQAST
Health and Air Quality Applied Sciences Team









HAQAST Supports 2 Types of Projects: Individual & Tiger Team

Sept. 2016

Sept. 2017

Sept. 2018

Sept. 2019

13 HAQAST Members' Proposed Initiatives
with stakeholders & Co-I collaborators

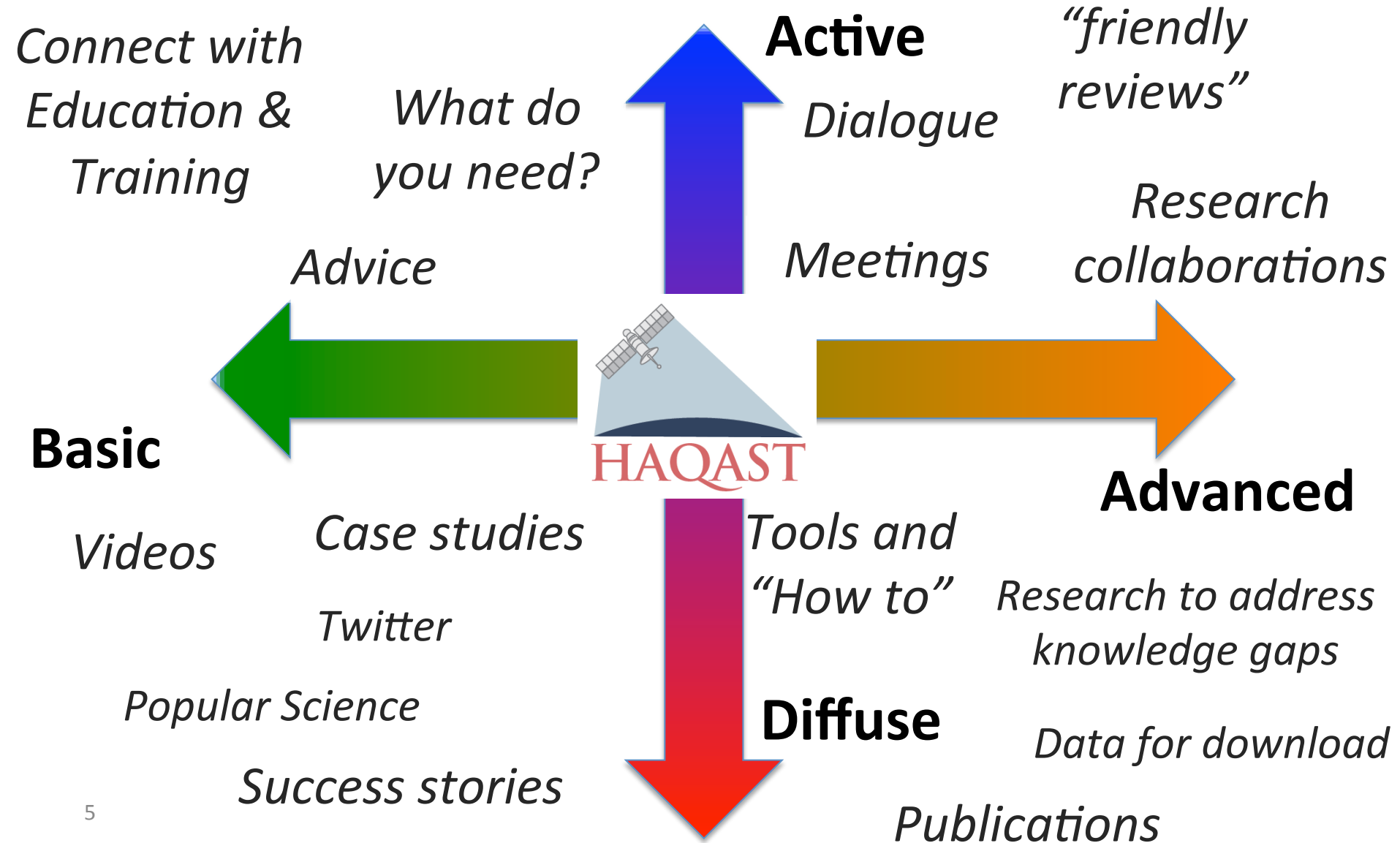
Now =

- Mid-point for individual projects
- Mid-point for Year 1 Tiger Teams
- Launch of Year 2 Tiger Teams

Year 1 "Tiger Teams"
4 larger collaborations
Focused, stakeholder-
based, short-term

Year 2 "Tiger Teams"
TBD

HAQAST Scope of Work



RESEARCH LETTER
10.1002/2017GL073524

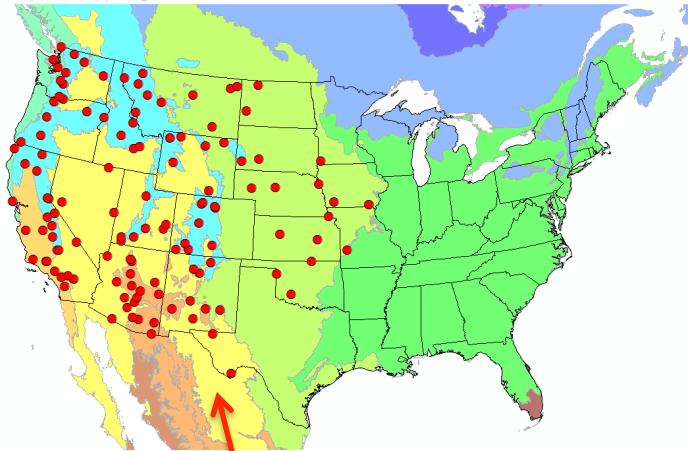
Intensified dust storm activity and Valley fever infection in the southwestern United States

Key Points:
• The frequency of locally originated

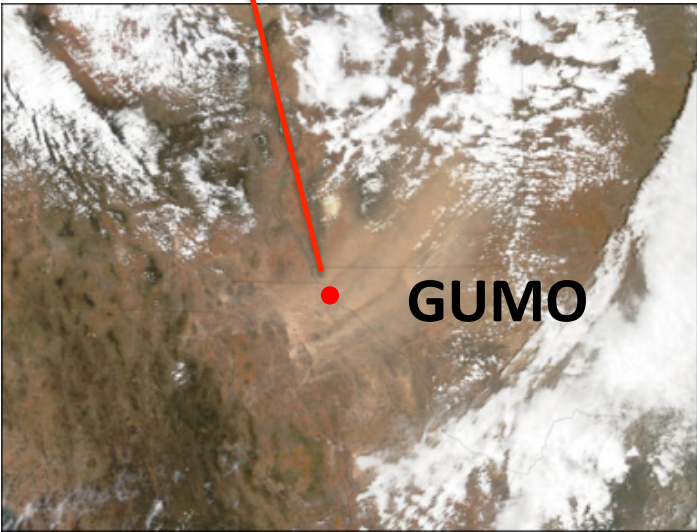
Daniel Q. Tong^{1,2,3}, Julian X. L. Wang², Thomas E. Gill⁴, Hang Lei^{1,2}, and Binyu Wang¹



Ground Network



MODIS Dust



PBSO NEWS HOUR

Menu

Forbes | S

By — Dave Berndtson

0 comments

Brea can't Share

Why more dust storms and Valley fever are blanketing the Southwest

MAY 10, 2017 @ 05:39 PM 2,277

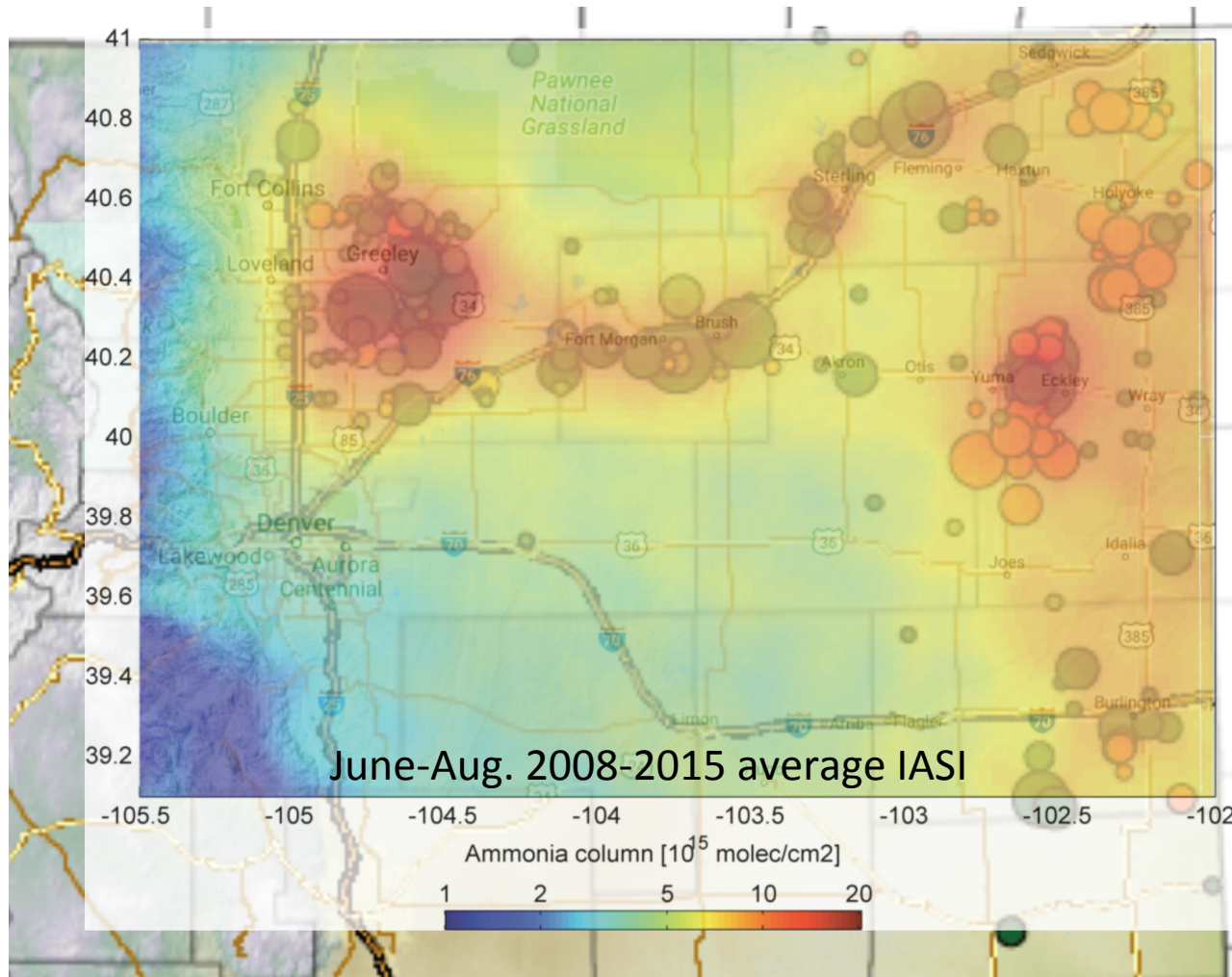
Dust Storms In The Southwest ~ There A Connection To Valley Fever?

High-resolution NH_3 maps - $\text{PM}_{2.5}$ precursor in Colorado

Mark Zondlo (Princeton), Kang Sun (Harvard), Daniel Bon (CDPHE)



- Quantify agricultural impact of $\text{PM}_{2.5}$ in Denver-Boulder
- Highest resolution mapping of NH_3 at ~ 2 km, oversampling IASI NH_3
- Overlaid with CAFO sizes and locations



Legend

Animal Type

- Cattle
- Dairy
- Horse
- Poultry
- Sheep
- Swine

CAFO size (animal units)

- < 7,500
- 7,501 - 15,000
- 15,001 - 30,000
- 30,001 - 45,000
- > 45,000

IASI oversampling algorithm
(K. Sun et al., 2017)

IASI NH_3 Neural network, v1
(S. Whitburn et al., 2016)

NASA Health and Air Quality Applied Sciences Team (HAQAST)



- Tracey Holloway (Team Lead, UW-Madison)
- Bryan Duncan (NASA GSFC)
- Arlene Fiore (Columbia University)
- Frank Freedman (San Jose State University)
- Daven Henze (University of Colorado, Boulder)
- Jeremy Hess (University of Washington, Seattle)
- Yang Liu (Emory University)
- Jessica Neu (NASA Jet Propulsion Laboratory)
- Susan O'Neill (USDA Forest Service)
- Ted Russell (Georgia Tech)
- Daniel Tong (George Mason University)
- Jason West (UNC-Chapel Hill)
- Mark Zondlo (Princeton University)

haqast.org





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4 New Tiger Teams from HAQAST

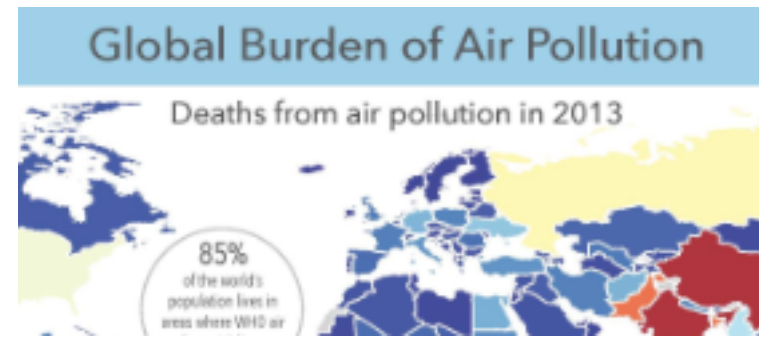
- **Led by Brad Pierce & Daniel Tong:** Improved NEI NO_x emissions using OMI Tropospheric NO₂ retrievals
- **Led by Pat Kinney:** High Resolution Particulate Matter Data for Improved Satellite-Based Assessments of Community Health
- **Led by Bryan Duncan & Jason West:** Demonstration of the Efficacy of Environmental Regulations in the Eastern U.S. for Health and Air Quality
- **Led by Arlene Fiore:** Supporting the use of satellite data in State Implementation Plans (SIPs)

Table of team Pls & Budget Totals

	Duncan & West	Fiore	Kinney	Pierce & Tong
Duncan	80%	20%		
Fiore	11%	60%	29%	
Freedman			100%	
Henze	10%	20%	50%	20%
Hess		25%	75%	
Holloway		50%		50%
Liu	40%		60%	
Neu		100%		
O'Neill			40%	60%
Russell	34%	33%		33%
Tong	5%	10%	5%	80%
West	100%			
Zondlow	60%	20%	20%	

+ Communications





(U.S.) Air Quality Management

- Clean Air Act
- Compare w/ Monitoring
- Litigious
- Federal (especially EPA)
- States, sometimes counties
- Regulated pollutants
- Exceptional Events
- Key opportunities:
 - Model validation
 - emissions inventories
 - Trends

Public Health

- No legal framework
- Open to new data
- Research-oriented
- Global (WHO, other countries)
- Federal (CDC, NIH, EPA)
- Cities & Communities
- All pollutants of interest
- Key opportunities:
 - Population health risk
 - Connect with low cost sensors
 - Public outreach

How can we link NASA science with your organization?



Unaware: What NASA data?

Uninterested: I don't think that NASA data is useful to me

Curious: I wonder if that NASA data could be useful to me

Engaged: I'd like to start using those NASA data

Enthusiastic: These NASA data are so useful! Thanks, HAQAST!!