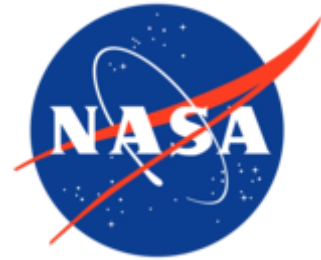


# Down to Earth: How CDC and NASA Track Environmental Health

*Health and Air Quality Applications Program  
Review, September, 2019*

Environmental Public Health Tracking Program  
Emergency Management, Radiation, and Chemical Branch  
Division of Environmental Health Science and Practice



# Celebrating 15-year Collaboration!

## Memorandum of Understanding: CDC/ATSDR and NASA (2004)

### Exploring Applications of Earth Science Research and Development for Environmental Public Health

- **Evaluate** use of NASA Earth system science, technology and data as potential solutions to characterizing environmental hazards and other risk factors to be measured and tracked by CDC/ATSDR
- **Verify, validate, and benchmark** potential solutions
- **Identify** education, training and communications needs
- **Establish** an interagency working group

# Celebrating 15-year Collaboration

Thank you to NASA and NASA funded participants!

- Sue Estes
- Lawrence Friedl
- John Haynes
- Yang Liu
- Jennifer Stowell
- Xiaomeng Jin
- Tabassum Insaf
- Fiona Lo
- Richard Stumpf
- Michael Wimberly
- Maury Estes
- Kevin Doty
- Jeff Luvall
- Aaron Naeger
- Gary Jedlovec
- Emily Berndt



Plus CDC and state/local speakers

Funded since 2002

# TRACKING PROGRAM

Goal: Increase the number of **data-driven** environmental public health **actions and decisions** by providing information from a **nationwide network** of **standardized, integrated** health and environmental data

# National Environmental Public Health Tracking Program



\* efforts to reduce or eliminate diseases that may be prevented by managing environmental factors

# HELPS IMPROVE HEALTH WITH DATA, TOOLS, AND EXPERTISE



*Target  
prevention  
activities*



*Monitor  
community  
health*



*Identify  
communities  
at risk*



*Support  
epidemiologic  
studies*



*Educate  
residents*



*Inform city or  
state planning*



*Inform health  
policies*



*Visit the Tracking Network today  
[www.cdc.gov/ephtracking](http://www.cdc.gov/ephtracking)*

*Check out examples of Tracking in  
Action success stories and products!*



In order to have data-driven actions, data must be:



**TIMELY**



**ACCURATE**

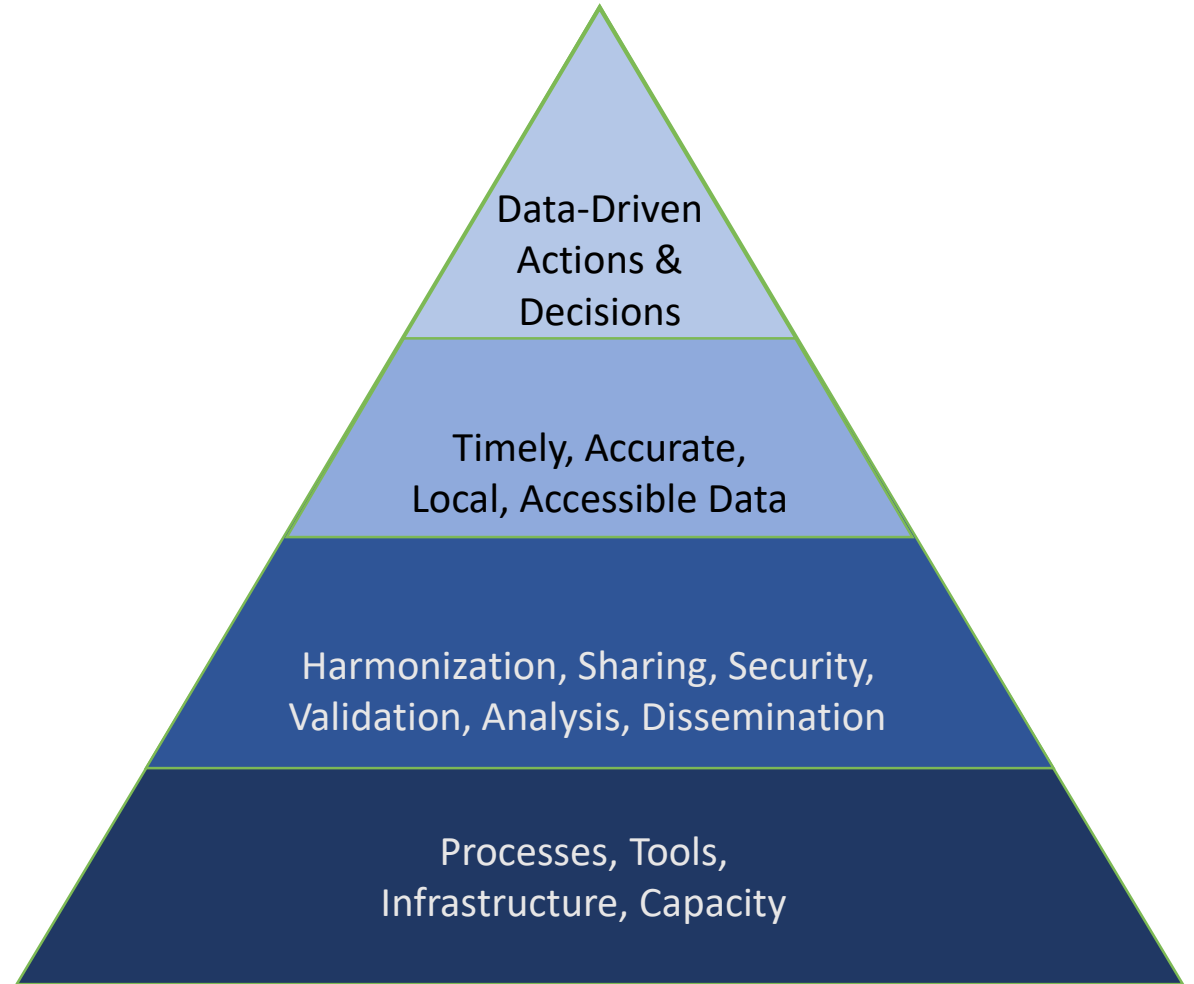


**LOCAL**



**ACCESSIBLE**

# How do we do it?







ENVIRONMENTAL PUBLIC HEALTH

**TRACKING**

# CONNECTS ENVIRONMENT & HEALTH INFORMATION

Check out CDC's data explorer and state and local tracking programs for more information.

## Environmental

- Radon
- Drought
- Sunlight & UV
- Wildfire Smoke
- Air Quality
- Extreme Heat
- Drinking Water
- Flood Vulnerability
- Community Design

- Pesticide Exposures
- Toxic Substance Releases
- Other Environmental Chemicals

## Exposures

## Health Effects

- Asthma
- Cancer
- Heart Disease
- Heat Stress Illness
- Childhood Lead Poisoning
- Developmental Disabilities
- Carbon Monoxide Poisoning
- Reproductive and Birth Outcomes

## Population Characteristics

- Lifestyle Risk Factors
- Socioeconomics
- Demographics
- Vulnerabilities

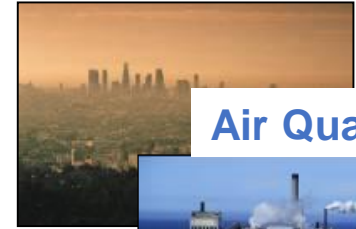




**Water Quality**



**Disasters**



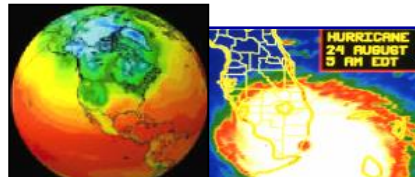
**Air Quality**



# NASA Earth system science, technology, and data offer solutions



**Built Environment**



**Global Climate Change**



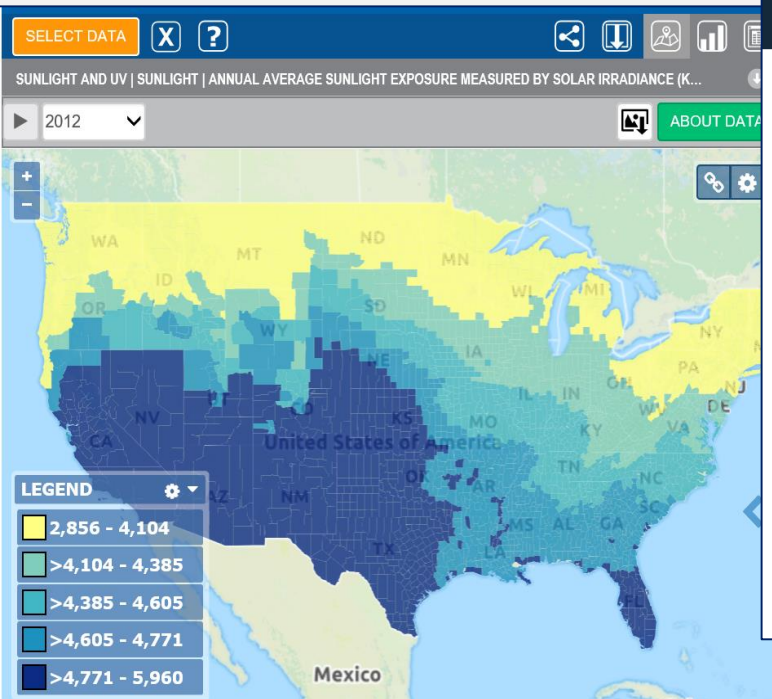
**Population Movement**

# CDC/Environmental Public Health Tracking and NASA Partnership

- Improved data
- Better tools and methods
- Available technical expertise and resources
- Increased workforce capacity



# UV and Solar Metrics



Images Global Maps Articles Blogs

NASA earth observatory

## New Map Shows Risk of Sunburn Across the U.S.

Erythemally Weighted Daily Dose of UV ( $J/m^2 \times 1000$ )

1 2 3 4 5 6 7

January - December 2015

Image of the Day for August 7, 2019

**Instrument:**  
Aura — OMI

Image of the Day Atmosphere Land

Remote Sensing

**View more Images of the Day:**

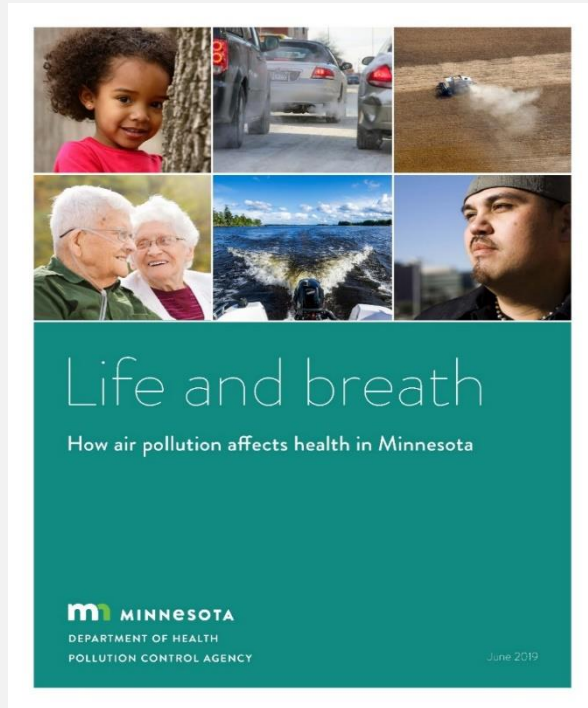
Skin cancer is the most common form of cancer in the United States, taking thousands of lives every year. By the age of 70, one in five Americans will develop skin cancer. Now

<https://earthobservatory.nasa.gov/images/145413/new-map-shows-risk-of-sunburn-across-the-us>

## Looking Forward – Opportunities for Collaboration

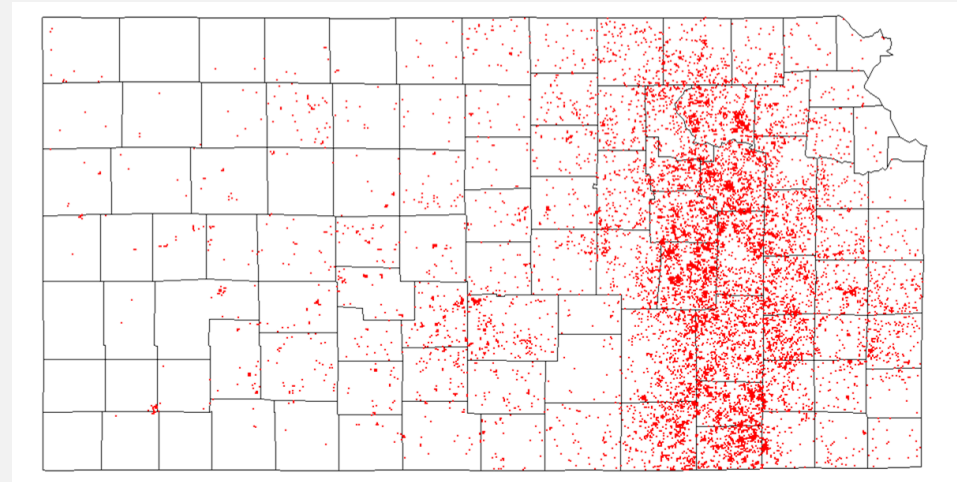
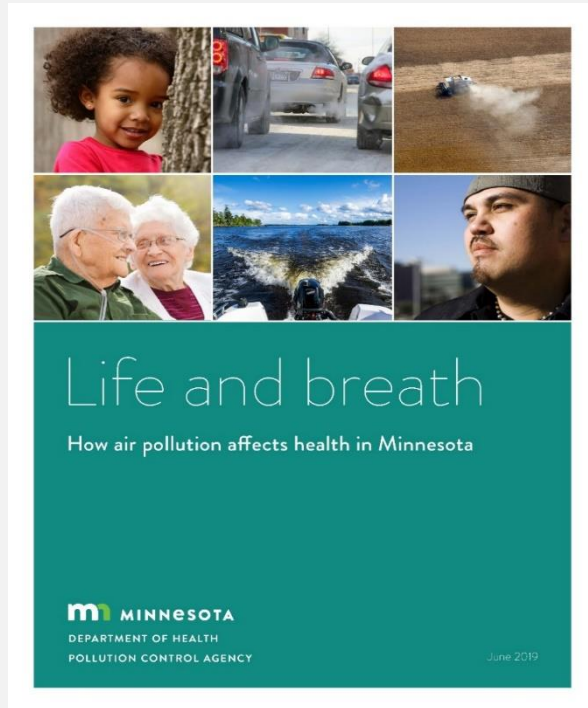
- ❑ Characterize exposure, vulnerabilities, and health impacts to take action
  - ❑ Air pollution
  - ❑ Pollen
  - ❑ Wildfires and prescribed burnings
  - ❑ Heat
  - ❑ HABs

# Looking Forward – Opportunities for Collaboration

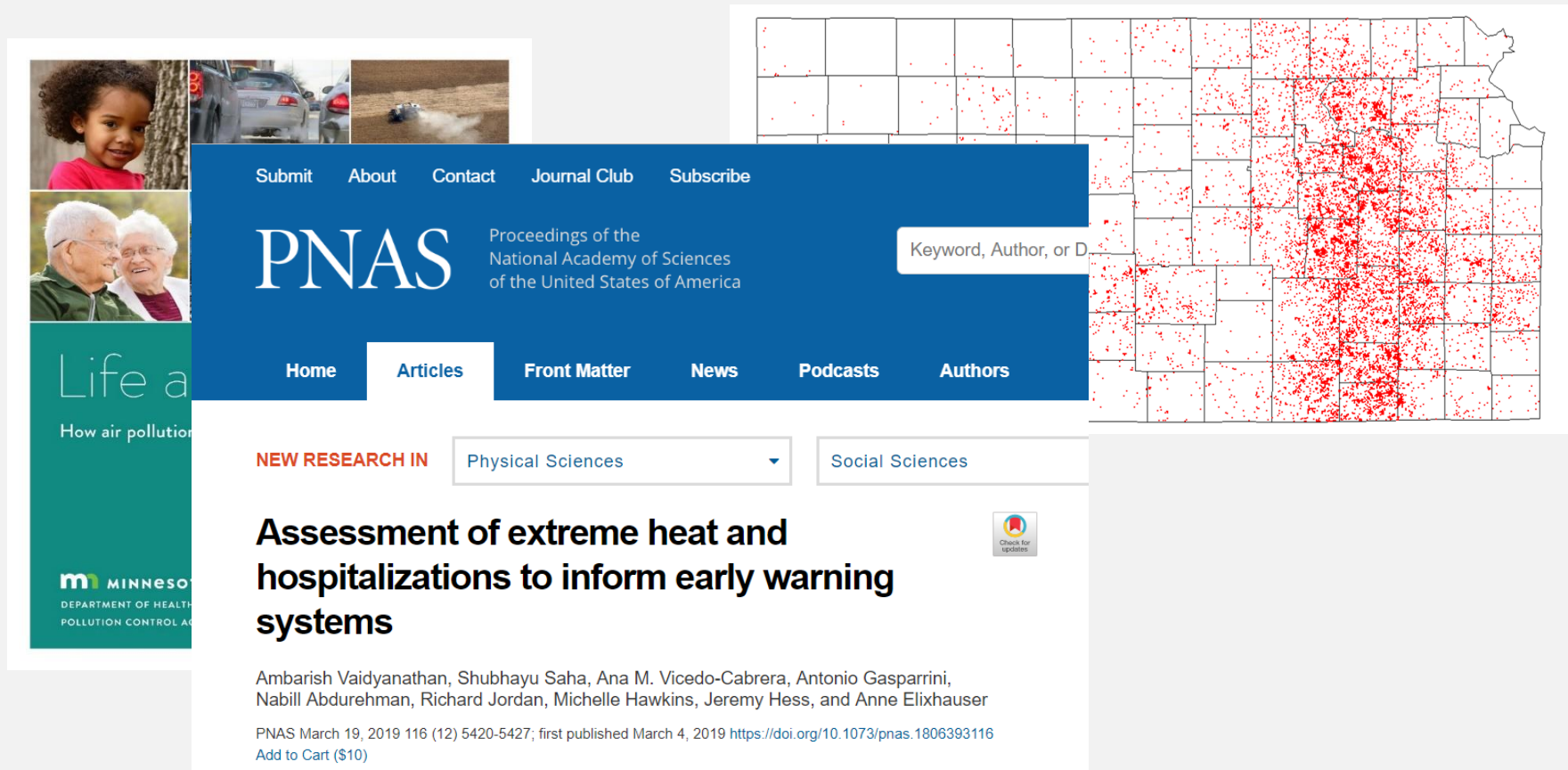




# Looking Forward – Opportunities for Collaboration



# Looking Forward – Opportunities for Collaboration



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NEW RESEARCH IN Physical Sciences Social Sciences

**Assessment of extreme heat and hospitalizations to inform early warning systems**

Ambarish Vaidyanathan, Shubhayu Saha, Ana M. Vicedo-Cabrera, Antonio Gasparrini, Nabill Abdurehman, Richard Jordan, Michelle Hawkins, Jeremy Hess, and Anne Elixhauser

PNAS March 19, 2019 116 (12) 5420-5427; first published March 4, 2019 <https://doi.org/10.1073/pnas.1806393116>

Add to Cart (\$10)

Life a  
How air pollution  
m MINNESOTA  
DEPARTMENT OF HEALTH  
POLLUTION CONTROL AGENCY



# Looking Forward – Opportunities for Collaboration



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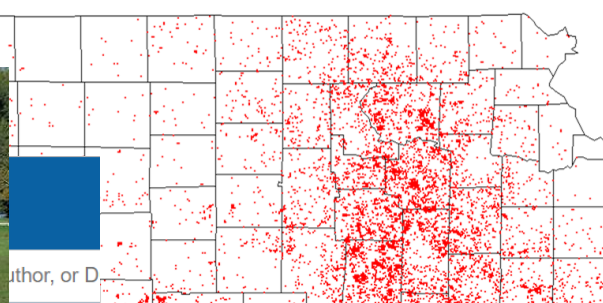
# PNA

Home

## Life a

How air pollution

**m** MINNESOTA  
DEPARTMENT OF HEALTH  
POLLUTION CONTROL AGENCY



NEW RESEARCH

## Assessing hospitalizations to inform early warning systems

Ambarish Vaidyanathan, Shubhayu Saha, Ana M. Vicedo-Cabrera, Antonio Gaspar, Nabill Abdurehman, Richard Jordan, Michelle Hawkins, Jeremy Hess, and Anne E

PNAS March 19, 2019 116 (12) 5420-5427; first published March 4, 2019 <https://doi.org/10.1073/pnas>  
Add to Cart (\$10)

## Looking Forward – Opportunities for Collaboration

- ❑ Extend the use of the Environmental Public Health Tracking Network as a Decision Support System and platform to host earth science data products
  - ❑ Share expertise and resources to transform raw data for public health
  - ❑ Identify repeatable, sustainable data products to support ongoing public health surveillance

# Thank you

**CDC Public Health Grand Rounds Presentation and “Beyond the Data”:**  
Tracking Environmental Health Data for Public Health Decision Making  
<http://www.cdc.gov/cdcgrandrounds/archives/2016/june2016.htm>



For more information, contact NCEH/ATSDR  
1-800-CDC-INFO (232-4636)

TTY: 1-888-232-6348      [www.atsdr.cdc.gov](http://www.atsdr.cdc.gov)      [www.cdc.gov](http://www.cdc.gov)

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention and the Agency for Toxic Substances and Disease Registry.

