

NASA HEALTH AND AIR QUALITY TEAM SUPPORTS NATIONAL PUBLIC HEALTH WEEK 2019

Every April, **National Public Health Week (NPHW)**, which is supported by the American Public Health Association (APHA), is celebrated to highlight key health priorities and encourage health educators, practitioners, and researchers to coordinate related health activities that address emphasized topics. For NPHW 2019 (*Creating the Healthiest Nation: For Science. For Action. For Health.*), the NASA Health and Air Quality Applications (HAQ) and Communications Teams (**Aries Keck, McRae Lenahan, Lia Poteet**) shared five projects on the NASA Applied Sciences Program’s **Making Space for Earth** [website](#) that promoted the use of Earth observation data to encourage community engagement in these environmental and public health issues. These project highlights were also widely disseminated on social media, with the support of APHA Veterinary Public Health, George Washington University, NASA Health and Air Quality Applied Sciences Team (HAQAST), the New York State Department of Health, One Health Commission, and One Health Initiative. These projects included [Space Views Aid Florida ‘Red Tide’ Health Alerts](#) (**Richard Stumpf, NOAA**), [NASA Helps New Yorkers Cope with Summer Swelter](#) (**Tabassum Insaf, New York State Department of Health**), [Understanding Your UV Exposure Risk](#) (**CDC Environmental Tracking Program**), [Mosquito Meets MODIS: South Dakota Fights West Nile Virus](#) (**Michael Wimberly, U. of Oklahoma**), and [NASA Satellites Help Scientists Determine the Global Burden of Asthma](#) (**Susan Anenberg, George Washington U.; Daven Henze, U. of Colorado, Boulder**). These public health stories emphasize the need for transdisciplinary collaborations that integrate innovative data and technology into public health applications, allowing us to learn more about our surrounding environment. For more information, please read the [Spring 2019 issue](#) of the **APHA Veterinary Public Health’s One Health Newsletter**.

The image shows a grid of six tweets. The top row contains three tweets: Milken Institute SPH (April 4) about satellite and ground monitors for asthma; NYSDOH (April 5) about updating New York's warning systems for extreme heat; and APHA Veterinary Public Health (April 7) about Red Tide risk. The bottom row contains three tweets: OneHealth Commission (21h) about the wrap-up of NPHW; NASA HAQAST (21h) about mapping skin cancer risk from sun exposure, which includes a map of the US with a legend for UV exposure levels (32-398, >398-924, >924-1,440, >1,440-2,352, >2,352-9,549); and Kahn-Kaplan-Monath (April 4) about NASA Science, Public Health Week.

Selected Tweets from National Public Health Week 2019.

HEALTH AND AIR QUALITY APPLICATIONS APPLIED SCIENCES PROGRAM



JOHN HAYNES
PROGRAM MANAGER
HEADQUARTERS

SUE ESTES
ASSOCIATE
U. of ALABAMA- HUNTSVILLE

HELENA CHAPMAN
AAAS S&T POLICY FELLOW
HEADQUARTERS



ATS 2019 FEATURES TALKS ON AIR QUALITY AND PUBLIC HEALTH APPLICATIONS FROM INVESTIGATORS

In May 2019, at the **American Thoracic Society (ATS) International Conference 2019**, held in Dallas, TX, the NASA HAQ Team coordinated the scientific session, *NASA Remote Sensing Satellite Observations: Applications for Respiratory Health*, moderated by **Sue Estes (U. of Alabama in Huntsville)**, to an audience of approximately 75 attendees. **S. Estes** introduced the session with the presentation, *NASA's Public Health and Air Quality Program: Helping Us Understand Satellite Remote Sensing and How It Can Improve Health Outcomes*. Three researchers presented scientific talks: *Improving the Representation of Physical Atmosphere in Air Quality Decision Support Systems Used for Emissions Control Strategy Development* (**Arastoo Pour-Biazar, U. of Alabama in Huntsville**); *Using Satellite Derived PM_{2.5} Exposure Estimates to Assess Neighborhood-Scale Health Impacts* (**Kevin Cromar, New York U.**); and *Chemical Data Assimilation and Analog-Based Uncertainty Quantification to Improve Decision-Making in Public Health and Air Quality* (**Rajesh Kumar, National Center for Atmospheric Research**). **Helena Chapman (NASA HQ)** attended the *Teaching and Researching in Resource Constrained Settings: A Guide to Global Pulmonary Critical Care Medicine* workshop, which offered academic presentations on environmental health topics, including air pollution.



H. Chapman, R. Kumar, S. Estes, A. Pour-Biazar, and K. Cromar (Left to Right) at ATS2019.

Photo credit: H. Chapman

NASA HEALTH AND AIR QUALITY TEAM ATTENDS THE MAIA SCIENCE TEAM MEETING AND EARLY ADOPTERS WORKSHOP

In June 2019, the NASA HAQ Team attended the **Multi-Angle Imager for Aerosols (MAIA) Science Team Meeting** and **Early Adopters Workshop**, held in Pasadena, CA. The MAIA Science Team Meeting offered expert talks on various topics related to MAIA instrument development and data products, including interagency and international partnerships, speciated particulate matter filter stations, science data system and algorithms, data validation, and target area implementation details. The inaugural MAIA Early Adopters Workshop provided an overview of MAIA scientific goals and data products as well as an opportunity to expand end-user community networks for using MAIA observations.



J. Haynes (Left) and D. Diner (Right) present at the MAIA Early Adopters Workshop.

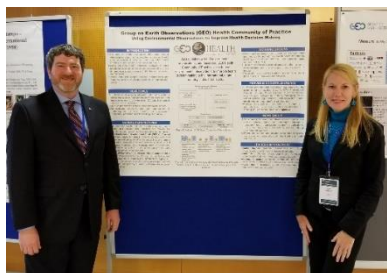
Photo credit: H. Chapman

NASA INVESTIGATORS IN THE NEWS

Tracey Holloway and Daegan Miller (U. of Wisconsin, Madison): [HAQAST Spring 2019 Newsletter](#)

GROUP ON EARTH OBSERVATIONS (GEO) SYMPOSIUM 2019

In May 2019, the NASA HAQ Team participated in the **GEO Symposium 2019**, held at the World Meteorological Organization, in Geneva, Switzerland. This symposium highlighted the GEO Work Programme activities, initiatives, and flagships, sharing updates and plans to enhance the use of Earth observation data for sustainable development. It also served as a professional networking event, connecting GEO members across agencies and institutions, disciplines, and geographic regions. More than 90 attendees participated in-person in this symposium. The [agenda](#) covered various topics, including Earth Observations for Health and Urban Resilience; GEO Support to the Paris Agreement, Sendai Framework, and the 2030 Agenda for Sustainable Development; GEO Knowledge Hub; Cross-cutting Activities; and Regional GEOs. In the *Earth Observations for Health and Urban Resilience* session, **John Haynes (NASA HQ)** presented an update on [Earth Observations for Health \(EO4HEALTH\)](#). Small group break-out sessions allowed for dynamic discussions on GEO Work Programme activities and priorities. In the concurrent poster presentation session, **J. Haynes and Helena Chapman (NASA HQ)** presented a poster on the [GEO Health Community of Practice](#).



J. Haynes and H. Chapman present the GEO Health Community of Practice poster. Photo credit: GEO



J. Haynes presents EO4HEALTH updates. Photo credit: H. Chapman

NASA HEALTH AND AIR QUALITY TEAM PRESENTS AT AMCA 2019

In May 2019, the NASA HAQ Team was invited to present two talks at the **American Mosquito Control Association (AMCA)'s 21st Annual Washington Conference 2019**, held in Alexandria, VA. The AMCA aims to provide leadership and educational opportunities that enhance public health by reducing risk of mosquito exposures. This event provided the first networking opportunity between the NASA HAQ Team and AMCA leadership. Presentation topics included *Earth Observations Applied to a Changing World: NASA Health and Air Quality Applications* (**John Haynes, NASA HQ**) and *Using Earth Observations to Strengthen One Health Networks in Vector Control* (**Helena Chapman, NASA HQ**). These talks highlighted NASA's work with end users to apply Earth observation data for improved mosquito-borne disease risk characterization and surveillance. With more than 100 AMCA members in attendance, the presentations were well received and facilitated an open dialogue with AMCA membership about the use of Earth observation data for "One Health" applications, which link human, animal, and environmental health.

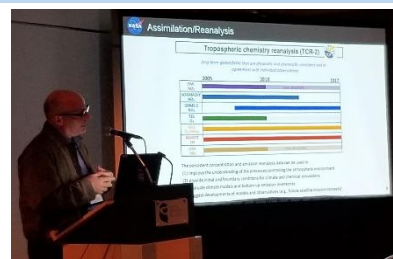
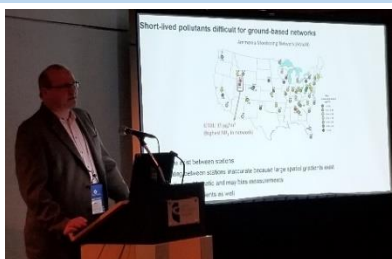


J. Haynes (Left) and H. Chapman (Right) presented at the AMCA's 21st Annual Washington Conference 2019. Photo credits: H. Chapman, J. Haynes

AWMA 2019 FEATURES HYPERWALL TALKS AND SESSION ON AIR QUALITY AND PUBLIC HEALTH APPLICATIONS FROM INVESTIGATORS

In June 2019, at the **Air & Waste Management Association (AWMA) Annual Conference 2019**, held in Quebec City, Quebec, Canada, the NASA HAQ Team coordinated the scientific session, *Answering Critical Challenges Facing our Planet in Air Quality by Using NASA's Current & Future Earth Observing Satellites*, moderated by **Sue Estes (U. of Alabama in Huntsville)**, to an audience of approximately 65 attendees. Presentation titles included *Earth Observations Applied to a Changing World: NASA Health and Air Quality Applications* (**John Haynes, NASA HQ**); *Air Quality Applications from the Pre-Aerosol, Clouds, and Ocean Ecosystem (PACE) Mission and other Upcoming Satellite Missions* (**Ali Omar, NASA**); *New Insights into Ammonia from Satellites: Implications for Emissions and Future Surface Networks* (**Mark Zondlo, Princeton U.**); *Connecting NASA Data with Health and Air Quality* (**Tracey Holloway, U. of Wisconsin in Madison**); and *Using Satellite Data to Aid Quantification and Attribution of Background Ozone Changes in the Western U.S.* (**Gregory Osterman, Jet Propulsion Laboratory**). **Helena Chapman (NASA HQ)** also presented the talk, *Strengthening "One Health" Collaborations in Air Quality Management*, in the *Health Effects & Exposure - Part 1* session.

Organized by the HAQ and Science Communications Support (**Marit Jentoft-Nilsen, Amy Moran**) Teams, the five NASA Hyperwall talks at the exhibit hall booth included: *Earth Observations Applied to a Changing World: NASA Health & Air Quality Applications* (**J. Haynes**); *Aerosols around the World and Improved Air Quality* (**A. Omar**); *Satellite Data for Air Quality Management* (**T. Holloway**); and *Linking Satellite Data to the One Health Approach* (**H. Chapman**).



T. Holloway, M. Zondlo, and G. Osterman (Left to Right) present at the NASA scientific session. Photo credit: H. Chapman



G. Osterman, S. Estes, T. Holloway, M. Zondlo, A. Omar, J. Haynes (Left to Right). Photo credit: H. Chapman



Panelists G. Osterman, J. Haynes, T. Holloway, A. Omar, and M. Zondlo (Left to Right). Photo credit: H. Chapman



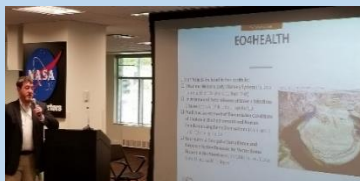
J. Haynes presents at the NASA Hyperwall. Photo credit: H. Chapman



H. Chapman, A. Omar, and T. Holloway (Left to Right) present at the NASA Hyperwall. Photo credits: NASA GSFC, H. Chapman

USGEO WORKSHOP ON THE GEO WORK PROGRAMME

In April 2019, the **U.S. Group on Earth Observations (GEO) Workshop** on the GEO Work Programme was held at NASA HQ, in Washington, D.C. This meeting served as a platform to unite U.S. GEO members across sectors, provide updates on GEO Work Programme activities, and assess U.S. contributions to the GEO Work Programme 2020-2022. As Co-Chair of the GEO [Earth Observations for Health \(EO4HEALTH\)](#), **John Haynes (NASA HAQ)** presented an informative update about EO4HEALTH project activities and accomplishments.



J. Haynes presents the EO4HEALTH update.
Photo credit: H. Chapman

UPCOMING

Meetings:

[HAQAST 6 Team Meeting](#)

July 10-12, 2019

Pasadena, CA

[AmeriGEO Week](#)

August 19-23, 2019

Lima, Peru

CDC Tracking Meeting and Celebration of 15 Years in partnership with NASA

September 4-6, 2019

Atlanta, GA

HAQ Annual Meeting

September 10-11, 2019

Rapid City, SD

HEALTH AND AIR QUALITY RESEARCHER PRESENTS SEMINAR AT NASA GSFC

In April 2019, **Susan Anenberg (George Washington U.)** presented the topic, *Using Satellite-derived Pollution Concentrations to Estimate the Health Impacts of Air Pollution Worldwide*, as part of the NASA Goddard Space Flight Center (GSFC)'s Applied Sciences Seminar Series. As a NASA HAQ researcher and [Health and Air Quality Applied Sciences Team \(HAQAST\)](#) Tiger Team member, she focuses her research on the health effects of air pollution and climate change.



Photo credit: S. Anenberg

NATIONAL DROUGHT & PUBLIC HEALTH SUMMIT

In June 2019, the HAQ Team was invited to present at the **National Drought & Public Health Summit**, held in Atlanta, GA. This meeting facilitated dialogue among various stakeholders about drought preparedness and response measures to mitigate risk to human health. **John Haynes (NASA HQ)** presented the topic, *Earth Observations Applied to a Changing World: NASA Health and Air Quality Applications*, focusing on environmental health risks related to extreme heat, drought, and wildfires.

NASA HEALTH AND AIR QUALITY TEAM SUPPORTS NATIONAL MOSQUITO CONTROL AWARENESS WEEK 2019

In June 2019, the NASA HAQ and Communications (**Aries Keck, U.Group**) Teams promoted a web feature on NASA's Making Space for Earth blog, to support [National Mosquito Awareness Week 2019](#). This web feature, [Fighting Mosquitoes from Space](#), was prepared to support this initiative of the **American Mosquito Control Association**. Featured HAQ projects included the potential transmission of Zika virus in California, mapping malaria hotspots in the Amazon, testing a surveillance and response system for vector-borne diseases in South America, and developing early warning systems for malaria in Myanmar and human West Nile virus in South Dakota.

NASA HAQ ANNUAL SUMMARY 2018

In April 2019, the NASA Applied Sciences Program disseminated the *NASA Health and Air Quality Applications Annual Summary 2018*. This report summarized major accomplishments, project portfolio milestones, community leadership, and international activities. It highlighted the achievements of the [Health and Air Quality Applied Sciences Team \(HAQAST\)](#) and four ongoing [Earth Observations for Health \(EO4HEALTH\)](#) projects of the GEO Work Programme 2017–2019.



Photo credit: NASA

SHARING CAREER EXPERIENCES

In April 2019, **Helena Chapman (NASA HQ)** presented the seminar topic, *A Career in One Health with the Federal Government*, for the **University of Florida's Masters of Public Health (MPH) Alumni Seminar Series**, held in Gainesville, FL. She described her professional training beyond her MPH graduation and shared pivotal reflections and collaborations along her career path.



H. Chapman presents her seminar talk. Photo credit: University of Florida

PAST

Webinars:

[ARSET Advanced Webinar High Resolution NO₂ Monitoring From Space with TROPOMI](#)

May 28 – June 3, 2019

Meetings:

[American Thoracic Society International Conference](#)

May 17-22, 2019
Dallas, TX

[GEO Symposium 2019](#)

May 27-29, 2019
Geneva, Switzerland

[MAIA Science Team Meeting & Early Adopters Workshop](#)

June 3-5, 2019
Pasadena, CA

[National Drought & Public Health](#)

[Summit](#)
June 17-19, 2019
Atlanta, GA

[Air and Waste Management Association's Annual Conference & Exhibition](#)

June 25-28, 2019
Quebec City, Quebec, Canada

PUBLICATIONS

[Effects of Increasing Aridity on Ambient Dust and Public Health in the U.S. Southwest under Climate Change](#) *GeoHealth* (P. Achakulwisut, **S.C. Anenberg**, J.E. Neumann, S.L. Penn, N. Weiss, A. Crimmins, N. Fann, J. Martinich, H. Roman, L.J. Mickley)

[Estimating Policy-relevant Health Effects of Ambient Heat Exposures using Spatially Contiguous Reanalysis Data](#) *Environmental Health* (T.E. Adeyeye, **T.Z. Insaf**, M.Z. Al-Hamdan, S.G. Nayak, N. Stuart, S. Dirienzo, W.L. Crosson)

[Ground-truth of a 1-km Downscaled NLDAS Air Temperature Product using the New York City Community Air Survey](#) *Journal of Applied Remote Sensing* (H. Eliezer, S. Johnson, W.L. Crosson, M.Z. Al-Hamdan, **T.Z. Insaf**)

[HABscope: A Tool for Use by Citizen Scientists to Facilitate Early Warning of Respiratory Irritation caused by Toxic Blooms of *Karenia brevis*](#) *PLOS One* (D.R. Hardison, W.C. Holland, R.D. Currier, B. Kirkpatrick, **R. Stumpf**, T. Fanara, D. Burris, A. Reich, G.J. Kirkpatrick, R.W. Litaker)

[Use of Earth Observation-derived Hydrometeorological Variables to Model and Predict Rotavirus Infection \(MAL-ED\): A Multisite Cohort Study](#) *Lancet Planetary Health*. (J.M. Colston, **B. Zaitchik**, G. Kang, P. Peñataro Yori, T. Ahmed, A. Lima, A. Turab, E. Mduma, P. Sunder Shrestha, P. Bessong, R.D. Peng, R.E. Black, L.H. Moulton, M.N. Kosek)

[A Genetic Algorithm for Identifying Spatially-varying Environmental Drivers in a Malaria Time Series Model](#) *Environmental Modelling & Software*. (J.K. Davis, T. Gebrehiwot, M. Worku, W. Awoke, A. Mihretie, D. Nekorchuk, **M.C. Wimberly**)