GEO Health Community of Practice (CoP)
Telecon: Focus on COVID-19 Activities
April 3, 2020

In Attendance: 100 participants
John Haynes (NASA HQ), Juli Trtanj (NOAA), Helena Chapman (NASA HQ/BAH), Sue Estes (NASA/UAH), John Balbus (NIEHS), April Bennett (NIEHS), Trisha Castranio (NIEHS), Ann Liu (NIEHS), Heather Henry (NIEHS, Superfund Research Program), Kiersten Johnson (USAID Bureau for Resilience and Food Security), Jim Roberts (NOAA Chemical Sciences Laboratory, Boulder, CO), Lisa Vaughan (NOAA Climate Program Office), Bryan Duncan (NASA Goddard), Dorian Janney (NASA Goddard/ADNET), David Green (NASA HQ), Shobhana Gupta (NASA HQ), Brady Helms (NASA HQ/AI Solutions), Laura Judd (NASA Langley/SSAI), Ana Prados (NASA Goddard/UMBC), Mariel Friberg (NASA Goddard/USRA), Tian Yao (NASA Goddard), Jeremy Kirkendall (NASA Goddard/AI Solutions), Jordan Bel (NASA/MSFC, NASA Disasters, NASA SPoRT), Jennifer Wei (NASA Goddard/GES DISC), Helen Amos (NASA Goddard/SSAI), Garrett Layne (NASA Goddard/AI Solutions), Travis Toth (NASA), Sushel Unninayar (NASA Goddard/GESTAR/MSU), Maggi Glasscoe (Jet Propulsion Laboratory), Pawan Gupta (USRA/MSFC), Amanda Quintana (USGCRP), Richard Kwok (NIEHS), Brad Goodwin (ATSDR), Rish Vaidyanathan (CDC), Bandana Kar (Oak Ridge National Laboratory), Tabassum Insaf (New York State Department of Health), Mark Shimamoto (AGU), Bryan Richards (USGS National Wildlife Health Center), Erika Roesler (Sandia National Laboratories), Cathy Wilson (Los Alamos National Laboratory), Arunas Kuciauskas (Naval Research Lab, Monterey, CA), Lt Col Robert Branham (US Air Force, Chief Climate Services Integration), Ed Hyer (Naval Research Laboratory), Karyn Tabor (Conservation International), Tanya Maslak (Battelle Memorial Institute), Heather Holmes (U. of Nevada-Reno), Emily Smail (NOAA/U. of Maryland-College Park), Ben Zaitchik (Johns Hopkins U.), Antar Jutla (U. of Florida), Chang-Yu Wu (U. of Florida), James Kubicki (U. of Texas at El Paso), Gabriel Carrasco (U. of California, San Diego), Ashish Sharma (U. of Illinois at Urbana-Champaign), Ali Akanda (U. of Rhode Island), Bujin Bekbulat (U. of Washington), Julian Marshall (U. of Washington), Diana Mastracci (U. of Oxford), Rachel Lowe (London School of Hygiene & Tropical Medicine), Joy Shumake-Guillemot (WHO/WMO Joint Climate and Health Office, Geneva, Switzerland), Rifat Hossain (WHO), Pablo Aguilar (PAHO), Juan Castillo (PAHO), Serge Olivier Kotchi (National Microbiology Laboratory, Public Health Agency of Canada), Ken Takahashi (SENAMHI, Peru), Romina Caminada (SENAMHI, Peru), Edson Arias (SENAMHI, Peru), Wil Laura (SENAMHI, Peru), Cristina Ananasso (European Commission, DG DEFIS – Copernicus), Astrid-Christina Koch (European Commission, DG DEFIS – Copernicus), Hugo Zunker (European Commission, DG DEFIS – Copernicus), Bernd Eggen (Met Office/Copernicus C3S), Guy Aube (Canadian Space Agency), Jorge Del Rio Vera (UN Office for Outer Space Affairs), Celine Audette (Environment and Climate Change Canada, Air Quality Health Index), Kym Watson (Fraunhofer IOSB), Naledzani Mudau (South African National Space Agency), Andreas Skouloudis (Environment and Health, Joint Research Centre, Italy).

Summary Notes:
**Prepared by Helena Chapman (NASA HQ/BAH)*

John Haynes (NASA HQ) and **Juli Trtanj (NOAA)** opened the telecon by welcoming all participants. They moderated a dialogue on current CoP activities and updates related to the ongoing COVID-19 pandemic.

Ali Akanda (U. of Rhode Island) presented on water security related to the COVID-19 pandemic and approaches to inform environmental policy. He described the potential impact of water insecurity for hospitals and other critical services as well as the impact of COVID-19 on the Navajo Nation.

Ben Zaitchik (Johns Hopkins U.) described the prospective tracking and modeling of the impact of hydroclimatic factors on the ongoing COVID-19 pandemic.

John Balbus (NIEHS) asked about how potential confounding with hydrometeorological signals can be accounted, in light of challenges (e.g. diagnostic testing) to obtain accurate COVID-19 incidence data. **Ben Zaitchik (Johns Hopkins U.)** mentioned that they are selecting case study sites with reliable incidence data. These data can help inform research efforts as well as hospital capacity. He mentioned that hospitalization data (e.g. hospitalization, mortality rates), although not always public information, can allow researchers to understand when individuals seek medical services, associations with hydrometerological factors that affect health, and expectations of increased hospital capacity.

Juli Trtanj (NOAA) asked the model will incorporate heat projections to examine how heat affects COVID-19 transmission dynamics. **Ben Zaitchik (Johns Hopkins U.)** confirmed that heat will be incorporated as it is an important variable to examine in respect to COVID-19 transmission.

Shobhana Gupta (NASA/ASRC) described resources and crowdsourcing opportunities to address the COVID-19 pandemic. She mentioned some opportunities, including the MIT COVID-19 Challenge, COVID-19 Open Research Dataset (CORD-19) Challenge, COVID-19 High Performance Computing Consortium, Global Innovation Exchange, MIT Health Security and Pandemics Challenge, and list of US Government challenges.

Andreas Skouloudis (Joint Research Centre, Italy) and **John Balbus (NIEHS)** provided a follow-up presentation on how the health care facilities have monitored and managed the COVID-19 pandemic in Italy. They described the monitoring and adequacy related to the COVID-19 emergency data requirements and commented on their perspectives for future actions.

Sushel Unninayar (NASA Goddard/GESTAR/MSU) asked about the potential use of commercial satellite data for surface mapping of daily changes in high-impact areas. **Andreas Skouloudis (Joint Research Centre, Italy)** said that these data would have been extremely useful if already in hand. He said that they are seeking approaches to potentially obtain commercial satellite data, understanding their high cost. **John Balbus (NIEHS)** added that these

operational efforts aim to provide real-time data to better inform the management of health care facilities and threats to potential operations. He stated that there are lessons to be learned, including the impact of heat waves and other weather events on conducting emergency field operations. He also shared that although the Health Care Infrastructure Work Group was organized to address permanent health care facility vulnerability, he stated that this Work Group can now leverage these COVID-19 response efforts for both temporary and permanent vulnerability to health care infrastructure.

Rifat Hossain (WHO) provided a brief up from the World Health Organization as he has recently joined the Monitoring and Evaluation of COVID-19 Response. He stated that there is a new monitoring and evaluation framework for the COVID-19 response that was launched last week, and the team is currently in the pilot stage of data collection. He seeks to use the GEO network to expand data collection for this indicator framework for the COVID-19 response, which then can potentially be adapted for non-emergency operational purposes**.** Over the next week, **Juli Trtanj (NOAA)** offered to identify and connect GEO members who are interested in learning more about this COVID-19 indicator framework with Rifat and this team.

Bernd Eggen (formerly Public Health England, currently Met Office) and **Rachel Lowe (LSHTM)** provided an overview of the Copernicus Climate Change Service data to model how COVID-19 may be influenced by meteorological factors. He mentioned that Copernicus as the largest Earth Observation programme that incorporated three services: Climate Services (C3S), Atmosphere Monitoring Service (CAMS), and Emergency Services (EMS). He shared two references – Data and Apps from the Climate Data Store and COVID-19 app – that are freely available to end users.

Cristina Ananasso and **Astrid-Christina Koch (European Commission, DG DEFIS – Copernicus)** provided a second overview of the Copernicus CAMS and C3S, with related publications of ongoing activities. She highlighted that there has been significant global media coverage related to COVID-19, including the impact on air quality. She requested that GEO members review the products on the website and provide feedback. **Hugo Zunker (European Commission, DG DEFIS – Copernicus)** stated that can provide data on climatology, air quality, and atmospheric transport models, and are actively seeking to collaborate with medical and public health (epidemiology) expertise for data validation. Currently, they are in contact with the European Centre for Disease Prevention and Control in Stockholm.

Juli Trtanj (NOAA) requested that GEO members start to connect with speakers after the telecon, especially with activities of similar interests. She emphasized that Copernicus C3S is an incredible tool and can provide real-time data for researchers.

After the finalization of the slide presentations, **John Haynes (NASA HQ)** and **Juli Trtanj (NOAA)** encouraged other GEO members to provide updates on their COVID-19 activities.

John Haynes (NASA HQ) shared a few highlights regarding current informational and funding opportunities related to COVID-19 research activities.

1) NASA Response to Coronavirus: This website was added to provide information about NASA's response to the COVID-19 response.

2) NASA at Home: This website was added to provide additional scientific resources for families, including e-books, videos, and podcasts.
3) NASA's Rapid Response and Novel Research in Earth Science: Released in February 2020, this solicitation encourages the innovative use of NASA satellite data to address environmental, economic, and/or societal impacts of the COVID-19 pandemic. Proposals should describe a project with one-year duration and requesting a US$100,000 budget.
4) COVID-19 High Performance Computing Consortium Request: Formed in March 2020, this unique public-private consortium was spearheaded by the White House Office of Science and Technology Policy, the US Department of Energy and IBM. Formed in March 2020, this solicitation offers researchers a range of computing capabilities to accelerate scientific understanding and discovery of COVID-19 virus and related treatments and vaccine development.
5) Funding Opportunities by the European Commission
    a. FTI - Fast Track to Innovation (June 9 and October 27, 2020) - ID: EIC-FTI-2018-2020
    b. FET Proactive: Emerging Paradigms and Communities (Due: July 2, 2020) - ID: FETPROACT-EIC-07-2020
    c. FET Proactive: Environmental Intelligence (Due: July 2, 2020) - ID: FETPROACT-EIC-08-2020

Joy Shumake-Guillemot (WHO/WMO) shared two brief updates from WMO.

1) Consensus Statement: She mentioned that the team has been working on a consensus statement regarding the relationship between COVID-19 and climate and weather. She stated that this would be particularly useful to WHO to better understand the current evidence and make clear public statements. This consensus statement should be released within one week.
2) FAQ Guides: She stated that the team has been developing FAQ guides and check-lists regarding the relationship between COVID-19 and extreme heat. They recognize that managing heat wave risks and executing action plans will be difficult across countries, considering the shelter-in-place and social distancing policies, overburdened health systems, and vulnerable populations. She mentioned that COVID-19 transmission during heat waves will remain challenges for health care facilities and patient care. In efforts to address these challenges, the team has launched some international work groups where city governments and health authorities have submitted questions and can receive responses. These FAQ guides should be released in early May 2020.
3) She stated that WMO is particularly concerned about monitoring impacts of COVID-19 on Earth observation networks as well as operational meteorology capacities. Since data are typically collected from air crafts (which are no longer flying), they are concerned about the reduced Earth observation capacity. The WMO webpage will be updated with more information over the upcoming weeks.

John Haynes (NASA HQ) mentioned that these data losses will cause a significant negative impact, especially for the North America and Caribbean regions that are preparing for tornado (April) and hurricane (June) seasons.

Naledzani Mudau (South African National Space Agency) shared that they are developing support tools for government programs to guarantee that citizens have access to services during the lockdown period. For example, the Small Business Approach aims to ensure that the government supports small businesses in rural areas and townships so that they can purchase sufficient food and supplies (e.g. sanitizers) in bulk and distribute as needed to the local community during the lockdown period.

Juli Trtanj (NOAA) asked if they are using any climate and weather data to implement this Small Business Approach. **Naledzani Mudau (South African National Space Agency)** stated that for this particular program, they are using very high resolution satellite images, crowdsourcing, and location-based services, since they are examining rural geographic areas without access to supermarkets. They are also looking at the impact of the lockdown period on air pollution and temperature variation. She stated that most geographic areas of South Africa will soon be experiencing winter.

John Haynes (NASA HQ) mentioned that Ken Takahashi (SENAMHI, Peru) also commented that as the Southern Hemisphere would also be experiencing winter months, the potential impact on COVID-19 spread and temperature variation should be explored. He mentioned that Ben Zaitchik's project will gather COVID-19 infection data from Johns Hopkins COVID-19 Dashboard, and temperature variation will be examined.

Katherine Deliz Quinones (U. of Florida) asked if any GEO member was working on rapid diagnostic tools to detect COVID-19 in water or wastewater. She mentioned that the assessment of water or wastewater samples may provide insight into the COVID-19 prevalence in the community. **Bryan Richards (USGS)** mentioned that USGS is developing a research project to examine the presence of COVID-19 in wastewater. **Joy Shumake-Guillemot (WHO/WMO)** stated that Dutch researchers have investigated sewage water for COVID-19 spread. **Armistead Russell (Georgia Institute of Technology)** mentioned that he was aware that some consortiums are looking at associations of COVID-19 in wastewater. **Kathleen O'Reilly (LSHTM)** mentioned that concentration steps would most likely be required to detect COVID-19 in wastewater samples.

John Haynes (NASA) and **Juli Trtanj (NOAA)** then moderated the open dialogue for general questions or comments related to COVID-19 activities.

Jorge Del Rio Vera (UN Office for Outer Space Affairs) asked about approaches that can remove any confounding effects with environmental determinants. **Bernd Eggen (formerly Public Health England, currently Met Office)** stated that there is mounting evidence about the possibility of microdroplet spread of COVID-19, as the wind can carry and suspend microdroplets for longer periods of time when compared to coughing or sneezing. He said that this will require additional modeling for urban outdoor environments as well as indoor environments (e.g. air conditioning or other ventilation methods). **Antarpreet Jutla (U. of Florida)** mentioned that they have research team that is conducting experiments on this same topic and happy to share more details after the meeting.

Julie Trtanj (NOAA) mentioned the value of sharing information for meaningful collaborations moving forward. She encouraged GEO members to present new topics at the next telecon.

John Haynes (NASA HQ) agreed that this telecon has provided an opportunity to share information, connect researchers, and leverage resources that can amplify current activities related to the COVID-19 response. He emphasized that GEO serves as a perfect platform for sharing information on using environmental observations to understand impacts of health, which is essential now during this COVID-19 pandemic.

Helena Chapman (NASA HQ/BAH) agreed that these telecons are informative and encouraged GEO members to leverage expertise to contribute to solving these complex challenges like this COVID-19 response. She mentioned that the GEO Secretariat has been supportive of the GEO Health CoP website, where GEO members can review slide presentations on the COVID-19 tab. She stated that the GEO Health CoP strength lies in the diversity of our expertise and geographic regions, which we can use Earth observations to strengthen our response efforts in the current COVID-response as well as non-emergency scenarios.

John Haynes (NASA HQ) and **Juli Trtanj (NOAA)** closed the telecon and mentioned that the next telecon would be scheduled for the following week.

Adjourned: 1:00 PM EST