

GEO Health Community of Practice (CoP)

Telecon: Focus on Water Quality Issues related to COVID-19 Activities

May 19, 2020

In Attendance: 42 participants

John Haynes (NASA HQ), Juli Trtanj (NOAA), Helena Chapman (NASA HQ/BAH), Sue Estes (U. of Alabama in Huntsville), John Balbus (NIH/NIEHS), Trisha Castranio (NIEHS), Stan Benjamin (NOAA), Amanda Quintana (USGCRP), Kartik Sheth (NASA HQ), Laura Mulvey (NASA HQ), Bradley Doorn (NASA HQ), Abigail Seadler (NASA HQ), Anna Borovikov (NASA GMAO/SSAI), Cynthia Hall (NASA Earth Science Data Systems), Sean McCartney (NASA Goddard), Amita Mehta (NASA Goddard), Dorian Janney (NASA Goddard/GPM), Helen Amos (NASA Goddard/SSAI), Pawan Gupta (NASA/USRA), Sushel Unninaray (NASA Goddard/GESTAR/MSU), Bob Chen (SEDAC/Columbia University), Mark Shimamoto (AGU), Alex Long (Wilson Center), Corey Hummel (HQ USAF, Directorate of Air Force Weather), Ray Kiess (USAF, 14th Weather Squadron), Bill Frey (USAF, 14th Weather Squadron), Bryan Richards (USGS National Wildlife Health Center), Lisa Conti (Florida Department of Agriculture), Josh Colston (U. of Virginia), William Pan (Duke U.), Ali Akanda (U. of Rhode Island), Greg Carmichael (U. of Iowa), Augustin Vintzileos (U. of Maryland), Jorge Del Rio Vera (UN Office for Outer Space Affairs), Stefano Ferretii (European Space Agency), Astrid-Christina Koch (European Commission, DG DEFIS – Copernicus), Jan Ramboer (European Commission), Ian Coady (UK Department for International Development), Didier Davignon (Meteorological Service of Canada), Serge Olivier Kotchi (Public Health Agency of Canada), Andreas Skouloudis (Joint Research Centre, Italy), Naledzani Mudau (South African National Space Agency).

Summary Notes:

**Prepared by Helena Chapman (NASA HQ/BAH) and Helen Amos (NASA Goddard/SSAI)*

John Haynes (NASA HQ) and **Juli Trtanj (NOAA)** opened the telecon by welcoming all participants. They invited GEO members to provide brief updates on upcoming conferences and related activities.

John Haynes (NASA HQ) mentioned that the Interagency COVID-19 Meeting, moderated by NASA, which follows the GEO Health CoP telecon, was canceled for today.

Juli Trtanj (NOAA) mentioned that **Neville Sweijd (COVID-19 Environmental Reference Group, South Africa)** has been active in coordinating an upcoming WHO workshop on COVID-19 and environmental drivers and will share details at an upcoming telecon. She also stated that **Rifat Hossain (WHO)** and a small group had a follow-up meeting to discuss the use of Earth observation data for migration and COVID-19 recovery planning. She hoped to share an update at an upcoming telecon. Finally, she encouraged CoP members to continue to share their current and future activities, workshops, and funding opportunities with the CoP members.

Jorge del Rio Vera (UNOOSA) mentioned that the UNOOSA [Space4Health webinar](#) was held on May 14, 2020, with [morning](#) and [evening](#) sessions to accommodate time zones. He confirmed that there were approximately 400 registered participants, where there were about 150 participants per session. This webinar aimed to provide an overview on space applications to support global health, including COVID-19 response efforts. He stated that they referenced the GEO Health CoP during these sessions.

John Haynes (NASA HQ) stated that the GEO Secretariat has invited the GEO Health CoP to present a 90-minute session, *GEO Community Response to the COVID-19 Pandemic*, which will be held on June 15, 2020 from 7:30-9:00AM EDT (GMT-4) at the upcoming [GEO Virtual Symposium 2020](#) (June 15-19, 2020). He also mentioned that NASA, ESA, and JAXA have partnered to collaborate on the [Space Apps COVID-19 Challenge 2020](#) (Theme: *Using Earth Observations to Learn about COVID-19*), which will be held from May 30-31, 2020. He said that they are still looking for subject matter experts to work with teams on their ideas (POC: Shobhana Gupta, shobhana.gupta@nasa.gov). Finally, he mentioned that NASA, ESA, and JAXA are co-developing a data dashboard (“one-stop-shop” for end-user), which will be released in early June 2020.

Helena Chapman (NASA HQ/BAH) shared the upcoming [NASA ARSET](#) introductory training, *An Inside Look at how NASA Measures Air Pollution*, scheduled for May 26 and 28, 2020. This webinar will be held in [English](#) (10AM-11:30AM EDT/GMT-4) and [Spanish](#) (2-3:30PM EDT/GMT-4). Attendees will be able to list the pollutants that can be observed by NASA satellites, download imagery for NO₂ and aerosols and particles, and describe capabilities and limitations of NASA NO₂ and aerosol measurements.

Juli Trtanj (NOAA) mentioned that GEO Symposium is an annual event that offers GEO community activities, initiatives, and flagships the opportunity to present the work plans and activities that support the GEO Work Programme. She said that at this GEO Virtual Symposium, the *GEO Community Response to the COVID-19 Pandemic* session (supported by the GEO Health CoP) will be the first session after the opening ceremony. Also, she mentioned that the Global Heat Health Information Network (GHHIN) will be offering the [Heat Health Masterclass Series 2020](#) in June and July 2020. Four virtual classes will be held from 11:00-12:30PM EDT (GMT-4) on June 2 (*Setting Operational Thresholds for Heat Early Warning Systems*), June 16 (*Innovating in Urban Planning and Governance for Heat Health*), June 30 (*Economic Valuation of Heat-health Impacts and Interventions*), and July 21 (*Developing an Effective Heat Health Action Plan (HHAP) for your city*). Finally, she stated that the [2nd Global Forum on Heat and Health](#) (Theme: *Heat-healthy Cities and Workplaces*) will be held virtually from July 28-31, 2020, hosting two sessions on July 28 (*Heat in the City*) and July 29 (*Heat in the Workplace*).

Cynthia Hall (NASA Earth Science Data Systems) presented on NASA’s New COVID-19 Data Pathfinder. She mentioned that this [COVID-19 Data Pathfinder](#) has three primary sections of environmental impacts (e.g. air quality, night time lights), seasonality (e.g. weather, climate), and water availability (e.g. precipitation, soil moisture, ground water). She mentioned that the Data Pathfinder is constantly updated, and they request feedback from end-users.

Juli Trtanj (NOAA) asked if end-users can add interactive layers in the data. **Cynthia Hall (NASA Earth Science Data Systems)** mentioned that the Data Pathfinder provides access to Worldview, an application tool that can add different data layers.

Helena Chapman (NASA HQ/BAH) thanked **Cynthia Hall (NASA Earth Science Data Systems)** for her insightful presentations to the group. **John Haynes (NASA HQ)** and **Juli Trtanj (NOAA)** invited GEO members to provide any updates on their COVID-19 activities.

Serge-Olivier Kotchi (Public Health Agency of Canada) provided a few updates from the Environment and Climate Change Canada (ECCC) and Public Health Agency of Canada (PHAC).

- Environment and Climate Change Canada is analyzing historical and real-time data collected from the National Air Pollution Surveillance Program (NAPS). The Analysis of Canadian NAPS ground-based stations is looking at changes in NO₂, O₃, PM_{2.5}, and the Near Road data analysis is looking at traffic flow and air quality before and after lockdown measures.
- Future plans for the use of satellite data include: (i) generating time series (how NO₂ within a city, considering the city as a whole, has evolved with time pre, during, and post-COVID), (ii) directly determining actual NO_x (nitrogen oxide) emissions from satellite, and (iii) publishing the current results in a peer-reviewed journal. **Chris McLinden (Environment and Climate Change Canada)** will continue in his Canada-wide analysis of satellite-measured NO₂. Meteorological Services Canada (MSC) will conduct an examination of optimal analysis (OA) NO₂, O₃, and PM_{2.5} operational data product and will rerun the GEM-MACH AQ forecast model using COVID-reduced emissions scenarios, to assess how changes in air pollutant concentrations can be attributed to those reductions in emissions.
- With Health Canada, health studies looking for statistical links between air pollutants, weather conditions, and incidences of COVID-19 by Canadian Health Region (Applied the Harvard Study code), and with International agencies, looking at long term time-series analysis of incidence of COVID-19, weather, and air quality have begun.
- Public Health Agency of Canada, with the Canadian Space Agency, is looking at direct and indirect proxy measures of the COVID-19 spread. Night time light satellite images and air quality data are being used by PHAC to analyze population mobility related to COVID-19 public health measures.

John Balbus (NIEHS) mentioned that he has no NIEHS updates at this time.

Andreas Skouloudis (Joint Research Centre, Italy) mentioned that he has been involved in two activities over the past few weeks. First, they described examining links between climate change and mortality in European countries, especially as countries on a global scale are lifting lockdown restrictions. He stated that they are monitoring COVID-19 transmission as European countries are entering summer months. He added that they are collecting regional and provincial data, together with location observations. Second, they have been working in collaboration with **John Balbus (NIEHS)** to examine the status and lessons learned of health infrastructure facilities (military and civilian) and coping measures during and after the COVID-19 transmission peak.

Juli Trtanj (NOAA) asked if they are using Copernicus data to map hospitals and population movement. In the next update, she requested that **Andreas Skouloudis (Joint Research Centre, Italy)** synthesize the most relevant environmental observations and resolutions used. She said that this information can identify critical gaps and needs for the Earth observation community.

Naledzani Mudau (South African National Space Agency) shared that SANSa is providing data (e.g. environmental and socioeconomic indicators derived from satellite imagery) to the South African government to help them identify communities at risk of COVID-19 spread. She said that they are using sentinel and high-resolution imagery to map human settlements and informal settlements. These data are used to identify settlements that need to be de-densified to ensure social distancing and provide essential services such as temporal housing and water. She mentioned that they are also using Sentinel-5P data to examine the air quality impacts related to the lockdown. She stated that they have also established one AfriGEO working group to share experiences and lessons learned as well as promote the use of Earth observations to support decision-making.

Steven Ramage (GEO) mentioned the May 2020 [announcement](#) that Microsoft's [AI for Earth](#) program and GEO Biodiversity Observation Network (GEO BON) Secretariat launched a new US\$1 million grant programme to monitor Earth's biodiversity and create Essential Biodiversity Variables (EBVs) and relevant biodiversity change indicators derived from the EBVs (deadline: June 5, 2020). He stated that they had a recent telecon with the urban sub-group and hoped to prepare a paper for urban agenda as a fourth priority for the UN2030 Agenda for Sustainable Development. As part of this discussion, he said that they discussed EO4HEALTH and health effects related to urban and peri-urban areas, which overlap with the broader urban resilience activities. He encouraged CoP members to add a brief description of their project activities on the [GEO Community Response to COVID-19](#). He shared the open call for [GEO and UN-Habitat Earth Observation Toolkit for Sustainable Cities and Communities](#) (deadline: May 31, 2020), emphasizing the focus on urban topics for SDG11. He also presented the recent article on GEOGLAM activities, [GEOGLAM and COVID-19: Responding to an Emerging Food Security Emergency](#).

Juli Trtanj (NOAA) asked how GEO recommends the coordination of the four new [working groups](#) (Capacity Development, Climate Change, Disaster Risk Reduction, Data) in order to synergize the GEO community and eliminate duplication of efforts, especially since each group can be connected to health. **Steven Ramage (GEO Secretariat)** mentioned that they are examining this challenge, especially since they have more than 60 activities in the GEO Work Programme. To date, they have considered three approaches: 1) GEO representatives would join different meetings and share information; 2) Engagement teams within the GEO Program Board would ensure that some of the different activities and implementation plans are achieved, acting as bridge for this coordination; and 3) GEO Symposium would serve as a form to share Work Programme activities, encourage collaboration, and eliminate duplicated efforts). **Juli Trtanj (NOAA)** agreed that this coordination would be helpful, especially since they have seen synergy with GEO activities related to water (e.g. AquaWatch, Blue Planet).

Steven Ramage (GEO Secretariat) mentioned that the COVID-19 pandemic affects all GEO elements, from health to resource utilization. He stated that national and international agencies are allocating financial resources into the COVID-19 response and recovery efforts. For this reason, the wider GEO community will be helpful to coordinate strategic efforts over the next 18-24 months.

John Haynes (NASA HQ) and **Juli Trtanj (NOAA)** introduced **Ali Akanda (U. of Rhode Island)** to moderate the group discussion on water quality issues related to COVID-19 transmission. **Ali Akanda (U. of Rhode Island)** provided an overview of four recent articles from *Forbes*, *The Hill*, and the *Washington Post* that described water-quality issues related to COVID-19 transmission. He mentioned that these articles prompted some of the questions currently being asked by various communities, including: Can SARS-CoV-2 presence in waste water help identify at-risk communities for transmission? Can SARS-COV-2 infect shellfish? How will African and Asian countries manage the rise in COVID-19 cases observed over the past couple weeks? How are communities managing water insecurity or lack of safe water? He encouraged CoP members to identify how they can leverage expertise and efforts to develop early warning systems or additional modeling approaches. Then, he presented four main points for discussion, including role of water quality in the COVID-19 pandemic, safe water access for vulnerable communities, implications for the Global South, and developing early warning in anticipation of a second wave.

Brad Doorn (NASA HQ) mentioned that they have previously focused their water quality efforts on toxic algal blooms. During the COVID-19 pandemic, he said that they have been exploring other indicators that influence COVID-19 transmission, including the impact of wastewater, areas where fresh water is not plentiful, and populations at higher risk of transmission. He stated that since they have already been exploring ground water and soil moisture, they hoped to provide more information for global vulnerable populations.

Juli Trtanj (NOAA) mentioned that gaps may exist within the research community and that it would be important to shape research questions that can facilitate funding or intramural work. She said that NOAA is working on coastal quality and runoff and potential COVID-19 aerosolization in coastal environments. She asked CoP members to reflect on the following question: What would be the most salient research question for water-related issues related to COVID-19 transmission?

Brad Doorn (NASA HQ) agreed that this is a timely question. He mentioned that he and **John Haynes (NASA HQ)** have had discussions about coastal and water issues for our NASA research program, focusing on research applications and decision-making for water quality. Since many researchers working on water-related topics form part of a wider global community, he stated that they hoped to strengthen these scientific connections.

Juli Trtanj (NOAA) stated that if there is enough interest with water-related issues and COVID-19 transmission, they can coordinate a follow-up telecon on specific research questions that follow the talking points described by **Ali Akanda (U. of Rhode Island)**.

John Haynes (NASA HQ) said one question from the chat box inquired about potential COVID-19 transmission through irrigation systems. **Brad Doorn (NASA HQ)** stated that no research to date has shown COVID-19 transmission through food. However, he said that they are examining any potential links since the food supply issue is a significant topic. **Ali Akanda (U. of Rhode Island)** agreed that this issue is important, especially since most people are adhering to different lockdown restrictions and only leave home for the grocery store. Hence, there is a reliance on the food industry to provide food items in a safe manner.

Helena Chapman (NASA/BAH) mentioned that ongoing research studies are examining the identification and persistence of SARS-CoV-2 in (human) fecal samples. Some of these studies can be reviewed by the CDC [Morbidity and Mortality Weekly Report](#) and [Emerging Infectious Diseases](#) publications.

Ian Coady (UK Department for International Development) mentioned that they have not explored water quality issues related to COVID-19 transmission, but rather the secondary impacts related to lockdown measures (e.g. seasonality, air quality) and access to safe water. He stated that he would be interested to share how his team has integrated Earth observation data with population data for COVID-19 response in developing countries. He shared the WHO/UNICEF Interim Guidance for [Water, Sanitation, Hygiene, and Waste Management for the COVID-19 Virus](#).

Sushel Unninayar (NASA Goddard/GESTAR/MSU) asked if COVID-19 can be transmitted through food like *Escherichia coli* or *Salmonella*. **Ali Akanda (U. of Rhode Island)** mentioned that he had not found any research findings, but he would imagine that the US Department of Agriculture and other state authorities are exploring this research question.

John Haynes (NASA HQ) and **Juli Trtanj (NOAA)** thanked all GEO Health CoP members for their outstanding presentations, their continued contributions to the field, and engagement in the group discussion. They agreed that this telecon had provided an opportunity to share information, connect researchers, and leverage resources that can amplify current activities related to the COVID-19 response. They also requested that GEO Health CoP members share the CoP telecon schedule with their colleagues from Central/South America and Asia-Pacific regions.

John Haynes (NASA HQ) and **Juli Trtanj (NOAA)** closed the telecon and mentioned that the next telecon would be scheduled for Tuesday, May 26th at 8:30AM EDT (GMT-4). The focus area would be related to zoonotic diseases, One Health, and COVID-19 transmission.

Adjourned: 10:00 AM EDT (GMT-4)