

GEO Health Community of Practice (CoP)

Telecon: Focus on One Health, Zoonotic Diseases, and COVID-19 Transmission

June 2, 2020

In Attendance: 43 participants

John Haynes (NASA HQ), Juli Trtanj (NOAA), Helena Chapman (NASA HQ/BAH), Sue Estes (U. of Alabama in Huntsville), Ann Liu (NIEHS), Trisha Castranio (NIEHS), Stan Benjamin (NOAA), Leslie Friedlander (EPA), Amanda Quintana (USGCRP), Kartik Sheth (NASA HQ), David Green (NASA HQ), Laura Mulvey (NASA HQ), Stephanie Schollaert Uz (NASA Goddard), Anna Borovikov (NASA GMAO/SSAI), Cynthia Hall (NASA Earth Science Data Systems), Sean McCartney (NASA Goddard), Assaf Anyamba (USRA/NASA Goddard), Dorian Janney (NASA Goddard/GPM), Helen Amos (NASA Goddard/SSAI), Sushel Unninar (NASA Goddard/GESTAR/MSU), Tanya Maslak (Battelle Memorial Institute), Merrie Beth Neely (GEO AquaWatch), Bob Chen (SEDAC/Columbia University), 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), Karen Gruszynski (Lincoln Memorial U.), Karin Ardon-Dryer (Texas Tech U.), Moiz Usmani (U. of Florida), William Pan (Duke U.), Ali Akanda (U. of Rhode Island), Rowena Christiansen (U. of Melbourne Medical School, Australia), Jorge Del Rio Vera (UN Office for Outer Space Affairs), Ian Coady (UK Department for International Development), Iphigenia Keramitsoglou (National Observatory of Athens), Didier Davignon (Meteorological Service of Canada), Celine Audette (Environment and Climate Change Canada), Melissa MacDonald (Environment and Climate Change, Canada), Serge Olivier Kotchi (Public Health Agency of Canada), Renzo Guinto (Philippines), 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.

Juli Trtanj (NOAA) 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*). She also stated that NOAA researchers have been working with several modeling groups (e.g. CDC, NIH, MIDAS) to prepare the [Environmental Datasets for Infectious Disease Modeling](#), as a resource designed for researchers and decision-makers. Finally, she shared the Global Heat Health Information Network launch of the [Heat and COVID-19 Information Series](#) which provides additional information on risk management for vulnerable populations, health workers, and city planners.

John Haynes (NASA HQ) provided the link for the Interagency COVID-19 Meeting, led and moderated by **David Green (NASA HQ)** of the NASA Disaster Program, which would follow the GEO Health CoP telecon, at 11AM EDT (GMT-4). He also 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). 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 late June 2020.

Sushel Unninayar (NASA Goddard/GESTAR/MSU) asked if the COVID-19 dashboard would display COVID-19 incidence and mortality data along with Earth observation data (e.g. graphical plots per county, province, or state). **John Haynes (NASA HQ)** stated that the tri-lateral agency COVID-19 dashboard does not plan to show COVID-19 incidence data.

Jorge del Rio Vera (UNOOSA) mentioned that he had no updates to share at this time.

Karin Ardon-Dryer (Texas Tech U.) provided an overview on the protective mechanisms of new mask designs for COVID-19 transmission. As an atmospheric scientist, she explained that her team modified their research with atmospheric particles with laboratory experiments to analyze the number of particles that filter through six types of masks.

Sushel Unninayar (NASA Goddard/GESTAR/MSU) asked about the HEPA filters. **Karin Ardon-Dryer (Texas Tech U.)** stated that they tried HEPA filters and 3-D printing masks. She said that the HEPA filters had high efficiency and stable over time; however, the 3-D masks did not pass the fit test.

Jorge Del Rio Vera (UNOOSA) asked about her recommendation regarding how long a mask should be worn to be considered effective. **Karin Ardon-Dryer (Texas Tech U.)** mentioned that the duration would depend on the type of mask. For example, for N95 masks, WHO recommends that masks not be worn for not more than 12 hours. She stated that her team tested these masks for only two hours, but would agree with the WHO recommendation. She stated that there are many papers now that highlight how to decontaminate masks. Their team is currently working on ways to improve masks and hope to have some answers soon. **Jorge Del Rio Vera (UNOOSA)** stated that he would check with the WHO recommendations. He agreed that this is a crucial topic and would be interested to learn more about their research findings. He noted that mask reutilization is insufficient, and there is limited public awareness on this issue.

Helena Chapman (NASA HQ/BAH) thanked **Karin Ardon-Dryer (Texas Tech U.)** for her insightful presentation to the group. **John Haynes (NASA HQ)** and **Juli Trtanj (NOAA)** introduced **Helena Chapman (NASA HQ/BAH)** and **William Pan (Duke U.)** to moderate the group discussion on One Health, zoonotic diseases, and COVID-19 transmission.

Helena Chapman (NASA HQ/BAH) and **William Pan (Duke U.)** provided an overview on the One Health concept, major One Health communities, and current understanding of zoonotic transmission. They mentioned that the CDC has [reported](#) that there is no current evidence that animals play a significant role in spreading SARS-CoV-2. They showed a few examples from the [American Veterinary Medical Association report](#) on SARS-CoV-2 infections in domestic animals and farmed or captive wildlife. They described the USAID [PREDICT](#) (2009-2019) and Strategies to Prevent (STOP) Spillover Program (September 2020) as approaches to operationalize One Health surveillance by building global capacity, identifying potential sources of zoonotic spillover, and developing best practices to mitigate risk to human health. Finally, they noted that integrating innovative data and technology – like Earth observation and public health data – will be instrumental to mitigate SARS-CoV-2 transmission and presented some discussion points for the open discussion. Some examples include: 1) Which research questions would be ideal for integrating Earth and health science data? 2) Which data and tools can help us identify emerging threats and predict the next pandemic? 3) How can we best encourage transdisciplinary collaborations considering strongly connected clinical and epidemiologic research on SARS-CoV-2 transmission?

Sushel Unninayar (NASA Goddard/GESTAR/MSU) asked **Bill Pan (Duke U.)** about the reliability of nasal swabs. **Bill Pan (Duke U.)** mentioned that these samples are reliable, but that it is also important to consider clinical symptoms.

Lisa Conti (Florida Department of Agriculture) mentioned that half of the population has pets, which is why the concern about animal to human transmission became a public concern. She said that leadership should value transdisciplinary thinking and reward these collaborations with funding. She stated that this must be part of the culture shift, which she has positively observed from the interest of high school cohorts over the past couple years. She mentioned that social sciences must be part of the integrated approach.

Juli Trtanj (NOAA) requested that CoP members continue to discuss how to integrate Earth observation and health data. She mentioned that Earth observation data were not used to predict outbreaks, even with PREDICT in place. **Bill Pan (Duke U.)** stated that PREDICT and STOP programs did not have the funding mandate to include Earth observation data since primary expenses were related to diagnostic testing. **Mary Beth Neely (GEO AquaWatch)** agreed with **Juli Trtanj (NOAA)** that mentioned that the NOAA Satellite Oceanography and Climatology Division seeks to focus on more environmental monitoring opportunities, which also aligns with GEO AquaWatch. **Juli Trtanj (NOAA)** mentioned that it would be wonderful to connect **Helena Chapman (NASA HQ/BAH)** and **Bill Pan (Duke U.)** to identify appropriate researchers.

Lisa Conti (Florida Department of Agriculture) emphasized the One Health promotes the value of working together across disciplines and finding solutions to integrate information. These elements can come from leadership and education. She stated that the GEO Health Community of Practice is a key start to these integrated efforts to inform health decision-making. She also shared that CDC hosts a veterinary public health group, which could serve as another resource for other researchers and practitioners to join this call.

Juli Trtanj (NOAA) said that it would be helpful if CoP members could share their networks on interdisciplinary groups. She asked if there have been any advances to foster One Health collaborations in legislation. **Lisa Conti (Florida Department of Agriculture)** stated that the One Health community promotes their initiatives as bipartisan. Bipartisan One Health Congressional Bills, *Advancing Emergency Preparedness Through One Health Act of 2019* (S.1903 and HR.3771) were introduced in Summer 2019, before the COVID-19 pandemic. She mentioned that we should value the ability of these programs to focus on planning and prevention.

Bill Pan (Duke U.) stated that he has observed a positive advancement toward interdisciplinary research approaches. He also mentioned that Planetary Health, which is similar to One Health, was motivated by the [Lancet Planetary Health](#) as a more environmentally focused paradigm. He mentioned that the Earth observation community can play a central role on exploring the environmental impacts to human health.

Juli Trtanj (NOAA) asked what Earth observations could be useful to promote scientific collaborations across disciplines. She mentioned that understanding the socioeconomic impact could help with educating decision-makers and fostering the leadership shift. She asked if any CoP members were working on the value of early warning systems that demonstrate the benefits of early action on community health outcomes.

Mary Beth Neely (GEO AquaWatch) mentioned that NOAA economics are trying to seek new opportunities for collaboration. **Helen Amos (NASA Goddard/SSAI)** stated that [Resources for the Future](#) has the VALUABLES program that is examining the value of Earth observation data, but unsure if they are considering the One Health concept. **Kartik Sheth (NASA HQ)** mentioned that VALUABLES is looking into adding a couple more Impact assessments during the remaining time frame of the consortium. **Mary Beth Neely (GEO AquaWatch)** asked about the best starting point as well as what Earth observation resources or expertise would be needed to help support or enhance these collaborative activities.

Assaf Anyamba (USRA/NASA Goddard) mentioned that there are many challenges regarding the COVID-19 outbreak, especially since we are uncertain about the origin (e.g. patient zero). He believed that Earth scientists can contribute expertise to this global challenge, especially in real-time monitoring. He said that we have a record of Earth observations that can assist with monitoring and detection of anomalies in specific regions. He also stated that it is important to understand the biology and ecology of all the drivers and be able to use the data to study how these variables apply. For example, he shared his current project on Rift Valley Fever in South Africa, where they have multidisciplinary teams working to collect epidemiologic data on humans and animals, mosquito samples, and other field data. He said that this project is a prime example of how research using the One Health approach can be applied in practice. He stated that this five-year project will contribute significantly to advance science, requiring the dedication of researchers who are willing to share and collaborate with other disciplines. He also mentioned that the use of Earth observations has resulted in disseminating early warnings (e.g. three to four months prediction) before the disease outbreak.

Juli Trtanj (NOAA) agreed that we should understand the basic biology behind the environmental drivers of SARS-CoV-2. She said that his basic biology question is complex for the community, especially examining and modeling an array of variables.

Helena Chapman (NASA HQ/BAH) stated that the use of virtual platforms across sectors and geographies has demonstrated the ability to leverage scientific expertise on diverse topics related to COVID-19 transmission. Moving forward, she believed that that this platform would be able to offer opportunities to build and strengthen multidisciplinary collaborations.

Assaf Anyamba (USRA/NASA Goddard) stated that one challenge lies in the funding commitments by agency for long-term projects (e.g. five years). **Juli Trtanj (NOAA)** agreed that the most successful projects have been centers with teams of more than five years of research activities.

Serge Olivier Kotchi (Public Health Agency of Canada) mentioned that his research group in Montreal focuses on the epidemiology of zoonotic diseases and public health, integrating veterinarians, microbiologists, medical geographers, and other Earth scientists. He said that they work in the One Health context and have established long-term collaborations working on vector-borne and water-related diseases – and now the COVID-19 pandemic.

Juli Trtanj (NOAA) stated that we can identify ways for CoP to tackle some of these challenges using the One Health concept and use of Earth observation data.

Karen Gruszynski (Lincoln Memorial U.) stated that she is a veterinarian who has had some experience with GIS applications. With significant interest in One Health and the use of Earth observations, she encouraged CoP members to explore conferences of other disciplines (e.g. medical geography) and be included in discussions to emphasize the use of Earth observation data for public health applications. She mentioned that she learned that the [American Association of Geographers](#) has working groups on spatial analyses related to medical geography. She also mentioned that the [GeoVet Conference](#), held every three years, provides networks for spatial epidemiology, spatial statistics, and GIS applications related to public health. She expressed interest in learning how these organizations are partnering with the public health community.

Dorian Janney (NASA Goddard/GPM) mentioned that the public can benefit from understanding about the One Health approach in research and community applications. She highlighted the vector-borne disease and water-related research by **Ben Zaitchik (Johns Hopkins U.)**, **Bill Pan (Duke U.)**, and **Antar Jutla (U. of Florida)**, and the use of precipitation data ([Global Precipitation Measurement](#) mission). She emphasized the importance of citizen science, especially educating the public on the interconnectedness of humans, animals, and the environment as well as encouraging their assistance to help reduce these disease threats. She shared the [2018 Vector-borne and Water Based Diseases Workshop](#) (May 2018) as an example of a workshop that integrated research scientists, educators, public health officials, and citizen scientists to discuss challenges related to vector-borne and water-based diseases.

Juli Trtanj (NOAA) asked if any CoP members are working with One Health issues related to the marine ecosystem. **Helena Chapman (NASA HQ/BAH)** asked if any CoP members are working in food security or the agricultural sector.

Stephanie Schollaert Uz (NASA Goddard) stated that NASA Goddard's Applied Sciences Program has been funding [NASA HARVEST](#), a five-year consortium led by the U. of Maryland's Center for Global Agriculture Monitoring Research. She mentioned that they have distributed the [Food Security thematic fact sheets](#) on vegetation health, water availability, water quality, and air quality at the GEO Health Community of Practice in-person meeting in December 2019. Also, she shared information on the Chesapeake Bay Working Group, which aims to examine harmful algal blooms and indicators for water quality through the new generation of hyperspectral instruments (e.g. NASA Planned. Plankton, Aerosol, Cloud and ocean Ecosystem, PACE). **Karen Gruszynski (Lincoln Memorial U.)** mentioned that Virginia Tech researchers were conducting some research (e.g. mapping) about poultry farms and Vibrio in the Chesapeake area. **Stephanie Schollaert Uz (NASA Goddard)** also mentioned that they have recently formed a new Climate and Environmental Working Group and hope to further discussions on diverse topics.

Ben Zaitchik (Johns Hopkins U.) provided the link for the [Food Systems dashboard](#), which was recently launched by Johns Hopkins U.

John Haynes (NASA HQ) and **Juli Trtanj (NOAA)** welcomed any final updates on upcoming conferences and related activities.

Helena Chapman (NASA HQ/BAH), on behalf of Diana Mastracci Sanchez (U. of Oxford), mentioned that the [GEO Indigenous COVID-19 Hackathon 2020](#) would be held from June 5-7, 2020. She encouraged others to join this crowdsourcing challenge by Indigenous communities from the Ecuadorian Amazon (Kichwa and Shuar Nation), Brazilian Amazon (Paiter Surui People and Quilombola) Kenya (Samburu Tribe), and the USA (Rosebud Sioux Tribe). She said that the Indigenous communities aim to use Earth observation and Information and Communication Technologies to develop solutions that tackle COVID-19 transmission.

John Haynes (NASA HQ) mentioned that the [Space Apps COVID-19 Challenge](#), co-sponsored by NASA, ESA, and JAXA, was successfully held from May 30-31, 2020. He mentioned that many CoP members served as topic matter experts. **Dorian Janney (NASA Goddard/GPM)** mentioned that she served as moderator for one of the eight challenges and was inspired by the level of enthusiasm and expertise from the mentors and teams. She recognized the energy and work across different platforms and encouraged CoP members to become involved in future Space Apps Challenges. **Sushel Unninayar (NASA Goddard/GESTAR/MSU)** stated that he served as a subject matter expert and judged the session on UN Sustainable Development Goals. He mentioned that this was an exciting session with significant participation and looks forward to the final report of the event.

Ben Zaitchik (Johns Hopkins U.) mentioned that their team has continued to coordinate logistics for the WMO/WHO Workshop on environmental drivers related to COVID-19 transmission for August 2020. He hoped that they would be able to announce formal details next week. He also mentioned that the COVID-19 Japanese Geoscience Union (JpGU) – American Geophysical Union (AGU) Joint Meeting 2020 (Theme: *For a Borderless World of Geoscience*) will be held from July 12-18, 2020. He stated that their joint session, [Environmental Drivers and Impacts of the Evolving COVID-19 Pandemic](#), will be held on July 13, 2020 (morning session in Japan). There is an [open abstract call](#) for late-breaking work, including One Health, and he encouraged CoP members to submit their work.

Juli Trtanj (NOAA) encouraged CoP members to continue to share their current and future activities, workshops, and funding opportunities with the CoP members. **Merrie Beth Neely (GEO AquaWatch)** asked if webinars, workshops, and conferences will be listed on the COVID-19 tab of the GEO Health CoP webpage. **Helena Chapman (NASA HQ/BAH)** agreed that this was an excellent idea, since current activities are only shared on the GEO Health CoP listserv. She stated that she would talk with **John Haynes (NASA HQ)** and **Juli Trtanj (NOAA)** for the best approach to highlight these activities.

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.

John Haynes (NASA HQ) and **Juli Trtanj (NOAA)** closed the telecon and mentioned that the next telecon would be scheduled for Tuesday, June 9th at 8:30AM EDT (GMT-4). The focus area would be determined later this week. They also mentioned that there would be no CoP telecon on Tuesday, June 16th, due to the [GEO Virtual Symposium](#) that will be held from June 15-19, 2020.

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