GEO Health Community of Practice (CoP)
Community Telecon
June 20, 2023

In Attendance: 30 participants
Juli Trtanj (NOAA), Helena Chapman (NASA HQ/BAH), Trisha Castranio (NIEHS/NIH), Dorian Janney (NASA Goddard/GPM), Kim McMahon (NOAA NWS), Ana Prados (NASA Goddard), Bob Chen (CIESIN/Columbia University; GEO Human Planet; NASA SEDAC); Hazem Mahmoud (NASA ASDC); Carl Malings (NASA Goddard; Morgan State Univ.), Steve Moran (Google), Assaf Anyamba (Oak Ridge National Laboratory), Karly Harrod (Oak Ridge National Laboratory), Ram Peruvemba (HSR.health), Rebecca Gutema (HSR.health), Susan Alexander (Univ. of Alabama in Huntsville), Jenny Bratburd (Univ. of Wisconsin, Madison), Josh Colson (Univ. of Virginia), Orhun Aydin (St. Louis Univ.), Olayinka Osuolale (Elizade Univ., Nigeria), Mahesh Jampani (International Water Management Institute, IWMI-CGIAR), Mahzad Mirzalou (PAHO), Paschalis Tziastas (European Commission), Lara Congiu (European Commission), Didier Davignon (Environment and Climate Change Canada), Quillon Harpham (HR Wallingford, UK), Ousmane Ndiaye (Senegalese Meteorological Services, ANACIM, Senegal), Carlos Barboza (Ministry of Public Health, Uruguay), Mercy Borbor (ESPOL, Ecuador), Reyna Durón (UNITEC, Honduras), Gissel Padilla (UNITEC, Honduras).

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

Juli Trtanj (NOAA) opened the telecon by welcoming all participants. She provided a overview of the *Deep Dive on Health Activities in the European Region* that was held on June 9. **Paschalis Tziastas (European Commission)** thanked presenters and CoP members for attending and hoped that they could continue the dialogue and identify synergies for future collaborations with CoP members from different geographical regions.

Juli Trtanj (NOAA) wondered how they could produce comprehensive global maps with early warning systems. **Helena Chapman (NASA HQ/BAH)** mentioned that **Frederic Bartumeus (Centre for Advanced Studies of Blanes, CEAB-CSIC)** described the E4Warning project, where they plan to combine FARSEER and D-MOSS (disease models in endemic settings) to incorporate citizen science applications where dengue is endemic and D-MOSS is operational, and hence improve water availability models from the D-MOSS operational framework. **Quillon Harpham (HR Wallingford)** said that the D-MOSS team has worked with UN and WHO for several years and is operational in many countries in south and southeast Asia. He said that they would like to build a map and make this information widely available, but it is difficult to maintain these maps over time, noting that periodic snapshots are more feasible. **Juli Trtanj (NOAA)** suggested the possibility of an intern to maintain these early warning system maps, as part of the CoP Student Engagement activities, and wondered if there were any opportunities within the GEO Secretariat. **Bob Chen (CIESIN/Columbia University; GEO Human Planet; NASA SEDAC)** said the GEO Knowledge Portal can populate specific data and includes tutorials, but there is no portal (aside from the main portal) to set up your own cluster page.

Didier Davignon (Environment and Climate Change Canada) mentioned that the UN Environment Programme's World Environment Situation Room (UNEP-WESR) had developed a project to map different environmental issues from different geographic regions. He said that they had hired contractors to develop a GEO platform within the UN system, and he wondered if this would be feasible for GEO. He said that the geospatial service is well designed to ingest and aggregate data through servers, but it depends on data management and storage needs (vs capacity to connect data services to aggregate). **Juli Trtanj (NOAA)** and **Helena Chapman (NASA HQ/BAH)** commented about the need to connect with GEO Global Water Sustainability (GEOGLOWS) or GEO Global Agricultural Monitoring (GEOGLAM).

Mercy Borbor (ESPOL, Ecuador) was interested in integrating Copernicus data on a local (city-level) scale for flooding, especially during the dengue seasonality. She would like to explore how they can connect local sensors with high-resolution information on temperature and precipitation, to track dengue cases. **Quillon Harpham (HR Wallingford)** said that their team incorporates social data with public health surveillance data (dengue cases) into a statistical model for dengue forecasts (up to six months in the future). He noted that water availability is a primary expertise of HR Wallingford, and they add this factor to dengue statistical models to increase the scale of the model. For example, he said that they run the water availability forecast first, then they add climate parameters (e.g. precipitation, wind speed, air temperature), and finally build water availability forecasts (e.g. evapotranspiration) into the dengue model.

Juli Trtanj (NOAA) said that there are strong links between El Nino with precipitation on vector-borne diseases, and she wondered how we can enhance our models and forecasts to better prepare public health surveillance. She was concerned specifically about the southern coast of the Americas, the western coast of Africa, and the Pacific islands. **Mercy Borbor (ESPOL, Ecuador)** said that many people across local and national governments in Ecuador are concerned about El Niño and are working to develop vulnerability maps related to flooding and landslides. She stressed the importance to take action to mobilize communities, communicate effectively, and use resources to enhance sectorial response. She commented that they analyze data from the Met agencies and stations, but it is difficult to access real-time monitoring data on landslides. **Assaf Anyamba (Oak Ridge National Laboratory)** shared that his team had analyzed patterns of selected disease outbreaks during the El Niño event from 2015-2016, as they related to climate anomalies derived from satellite measurement (*Scientific Reports:* Global Disease Outbreaks Associated with the 2015–2016 El Niño Event.

Juli Trtanj (NOAA) shared the GEOGloWS Global Streamflow Forecasting. **Quillon Harpham (HR Wallingford)** commented that when they include El Niño in the model and index, it does have a significant impact on dengue and you can track factors related to the Indian Ocean. **Carlos Barboza (Ministry of Health, Uruguay)** mentioned that we need to improve vector and case notification systems and their connection to early warning systems, as there is a significant gap between the quality and relevance of geospatial information with vector and cases, and even with the volume of domestic insecticides traded in cities. **Mercy Borbor (ESPOL, Ecuador)** shared a *Lancet* article about dengue forecasts using El Niño index and meteorological and epidemiological data (Climate services for health: predicting the evolution of the 2016 dengue season in Machala, Ecuador).

Ousmane Ndiaye (Senegalese Meteorological Services, ANACIM, Senegal) said that his team meets with each sector (including health) to discuss the seasonal forecasts and impacts across sectors (including implications on health) and develop national recommendations. He commented that they launched the heat wave campaign (with NOAA funding) and currently have a pilot study in one district, where they seek feedback from residents on the usefulness of these heat wave forecasts. In previous years, they disseminated heat wave bulletins, but did not receive public feedback on the utility of these bulletins, so they implemented this pilot study (with Red Cross and women's organizations for community mobilization) to learn lessons for upcoming years (including gender differences). He said that with El Niño, they expect more heat waves, as the clear sky and high temperatures will create challenges.

Juli Trtanj (NOAA) asked if they plan to look at vector-borne disease surveillance, especially with strong links to heat. **Ousmane Ndiaye (Senegalese Meteorological Services, ANACIM, Senegal)** said that on the health side, they are requesting feedback on the number of people who visit health facilities because of heat waves. He added that on the disease side, teams are working on malaria seasonal forecasts for the national implementation plan.

Carlos Barboza (Ministry of Health, Uruguay) said that we need to better understand the anthropogenic impacts on entomology (insect's world). As one example, he commented that a 200km road trip in the southern region of Latin America used to result in a windshield full of insects, but now there are no insects. **Juli Trtanj (NOAA)** agreed that ecosystem changes affect mosquitoes and wondered how they could use these models (incorporating El Niño impacts) to enhance mosquito surveillance and work more closely with health care facilities and practitioners. She remarked that the example described of the Senegal's women's group may be an ideal on-the-ground approach to monitor and reduce these climate impacts. She mentioned that PAHO used to prepare El Niño Bulletins and then transitioned to Disasters Bulletins. **Mercy Borbor (ESPOL, Ecuador)** said that tracking the impacts of El Niño is important to prepare for flooding and mobilization efforts.

Mahesh Jampani (International Water Management Institute) said that IWMI has a climate resilience portfolio, and they are closely working with the Senegal's Malaria Department, to examine El Niño impacts and develop models to assess the malaria prevalence in respect to climate change. He commented that they are also working with Sri Lanka's Dengue Department, to examine climate effects (including the Indian ocean) and drought and flood patterns with different dengue trends.

Juli Trtanj (NOAA) introduced **Orhun Aydin (St. Louis Univ.)** and **Mahesh Jampani (International Water Management Institute)** who serve as the co-leads for the Food Security and Safety Work Group, She thanked **Dorian Janney (NASA Goddard/GPM)** for her outstanding leadership to develop and expand the Work Group over the past four years.

Orhun Aydin (St. Louis Univ.) mentioned that the Work Group plans to focus on the food, water, and energy nexus as well as collaborations, populations (heterogeneity, growth), logistics (e.g. farm to table), and policy (related directly to sub-systems that food relies on). He said that El Niño will have a significant impact on agriculture, demand, and logistics, so it will be important to address physical and social challenges related to food security. He presented the near-consensus (by UN, G8 and G20 Alliances, USAID, USDA) around one policy theme: "*Coordinating local, regional and global policies to create a world where every household is food secure*". Finally, he mentioned that they aim to explore: 1) remote sensing data yield estimation, precision agriculture data infrastructure, and agro-climate interactions; 2) food deserts and inaccessibility, food supply chains, and multiscale food logistics networks; 3) farm-to-table nutrition content, nutrition and public health, and nutrition equity;

and 4) environment stability, agriculture disease monitoring and mitigation, and food logistics resilience.

Juli Trtanj (NOAA) noted that urban gardens offer multiple benefits for urban forestry and wondered how to promote urban sustainability with food supplies with heat waves. She wondered how we can manage the water supply for rooftop gardens if there are more heat waves. **Mahzad Mirzalou (PAHO)** commented that the World Heart Federation contributed to a recent report that highlighted links of air pollution (including greenhouse gas emissions) to cardiovascular disease (*Circulation*: Taking a Stand Against Air Pollution—The Impact on Cardiovascular Disease).

Helena Chapman (NASA HQ/BAH) shared information about the One Health session (*Connecting Earth and Health Science Communities through One Health Regional Partnerships*) and side event (*Deep Dive on Using Earth Observations for Public Health Applications*) on August 8, as part of hybrid AmeriGEO Week 2023 from August 7-12, 2023. She encouraged CoP members to register for the event, submit abstracts for virtual or in-person poster presentations, and contact her if they were interested in helping organize the One Health session and side event. **Reyna Duron (UNITEC, Honduras)** mentioned that we can consider publishing the AmeriGEO Week proceedings in the UNITEC journal, *Innovare*.

Juli Trtanj (NOAA) thanked **Paschalis Tziastas, Franz Immler,** and **Jean Dusart (European Commission)** for their support of the *Deep Dive on Health Activities in the European Region* and agreed that this telecon provided an opportunity to share information, connect researchers, and leverage resources that can amplify current activities using Earth observations for public health applications.

Juli Trtanj (NOAA) closed the teleconference and mentioned that the next community teleconference will be scheduled for Tuesday, July 11, 2023 at 8:30AM EDT (GMT-4).

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