GEO Health Community of Practice (CoP)  
Annual Meeting  
December 14, 2021

In Attendance: 47 participants  
John Haynes (NASA HQ), Juli Trtanj (NOAA), Helena Chapman (NASA HQ/BAH), Angelica Gutierrez (NOAA), Christina Moats-Xavier (NASA/Earth Science Division/ Applied Sciences Program), Sophia Liu (US Geological Survey), Trisha Castranio (NIEHS/NIH), Ann Liu (NIEHS/NIH), Sheila Fleischhacker (USDA NIFA), Stacie Dunkle (Food and Agriculture Organization), Dorian Janney (NASA/GSFC/GPM), Assaf Anyamba (USRA/NASA GSFC), Sushel Unninayar (NASA/GSFC & GESTAR/MSU), Helen Amos (NASA GSFC/SSAI), Bob Chen (CIESIN/ Columbia Univ./NASA/SEDAC), Cascade Tuholske (CIESIN, Columbia Univ.), Mike Gremill (Univ. of Alabama), Rasha Elimeiry (Washington State Department of Health), Santosh Mal (Louisiana State Univ.), Antar Jutla (Univ. of Florida), Moiz Usmani (Univ. of Florida), Ben Zaitchik (Johns Hopkins Univ.), Josh Colston (Univ. of Virginia School of Medicine), Matthew Romm (Univ. of North Carolina), Olayinka Osoule (Elizade Univ.), Shivam Gupta (Univ. of Bonn), Mustafa Sikder (Institute for Health Metrics and Evaluation), Laura Kahn (One Health Initiative), Estella Geraghty (Esri), Eric Klos (Daily Breath), Steven Ramage (GEO Secretariat, Geneva), Marjan van Meerloo (European Commission/EuroGEO), Xingfa Gu (Institute of Remote Sensing Applications, Chinese Academy of Sciences), Marcelo Korc (PAHO/WHO), Juan Castillo (PAHO/WHO), Gina Tsarouchi (HR Wallingford), Andreas Skouloudis (iSteep.org), Adrian Guzman (Mexican Space Agency), Didier Davignon (Environment and Climate Change Canada), Celine Audette (Environment and Climate Change Canada/ Meteorological Service of Canada/Health and Air Quality Forecast Services), Melissa Macdonald (Environment and Climate Change Canada/ Meteorological Service of Canada/Health and Air Quality Forecast Services), Mercy Borbor (Escuela Superior Politica del Litoral, Ecuador), Jiuliang Liu, Chen Li, Cong Liang, Karen Holcomb, Lisa Gonzalez.

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

John Haynes (NASA HQ), Juli Trtanj (NOAA), and Helena Chapman (NASA HQ/BAH) opened the telecon by welcoming all participants to the GEO Health CoP Annual Meeting 2021.

**I. International Updates**

Helena Chapman (NASA HQ/BAH) introduced the invited speakers, who provided updates, activities, and priorities from their international agencies.

Steven Ramage (GEO Secretariat) provided an update on the GEO Secretariat and GEO Virtual Week 2021. He highlighted that the next generation GEO incorporates four elements: 1) integrative approaches to harness EO and promote coherent policies, governance, and investments; 2) engagements with public, private, academic NGOs, CSOs, and indigenous people; 3) results-driven and impact-oriented portfolio of projects and programmes; and 4) open knowledge-based tools and services: from research to operations. He also said that they aim to bridge the digital divide with open knowledge (e.g. open data, open software, open standards, open science). He shared that the four GEO focus areas are: 1) sustainable development; 2) climate action; 3) disaster risk reduction; and 4) urban resilience. He believed that some potential areas for engagement include urban resilience and air
quality/heat and health, One Health and biodiversity, and other cross-cutting issues. During GEO Week 2021 (November 2021), he highlighted that there were over 1,500 participants from 100 countries, and that they launched the 1st Youth Track, 3rd Industry Track, Adoption of the Open Knowledge Statement and Equality, Diversity and Inclusion Statement.

Marcelo Korc (PAHO) provided an update from the Pan American Health Organization. He mentioned that equity is at the heart of environmental public health, and that they are focusing on four specific thematic areas: 1) climate change and health; 2) chemical safety; 3) water, sanitation and hygiene; and 4) air quality and health. As strategic actions, PAHO aims to improve the performance of environmental public health programs and institutions, foster an environmentally sustainable and resilient health system, and promote environmentally healthy and resilient cities and communities. He noted the need for shared responsibility as a call to action for environmental health leadership, embracing health system resilience and environmental sustainability, and use of partnerships and knowledge to create sustainable change. He provided some examples of the use of EO in monitoring (e.g. La Soufrière – Monitoring Air Pollution from Volcanic Activity), research (e.g. research proposals), and knowledge (e.g. outreach and capacity building).

Juli Trtanj (NOAA) provided an update on the Global Heat Health Information Network (GHHIN), including the integrated framework approach and priorities. Over the past year, she highlighted key activities, including the South Asia Heat Health Summit and SAHHIN (Feb 2020-2021), Hot but Habitable, Lorentz Center (Mar 2020), Heat and COVID-19 Information Series (May 2020), and Heat Health Masterclasses (Jun-Jul 2021).

II. Updates from Small Work Groups Leads

Helena Chapman (NASA HQ/BAH) introduced the leads of the five CoP Small Work Groups, who shared the team goals, milestones reached this year, and upcoming plan of activities and potential partnerships.

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<tr>
<th>Small Work Group</th>
<th>Presenter</th>
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<tr>
<td>Heat</td>
<td>Cascade Tuholske (CIESIN, Columbia University)</td>
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<td>Infectious Diseases</td>
<td>Antar Jutla (University of Florida)</td>
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<td>Air Quality, Wildfires, and Respiratory Health</td>
<td>Eric Klos (DailyBreath)</td>
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<td>Food Security and Safety</td>
<td>Dorian Janney (NASA/GSFC/GPM)</td>
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<td>Health Care Infrastructure</td>
<td>Andreas Skouloudis (iSteep.org)</td>
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Ben Zaitchik (Johns Hopkins Univ.) shared the Earth Observations of Extreme Heat Events: Leveraging Current Capabilities to Enhance Heat Research and Action article in Environmental Research Letters. Helena Chapman (NASA HQ/BAH) shared the NASA At Your Table: The Space Agency’s Surprising Role in Agriculture web feature.
III. Regional Focus

Helena Chapman (NASA HQ/BAH) introduced the three representatives of Regional GEOS, who provided updates, activities, and priorities from their regions.

Angelica Gutierrez (NOAA) provided an update on AmeriGEO activities. She mentioned that AmeriGEO supported health as the fifth thematic community, and they launched the revised webpage. She highlighted that priorities incorporate data integration and capacity building for the 20 member countries, and that potential topics for collaboration include heat and water- and vector-borne diseases.

Helena Chapman (NASA HQ/BAH) shared links to AmeriGEO Week 2021 in August 2021 and GEO Week 2021 in November 2021. Sophia Liu (US Geological Survey) shared links to AmeriTerria and Peru Mapathon 2021, noting that these mapathons can be adapted for specific needs (Missing Maps). Eric Klos (DailyBreath) agreed that the Mapathon was a great idea, noting that mapping health facility vulnerability to extreme weather events would be interesting. Steven Ramage (GEO Secretariat) mentioned that the GEO Secretariat has significant global experience with hackathons.

Xingfa Gu (Institute of Remote Sensing Applications, Chinese Academy of Sciences) provided an overview of the Asia Oceania (AOGEO) activities. He said that the AO region represents 60% of the global population, with 22 member countries and 12 task groups. He noted that the priority areas include the Mekong River Basin, Small Island States, and Himalayan Mountains. He shared successful case examples of EO application and data sharing in regional disaster monitoring and disaster risk reduction, which had improved regional disaster resilience with the support of regional EO data cooperation. Sophia Liu (US Geological Survey) mentioned that she was involved in the Antimicrobial Resistance (AMR) workshop in the Mekong Region and with its links to One Health, she highlighted that it may be an excellent example of a use case.

Marjan van Meerloo (European Commission) provided an update on EuroGEO Activities. She noted that there are fixed-term projects from funding programmes (e.g. Horizon 2020, Copernicus, other EU programmes, European Space Agency) as well as action groups that seek open innovation partnerships that can collaborate, benchmark, and combine existing developments. She shared the Call for Proposals and Tenders and suggested one funding opportunity (HORIZON-CL6-2022-GOVERNANCE-01-09: Environmental Observations Solutions contributing to Meeting “One Health” Challenges).

III. Discussion, Next Steps & Closing

Juli Trtanj (NOAA) opened the discussion on cross-cutting engagements with the GEO Secretariat, International Organizations, Regional GEOS, and CoP members.

Juli Trtanj (NOAA) recognized Angelica Gutierrez (NOAA) for the AmeriGEO support of the CoP, adopting health as a fifth thematic community and supporting links to PAHO. She wondered how they could support AOGEO activities in 2022. Xingfa Gu (Institute of Remote Sensing Applications, Chinese Academy of Sciences) mentioned that Asia should be largely involved in CoP activities because the region holds 60% of the global population. He suggested one approach of developing one website for case studies, tools, and other products that can be shared with the wider GEO community.
Eric Klos (DailyBreath) suggested that collaborations could include heat and air quality (e.g. What is the exceedance variable to how heat affects air quality after 3-4 days of a heat wave?) or harmful algal blooms and food security. Juli Trtanj (NOAA) agreed that these intersections would be instrumental, especially expanding on low-cost air quality sensors. She suggested that project cities (e.g. NIHHIS Urban Heat Island Mapping) may offer a deeper dive to enhance modeling and extrapolation techniques. Eric Klos (DailyBreath) suggested monitoring clusters in communities for air quality or extreme heat events. Andreas Skouloudis (iSteep.org) mentioned that thermal and relative humidity sensors are low cost (< US$5 each) and operational around the world. Sophia Liu (US Geological Survey) shared links to Habitat Map Aircasting, Mapping for Change Air Quality, and Mapping for Change Projects.

Melissa Macdonald (Environment and Climate Change Canada/Meteorological Service of Canada/Health and Air Quality Forecast Services) said that their team faces challenges with heat and air quality topics in Canada. She mentioned that they have requested support from health teams in Canada, where they look at combined effects from epidemiological studies. She expressed interest in continuing CoP discussion on these topics.

Juli Trtanj (NOAA) expressed that they hope to identify opportunities to connect with AOGEO, especially using current partnerships with the heat community in Asia. Angelica Gutierrez (NOAA) mentioned that the GEO Pathways and Mapathon offered an opportunity for the global community to become involved. Juli Trtanj (NOAA) said that the CoP was not as engaged in the Mapathon, but she agreed that this could be an entry point to find partners and enhance regional engagement. Angelica Gutierrez (NOAA) agreed that one entry point would be engagement with the Ministries of Health in different countries.

Juli Trtanj (NOAA) wondered how CoP members can leverage private sector partners. Estella Geraghty (Esri) said that although the private sector can offer a big picture view, it is important to overcome the concept of specialization. For example, she said that as we specialize, we build silos and expertise. For this reason, she stated that the private sector can help with the level of complexity, such as how to integrate crowdsourcing data and non-traditional surveillance indicators into a cohesive unit (e.g. dashboard). She noted that technology allows us to enhance our approaches – cooperation, collaboration, and data resources – as well as remain open mindedness and advance analytics to account for factors. She said that the private sector has an important role to help build capacity and share tools that the academic sector can utilize.

Juli Trtanj (NOAA) asked CoP members about other potential focus areas for CoP members for the upcoming year.

Marjan van Meerloo (European Commission) said that they are mapping the European initiatives on how citizens contribute to environmental monitoring, especially with air quality. She shared links to the Best Practices in Citizen Science for Environmental Monitoring, Roadmap for the Uptake of the Citizen Observatories; Knowledge Base, and Citizen Science for Environmental Policy. Sophia Liu (US Geological Survey) said that the EU Citizen Science platform has been an innovative resource. She said that the Mapathon was an opportunity to integrate different perspectives, ideas, data, services, and tools to help develop solutions. She suggested using the open science innovation background and leveraging communities on ground- and low-cost sensors and technologies that can engage the public in different global challenges.
Yana Gevorgyan (GEO) applauded the GEO Health CoP activities and suggested potential opportunities with the new Youth Engagement. Steven Ramage (GEO Secretariat) agreed and shared the GEO Initiative Proposal for Earth Observations and Citizen Science. Juli Trtanj (NOAA) said that the CoP has not fully explored citizen science applications to date, but she agreed that these opportunities can serve as next steps. She shared the NIHHS Urban Heat Island Mapping that is based on citizen science.

Stacie Dunkle (FAO) said that FAO works with agroecological zones that might help address some of the food security questions (Global Agro-Ecological Zones).

Steven Ramage (GEO Secretariat) mentioned that he is a Humanitarian Openstreetmap Team (HOT), with significant leadership in the crowdsourcing world. He said that the GEO Youth Community of Practice has recruited a consultant from the African Union's Disaster Risk Reduction and GEO Indigenous Alliance, which may be able to provide some use cases. He also suggested potential engagement with Youth Mappers. Sophia Liu (US Geological Survey) suggested that engagement with indigenous communities in the US could occur through SACNAS.

Helena Chapman (NASA HQ/BAH) shared that the WHO reported 13 urgent health challenges for the next decade — including gaining public trust and harnessing novel technologies — which she believed are two areas where CoP activities can be impactful. She agreed that these next steps can incorporate youth engagement.

Juli Trtanj (NOAA) provided some concluding remarks from the discussion, including next steps to engage with the GEO Youth Community of Practice and the Indigenous Alliance and expand dialogue to AfriGEO, AOGEO, and EuroGEO. She mentioned that they could focus community telecons on geographic regions and integrate activities across smaller teams (e.g. food security).

John Haynes (NASA) and Juli Trtanj (NOAA) thanked invited presenters, panelists, and CoP members for their continued contributions to the field and engagement in the group discussion. They expressed their appreciation for CoP reflections over their 2021 activities and current dialogue to identify focus areas for 2022 activities. They mentioned that this annual meeting has offered direct engagement among CoP members on ideas and initiatives using EO for societal benefit during these challenging times. They closed the telecon and mentioned that the next community telecon will be scheduled for January 2022.

Adjourned: 11:30 AM EST (GMT-5)