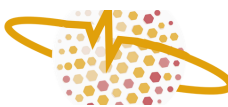


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SPACE AND GLOBAL HEALTH NETWORK ANNUAL REPORT



Introduction

2024 marks a crucial year for the Space and Global Health Network, with a focus on expanding its activities, strengthening the network and initiating new collaboration with various stakeholders of Space and Global Health.

This Annual Report provides an overview of the key activities conducted throughout the year 2024, focusing on the major achievements and key outcomes.

The Space and Global Health (SGH) Network is an open and flexible network of governmental institutions, international organizations, non-governmental entities, individuals and other relevant stakeholders.

The Space and Global Health Network was officially established in December 2022, following the adoption of General Assembly resolution 77/120 on international cooperation in the peaceful uses of outer space.

The SGH Network is coordinated by the Geneva Digital Health Hub (gdhub) at the University of Geneva. The gdhub was created in partnership with the Swiss Agency for Development and Cooperation, to address the need for de-fragmentation, better knowledge management and more science-based decision-making in digital health.

The various activities of the SGH Network are promoted and consolidated through the Space and Global Health Platform (Implementome), a dedicated, cooperative, globally accessible, multifaceted platform for information and community management whose establishment based in Geneva was recommended by General Assembly resolution 77/120.

The primary objective of the Space and Global Health Network is to facilitate effective collaboration on space and global health issues among Member States, UN entities—particularly the WHO and the Office for Outer Space Affairs(UNOOSA)—international organizations, and relevant stakeholders.

The SGH Network includes 175 members (December 2024).

2024 Key Objectives

Our Strategic priorities

Building on the momentum created by the establishment of the SGH Network in 2022 and the successful inaugural conference of 2023, the 2024 Annual Plan was designed around the following objectives:

01

Raising awareness

Drive awareness on the SGH Network' mission and activities through events and global conferences with UNOOSA/WHO and publications.

02

Capacity building

Improving education through the creation of a space and global health curriculum and a comprehensive list of relevant use cases to drive capacity-building.

03

Strengthen the network

Engage with new stakeholders sharing similar interests to contribute to influence the agenda in the field of Space and Global Health.

61st STSC session February 2024

Main conclusions

The Space and Global Health Network held two meetings, in hybrid format, on the margins of the sixty-first session of the Subcommittee of the Peaceful Uses of Outer Space(5-6th February 2024). After those sessions, the representative of the Coordinator of the SGH Network reported the conclusions of the meetings in plenary session.

A **total of 50 participants** attended the meetings, including participants from both the space and health sectors, space agencies, academia and international organizations including the Office for Outer Space Affairs and the World Health Organization.

During those meetings, a summary of the 2023 activities of the SGH Network was presented.

The discussions were articulated around 3 main areas

1. Design of a curriculum on space and global health.
2. Identification and description of space-based essential health variables (S-EHVs).
3. Organizational and technical Interoperability in the field of space and global health.

In order to bring concrete solutions to answer the need of driving capacity building, the decision was made and acknowledged- to design, develop and implement of a **novel curriculum on space and global health**.

61st STSC session February 2024

During the meetings, successful examples of multidisciplinary capacity-building efforts bridging space and health were discussed, and it was recognized that additional efforts to identify existing materials and gaps were needed in order to create the Curriculum.

In addition, the creation **of dedicated taskforce for the Space and Global health Curriculum** appeared to be essential to advance on this topic. Call for interest to identify key experts were cited as one of the methodological approach to build the taskforce.

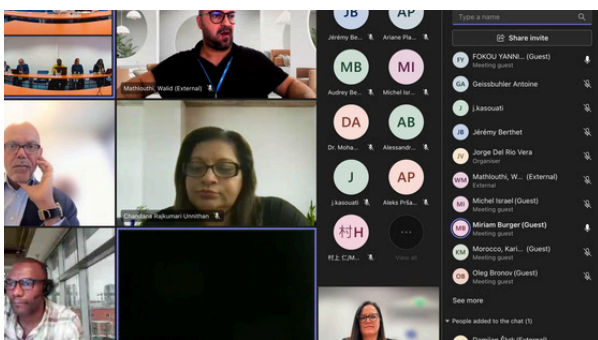
On the topic of Interoperability:

"Organizational and technical Interoperability in the field of space and global health. Participants recognized the need to advance further in terms of organizational and technical interoperability. During the meetings the focus was on technical interoperability and two pathways were identified. The first one on the need to identify data frameworks, policies, data types, sources and standards and the second one to leverage existing work within the United Nations in the field of interoperability"

Finally, one of the main objective of those meetings was to start the preparation of a medium/long term plan of work (*per the recommendations of the General Assembly Resolution 77/120 and of the United Nations/World Health Organization International Conference on Space and Global Health (A/AC.105/1306)*)

The full report issued after those meetings can be found here:

https://www.unoosa.org/res/oosadoc/data/documents/2024/aac_105c_12024crp/aac_105c_12024crp_33_0_html/AC105_C1_2024_CRP33E.pdf



Geneva Digital Health Day 2024



Geneva
Digital
Health
Day



The Space and Global Health Network participated to the first edition of the Geneva Digital Health Day (GDHD) held on the sidelines of the World Health Assembly.

The inaugural edition of the GDHD took place on Thursday, May 30, 2024, alongside the World Health Assembly at Campus Biotech in Geneva.

This successful launch was made possible through a unique collaboration with the Geneva Health Forum, the Global Initiative on Digital Health (GIDH), the University of Geneva, AI for Life, and Campus Biotech. This edition was also co-sponsored by the World Health Organization.

The event gathered over **800 participants and experts** from the public and private sectors as well as academia, who engaged around cutting-edge presentations from more than 70 thought leaders in digital health.



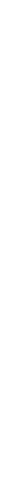
Space and Global Health. From Satellites to Stethoscopes

During the GDHD, a full track was dedicated to Space and Global Health with high-profile speakers from organizations such as the World Health Organization, the European Space Agency, UNOOSA, the Federal Department of Foreign Affairs (FDFA) or the World Organisation of Animal Health (WOAH) with a special keynote from Prof. Claude Nicollier, the first Swiss Astronaut.

Some of the topics covered included: Optimizing access to emergency healthcare services in resource-limited settings: The Critical Role of Remote Sensing Data, Data Governance and Management or Addressing Climate-Sensitive Diseases through Digital Environmental Surveillance in SORMAS. In addition, panelists discussed specific strategies and actions aimed at fostering stronger collaboration between Space and Global Health.

Space and Global Health Hackathon

A unique collaboration with the European Space Agency



On the sidelines of the World Health Agency, the gdhub and ESA organised together and with various partners including the Space and Global Health Network ,UNOOSA, WHO, Group on Earth Observations, Open Geneva, Space Generation Advisory Council the first Space and Global Health Hackathon in Geneva (31 May, June 1 2024)

The call for projects aimed to identify challenges to broaden the spectrum of solutions of space of Space applications to the health sector. As examples, some projects focused on the use of EO satellite data in combination with in-situ data and AI, with the involvement of local users and some key stakeholders in the health domain.

The key outcomes can be summarized as follow:

- **9** challenges selected
- **125** participants
- **17** experts mentors
- **36** hours of intensive collaboration

Various prizes and awards were granted to the participants to help accelerate their projects.

The video summarizing the key highlights of the Hackathon can be found here:

<https://youtu.be/uvJ8nmtiwfo?si=PjgBwXr6HD5Ud0tw>

Pictures of the event can be seen here: <https://community.implementome.org/posts/space-and-global-health-hackathon-hackathon-pictures>

Collaboration with the GESDA

Following the discussions which happened during the Geneva Digital Health Day, a dedicated article was published in collaboration with the GESDA.



For the first time, the SGH Network contributed to the GESDA Science Breakthrough Radar® (2024) which provides an overview of science trends and breakthrough predictions at 5, 10 and 25 years in 42 science and technology emerging topics, a synthesis of the related fundamental debates and actions in society, and an exploration of opportunities for concerted action through initial contributions on the implications for international affairs, global challenges, and the SDGs by the Geneva Science and Diplomatic Anticipator.

The link to the full article dedicated to Space and Technology can be found here : <https://radar.gesda.global/space-and-global>

Invited Contribution:
Space Technology and Global Health

Due to the profound impacts of climate change, the intersection of space technology and global health is emerging as a crucial area of focus. Climate change is fundamentally altering the global landscape, causing extreme weather events such as wildfires, droughts, cyclones and floods. These events reshape our physical world and profoundly impact public health by altering patterns of disease spread and facilitating outbreaks. Space monitoring technology, combined with artificial intelligence, is playing an increasingly important role in tracking these environmental changes, and related disease outbreaks, to improve public health interventions.

Studies suggest that over 50 per cent of known human infectious diseases may be exacerbated by climate change, with a significant proportion of emerging pathogens being zoonotic in nature. Vector-borne diseases such as dengue, chikungunya and malaria, as well as water-borne diseases such as cholera, are particularly sensitive to environmental changes. The displacement of human and animal populations due to climate-related events further complicates disease dynamics and creates new pathways for disease transmission and outbreaks.

THORS

- Claude Nicollier**
Honorary Professor
EPFL
- Pilar Hernandez**
MD
SORMAS Foundation
- Chadia Wannous**
One Health Global Coordinator
World Organization for Animal Health
- Nicolas Ray**
Associate Professor at the Institute of Global Health
University of Geneva
- Steve MacFaely**
Chief Statistician and Director of the Statistics and Data Directorate
OECD
- Markus Reubi**
Delegate of the Federal Council for the 2030 Agenda and Deputy Head of the Prosperity and Sustainability Division.
EDA
- Natália Archinard**
Deputy Head, Science, Transport and Space Section
EDA
- Martyn Clark**
Professor of Hydrology in the Department of Civil Engineering at the Schulich School of Engineering

COPUOS Meeting

June 2024

Main conclusions

The Space and Global Health Network held two meetings, in hybrid format, on the 19 June 2024 on the margins of the sixty-seventh session of the Committee

Over 30 participants attended, including participants from both the space and health sectors, space agencies, academia and international organizations including the Office for Outer Space Affairs.

The main objective of those meetings was to discuss the progress of the activities of the annual work plan shared during the sixty-first session of the Committee in February 2024.

Some of the main conclusions of those meetings include:

1. The presentation of a **Draft long-term strategy on space and global health** for the period 2025–2035 (A/AC.105/C.1/L.417) available in all six official languages of the United Nations for further comments from the members States of the Committee
2. The presentation of the **outcomes of the Geneva Digital Health Day** and the dedicated track on Space and Global Health.
3. A **draft mapping of organizations** working on the fields of space and global health was presented, with the aim to improve knowledge, identify potential gaps and support the collaboration between the different actors
4. **A transdisciplinary taskforce was created** as per the Space and Health Network's conclusions at the sixty-first session of the Scientific and Technical Subcommittee (A/AC.105/C.1/2024/CRP.33). A Chair and Vice-Chair were appointed to lead this workstream, the taskforce consisted at that time of 17 members. Details about the methodology of work, targets and format of the Space and Global Health Curriculum were also presented by the Taskforce (see dedicated section in this Annual report for more information)

The link to the full report can be found here:

https://www.unoosa.org/oosa/oosadoc/data/documents/2024/aac.1052024crp/aac.1052024crp.18_0.html

FOCUS ON THE SPACE AND GLOBAL HEALTH CURRICULUM



Prof. John
Wilson

Spatial Sciences
Institute, University of
Southern California

CHAIR



Ilaria Cinelli

Aerospace Medical
Association

VICE-CHAIR

The **transdisciplinary Space and Global Health taskforce** was created in March 2024 as per the Space and Health Network's conclusions at the sixty-first session of the Scientific and Technical Subcommittee (A/AC.105/C.1/2024/CRP.33) and officially presented in June 2024 during the COPUOS meeting.

A Chair and a Vice-Chair have been appointed to lead those efforts to build this novel Curriculum. Initially, the task force consisted of 17 members; as of December 2024, it has expanded to 32 members.

Objectives of the Curriculum:

- Develop skills, knowledge, and competencies at both the individual and the organizational levels to effectively utilize space and digital technology in the realm of global health worldwide
- Understanding the applications of space technology in global health
- Identifying challenges and opportunities in implementing space technologies for health

Targets (2):

First, the curriculum will target policy makers and decision-makers and introduce prominent issues on space technology and the use of space data to support current and nascent global health initiatives. Second, it will target masters and doctoral students (in the field of medicine and relevant fields) and explore space resources and public health challenges with more granularity. Inclusivity will also be a prominent aspect e.g., people at different stages of life and from various locations.

Format:

Online MOOCs will be created to broaden the curriculum's appeal and accessibility and could also be offered as standalone resources or as a part of hybrid models that could incorporate in-person workshops and internships. Certification will be an essential component and multiple models are being assessed to serve the various audiences in different locations. Importantly, a digital platform is thought to be versatile, able to provide content in multiple languages, and also built upon the latest technologies such as AI and LLMs.

Deadline set to deliver the **MOOCs: June 2025**

SPACE AND GLOBAL HEALTH CURRICULUM : METHODOLOGY

Sub-groups: The action plan includes the formation of dedicated subgroups within the taskforce to focus on essential deliverables such as content development, learning pathways, partnership development or the platform choice.

Use Cases

A series of case studies will be used to help students develop their familiarity with data sources and analytical skills. These case studies will likely include the use of satellite imagery to track disease vectors, monitor climate change impacts on health, and assess the role of disasters on health, among others.

Considering the crucial need to adopt a pragmatic approach within the Taskforce to drive this exercise and in order to deliver an original and practical Curriculum to the targeted audience, **a reverse engineering process** has been put in place **consisting on focusing first on identifying key Use Cases** on the prominent topics of the application of Space technologies for Global Health.

The use Cases will be framed into the Curriculum and the key learnings and themes identified from the Use Cases Summaries will be one first source to help to construct the overall list of topics of the Curriculum.

The following first list of 5 Use cases have been defined by the Members of the Space and Global Health Taskforce. The results were obtained through a process in which each member was asked to contribute to define a preliminary list of Use Cases and then rate them by order of importance.

Use case 1: Access to Drinkable Water

Exploring the Role of Space Technology in Water Resource Management; Identifying Challenges in Global Water Accessibility; Assessing the Effectiveness of Space-Based Water Monitoring; Developing Solutions for Water Purification Using Space Technology; Promoting Sustainable Water Use Through Space-Driven

SPACE AND GLOBAL HEALTH CURRICULUM : USE CASES

Use Case 2: Vector Borne Diseases Tracking

Explore how space data can help monitor vectors such as mosquitoes and habitats enabling early warning systems for dengue, malaria, zika, chikungunya in various regions of the world

Use Case 3: Telehealth

Understand how telehealth and satellite technologies associated can deliver high-quality healthcare services, especially in remote or underserved areas and for vulnerable populations including displaced populations.

Use case 4: Global Access to Healthcare using remote sensing

Understand how remote sensing data can help monitor and improve health outcomes.

Ex. Disease Surveillance, Natural Disaster Response, Food Security and Nutrition, Urban Planning and Health, Epidemiology

Use 5: Environmental Health Monitoring

Understand how Space can data support Air Quality Monitoring and tackle Pollution Related Disorders; E.g. Use of Satellites to track air and water pollutants and help identify areas with poor quality initiating evidence informed public health policy; Environmental Risk Assessment: Explore the applications of EO, (GIS) and Global Navigation Satellite Systems (GNSS)

The Taskforce was divided in sub-groups with 5 leads to deliver the content of the Use Cases. The first milestone was set for December 2024 to deliver the Summary of each Use Case.

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A Delphi-Process for the Space and Global Health Curriculum

This Delphi process was designed to identify the key domains of the curriculum, which, together with the work on the use cases, will establish the foundation for the Space and Global Health Curriculum. Members of the Space and Global Health Taskforce were involved in the Process.

Round 1

- Review of a preliminary list of domains and sub-domains, issued from an initial search of literature and suggest any additions or revisions to the content. (December 2024)

Round 2

- Rank the identified domains /subdomains based on their level of importance to the curriculum.
- Indicate if domains should be mandatory, optional
- Associate the targets to each domain. (December 2024)

Round 3

- Review of personal rankings vs group ranking (December 2024).

Consensus Meeting and Publication

- Presentation of Results and final alignment on the list (January 2025)
- Scientific paper documenting the full process(February 2025)

After the Delphi Process, feedback from a broader group of stakeholders/ relevant organizations will be collected to ensure the inclusion of diverse perspectives and strengthen the proposal.

International Astronautical Congress Milan(IAC) October 2024

Representatives of the Space and Global Health Network participated to the 75th edition of the International Astronautical Conference in Milan (October 14-18th, 2024).

In collaboration **with Space Exchange Switzerland**, a national platform for the promotion of space in Switzerland from the Swiss Space Office (SSO) of the Federal Department for Economic Affairs, Education and Research (EAER) in collaboration with the two Swiss Federal Institutes of Technology (EPFL and ETHZ).

A presentation of the Space and Global Health Curriculum was performed on on Switzerland's Booth.

This event represented an opportunity to engage with various individuals, and organizations from the private sector and academia who expressed interest in joining the efforts of the SGH Network and particularly for the Space and Global Health Curriculum.



United Nations/WHO Regional Conference on Space Technology for Advancing Global Health October 2024

Organized by UNOOSA in collaboration with the World Health Organization and the Space and Global Health Network, this regional conference took place in Vienna 23-25 October with a focus on the Americas and the Caribbean.



The Conference provided a forum for discussion on the areas identified by the Working Group on Space and Global Health and was an opportunity to increase awareness and build capacity among attendees in three main areas of interest:

- (a) Geospatial Information / Space Applications for Health Use Cases;
- (b) Space and Health Data;
- (c) Capacity-Building for Space and Global Health;

- **274 individuals*** from 56 countries registered for the event
- 65 individuals out of them, 30 women, were selected by the programme committee and invited to participate.
- **57 individuals participated in person***, with funding provided by the Office for Outer Space Affairs for 14 participants (8 women and 6 men), including funding from ESA.
- **35 speakers*** from space agencies, academia, industry and civil society. Speakers included the Ambassadors of El Salvador, Mexico, Panama and Paraguay. Representatives of the Pan American Health Organization (PAHO) and World Health Organization participated and presented in the Conference.

The last session focused **on the space and global health curriculum and** discussions around a comprehensive list of relevant use cases to drive capacity-building and awareness-raising efforts and **to ensure to get regional insights.**

**From the Draft Report*

United Nations/WHO Regional Conference on Space Technology for Advancing Global Health

October 2024

Recommendations and observations for Capacity Building (From the Draft report)



1. Participants recommended **integrating real-world use cases and practical examples from the Latin America and Caribbean region presented during the Conference into curriculum development for education and training programs.** This would ensure that students, researchers, and professionals in the space and global health sectors have access to relevant, hands-on learning experiences that reflect current challenges and opportunities in the field. Additionally, participants recommended that **the curriculum for decision-makers includes potential recommended actions with estimated return on investment.**
2. **Active participation from stakeholders in the region was deemed necessary** to ensure the relevance of the content developed for the Curriculum. Participants recommended organizing specific activities and collaborating with educational institutions, local experts, and other key partners to tailor use cases to local contexts, needs, and priorities. In addition, ensuring that the curriculum is multilingual was considered extremely important.
3. Participants recommended **conducting thorough impact analyses, including cost-benefit analyses, to assess the effectiveness and value** of applying space-based technologies in various public health, healthcare and surveillance settings. This approach would provide a more comprehensive understanding of the financial, social, and economic implications and return on investment of using these technologies.

Key results at glance and Conclusion

The following key figures summarize the key achievements of the Space and Global Health Network. While continuous efforts and focus are certainly needed to achieve our overall mission, 2024 marks a key momentum with unique activities of the Space and Global Health Network and growing expressed interests from various relevant stakeholders to join our efforts to foster better collaboration between Space and Global Health communities.

Objectives	Activities	Outcome
Raising awareness	<ul style="list-style-type: none">• Geneva Digital Health Conference• GESDA Collaboration• IAC Milan• UN/WHO regional conference on Space technology to advance Global Health• Space and Global Health Hackathon• World Health Summit (Berlin)• Global Digital Health Forum	<ul style="list-style-type: none">• Track Session on Space and Global Health during the GDHD• Published article in the GESDA Scientific Breakthrough Radar• Mapping of Space and Global Health Projects• Panels discussions
Capacity Building	<ul style="list-style-type: none">• Space and Global Health Curriculum• UN/WHO regional conference on Space technology to advance Global Health	<ul style="list-style-type: none">• Creation of a dedicated Taskforce• Outline of the Curriculum with targets• Development of 5 initial Use Cases• Delphi Process to map key domains/subdomains• Recommendations to enhance capacity building at regional level
Strengthen the Network	<ul style="list-style-type: none">• STSC/ COPUOS Meetings (February and June 2024)• Internal meetings with the SGHN• Panel discussion during the last edition of the Global Digital Health Forum.• Mapping of Space and Global Health implementation projects	<ul style="list-style-type: none">• Set of recommendations issued through CRPs /reports.• Long-term strategy on space and global health for the period 2025–2035 (A/AC.105/C.1/L.417)• Mapping of around 60 Space and Global Health implementations.• 175 members of the SGH Network

Acknowledgements

To our partners and colleagues from the Federal Department of Foreign Affairs of Switzerland, the UN Office for Outer Space Affairs, the World Health Organization and other relevant organizations. The members of the Space and Global Health Network and the Space and Global Health Curriculum Taskforce.

**Thank you for your
dedication and the strong
support to our mission to
enhance better
collaboration between Space
and Global Health
communities.**

Website: <https://sgh.network>