

Unleashing the Potential of Space Technologies and Tools for Global Health

Observations and recommendations from the Expert Group on Space
and Global Health of the Scientific and Technical Subcommittee of the
Committee on the Peaceful Uses of Outer Space

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**SPACE AS A DRIVER FOR
SUSTAINABLE DEVELOPMENT**

SPACE AND GLOBAL HEALTH

		<i>Individual health</i>	<i>Individual and Communities</i>		<i>Population Health</i>	
Key HEALTH activities		Medical practice	Health services	Medical Research	Prevention and control of infectious and chronic diseases	Global Health Security
Key Space Activities		Tele-Medicine	Tele-Health	Health Sciences	Tele-epidemiology	Disaster Management
Satellite Activities	Tele-communications	<ul style="list-style-type: none"> ▪ Specialist ▪ Second opinion ▪ Remote monitoring ▪ Tele-diagnostic ▪ Tele-consultation ▪ Peer to peer ▪ Tele-Robotic 	<ul style="list-style-type: none"> ▪ Professional training ▪ Community health worker training ▪ Community health education ▪ Tele-education ▪ Peer-to-peer training 	<ul style="list-style-type: none"> ▪ Knowledge transfer 	<ul style="list-style-type: none"> ▪ Data dissemination through centres of expertise ▪ Water levels & water borne diseases ▪ Emergency communication for outbreak/pandemic management 	<ul style="list-style-type: none"> ▪ Flexible and deployable capacities ▪ Strategic planning, coordination and communication among relief workers; coordination sites; experts; individuals
	Global Navigation Space Systems & GIS	<ul style="list-style-type: none"> ▪ Routing Medical Emergencies 	<ul style="list-style-type: none"> ▪ Contextual information on site ▪ Health services optimization 		<ul style="list-style-type: none"> ▪ Geographic occurrences of diseases ▪ Location of sources of infection/pollution ▪ Tracking animals as disease sentinels 	<ul style="list-style-type: none"> ▪ Detailed site information ▪ Response worker location coordination
	Remote sensing of the Earth and Atmosphere				<ul style="list-style-type: none"> ▪ Tracking disease and risk factors ▪ Vector-borne diseases (malaria) ▪ Air-born disease, including dust, air pollution (ex: Asthma) ▪ Waterborne diseases (ex: Cholera) ▪ Food security 	<ul style="list-style-type: none"> ▪ Disaster mapping (before and after) ▪ Planning and response ▪ Emergency tele-epidemiology
Human Space Flight	Space Life Science			<ul style="list-style-type: none"> ▪ Knowledge of the human body (ex: aging) ▪ Infection prevention 		
	Technology Development	<ul style="list-style-type: none"> ▪ Digital Applications 		<ul style="list-style-type: none"> ▪ Point of care medicine 		

Scoping review: main topics

- Tele-epidemiology for infectious and non-communicable diseases (including environmental factors)
- Telemedicine and tele-education of care professionals
- Access to healthcare and improvement of autonomy
- Disaster prevention, early warning, management of humanitarian crises
- Decision-support systems and innovative research methods



Key observations on space & global health(1/2)

- Alignment of focus of the work of the Expert Group not only on SDG 3 (good health and well-being), but also on SDG 4 (education), SDG 6 (clean water and sanitation) and SDG 13 (climate change).
- Ability to support not only SDGs but also the Sendai framework for disaster risk reduction, and the Paris agreement on climate change.
- Importance of integrating the One Health perspective.
- The need to strengthen cooperation between WHO and UNOOSA.
- The value of connecting remotely sensed information with public health information systems, as a way to enhance understanding and decision-making in health systems.

Key observations on space & global health (2/2)

- Key role of GEO, the Group on Earth Observations, in providing capacity and access to remotely sensed data.
- Importance of space technology for public health surveillance, emergency preparedness and field response.
- Need for capacity building in the domains of space-based data and technology in global health, at the level of public health actors, policy makers and citizens. Need for stronger involvement of youth.
- Challenges of technical and operational interoperability.
- Enabling role of open approaches in developing and applying space-based solutions to health.

Recommendations (1/2)

- Encourage **formal cooperative agreements** between health authorities and space authorities at national level.
- Establish a **dedicated coordination platform** between UN entities and other relevant actors.
- Engage the WHO in some of the OOSA activities related to global health, such as UN-SPIDER technical advisory missions.
- Establish a **global financing mechanism** to promote application of space solutions for global health.
- Establish national governance mechanisms for **removing barriers** in the effective use of space-based technologies, including **telemedicine**.

Recommendations (2/2)

- Promote **open data** sharing policies and **participatory approaches** in improving access to all geospatial information relevant to global health.
- Enhance inter-sectoral coordination and cooperation for **effective capacity building** activities.
- Engage learning institutions to **motivate young professionals** towards space-related abilities with particular attention to experts in health.
- Enable **organizational and technical interoperability** to facilitate the implementation of space-based science and technology in the health sector.
- Conduct appropriate **exercises to benchmark preparedness** for appropriate use of space technologies in responding to global health events.