

EARTH OBSERVATION SYMPOSIUM (B1)
International Cooperation in Earth Observation Missions (1)

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SENSING PROGRESS: SPACE SOLUTIONS FOR FOOD & WATER SECURITY

Abstract

With food and water security presenting one of the 21st century's key challenges for humanity, this paper undertakes an examination of potential space solutions that could assist in tackling this pressing issue. With a focus on application within the Global South, Sensing Progress is the result of a 5 week project involving 31 participants from 11 countries who together identified three core issues contributing to contemporary food and water insecurity. These comprise urbanization and population growth, climate change and also flooding and drought. By delivering a series of seven national case studies, such as data and imagery collection for the agricultural sector by the NigeriaSat-1 satellite and China's CropWatch initiative, a snapshot is provided of the space applications already being successfully applied in the Global South to tackle food and water insecurity. The current work of international programs and organizations engaged in this field, such as the ESA-led TIGER Initiative in Africa and the Group on Earth Observations Global Agricultural Monitoring (GEOGLAM) program, is further explored with a view to promoting such international endeavors. Separately the novel concept of an Orbital Seed Vault is also discussed as a means of preserving humanity's long-term access to food in the face of cataclysmic disaster.

Ultimately three main recommendations are proposed by the multinational cohort of project participants for consideration by the international community. The first, international data sharing, involves the open and timely sharing of Earth observation data, experience and information resources among nations and people. The second recommends expansion of current Earth observation programs, such as Remote-sensing Information and Insurance for Crops in Emerging economies (RIICE) and the Famine Early Warning System (FEWS), by establishing multisectoral policies and programs focused on food and water security. Such expansion should include strengthening of existing State engagement with such programs and the extension to further States not yet involved. The third recommendation surrounds capacity building, with the call for national governments of the Global South to fund Earth observation and remote sensing education and outreach programs. These capacity building initiatives should be supported by well developed communications infrastructure and access to relevant hardware and software platforms. This paper arising from the 2016 Southern Hemisphere Space Studies Program held in Adelaide, Australia, brings to this issue the unique international, intercultural and interdisciplinary perspective that such programs of the International Space University are renowned.