



UNITED NATIONS
Office for Outer Space Affairs



Regional Expert Meeting

Use of Space-based Information in Early Warning Systems for Drought

Co-organized by

**The United Nations Platform for Space-based Information
for Disaster Management and Emergency Response (UN-
SPIDER) of the United Nations Office for Outer Space
Affairs (UNOOSA)**

and

**The National Emergency Commission
of the Dominican Republic**

**Santo Domingo, Dominican Republic
18 and 19 July 2016**

1. INTRODUCTION:

The Dry Corridor of Central America and several regions of the Dominican Republic have been experiencing more intense and more frequent droughts for the past decades. The rural communities' high vulnerability in this area, particularly of those that depend on subsistence agriculture; the high poverty and extreme poverty indexes that characterize many of the rural areas in this region; and the national economies' dependency on agriculture are forcing national and local governments to implement a series of measures in order to respond to the impacts caused by those droughts, including drought monitoring systems.

Traditionally, Drought Early Warning Systems (DEWS) are operated by meteorological observatories in countries of this region using rainfall data (rainfall anomalies). The Standardized Precipitation Index is being promoted as useful for such purposes. Ministries of Agriculture often use their extensionists in the field to gather additional data and information on the impacts due to droughts on crops. However, there is no real use of space-based information to track changes in the condition of the vegetation as a way to complement rainfall anomaly data in order to enhance the scope and effectiveness of the DEWS.

As a way to promote the use of novel methodologies developed by the space community, and novel concepts of early warning systems; in the year 2015 the UN-SPIDER programme of the United Nations Office for Outer Space Affairs (UNOOSA), the Food and Agriculture Organization of the United Nations (FAO), the United Nations Convention to Combat Desertification (UNCCD), the International Research Center on El Niño Phenomenon (CIIFEN), the Regional Centre for Space Science and Technology Education for Latin America and the Caribbean (RECTEALC), the Central American Agricultural Council (CAC) and the Central American Coordination Centre for Natural Disaster Prevention (CEPRENAC) of the Central American Integration System, the Agustín Codazzi Geographic Institute in Colombia (IGAC), the Mexican Space Agency and the Federal University of Santa Maria in Brazil (UFESM); as well as government ministries and institutions of several countries in Central America and the Dominican Republic, including the National Emergency Commission and the EIGEO launched the Project entitled Strengthening Early Warning Systems for Drought (SEWS – D). The Project aims to institutionalise and improve DEWS through the routine generation and use of space-based information in combination with other types of information in countries of this region to contribute to the decision-making process regarding how to cope with the impacts of droughts.

The SEWS-D project is aligned with two of the six thematic priorities established under the UNISPACE+50 process (*International cooperation towards low-emission and resilient societies and capacity-building for the 21st century*) and with the "Space Society" pillar that promotes the use of space-based applications to contribute to increase the resilience of nations as a way to meet the objectives of the global development agenda. A key element of this global agenda is the Sendai framework for Disaster Risk Reduction 2015-2030 which was launched during the Sendai World Conference on Disaster Risk Reduction in March, 2015. The Sendai framework calls for the use of space-based technologies and geospatial information as a way to improve the understanding of disaster risk.

As one of the key activities of the SEWS-D Project in 2016; UN-SPIDER, the National Emergency Commission of the Dominican Republic (CNE) and the Inter-institutional Geospatial Information Team (EIGEO) are organising the Regional Expert Meeting on the Use of Space-based Information in Early Warning Systems for Drought. This Regional

Expert Meeting that brings together stakeholders from Latin America and the Caribbean will be conducted in Santo Domingo, Dominican Republic, from 18 to 19 July 2016.

2. BACKGROUND AND OBJECTIVES

The more frequent and intense droughts that are taking place in the so called “Dry Corridor” of Central America and in the Dominican Republic; as well as the high vulnerability of rural communities in these regions, are forcing national and local governments in countries of these regions to implement a series of measures in order to respond to the impacts caused by those droughts.

Recognizing the usefulness of space-based technologies and geospatial information to contribute to sustainable development worldwide; the Committee on the Peaceful Uses of Outer Space (COPUOS) of the United Nations and UNOOSA are leading the UNISPACE+50 process to shape the use of these space-based technologies in the framework of the global “Space 2030” agenda that has been shaped in 2015 through the launch of the Sendai framework for disaster risk reduction, the Paris climate change agreement and the Sustainable Development Goals. The Committee has defined two thematic priorities within this UNISPACE+50 process that are geared to contribute to enhance the resilience and to support Member States in meeting objectives of the global development agenda:

- *International cooperation towards low-emission and resilient societies, and*
- *Capacity-building for the 21st century*

UNISPACE+50

The year 2018 will mark the 50th anniversary of the first United Nations International Conference on the Exploration and Peaceful Uses of Outer Space - UNISPACE+50. The Committee on the Peaceful Uses of Outer Space (COPUOS) at its fifty-eighth session in June 2015 endorsed the plan of work for UNISPACE+50. UNISPACE+50 will review the contributions that the three UNISPACE Regional Expert Meetings (UNISPACE I, held in 1968, UNISPACE II, held in 1982, and UNISPACE III, held in 1999) have made to global space governance. In line with the 2030 Agenda for Development and sustainable development goals, UNISPACE+50 aims to chart the future role of COPUOS, its subsidiary bodies and the United Nations Office of Outer Space Affairs, at a time of an evolving and more complex space agenda when more participants, both governmental and non-governmental, are increasingly involved in ventures to explore space and carry out space activities. The activities of the United Nations Programme on Space Applications are an integral part of the UNISPACE+50 thematic cycle and are aimed at contributing to outputs under the four pillars space economy, space society, space accessibility and space diplomacy. For additional information on UNISPACE+50 see <http://www.unoosa.org/oosa/en/ourwork/hlf/hlf.html>.

The Sendai Framework for Disaster Risk Reduction 2015-2030 includes 7 global targets, including the need to substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030.

As a way to promote an improved understanding of disaster risk, the Sendai framework promotes real time access to reliable data, the use of space and in situ information, including geographic information systems (GIS), and the use information and communications technology innovations to enhance measurement tools and the collection, analysis and dissemination of data.

The Sendai framework calls on the international community to promote and enhance, through international cooperation, including technology transfer, access to and the sharing and use of non-sensitive data and information, as appropriate, communications and geospatial and space-based technologies and related services; and to maintain and strengthen in situ and remotely-sensed earth and climate observations as appropriate and in accordance with national laws.

The SEWS-D project, addressing the use of space-based applications and geospatial information, will contribute to the strengthening of national drought policies, it will promote the incorporation of the routine use of space-based information generated through the use of the Agricultural Stress Index System (ASIS) which has been developed by FAO, information generated by CIIFEN, the use of step-by-step procedures developed by UN-SPIDER and its partners regarding indexes based on satellite products such as the Normalized Differential Vegetation Index (NDVI), the Enhanced Vegetation Index (EVI), the Vegetation Condition Index (VCI), and the Standard Vegetation Index or Anomaly Index (SVI); as well as other relevant social, economic and environmental data.

The need to focus on disaster risk reduction and the adverse effects of climate change is aligned with the cross cutting areas defined by the Committee for the Peaceful Uses of Outer Space (COPUOS) as part of its UNISPACE+50 process. The focus on droughts is also essential in the context of space for sustainable development and the resilience of societies. In addition, the efforts conducted in the SEWS-D project in turn fit into the thematic priority of space society that has been identified as one of the four priorities for UNOOSA.

The Expert Meeting aims to contribute to:

- The execution of the SEWS-D project; the efforts conducted in the region by different international and regional organizations including FAO and UNCCD regarding the enactment and implementation of national drought policies and efforts to cope with droughts, and by national government agencies in the topic of early warning;
- The efforts conducted by CNE and EIGEO to establish the Integrated Geographical Information System for Disaster Risk Management in the Dominican Republic and the strengthening and institutionalization of the EIGEO group;
- The efforts that UNOOSA is conducting related to the UNISPACE + 50 process;
- The efforts conducted by UN-SPIDER to institutionalize the use of space-based information in all phases of the disaster management cycle due to natural hazards at the regional level and in each of the countries of the region;
- The efforts conducted in Latin America and the Caribbean, as well as at the global level regarding the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030;
- The efforts that are conducted in Central America with respect to the implementation of the Central American Policy for Integral Disaster Risk Management (PCGIR); with a particular focus on early warning systems;
- The implementation of the Central American Agricultural Policy (PACA), the Central American Strategy for Territorial Rural Development (ECADERT), and the Food Security and Nutrition Policy for Central America and the Dominican Republic (POLSAN);

The specific aims of the Regional Expert Meeting include:

- Taking note of the recent advances regarding the activities conducted as part of the SEWS-D project, including advances at the national level in the analysis of maps of the Vegetation Condition Index (VCI) that have been elaborated and provided to institutions in each country by UN-SPIDER and to document critical aspects that may have been identified by the partners and to identify how to solve such critical issues;
- Harmonisation of concepts regarding the way to visualize droughts that include information regarding the weather, the oceans, the status of vegetation, types of crops and soils, economic and social trends (demographic trends, poverty levels, malnutrition, etc) as well as other factors that may be relevant;
- Identification of strategies and activities to contribute to the institutionalization of national drought policies and within these policies, drought early warning systems;
- Identification of the next steps in the implementation of FAO's Agricultural Stress Index System (ASIS) at the national level;
- Harmonization of the plan of work for the following year.

Expected outcomes and results include:

- The compilation of advances regarding the implementation of the use of VCI maps and FAO's ASIS system in those countries where the SEWS-D Project is being implemented;
- Suggestions to institutionalize the use of space-based information in early warning systems operated in the region with a particular emphasis on droughts; including monitoring and visualization systems;
- Elements for the plan of work of the SEWS-D project for the next year;
- An improved awareness of representatives of the region regarding advances in the technologies developed by the space community to support efforts in the area of disaster risk reduction and early warning;
- Showcasing how regional efforts contribute to address trans-boundary hazards.

The discussions to be conducted during various sessions will be linked to the recently launched Sendai framework and the Sustainable Development Goals (SDGs). Specifically, they will make reference to Priority 4 of the Sendai framework that addresses the need to enhance disaster preparedness for effective response.

It is expected that participants in this Regional Expert Meeting will outline and approve recommendations and suggestions concerning efforts related to the use of space-based applications and geospatial information in the contexts of early warning systems targeting droughts and other natural hazards, as well as in areas related to their use in disaster risk management, emergency response and recovery efforts.

The outcomes and results of this Regional Expert Meeting will also inform the preparations towards UNISPACE+50, which will be held in 2018 marking the fiftieth anniversary of the first United Nations Regional Expert Meeting on the Exploration and Peaceful Uses of Outer Space held in 1968.

3. LOCATION AND DATE OF THE REGIONAL EXPERT MEETING

The Regional Expert Meeting will be held from 18 to 19 July 2016 in Santo Domingo, Dominican Republic. Invited participants will receive information with details on hotels and other local arrangements.

The Regional Expert Meeting will be conducting in Spanish language.

4. AGENDA OF THE REGIONAL EXPERT MEETING

The following activities are foreseen:

- A high level panel with Directors of Institutions involved in the implementation of national drought policies, and institutions that make use of geospatial information;
- Plenary an technical presentations by partners of the SEWS-D Project;
- Plenary presentations by representatives of countries involved in the SEWS-D project
- Discussion sessions in the modality of working groups.

5. PARTICIPANTS

The Regional Expert Meeting will bring together participants from national, regional, and international organizations from:

- Government agencies including national meteorological institutes, civil protection agencies, ministries of agriculture, environment and natural resources who are involved in the SEWS-D project;
- The United Nations, Central America, the Caribbean, and of the international development community;
- Academic and research institutions;
- Non-governmental organizations; and
- The private Sector and industries.

6. LIFE AND HEALTH INSURANCE

Life/major health insurance for each of the selected participants is necessary and is the responsibility of the candidate or his/her institution or government. The co-sponsors will not assume any responsibility for life and major health insurance, nor for expenses related to medical treatment or accidental events.

7. LANGUAGE OF THE REGIONAL EXPERT MEETING

The Regional Expert Meeting will be conducted in Spanish language.

8. CONTACT INFORMATION

For information regarding the programme of the Regional Expert Meeting, please contact:

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