

## CONCEPT NOTE

### Stakeholder Workshop on Earth observation-based information products for drought risk on a national basis

Organized by

**DiMTEC, University of the Free State (UFS), South Africa**

**ZFL, University of Bonn**

**UNU-EHS**

**UNOOSA / UN-SPIDER**

4 to 8 June 2018; Pretoria and Eastern Cape, South Africa

#### 1. Background

The duration and intensity of droughts have generally increased in several regions of the world. Agriculture is especially affected, triggering direct consequences on food security, health, and the economic situation of a country. In recent years South Africa has been experiencing severe droughts that have affected cities and rural communities in several regions of the country dedicated to agriculture and livestock. Using South Africa as pilot country, the project *Earth Observation Based Information Products for Drought Risk Reduction at the National Level (EVIDENZ)* develops new Earth-Observation-based methods to monitor agricultural impacts due to droughts.

The project consortium has developed workflows which can be used to contribute to the monitoring of the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030. Therefore, the workflows have been developed in accordance with the *Technical Guidance for Monitoring and Reporting on Progress in Achieving the Global Targets of the Sendai Framework for Disaster Risk Reduction*. The aim is to raise awareness regarding the use of space-based technology for monitoring progress in disaster risk management as recommended in the UNISDR Technical Guidance. These workflows will be given global visibility and will be promoted through the recommended practices included in the UNOOSA /UN-SPIDER Knowledge Portal.

The workflow developed by the Centre for Remote Sensing of Land Surfaces (ZFL) of the University of Bonn and by the United Nations University Institute for Environment and Human Security (UNU-EHS) as part of the EVIDENZ project aims to contribute to the estimation of the number of people engaged in agricultural activities that are affected by droughts. Such an estimation will contribute to assess the effectiveness of efforts conducted by countries such as South Africa to achieve Target B of the Sendai Framework (Substantially reduce the number of

affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared with 2005-2015).

The first segment of the workflow has been developed by the Center for Remote Sensing of the Land Surfaces (ZFL) using a weighted drought hazard classification based on a set of remote sensing indicators. This segment is based on the vegetation condition index taking into consideration the drought timing and the vulnerable growing stages of crops. The assessment is based on an analysis of phenological metrics and employs a weighted linear combination (WLC).

The second segment of the workflow has been developed by UNU-EHS and builds on the drought hazard classification with the assessment of exposed elements for a quantitative measure of the Sendai indicator B-5 (Number of people whose livelihoods were disrupted or destroyed, attributed to agricultural drought). This part of the workflow makes use of in-situ data generated by the agricultural community, in particular the ministry of agriculture and national authorities that provide socio-economic data. The data on the population involved in agricultural tasks and their socio-economic characteristics has been used to estimate the vulnerability of agricultural dependent population using an indicator-based approach.

Software and data availability plays a vital role in the ability of countries to monitor the impacts of hazards such as droughts. Therefore freely available data and open source software have been used, in combination with complementary in-situ data such as agricultural yield information, population and occupation, to develop the workflows.

The EVIDENZ workflow is presented as a Recommended Practice in the UN-SPIDER Knowledge Portal. The practice includes explicit, step-by-step instructions to its use.

## **2. Objectives and Expected Outcomes of the stakeholder workshop**

The objective of the *EVIDENZ stakeholder workshop* is to make decision makers and technical staff of several institutions of South Africa aware of the workflow developed by ZFL and UNU-EHS to contribute to the estimation of the impacts of droughts on crops and livestock, to understand drought risks and to discuss a methodological approach to implement the use of the workflow. In addition, the workshop will be used to train technical staff on the use of the workflows as presented in the UN-SPIDER Knowledge Portal.

## **3. Structure of the workshop**

The stakeholder workshop in South Africa will include segments in Pretoria and in Eastern Cape. The segment in Pretoria will allow participants from government agencies at the national level to take note of the types of information which can be obtained from the workflow and will include a dedicated training segment for technical participants. The segment in Eastern Cape will target local government officials and stakeholders and as in the case of Pretoria, it will allow participants to take note of the workflow.

Through technical presentations and subsequent discussions, the stakeholder workshop will explore ways to incorporate the use of the workflow by the local government in Eastern Cape and the national government in Pretoria to generate relevant information to be included in the report on progress achieved in the implementation of the Sendai Framework, and to gather feedback from decision makers and from technical staff with regard to refinements of the

methodological approach and to be integrated in the final version of the recommended practices.

The training segment of the stakeholder workshop, to be conducted in Pretoria, will be used to train technical staff on the use of the workflows.

#### 4. Participants

The stakeholder workshop is expected to bring together key decision makers and operational technical audience from the rural development sector, the agricultural sector, water, sanitation, economic and the disaster management communities, space agencies, research and technology entities. The list of suggested agencies to take part in the stakeholder workshop include:

National Disaster Management Centre (NDMC)
Department of Agriculture Forestry & Fisheries (DAFF)
Department of Water & Sanitation (DWS)
Department of Rural Development
Department of Environmental affairs (DEA)
South Africa Satellite Agency (SASA)
Agricultural Research Council (ARC)
Council for Scientific and Industrial Research (CSIR)
DiMTEC, University of the Free State (UFS)
Other Interested Universities
ZFL University of Bonn, Germany
UNU-EHS
UN-SPIDER

#### 5. Working Language

The working language will be English.

#### 6. Contact

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## 7. Programme of work

### 4 June 2018 (stakeholder workshop): Pretoria

Day / Time	Activity	Remarks
8:30 am - 9:00 am	Registration of participants	
9:00 am - 9:30 am	Welcome (DIMTEC, UFS and UBN-SPIDER)	Welcome Stakeholders and round table introduction
9:30 am – 10:00 am	NDMC, SANSa or CSIR	Recent advances in the use of space technologies in South Africa in the agricultural sector and key challenges to monitor impacts as per the Sendai framework targets
<b>Session 1: EvIDENZ project and its workflows</b>		
10:00 am- 10:30 am	ZFL	Segment of the workflow on the use of space-based vegetation indexes
10:30 am- 11:00 am	Coffee break, Group Photo	
11:00 am- 11:30 am	UNU-EHS	Workflow to estimate number of people affected due to agricultural drought and understanding drought risk in South Africa
11:30 am- 12:00 pm	UNU-EHS	Brief introduction to proposed Policy Brief and distribution of Policy Brief
12:00 pm- 13:30 pm	Lunch break	
<b>Session 2: Monitoring droughts in South Africa</b>		
13:30 pm- 14:00 pm	Drought monitoring in South Africa	Presentation on efforts in South Africa to monitor drought as a weather event and its impacts on hydrologic resources
14:00 pm- 14:30 pm	Use of space technologies in agriculture	Recent advances in the use of space technologies in South Africa in the agricultural sector
14:30 am- 15:30 am	Discussion	What are the current challenges in South Africa regarding the compilation of data on impacts of droughts and other hazards to generate reports to be incorporated in the Sendai Monitoring tool?
15:30 pm- 16:00 pm	Coffee break	

16:00 pm- 17:30 pm	Discussion	Next steps to incorporate EVIDENZ workflow to assess and report on crop losses in South Africa: <ul style="list-style-type: none"> <li>• Modifying workflow to address other provinces in South Africa</li> <li>• Testing</li> <li>• Potential implementation</li> </ul>
17:30 pm	End of stakeholder workshop in Pretoria	

### 5 June 2018: Training segment – Pretoria

Day / Time	Activity	Remarks
<b>Session 3: Sendai framework monitoring and reporting</b>		
09:00 am-10:00 am	Introduction to the Workflows – UN-SPIDER	Introduction to: <ul style="list-style-type: none"> <li>• Types of data used in the workflows (MODIS composite products);</li> <li>• Additional, in-situ data needed;</li> </ul> Overview of EVIDENZ Recommended Practice in the UN-SPIDER Knowledge Portal
10:00 am-10:30 am	Beginning of training on the use of workflows	
10:30 am-11:00 am	Coffee break	
11:00 am-12:00 am	Continuation of training	
12:00 am-14:00 pm	Lunch break	
14:00 pm-17:00 pm	Continuation of training	
15:00 pm-17:00 pm	Wrap up first day	
17:00 pm	Wrap up	

### 6 June 2018 (continuation of training segment)

Day / Time	Activity	Remarks
8:30 am - 11:00 am	Continuation of training	
11:0 am - 12:00 pm	Discussion and wrap up	
12:00 pm	End of Pretoria segment of the stakeholder and user workshop	

### 8 June 2018 (stakeholder workshop): Eastern Cape

Day / Time	Activity	Remarks
8:30 am - 9:00 am	Registration of participants	
9:00 am - 10:00 am	Welcome (DIMTEC, UFS; UN-SPIDER)	Welcome Stakeholders and round table introduction
<b>Session 1: EVIDENZ project and its workflows</b>		



10:00 am-10:30 am	EVIDENZ workflow - ZFL	Segment of the workflow on the use of space-based vegetation indexes
10:30 am-11:00 am	EVIDENZ workflow - UNU-EHS	Workflow to estimate number of people affected due to agricultural drought and understanding drought risk in South Africa
11:00 am-11:30 am	Coffee break, Group Photo	
11:30 am-12:00 am	Drought monitoring in Eastern Cape	Presentation on efforts in Eastern Cape to monitor drought as a weather event and its impacts on hydrologic resources
12:00 am-13:30 pm	Lunch break	
<b>Session 2: Monitoring droughts in South Africa</b>		
13:30 pm-15:00 pm	UN-SPIDER	<p>On overview of the operational elements of the workflow:</p> <ul style="list-style-type: none"> <li>• Hardware and software employed to use the workflow;</li> <li>• Data sources and pre-processing;</li> <li>• Characterization of severity of droughts in Eastern Cape: an example from the workflows;</li> <li>• Incorporation of the in-situ data on land-use (agriculture, livestock, population census);</li> <li>• Output of the workflow (number of people affected by drought).</li> </ul>
15:00 am-15:30 am	Coffee break	
15:30 pm-17:00 pm	Discussion on potential implementation of workflow	<p>Next steps to incorporate EVIDENZ workflow to assess and report on crop losses in South Africa:</p> <ul style="list-style-type: none"> <li>• Modifying workflow to address other provinces in South Africa;</li> <li>• Testing;</li> <li>• Potential implementation.</li> </ul>
17:00 pm	End of stakeholder workshop in Eastern Cape	