



(APFM)
Advisory
Committee Meeting

National Program Against Drought (PRONACOSE)



"Advisory Committee and Management Committee meeting of the
WMO/GWP Integrated Drought Management Programme (IDMP)
2017"

Genève, Switzerland, September 2017

4.1 Development and publication of the Mexican Multivariate Drought Monitor (MoSeMM)

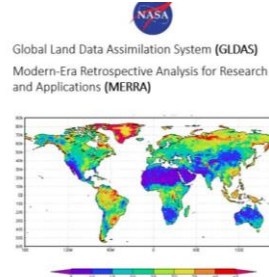
Data:

Innovative data sources in Mexico:

- **Reanalysis data source (NASA-MERRA).**



<http://www.conagua.gob.mx/conagua07/contenido/documentos/portada%20bandas.htm>
<http://clicom-mex.cicese.mx/>



Indexes:

- SPI= Standardized Precipitation Index
- SRI= Standardized Runoff Index
- SSI= Standardized Soil Moisture Index

New Multivariate Index (2013)

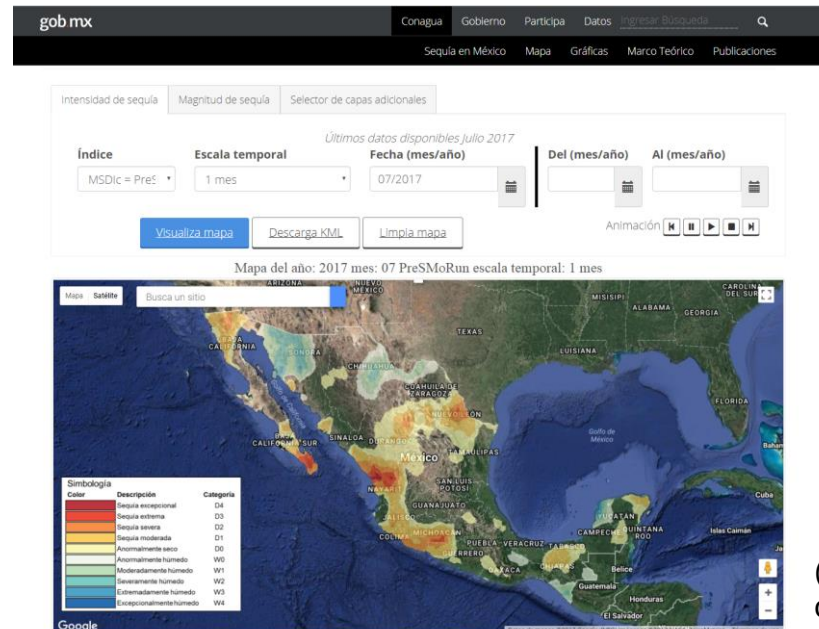
Multivariate Standardized Drought Index (MSDI)

$$\text{MSDI} = \phi^{-1}(p)$$

Where, ϕ is the standard normal distribution.

Intensity scale

Simbología	Escala	Descripción
	W_4	Excepcionalmente húmedo
	W_3	Extremadamente húmedo
	W_2	Muy húmedo
	W_1	Moderadamente húmedo
	W_0	Anormalmente húmedo
		Normal
	D_0	Anormalmente seco
	D_1	Sequía moderada
	D_2	Sequía severa
	D_3	Sequía extrema
	D_4	Sequía excepcional

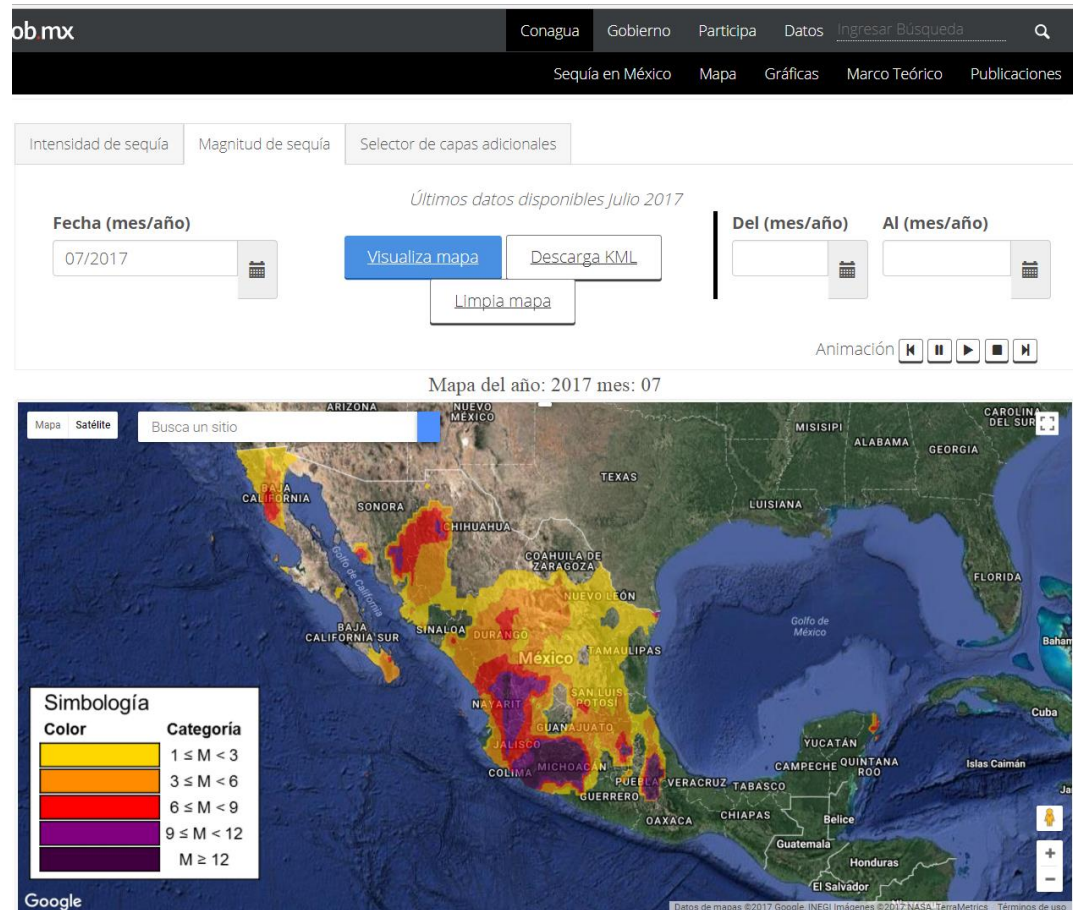


(CONAGUA-UNAM Institute of Engineering, 2017)

4.1 Development and publication of the Mexican Multivariate Drought Monitor (MoSeMM)

There is another tool established to evaluate the persistence of an event, which is named drought magnitude (M). Mathematically it is defined by the sum of the SI of the months that had lasted a drought event (n), divided by threshold (SI_u), as it is shown in the expression:

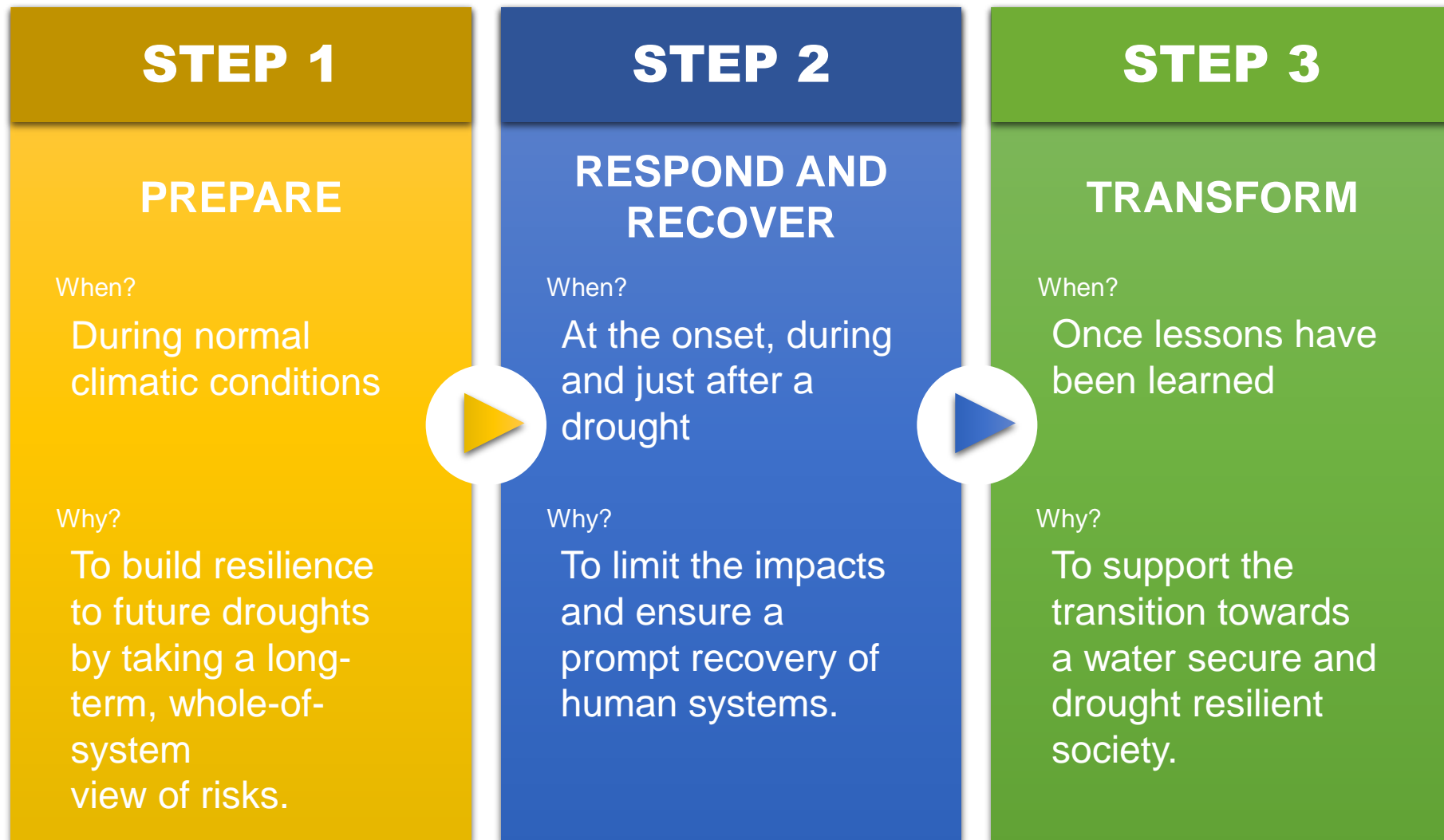
$$M = \frac{\sum_{i=1}^n SI_i}{SI_u}$$



Magnitude scale

The drought magnitude (M) represents the equivalent months of severe drought.

4.3 Strategic drought risk management (SDRM)



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8 “Golden Rules” of SDRM

Sayers *et al.* (2016)



Set multiple goals and objectives that promote positive long-term outcomes for society



Encourage stakeholders from a variety of different sectors and realms to participate



Implement measures to prepare, respond, and recover from drought and transform society's resilience to drought



Utilize limited resources efficiently and fairly to reduce risk and maximize opportunities



Assess whole system behaviour and associated risks and uncertainties over the short and long term



Communicate risks (and associated uncertainty) effectively and widely



Understand inherent controversies and trade-offs



Embed a continuous process of review and adaptation

- According to the Integrated Drought Management Programme (IDMP), the 3 pillars of national drought policy, which are part of integrated drought management, are:
 1. Drought Monitoring and Early Warning Systems;
 2. Vulnerability and Impact Assessment;
 3. Preparedness and Mitigation Actions.

Therefore, the future work is focused on strengthening the corresponding actions to those pillars:

- To apply efficiently the complementary tool of drought monitoring: MoSeMM;
- To develop and apply an effective early warning system;
- To review the Federal Programs actions in order to evaluate the impact that they had in drought vulnerability evolution (Inter-Institutional Coordination);
- To develop and apply the methodology of strategic drought risk management;
- To review, evaluate and update the Preventive and Mitigation Programs (PMPMS) in terms of application and effectiveness, in order to achieve the goals of strategic drought risk management.



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- <https://www.gob.mx/conagua/documentos/monitor-de-sequia-multi-parametrico-de-mexico-mosemm>