Overview of Integrated Drought Management and Climate Services

By

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World Meteorological Organization
Organisation météorologique mondiale
World Meteorological Organization

- United Nations agency for weather, climate, hydrology and water resources and related environmental issues.

- 191 Members from National Meteorological and Hydrological Services (NMHS) – New Member – South Sudan (Dec 2012)

- 10 major scientific & technical programmes (Secretariat)
- 8 Technical Commissions advise & guide activities of programmes (Experts)
- 6 Regional Associations involved in implementation
Global Framework for Climate Services

• Goal:

Enable better management of the risks of climate variability and change and adaptation to climate change at all levels, through development and incorporation of science-based climate information and prediction into planning, policy and practice.
Priorities

- Agriculture
- Disaster risk reduction
- Water
- Health
- Energy
Why Monitor Drought?

• Drought is a *Normal* Part of the Climatic Cycle
• Drought *Impacts* are Significant & Widespread
• *Many* Economic Sectors Affected
• Drought is *Expensive*
  – Droughts cause more deaths and displace more people than any other kind of natural disaster.
  – Since 1980, major droughts and heat waves within the U.S. alone have resulted in costs exceeding 100 billion dollars

Source: Svoboda, 2009
High-Level Meeting on National Drought Policies

- March 11-15 2013
- Over 414 participants from 87 countries
- Main Partners – UNCCD, FAO, WMO
- Key message: Help countries move from reactive to proactive drought policies

- 12 representatives of UN agencies and international and regional organizations (NOAA, UNU, IFRC, IOM, CBD, WFP, IAEA, UNECA, JRC, ICARDA, GWP, ACMAD, ISDR)
- Final Declaration adopted – www.wmo.int/hmndp
HMNDP Main Organizers and Partners

- World Meteorological Organization (WMO)
- United Nations Convention to Combat Desertification (UNCCD)
- United Nations Food and Agriculture Organization (FAO)
- United Nations Educational, Scientific and Cultural Organization (UNESCO)
- US National Oceanic and Atmospheric Administration (NOAA)
- United Nations Development Programme (UNDP)
- United Nations International Strategy for Disaster Reduction (UNISDR)
- World Food Programme (WFP)
- Global Water Partnership (GWP)
- US National Drought Mitigation Center (Uni of Nebraska)
- A total of 17 Organizations
Examples of Reactive Drought Management Policies

- **Crisis (reactive) management policies** are only focused on post-impact government interventions—relief measures.

- **Conflicts between water users.** Providing water supplies due to drought to urban areas but ignoring agriculture and ecosystems issues causing long-term damage to soils, farmers incomes and biodiversity.

- **Depleting groundwater and reservoir supplies** for current drought situation without taking into conserving water supplies for next drought event.

- **Increase loss of biodiversity**, poor stewardship of natural resources.

- Livestock producers that do not maintain adequate on-farm storage of feed during droughts management strategy.
The cycle of disaster management

Risk Management
- Mitigation
- Planning
- Monitoring and prediction

Protection
- Disaster
- Impact assessment

Recovery
- Reconstruction
- Recovery
- Response

Crisis Management
BUILDING DROUGHT RESILIENCE TO REDUCE POVERTY
Integrated Drought Management Programme (IDMP)

- Established in 2013 at HMNDP
- Main co-sponsors WMO and Global Water Partnership along with over 30 other organizations including FAO & UNCCD

- Supports stakeholders at all levels by providing policy and management guidance and by sharing scientific information, knowledge and best practices for Integrated Drought Management.

- Contributes to global coordination of drought-related efforts of existing organizations & agencies
3 Pillars of Integrated Drought Management

- **MONITORING/EARLY WARNING**: Drought status
- **VULNERABILITY & IMPACT ASSESSMENT**: Who/What is at RISK & Why? Prioritization/Ranking
- **MITIGATION & PREPAREDNESS**: Actions and measures to mitigate drought impacts and prepare to respond to drought emergencies more effectively

**INTEGRATED DROUGHT MANAGEMENT**

**FEEDBACK**

**DROUGHT CHARACTERIZATION STUDIES**
Pillars of Integrated Drought Management

• Drought Monitoring and Early Warning Systems
  – Drought Status

• Vulnerability and Impact Assessment
  – Who/What is at RISK & Why? Prioritization/Ranking

• Mitigation and Preparedness
  – Actions and measures to mitigate drought impacts and prepare to respond to drought emergencies more effectively
WMO Drought Projects

  - Eastern Europe, Latin America, Asia-Pacific, North Africa and Western Asia East and Southern Africa, West Africa

- IDMP Regional Projects
  - Central and Eastern Europe (since 2013)
  - Horn of Africa (since 2014)
  - West Africa (since 2015)
  - South Asia Drought Monitoring System (since 2014) – with IWMI
  - Central America (since 2013).
  - South America (since 2015) - Developing South American Drought Monitoring System
  - Pacific Islands (since 2016)
Drought Management Policy Guidelines

- Adapting of 10-step process by Don Wilhite (National Drought Mitigation Center at the University of Nebraska-Lincoln)
- Response to need articulated at High-level Meeting on National Drought Policy (HMNDP)
- **Template** that can be adapted to national realities and needs
- Building on existing risk management capacities
Future Important Meetings

• Latin America and the Caribbean Regional Conference on Drought Management and Preparedness - 14-16 Aug 2017 – Santa Cruz Bolivia

• UN Convention to Combat Desertification (UNCCD) – 6-14 Sept 2017, Ordos, China
Handbook of Drought Indicators and Indices

- Handbook is a resource to cover most commonly used drought indicators/indices
- A starting point to describe and characterize the most common indicators and indices and their applications
- Does not recommend a "best" set of indicators and indices, given research requirements for appropriate application in location in question.
Selecting drought indicators and indices

- Timely detection of drought to trigger appropriate communication and coordination to mitigate or respond
- Sensitivity to climate, space and time to determine drought onset and termination
- Responsive to reflect drought impacts occurring on the ground
- Which indicators/indices and triggers to use for going into and coming out of drought
- Data for indices/indicator available and record consistent
- Ease of implementation? (Human, institutional and financial capacity available)
Importance of a Drought Monitoring System

• allows for *early* drought detection
• improves response (*proactive*)
• “triggers” actions within a drought plan
• a critical *mitigation* action
• *foundation* of a drought plan

Source: Svoboda, 2009
Components of a Drought Monitoring System

- timely data and timely acquisition
- synthesis/analysis of data used to “trigger” set actions within a plan
- efficient dissemination network (web, media, extension, etc.)

Source: Svoboda, 2009
Potential Monitoring System Products and Reports

• **Historical analysis** (climatology, impacts, magnitude, frequency)

• **Operational assessment** (cooperative data, SPI and other indices, automated networks, satellite and soil moisture data, media and official requests)

• **Predictions/Projections** (SPI and other indices, soil moisture, streamflow, seasonal forecasts, SST’s)

Source: Svoboda, 2009
Components of a Drought Early Warning and Information System

- Monitoring **AND** Forecasting
- **Tools** for decision makers
- Drought risk assessment and planning
- **Education** and awareness
- Communication

- An early warning must contain a statement of potential future risk, whether through persistence from trends, a forecast, a scenario or an analog.
Planned drought mitigation and response options

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<th>Indicators</th>
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<th>Actions</th>
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Time during normal conditions

Consider I-1 is SPI

Consider Level 2; SPI = -1.25 (Moderate drought)

Consider Action 1: Ban watering lawns
Consider Action 2: Dig extra wells for livestock and wildlife in area
Consider Action 3: Reduce irrigation of annual crops by 50%
Thank you
Drought Publications

Agricultural Drought Indices
Proceedings of an Expert Meeting
2-4 June 2010, Murcia, Spain

Handbook of Drought Indicators and Indices

Integrated Drought Management Programme (IDMP)

Drought monitoring and early warning: concepts, progress and future challenges

National Drought Management Policy Guidelines
A Template for Action