SOUTH ASIA DROUGHT MONITORING SYSTEM (SADMS) DEVELOPMENT – Phase I (July 2014 - April 2015)

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Collaborative Project of Global Water Partnership South Asia (GWP SAS), International Water Management Institute (IWMI) part of the WMO/GWP Integrated Drought Management Programme (IDMP)

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www.gwp.org/en/gwp-south-asia

Global Water Partnership

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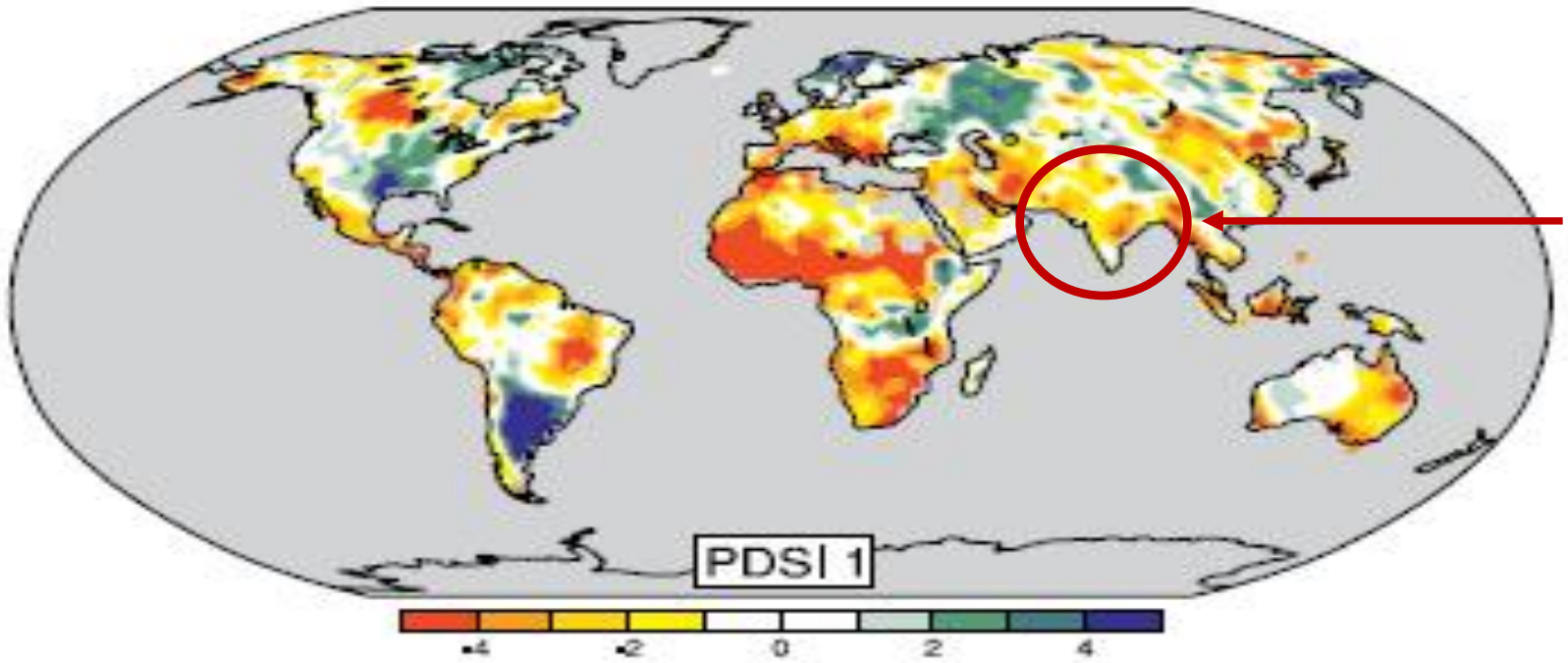
A growing international network since 1996

- 13 Regional Water Partnerships
- 84 Country Water Partnerships (in 2013)
- 2,904 institutional Partners in 172 countries (in 2013)

Observed Changes – Drought Severity

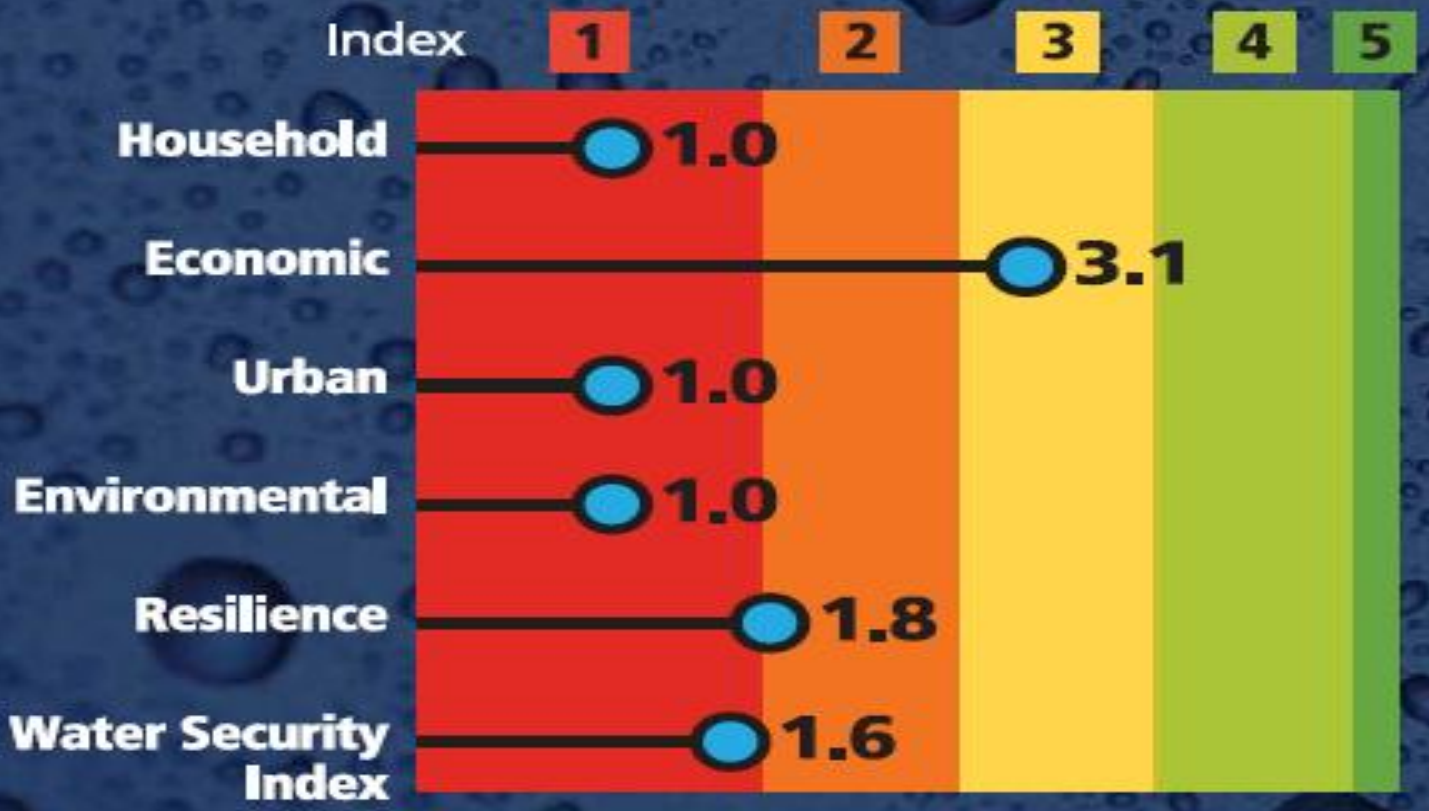


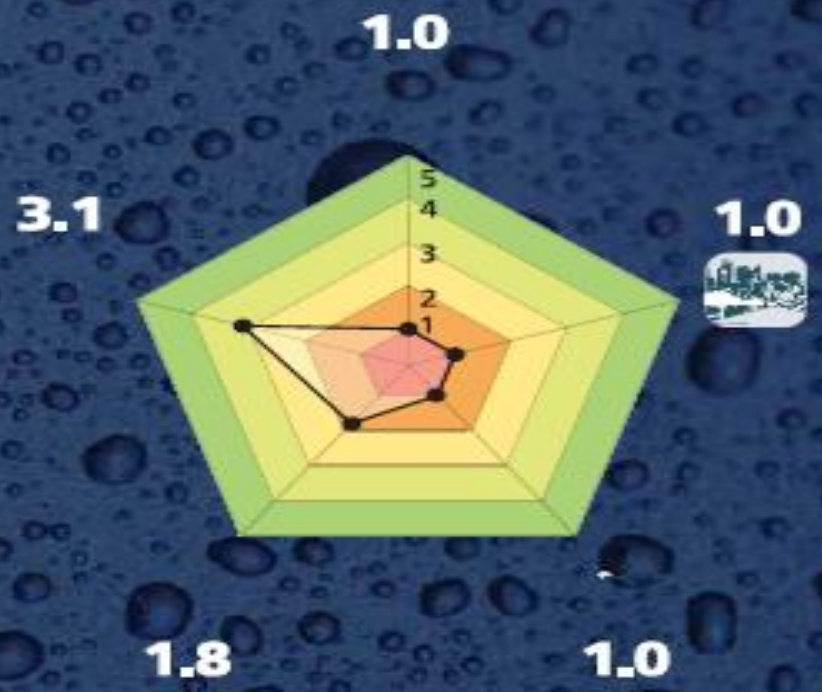
Increasing droughts seen in South Asia

Palmer Drought Severity Index (PDSI) for 1900 to 2002

Source: Dai et al. 2004

Regional Water Security Index for South Asia





Source: Asian Water Development Outlook 2013

Drought and Agriculture in South Asia

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- Over 1 Billion South Asia depend on agriculture
- Most vulnerable sector

Country	Agriculture contribution to GDP / percent	Rural population / percent	labor force employed in agriculture / percent	Agricultural Area / percent	Irrigated area / percent
Afghanistan	31.6	77	70.0	58	3.4
Bangladesh	18.6	72	48.0	65	35.1
Bhutan	17.4	65	59.4	15	1.0
India	19.0	70	56.0	55	18.9
Maldives	5.6	60	12.0	30	--
Nepal	32.8	81	66.0	30	8.0
Pakistan	21.2	64	45.0	33	25.0
Sri Lanka	12.8	85	33.0	40	8.9

Sources: FAOSTAT, 2011; ADB, 2011; CIA, 2012 and World Bank, 2011

Drought Related Activities GWP SAS

GWP SAS APAN Policy Brief 2014

Developing Climate Resilient Water Management Plans/ Agriculture Systems for Water Stressed Areas in South Asia

Thematic Node
WATER
Asia Pacific Adaptation Network (APAN)

http://www.gwp.org/Global/Documents_And_Downloads/APAN%20GWP%20SAS%20Policy%20Brief%20FY%202013.pdf

Drought Related Activities GWP SAS

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Pakistan Water Partnership - Tharparkar Drought

Fact Finding Mission and

Drought Master Planning Appraisal Mission

April 16– April 21, 2014

Objectives

- Provide government with assessment of on-ground situation based on rapid reconnaissance, discussions with stakeholders and overall observations and conclusions drawn by the team
- Propose a development agenda around water development to help initiate detailed development strategy

Activities carried out in Tharparkar - PWP

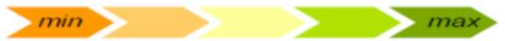
- Demonstration of Bio Sand Water Filter
- Traditional Methods of Soap Making
- Distribution of Hybrid Napier
- Distribution of Medicine
- Rain Water Harvesting

Activities were carried out in 2 villages of District Tharparkar

More than 130 children have died due to malnutrition and disease in Tharparkar district

	1 Existence of Drought Early Warning System	2 Capability to contribute to Drought Monitor/ Early Warning	3 Requirement for infrastructural support	4 Rating of usefulness of Drought Monitor/Early Warning System
Afghanistan	No	Very Low – No prediction capability	Very High – Technical and Training Support needed	"Very essential"
Bhutan	No	Very low – daily and seasonal rainfall prediction	Very high – satellite images of moisture contents, hydrological models, forecast products	"Important"
Bangladesh	No	Medium – experience in flood warning, usage of drought prediction tools	High – Technical support and training needed	"Very essential to ensure food security"
Maldives	No	Medium – Experience in flood & rainfall early warning	High – Technical support and training needed	"Very essential t ensure drinking w
Nepal	No	Low – experience in collecting post-drought information	Very high – more hydro-met stations required	"One of the best initiatives in the region and my country"
India	Yes – especially powerful in certain regions	Very high – experience in usage of different drought indices	Medium – nationalized institution needed who can run a Drought Early Warning System	"Extremely useful and essential"
Pakistan	Yes	Very high – weather radar and GIS spatial integration systems capability to identify drought	Medium – information for specific drought prone areas needed	"Moderate in own country"
				"Strong in South Asia
Sri Lanka	No	Low – capacities exist, but need improvement	Very high – information tailored to the area is needed	"Very useful"

Table: Overview of the responses. Colour scale indicating country capacity:



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Needs Assessment Survey SA DMS

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- No validated system of DM that could meet the requirement for a high spatial resolution in any of the surveyed countries
- Challenges that the countries face at present in drought monitoring are
  - lack of hydrological / meteorological measurement stations
  - missing access to satellite data
  - insufficient rainfall prediction capability
  - shortage of well-trained staff
- Development of an institutional mechanism of functional collaboration across ministries and departments at the sub-national, national and regional/ international level is also essential
- There is a need to shift emphasis from disaster response to risk management: to improve drought forecasting; to establish early warning systems and to improve communication flow

Ground Verification May 2014 Sri Lanka Drought

SA DMS GWP SAS IWMI WMO

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- GOAL deliver a newly integrated drought monitoring method by selecting the best combination of variables with better accuracy
- At present countries SA - use traditional methods (Ex: SPI based on rainfall data) in Drought Assessment & Monitoring
- Remote sensing technology provides alternative data for operational drought monitoring, with advanced temporal and spatial characteristics
- Integration of traditional meteorological data, remotely sensed drought indices, together with information on elevation, vegetation type, and man-made irrigation, provides a promising approach to better characterize the spatial extent and intensity of drought

SA DMS IWMI Approach and Data

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There are three Phases in the project:

1. Development and calibration/testing of the monitoring method, using most advanced drought indices, and multiple (climate, hydrology, RS, in-situ data) data sources; Phase I

2. Development of the operational online prototype drought monitoring system; Phase II

3. Capacity building (development of detailed Training Manual), customization for national needs and dissemination of the monitoring product in the region; Phase III

DMS installed in national center(s), - subject to interest and necessary facilities or / and in identified regional Hub; Phase III

SA DMS Beneficiaries

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Primary users

- Ministries of Agriculture
- National Disaster Management Centers
- Farmers - main beneficiaries
- Decision-makers
- non-governmental agencies involved in global, regional and national drought advocacy, awareness and response efforts; stakeholders vulnerable to drought; and population in general

SA DMS End of Phase I

- Present a beta version of the South Asia Drought Monitoring System (SADMS) in corporation with national partners in South Asia
- Have a dialogue with national partners of their country requirements to ensure it responds to the need of users
- Start a discussion on how to integrate the results of the SADMS to regional, national and state level decision making processes
- To have initial awareness on the final product and attract the attention of key actors in the water & climate community

SA DMS Implementation

- Keep the input data simple and ensure that there is an understanding on what basis drought risks are being generated for SA DMS to gain acceptance by users
- Include ground verification of the results
- Uncertainty to be communicated clearly to users
- Efforts are made to include the outputs of the SASCOF as well as any National Climate Outlook Forums
- Involvement and ownership of government agencies and the users from the beginning in SA DMS development (facilitated by CWPs)
- SADMS to have the potential to be used as a South Asia Drought Early Warning (SADEWS)

Existing Cooperation Mechanisms in South Asia SAARC - DMC

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Outcomes Kabul workshop - definition of five broad areas of regional cooperation

- Drought Monitoring and Early Warning
- Drought Research and Documentation
- Training and Capacity Building for Drought Management
- Sharing of Good Practices on Drought Risk Management
- Development of a South Asia Drought Network

SAARC DMC National Focal Points

- Afghanistan - Afghan National Disaster Management Authority
- Bangladesh - Department of Disaster Management
- Bhutan - Ministry of Home and Cultural Affairs
- India - Ministry of Home Affairs
- Maldives - National Disaster Management Centre
- Nepal - Ministry of Home Affairs
- Pakistan - National Disaster Management Authority
- Sri Lanka - Ministry of Disaster Management and Human Rights

Snowballing Responsibility for Early Warning Sri Lanka (same in other countries)

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- Whose responsibility was it anyway?
- Meteorology Department - Wind Speed 80 Km/h
- has not been conveyed properly to the fishermen
- fishermen ventured off to sea June 07-08, 2013
- recovered the bodies of around 54 fishermen

07 reported missing and 12 people received injuries

- translate monitoring – Early Warning
- lapse in communication regarding the weather warning – Department of fisheries, disaster management –use of mobile phones
- Communication & Inter agency coordination for Early Warning is critical – responsibilities needs to be clearly identified/ defined

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Thank You