The 9th GEOSS Asia-Pacific Symposium

WG1: GEOSS Asian Water Cycle Initiative (AWCI)

Tokyo-Japan, 12 January, 2017

International DROUGHT Initiative (IDI)

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United Nations
Educational, Scientific and
Cultural Organization

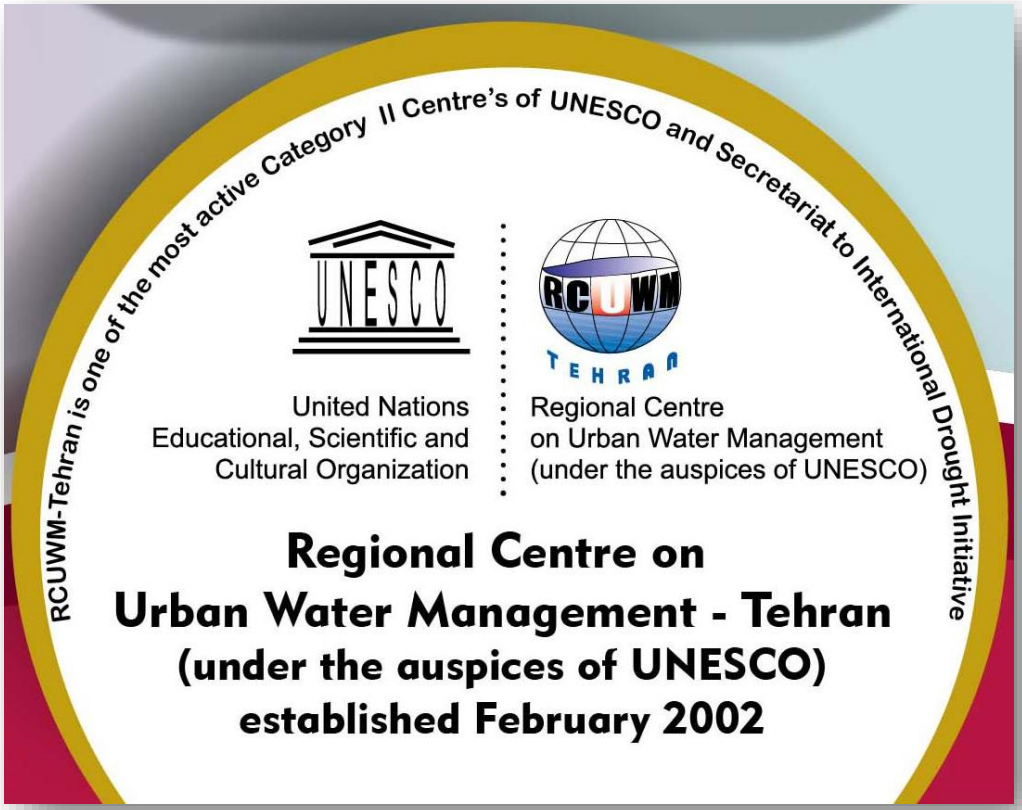
RCUWM TEHRAN

United Nations
Educational, Scientific and
Cultural Organization

International
Hydrological
Programme

INTERNATIONAL DROUGHT INITIATIVE

www.idi-drought.com



Objectives:

- Promoting IHP programs and initiatives
- Supporting applicable scientific research
- Networking international and local institutions
- Organising training courses

RCUWM Activities at a Glance

No of Participants: 7830 person/day

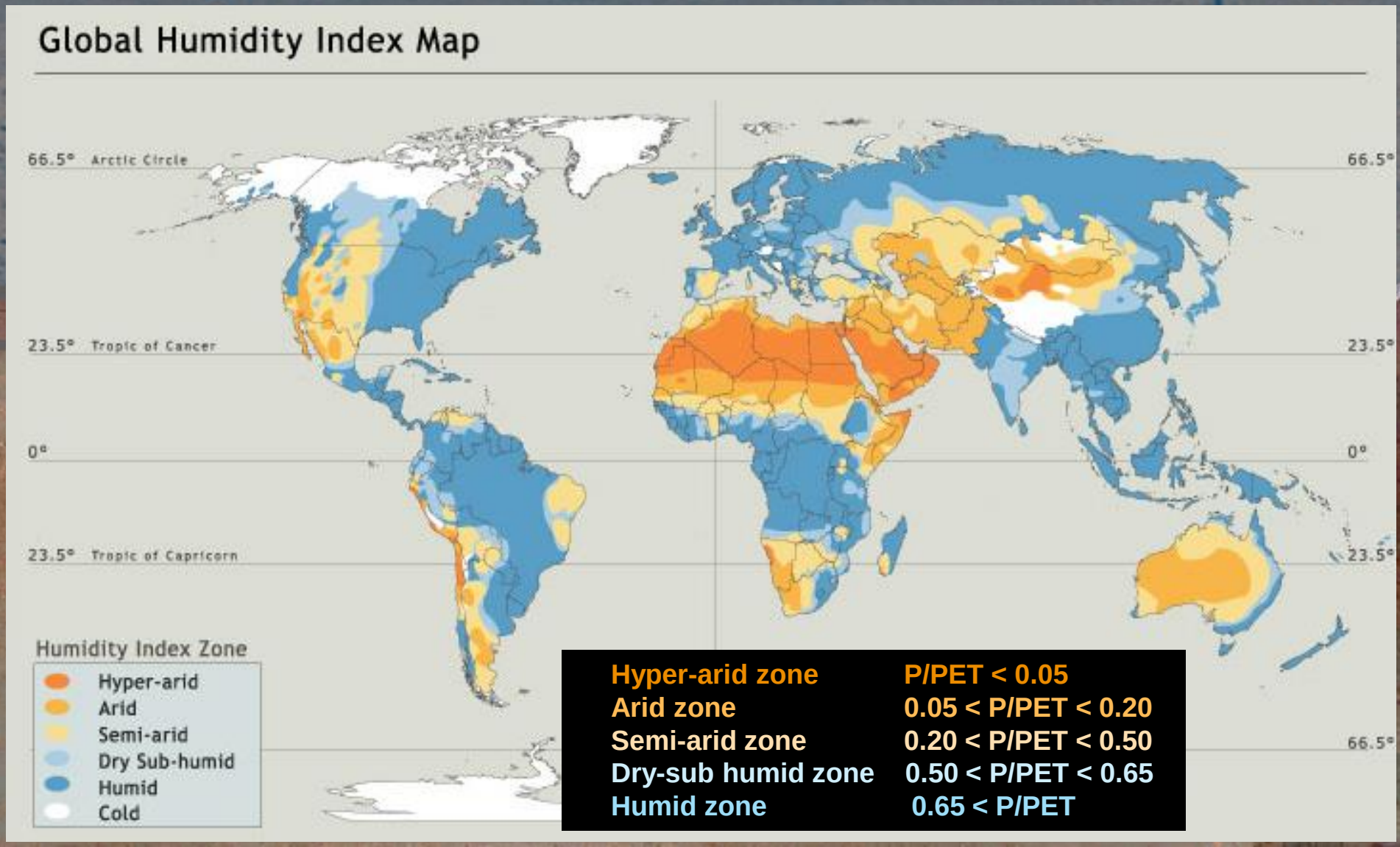
Number of Events: 102 events

More than 22 participants countries Including: Oman,, India, Bahrain, Saudi Arabia, Afghanistan, Yemen, Pakistan, Tajikistan, Turkmenistan, Kuwait, Syria, Lebanon, Egypt, …

Contributions to the IHP VIII

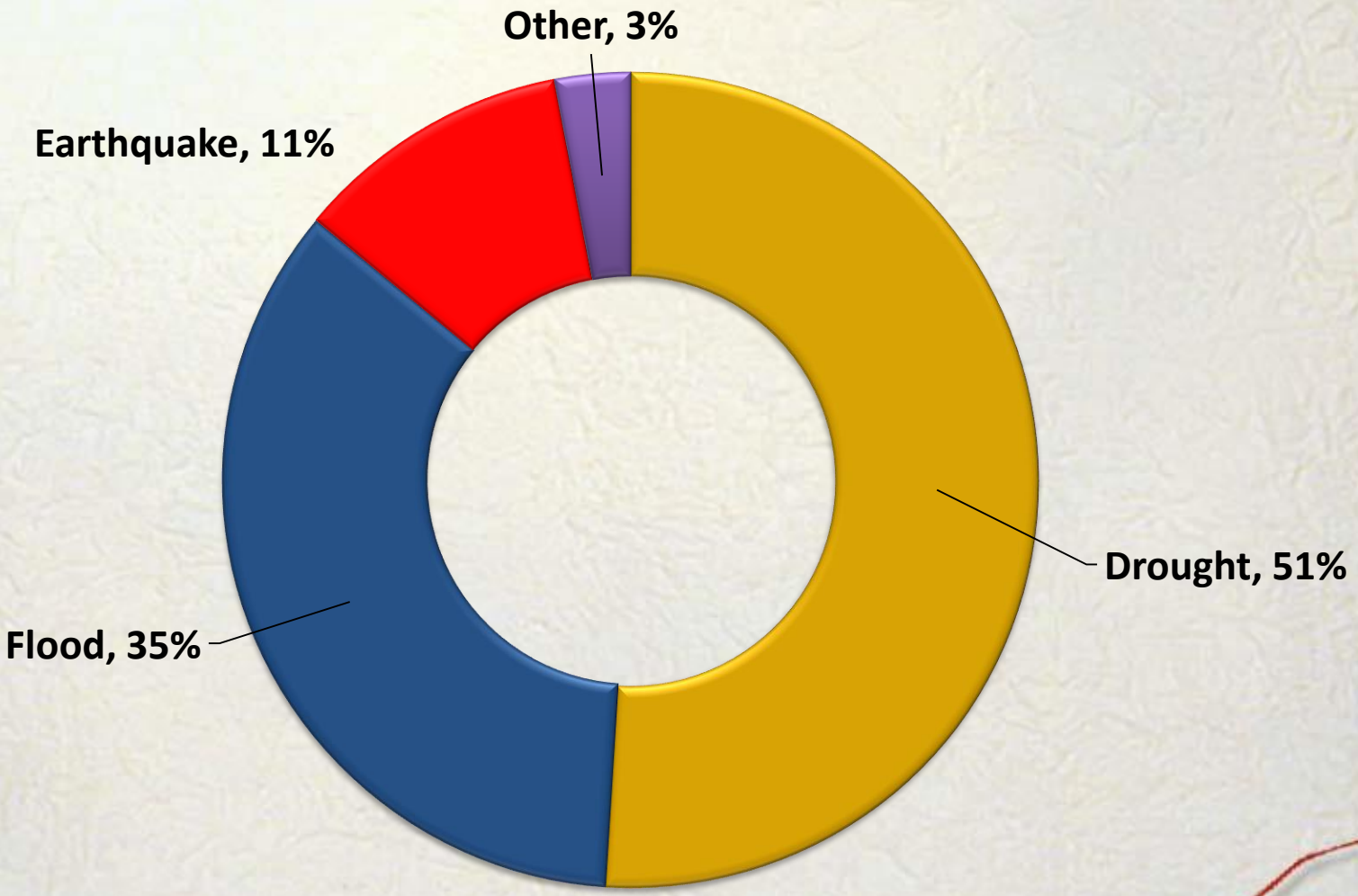
- T1: Water-related Disasters and Hydrological Changes
  - IDI is contributing by research activities such as Mono-graph of "Large-scale Drought Policy Report" and "Drought Risk Analysis Models"
- T2: Groundwater in a Changing Environment
  - ICQHS with intensive work on "Qanat" and "GW modeling"
- T3: Addressing Water Scarcity and Quality AND T4: Water and Human Settlements of the Future
  - Main research activities of RCUWM as you will see in the next slide
- T5: Ecohydrology, Engineering Harmony for a Sustainable World
  - A new UNESCO Cat. II is under establishment in Iran on "Integrated Management of Watershed and Bio-resources in Arid and Semi-Arid Regions"
- T6: Water Education, Key to Water Security
  - The main agenda of Iran IHP NATCOM , UNESCO Chairs and Cat. II Centres as well as IDI

Arid and Semi-arid Areas

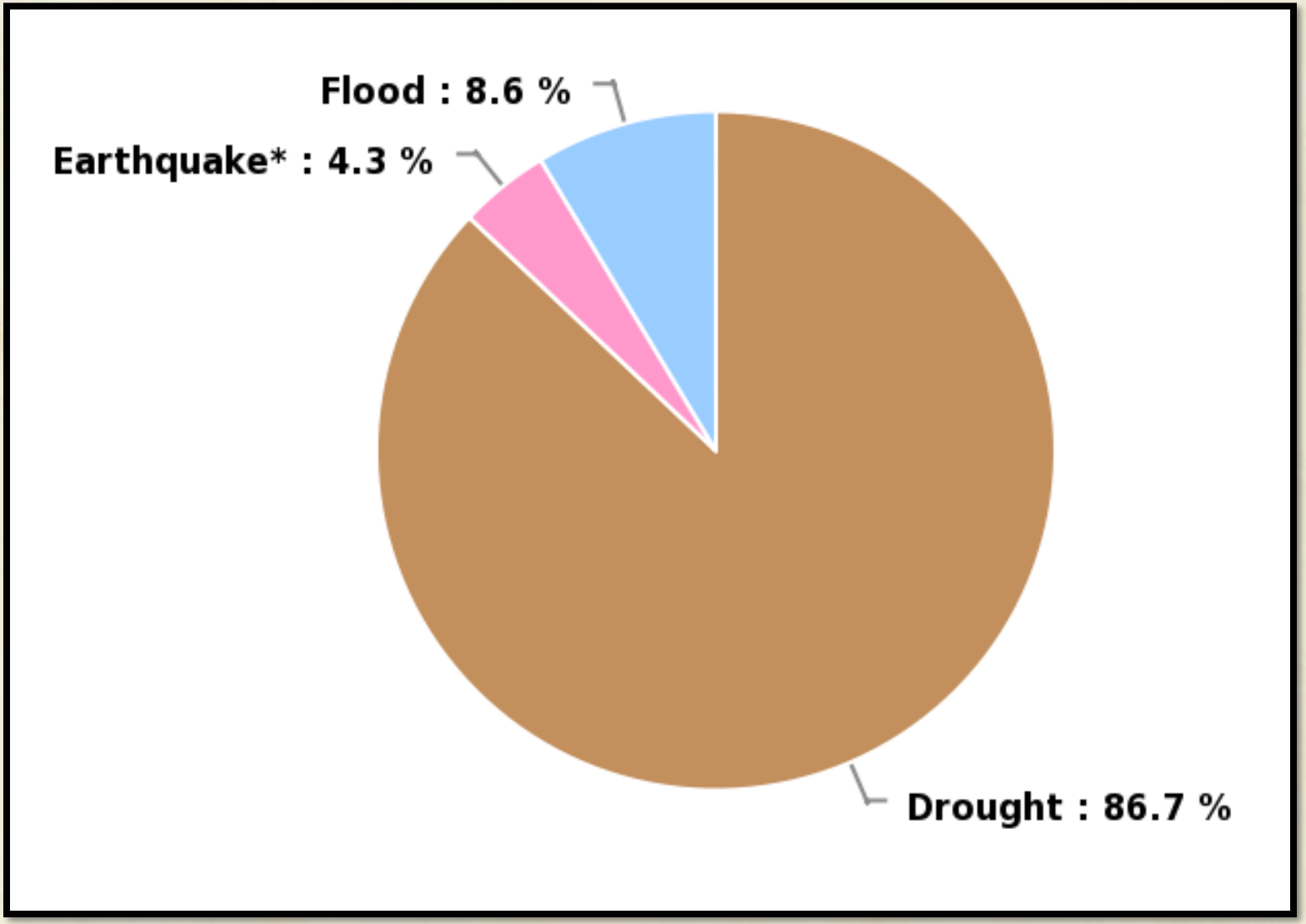


Major Disasters in West and Central Asia

(Based on reported affected people,1980-2015)

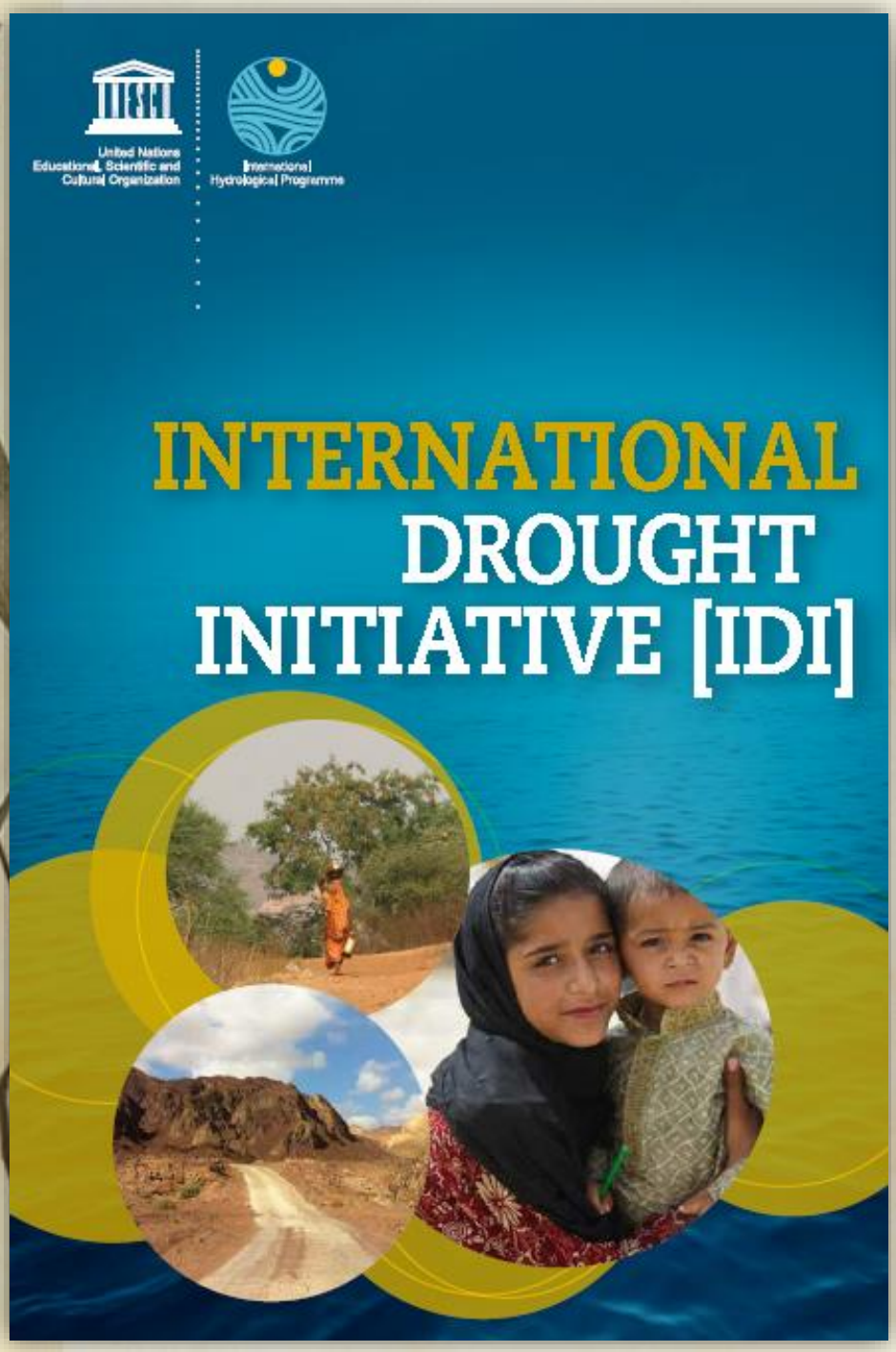


Iran:
Percentage of reported people affected
(1980 to 2015)



International Drought Initiative (IDI)

The International Drought Initiative (IDI) was approved by the 19th IHP Intergovernmental Council held in Paris, France July in 2010.



OBJECTIVES

The overall aim of the initiative is to develop and strengthen capacity at the regional and international levels to better understand and respond to droughts by taking into account socio-economic, cultural, educational and environmental aspects. The initiative will share experiences and best practices to deal with droughts for a better management of water resources in line with sustainable development approaches and for water, energy and food security.

IDI SECRETARIAT, CONTACT INFORMATION:

REGIONAL CENTRE ON URBAN WATER MANAGEMENT – TEHRAN (RCUWM)

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IDI Structure

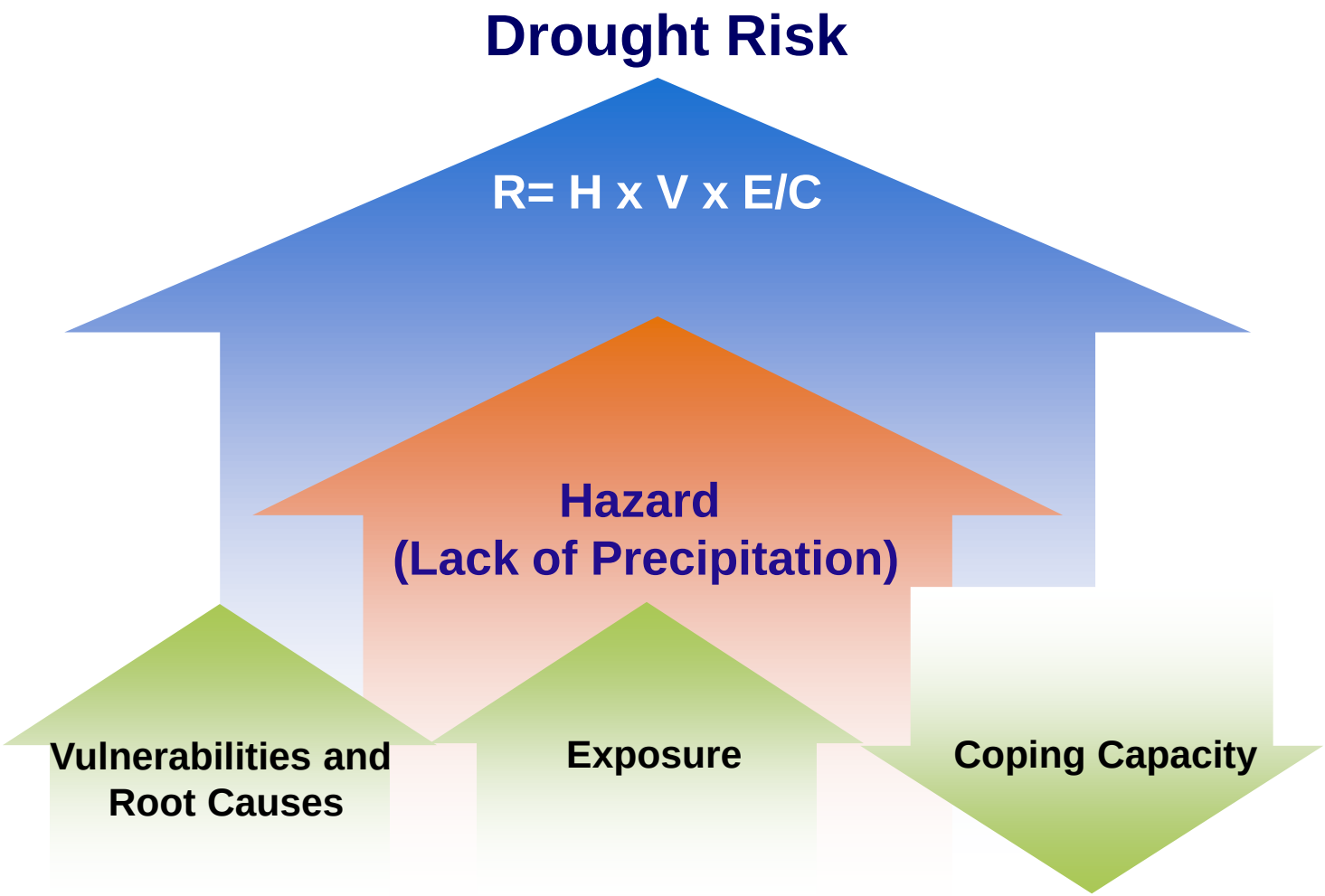
- Advisory Committee: Representatives from UNESCO-IHP, WMO, FAO, UN/ISDR, UNCCD, IAHS and three other from relevant UNESCO programs, academia and research institutes (G-WADI, IAHS, etc.)

- Expert Group: 12 members from different geographic/climate regions mainly from academia and universities

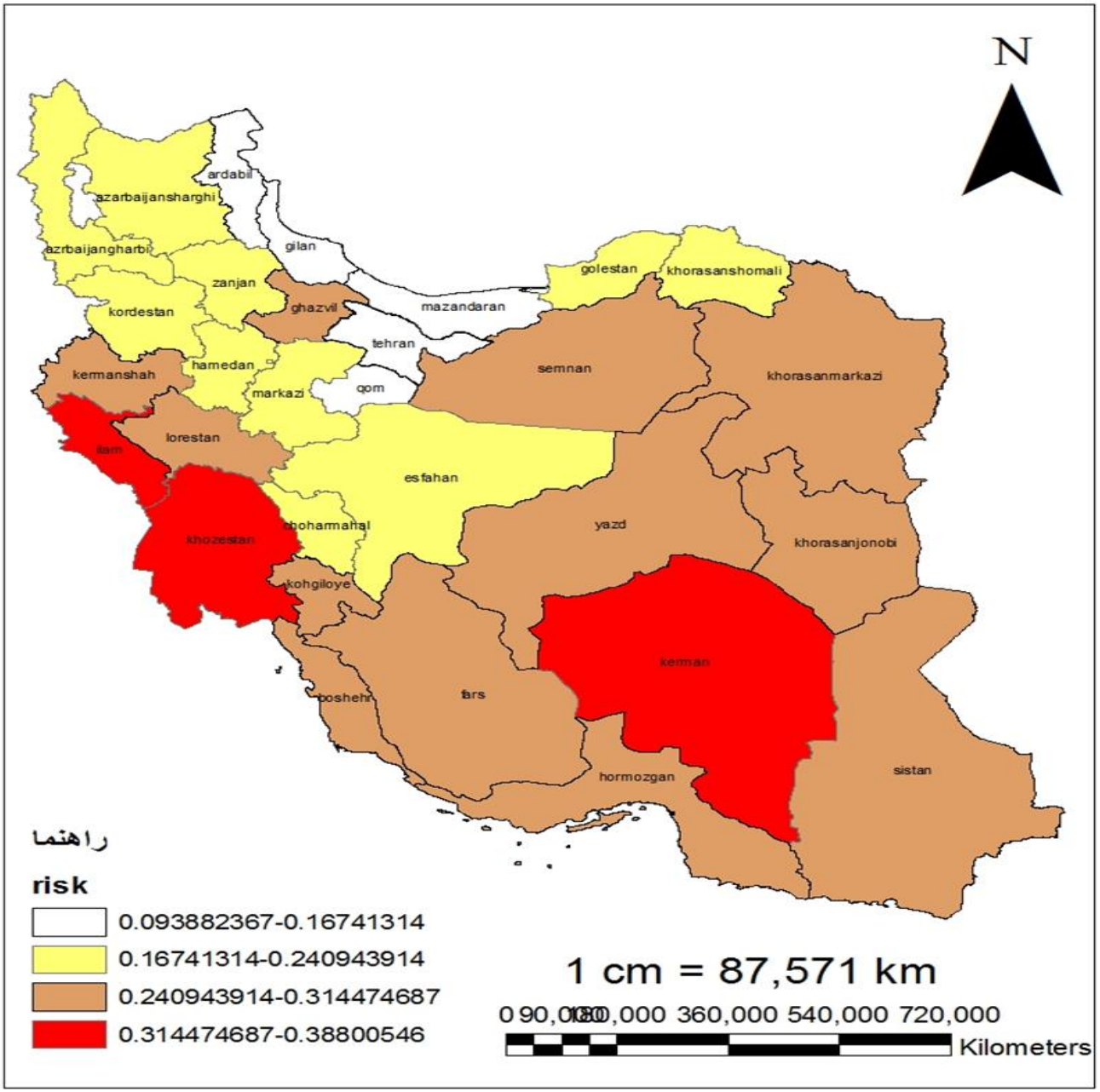
- IDI Secretariat: RCUWM

Recent Activities
IDI and Asian G-WADI WS (Groundwater)
Tehran-June 2015

Pressure and Release Concept



Drought Risk Map using PAR Method



Copula

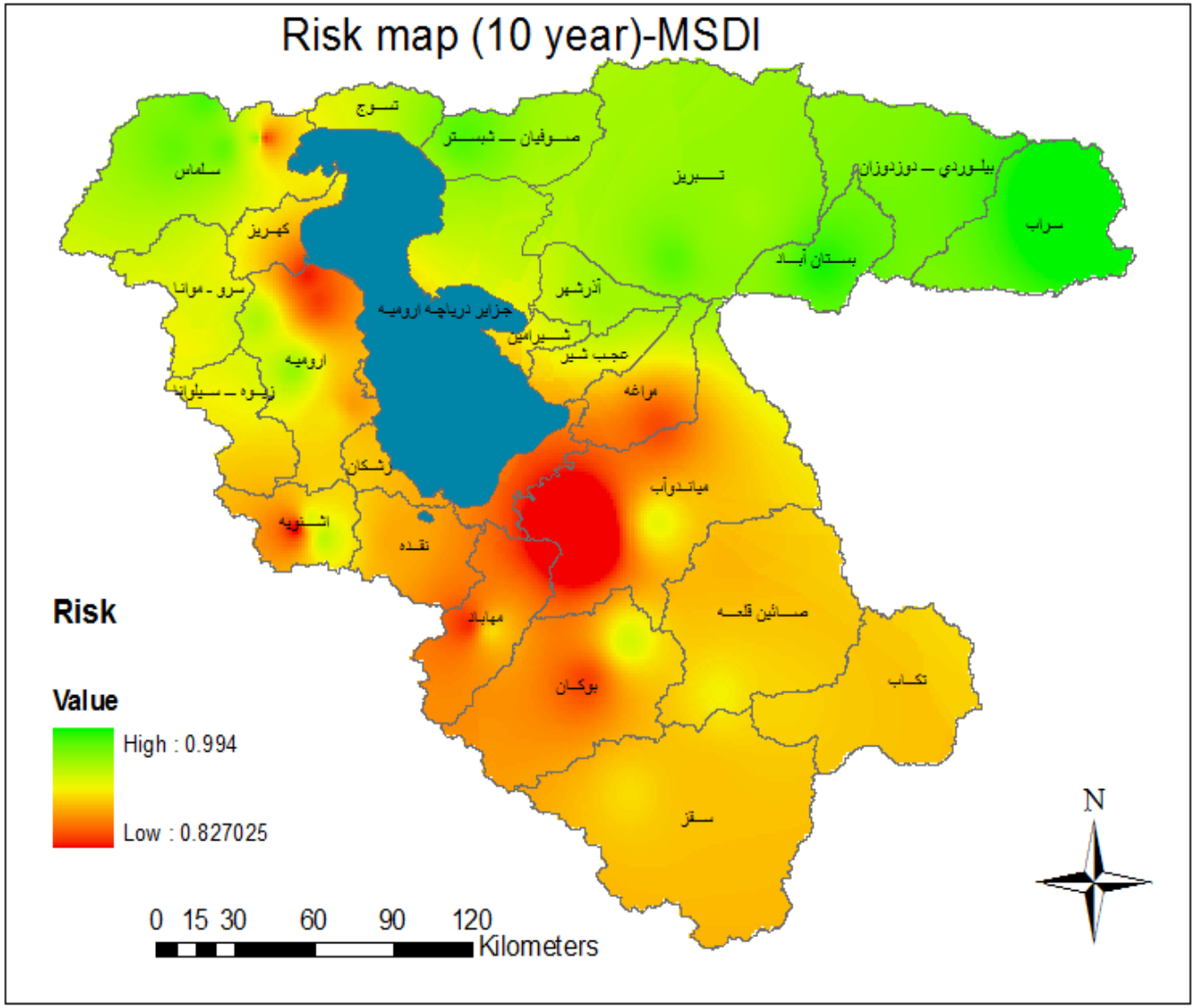
Copula is multivariate distribution function in order to describe the dependence between random variables.

A copula is the joint distribution of random variables $U_1;U_2; \ldots ;U_p$, each of which is marginally uniformly distributednas U(0; 1).

- The term copula is also used for the joint cumulative distribution function of such a distribution,

$C(u_1; u_2; \ldots ; u_p) = P(U_1 \leq u_1; U_2 \leq u_2; \ldots;U_p \leq u_p)$:

Drought Risk Map with 10 Years Return Period
Urmia lake basin



IUST

Integrated Drought Monitoring System in West and Central Asia

- Monitoring drought
  - Need to overcome limitations of relying too heavily on only one aspect of drought (e.g. meteorological data alone) => "composite drought indicators"
  - Need to make better use of new information (e.g. satellite information, ground based weather radar etc.).
- Understanding drought and quantifying drought risk
  - Must consider natural climate variability AND anthropogenic climate change

Thank you