

Global Drought Information System (GDIS) and Global Drought Observatory (GDO)

Jürgen Vogt

European Commission Joint Research Centre (JRC) juergen.vogt@ec.europa.eu





Main Characteristics of GDIS and GDO



https://www.drought.gov/gdm

GEO: Global Drought Information System (GDIS)

- Portal hosted by NOAA ٠
- Goal: Develop and deploy early warning maps; identify atmospheric and oceanic triggers of drought; present synthesized information through the portal
- Focus on monitoring and forecasting meteorological drought hazard
- Research oriented, customer not defined

Global Drought Observatory (GDO)

- Portal hosted by JRC
- Goal: Monitor and forecast drought hazard as well as assess the (dynamic) risk of impacts in different sectors
- Focus on sectorial risk assessment (hazard, exposure, vulnerability)
- Operational oriented, Main customers: Emergency Response Coordination Centre (ERCC) of the European Commission; Global Disaster Alert and Coordination system (GDACS) of UN, EC, and disaster managers





GDIS – Home Page & Current Conditions

Emergency Management

Home Page



Formation Commission

GDIS-Interactive Maps & Regional Drought

Emergency Management

Interactive Maps



Situation 22 August 2019:

- Only NADM and EDO display
- GPCC and Australian data not available or outdated

HE TRA HERE **Global Drought Information System** where descendent game CONSTRUCTION OF **Regional Drought** North America Links to regional portals + Hurth American Drought Mental · NEXUS US Dravant, Partie Not harmonized Europe · European Draught Ublanyators Sometimes outdated Africa · ELAD Cleants Predictory and Applications Connect · ICANC Web Reports · provide here of the providence of the second seco Australia · Australian Generating Durani of Neuro Lager South America Western Seath Adveroa Reports Distant Lister / Gentra International parts in Intercapions de Recorderes de di Solis (Carter). · Prostice's Latin American Flood and Trought Hundre Asia + South Associations through the strategy layout

Regional Drought



European Commissio



Global Drought Observatory (GDO)

Management



The risk of impact is evaluated based on the drought hazard, exposure and the vulnerability. Updated every 10 days. European





GDO: Forecasting

Emergency Management

Early warning of extreme wet/dry conditions :

- From 1-month to 6-months lead time (i.e. SPI1, SPI3 and SPI6)
- Derived from Seasonal S5 model of ECMWF





Forecast for May to July 2019

Forecast for May to October 2019

Warning levels increase with the intensity (median) and the coherency (spread) of the ensemble forecast





Global Database of Past Drought Events



Graphical Interface to explore the global database of meteorological drought events using a dash-board tool

- Based on SPI and SPEI
- 1951 to 2016
- Regular updating

Table of historical events in France

			D	rought events in	France, delected	ty Spi-3			
start	peak	end i	max ext	duration	severity (Intensity	average area involved	score	widest srea involved
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Dec 2015	Dec 2015	Jan 2016	Dec 2015	2 months	3.13	1.17	60 %	11	81%
Mar 2019	May 2011	362011	May 2011	5 eostitui	7.61	152	50.%	14	85%
Sep 2009	Oct 2009	Nov 2009	Ckd 2009	3 ennits	2.57	0.86	35%	4	61%
Nov 2007	Nov 2007	Feb 2008	Nov 2007	Amonto	3.39	0.85	31.5	. 6.1	07%

[Spinoni et al., 2019; J. Hydrol.: Reg. Studies, doi: 10.1016/j.ejrh.2019.100593]





Management

GDO: Injecting Drought Events in GDACS

Injecting significant drought events into GDACS



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GDACS: Global Disaster Alert and Coordination System, www.gdacs.org

- STEPS:
- 1) Automatic detection of agricultural drought events (other types to follow)
- 2) Evaluation and classification of detected drought events
- 3) Publication of confirmed and classified in GDACS





GDO: Analytical Reports

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In case of severe droughts EDO & GDO produce Analytical Reports on the drought evolution and related impacts ...

.... and **Daily Maps** for ERCC







GDO: Other Features

- Side by side maps of different indicators or of time-series of indicators
- On the fly reports of drought characteristics and areas affected
- Standardized Indicator Factsheets
- Soft validation by media monitoring and customer feedback
- Analyzing past trends and future projections (e.g. CORDEX)
-

Ongoing developments:

- Linking to (sub-)continental monitoring systems
- Inclusion and further development of an impact database (EDII)
- Exposure, vulnerability & risk assessments for power generation, public water supply
- Studying the changing risk under climate change
- Testing groundwater indicators (e.g. GRACE)
- Exploring different meteorological and satellite data sources



Management

Summary: Current Situation

GDIS:

- Limited functionality, based on in-kind contributions
- Customer not clearly defined
- Strong research component, especially on modelling and forecasting
- Proposal for GEO WP 2020-22 submitted

GDO:

- Operational running and fully functional
- Customers clearly defined
- Research on indicators, risk assessment, impacts, forecasting and climate change impact
- Part of the Copernicus Emergency Management Service EMS (Floods, Droughts, Wildfires, Rapid and Recovery Mapping), long-term perspective





Management

Planned Evolution (main points)

GDIS:

- Develop combined land- and satellite-based precipitation and SPI product
- Set-up data processing streams for global drought monitoring and forecasting (based on NMME and ECMW SEAS)
- Include other indicators (e.g., global soil moisture)
- Develop links to Regional Climate Centers
- Improve link to continental observatories

GDO:

- Improve the sectorial risk assessment and adding additional sectors (e.g. public water supply, power generation, waterborne transport, ecosystem services)
- Analyze future risk evolution
- Improve the meteorological data input
- Validate and improve meteorological drought forecasting (e.g., multi-model ensemble)
- Include an impact monitor (prototype based on EDII)





Thank You

Jürgen Vogt

juergen.vogt@ec.europa.eu

