A Global Drought Monitoring & Forecasting System To Support Sector-Specific Drought Management

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Background

- **Drought events have become more common** in recent years across all continents. (Seneviratne et al., IPCC AR6 2021)
- **Information** on droughts in the last and upcoming months is needed to support drought management but **is often not available in data-scarce and vulnerable regions.**
- Drought affects water supply, agriculture, but also terrestrial and aquatic ecosystems, and **what is considered as ‚drought' depends on the system at risk.**

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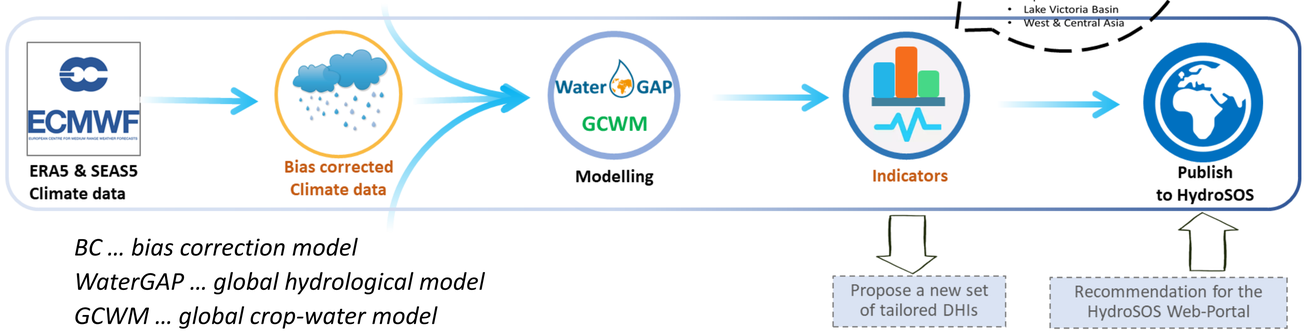
HydroSOS: OUTLAST at the HydroSOS webportal wmohydrosos.ceh.ac.uk/portal

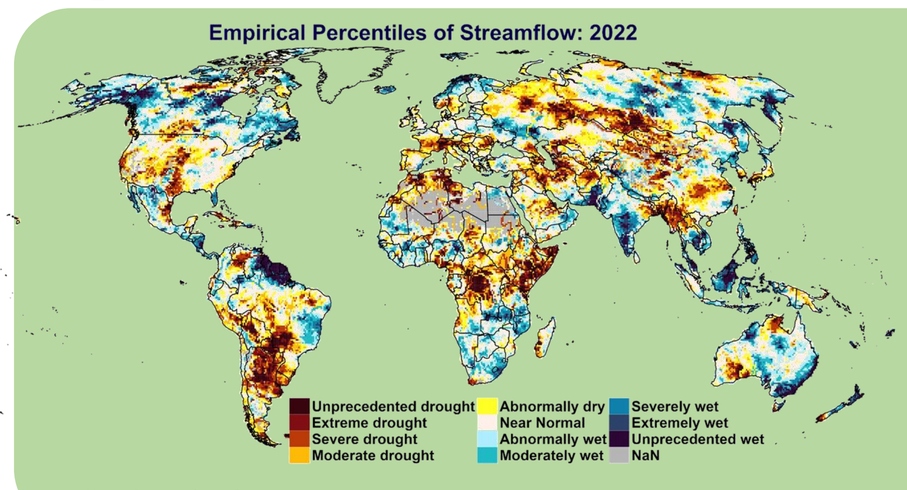
OUTLAST

- ..is a **global, multi-sectoral and operational system for the near-real time monitoring and seasonal forecasting of drought hazards**
- ..provides a consistent workflow that produces **model-based drought hazard indicators (DHIs) tailored for various sectors** to reflect
  a) drought conditions relevant for each sector
  b) the needs of end users to improve drought management

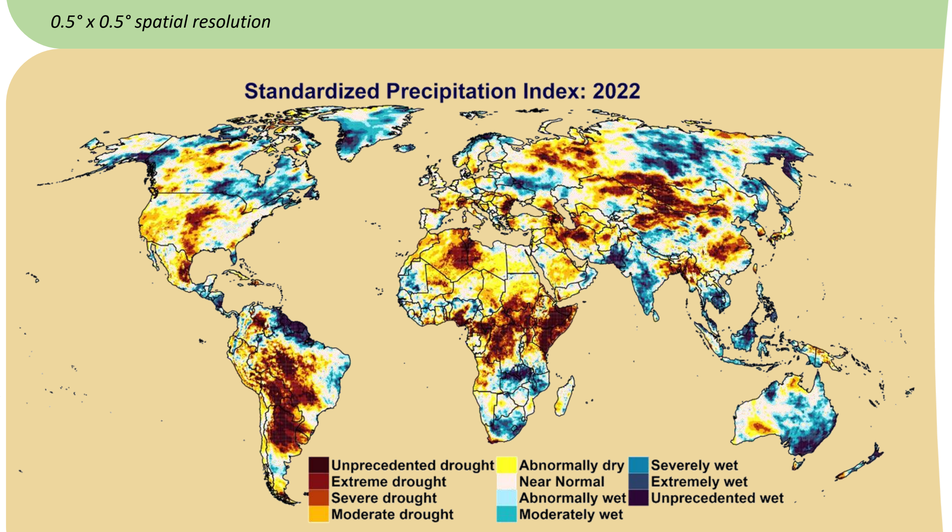


BC … bias correction model
WaterGAP … global hydrological model
GCWM … global crop-water model

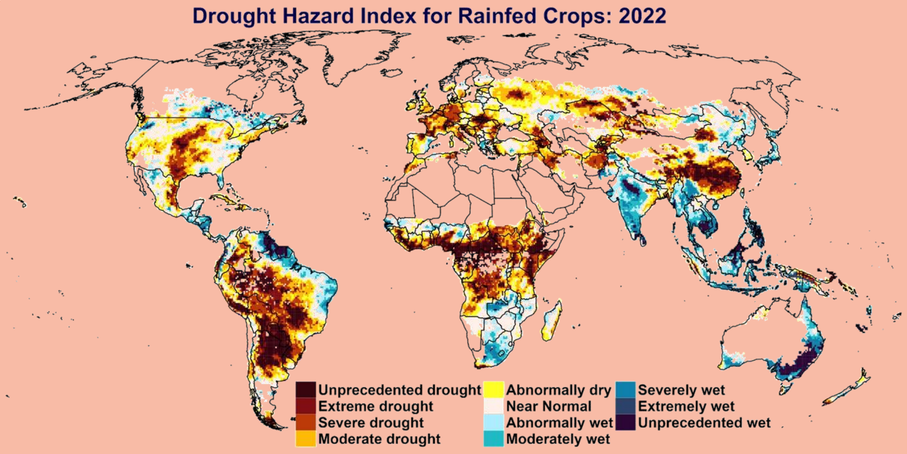
Drought Hazard Indicators for Multiple Sectors



0.5° x 0.5° spatial resolution



0.25° x 0.25° spatial resolution



5 arcmin spatial resolution

Hydrological Droughts

- relative deviation of **groundwater recharge**
- empirical percentiles of **streamflow**
- relative deviation of **streamflow**
- empirical percentiles of **soil Moisture**

suitable for
- water supply
- riverine ecosystems
- non-agricultural land ecosystems

Meteorological Droughts

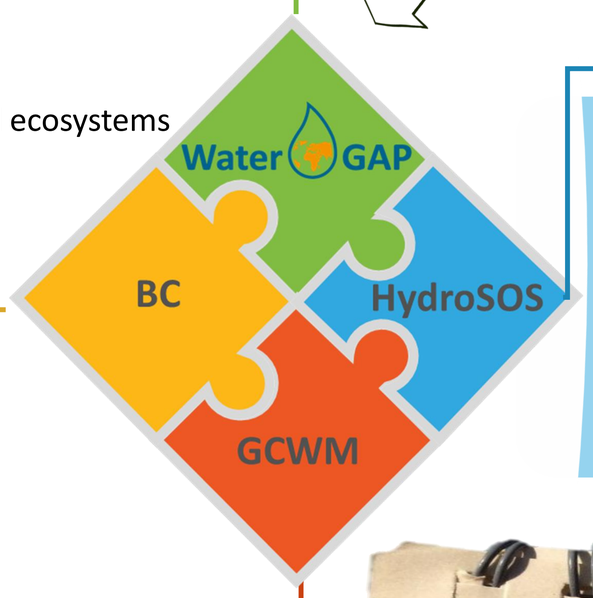
- **SPI**
- **SPEI**
- relative deviation of **precipitation**

suitable for
- a general overview on drought conditions

Agricultural Droughts

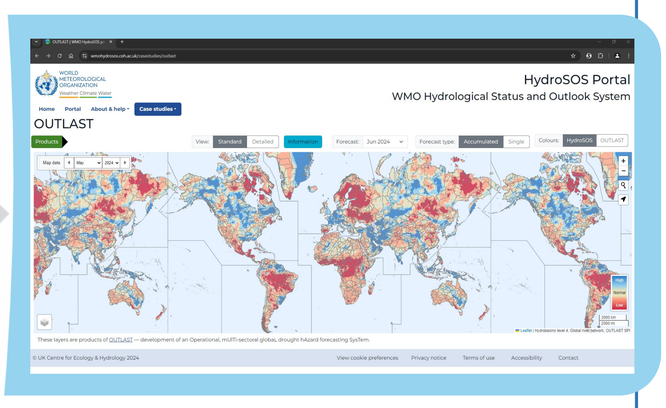
- crop-specific drought líndicator across **rainfed areas**
- crop-specific drought líndicator across **irrigated areas**

suitable for
- food security
- livelihood



- monthly DHIs are calculated based on the **reference period 1981-2020**
- some DHIs are calculated for **different averaging periods** (1, 6 or 12 months)

Available on HydroSOS



Benefits of OUTLAST

- ✓ **global coverage of drought conditions during the last 12 months as well as the upcoming 7 months**
- ✓ **sector-specific drought hazard indicators** selected based on a co-design approach with pilot end-users
- ✓ outputs **operationally provided and freely accessible** on WMO's HydroSOS webportal

→ **support sector-specific drought management at national, regional and global scales**

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