



Rainfall Index

TRMM Effective Drought Index (EDI)

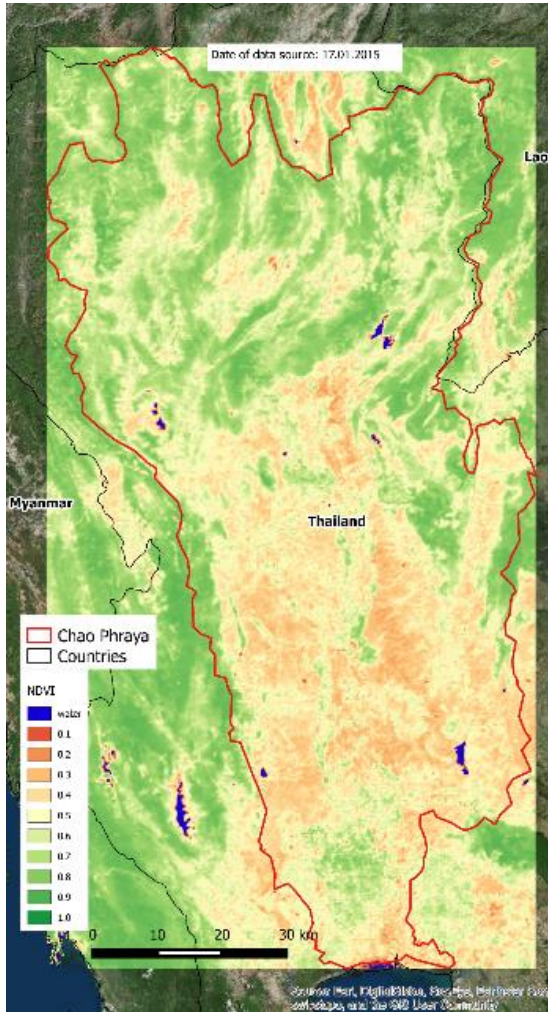
UNCCD-led Drought toolbox - May 2019, Antalya

Bertrand Richaud, UNEP-DHI

UN Environment-DHI Centre
on Water and Environment



From data to information



Satellite data

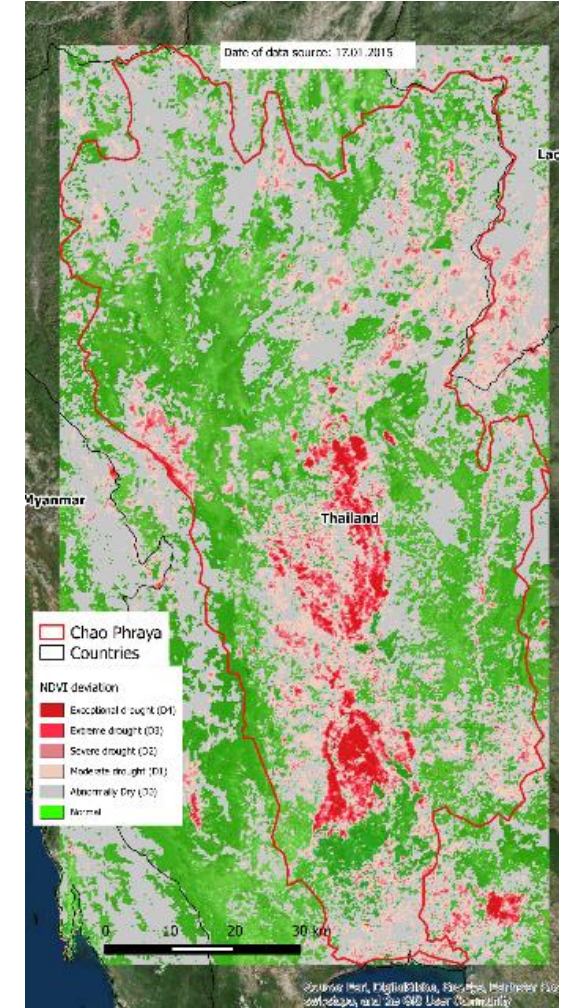
What do the data tell us?

How are the current values compared to the historical values?

Is there a deviation, anomaly, compared to normal conditions?

Are there areas at risk?

Are conditions 'good' or 'bad'?

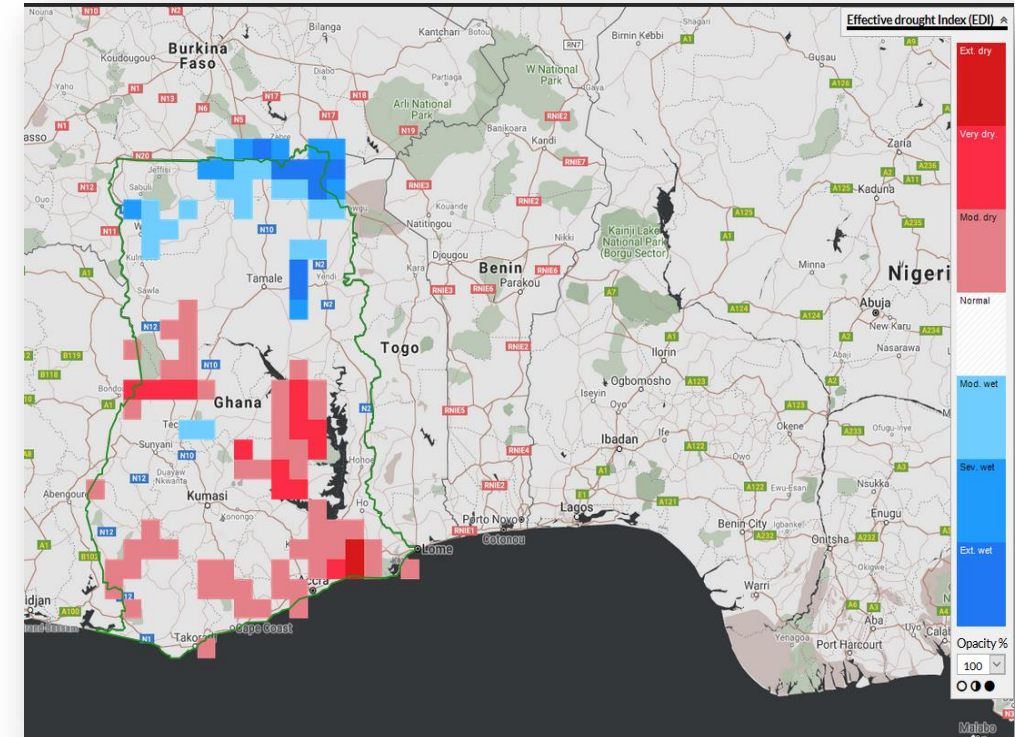


Index (classification)

Effective Drought Index (EDI)

- Many rainfall indices have limitations in indicating the exact start and end of the drought period and drought duration.
- Based on effective precipitation (P_e): the summed value of rainfall for current and antecedent day determined by a time-dependent reduction function
- $EDI = P_e \text{ deviation} / \text{Std}(P_e)$

$$P_{E_i} = \sum_{N=1}^D \left[\frac{\sum_{m=1}^N P_m}{N} \right]$$



ONLINE DROUGHT INDICATORS AND INDICES

Effective Drought Index (EDI)

Effective Drought Index (EDI)

Index name: Effective Drought Index (EDI).

Ease of use: Yellow.

Origins: Developed through work done by Byum and Wilhite, along with staff at NDMC.

Characteristics: Uses daily precipitation data to develop and compute several parameters: effective precipitation (EP), daily mean EP, deviation of EP (DEP) and the standardized value of DEP. These parameters can identify the onset and end of water deficit periods. Using the input parameters, EDI calculations can be performed for any location in the world in which the results are standardized for comparison, giving a clear definition of the onset, ending and duration of drought. At the time of EDI's development, most drought indices were being calculated using monthly data, so the switch to daily data was unique and important to the utility of the index.

Input parameters: Daily precipitation.

Applications: A good index for operational monitoring of both meteorological and agricultural drought situations because calculations are updated daily.

Exercise: Rainfall index

1. EDI time series tool

- View EDI as time series
- Compare different subarea layers and time steps

2. EDI column chart tool

- Create column chart based on TRMM EDI layer
- Explore column charts for various time steps and subarea layers

3. EDI vs. Rainfall data

(page 9 → 12, approx. 30 min)

Exercise: Rainfall Indices

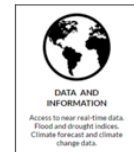
Rainfall indices overview

In this exercise, you will learn how the Data and Information application can be used to get an overview of the climate in a specific area or basin, with focus on rainfall data. Objective: learn how satellite-based data can provide valuable information regarding the climatology in an area, using rainfall data.

Open the Data and Information application

Open the Flood and Drought portal through www.flooddroughtmonitor.com and log in.

The Data and Information application is accessible from the Home page of the Flood and Drought portal – click on the icon seen to the right to enter the Data and Information application.



Please refer to the introduction exercise to the Data and Information application for a detailed description of the functionality.

1 Rainfall indices: Effective Drought Index (EDI) (TRMM)

The objective with this exercise is to demonstrate how different rainfall data sources could be used to provide an overview of the current and historic climate in the area.

1.1 EDI: Time series tool

The Effective Drought Index (EDI) is a measure for how the weighted rainfall during the past 365 days compares to the long term normalised mean.

If the EDI is below -1 then there would normally be a drought. Consecutive days with drought would increase the stress on the crops.

- Select EDI under TRMM data products
- View data as Time series
- Zoom in to the years with extreme dry conditions by selecting the area on the chart.
- Click on the options in the chart (1m, 6m, 1y) to see the data for different time steps.

