

Fact sheet on Drought

El Nino & CC

- Viet Nam case -



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Presentation topics

➤ Background

- Definition
- Causes
- Effects/impacts

➤ Viet Nam case

➤ Relation with:

- El Niño
- Climate change

➤ What to do

➤ Conclusion

Introduction

❖ Purpose:

present and share with you
this fact sheet



❖ Goal

ask your contribution to
finalize it



Background - *definition*

Three similar but different features:

- ❖ **Aridity**: permanent feature
- ❖ **Drought**: temporary aberration, months or even years;
- ❖ **Heat wave**: abnormally hot weather, order of a week.

Many perspectives depending on the concern and objectives:

- ❖ for plants
- ❖ for human beings or animals
- ❖ from the meteorological view
- ❖ for rivers streams and geological hydrology

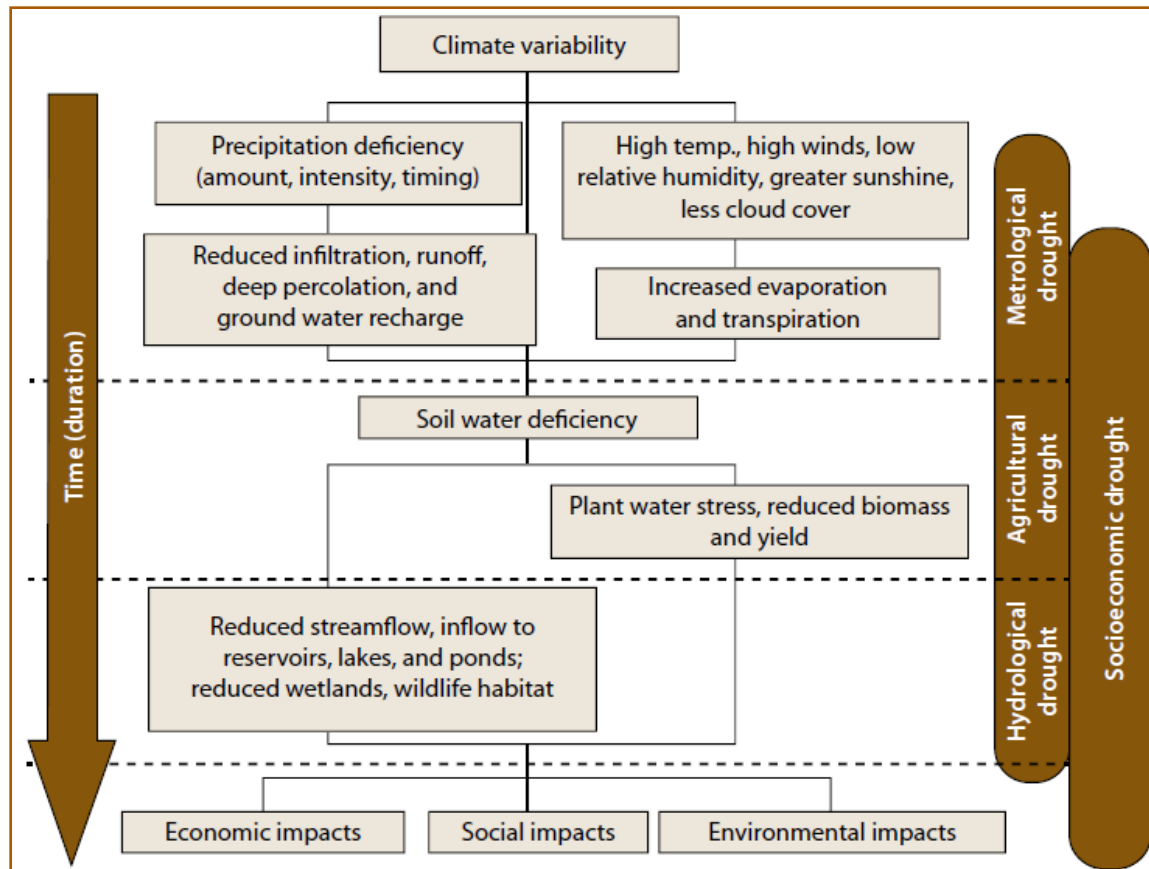
“a period of abnormally dry weather long enough to cause a serious hydrological imbalance”

IPCC, 2012.

Background - *definition*

Most of all the prospective are represented by these four categories:

- ❖ **Meteorological drought:** lack of a precipitation;
- ❖ **Hydrological drought:** a period with inadequate surface and subsurface water sources;
- ❖ **Agricultural drought:** a period with declining soil moisture and consequent crop failure;
- ❖ **Socio-economic drought:** failure of water resources system to meet water demands.



Background – *effect/impacts*

Droughts produce a complex web of impacts that span many sectors of the environment and the society:

- ❖ **Water Supply:** droughts impact both surface and groundwater resources and can lead to reduced water supply, crop failure, reduced range productivity, diminished power generation.
- ❖ **Water quality** is also affected by drought; as moderate climate fluctuations alter hydrologic regimes that have substantial effects on the lake chemistry.
- ❖ Drought creates or exacerbates **conflicts over access** to river basins and water systems. Thus, drought's impact is far-reaching and damage to the ecosystem may be irreversible.
- ❖ Drought can have a devastating **impact on agricultural workers** and lead to difficult decisions regarding allocation of water and stringent water-use limitations.
- ❖ Drought may cause **economic ruin** to farmers and ranchers. It brings hardship to water-dependent enterprises such as commercial fishing. In many small towns and villages, downturns in farming have a rippling effect to other local businesses.
- ❖ Drought creates vast, windblown dust bowls, **eroding landscape**, damaging terrestrial and aquatic wildlife habitat, contributing to widespread wildfire.
- ❖ Drought can decrease the average water level in major rivers, this facilitated **seawater intrusion** inside estuaries, inland and residential areas, mainly in the flatted delta regions.
- ❖ If severe or persistent enough, droughts put added pressure on urban resources through increased **migration** of vulnerable rural people from drought-stricken areas. In marginal areas where opportunistic cropping has occurred in years of above-normal rainfall, a subsequent return to normal or below normal conditions can initiate wind erosion and accelerate existing processes of desertification

Viet Nam case



The most prone drought regions:

- ❖ South Central.
- ❖ Central highlands

“After typhoons and floods, drought is responsible for the highest amount of damage to livelihoods and the economy of Viet Nam”

UNDP 2012

Event	Situation	Damage
1997/ 1998	<ul style="list-style-type: none"> • the average rainfall decrease down to 30-70%. • vigorous vaporization at 5- 7mm/day • River and stream water sources dried up • Salt water intrusion in averaged 15-20 km deep inland 	<ul style="list-style-type: none"> • 3,1 million people suffered shortage of water. • Total economic damage was valued at approx. VND 5000 bil.
2010	<ul style="list-style-type: none"> • in June the total rainfall in Central Vietnam was only 10-20% year-on-year; • water flowing to reservoirs that served irrigational works and those that served hydro-power stations was seriously insufficient; • heat even over passed the historic record with temperature reaching 420C and above; 	<ul style="list-style-type: none"> • damages were valued at nearly VND 2,500 billions;

El Niño

El Niño is closely associated to the **Southern Oscillation (SO)**,

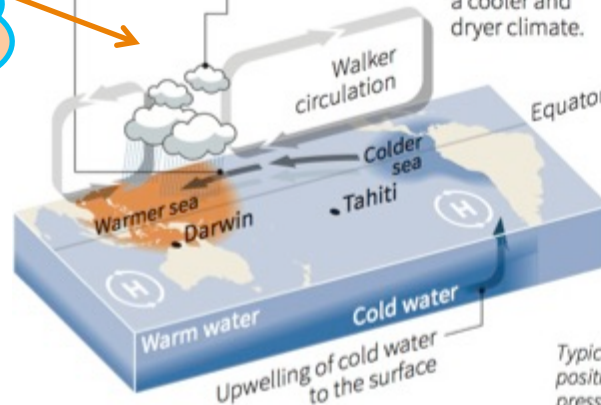
- ❖ The SO is the atmospheric counterpart of El Niño
- ❖ El Niño is the oceanic counterpart of SO.

↓
ENSO

El Niño is a warming of tropical Pacific waters that affects wind circulation patterns, recurring every 3 to 7/8 years with resulting extreme drought conditions in some parts of the world

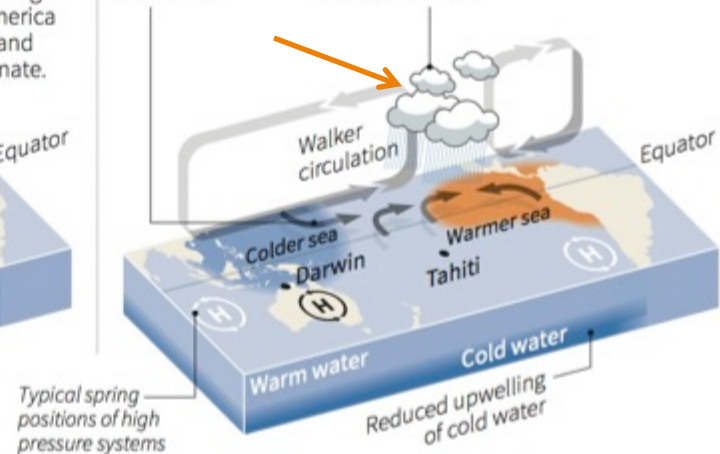
NORMAL YEAR

- 1 Trade winds push warm surface waters westward.
- 2 Warmer waters heat the air, causing rain clouds to form over Asia.
- 3 Colder waters rise and cool the air, giving South America a cooler and dryer climate.



EL NINO YEAR

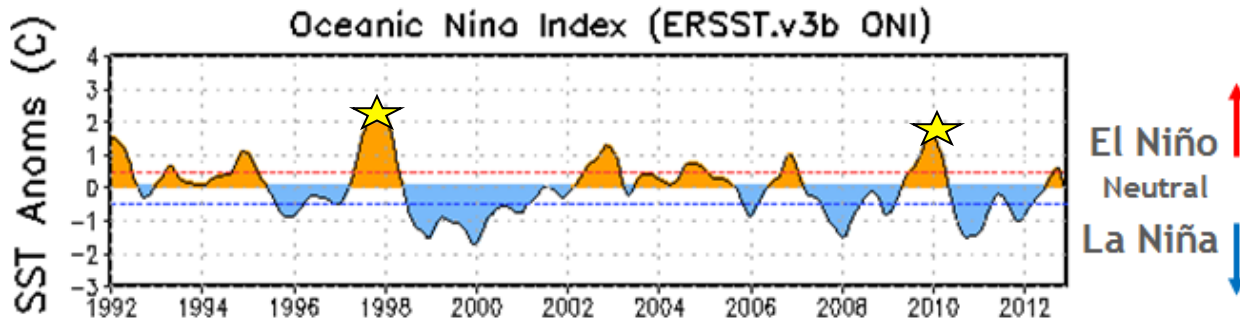
- 1 Trade winds weaken or reverse direction.
- 2 Warm waters and rain clouds shift eastward.
- 3 Asia is left unseasonably dry.



Look the position of the rain clouds!

El-Nino & Drought

El Niño conditions are evident in the
Observed SST anomaly
-Sea Surface Temperature-



El-Nino & Drought

History of the ENSO Tracker:

this table summaries the ENSO Tracker status by month from 1980 to present

<http://www.bom.gov.au/climate/enso/tracker/#tabs=History>

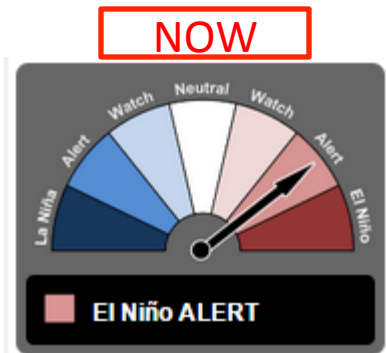
History of the ENSO Tracker

The below table summarises the ENSO Tracker status by month from 1980 to present.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1980												
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2014												



This year:
5 months of WATCH
6 months of ALERT



CC & Drought

“**There is medium confidence** in a projected increase in duration and intensity of **droughts** in some regions of the world”.

IPCC 2012

“**Ascertaining how drought and climate change are connected in a given environment is especially difficult**, as the combined relationship can be quite ambiguous”

UNDP 2012

It is quite well accepted that **droughts in future pose a threat to climate sensitive economic sectors, specifically agriculture.**

We need to **develop measures to reduce agricultural vulnerability** and thereby secure livelihoods of those who depend on agriculture.

Some predicted scenarios of drought throughout the 21st century for Viet Nam (*IMHEN2014*):

- ❖ In the **Northe Regions** the **drought increase in the east and decrease in the west**:
- ❖ Droughts are **projected to occur more often** in mountainous parts of the **North Central Region**.
- ❖ **More and longer drought** in the **North Red River Delta**
- ❖ Droughts in the **South Central Region** are **expected fewer drought but longer**.

What to Do

We need a multifaceted approach to DRM.

❖ The approach must recognize the **wide scope** of drought and thus the implications for coherent strategies to manage it **across sectors, levels and disciplines**.

❖ Furthermore, the applicability of a particular approach depends on the timing of interventions: **before, during and after impact**.



Conclusion

Any questions?

Any suggestions and contributes are welcome:

- ❖ Information relate Drought in Viet Nam in particular in the last decades?
 - ❖ **traditional Vietnamese** coping mechanisms for drought(ex. indigenous forecasts);
 - ❖ some thoughts as to how this might be impacted by CC;
 - ❖ **photos** outlining some related images;
 - ❖ drought and its **impact** on urban areas;
- ❖ Project in your Organizations **going on** or just finish it?
- ❖ Or **any other information** that you believe are relevant after this presentation that you are expect from this factsheet

You can provide information:

- ❖ right now
- ❖ or you can send me comments back by mail



Thank you for
your attention...