



Food and Agriculture Organization
of the United Nations

LAND AND SOIL MANAGEMENT AND CLIMATE CHANGE IN UKRAINE: trends, challenges and solutions

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Climate change & land/ soil management @ international and national levels

- UN Convention to Combat Desertification (UNCCD)
- Paris Agreement
- The Concept for Implementation of the Climate Change Policy of Ukraine till 2030
- Priorities for Climate Change Mitigation and Adaptation in Agriculture, Forestry and Fisheries of Ukraine till 2030 & Implementation Plan till 2023 – to be available to public by end of March

Climate smart agriculture / land / soil management =
Increasing production + CC prevention + CC adaptation



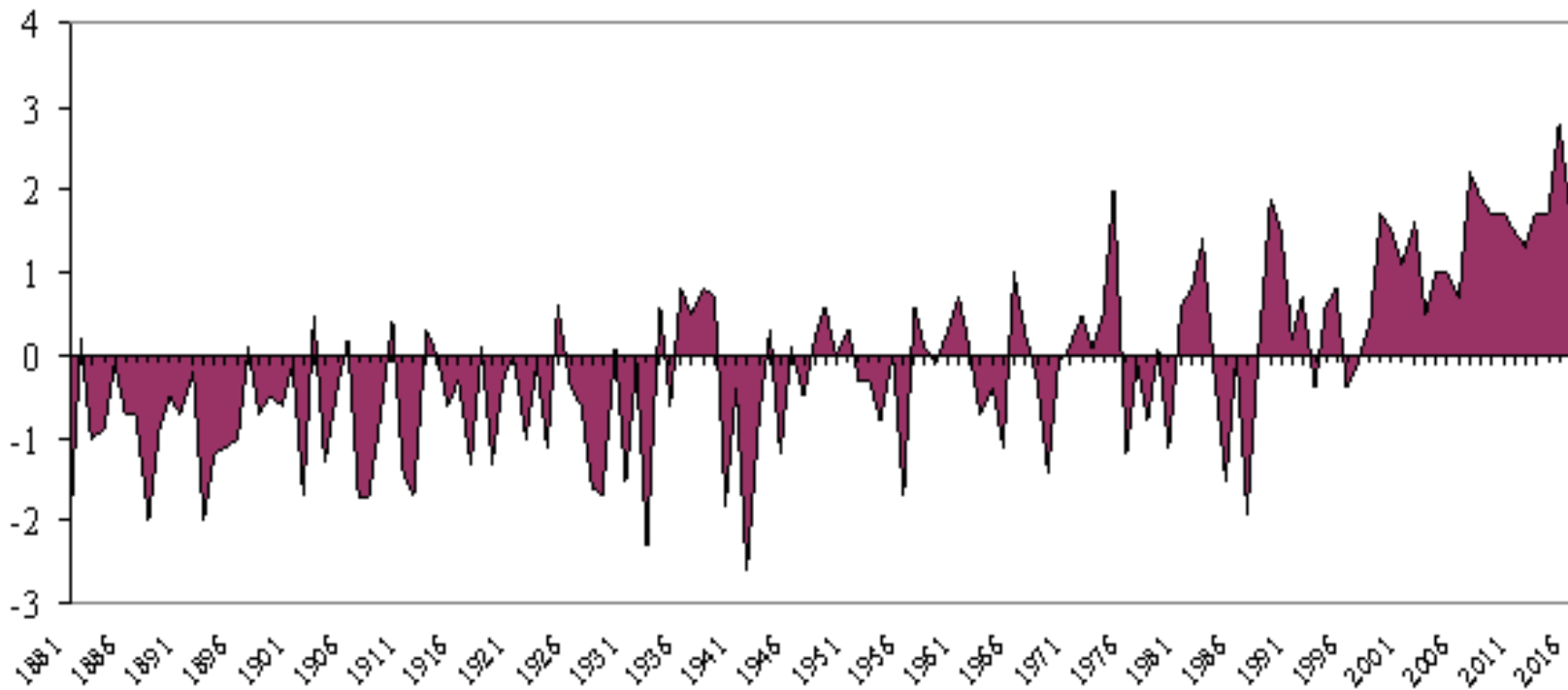
IS CLIMATE CHANGE A FAIRY TALE OR IS IT JUST
ABOUT SMALL ISLAND STATES IN THE PACIFIC?

IS THERE ANYTHING FOR UKRAINE?

Temperatures in Ukraine

- Rising temperatures observed since end 19th century
- The highest rates of warming since end XX century

Deviation in annual mean air temperature (°C) in Kiev in 1881-2016 (in comparison to the base period 1961-1990)

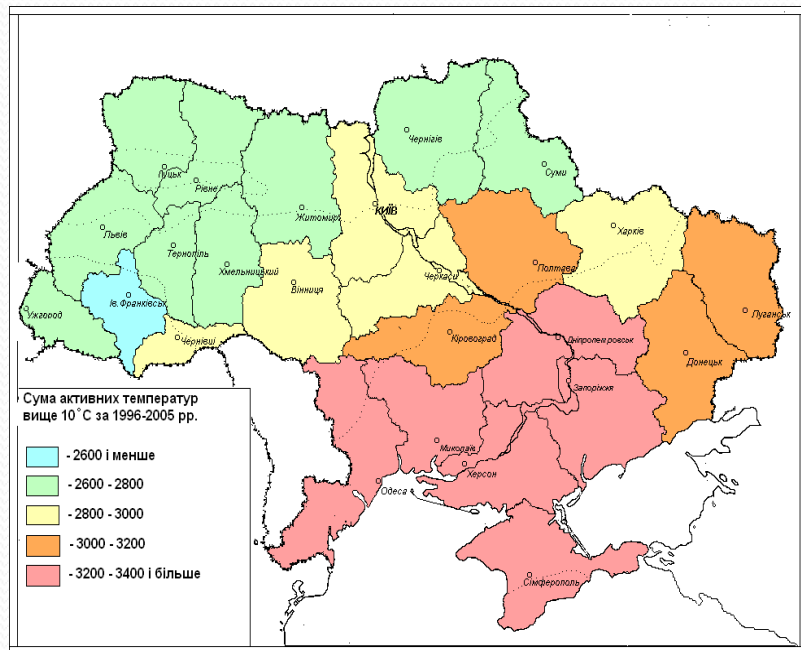


Temperatures in Ukraine

- Annual mean air temperature in 1989-2016 pp. overcome the standard up to 1,0°C (in 2017 up to 1,5-2 °C.)
- All agroclimatic zones are getting characteristics of the Steppe Zone, its south is getting similar to dry subtropical climate

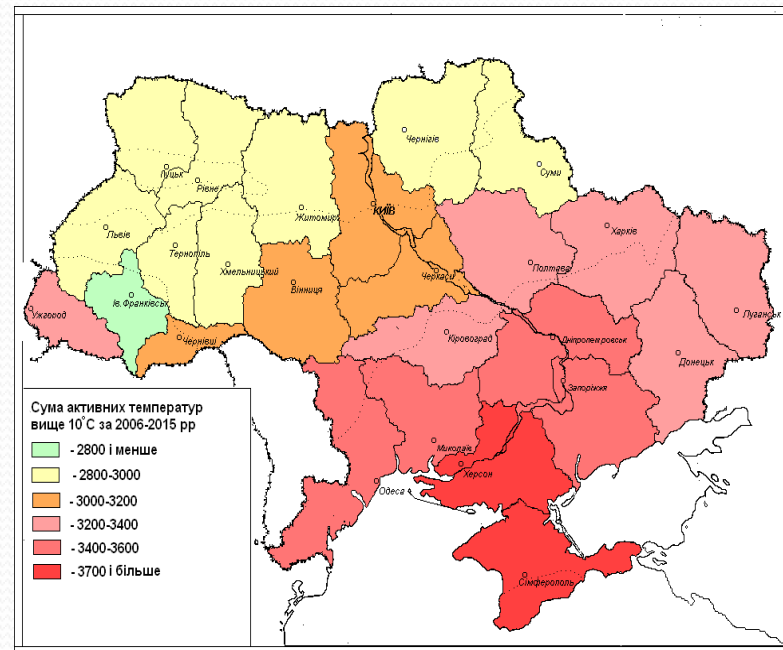
SUM OF ACTIVE TEMPERATURES HIGHER THAN +10°C

1996-2005



Σ 2600-3400

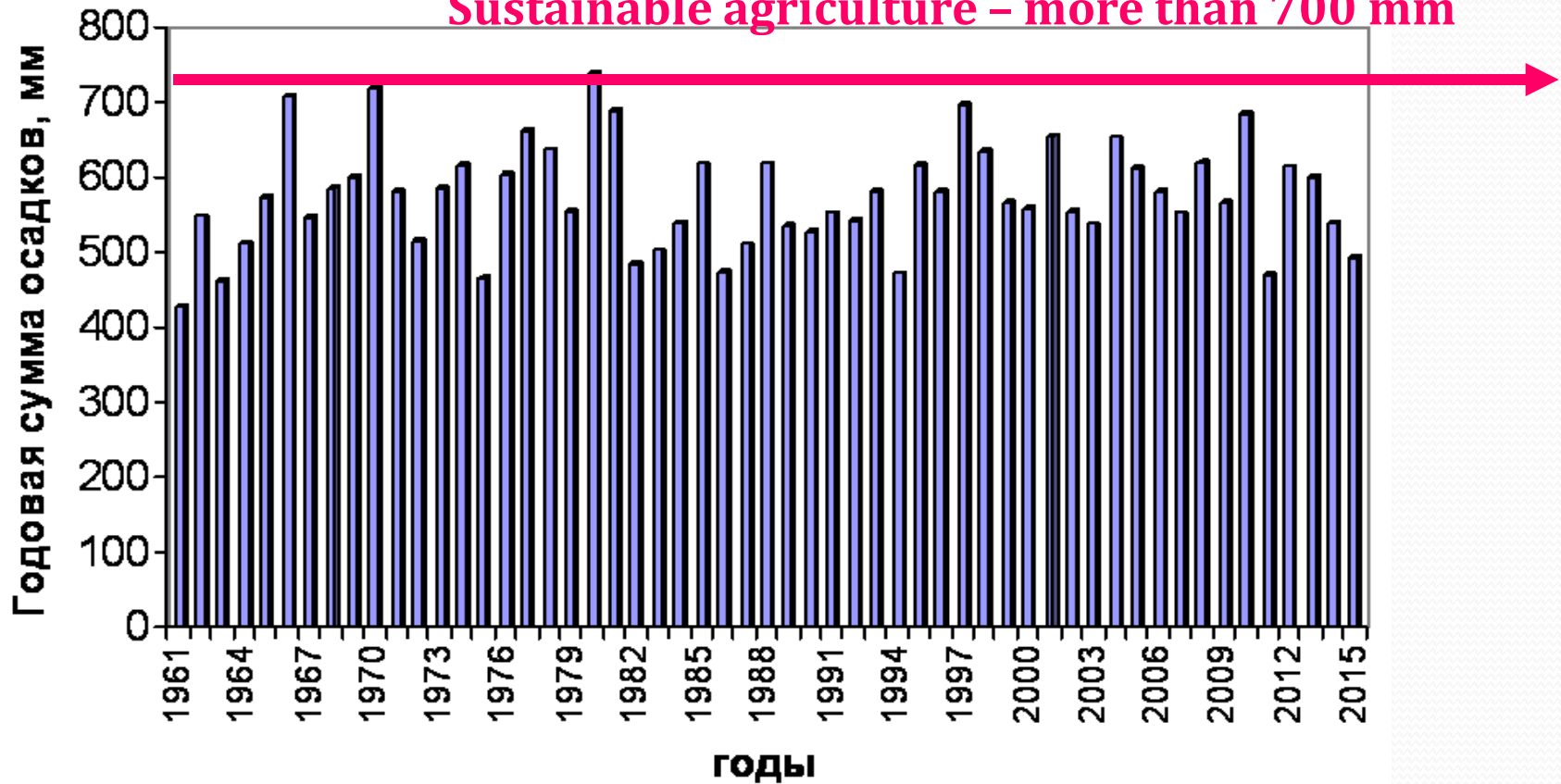
2006-2015



Σ 2800-3700

Annual precipitation in Ukraine

Sustainable agriculture - more than 700 mm

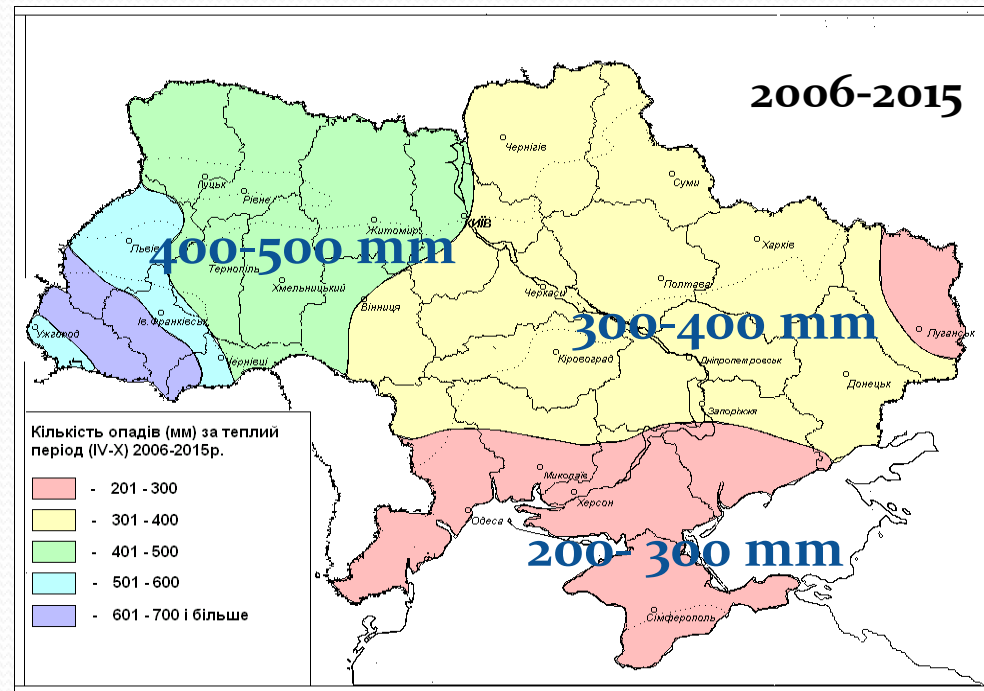
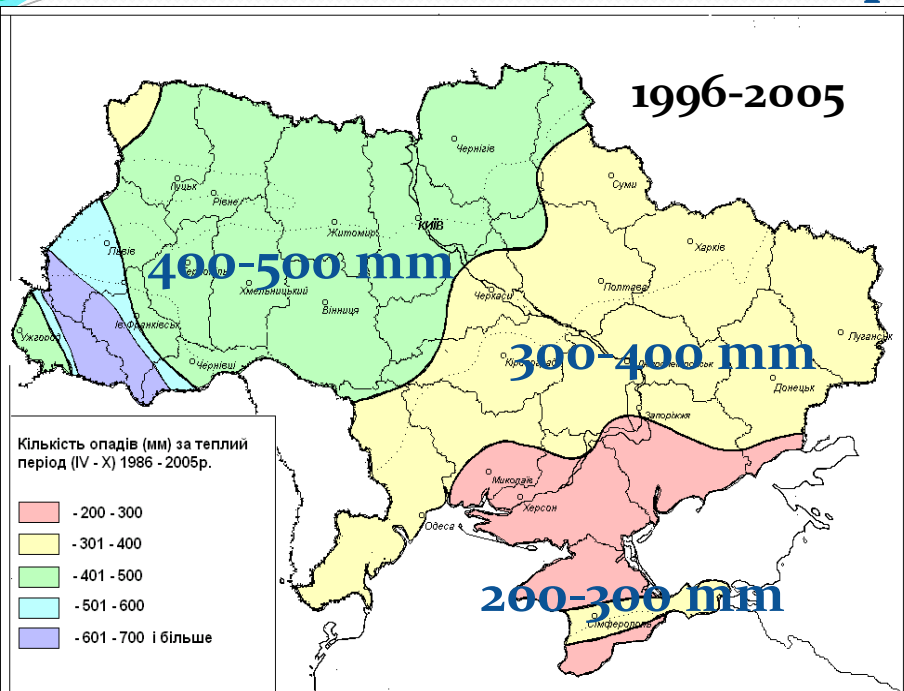


Standard (1961-1990) - 578 mm

Current 2011-2016 - 569 mm

Annual volume of precipitation is almost the same BUT its distribution throughout the year is uneven => extreme weather events

Increased area with lack of precipitation during vegetation period



Soil moisture in a 1-m depth of soil will be decreasing. Soil moisture may decrease to 15 - 20%, in the Steppe zone to 20-30%. Max will happen in second half of July (not crucial for cereals but is crucial for other plants).

=> A number of summer and autumn droughts is likely to increase to 15-30%

Soils services

Soils do influence climate change – undisturbed soils absorb carbon => healthy soils mitigate climate change (esp. peatlands and grasslands). Soils are the second largest carbon sink in the world after oceans

Degraded lands turn soil from a carbon sink to a source of emissions!

=> We are to keep up and increase soils mitigation capacity

Soils at risk

Climate change does influence soils, it:

- increases temperatures and provokes droughts
- increases the rate of soil organic matter decomposition (mineralization) which decreases soil capacity to retain water
- speeds up erosion
- decreases productivity & stability (degradation)
- increases frequency & intensity of extreme climate-related disasters (e.g. sand storms, flash floods)
- reduces nutrients available to plants (no water)

Degraded soils lose SOM, soil biodiversity, are more compacted, have increased rates of soil erosion and landslides

At social level this means decreased nation's **food security** and increased levels of forced **migration**

=> There is a need for **adaptation** and increased **resilience**



Your solutions?

Solutions

Avoid land degradation! (land degradation neutrality)

- Reduced tillage – WHEN FEASIBLE (ploughing accelerates decomposition and mineralisation of organic matter and release carbon)
- Crop rotations using “cover crops” and mulching (fixes nitrate and anti-erosion)
- Use of manure (rebuilds the soil’s organic carbon deep below the soil surface and cuts GHG)
- Sustainable grazing (avoiding overgrazing)
- Enforced ban of agricultural burning
- Agroforestry: forest bends along roads, around farms, between fields (provide shadow, moisture, forage, biofuel, keep moisture)
- Ecosystems conservation and restoration(peatlands, grasslands)
- Irrigation, water recycling, reuse and harvesting (raises ground water levels and increases crop yields and the fauna of the region changes)
- Precise management of nitrogen and fertilizers

Instruments at hands & to be developed

- Integrated water resources management (ref. EU Water Framework Directive) & Integrated Drought Management (World Meteorological Organization)
- National Action Plan for Combating Land Degradation and Desertification (2016 – 2020)
- Monitoring and early warning systems
- Crop insurance – expand!
- National food security law – develop!
- Climate smart / land / soil management – support by commercial banks and state funds
- Science – develop and involve!
- Education, awareness raising and advisory bodies / extension centres – keep up!
- Carbon / Climate footprint (ref. WEF / Davos, EU markets, ISO / TS 14067 on GHG / Carbon footprint of products) – consider!
- SME vulnerability (natural disasters losses) - pay attention to!
- Efforts at international, national, intersectoral and local levels – coordinate!



Thank you!

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