CLimate INTelligence

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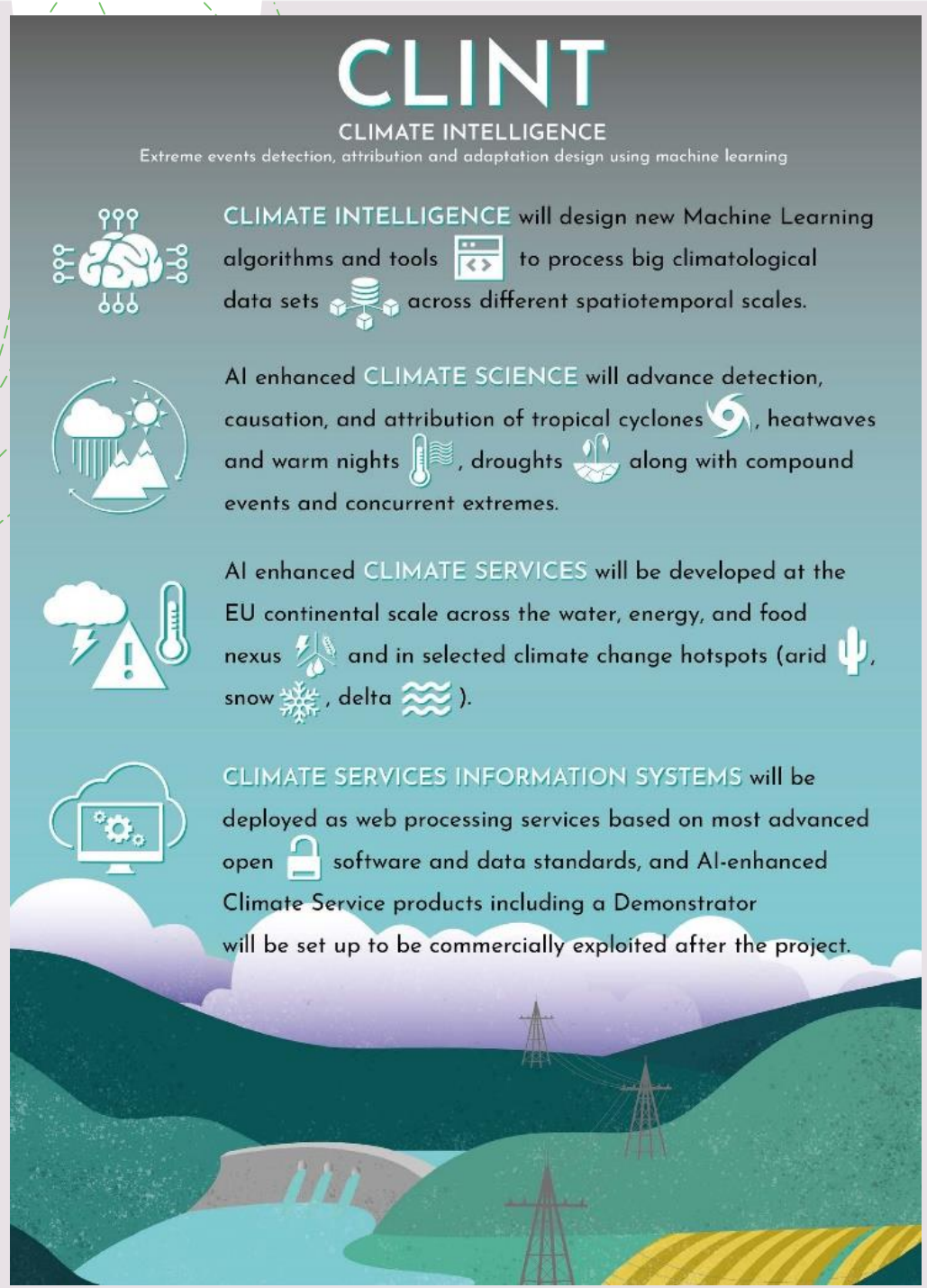


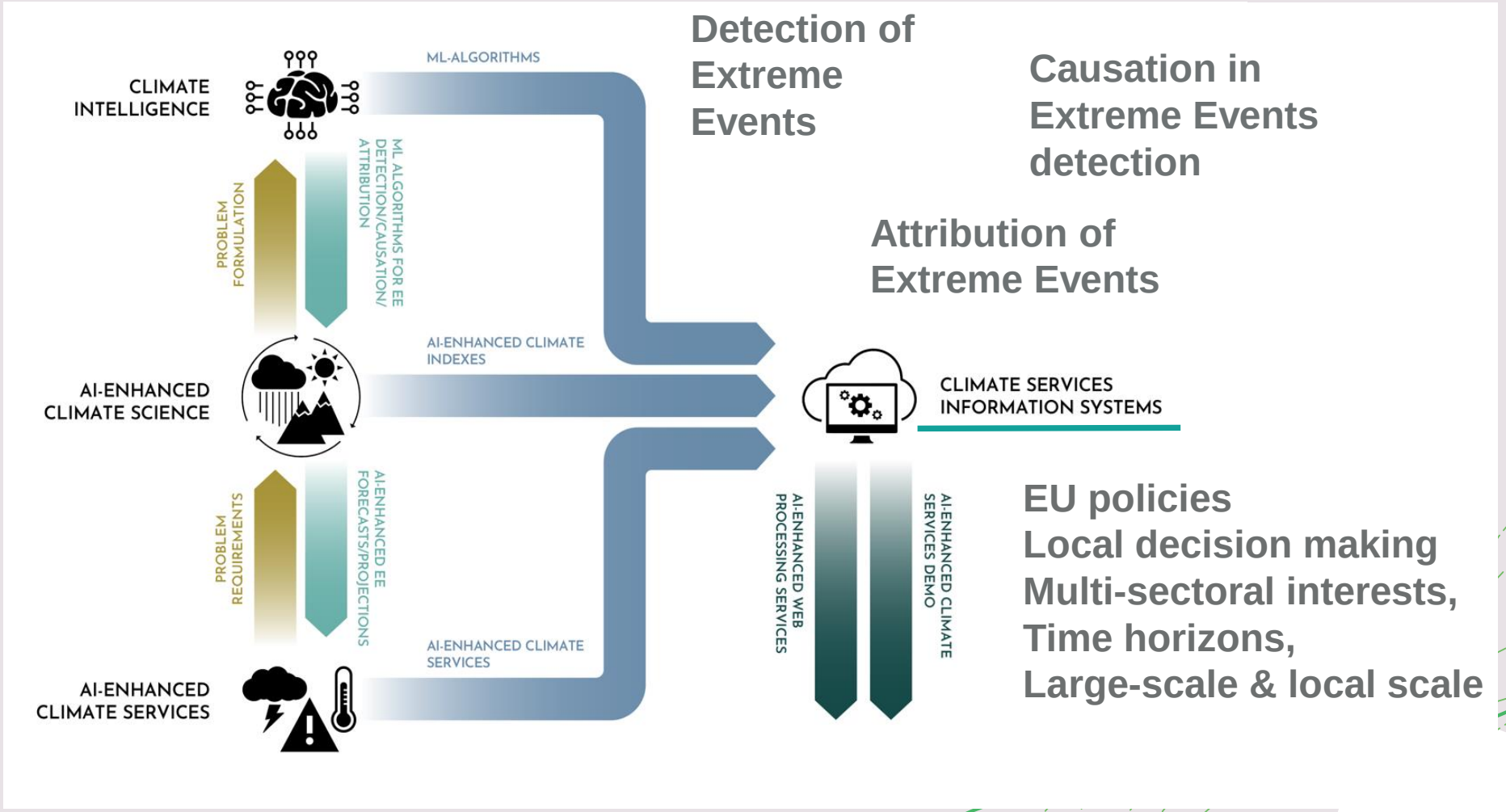
A new H2020 project responding to the call:

Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement

Participant No.	Participant organisation name	Country
1	Politecnico di Milano (POLIMI)	IT
2	Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (CMCC)	IT
3	Helmholtz-Zentrum Geesthacht Zentrum fur Material-und Kustenforschung (HZG)	DE
4	Agencia Estatal Consejo Superior de Investigaciones Cientifcas (CSIC)	ES
5	Sveriges Meteorologiska Och Hydrologiska Institut (SMHI)	SE
6	HKV Lijn in Water BV (HKV)	NL
7	E3-modelling AE (E3M)	EL
8	The Climate Data Factory (TCDF)	FR
9	Deutsches Klimarechenzentrum GMBH (DKRZ)	DE
10	Stichting IHE Delft Institute for Water Education (IHE)	NL
11	European Centre for Medium-Range Weather Forecasts (ECMWF)	International
12	Universidad de Alcalá (UAH)	ES
13	Justus-Liebig-Universitaet Giessen (JLU)	DE
14	Ramboll France (RBL)	FR
15	Universidad Complutense de Madrid (UCM)	ES

CLINT Concept

Machine Learning to advance discovery in Climate Science



Detection of Extreme Events

Causation in Extreme Events detection

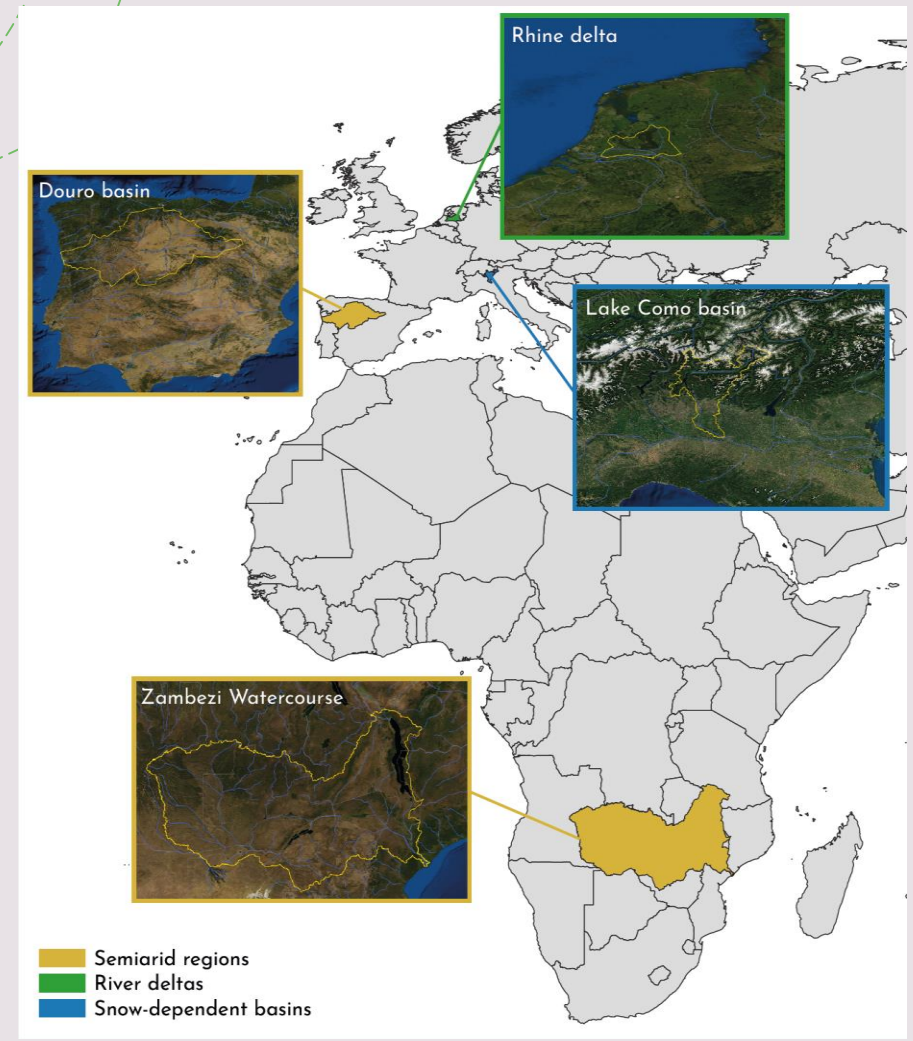
Attribution of Extreme Events

AI-enhanced Climate Services

EU policies
Local decision making
Multi-sectoral interests,
Time horizons,
Large-scale & local scale

Areas of concerns & risk and impact assessments

CLINT Climate Change Hot Spots

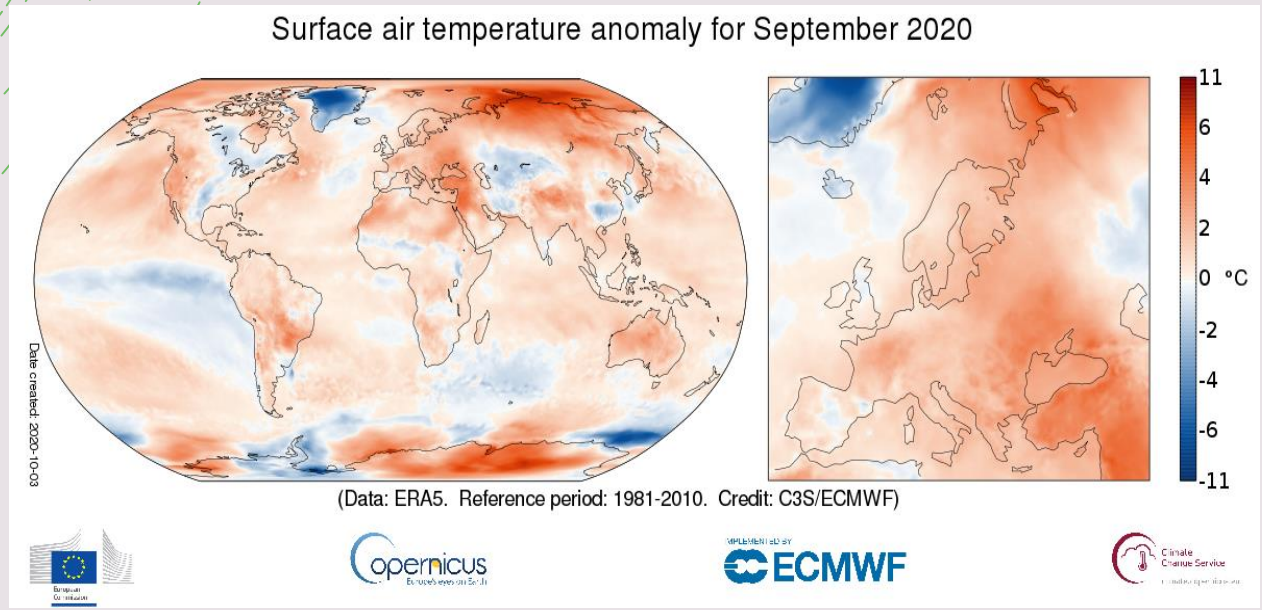


+ Rhine delta
+ Lake Como basin
+ Douro basin
+ Zambezi Watercourse

The agriculture use case

The need for enhanced climate services

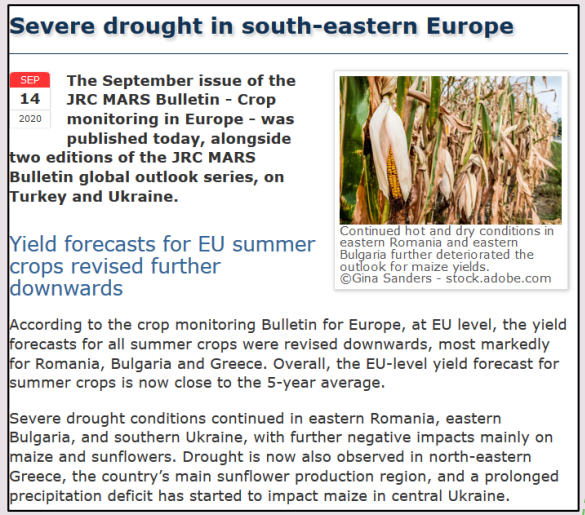
Today, (very) recent past and…



Source: Copernicus C3S

Breaking new records every month

The 2020 drought



Severe drought in south-eastern Europe

SEP 14 2020

The September issue of the JRC MARS Bulletin - Crop monitoring in Europe - was published today, alongside two editions of the JRC MARS Bulletin global outlook series, on Turkey and Ukraine.

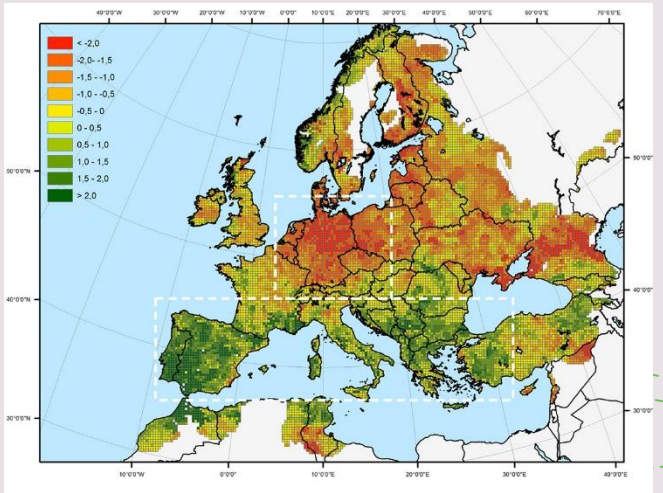
Continued hot and dry conditions in eastern Romania and eastern Bulgaria further deteriorated the outlook for maize yields. ©Gina Sanders - stock.adobe.com

Yield forecasts for EU summer crops revised further downwards

According to the crop monitoring Bulletin for Europe, at EU level, the yield forecasts for all summer crops were revised downwards, most markedly for Romania, Bulgaria and Greece. Overall, the EU-level yield forecast for summer crops is now close to the 5-year average.

Severe drought conditions continued in eastern Romania, eastern Bulgaria, and southern Ukraine, with further negative impacts mainly on maize and sunflowers. Drought is now also observed in north-eastern Greece, the country's main sunflower production region, and a prolonged precipitation deficit has started to impact maize in central Ukraine.

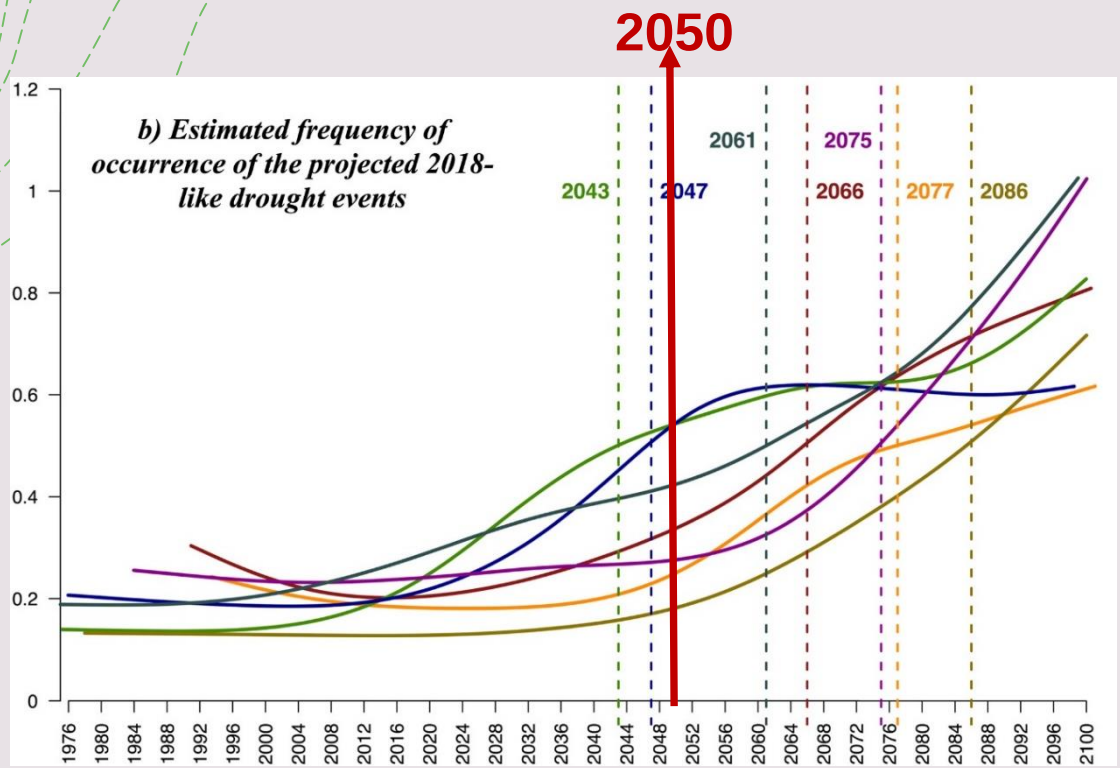
Source: EU Science Hub



The 2018 drought

Spring-to-summer SPEI: dry (red)/wet (green).
Source: Toreti et al. Earth's Future 2019

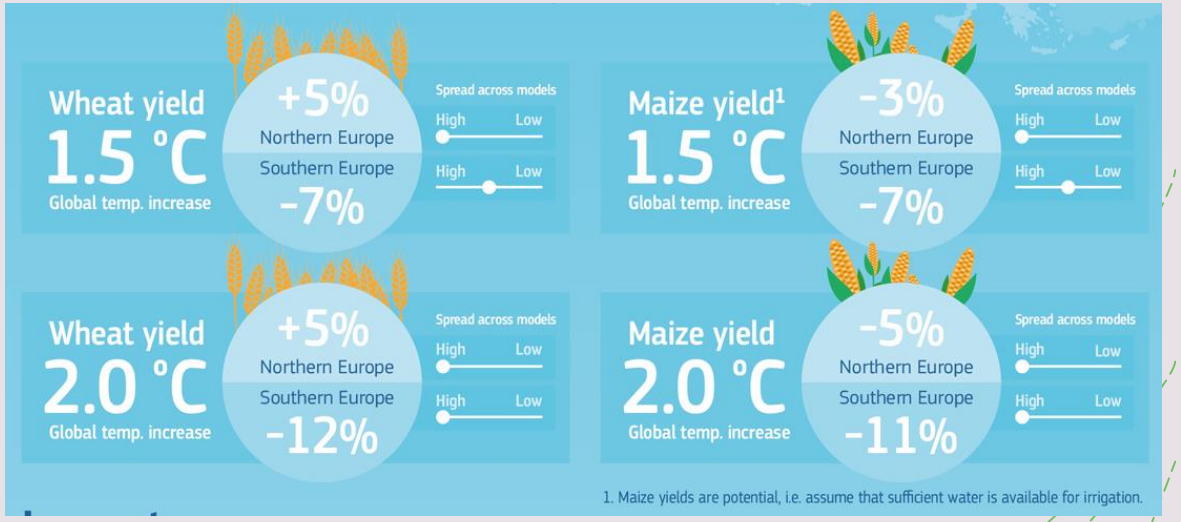
Climate projections



By 2050, drought events like 2018 are expected to become the norm

Source: Toreti et al. Earth's Future 2019

JRC PESETA 4 Multi-sectoral impact assessment. The agri results

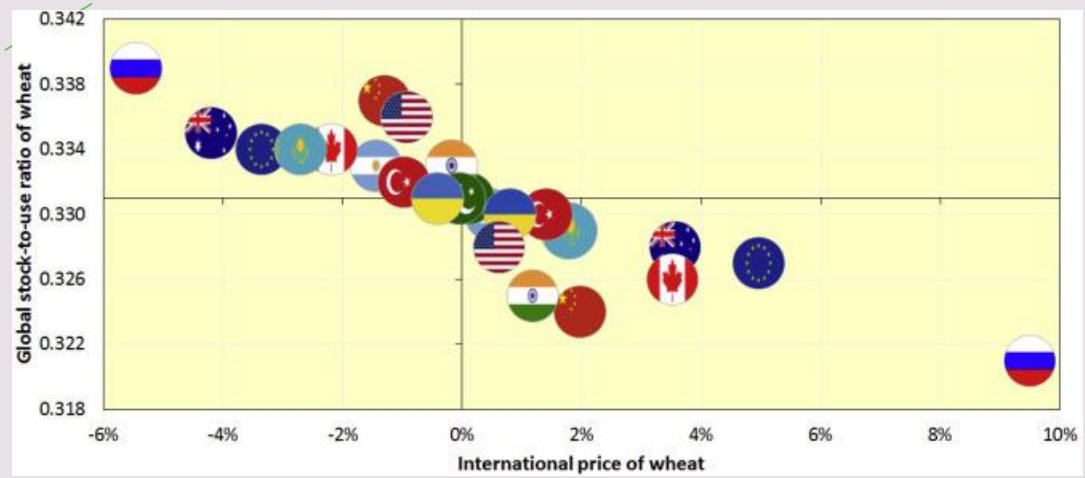


Crop yield projections assuming no changes in agro-management (e.g. irrigation)

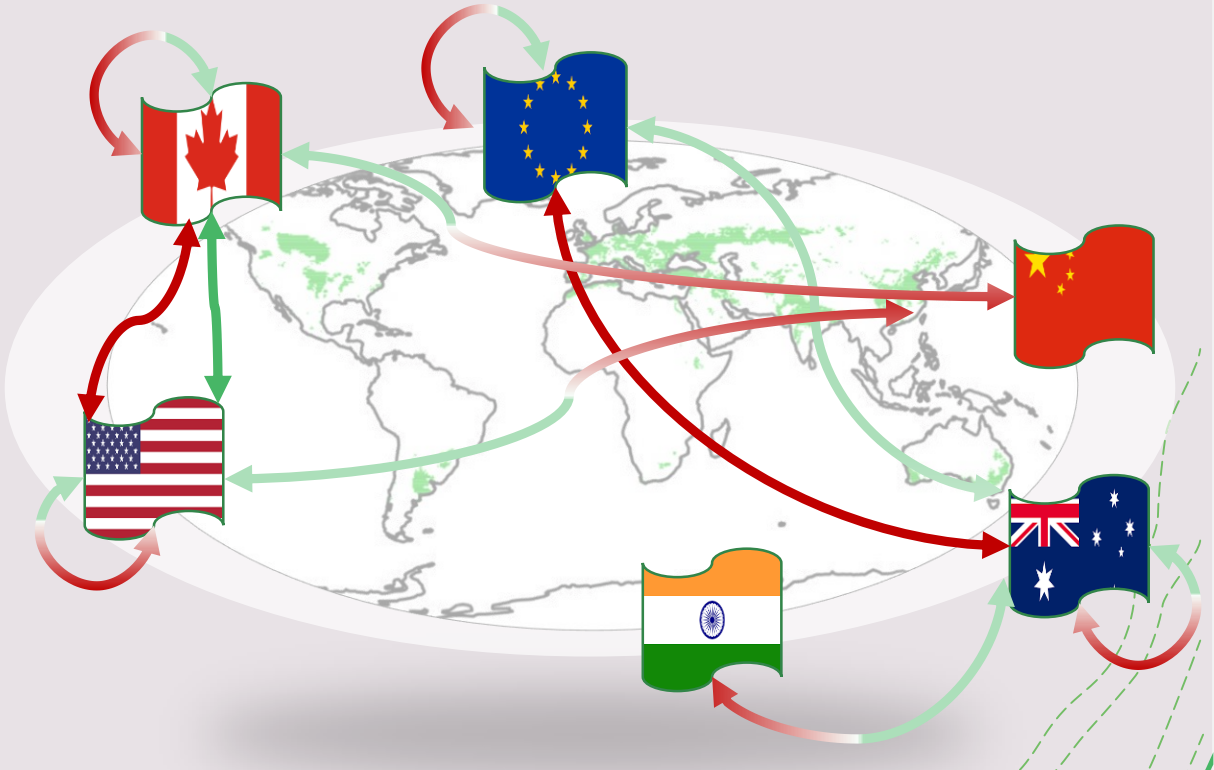
Source: EU Science HUB, PESETA 4

A globally connected world

Large scale climate extremes occurring in a single producing region may shock the market



Source: Chatzopoulos et al. Weat. Clim. Extremes 2020



But… large-scale climate extremes in key wheat producing areas are dependent and tend to co-occur

RISK

Adapted from Toreti et al. Sci Rep 2019

Enhancing agriculture's climate resilience

SUSTAINABLE MITIGATION & ADAPTATION

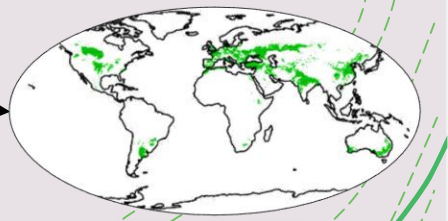
Evolving the agri systems by responding to short- and long-term changes

Tailored co-designed climate services are an essential component of effective adaptation strategies

Farm

MS

EU

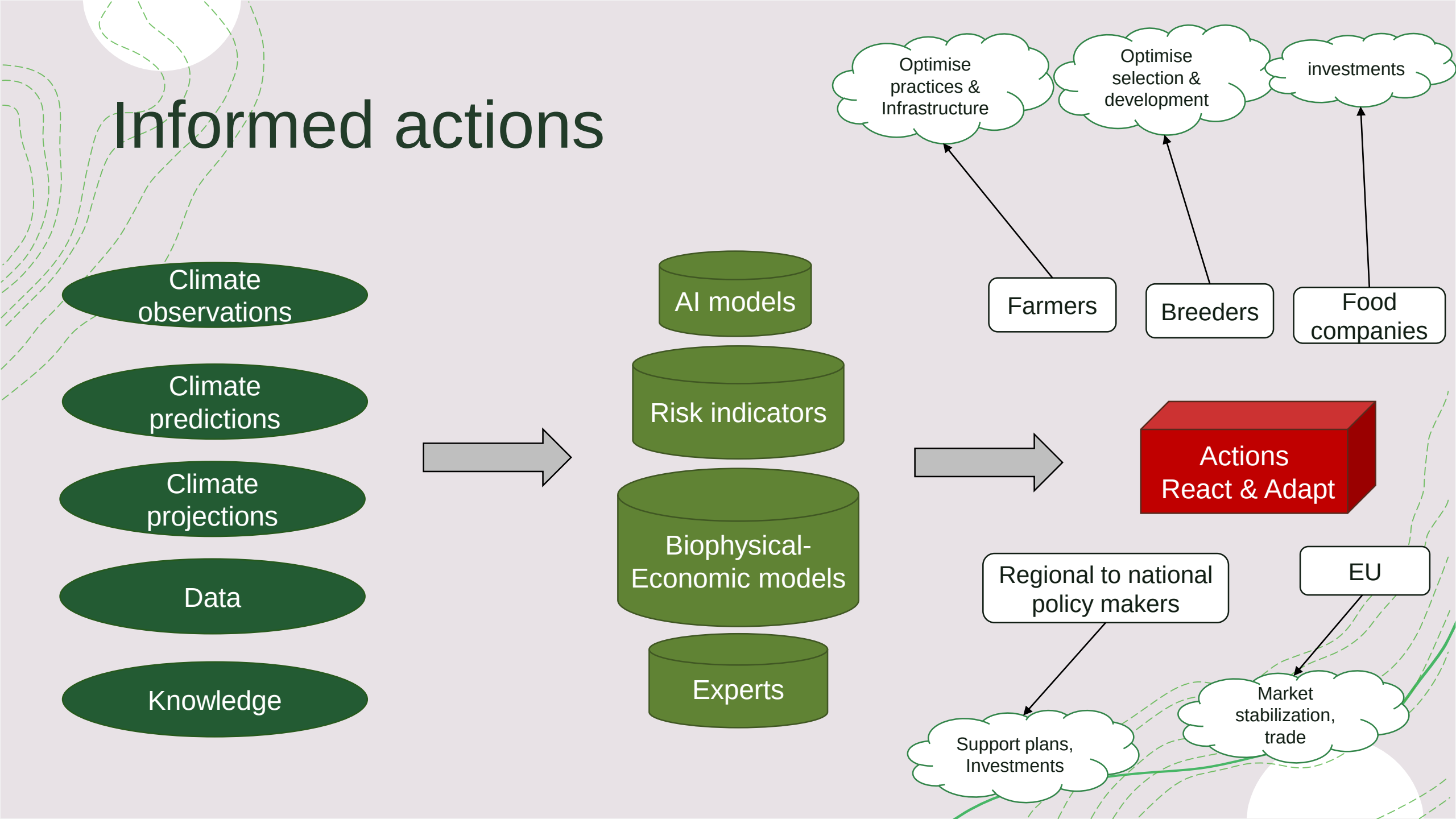


Next months – end of season

Next 5-10 years

Next decades

Informed actions



CLINT Impact

+ Enhanced adaptive capacity, from pan-European to local scale
+ Reduced vulnerability to climate change
+ Enhanced actions on adaptation
+ Strengthened scientific knowledge on climate
+ Better informed Climate Services and decision-making

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