


TAL TECH




# CUPAGIS: A step towards future

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Co-funded by the Erasmus+ Programme of the European Union 

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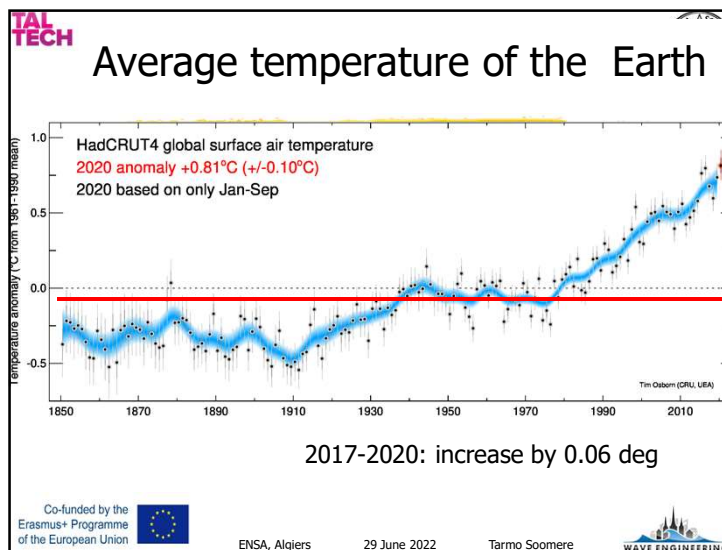


## Instead of Introduction:


## Our climate is changing So what?

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## Local view: Some climate change winners

- **The Arctic** – Access to vast expanses of previously inaccessible land
- **The oil, gas and mineral industries** – “I think it’s important to realise that this [melt] is also an opportunity” (Norway’s petroleum and energy minister)
- **Shipping** – The northwest passage becomes a viable alternative to the Panama Canal
- **High latitude agriculture**– Production belts in the northern hemisphere shift northwards
- **Plant growth** – Increased plant production (including plankton biomass which may have implications for fisheries)
- **Greenland** – Oil and gas, mineral extraction, fishing, tourism, agriculture, energy intensive industries (massive amounts of cheap hydropower), water exports


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## Global view: a different picture

- Global warming – as any crisis – has (and will continue) to increase global economic inequality
- Wealthy countries have benefited disproportionately from the activities that have caused global warming
- while poor countries **suffer disproportionately** from the impacts


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## The measure of vulnerability

most at risk 30-39 40-49 50-59 60-69 70-79 80+ least at risk




University of Notre Dame  
Global Change Initiative

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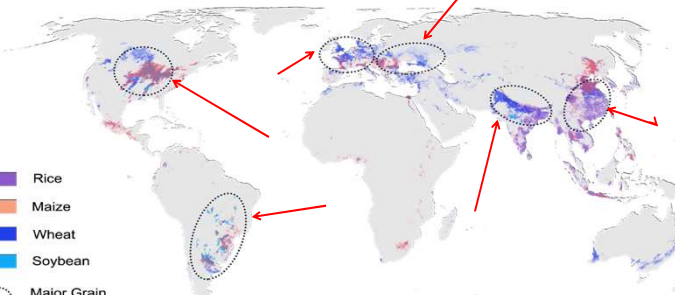
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Rank	Country
1	Norway
2	New Zealand
3	Finland
4	Sweden
5	Australia
6	Switzerland
7	Denmark
8	Austria
9	Germany
10	Iceland
11	Singapore
12	United Kingdom
13	Canada
14	Luxembourg
15	United States
16	Republic of Korea
17	France
18	Netherlands
19	Slovenia
20	Japan
21	Ireland
22	Czech Republic
23	Poland
24	Spain
25	Estonia
26	Belgium
27	Portugal
28	China
29	Israel
30	Lithuania
31	Latvia
32	Italy
33	United Arab Emirates
34	Russian Federation
174	Haiti
175	Niger
176	Sudan
177	Dem. Rep. of the Congo
178	Central African Rep.
179	Eritrea
180	Chad
181	Somalia

Wealthy countries: small risk;  
poorer countries: large risk


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## Vulnerability has clear geographic pattern: food production strongly concentrated




■ Rice  
■ Maize  
■ Wheat  
■ Soybean  
○ Major Grain Production Areas

McKinsey Global Institute 2020

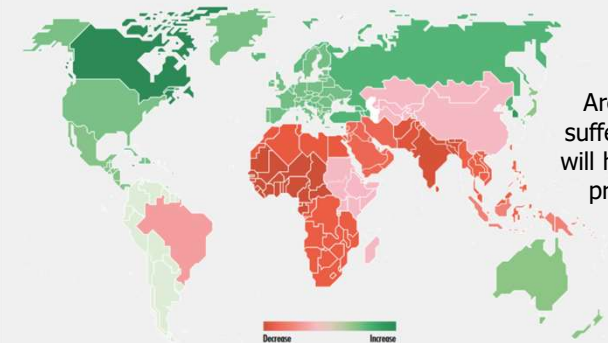
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## The forecast until 2050


FIGURE 2.1  
CHANGES IN AGRICULTURAL PRODUCTION IN 2050: CLIMATE CHANGE RELATIVE TO THE BASELINE




Areas that suffer already will have more problems

Decrease Increase

NOTE: The final boundary between the Republic of the Sudan and the Republic of South Sudan has not yet been determined. Final status of the Abyei area has not yet been determined.  
SOURCE: Based on data provided by Wageningen Economic Research, 2018. Climate Change and Global Market Integration: Implications for global economic activities, agricultural commodities and food security. SOCO 2019 Background Paper, Rome, FAO.  
FAO, 2018. The State of Agricultural Commodity Markets 2018. Agricultural trade, climate change and food security. Rome

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An obvious way to the future that is worth of living: 

**Food production** that is


- Effective
- Sustainable
- Environmentally friendly

The common denominator

- Precision agriculture
- and its teaching

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*Knowledge is the source of wealth. Applied to tasks we already know, it becomes productivity. Applied to tasks that are new it becomes innovation.*



Peter Drucker  
*Management challenges of the XXIst Century-1999*

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Research drives prosperity



nature**OUTLOOK** 1 September 2016  
SCIENCE-LED ECONOMIES

How research drives prosperity

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### The consortium

**Technical University Berlin, Germany**

**ECOLAUNCH, Berlin Germany**

**Tallinn University of Technology, Estonia**

**Czech University of Life Sciences, Prague**

**The Agricultural University Plovdiv Bulgaria**

**Ecole Nationale Supérieure d'Agronomie  
Djillali Liabes University of Sidi bel Abbès  
Université d'Oran 1 Ahmed Ben Bella  
Ministry of Higher Education and Scientific Research** **Algeria**

**Universite de Mostaganem  
Universite de Tiaret**

### CUPAGIS oversimplified: The idea

Implementation of new perspective methods and techniques

- GIS technologies
- Remote sensing technologies via university teaching

New **CU**rricula in **P**recision **A**griculture using **GIS** technologies and sensing data -- CUPAGIS

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### The challenge of Algeria: to increase harvest with minimum increase in fertiliser use

	Area, 1000 km <sup>2</sup>	Population, millions 2020	Fields, % 2018 / 2020	Crop yield, 1000 kg/ha	Farmers, % 2019	Fertilisers, kg/ha
Algeria	2382	43.85	3	1.759	10	20.7
Estonia	45	1.33	23.1	2.625	3	87.7
France	594	67.4	52.3	6.885	3	172.7
EU	4233	447.7	40.9	5.24	4	154.8
USA	9834	329.5	44.4	8.69	1	128.8

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CUPAGIS webinar 07 April 2021 Tarmo Soomere


### The EU partners

- Provide their competence in the use of GIS and remote sensing technologies
- Mostly (but not only) applied to precision agriculture
- Organise lectures and training sessions
- Purchase the necessary equipment
- Collect and prepare reports
- ...



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**TAL TECH** The equipment 

- **Total budget: 300,000 euro**
- About 45 million dinar
- **First package: IT & teaching equipment (250 k€)**
  - Computers, servers, switches, beamers, printers
  - Field equipment
- **Second package: sensors for teaching (50 k€)**
  - Will arrive Algiers next week
  - Currently in Oran, customs operations in progress
  - A spectroradiometer, multispectral camera, soil NPK tester, soil NPK temperature and humidity sensor

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**TAL TECH** The equipment 



First set: Collected in Tallinn in spring 2021




Almost 3 tons, 250,000 euro net, full marine container



Empty room in autumn 2021



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## The Algerian partners




- Develop new curricula that focus on precision agriculture
- Organise teaching of these curricula
- Spread the competence also outside of the academic/higher education sector
- Make this competence sustainable
  - The PAGIS competence centres
- ...

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## The European Commission




Technically: Education, Audiovisual and Culture Executive Agency



- **Finances the activities**
  - This is why some operations may seem bureaucratic
- Monitors the entire process
  - Does not interfere in terms of content
- Keeps track on progress & reporting
- ...

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Experience is not what happens to a man;  
it is what a man does with what happens to him.  
(Aldous Huxley)

See more:  
[www.cupagis.eu](http://www.cupagis.eu)



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