

# Opening session

Edith Le Cadre, ESA president

L'Institut Agro Rennes-Angers (IA RA)

UMR SAS IA RA – INRAE Joint unit research Soil Agrohydrocosystems and Spatialisation

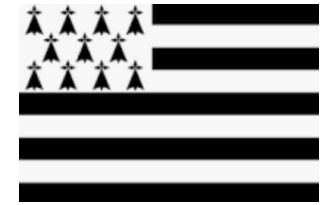
Edith.Lecadre@institut-agro.fr

18<sup>th</sup> Congress of the European Society for Agronomy in Rennes, France

 L'INSTITUT  
**agro** Rennes  
Angers

**INRAE**

 **ESA**  
EUROPEAN SOCIETY FOR AGRONOMY



# **Welcome to Brittany**

## **Bienvenue en Bretagne**

*Degemer mat e Breizh*



# The couvent des Jacobins



© Hervé Paitier, Inrap  
© Hervé Paitier, Inrap

More informations : <https://www.inrap.fr/couvent-des-jacobins-1312>

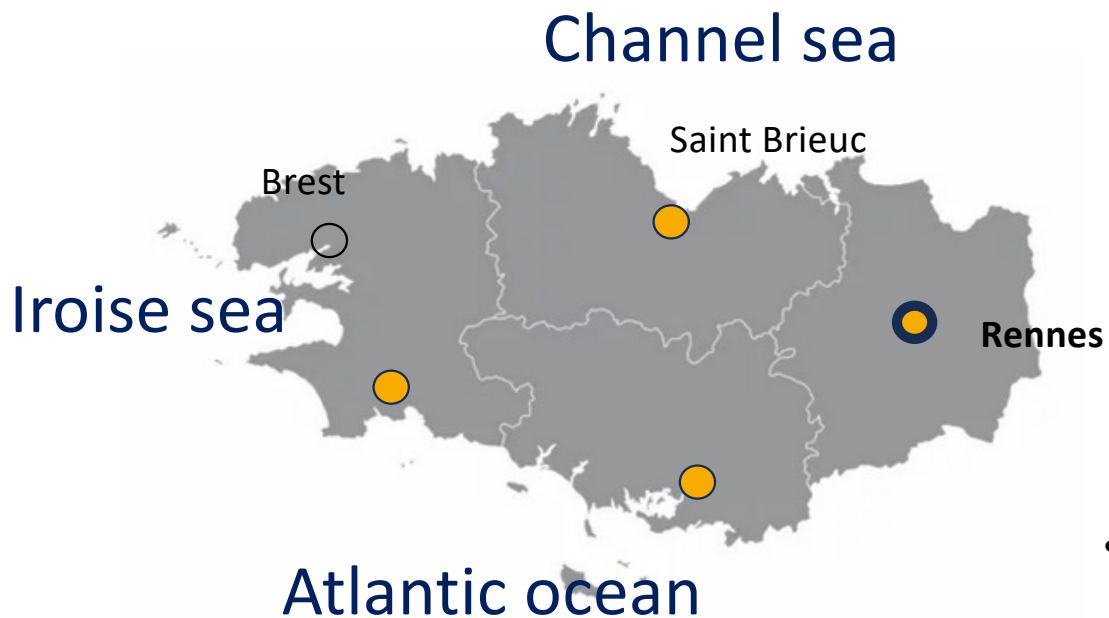


# **Some key features about Brittany, and its agricultural systems**



# Key features of Brittany

## Administration & history

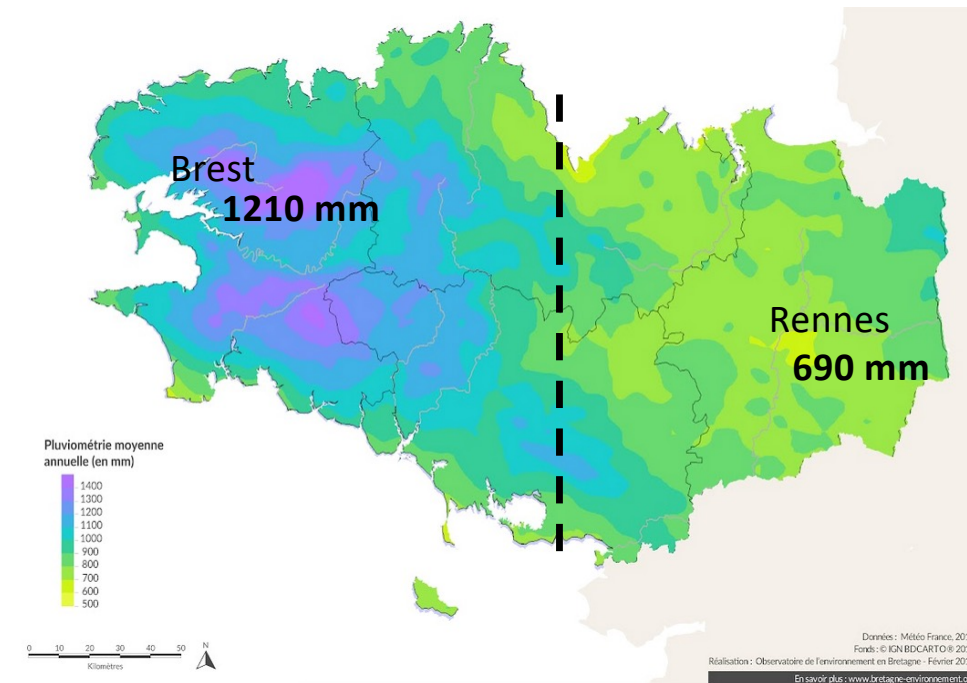


- **Brittany is integrated into French kingdom**
  - 1491 Anne de Bretagne (Duchess of Brittany)
  - her daughter (Claude) with King François 1<sup>st</sup>
- **1671 Red hat protest (fiscal tax) related to trade difficulties of regional sea ports - Louis XIV wars**
- **French revolution**
- **After WWII : opening up**
  - Free 4x4 roads and industries (Rennes, Brest, Lannion)
  - an economic renewal based on **agriculture**

# Key features of agricultural systems in Brittany

## Climate

### Annual average precipitations (mm)



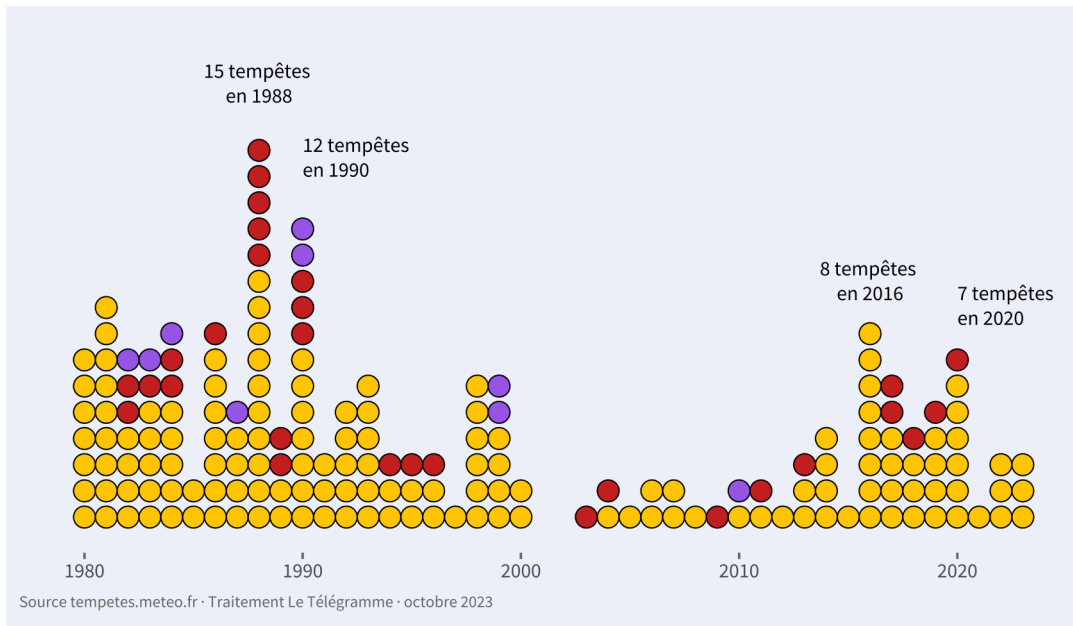
- Temperate oceanic climate
- Gradient of precipitations
- Succession of atmospheric circulations
- Sea breezes
- Annual average temperatures: 10,3 to 13°C



# Key features of agricultural systems in Brittany

Climate and storms

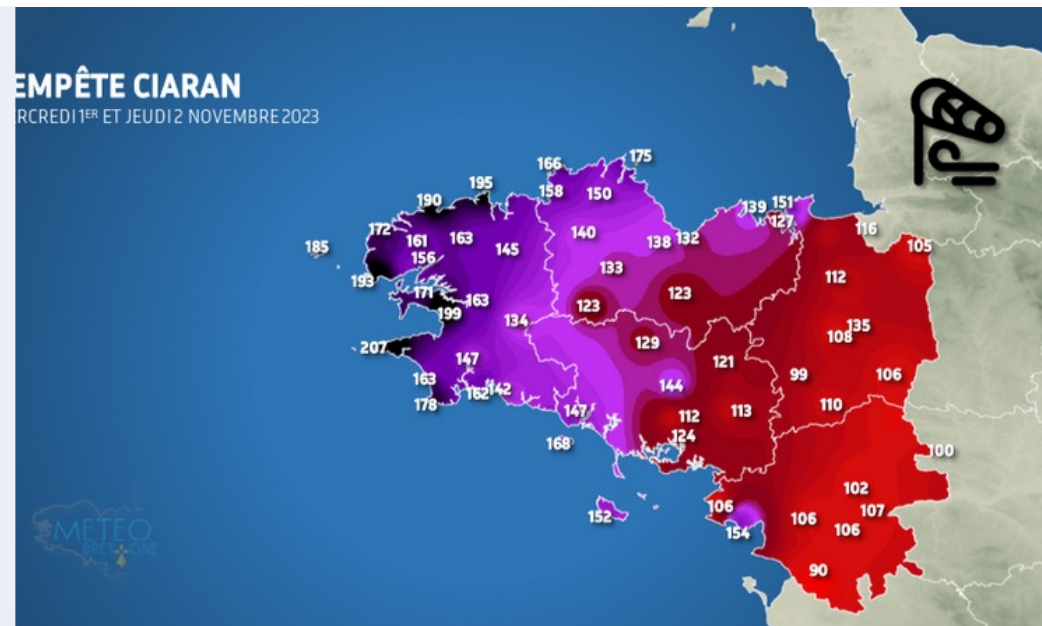
## Storms in Brittany 1990 - 2020



● Moderate ● Strong ● Extreme

© Le Télégramme

## Wind speeds CIARAN storm



2023 November (1 & 2)

© Pledeliac

# Key features of agricultural systems in Brittany

Climate and storms

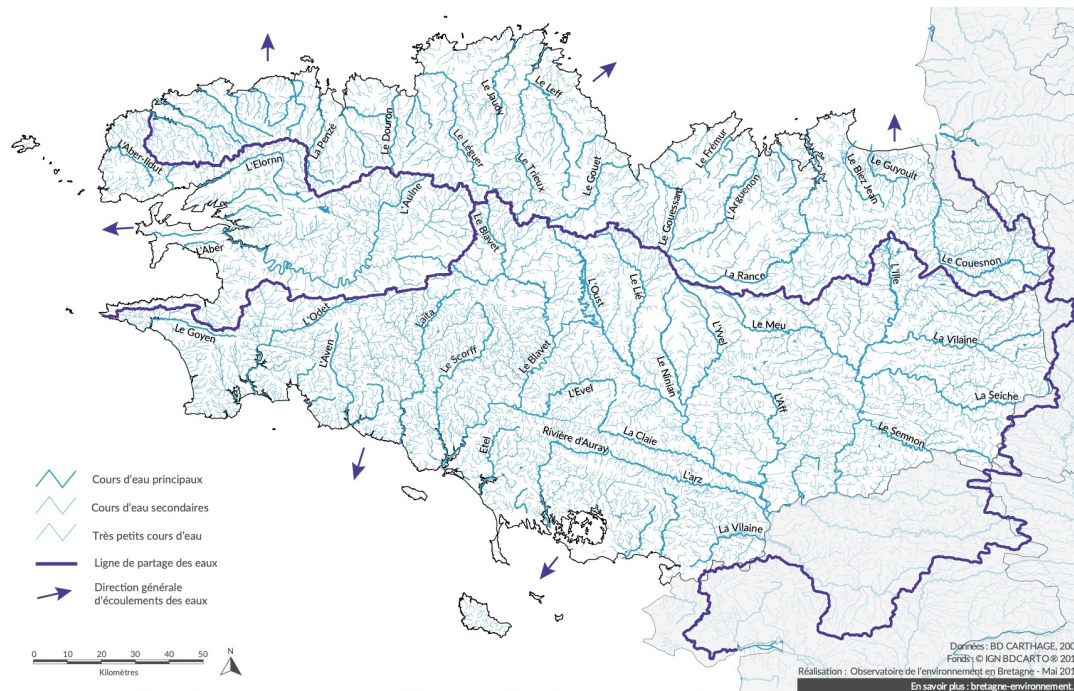


CIARAN storm 2023 November (1 & 2)



# Key features of agricultural systems in Brittany

## Hydrological system



- End to end : 30 000 km

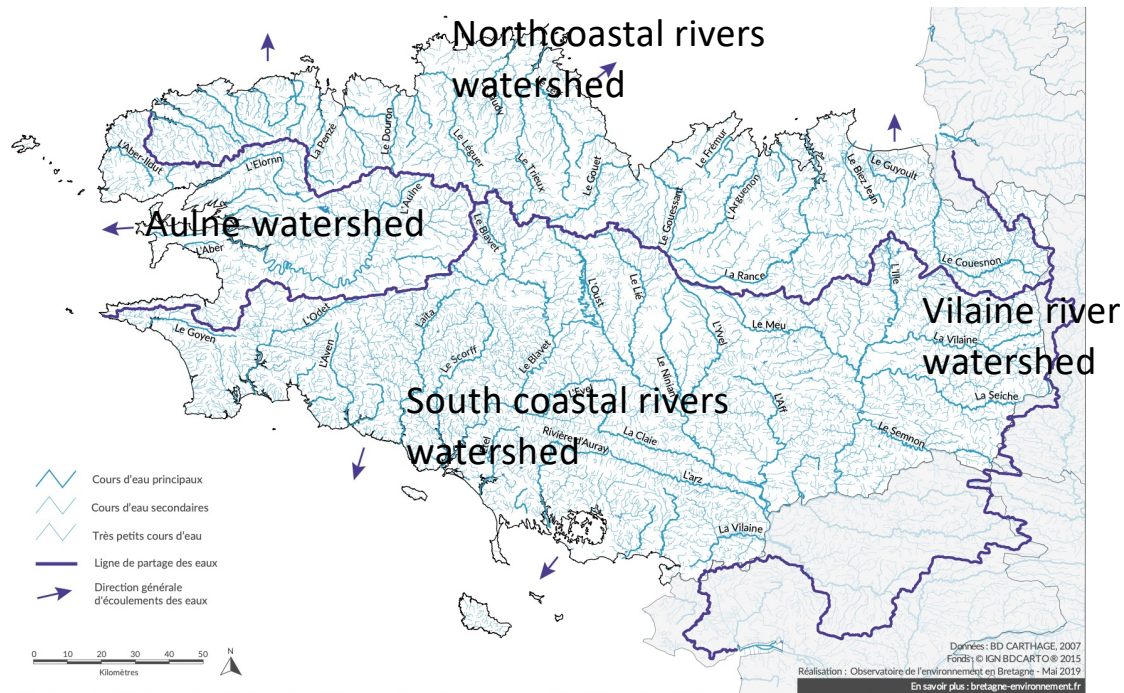


© Observatoire de l'Environnement en Bretagne, 2019

A coastal river flowing into Channel sea  
Trebeurden – Côtes d'Armor

# Key features of agricultural systems in Brittany

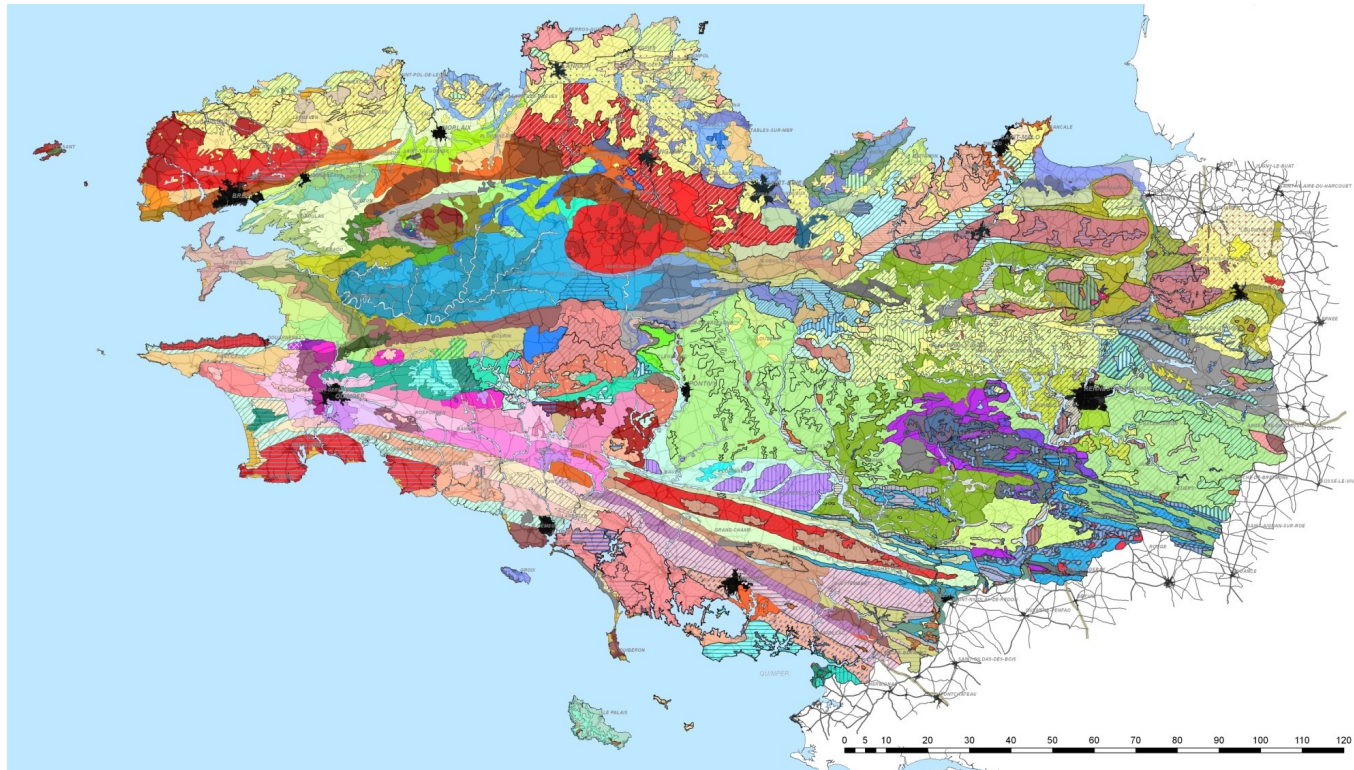
## Hydrological system



- 4 major watersheds
- Rainwater abundant but not available water
- Regular floodings (winter)

# Key features of agricultural systems in Brittany

Soil types

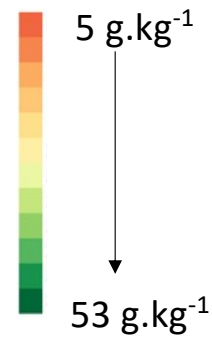
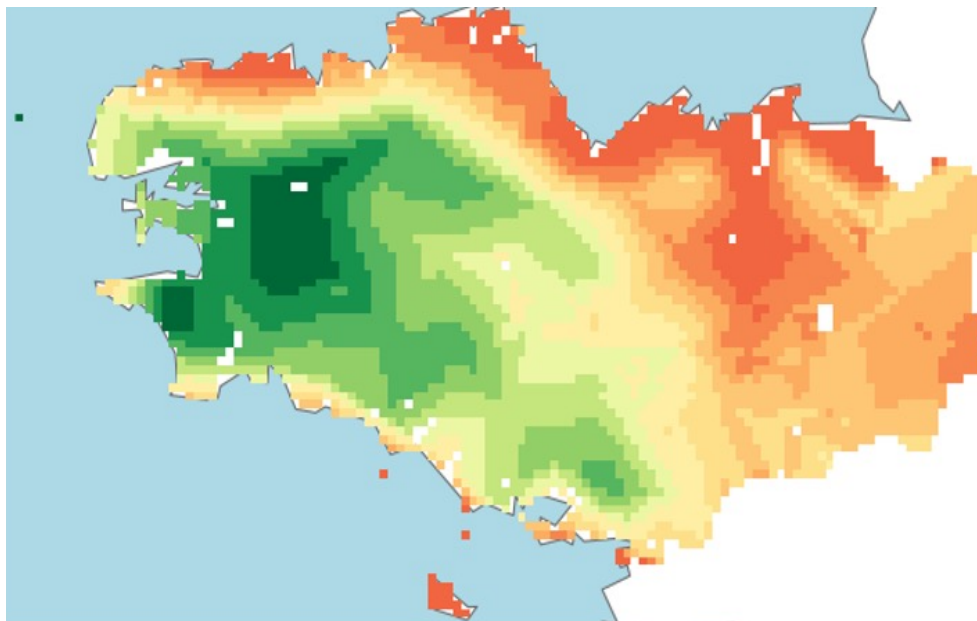


© Sols de Bretagne

# Key features of agricultural systems in Brittany

Pedoclimatic conditions

Topsoil ( 0- 25cm) organic carbon content



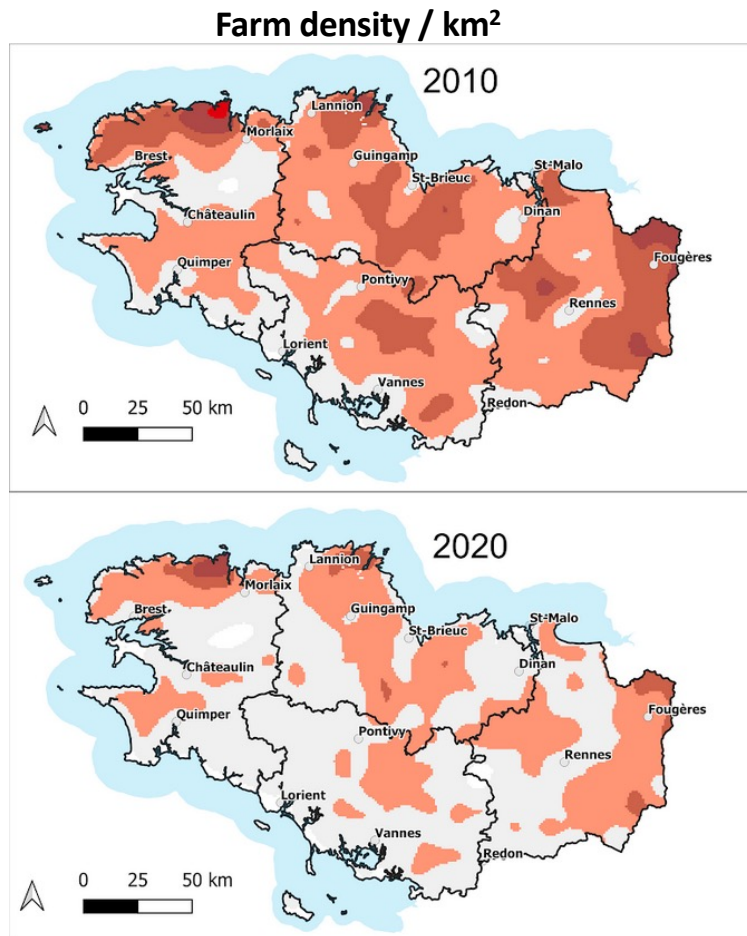
- Great variability
- Erosion risks
- Agricultural management

© Sols de Bretagne, created by B. Lemerrier



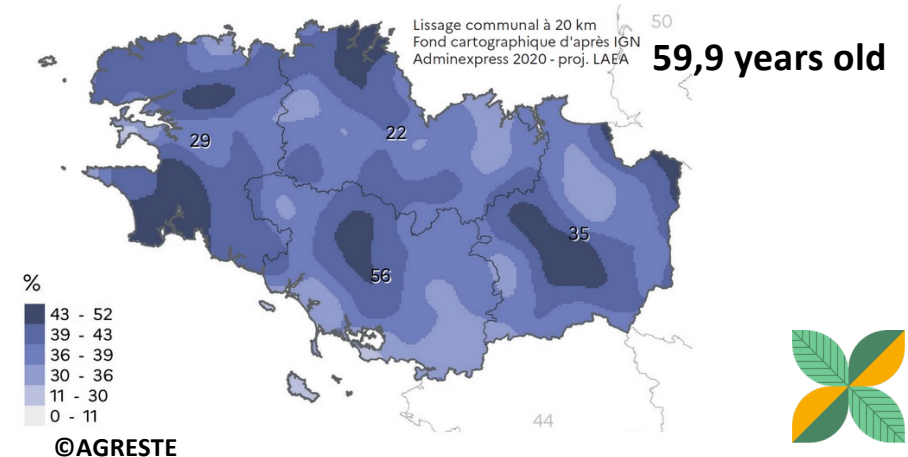
# Key features of agricultural systems in Brittany

## Agricultural productions



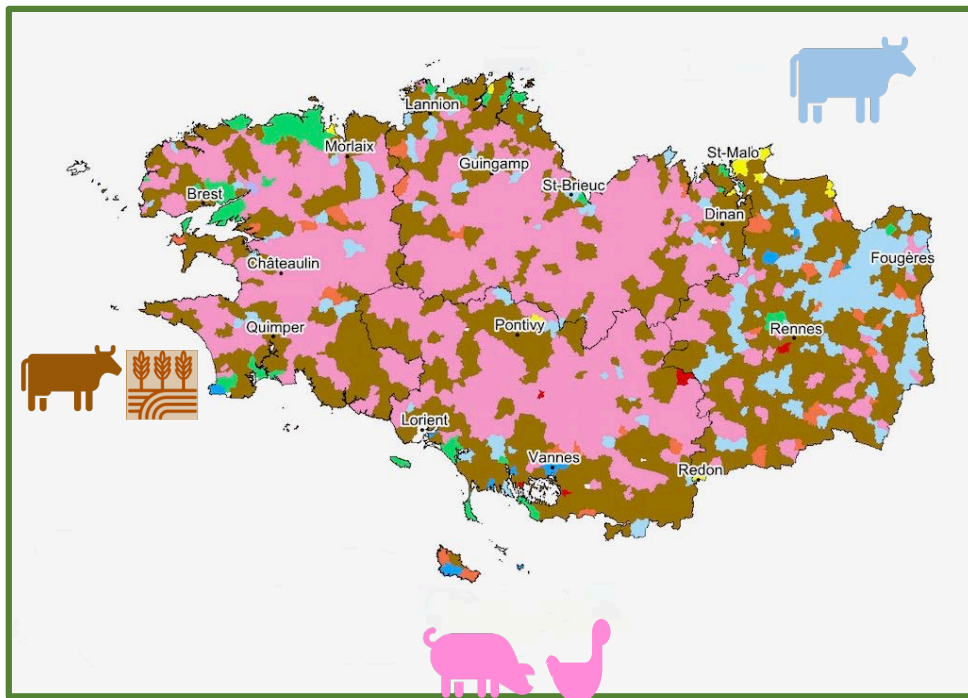
- Average agricultural area of farms (62 ha)
- - ¼ farms between 2010 and 2020
- Organic productions : 8%

## > 55 years old



# Key features of agricultural systems in Brittany

Specialized systems : animal productions



©DRAAF Region Bretagne

- 1<sup>st</sup> region for animal productions
- Animal productions and related crops (wheat, maize) and pastures



# Key features of agricultural systems in Brittany

Landscapes shaped by animal productions



© E Le Cadre

The « bocage » : hedgerows to keep livestock within parcels



# Key features of agricultural systems in Brittany

Landscape ecology, biodiversity and ecosystem services

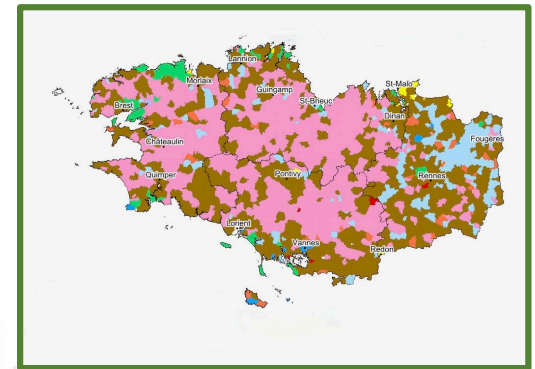




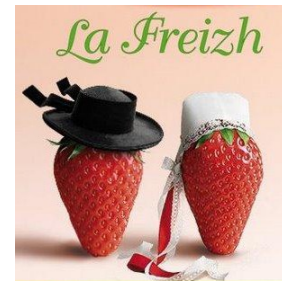
# Key features of agricultural systems in Brittany

## Specialized systems : vegetable productions

- Vegetables (artichoke, cauliflower cabbage)



- Others



# Key features of agricultural systems in Brittany

Between Land and sea



- « cauliflower » boats Roscoff –Plymouth (UK) to export vegetables
- A major company for trans channel traffic

# Key features of agricultural systems in Brittany

Maritime activities and tourism



*Max 2 hours by car from Rennes, Aug 2024*



# Key features of agricultural systems in Brittany

## Maritime activities and tourism

- 1<sup>st</sup> region for fishing (1152 fishing boats)
- Breton fishing accounts for 50% of French tonnage



*But also sea food, algal food, aquaculture*



***Les Lices – 2<sup>nd</sup> largest open market in France  
400y. old***

# Key features of agricultural systems in Brittany

Maritime activities and tourism



**Glénans archipelago (Finistère)**



**Pontusval beach – Brignogan (Finistère)**

# Key features of agricultural systems in Brittany

## Maritime activities and tourism



*Belle île Island (Morbihan gulf)*

©Tourisme Bretagne

- Water consumption during summer

# Key features of agricultural systems in Brittany

- Oil spills



Maritime activities and tourism



1978 Amoco cadiz sinking

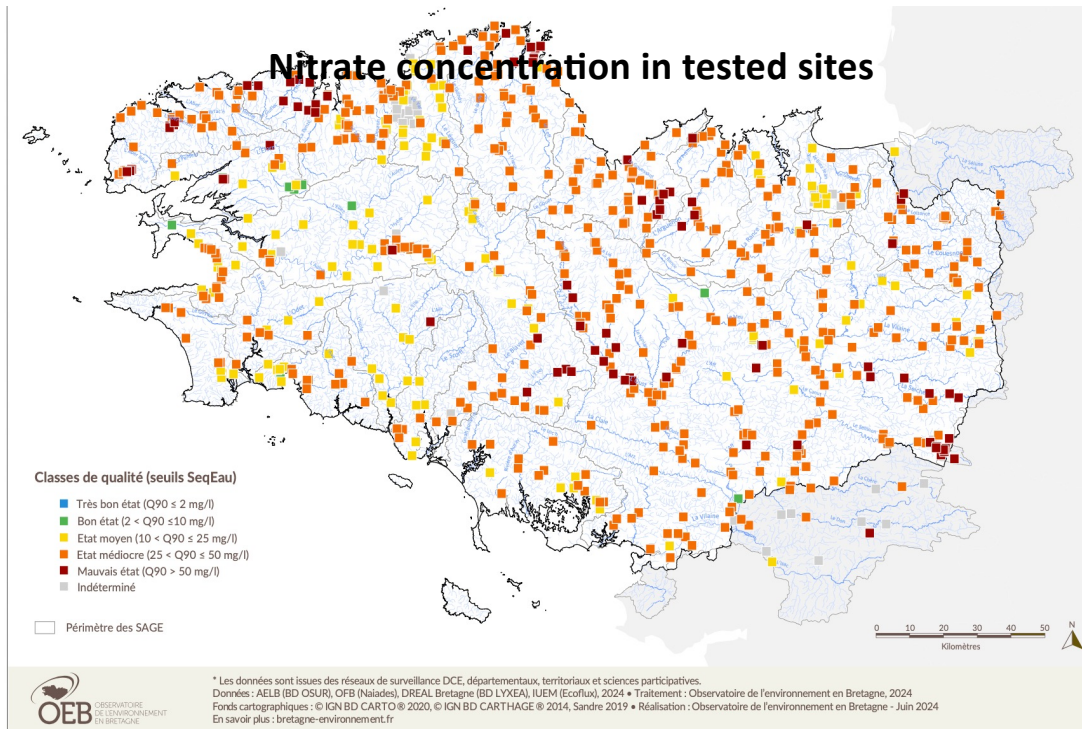
# **Somes challenges of agricultural systems in Brittany**





# The environmental issues related to agriculture

## Water quality and eutrophication



From : Observatoire de l'Environnement en Bretagne, 2023



Green tides (*Ulva Lатуca*)



# The environmental issues related to agriculture

Water quality, eutrophication and societal conflicts



# Climate change and agroecology

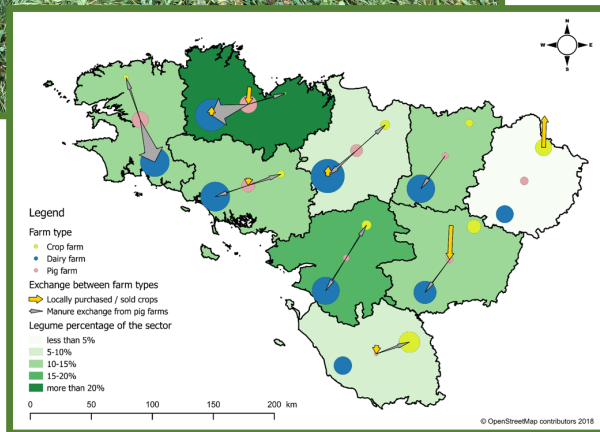


Dodd RJ, Chadwick DR, Hill PW, Hayes F, Sánchez-Rodríguez AR, Gwynn-Jones D, Smart SM, Jones DL (2023) Resilience of ecosystem service delivery in grasslands in response to single and compound extreme weather events. **Science of The Total Environment** 861:160660.

Mettauer R, Beule L, Bednar Z, Malige M, Godinot O, Le Cadre E (2023) Influence of two agroforestry systems on the nitrification potential in temperate pastures in Brittany, France. **Plant and Soil**.

Mettauer R, Emily M, Bednar – Konski Z, Widmer A, Godinot O, Beule L, Le Cadre E. (2024) Spatial patterns of causality in temperate silvopastoral systems: a perspective on nitrification stability in response to flooding accepted for **Ecological Processes**

# Re design cropping systems: plants for animals or animals for plants ?



© A Cenet, UMR SAS

Jouan J, Ridier A, Carof M (2020) Legume production and use in feed: Analysis of levers to improve protein self-sufficiency from foresight scenarios. *Journal of Cleaner Production* 274:123085.

# Bioenergy production



- Locally: Aulne river pollution by biodigestates
- Methane leakages ?
- Biodigestates value as fertilizers and amendments ?

Wechselberger V, Reinelt T, Yngvesson J, Scharfy D, Scheutz C, Huber-Humer M, Hrad M (2023) Methane losses from different biogas plant technologies. **Waste Management** 157:110-120.

# Competition for lands, as a new challenge

**Bioenergy**



**Food**



**Carbon storage, cultural services ....**

# **Synergies for a resilient future**

## **From knowledge to action**



# Scientific program

## ESA Postdam 2022 to Rennes 2024

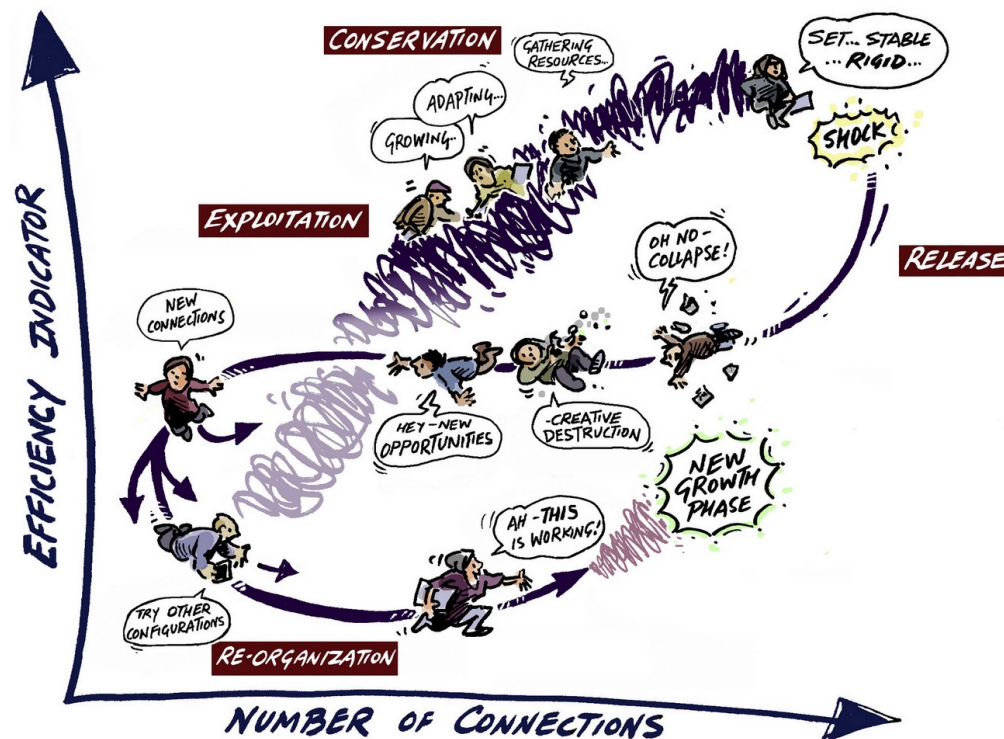


Fig. 1 Darnhofer (2021)

Darnhofer I (2021) Resilience or how do we enable agricultural systems to ride the waves of unexpected change? **Agric Syst** 187:102997.

Urruty N, Tailliez-Lefebvre D, Huyghe C (2016) Stability, robustness, vulnerability and resilience of agricultural systems. **A review. Agron Sustain**

Carof M, Godinot O, Le Cadre E (2022) Biodiversity-based cropping systems: A long-term perspective is necessary. **Science of the Total Environment** 838.



# Scientific program

## ESA Postdam 2022 to Rennes 2024

- Track Synergies between technologies



© atelier paysan



**Prof. Dr. Simon Cook**  
Chair: Prof. Dr. Claas Nendel

**Wed 28th 14h20-15h20**

**Is agronomy keeping up with digital agriculture?**

Sullivan S (2023) Ag-tech, agroecology, and the politics of alternative farming futures: The challenges of bringing together diverse agricultural epistemologies.  
**Agriculture and Human Values.**



# Scientific program

## ESA 2024

- Track Synergies between disciplines

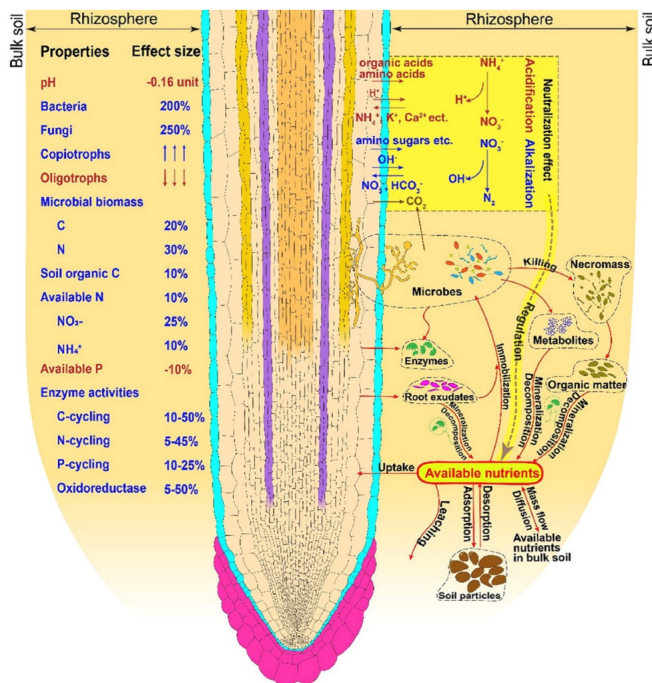


Prof. Dr. Mika Tarkka

Chair: Dr. Philippe Hinsinger

Tues. 14h15-15h15

Uncovering rhizosphere microbial resilience and potential to support plant growth



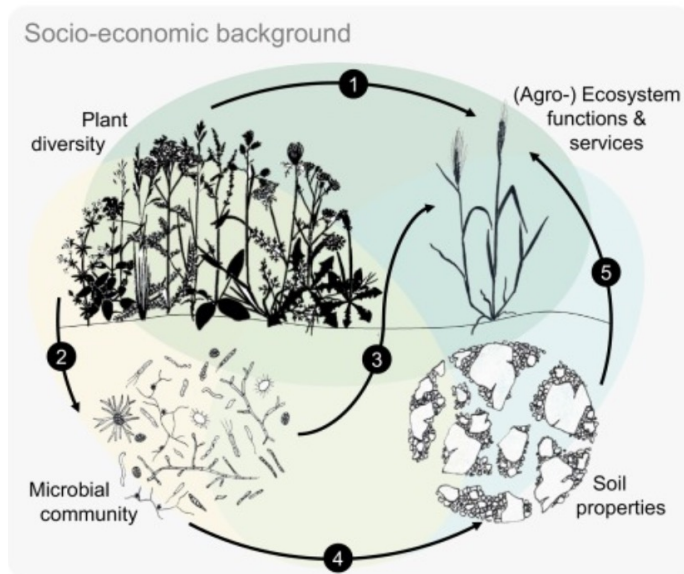
Liu SB, He FK, Kuzyakov Y, Xiao HX, Hoang DTT, Pu SY, Razavi BS (2022) Nutrients in the rhizosphere: A meta-analysis of content, availability, and influencing factors. *Science of the Total Environment* 826.



# Scientific program

## ESA 2024

- Track Synergies between short and long-term



**Dr. Guillaume Martin**

Chair: Pr. Dr. Evelin Loit

**Wed 8h30-9h30**

**Reconciling short- and long-term goals in agrifood systems**

**what role for agricultural sciences?**

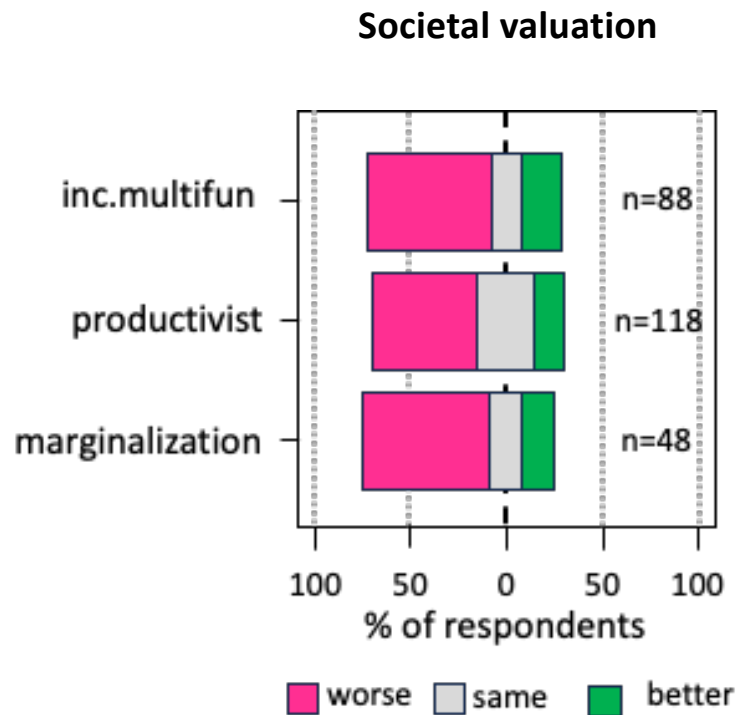
Cappelli SL, Domeignoz-Horta LA, Loaiza V, Laine A-L (2022) Plant biodiversity promotes sustainable agriculture directly and via belowground effects. *Trends Plant Sci* 27 (7):674-687.



# Scientific program

## ESA 2024

- Track Synergies between researchers, farmers and society



**Prof. Dr. Johanna Jacobi**

Chair: Prof. Dr. Edith Le Cadre

**Tues 9h45-10h45**

**Co-creation of knowledge and transformations in agri-food systems**

Helfenstein J, Hepner S, et al ((2024) Divergent agricultural development pathways across farm and landscape scales in Europe: Implications for sustainability and farmer satisfaction. **Global Environmental Change 86:102855**



# Scientific program

## Synergies for a resilient future : from knowledge to action

**April 18<sup>th</sup> (abstract deadline): 366 submissions**

### **Track Synergies between technologies (76/366)**

*Enli Wang (CSIRO), Davide Cammarano (Aarhus U.), Masahiro Ryo (ZALF), Claas Nendel (ZALF)*

### **Track Synergies between disciplines (104/366)**

*Sara Hallin (SLU), Antonio Delgado (Sevilla U.), Karel Klem (Czech Globe Institute), Maria Manzanares (Institut agro), Christine Bissuel (Institut agro)*

### **Track Synergies between short and long-term (92/366)**

*Christine Watson (SRUC), Bruno Rapidel (CIRAD), Matthieu Carof (Institut agro), Vincent Faloya (INRAE), Audrey Alignier (INRAE), Safya Menasseri (Institut agro)*

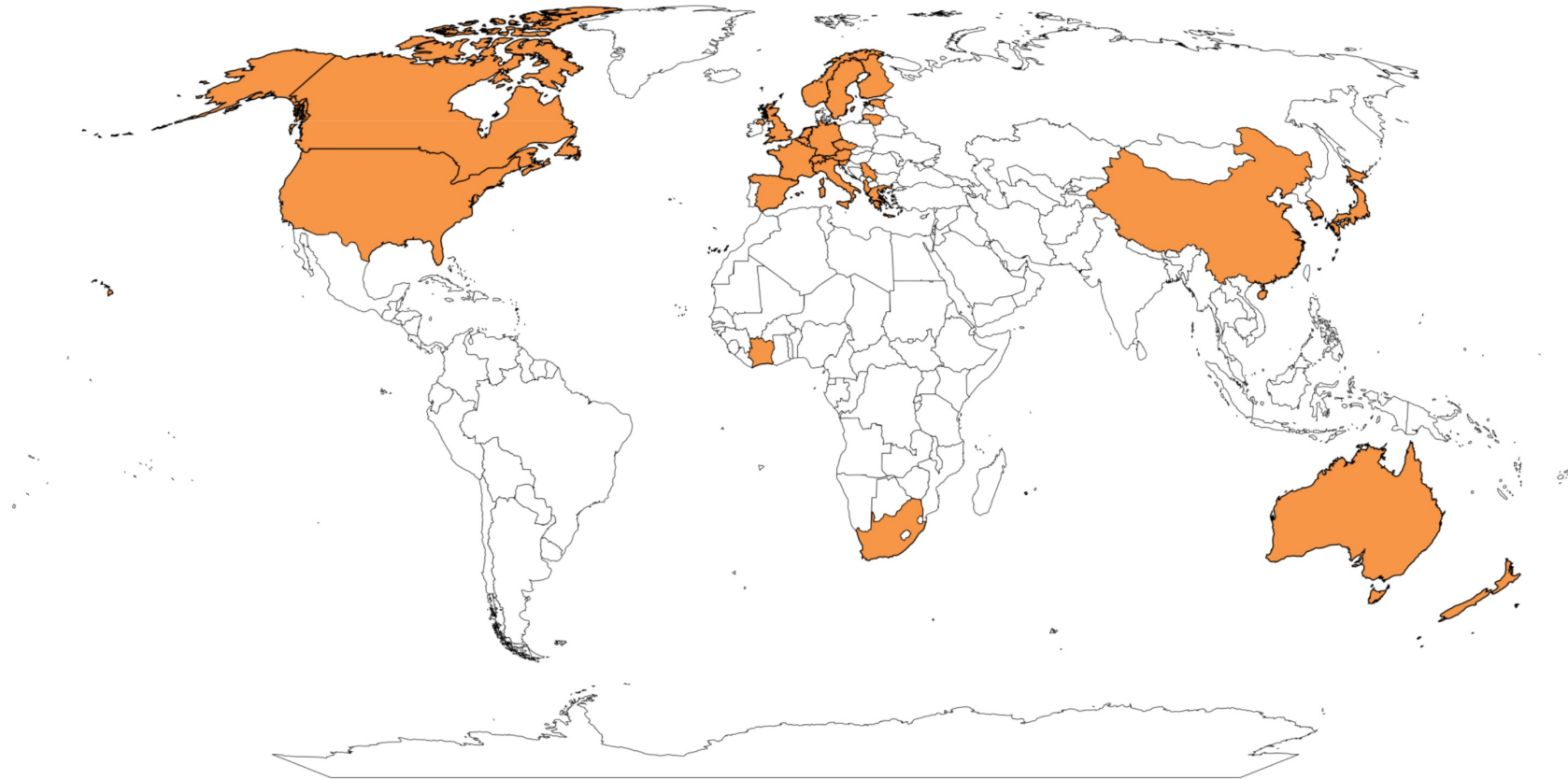
### **Track Synergies between researchers, farmers and society (94/366)**

*Elisa Marraccini (Udine U), Ariani Wartenberg (ZALF), Evelin Loit (EMU), Olivier Godinot (Institut agro), Antonin Pepin (INRAE),*



# Scientific program

## Synergies for a resilient future : from knowledge to action



# Practical informations for ESA 2024



# Scientific program & Timetable

**09:15 AM - 6:25 PM**

- **Oral session**  
4 rooms in parallel

*2 Keynote talks*

- **Poster session**  
Les Dortoirs
- **Oral session**  
4 rooms in parallel

**8:30 AM - 6:10 PM**

- **Oral session**  
4 rooms in parallel
- **Oral session**  
4 rooms in parallel

*2 Keynote talks*

- **Poster session**  
Les Dortoirs
- **Oral session**  
4 rooms in parallel

**DAY TRIP**

**09:00 AM - 4:00 PM**

- **Oral session**  
4 rooms in parallel
- **Oral session**  
4 rooms in parallel

**02:00 PM**

**Wrap-up session  
ESA 2026**

**7:15 AM - 11:30 PM**

**Cocktail  
Social dinner**

- Stay tuned with the «timetable» webpage and news webpages





# Day trips Thurs. 29th



Departure time  
Departure point

8:30 AM - 6:00 PM

5 rue de Juillet, Rennes

## DAY TRIP 1

- Landcape ecology
- Agroforestry
- Social issues

### La Gacilly



Cendrine Mony (UMR ECOBIO)  
Sebastien Boisnot (UMR BAGAP)  
Véronique Lucas (UMR BAGAP)

8:15 AM - 7:30 PM

2 boulevard de Chézy

## DAY TRIP 2

- Nutrient management
- LTER
- Organic wastes

### Saint Malo



Olivier Godinot (UMR SAS)  
Anne Jaffrezic (UMR SAS)

8:30 AM - 6:30 PM

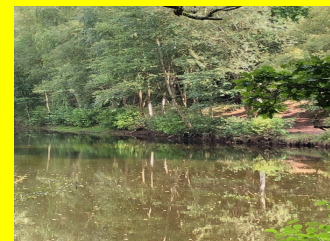
2 boulevard de Chézy

## DAY TRIP 3

- On site technologies
- Breeding, push pull
- Climate change
- Cropping systems

### Paimpont

Brocéliande forest



Matthieu Carof (UMR SAS)  
Blandine Lemerrier (UMR SAS)

8:15 AM - 8:00 PM

5 rue de Juillet, Rennes

## DAY TRIP 4

- Vegetable production
- Climate change
- Cropping systems

### Mont Saint Michel



Vincent Faloya ( UAR CNUE-CNOC)  
Antonin Pepin (UMR SAS)

# ESA 2024 Side event (Room 14)

9:15 AM – 12:00 AM



- Orchestrated by **Jean Pierre Cohan** (ARVALIS) and collaborators Root2Res  
**Christina Baxter** "*Which priority root/rhizosphere traits will best contribute to resilience to abiotic stress?*"

To be updated "*How to define and handle plasticity for root/rhizosphere traits against abiotic stress?*" »

**Katia Beauchêne** "*Innovation on root/rhizosphere traits phenotyping methods in field and controlled conditions for breeding and agronomic studies*"

15: 00 PM

**Rennes**



- **Guided tour of Rennes**  
Edith Le Cadre (UMR SAS)

# Young scientific awards (poster)

49 student posters

- Content of the presentation (50%)
- Novelty/contribution to the field (25%)
- Poster design, clarity and visual appeal (25%)



500 €, delivered during the wrap-up session on Friday afternoon



# Young scientific awards (oral)

## 56 student talks

- Contents of the presentation (50%)
- Clarity and flow of the presentation (20%)
- Novelty/contribution to the field (20%)
- Timing (10%)



**500 €, delivered during the wrap-up session on Friday afternoon**



# Special edition to European Journal of Agronomy



European Journal of Agronomy

Supports open access

8.3

CiteScore

4.5

Impact Factor

## Co Guest editors:

- Mrs (she,her) Edith Le Cadre
- Mrs (she,her) Elisa Marracinni
- Mr (he, him) Bruno Rapidel
- Mr (he, him) Olivier Godinot
- Mr (he, him) Matthieu Carof

4.5 Impact factor

2023 Journal Citation reports



# Bid for ESA 2028



- Guidelines in ESA 2024 webpage
- Meet the ESA steering committee during the conference



**Edith Le Cadre**

Institut agro Rennes Angers



**Evelin Loit**

Estonian University of Life Sciences (EMU)



**Claas Nendel**

Leibniz Centre for Agricultural Landscape Research (ZALF)

# Recommendations during ESA

- Goodwill and respect
- Discrimination of any kind will not be tolerated nor harsh messages (be constructive)
- Many of us are non-English native speakers, please keep in mind during your discussions
- A lot of volunteers (students, administrative staff, ...), please be patient

## POSTERS

- Too jet laggy, stressed by your contribution to ESA ? We have a relax room (ROOM 7)... to relax (not for meetings)
- Main organizer's office (room 12) in case of problems, or just to chat with us
  
- Wear your badge every day
- Pay attention to plenary announcements
- Stay tuned with the « news » webpage



# Recognize our volunteers



How can I help you ?

## Try to win an official ESA « marinière »



- Fun
- Day trip
- Science and sessions (O/P)

*More information on webpage*

*Graduate jury panel*

**Pictures exposed and prize delivered  
during the wrap-up session on Friday afternoon**





# Our keynote speakers



Tuesday 27<sup>th</sup> August



**9h45-10h45: Co-creation of knowledge and transformations in agri-food systems**  
*Track Synergies between researchers, farmers and society*



**14h15-15h15: Uncovering rhizosphere microbial resilience and potential to support plant growth**  
*Track Synergies between disciplines*



Wednesday 28<sup>th</sup> August



**8h30-9h30: Reconciling short- and long-term goals in agrifood systems:  
what role for agricultural sciences?**  
*Track Synergies between short and long-terms*



**14h20-15h20: Is agronomy keeping up with digital agriculture?**  
*Track Synergies between technologies*



18<sup>th</sup>  
**ESA** EUROPEAN SOCIETY FOR AGRONOMY  
**CONGRESS**  
AUGUST 26 - 30, 2024

