AGROECOLOGY EUROPE
FORUM 2023 IN HUNGARY
CONVERGING MOVEMENTS
FOR **RESILIENT FOOD SYSTEMS**
16-18 November 2023
Gyöngyös, Hungary

EUROPEAN JOINT PROGRAMME

Towards climate-smart sustainable management of agricultural soils

THE EJP SOIL ARTEMIS PROJECT

EJP SOIL
ARTEMIS

Claudia Di Bene
CREA
Italy
EJP SOIL ARTEMIS

SESSION 8: LONG-TERM RESEARCH FOR AGROECOLOGY

ORGANISED BY:

AGROÖKOLÓGIA MAGYARORSZÁG

Agroecology Europe

#AEEUForum2023

WITH THE SUPPORT OF:

Life

Fondation de France

Healthy Food Healthy Planet

EJP SOIL Programme facts

- **EJP SOIL** is a co-funded H2020 research and innovation programme
- **Total budget** 80 million €
- **Consortium**: 26 partner organizations from 24 European countries (involving more than 400 scientiests
- **Start date**: 1st of February 2020.
- **Duration**: 60 months

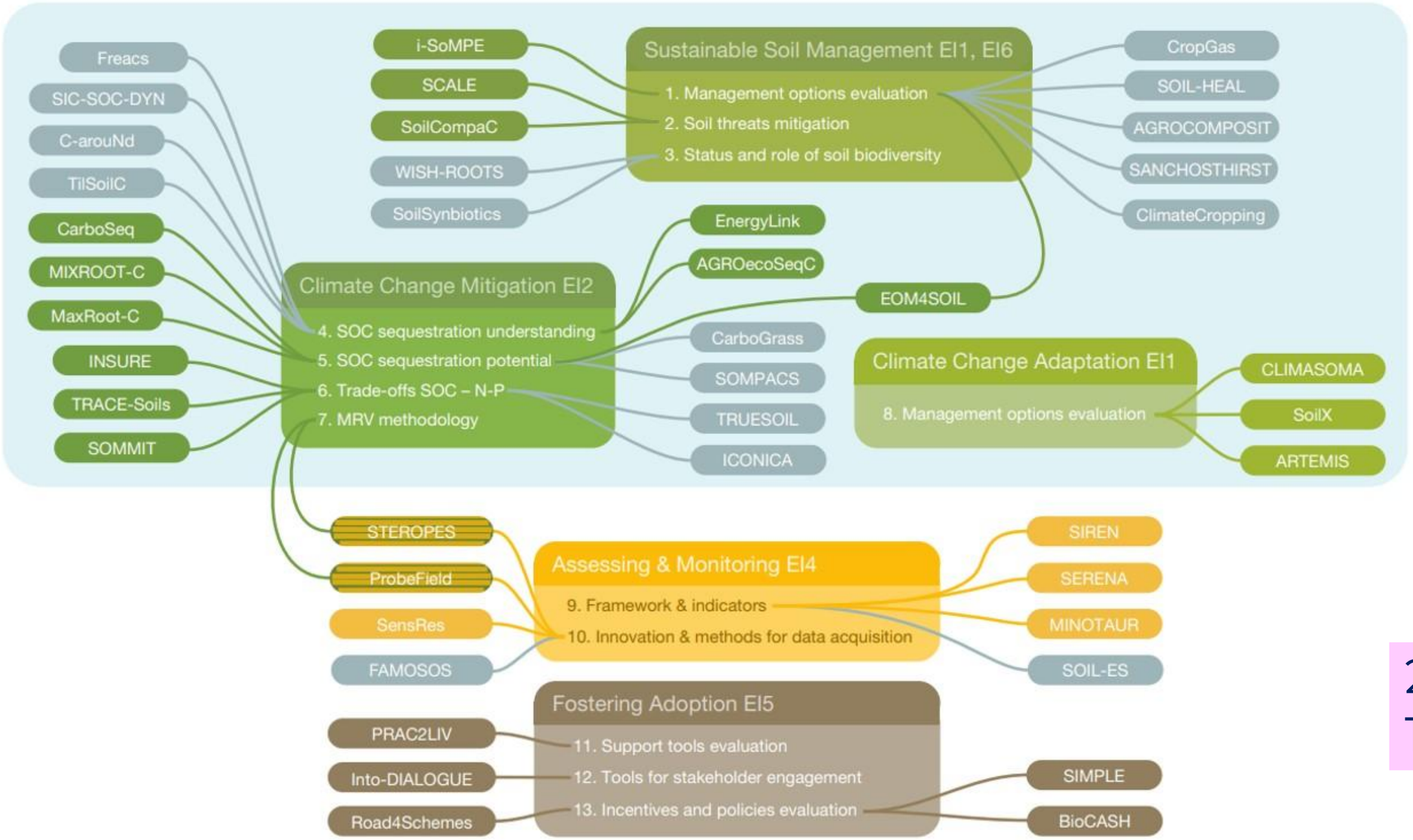
EJP SOIL is coordinated by INRAE
Coordinator: Claire Chenu
Programme Manager: Raisa Gerasina

Co-coordination by Wageningen Research
Co-coordinator: Saskia Visser
Manager: Christene Bunthof

Developing an integrated and harmonized research system to build a reference framework on climate-smart management of agricultural soils and sustainable food supply chain in Europe

More information www.ejpsoil.org

OVERVIEW OF EJP SOIL RESEARCH PROJECTS



44 co-financed projects

26 from internal call
18 from external call

EJP SOIL
ARTEMIS

AgRo-ecological strategies for promoting climaTE change MItigation and adaptation by enhancing Soil ecosystem services and sutainable crop production

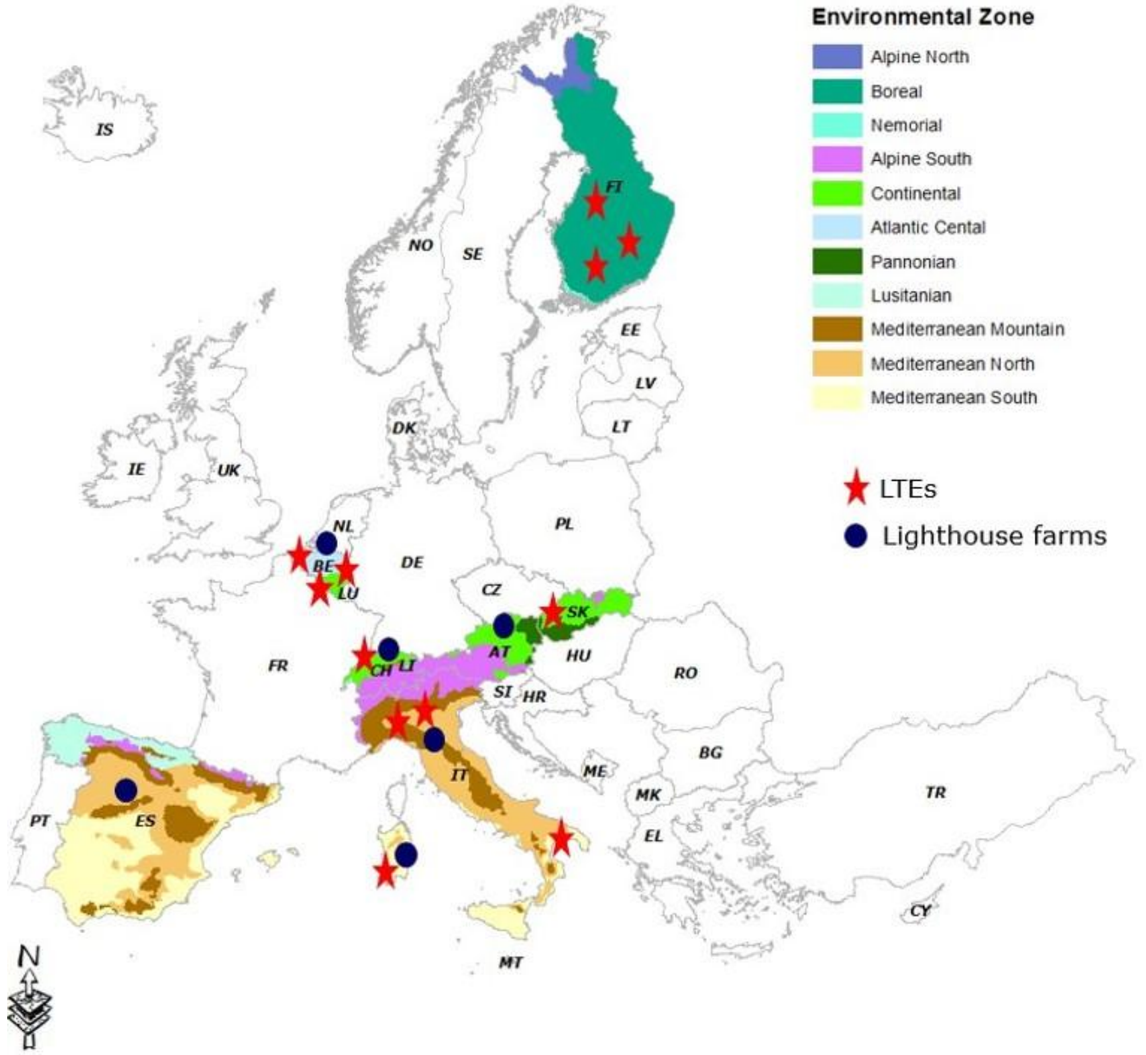
EJP SOIL
European Joint Programme

EJP SOIL has received funding from the European Union's Horizon 2020 research and innovation programme: Grant agreement No 862695

ARTEMIS facts

- Medium size research project (about 2 M €)
- Duration: 24 months
- Start date: 1st November 2022

- **Coordination**: **Agroscope** (lead) and **CREA** (deputy)
- **Consortium**: 12 Partners from 7 European countries
- **Geographical coverage**: 9 different agro-environmental zones



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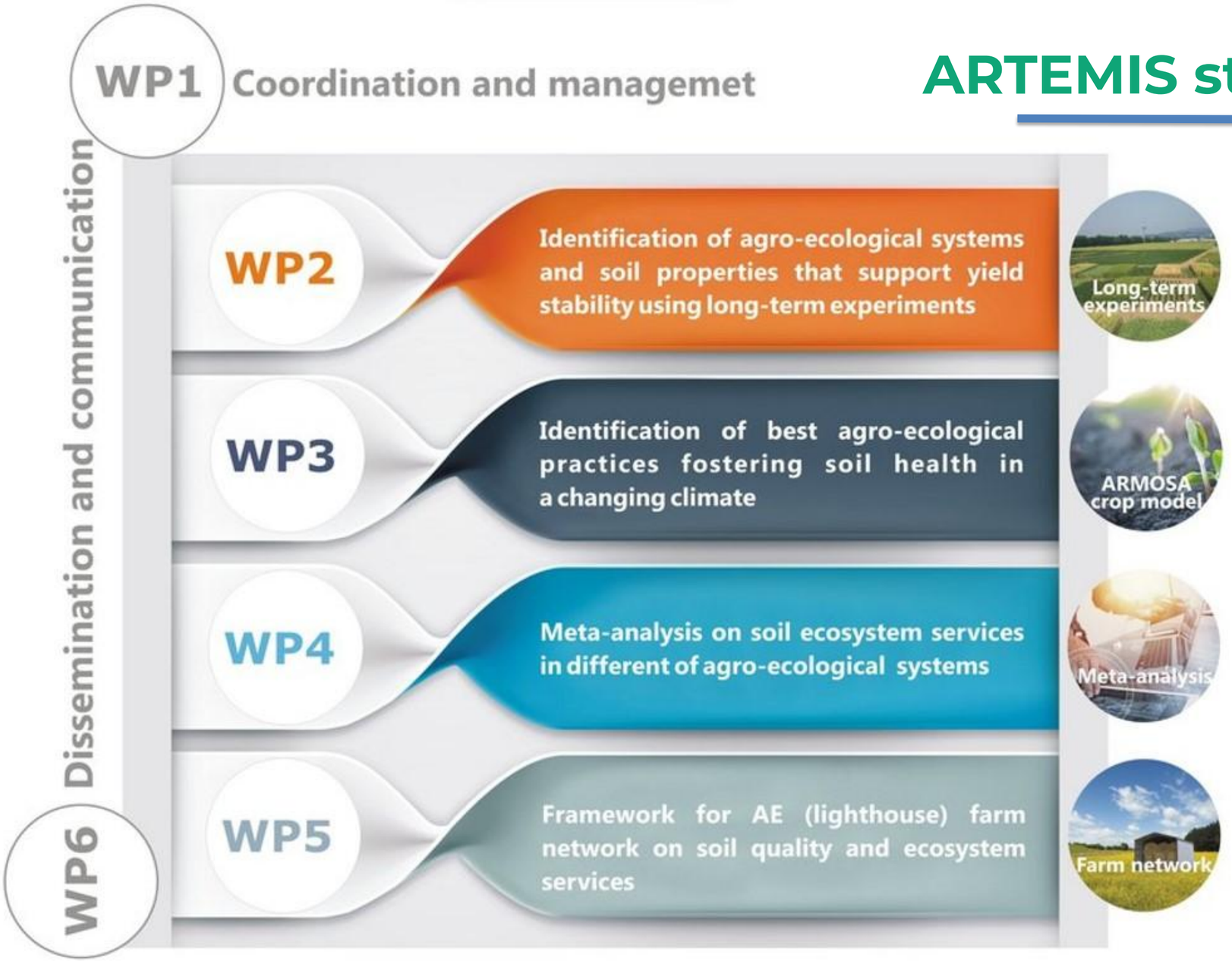
ARTEMIS structure and approach



- Long-term data
- Soil-crop modelling
- Literature review
- Meta-analysis
- Direct exchange with practitioners (participatory action research approach)

Upscaling the **agro-ecological transition** based on **Living labs** composed by real farms around the field research and stakeholders' community.

ARTEMIS aims

- Improving knowledge on the resilience of specific AE systems to **face climate extremes** across Europe.
- Improving knowledge on how **different management options** for AE systems affect soil services.
- **Meta-analysis** on European scale allowing quantitatively to summarize the current knowledge and outcomes on the contribution of soils to ecosystem services related to climate mitigation and sustainable agricultural production on AEs.
- **Delivering science-based practical knowledge** on sustainability of AE systems to practitioners.

ARTEMIS expected results

- **Assessing the effects of AE systems transition** at different scales, focusing on ecosystem services and crop productivity.
- **Increase the knowledge** about the ability of European soils to sustain more frequent extreme events to guarantee a more responsive and sustainable agricultural production.
- **Improve the AE living labs network** to assess soil quality and ecosystem services at farm level.

WP2: Analysis of AE systems using LTEs with different pedo-climatic conditions

Leader:
Klaus Jarosch
Agroscope, Switzerland

Deputy leader:
Gianluca Carboni
AGRIS, Italy

- **Creation of a homogenous dataset** of different AE LTEs
- **Identification of AE systems with increased yield stability** in comparison with conventional practice, using linear mixed models that are specifically designed for LTEs
- **Finding potential soil properties and indicators driving yield stability** in AE systems

WP3: Identification of best agro-ecological practices fostering soil health in a changing climate

Leader:
Simone Bregaglio
CREA, Italy

Deputy leader:
Elena Valkama
Luke, Finland

- **Simulation of management AE practices** of selected LTEs under current climate
- **Laboratory experiments** to analyze the response of soil microbial functionality under extreme climatic events
- **Evaluation of the most promising AE practices under current and future climate change scenarios,** using model-derived indicators of soil microbial functionality, crop yield and stability, C sequestration, and N leaching, at subregional scale

WP4: Meta-analysis on soil ecosystem services in different AE systems

Leader:
Elena Valkama
Luke, Finland

Deputy leader:
Julia Fohrafellner BIOS, Austria

Collect, review and quantitively summarize the current knowledge and outcomes on the contribution of soils to ecosystem services and sustainable agricultural production in AE systems (organic farming and conservation agriculture)

Compilation and harmonization of European database on agroecological systems

Quantitatively summarize existing knowledge and outcomes on arable crop yields in agroecological systems

Synthesize the impact and contribution of soils and management across the range of agroecological systems to conserve or increase SOC stocks, and decrease N2O emissions

WP5: AE lighthouse farm network on ecosystem services

Leader:
Ioanna Panagea
EV-ILVO, Belgium

Deputy leader:
Florian Walder Agroscope, Switzerland

Objectives/Approach

TASK 5.1: Defining a monitoring framework for on-farm assessment
- Indicators that directly measure soil quality and ESS (identified in ongoing and past projects, ...)
- Indirect indicators (management, models, tools) (identified in ongoing and past projects, ...)

TASK 5.2: Establishing an ae (lighthouse) farm network across Europe
- Identify existing networks and initiatives of farms that follow an AE approach (partners, SMS project map...)
- Connect these farms to an international network (for researchers mainly and future start point, maybe incorporate in the SMS map with lighthouse farms)

TASK 5.3: Harmonization of databases
- Database structure based on the indicators (data and management) identified in T5.1 for use in the initial on-farm monitoring and in the long run for monitoring the effect of AE practices on soil quality and ESS

TASK 5.4: Initial on-farm monitoring of soil quality and ES
- Testing the monitoring framework (T5.1) in a selection of farms identified (T5.2)
- Improvement of the framework and database structure
- Starting point for a larger farm monitoring network in Europe

WP6 – Communication and dissemination

Leader:
Miriam Kizeková
NPPC, Slovakia

Deputy leader:
Valentina Baratella
CREA, Italy

- **Press releases**, factsheets, etc. will be produced periodically in English and then translated and released by the project partners via Institutional and/or other general media to reach local end-users
- **Short video interviews** (e.g., during field days) to go along with articles
- **Organization of national workshops** to involve stakeholders and encourage application of knowledge into action
- **Results and outputs from project research activities** relevant for application to farming will be presented.

THANK YOU!

Contacts:

ARTEMIS coordinator
Dr Klaus A. Jarosch (AGROSCOPE)
klaus.jarosch@agroscope.admin.ch

ARTEMIS co-coordinator
Dr Claudia Di Bene (CREA)
claudia.dibene@crea.gov.it

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