

An introduction

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UP SOIL ASD-GM Vilnius June 2024

EJP SOIL: knowledge framework & expected impacts

understanding of soil management for climate change mitigation, adaptation, sust. production & sust° environment

understanding soil carbon sequestration and its contribution to climate change mitigation

strengthening scientific capacities and cooperation

supporting harmonised European soil information

fostering the uptake of climate-smart sustainable soil management practices

developing region-specific fertilisation practices

farming sector:

 its role as a steward of land and soil resources.
 its capacity to adapt to climate change and contribute to mitigation and carbon sequestration

research sector: long-term alignment and implementation of soilrelated research strategies and activities at national and EU level



knowledge

sharing

&transfer

knowledge

organization &

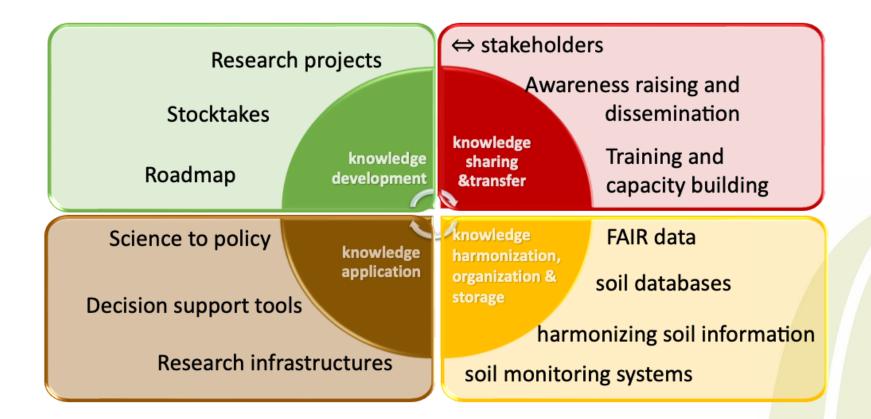
knowledge

development

knowledge

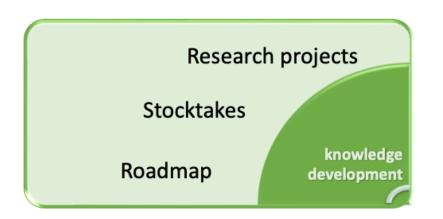
application

EJP SOIL: knowledge framework activities





EJP SOIL: Year 4 activities and achievements

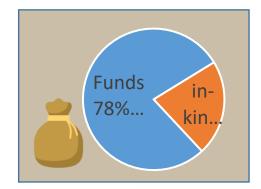


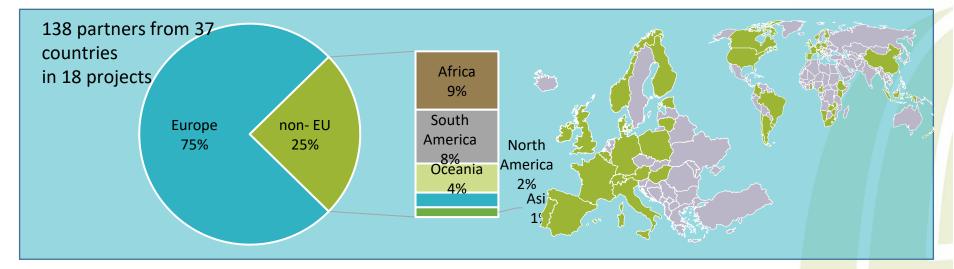


Expanding knowledge developement beyond EJP SOIL consortium

Topics in line with EJP SOIL roadmap

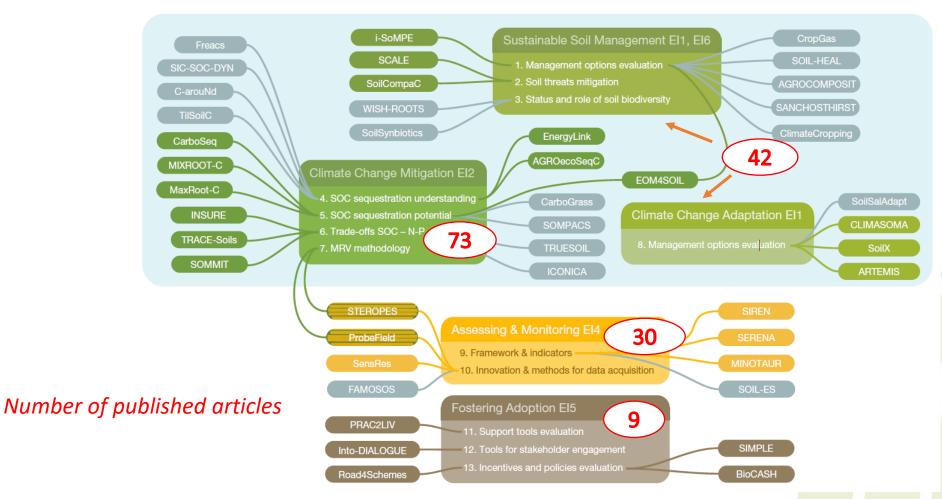
Towards an international research consortium on soil C







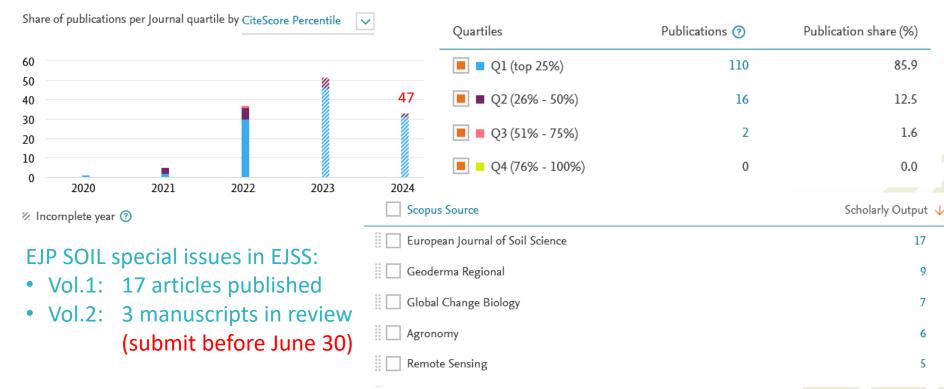
Landscape of EJP SOIL projects





Publications in high-impact journals (Scopus)

Publications by Journal quartile



WUR Library, april 2024



Informing the impact pathways

	Project	EI	General theme	Topic	Outputs (extracted/ understood from the proposal)	Products (that materialize the outputs and will contribute to the outcomes)	Outcomes 1 (extracted / understood from the proposal)	Outcomes 2 (more general) (lines do not necessarily match between outcomes 1&2)	Stakeholders
understanding of soil management for climate change mitigation, adaptation, sust°	Solix E1				s Identifying adaptation options, related to agricultural soil management, to respond to water-related impacts of extreme weather and climate change	Manuscript draft on long-term impacts of soil/crop management on soil structure across selected pedo-climatic regions of Europe	improved undestanding of spatial and temporal variability in soil-management-telated adaptation benefits and potential mitigation/sustainability co-benefits improved undestanding of factors inhibiting and facilitating famers' use of sustainable soil management practices and their regional variation across Europe	improved basis of knowledge and evidence to provide better soil management advice for both farmers and policy makers in Europe in relation to climate adaptation	regional farming communities
production & sustainable environment						10.1111/ejss.13455 Development of a soil crop model that could be used to predict consequences of sustainable mgt options when extreme events occur		Knowledge is used to select or co- design sustainable management options	
understanding soil carbon sequestration and its contribution to climate change mitigation		E1	Climate change adaptation	Management options evaluation	identify context-dependent inhibiting/enabling factors for the uptake of beneficial soil management practices	(Claire) Manuscript draft on Q methodological study, including comparisons across countries and stages of adoption			policy makers
strengthening scientific capacities and cooperation					improve the evidence base on management impacts on water regulation functions of the soil and crop response	This manuscript will present outputs from measurement-informed simulation experiments conducted in T3.5 ???	improved data basis contributing to understanding of mechanisms driving soil and crop management impacts on soil structure, soil physical conditions and related abilities of the soil to buffer impacts of precipitation extremes		scientific community
supporting harmonised European soil						Policy brief based on stakeholder/farmers internviews and validation processes (M57)			general public
information			1 Climate change adaptation	e Management options evaluation	Analysis of long-term field experiments in different regions, allowing identification of		Improved knowledge on the resilience of specific agroecological (AE) systems to withstand climate extremes in comparison with commonly practices control	•	scientists, farmers, advisors, poliy makers
fostering the uptake of climate-smart					specific AE systems with the highest resilience against climatic extreme events	6			
sustainable soil management practices					On a regional level, identification of best AE management practices by numerical modeling and evaluation of the effect of different climatic developments on crop production and soil indicators		Improved knowledge on how different management options for AE systems affect soil services		
developping region-specific fertilisation practices	ARTEMIS	RTEMIS EI1			Production and son indicators Meta analysis on the European scale allowing a quantitative summary of the current knowledge on the contribution of soils to ecosystem services related to climate mitigation and sustainable agricultural production in AEs	Meta-analysis of management effects on crop yied, SOC and N2O.	Improved knowledge on trade-offs and synergies between cropyield, SOC and N2O emission across agroecosystems.		
				Specific soil related ecosystem services indicators determined together with practitioners, aiming to improve the efforts to monitor soil indicators that potentially contribute to climate change mitigation and adaptation as well as soil health at farm level		Delivered science-based practical knowledge on sustainability of AE systems to practitioners			



An open-source metadataset of running European mid- and long-term agricultural field experiments

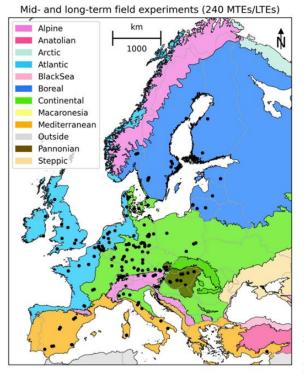


FIGURE 3 Distribution of the collected mid- and long-term field experiments across Europe with European biogeographical regions.

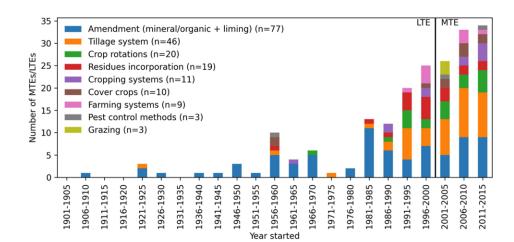


FIGURE 6 Evolution of newly started MTEs/LTEs with respect to their research themes. Note that one MTE/LTE can have several research themes (e.g. it can investigate both tillage and cover crops) and hence can be counted multiple times. The research theme about 'amendments' includes experiments that investigate mineral/organic or no fertilizer (67 MTEs/LTEs) and 10 MTEs/LTEs investigating liming.

Dommez et al. 2023, Soil Use and Management DOI: 10.1111/sum.12978 https://lte-eu.bonares.de/experiments



EJP SOIL: Year 4 activities and achievements





EJP SOIL PhD schools

- 140 participants in 7 courses, +1 course yet to take place
- Materials on EJP SOIL Knowledge Platform
- Some PhDs follow several courses!



EJP SOIL partner institution		Course title				
Swedish University of Agricultural Sciences, Sweden	2021	Soil Systems: Analytical methods for integrating the chemical and biophysical interface in soils				
University of Palermo, Italy	2022	Soil management for sustainable agriculture				
University of Latvia, Latvia		From field to model: peat soil study, mapping, statistical analysis and modelling				
AgroParisTech, France		Ecosystem services assessment in agricultural and peri-urban areas				
Aarhus University, Denmark	2023	Merging measurements and modelling in soil physics				
Swedish University of Agricultural Sciences, Sweden	2023	Soil Systems: Analytical methods for integrating the chemical and biophysical interface in soils				
Swedish University of Agricultural Sciences, Sweden	2024	Data management and modelling:				
Thünen campus in Braunschweig, Germany	2024	Soil organic matter management				



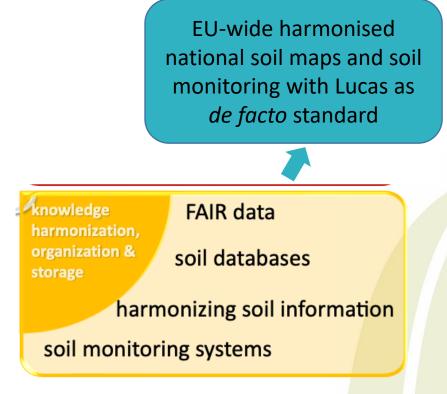
EJP SOL visiting scientist & infrastructures scheme

1-4 weeks study visit to an EJP SOIL affiliated or non-affiliated research partner, to develop joint research

 72 participants in 7 calls 	Visiting scientist	Women /men (%/%)	postdocs of	Number of successful applications
2021-2024	Call 1,2 2021	50/50	80%	12
• >50% - early career (PhDs, Postdocs)	Call 3,4 2022	34/66	50%	18
	Call 5, 6 2023	56/44	42%	34
	Call 7 2024		38%	8

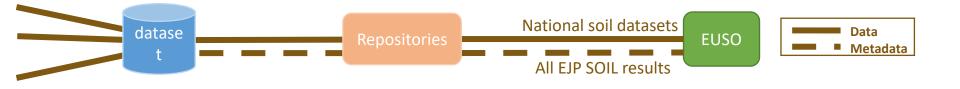


EJP SOIL: Year 4 activities and achievements





A metadata catalogue: make data findable



Contains: - Data produced in the EJP SOIL

- National datasets
 - Total: 555 datasets

Cookbook for guidance:

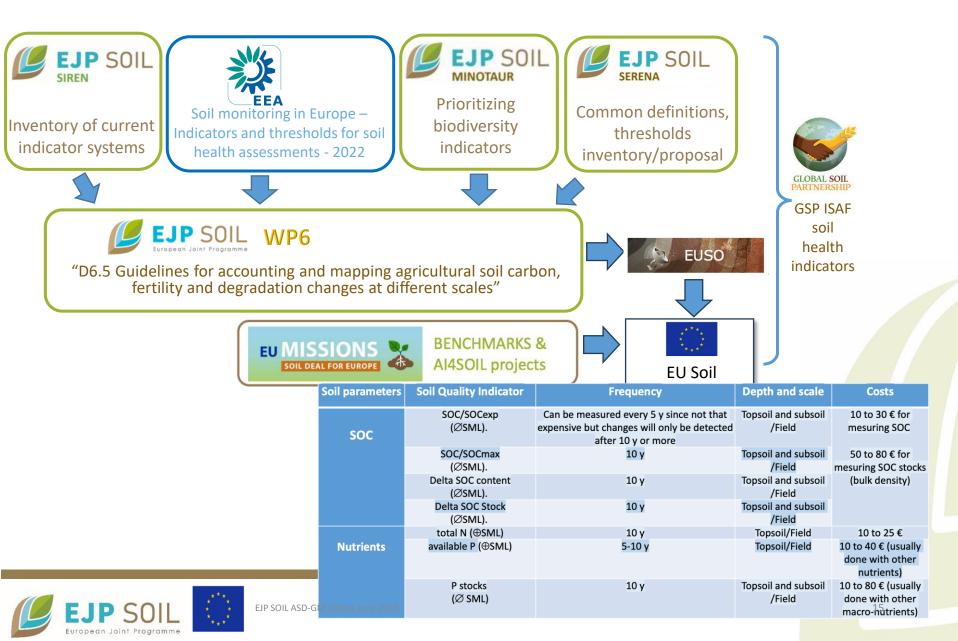
https://ejpsoil.github.io/soi Idata-assimilation-guidance



https://catalogue.ejpsoil.eu/



Developing soil health indicators



EJP SOIL: Year 4 activities and achievements

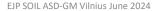
Science to policy knowledge application Decision support tools Research infrastructures



EU Carbon removals certification framework







EU Soil Monitoring Directive proposal





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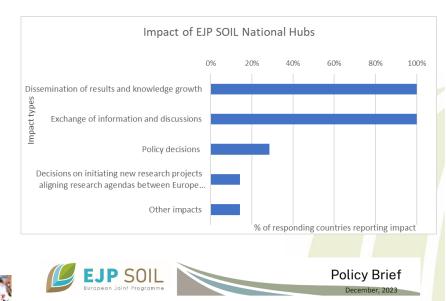
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EJP SOIL National Hubs: a new instrument for national stakeholders' consultation & science - policy interface



NHs are established in all 24 EJP SOIL countries

- Soil needs are stakeholder and region specific: no one size fits all
- EJP SOIL NHs are a good foundation for Soil Mission mirror groups



Successful stakeholder participation to address soil needs.

Saskia Visser, Claire Chenu, Anna Besse, Niels Halberg and Teresa Pinto Correia

- Soil needs are stakeholder and region specific.
- The implementation of the EU's Mission Soil, the EU Soil Strategy for 2030 and the future Soil Monitoring and Resilience Directive needs to recognize this broad spectrum of soil needs.
- We recommend formalizing the stakeholder participation to address soil needs by setting up national hubs.
- Effective national hubs are 'owned by an authority' and have as an objective to i) inform national
 policy makers on soil challenges and policy needs; ii) debate policy proposals and their
 implementation and iii) provide feedback on anticipated impact of proposed policies.



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Synergy with other initiatives/entities and EU Mission Soil & projects







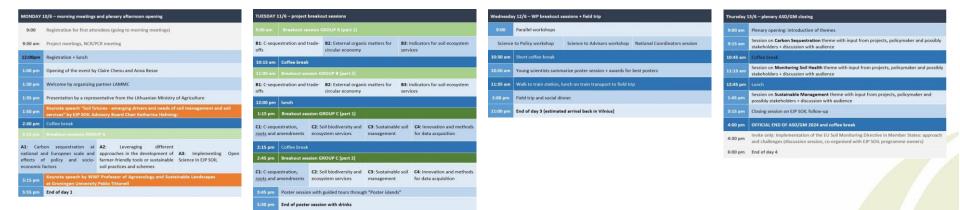
Objectives of this week



- Inform each other of results / achievements / ongoing activities
- Learn : science, data management, etc
- Synthesizing results, reflect on major cross-cutting issues and elaborating main messages
- Position our activities in relation to the soils policy context
- Strengthen our network, prepare the future







Contribution wanted / online questionnaires:

- Prioritization of the knowledge gaps to focus on for sustainable agricultural soils by 2050 (WP7)
- Strategic agenda for agricultural research in Europe 2025-2035 (WP2)



Have a productive and friendly week !