

# **Current status**





#### Suzanne Reynders, PhD (INRAE-CODIR)

- INRAE Head of the International Priority Program Soil and Climate
- ORCaSa PI
- Executive Director of the "Secretariat of the Soil Carbon IRC"



#### Mathieu Nogues, MSc (INRAE-DRI)

ORCaSa project manager



Coordination & Management team of ORCaSa & MARVIC









- To support the Paris Agreement on Climate Change, the European Green Deal & the objectives of the 4 per mille international initiative.
- An international research consortium (IRC) prepared by the ORCaSa project funded by Horizon Europe to:
  - Raise awareness and science-based knowledge on soil carbon,
  - Benefit international research cooperation and worldwide stakeholders,
  - Help ensure that all types of land use contribute to climate change mitigation and adaptation while improving soil health,
  - Give access to research outputs through an open online knowledge portal,
  - Gather the international community on MRV and propose co-constructed MRV methodologies.
- 12=6+6 partners in the core consortium: INRAE (FR), CNRS (FR), Cirad (FR), ANR (FR), ISRIC (NL), ARCTIK (BE), Vizzuality (ES), FARA (GHA), CSU (USA), CSIRO (AU), EMBRAPA (BRA), SFRI (VNM).
- Launched on November 2023 in Madrid in the context of the Soil Mission of the European Commission.

# Some background context...





# Soil Carbon IRC launched in Nov 2023

# **Speakers**



**Kerstin Rosenow** 

Head of Unit Research & Innovation DG AGRI



**Christian Holzleitner** 

Head of Unit Land Economy and Carbon Removals DG CLIMA



Participants: 373 in person & 600 online



Jean-François Soussana

Vice-President International INRAE



**Suzanne Reynders** 

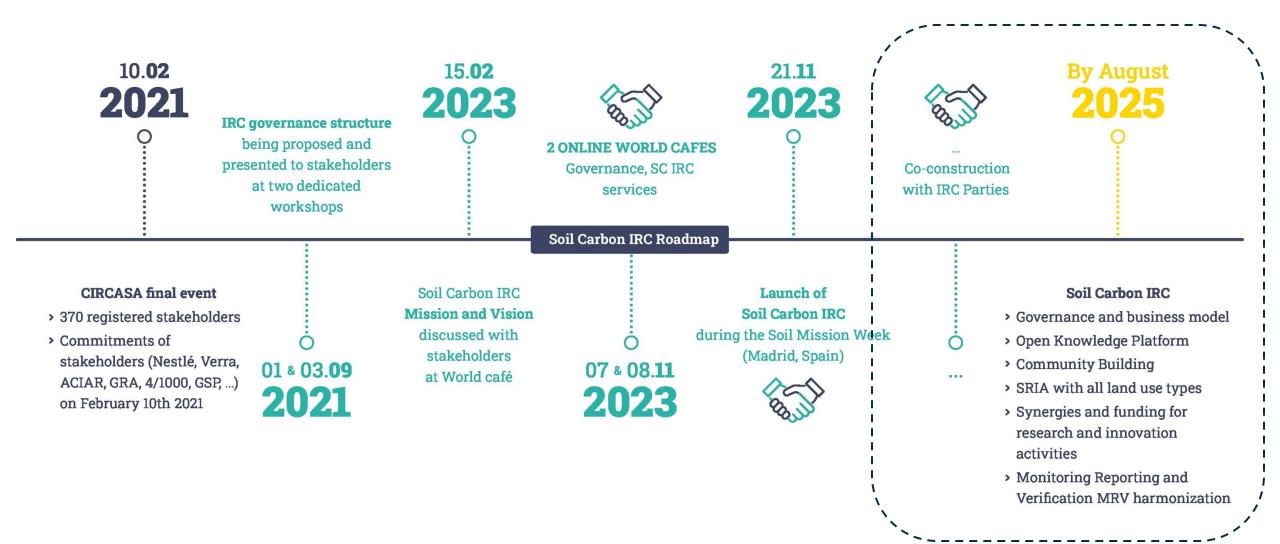
Head of Unit International priority program Soil and climate INRAE



**Fenny Van Egmond** 

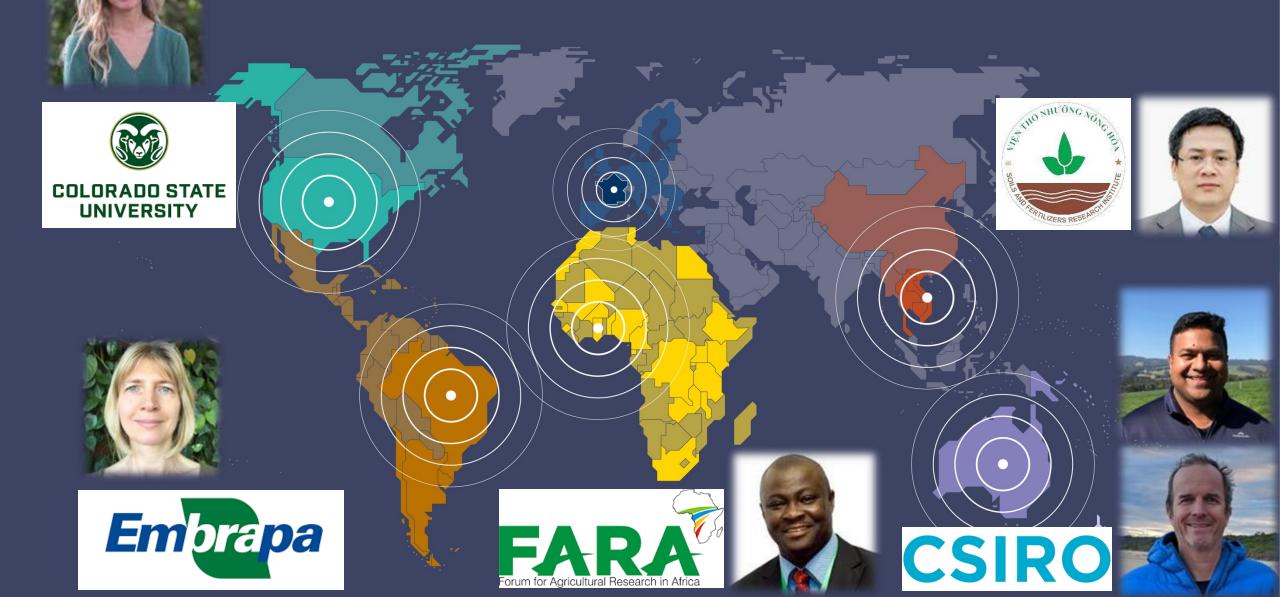
Soil sensing and soil information specialist *ISRIC* 







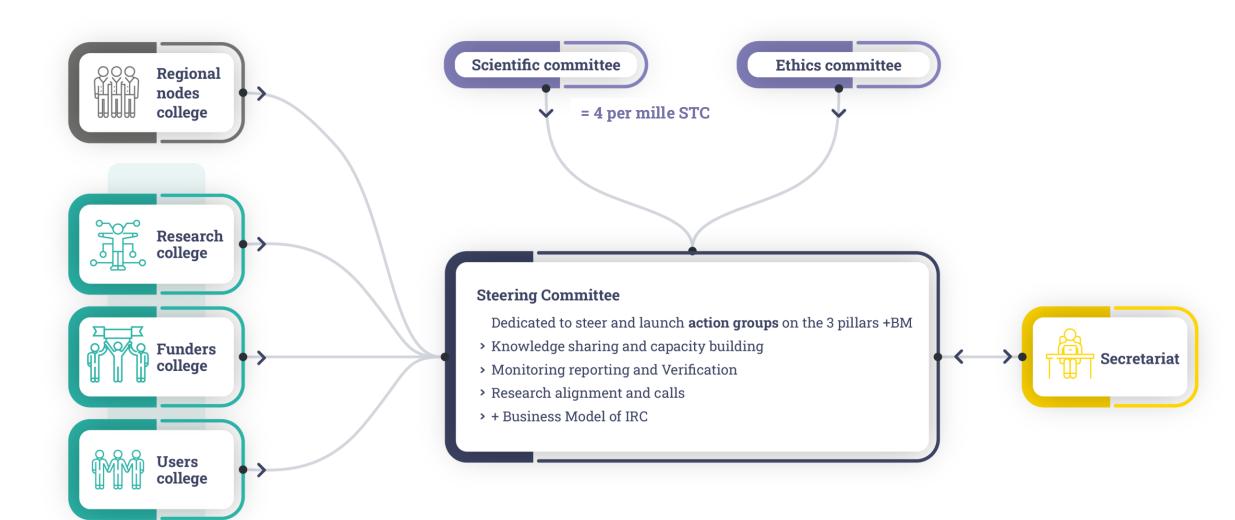
# Our Regional Nodes Ambassadors





**General assembly** 

# **Soil Carbon IRC Governance**





# 101 Signatories of the letter of interest in 44 countries



Number of signatories				
a)Number of individual experts	28			
b) Number of representatives of their				
organisation	75			
a) Number of Researchers	74			
b) Number of funders	4			
c) Number of end users	25			
Number of countries where organisations have signed				

Join now!



https://irc-orcasa.eu/join-the-soil-carbon-irc/



# Interim Steering Committee composition

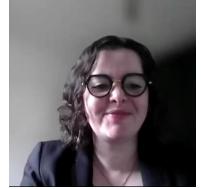
#### We tried to have:

- a gender balance,
- a good geographical representation
- and a distribution between the different colleges (research, funders, users)

Name	Organisation
Jean-François Soussana [Co-chair]	INRAE
Paul Luu [Deputy chair of JFS]	4p1000
Deborah Bossio [Co-chair]	The Nature Conservancy
Natalia Rodriguez [Deputy chair of DB]	FAO/GSP
Bruno Basso	Michigan State University
Wenfeng Cong	China Agricultural University
Ana Paula Dias Turetta	EMBRAPA
Amina Galiano	Deloitte
Christian Holzleitner	DG clima
Arwyn Jones	JRC
Mila Luleva	Rabobank
Ben Mac Donald	CSIRO
Matthias-Leonhard Maier [observer]	Soil mission secretariat
Philippe Maisongrande	CNES
Prudence Makhura	National Research Foundation, South Africa
Tran Minh Tien	Soils and Fertilizers Research Institute, Hanoi, Vietnam
Chirinda Ngonidzashe	UM6 P (Morroco)
Carlos Eduardo Pellegrino Cerri	University of Sao Paolo (Carbon Center)
David Schimmel	NASA
Louis Verchot	CGIAR - Mitigate+
Daniel Vidal Perez	EMBRAPA
Justin Zahra	EDF: Environmental Defence Fund
Oluwole Fatundi	FARA









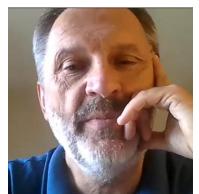


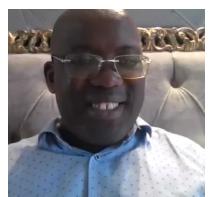


















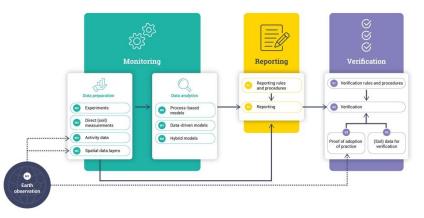






# Three main services in preparation

An internationally harmonized MRV framework to raise awareness and develop scientific knowledge and methods on how to Measure, Report and Verify soil carbon stock changes in various contexts of application (Offsetting, Insetting, NDC's, CAP...)



The <u>Impact4Soil</u> platform to drive cooperation and knowledge sharing on soil carbon at international level.

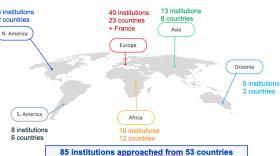
5 modules: maps (visualization of carbon stock and evolution over time), scientific evidence (from metanalysis), practices (from verified sources), data (from scientific repositories), network of initiatives and stakeholders.





Approached institutions and countries

A Research alignment and calls program through an aligned Strategic Research and Innovation Agenda considering all types of land use in each region; and through Knowledge hub and Thematic Annual Programming activities to facilitate international collaboration between projects for the Soil Carbon IRC members.





# Services in development: how to collaborate with us?

#### Harmonized MRV framework

- MRV: Share the experience on how to monitor, report and verify soil carbon stock changes: an international co-construction approach
- We encourage international collaboration and build an international network

#### Impact4Soil platform

- Make YOUR projects & networks more visible thanks to IMPACT4SOIL platform
- Valorise your own dataverses or datasets scientifically proved while ensuring your intellectual property rights

#### **SRIA & co-funded calls**

- Contribute to an international Strategic Research & Innovation Agenda and vote for the priorities
- Align funding agencies calls so that 10% of the funds can enhance exchanges between projects internationally



# **Harmonized MRV framework**



Work Package lead: Eric Ceschia - INRAE

Contributors: Ahmad Al Bitar - CNRS, Patrice Dumas - CIRAD, ...

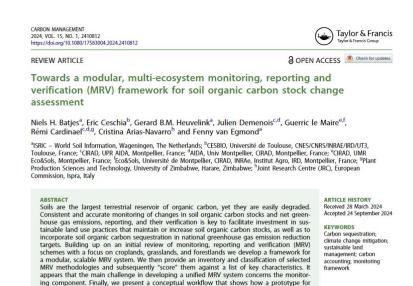




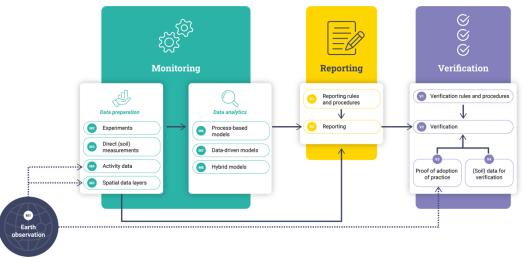
# 2023 International review of MRV

- Webinar with international participation
- Review of current MRV initiatives for soil carbon stock change assessment and associated methodologies
- Deliverable 4.1 'International review of current MRV initiatives for soil carbon stock change assessment and associated methodologies'
- New paper: Towards a modular, multi-ecosystem Monitoring, Reporting and Verification (MRV) framework for soil organic carbon stock change assessment" <a href="https://doi.org/10.1080/17583004.2024.2410812">https://doi.org/10.1080/17583004.2024.2410812</a>





an operational, modular multi-ecosystem MRV tool could be systematically built



Proposition of a generic MRV framework: schematic representation of the components/building blocks and information flow

# Draft of the cookbook: to be finalised by the end 2024



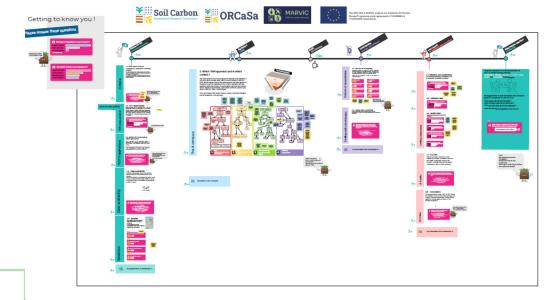
Organisation of two JOINT ORCaSa/MARVIC co-creative workshops on the Monitoring methodologies

 the 24th of April 2024 (MS11) with the Pacific, Asian, African and European stakeholders,

• the 25<sup>th</sup> of April 2024 with the European, African and American (South and North) stakeholders

Joint ORCaSa/MARVIC

**Workshop on Monitoring Cropland Soil Organic Carbon stock changes** 















# Impact4Soil platform



Work Package lead: Emilie Vrot-CIRAD

Contributors: CIRAD, Vizzuality





# Impact4Soil

A science-based, aggregative and cooperative platform

#### Our objectives:

- To align research effort at the international level
- To avoid duplication of data
- To highlight regions or practices that have received limited research attention
- To give science-based evidence for decision makers to let soil carbon sequestration become a reality.
- To foster collaboration and deepen connections



www.impact4soil.com









Geospatial data



Scientific evidence



Network



**Datasets** 



**Practices** 





# 5 modules



**MRV** results (WP4)





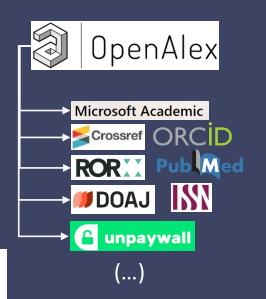
**GLOBAL FOREST WATCH** 













**Projects and research** activities identified in







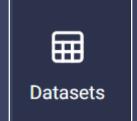






**Practices** 





























# A 23 minutes video explaining how to use Impact4soil



## A survey to enhance Impact4soil with us

We invite you to complete a short online survey (5 to 10 minutes) to share your feedbacks in order to improve Impact4Soil's functionnalities :

https://groupes.renater.fr/limesurvey/index.php/622186?lang=en



www.impact4soil.com

**Give us your feedback :** impact4soil@groupes.renater.fr







# SRIA: Strategic Research and Innovation Agenda



Work Package lead: Delphine Derrien-INRAE,

Contributors: Laure Bamière - INRAE, Julien Demenois - CIRAD



# **Compilation of some existing SRIAs**

		Peatland EU	CCARBON	2023 - LIFE			Soil Mission	"Accelerating			Atelier International		Carbone des
		Agenda	2023	CarbonCoun			Support	decarbonizatio		Assises de la	sur la Préservation	TSARA "Sols et	Sols pour
		07/2024		ts project	CIRCASA	EJP Soil Roadmar		n in the USA:	4p1000	RDI en	et la restauration		une
								technocolgy,		Agriculture	des Sols Forestiers	Climat"	agriculture
								policy, and		Grand Est	en Afrique de		durable en
	of C stabilisation / reversibility/ permanence of C stock	no	no	yes	yes	yes	yes	yes	no	no	no	no	no
ses	role of biodiversity, management of biodiversity, omics, impact	no	yes	no	yes	yes	yes	yes	yes	no	no	no	no
Se	deep soil	no	no	no	no	no	yes	no	no	no	no	no	no
Pro	pedoclimate	yes	yes	yes	no	no	no	no	no	no	no	no	no
	stochiometry	no	no	no	yes	yes	yes	no	no	no	no	no	no
	impact of soil sustainable practicies on C	no	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	yes
	reforestation of marginal/degraded lands	no	yes	no	no	no	no	no	no	no	no	no	no
×3	biomass input (location / form / timing / pretreatment (biocha	no	no	yes	yes	yes	no	yes	no	yes	no	no	no
Practices	impact of CC on plant input	no	yes	no	no	no	no	no	no	no	no	no	no
rac	optimal waste reuse/management (process chain)	no	yes	no	no	no	no	no	no	no	no	no	no
۵.	C and GHG leakage	no	yes	yes	no	yes	no	yes	no	yes	no	yes	no
	plant breeding	no	yes	no	yes	no	no	yes	no	yes	no	yes	no
	animal husbandry (reduce entheric fermentation : feed quality a	no	yes	no	no	no	no	no	no	no	no	no	no
	data acquisition / monitoring (soil /GHG / plant / history of practices)	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	yes	yes
	data organisation, harmonization & sharing	no		yes	yes	yes	yes	yes	yes	no	no	yes	yes
	long term site	no	yes	yes	yes	yes	yes	yes	no	no	no	yes	yes
	pilot farms	yes	yes	yes	no	no	no	no	no	no	no	no	no
Pa Pa	regional network of plots (ramp-up / scale up)	yes	yes	yes	no	no	no	no	no	no	no	no	no
Monitoring	ecosystem services / trade off evaluation	no	yes	yes	no	yes	yes	yes	yes	yes	no	no	no
oni	achievable C storage	no		no	yes	yes	yes	no	no	no	no	no	no
Ž	precision machinery, sensors, cost effective technologies	yes	yes	yes	yes	no	no	no	no	no	no	no	no
	remote sensing	yes	yes	yes	yes	yes	yes	yes	no	no	no	no	no
	predictive model to evaluate the impact	yes	yes	yes	yes	yes	yes	yes	yes	no	no	no	no
	indicator	yes	no	no	no	yes	yes	yes	yes	yes	yes	yes	no
	MRV tools (harmonized)	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	yes
S al	barriers in the adoption of sustainable practices (social, financia	no	no	no	yes	yes	no	yes	yes	no	yes	no	no
Economics and social sciences	barrier to shift in food consumption	no	no	no	no	no	no	yes	no	no	no	no	no
nd s	Economics (market diversification/invoice/incentives/certificati	yes	no	-see more be	yes	yes	yes	yes	yes	yes	yes	no	yes
ar s	enabling environment / policy (solution to multiples challenges	yes	no	-see more be	yes	yes	yes	yes	yes	yes	yes	no	yes
	education (knwoledge portail : showcase, knwoledge, mappong	yes	yes	no	no	yes	no	yes	yes	no	yes	yes	yes
2	capacity building (dvl les compétences)	no	yes	no	yes	yes	no	yes	yes	no	yes	no	yes
puildir	narrative of successful stories, positive experiences	yes	no	yes	no	no	no	no	yes	yes	yes	no	no
ď	mobility	no	no	no	no	no	no	no	yes	no	no	yes	no
cj.	marché financiers C, systemes de compensation	yes	no	no	no	no	yes	no	yes	yes	yes	no	no
ede	networking/collaboration	no	yes	no	no	yes	no	no	yes	no	yes	yes	yes
3	tool kit	yes	no	no	no	no	no	no	yes	no	no	no	no
	common language	no	no	no	no	no	no	no	yes	no	no	no	no

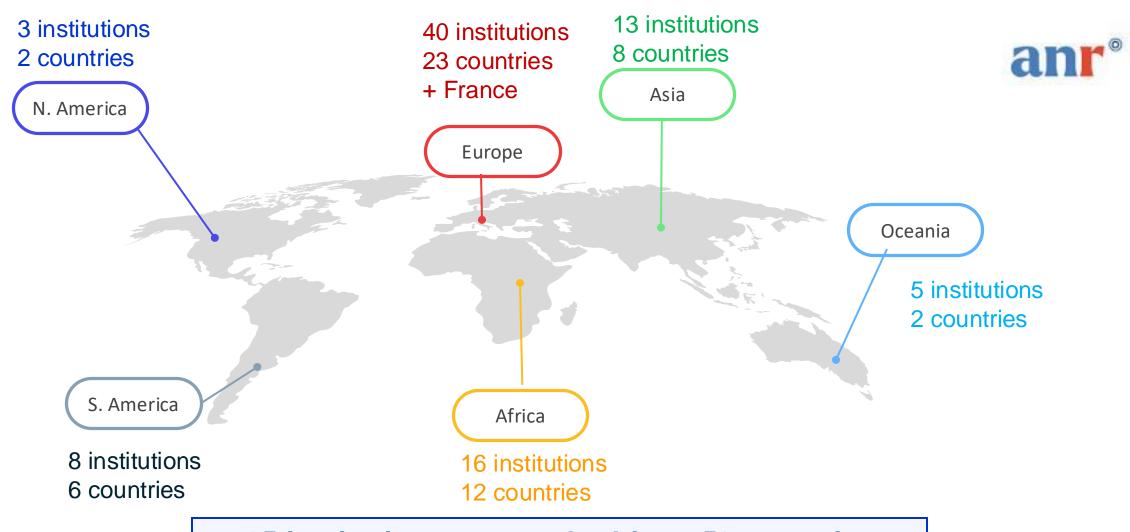
# **Approach for the Establishment of a Strategic Research and Innovation Agenda**

SRIA which is region-specific, land-use specific and end-user specific.

Building on existing roadmaps and research agendas + on the literature (Beillouin et al 2022, 2023; brainstorming of the French network CarboSMS published in Derrien et al., 2023)

- ⇒ Complete the existing basis during regional workshops involving scientists and various type of stake-holders
- ⇒ Request of justifications for the priorities listed by the workshop participants
- ⇒ Specific workshops will be organised for economics and social question related to C in soil

# Approached institutions and countries for thematic Annual Programming



85 institutions approached from 53 countries + more global institutions (ex. GRA)



# **Communication at events**



Carbon Farming Summit Dublin March 2025 Soil Carbon Research Symposium Rio June 2025



# **Communication & Network**

- Soil Mission Week Madrid Nov 2023
- IUSS Florence 19-22 May 2024
- EJP science days 10-14 May 2024
- SPAC Conference Kigali 29-31 July 2024
- JRC conference 3-4 October 2024
- Conference EES (European Environment Agency) & ESA (European Space Agency) Copenhagen 7-11
   October 2024
- Conference 4°/° Rabat 21-25 October 2024
- Expert Group CRCF Bruxelles 21-23 October 2024
- GRA Conference GHG Berlin 24 October 2024 Side event et IRG Integrative Research Group
- Soil Mission Week Bruxelles 12-14 November 2024
- Carbon Farming Summit Dublin 4-6 March 2025
- Brazil Symposium, Rio 23-28 June 2025

# MRV in relation with US partners

INRAE (Eric Ceschia) represented ORCaSa at 2 workshops in Pasadena (USA) in 2023 and 2024

KISS workshop on Managing Soil Organic Carbon for Climate Change Mitigation - Multiscale Quantification Through Remote Sensing, Al and Biogeochemical Models



## With participants such as:

- Keith Paustian (CSU)
- Steven Mirsky (USDA)
- David Schimel (NASA)
- Bruno Basso (MSU)







## We were at IUSS!



# 3 oral presentations and 1 poster

- Proposition for a methodological framework and prototype MRV tool for cropland C stock change assessment at high resolution over large regions
- Impact4Soil: the online platform boosting international research collaboration»
- A global meta-analysis of soil organic carbon in the Anthropocene





#### Join the Soil Carbon International Research Consortium

Dr Suzanne REYNDERS (INRAE) and the ORCaSa consortium (suzanne.revnders@inrae.fr)

#### 3 main services



The Impact4Soil platform to drive

cooperation and knowledge sharing on soil carbon at an international level. 5 modules maps (vizualization of carbon stock and evolution over time), scientific evidence (from metanalysis), practices (from verified sources), data (from scientific repositories) network of initiatives and stakeholders.



Collaboration: Fostering Equity, Decolonization, and Capacity Strengthening», 20 May 2024, 12:00-13:00, presentation #/«A global meta-analysis of soil organic carbon in the Anthropocene» in session «Soil carbon sequestration and land use

A Research alignment and calls program through an aligned Strategic Research and Innovation Agenda considering all types of land use in each region; and through Knowledge hub and Thematic Annual Programming activities to facilitate international collaboration between projects fo



#### the Soil Carbon IRC road map

ORCaSa (2022-2025) is a Horizon Europe project which aims to establish the first Soil Carbon International Research Consortium (IRC). The need for such an entity emerged during CIRCASA project (2017-2021). With 60-70% of the EU's soil in poor health, ORCaSa contributes directly to the Soil Deal for Europe and the Green Deal. By August 2025, the IRC should be fully operational.

February 2021	September 2021	February 2023	November 2023		
CIRCASA's final event brought together over 370 stakeholders, many of whom confirmed their commitment to joining the future Soil Carbon IRC, including 4p1000, Global	The IRC governance structure was proposed and presented during two stakeholder workshops:	The ORCaSa team organised a world cafe with stakeholders to discuss the Mission and Vision of the future IRC.	An agreement was reached on IRC governance and services during two world cafes.		



#### Launched in Madrid during the EU Soil Mission Wee



#### IRC governance structure

At the heart of the Soil Carbon IRC, there will be common work on the strategy and resources to be mobilised and allocated. A general assembly will be organised annually



#### Interested in joining the IRC? Flash this code!









# Sept. 26th 2024 Brussels MRV Policy workshop

- Gathers different actors (policy makers, end-users, researchers, NGO, certifications organisations) involved in or linked to Carbon Certification Schemes
- Presenting private as well as public schemes (US & Australia) for Carbon Certification
- European context with the planned regulations for carbon certification and the Soil Mission
- Objective : Produce a Policy Brief

- 60 on site registered
- 180 online already registered / 80 present
- Very positive feedbacks from the CRCF expert group and the GRA on GHG !!!

#### Policy Workshop on International Carbon Certification Schemes



26 SEPTEMBER 2024 (9AM TO 1 PM

# As part of the soil carbon family, join us!

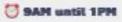
If you are an ORCaSa sister project or a Soil Carbon International Research Consortium (IRC) related initiative, this workshop may be of interest to you!

In the framework of the Soil Carbon IRC, the ORCaSa project is organising a workshop that will take you from Brussels to Australia, the US, the Pacific and Europe ... to explore the international public and private carbon certification schemes

This event is also an opportunity for **experts and policymakers** to meet, exchange ideas, and make progress in the field of soil carbon policy.

Moreover, the results will be used to **draw up a policy brief.** Indeed, to achieve the objectives of the Paris Agreement on climate neutrality, to support the EU Green Deal and the objectives of the EU Soil Mission, **Europe must**coordinate its research and innovation efforts on soil carbon with international stakeholders and policymakers.

Please feel free to forward this invitation to the relevant partners you work with and also to relay the information through your communication channels.





Place Stephanie, 60 1050 Brussels (Belgium)







**26 SEPTEMBER 2024** | 9AM TO 1 PM

09:20-11:00	ORCaSa & the Soil Carbon International Research Consortium (IRC), an overview.
	Suzanne Reynders, INRAE, Coordinator
	European context: Certification Framework for Carbon Removals and Carbon Farming.
	Christian Holtzleitner, Directorate-General for Climate Action, European Commission
	Private scheme in USA. An Overview of the Agricultural Carbon Market in the U.S.: Methods, Regulations, and Key Players.
	Bruno Basso, Michigan State University, USA.
	Public schemes in the USA
	Amy Swan, Colorado State University, USA.
	National policy in Australia. How is it working for the last 10 years? how it is linked to research?
	Senani Karunaratne, Commonwealth Scientific and Industrial Research Organisation, Australia.
	Pacific region context
	Ben Mac Donald, Commonwealth Scientific and Industrial Research Organisation, Australia.
	Soil Mission Board. EU Soil Mission for healthy soils promoting soil carbon stocks.
	Liisa Pietola, Expert Board member of the EU Mission Soil deal for Europe, The Finnish Innovation Fund Sitra, Finland.
11:00-11:30	Coffee break
11:30- 13:00	<b>Discussion &amp; debate</b> Moderated by <b>Jean-François Soussana</b> , Vice-President International, INRAE & <b>Edouard Lanckriet</b> , Strategy Director and carbon farming expert, Agrosolutions.
13:00- 15:00	Networking lunch at Comet Meetings Louise

# **European Carbon Farming Summit - 5 sessions submitted**

#### Topic 1 : Carbon farming practices for land managers

- Feedback from the field: how to put in place carbon farming on a farm? What
  motivates farmers to implement such practices? (Idele,Teagasc, Climate-KIC,
  Consulai, INRAE)
- Carbon farming practices in cattle and arable farming: theory, simulation and implementation. (INRAE, Arvalis, Teagasc, Agrosolutions, Terres Inovia)

#### <u>Topic 2: Rewarding mechanisms for impactful climate actions</u>

- Avoiding barriers to carbon farming projects in agriculture financing (I4CE Institute for Climate Economics, AC3A, Agrosolutions, INRAE, Nataïs)
- Point of views of farmers, policy makers, companies for rewarding mechanisms: result-based premium, carbon markets and CAP (INRAE, Deloitte, Climate-KIC, Agrosolutions, EARA European Alliance for Regenerative Agriculture TBC)

#### <u>Topic 3: Monitoring and verification tools</u>



Baseline approaches for monitoring soil carbon removals: public – private synergy (JRC, MARVIC coordinator/ILVO, MRV4SOC coordinator/GMV, ORCaSa coordinator/INRAE)











# Latin America and Caribbean Soil Carbon Research Symposium

**Dates**: June 25-28, 2025

**Location**: Rio de Janeiro – Brazil

**Funder:** 



## **Organizers:**

















# Latin America and Caribbean Soil Carbon Research Symposium

## **Preliminary agenda:**

#### **JOUR 1 - 25 juin 2025**

- Ouverture de l'événement de 3 jours
- Présentation des initiatives promotrices (4 pour 1000 Initiative internationale et Consortium international de recherche sur le carbone du sol)
- · Carbone du sol MMRV

#### **JOUR 2 - 26 juin 2025**

- Marchés du carbone
- Séquestration du carbone pour une production agricole durable, la santé des sols et la sécurité alimentaire (Partie 1)

### **JOUR 3 - 27 juin 2025**

- Séquestration du carbone pour une production agricole durable, la santé des sols et la sécurité alimentaire (Partie 2)
- Embrapa Agrobiologie (A confirmer)

#### **JOUR 4 - 28 juin 2025**

• Visite de terrain : Intégration culture-élevage-forêt dans la forêt atlantique

## Avant et/ou après :

- Interim Steering Committee (le seul en présentiel)
   journée
- Scientific Committee (avec 4°/°° ou à part !)
   journée
- Annual meeting envisagé mais reste à discuter (2 jours)

We are looking for keynotes on Soil and Biodiversity and on Traditional Knowledge on Soil



#### Harmonized MRV framework

- MRV: Share the experience on how to monitor, report and verify soil carbon stock changes: an international co-construction approach
- We encourage international collaboration and build an international network

#### Impact4Soil platform

- Make YOUR projects & networks more visible thanks to IMPACT4SOIL platform
- Valorise your own dataverses or datasets scientifically proved while ensuring your intellectual property rights

#### SRIA & co-funded calls

- Contribute to an international Strategic Research & Innovation Agenda and vote for the priorities
- Align funding agencies calls so that 10% of the funds can enhance exchanges between projects internationally

# Thank you and follow us!







www.linkedin.com/orcasa

Suzanne.Reynders@inrae.fr

