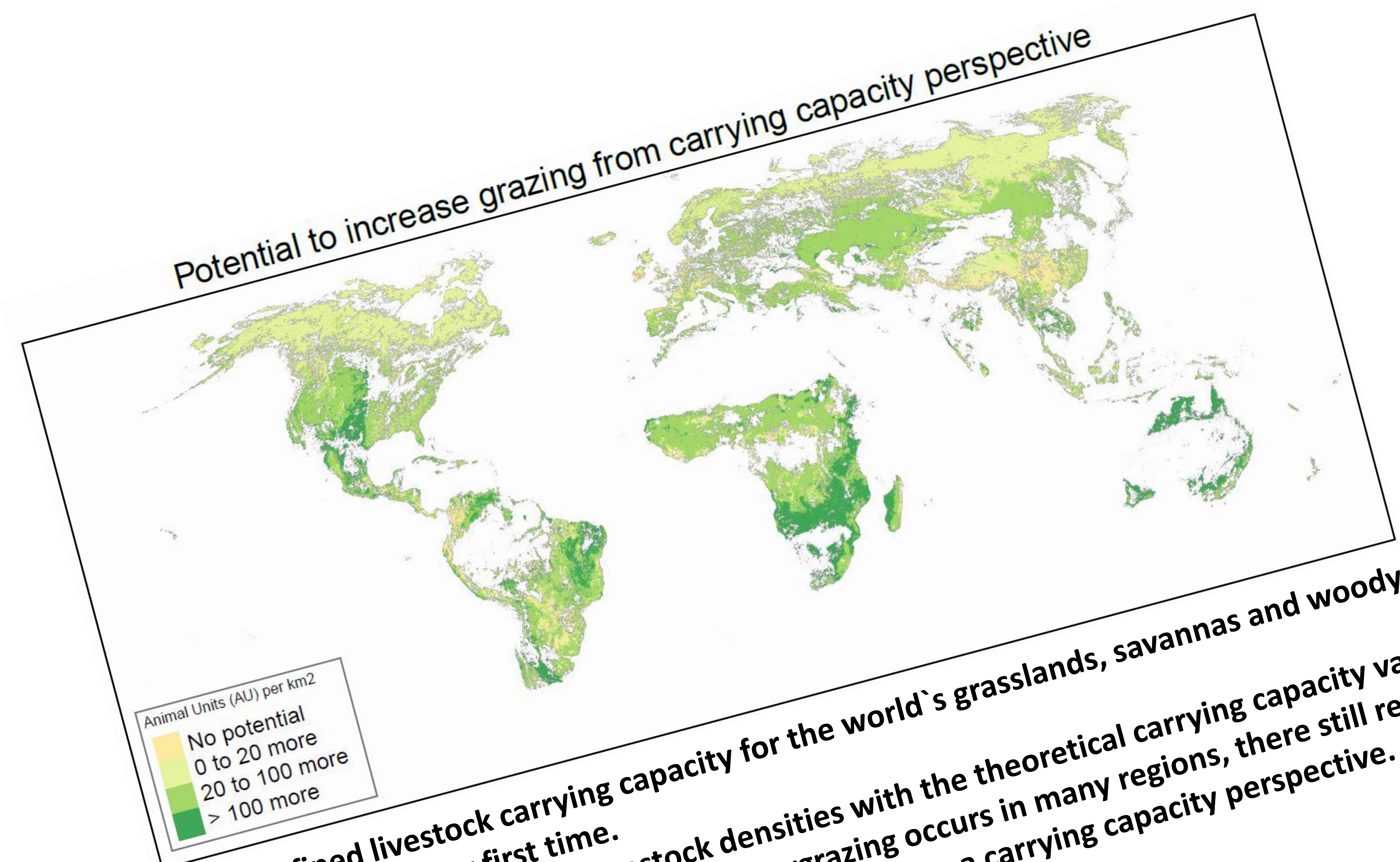


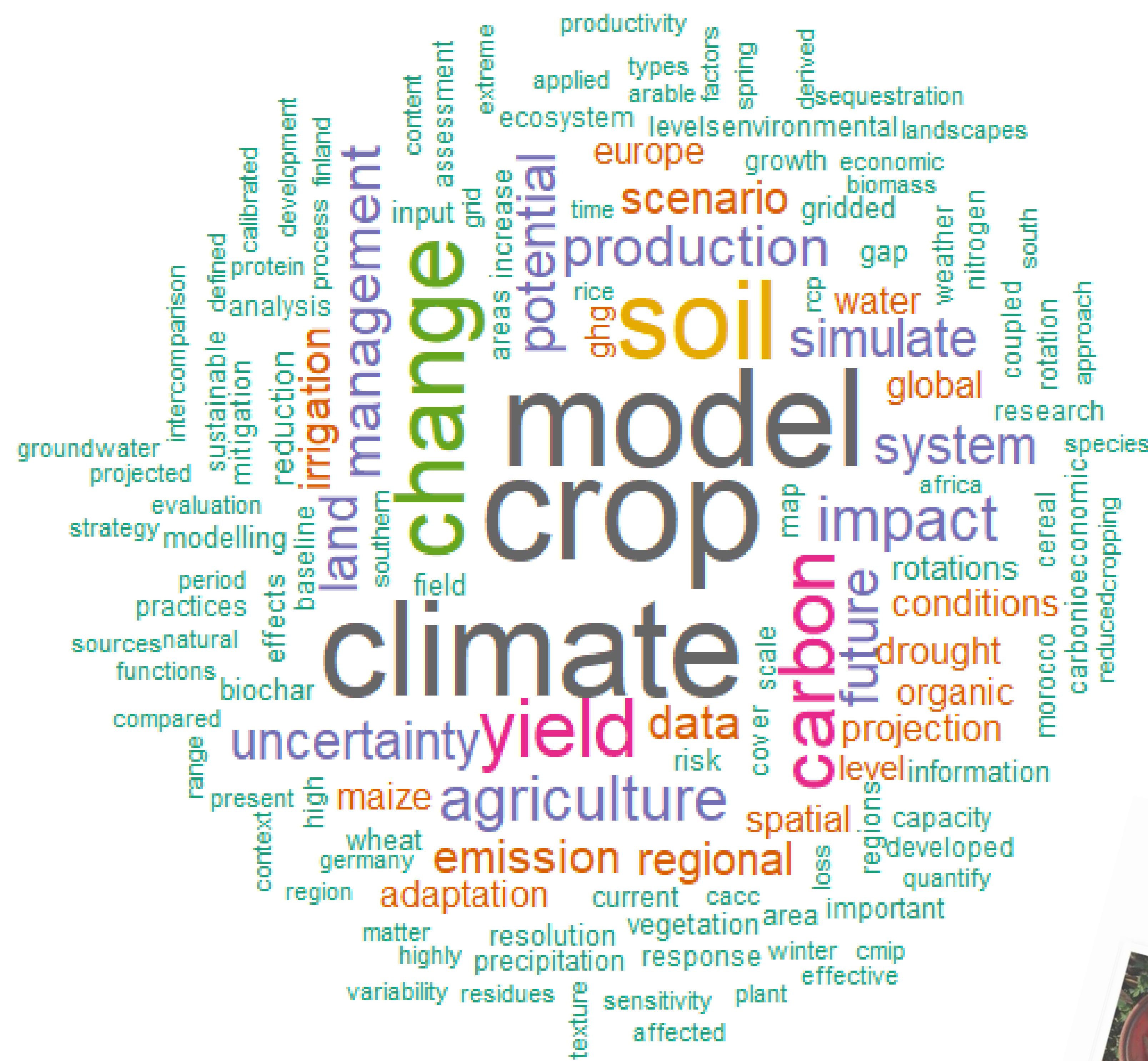
# BG3.18 Modeling agricultural systems under global change

EGU 2020, Friday 8 May, 8:30-10:15



- 1) We defined livestock carrying capacity for the world's grasslands, savannas and woody savannas for the very first time.
  - 2) Then we compared actual livestock densities with the theoretical carrying capacity values.
  - 3) Whilst heavy stocking densities and overgrazing occurs in many regions, there still remain areas that have the potential to increase grazing from a carrying capacity perspective.
- Piipponen et al.

A brief overview of the set-up of the regional AquaCrop model will be presented, along with the initial evaluation results of biomass production over Europe, using COPERNICUS SPOT-satellite data.  
- de Roos et al.



In Southern Finland, conventional systems loss SOC, while Conservation Agriculture allows to achieve SOC sequestration under current climate and future climate scenario.  
- Valkama et al.



Roetter et al.



## **Session description**

Sustainable agriculture is needed to ensure that both present and future societies will be food secure. Current agricultural productivity is already challenged by several factors, such as climate change, availability and accessibility of water and other inputs, socio-economic conditions, and changing and increased demand for agricultural products. Agriculture is also expected to contribute to climate change mitigation, to minimize pollution of the environment, and to preserve biodiversity.

Assessing all these requires studying alternative land management at local to global scales and to assess agricultural production systems rather than individual products.

This session will focus on the modeling of agricultural systems under global change, addressing challenges in adaptation to and mitigation of climate change, sustainable intensification and environmental impacts of agricultural production. We welcome contributions on methods and data, assessments of climate impacts and adaptation options, environmental impacts, GHG mitigation and economic evaluations.

## Online chat instructions

Each contribution in our session will be discussed for 5 Minutes in the online chat.

Each presenter should prepare a short 1-2 sentence opening statement that can be copied into the chat (so that no time is wasted for typing)

Each participant could also prepare questions in a similar manner

Time is very short, unfortunately, and discussions in written form somewhat cumbersome. There are no coffee breaks that could be used for follow-up discussions.

If presenters are willing to continue discussions afterward, they are invited to share an email address in the chat, e.g. “For follow up discussions please email [myname@mydomain.net](mailto:myname@mydomain.net)”

The planned sequence of discussion slots is listed on the next slide.



Chat:  
Fri, 08 May, 08:30–10:15

# Modeling agricultural systems under global change

Conveners: Christoph Müller, Christian Folberth, Sara Minoli

EGU2020

Time	Abstract	Topic	Title	Authors
08:30		Introduction		Conveners
08:35	<a href="#">5290</a>	1) Current climate & model evaluation	From the field-scale Aquacrop model to a regional gridded crop model: initial evaluation over Europe	<b>Shannon de Roos</b> , Gabriëlle de Lannoy, and Dirk Raes
08:40	<a href="#">11350</a>	2) Future climate impacts on crop yields	Simulating and analysing climate change impacts on crop yields in Morocco using the CARAIB dynamic vegetation model driven by Med-CORDEX projections	<b>Iliass Loudiyi</b> , Ingrid Jacquemin, Bernard Tychon, Louis Francois, Mouanis Lahlou, Joost Wellens, and Riad Balaghi
08:45	<a href="#">21722</a>	2) Future climate impacts on crop yields	Assessment of cereal production and food security under climate change in the Euro-Mediterranean Region	<b>Valentina Mereu</b> , José Maria Costa Saura, Antonio Trabucco, and Donatella Spano
08:50	<a href="#">18052</a>	2) Future climate impacts on crop yields	Climate change impact evaluation in various regions in Europe on the base of ensemble modelling	Jaromir Krzyszczak, <b>Piotr Baranowski</b> , and Monika Zubik
08:55	<a href="#">20676</a>	2) Future climate impacts on crop yields	Comprehensive global climate impact assessment for crop yields	<b>Christoph Müller</b> and the AgMIP GGCM team
09:00	<a href="#">11783</a>	3) Agricultural management	Site specific impacts of climate change on crop rotations and their management in Brandenburg/Germany	<b>Kurt-Christian Kersebaum</b> , Susanne Schulz, and Evelyn Wallor
09:05	<a href="#">21649</a>	3) Agricultural management	Modelling impacts of climate change and alternative management interventions on the multi-functionality of agricultural landscapes in southern Africa	<b>Reimund Roetter</b> , Simon Scheiter, Munir Hoffmann, Kwabena Ayisi, Paolo Merante, William Nelson, Johannes Isselstein, Jude Odhiambo, Gennady Bracho Mujica, Peter Taylor, Wayne Twine, and Barend Erasmus
09:10	<a href="#">8065</a>	3) Agricultural management	Livestock carrying capacity: assessment of world`s grasslands based on MODIS data products.	<b>Johannes Piipponen</b> , Afag Rizayeva, Jan de Leeuw, Mika Jalava, and Matti Kummu
09:15	<a href="#">21304</a>	3) Agricultural management	Closing the Global Irrigation Yield Gap alongside SSPs	<b>Marina Andrijevic</b> , Nicole van Maanen, Carl-Friedrich Schleussner, and Lorenzo Rosa
09:20	<a href="#">9762</a>	4) Crop production & environment	Mitigation potential for increasing soil organic carbon of rice fields in Bangladesh – a case study	<b>Jack Walton</b> , Matthias Kuhnert, Khadiza Begum, Mohammed Abdul Kader, Marta Dondini, Jon Hillier, Lini Wollenberg, and Pete Smith
09:25	<a href="#">4934</a>	4) Crop production & environment	Modelling of soil organic carbon changes and carbon balance under Conservation Agriculture and conventional cropping systems in Southern Finland	<b>Elena Valkama</b> and Marco Acutis
09:30	<a href="#">1141</a>	4) Crop production & environment	Modelling the potential for soil carbon storage using biochar- a case study	<b>Nicholas Allen</b> , Bernardo Borges, and Saran Sohi
09:35	<a href="#">21788</a>	4) Crop production & environment	MAPPY : Multisectoral Analysis of climate and land use change impacts on Pollinators, Plant diversity and crops Yields	<b>Maurine Antoine</b> and the Maurine Antoine(1)
09:40	<a href="#">22455</a>	5) Agriculture economics	Global Agricultural Costing and Investment model	<b>Yiorgos Vittis</b> and Michael Obersteiner
09:45		General discussion		All