

Visions for MERGE-BECC collaboration in the coming years

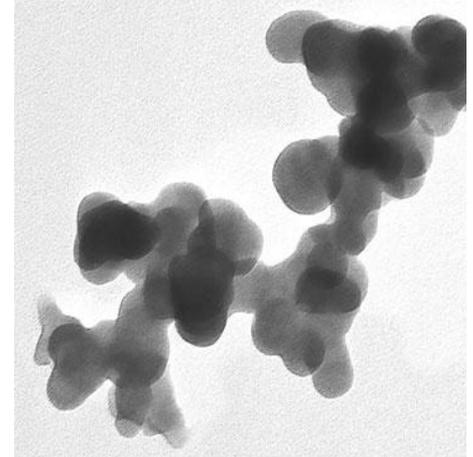
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In MERGE we want to

- Carry out strategic research to develop and improve global and regional ESMs with a focus on the **biosphere** as a key area in the Earth's climate system
- Contribute to national and international **policy** arenas
- **Educate** a new generation of young ESM model experts
- Improve the **societal relevance** of climate models and their results

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MERGE Strategy 2016-2020 – Key Points

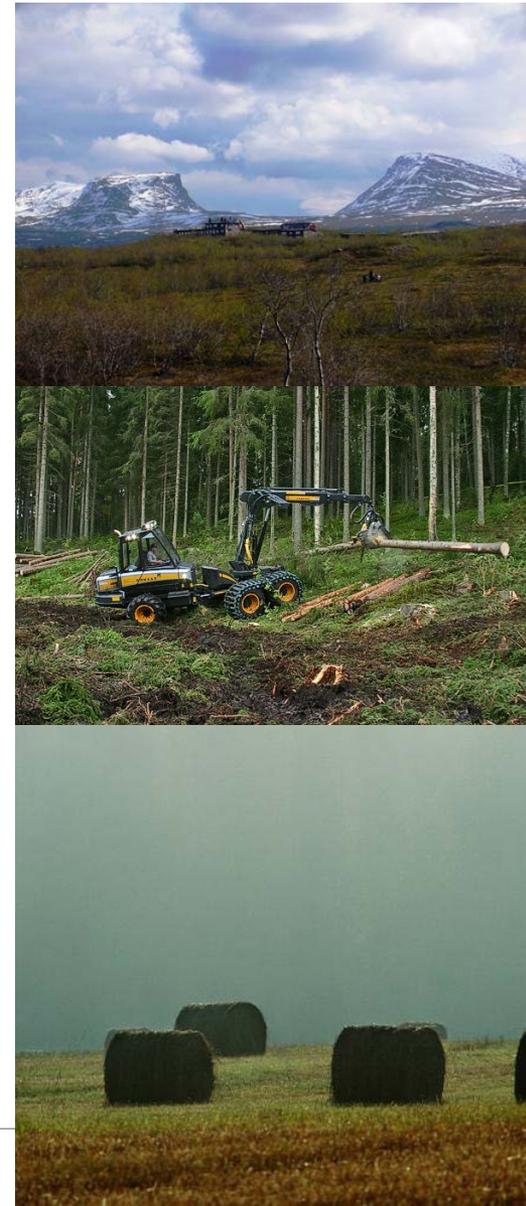
- Maintain our prominent position in international research through active participation in international projects and policy arenas
- Contribute to the further development and assessment of the EC-Earth and RCA-GUESS ESMs (C and trace gases, BVOC, SOA, clouds etc.)
- Strengthen education in climate and Earth system science by joining forces with BECC to develop an international MSc coupled to Climate-KIC, as well as MSc and BSc education elements that actively use ESMs
- Further develop collaboration with BECC, not least through CEC administration and ClimBEC Co. Joint annual meetings!
- Renew and develop stakeholder interaction, as well as outreach
- Improve the societal relevance of climate models and their results



In BECC we want to

- ✓ **assess climate change impacts** on biodiversity and ecosystem services in Sweden
- ✓ support policymakers through the **scientific evaluation of policy options** combining climate adaptation/mitigation with ecosystem resilience
- ✓ create synergies and added value by **bringing together modelling, empirical ecology, economics and social science**
- ✓ **integrate stakeholder experience** in the research process.

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BECC Strategy 2016-2020 – Key Points

- Combining support to disciplinary research with development of interdisciplinary methodology to tackle the grand challenge of integrating an ecosystem service dimension in decision making and policy formulation
- Make major contributions to ecosystem-based climate adaptation and the development of a green economy
- Promote international recruitments and career-advancement opportunities
- Stimulate creation of externally funded cross-disciplinary projects
- Enhance BECC's international impact and visibility
- Support and use joint infrastructure (e.g. ICOS, MAX-IV)
- Research training via ClimBEco & international Masters



Envisioned MERGE-BECC Collaboration 2017-2020

- Administration and support (CEC)
- Education (ClimBEco, Global Change MSc)
- Society and stakeholder interaction
- The science!
- Funding



BECC



MERGE

Administration and Support

- CEC Administration

- CEC reorganized to provide more efficient support to MERGE & BECC across partner universities and institutions
- Reorganization of “communication office”
- BECC and MERGE represented in day-to-day leadership
- New professorship

- Challenge

- Better integration with parallel organizations at partner universities



BECC



MERGE

Continued support for ClimBEco



- Research school ClimBEco is supported by MERGE, BECC and the LU Science Faculty (N-fak)
- Approx. 20-30 N-fak students/year can:
 - Meet and network with other PhD students and senior scientists
 - Choose from a variety of cutting-edge PhD courses, free of charge
 - Get introduced to the field of interdisciplinary research in the context of climate & climate change, biodiversity and ecosystem services
 - Have the possibility to attend a mentoring programme for personal development, communication skills, networking and career planning

**Next programme (Aug 2017 – Jun 2019) application deadline:
5 May!**



2-year MSc

“Global change and natural resource management”

- **N-fak LU (in collaboration with other U?)**
- Focus on sustainable use of natural resources in a rapidly changing world
- How will a future climate impact biodiversity, ecosystem services and natural resources?
- How will management and policy decisions relating to these issues feed back on the global climate?
- Mitigation and adaptation
- Agriculture, silviculture, nature conservation
- Cross-disciplinary, including science, economy, political science



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MERGE

Society and stakeholder interaction



- 2016 Research Bill RE SRAs: “The government stresses the importance of cooperation with industry and the surrounding society.”
- **BECC focus on providing knowledge on management of ecosystem services and conservation of biodiversity with relevance for agriculture, forestry and nature conservation**
- **Support decisions of managers as well as development of policies, e.g. the implementation of “green infrastructure”**
- **MERGE contributes with research underpinning policy relating to grand challenges such as climate change (e.g. EC-Earth), air pollution (e.g. EMEP), and food security (e.g. LPJ-GUESS)**
- **MERGE aims to develop and evaluate process descriptions in models to give more reliable projections**
- **Jointly, BECC and MERGE provide a more holistic perspective to the dialogue than any of the environments could alone**



Society and stakeholder interaction



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- **BECC and MERGE complement each other, because the more concrete management focus in BECC requires the framework provided by MERGE and management of natural resources have feedbacks on the climate system**
- MERGE and BECC have had a common Stakeholder Reference Group with the purpose of increasing our awareness of society's need for climate-related research and science-based solutions
- SRG: Environmental organisations, authorities and companies
- Our stakeholder interaction has been evaluated and will shortly be renewed and restarted
- There will be an increased focus on "strategic issues", i.e. the general development of BECC and MERGE as research environments and "horizon scanning" on emerging issues in policy and management



MERGE

Some International Context to Greater BECC-MERGE Collaboration

- **Paris Agreement:** The Parties (UNFCCC) to this Agreement.... noting the importance of ensuring the integrity of all ecosystems, including oceans, and the protection of biodiversity,.... have agreed as follows:
- To hold “**the increase in the global average temperature to well below 2C above pre-industrial levels and “ to pursue “efforts to limit the temperature increase to 1.5 C above pre-industrial levels,”**
- To increase “the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production”



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Some International Context to Greater BECC-MERGE Collaboration

- **IPBES – International Panel for Biodiversity and Ecosystem Services**
- Increasing realization of the two-way connections between climate change and biodiversity/ES conservation
- From press release 170307:
 - Global body on biodiversity science-policy to address synergies with climate change
 - Efforts to stem global temperature rise may have negative impacts on biodiversity
 - Protecting biodiversity can contribute to climate change mitigation and adaptation
 - UN Climate secretariat commits to even closer collaboration on biodiversity



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MERGE

BECC-MERGE collaborations bring better understanding and more reliable projections

- **BECC** → **MERGE** Greater ecological and (micro)biological realism will improve MERGE modelling tools
- These include LPJ-GUESS, RCA-GUESS, EC-Earth, EMEP etc.
- **MERGE** → **BECC** Better models tools can in turn provide more reliable projections of climate, CO₂, N availability, vegetation dynamics, NPP, crop yield etc. to support BECC management and policy evaluations

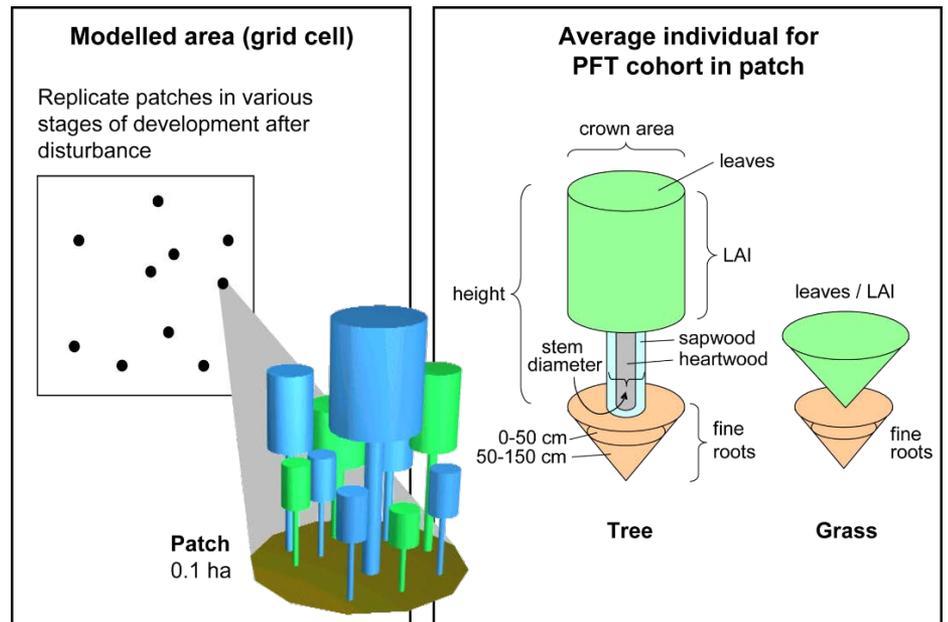
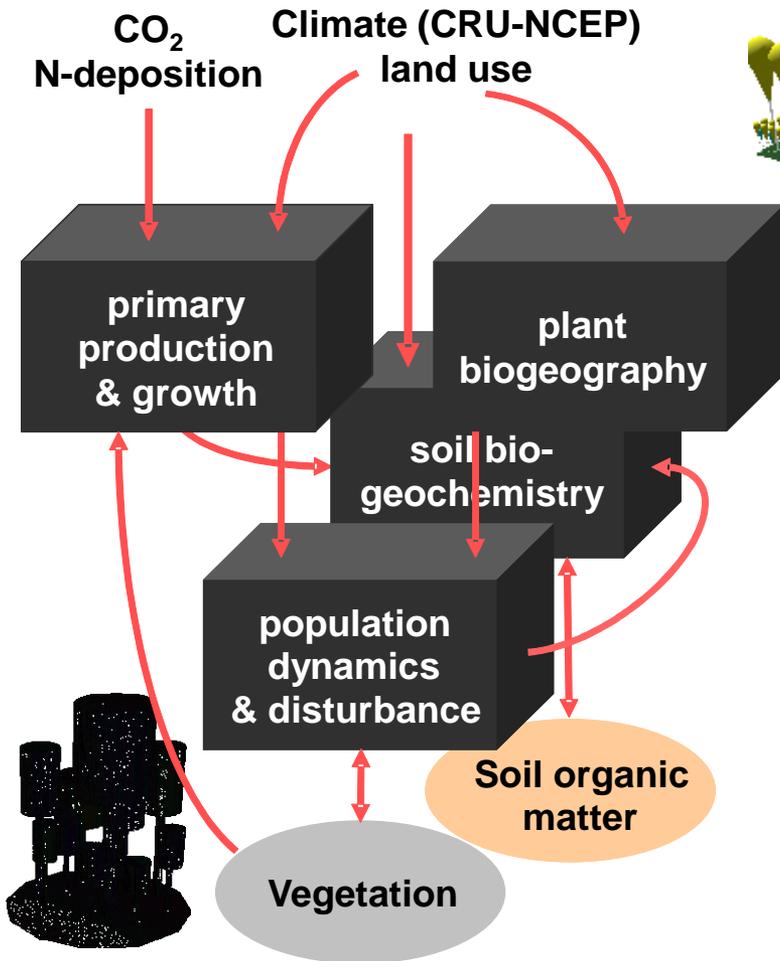
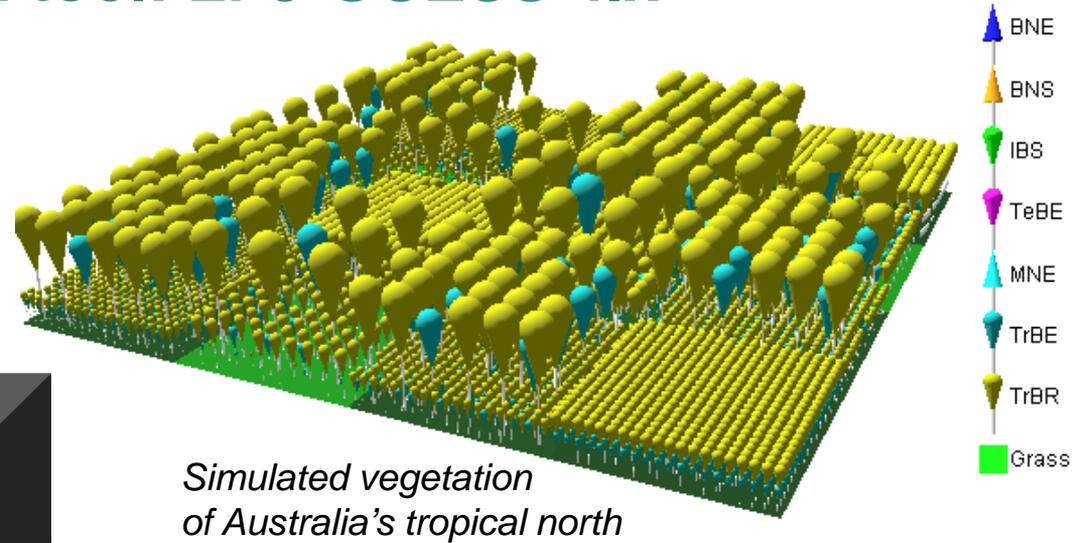


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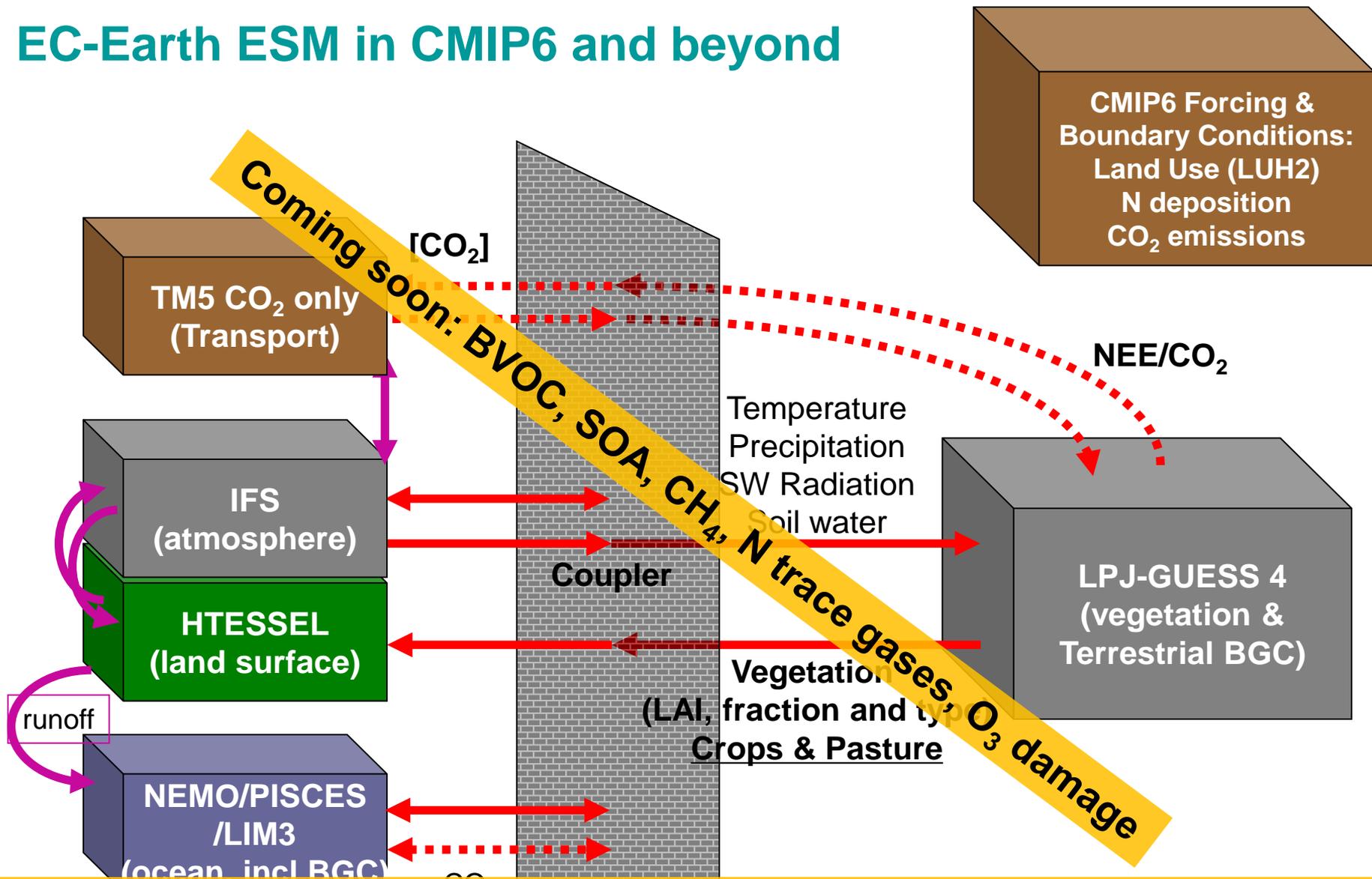


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A common tool: LPJ-GUESS 4.x



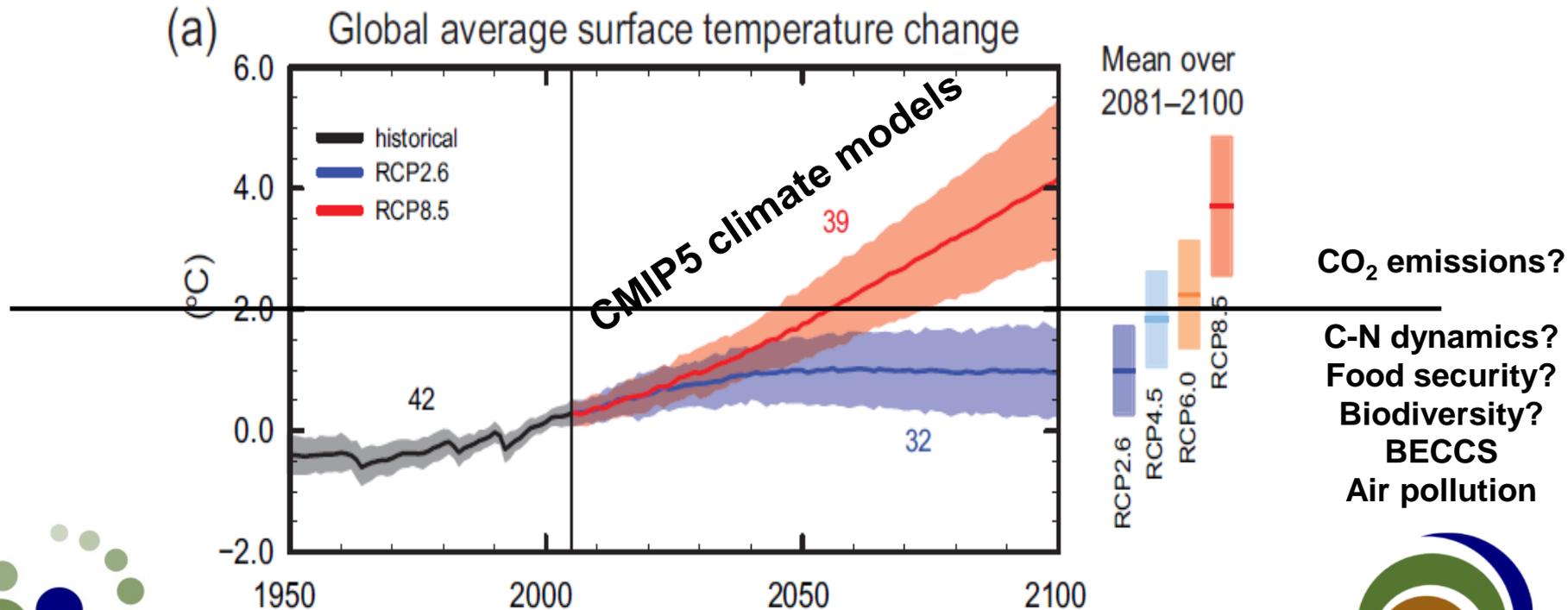
EC-Earth ESM in CMIP6 and beyond



A tool for implementing BECC-related process understanding, e.g. (management/climate effects on) soil carbon dynamics, better PFT descriptions, grazing etc

Meeting Grand Challenges

- Greater MERGE and BECC collaboration will allow us to tackle some of the most important Grand Challenges facing society today
- We have the tools, the methodologies and the expertise!



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IPCC AR5 "Summary for Policymakers"



MERGE

Funding Opportunities

- National, Nordic and European funding agencies want to address urgent global and societal challenges.
- Can we lead a suitable Horizon 2020 proposal? Discuss!
- The 2016 Research Bill gave FORMAS a greater mandate to support research addressing global challenges, resulting in a series of 10-year national research programmes, two of which are of great interest to BECC and MERGE:
Climate and **Building sustainable societies**
- Together, we will be well placed to compete for such funding!



BECC



MERGE

Thanks, and enjoy the
workshop!



BECC



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