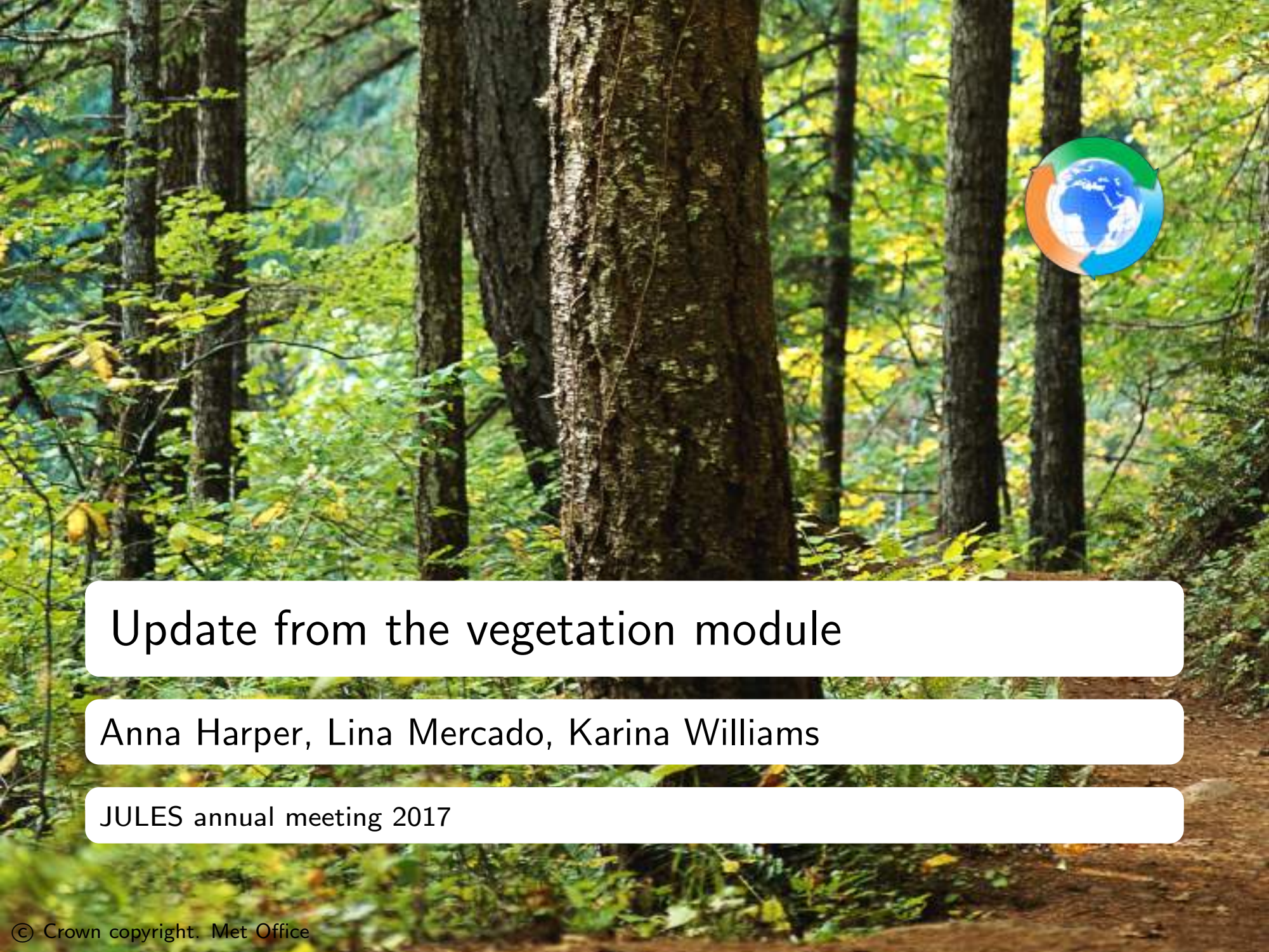


Update from the vegetation module

Anna Harper, Lina Mercado, Karina Williams

JULES annual meeting 2017

Vegetation Module Activities 2016-7

- JULES-crop coordination and collaboration meeting, Met Office, 1st-2nd August 2016, organised by Pete Falloon, 13 attendees.
- Vegetation module meeting, 2nd May 2017, Exeter University, 26 attendees

In collaboration with other modules:

- Cross-community group to look at the representation of soil moisture stress on vegetation in JULES (see talk on Wednesday). 38 members, 3 meetings (Exeter University and CEH, Wallingford), 6 telecons.

JULES-crop meeting, June 2016

- Minutes on the Met Office Collaboration Wiki: https://code.metoffice.gov.uk/trac/jules/wiki/JulesCropMeeting2016.

- Consensus that most of the focus will be on improving the representation of the four main crops:
  - wheat (winter: Alberto Martinez-de la Torre, Jon Finch, Eleanor Blyth, spring: Camilla Mathison, Chetan Deva)
  - rice (Anita Ganesan, Camilla Mathison, Chetan Deva)
  - soybean (**Felix Leung**)
  - maize (Karina Williams, Jemma Gornall, Anna Harper, Andy Wiltshire, Debbie Hemming, Tristan Quaife, Tim Arkebauer, and David Scoby).

  name in **bold** = talking on this topic in the JULES meeting.

JULES-crop meeting, June 2016

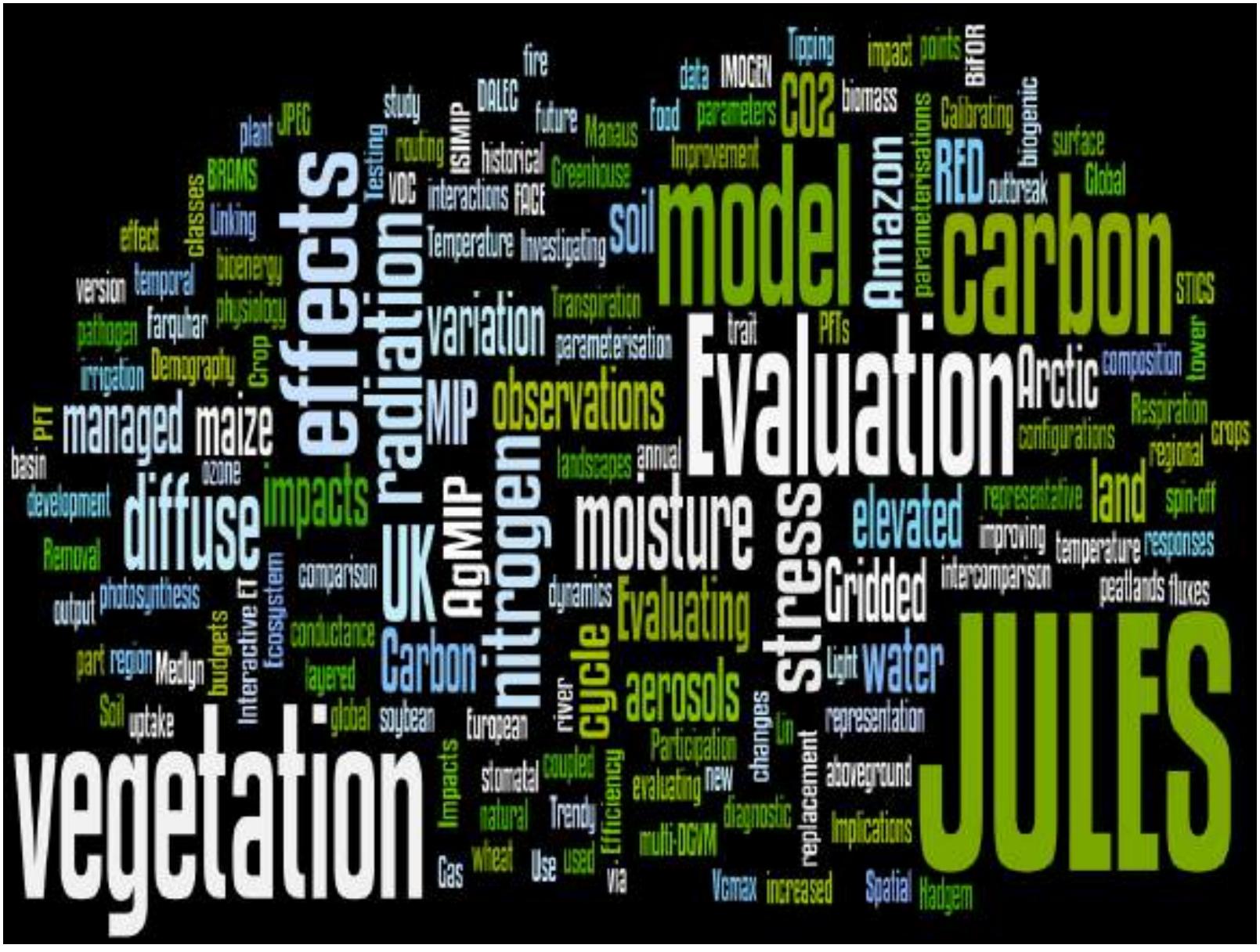
- MIP Participation: AGMIP GGMCI phase 2 and maize ET study (Karina Williams, Pete Falloon).
- Food security and pathogen outbreak (Catherine Morfopoulis)
- Integrated with other impacts components e.g. river routing, irrigation (Kate Halladay, Camilla Mathison)
- Linking the Land Surface and Atmospheric Composition (Garry Hayman, Anita Ganesan)
- Emphasized that the key issues facing crop modelling are also important for natural vegetation too e.g. response to drought, modelling leaf nitrogen concentration through the season.

Next meeting: 13th - 15th November 2017, Leeds University. Contact Pete Falloon for more information.

Vegetation Module Meeting, May 2017

- Current work
- Science direction and challenges
- Observational datasets
- Collaboration and funding opportunities

Minutes and links to slides on JULES trac:
https://code.metoffice.gov.uk/trac/jules/wiki/VegetationMeetingMay2017.



Results of recent poll of ongoing research in vegetation module. Word cloud from http://www.wordle.net/create

Vegetation Module Meeting - current work

- Evaluation against flux tower observations (**Darren Sleven**, Anna Harper, **Alberto Martinez de la Torre**, **Heather Rumbold**)
- Impacts of ozone (Becky Oliver, Lina Mercado, Stephen Sitch)
- Medlyn stomatal conductance (Becky Oliver, Lina Mercado, Stephen Sitch)
- Photosynthesis adaptation/acclimation (Becky Oliver, Lina Mercado)
- Carbon fluxes in the Arctic tundra (**Sarah Chadburn**)
- Evaluation of trait-based physiology runs (Anna Harper)
- Transpiration in JULES as a diagnostic (Kate Halladay)
- Soil moisture effects on Light Use Efficiency (Beni Stocker, Iain Colin Prentice)
- Interactive fire/vegetation (**Chantelle Burton**)
- ISIMIP historical runs (Catherine Morfopoulis)
- Carbon and nitrogen cycle configurations (Andy Wiltshire)

name in **bold** = talking on this topic in the JULES meeting.

Vegetation Module Meeting - future science

- Assessing leaf surface temperature/skin surface temperature.
- Phenology model based on degree days
- Carbon allocation scheme to include water and nutrient availability
- Heat stress parameterisation (particularly crops)
- Incorporate optimization theory into JULES
- Evaluation of combined carbon and water cycles, including feedbacks
- Improve Arctic vegetation
- Two sources (soils and vegetation) for ET
- Better understanding of WUE and elevated CO2
- Inclusion of a P cycle
- Improved N cycling model, what about emission of N2O from soils and fertilizer
- Include ground water access by plants
- Better use of our links with other models

Vegetation Module Meeting - datasets

- Avignon, crops, Mediterranean climate (**Sebastien Garrigues**): 15 years of flux observations on winter (wheat) and summer crops (maize, sunflower, sorghum). Includes met forcing, C & H2O fluxes, crop production, vegetation characteristics, LAI, soil moisture.
- Arctic sites (**Sarah Chadburn**): Flux sites freely available
- NORDESTE: Newton fund project Nordeste (led by Colin Prentice), which will be gathering physical and biological data about tropical dry forest in Brazil.
- BIFOR FACE data: contact via Debbie Hemming
- FLUXNET2015, FIFE (tallgrass prairie, Kansas), LBA (Amazon), ...
- Evaluation frameworks: NASA LIS, ESMeval tool, ILAMB
- South-East Asia impacts (Camilla Mathison): including crops, irrigation, river flow, possibly glaciers.