

Summary of survey of current JULES process issues & biases

Debbie Hemming



Summary of survey - current JULES process issues & biases

Process issues & biases	Who
<p>Terrestrial Carbon Cycle process evaluation workshop 16th May 2016</p> <p>6 proposed areas to focus on:</p> <ol style="list-style-type: none"> 1. Soil moisture & plant carbon response (Karina, Chris, Anna, Eddy, Tristan-obs, Pierre, + Lucy Rowland, Nic Gedney) 2. Vegetation dynamics (Tristan, Andy, Eddy, Pierre, Sarah, Anna, Chantelle) 3. C-N interactions (Pierre, Andy, Eddy, Debbie, Anna, Karina-crops, + Doug Clark) 4. Carbon allocation / biomass residence time (Chris, Debbie) 5. Soil carbon decomposition (Eleanor, Chris, Sarah) 6. Phenology (Karina, Debbie, Tristan-obs) 	<p>Anna Harper, Pierre Friedlingstein, Sarah Chadburn, Tristan Quaife, Eddy Robertson, Eleanor Burke, Gill Kay, Chantelle Burton, Andy Wiltshire, Karina Williams, Chris Jones, Debbie Hemming, Penny Boorman, Pete Faloon, Alistair Sellar, Steven Hardiman</p>
<p>Soil moisture stress on vegetation – existing group</p>	<p>Karina Williams, Anna Harper</p>

Process issues & biases...contd

Who

Turbulent fluxes of heat & moisture – particularly in complex (two source) surfaces

We dry out below-canopy soils too quickly

Eleanor Blyth, Emma Robinson,
Doug Clark

UKESM1 priorities:

1. Soil moisture & its impact on NPP & veg distribution *covered in existing Soil moisture stress on vegetation group*
2. Bare soil fraction & its impact on dust emissions & surface albedo
3. Vegetation biases in northern mid-latitudes *impacting on surface albedo, particularly where snow cover is sensitive to vegetation height*

Alistair Sellar, UKESM group

(Soil) Hydrology-related:

- Soil evaporation: *e.g. consider replacing current scheme*
- Infiltration: *Possibly together with soil evaporation*
- Root water uptake & root distribution functions
- Soil Hydraulic schemes & parameters: *this is largely being covered by ISMC/GEWEX-SoilWat activities led by Verhoef et al*
- Evaluations with Topmodel compared with other river routing scheme

Anne Verhoef et al Land Surface
Processes Cluster, Univ of
Reading/NCAS-Climate

Vegetation-related:

- Development of proper vegetation Aerodynamic scheme
- Improved phenology: *esp the way phenology reacts to soil water*
- Dynamic vegetation – *competition for space*
- Soil respiration & carbon stocks *e.g. spin-up for carbon more automated*
- Could calculation of VCmax be further improved?

Arctic region:

- Soil hydraulics: *soil too dry in the Arctic*
- Arctic vegetation not represented so carbon stocks & fluxes are too small

Sarah Chadburn



Summary of survey - current JULES process issues & biases *Rough groupings*

- **Soil moisture & vegetation responses – current JPEG (Karina, Anna et al)**
 - *Influence on NPP, veg distribution (Alistair Sellar)*
- **Soil hydrology (moisture) in general**
 - *Turbulent fluxes of heat and moisture – currently drying out below canopy soils too quickly (Eleanor Blyth et al)*
 - *Soil hydrology schemes & parameters, soil evaporation, infiltration (Anne Verhoef SoilWat activities)*
 - *Regional focus: Tropics and Arctic (Rich Betts, Sarah Chadburn)*
- **Soil carbon stocks, root distributions, decomposition, soil respiration**
 - *2016 TCC workshop – soil carbon decomposition (Eleanor, Chris Sarah)*
 - *Carbon stocks, root distributions, soil respiration (Reading/NCAS)*
- **Vegetation distribution**
 - *Bare soil fraction & impact on dust emission & surface albedo (Alistair Sellar)*
 - *Vegetation biases in northern mid-latitudes affecting albedo esp where snow cover sensitive to veg height (Alistair)*
 - *Arctic veg not represented so carbon stocks & fluxes too small (Sarah Chadburn)*
- **Vegetation dynamics / competition**
 - *2016 TCC workshop (Tristan, Andy, Eddy, Pierre, Sarah, Anna, Chantelle)*
 - *Competition for space (Reading/NCAS)*
- **Phenology**
 - *2016 TCC workshop (Karina, Debbie, Tristan-obs)*
 - *Esp how phenology reacts to soil water (Reading/NCAS)*
- **Vegetation & soil C:N dynamics (Chris Jones, Debbie)**
- **Proper vegetation aerodynamics scheme (Reading/NCAS)**
- **Could Vcmax be improved? (Reading/NCAS)**



Explanation of breakout groups

Debbie Hemming



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Breakout groups – explanation

3-4 breakout groups, colour coded!

Fill out separate template for each process/bias...

1. Identify key processes / biases
2. Ideas on how to address
3. People interested and/or already working on each
→ anyone want to lead the proposed JPEG
4. Criteria for success
5. Prioritise the processes/biases

Feedback from breakout groups

1 person to give 3-min feedback of the key points from their breakout group

Stick processes/biases written on separate sticky notes on the tree!

(with priority rank number in corner)



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Breakout Groups

Priorities for future JPEGs

Plenary discussion

Martin Best

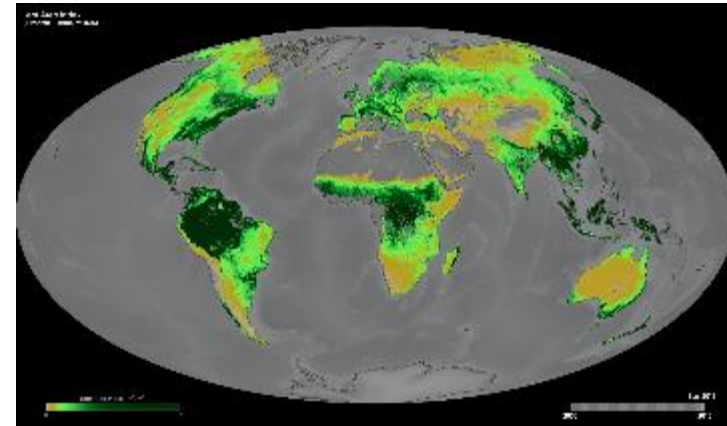
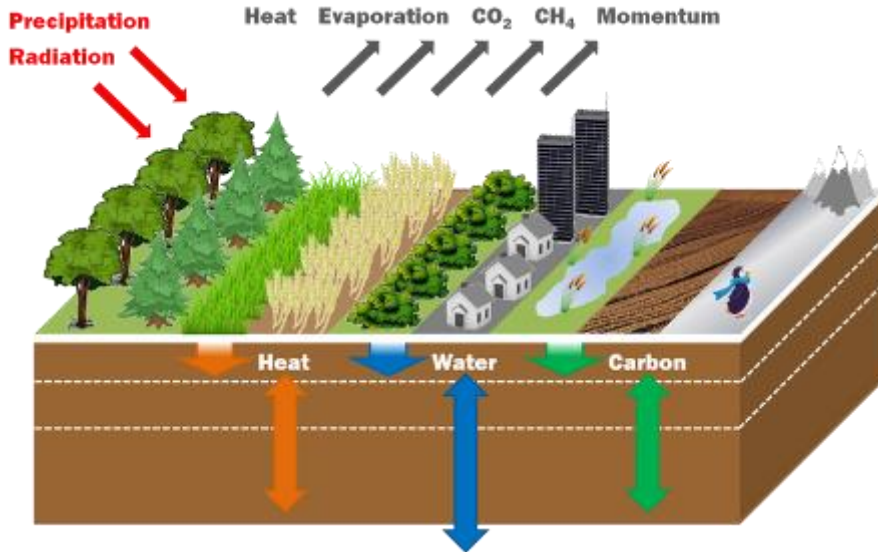


Summary & what next?

Debbie

1. Summarise everyone's templates and collate
2. Identify people interested in each process/bias
3. Please contact me, Martin or Chris Jones if you're interested in leading a specific (J)PEG – we can put you in touch with other people interested

Thank you



JULES

Joint UK Land
Environment Simulator

