

Soil biogeochemistry

Module leaders – Noah Smith and Eleanor Burke

We have fortnightly soil biogeochemistry meetings on a Wednesday morning – all are welcome

Current activities:

- JULES-peat (including MOTHERSHIP NERC large grant)
- CH₄ modelling (including CURFEW NERC large grant)
- UKESM2-permafrost
- Fire-soil carbon interactions

Sadly not enough of this work is going in the trunk (plan to do better)

Fire (but actually biogeochemistry)

- Adding pyrogenic carbon to JULES (Oscar Kennedy-Blundell)
 - Preliminary version added to non layered soil carbon model
- Investigating fire-permafrost interactions (Remi Gaillard)
 - Initial developments: changing soil physical properties in response to soil organic carbon content.

Biogenic fluxes (but actually biogeochemistry)

- Microbial modelling of CH₄ fluxes – including the effect of the water table distribution.
 - Site scale focusing on Panama (Janice Liu)
 - Pan-tropical using a compilation of in situ data, aiming to also get a good goal representation in JULES (Juliette Bernard)

JULES-peat (Elise Dehaem and Noah Smith)

- New scheme for calculating lateral flow from each soil layer
- Modifying vegetation inputs to soil:
 - below ground litter input via pft specific root depths
 - above ground litter into surface layer
 - dpm/rpm ratio depends on proportion of leaves, root, wood for each pft
- Moss pft (Rachael Turton)
- DigiBog type peat accumulation model under development in addition to Chadburn et al (2022)

JULES-CNP (Peter Cook and Alexander Kurganskiy)

Upgrading JULES CNP and applying to tropical and temperate forests.

IMOGEN (and its offshoot PRIME

See poster or come and talk with me