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| **Title :** | Links - C3/4/5 European scales and maps [WP12-16] |
| **Time :** | 09:00 – 10:30, Oct 26 |
| **Chair :** | Wim de Vries |
| **Attendees :** | Chris Evans, Håkan Pleijel, Felicity Hayes, Wilfred Winiwarter, Bruce Hungate, Max Posch, Almut Arneth, Gert-Jan Reinds, Wim de Vries |
| **Minutes by :** | Chris Evans and Wim de Vries |

### Aim

Build links between site- and regional-scale modelling in C3, C4 and C5 with respect to modelling carbon sequestration/ plant species change and with respect to development/ assessment of novel thresholds (C3) and application at European scale (C4).

### Presentations

None

### Topics discussed with Issue, decisions/conclusions and actions

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| Issue: | Which models to apply on a site basis (O-CN and CLM not in C3, DNDC-MOBILE not in C4) |
| Decision: | Aim to apply all models at a set of common sites if possible (not all modellers committed/funded to do this so it will be optional, but should be useful to all) |
| Action: | Wim to discuss applying O-CN and CLM with C4 modellers alongside C3 models |

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| Issue: | Selection of sites for model testing |
| Decision: | A common set of experimental/monitoring sites for model testing will be identified based on data availability/quality to include a range of ecosystems and drivers – require both model input data and test data. |
| Action: | Chris (in cooperation with Gina Mills /Felicity Hayes) is taking the lead in selecting appropriate sites for multiple model application based on results of data mining and identification of model data requirements |

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| Issue: | Interaction/overlaps between DO3SE model and DGVMs. Idea is to expand DO3SE to a photosynthesis based model, with plant more in focus than stomatal conductance alone, including all drivers affecting plant growth such as CO2 and N |
| Decision: | Recommend that modellers of DO3SE and DGVMs, which are photosynthesis based, work together to develop models in an efficient way, rather than duplicating efforts (i.e. DOSE creating a new photosynthesis model or DGVMs adding a new ozone uptake model if they already exist in a suitable form) |
| Action: | Håkan will take questions forward to Lisa Emberson and also link to Dave Simpson (in view of linkage to EMEP model). Lisa Emberson to discuss modelling needs with DGVM modellers (lead Lina Mercado) and finalise a joint model development strategy |

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| Issue: | Use of model outputs in GAINS. To be of policy relevance, it is crucial that response functions are included in GAINS beginning 2012. |
| Decision: | Use presently available response functions for N, CO2, O3 and climate at Alterra/RIVM-CCE, together with available E-D matrix for POD (made by and |

Dave S) within one year for use in policy making. Later on make use of results of DGVMs including DO3SE in either one or another version

**Action:** Max/ Wim to transfer available transfer functions to GAINS in discussion with Markus/Wilfried

**Issue:** Developing novel thresholds for N
**Decision:** The group felt that differential critical loads (as opposed to critical levels) for reduced and oxidised N were not well supported by the evidence, because the different forms are rapidly cycled within the terrestrial ecosystem and thus usually indistinguishable in terms of impacts. Work on novel thresholds for N should therefore focus on deriving new biodiversity-oriented critical loads for N based on species models (EU-MOVE and GB-MOVE)
**Action:** Wim, Gert-Jan, Max and Chris to collaborate on methods for setting critical thresholds using species models and linking these to biogeochemical models to define critical loads. Another issue that needs attention is the fact that a critical level for NH3 is not yet included in GAINS, nor a response function between NH3 and occurrence of lichens/higher plants. This would be valuable and requires an S-R matrix for $NH_3$. Wim to interact with Mark Sutton to get the NH3 response function.

**Issue:** Identification of model input requirements
**Decision:** Because this is a recurring need across several components (also C2) it would be best for this to be handled centrally by CEH Edinburgh if possible to ensure consistency and completeness, and to avoid duplication of effort.
**Action:** Wim to discuss Edinburgh leading a model input data identification with Claire Howard

**Decisions**

| Action | Due | Who |
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| Selecting appropriate sites for multiple model application | Jan 2012 | Chris (with Gina Mills /Felicity Hayes) |
| Discuss modelling needs finalise a joint model development strategy for DO3SE and DGVMs. | | Lisa Emberson with DGVM modellers (lead Lina Mercado) |
| Transfer available transfer functions to GAINS | Jan/Feb 2012 | Max/ Wim in discussion with Markus/Wilfried |
| Get the NH3 response function for lichens and think of developing an S-R matrix for $NH_3$. | Nov 2011 | Wim to interact with Mark Sutton for NH3 response function. |
| Edinburgh leading a model input data identification | Nov 2011 | Wim to discuss with Claire Howard |