We are pleased to announce plans for the Novus Workshop II, which will be held in Estes Park, Colorado in the first week of September, 2014.

This workshop will focus primarily on data and models addressing terrestrial nutrient dynamics and disturbance.

The first round of invitations and applications will begin in early 2014.

In addition, we have several exciting developments coming out of the Novus Workshop I, which was held in May 2013 at the H.J. Andrews Experimental Forest and focused on nutrient cycling in response to disturbance, spanning seasonal to millennial time scales. Currently, two manuscripts are in preparation from the workshop (contact Kendra McLauchlan for details) and a Novus Workshop report is in press at New Phytologist (watch for an announcement on the Novus blog!).
AMERICAN GEOPHYSICAL UNION FALL MEETING: SESSIONS OF INTEREST

Novus Sponsored Session: Convened by Novus Steering Committee Member Michelle Mack

**GC52B: Altered Nutrient Cycling in High Latitude Systems I**
(Also see poster session GC53B)
Climate change in high latitudes may alter disturbance regimes (i.e., fire), hydrology (i.e., water tables) and vegetation communities (i.e., shrub expansion) with cascading impacts on nutrient cycling. This session explores how changing climate alters nutrient dynamics in permafrost-dominated ecosystems and includes presentations on the cycling of N, P and other nutrients, particularly those on disturbance effects, terrestrial-aquatic linkages and growing season controls on productivity.

**B22C: Dynamics of Global Forests Under a Changing Climate I**
(Also see poster session B23D)
This session will focus on impacts of climate change on forests globally and consequent climate feedbacks, addressing both the effects of altered atmospheric CO$_2$ and climate and the implications of forest-climate feedbacks that could buffer or accelerate change.

**B41F/B42B: Ecological Disturbance: Observing and Predicting the Impacts of Landscape Disturbance II/III**
(Also see poster session B33D)
This session focuses on observational and modeling studies into the effects of ecological disturbance on terrestrial ecosystem carbon balance and ways to understand non-equilibrium conditions.

**H11D: Hydrological and Biogeochemical Recovery in Forests after Disturbance (Posters)**
This session will explore our current understanding of forested catchment recovery after disturbance, including methods for quantifying recovery, field and modeling studies of recovery mechanisms, and cross-site comparisons.

**B51L/B52C: New Mechanisms, Feedbacks, and Approaches for Improving Predictions of the Global Carbon Cycle in Earth System Models I/II**
(Also see poster session B53C)
This session focuses on integrated understanding of feedback mechanisms, structure and function of critical and vulnerable ecosystems, human activities, and approaches for evaluating and benchmarking Earth System Models.

**EP11A: Thresholds in Soil Response to Global Change I**
(Also see poster session EP13C)
This session explores thresholds of change in soil state and function to better understand vulnerability to global change. Studies that focus on non-linear shifts carbon storage and release in soil, novel isotopic fractionation, changes in soil-water interactions to better understand non-linear thresholds in soil condition, water transport and chemistry are encouraged.

**B41H/B42D: The Bio-atmospheric N Cycle: Emissions, Transformations, Deposition, and Terrestrial and Aquatic Ecosystem Impacts I/II**
(Also see poster session B43E)
This session focuses on physical, chemical, biological, and anthropogenic processes that drive local, regional and global nitrogen exchange, impacts on ecosystems, carbon uptake, nitrogen export, biodiversity, human health, and policy implications and responses.
Research Highlights: How Robust are Holocene Treeline Simulations?

Novus participant Jesse Morris (University of Idaho) and colleagues recently assessed the accuracy of generalized dynamic vegetation models in reconstructing historical treeline patterns. For this study, they compared output from the LPJ-GUESS vegetation model with fossil-based reconstructions of the European Arctic treeline over the past 9,000 years. The study showed that the model-based reconstructions may be limited in their ability to capture species-level dynamics (both current and historic), but do accurately simulate coniferous treeline shifts throughout the Holocene. The study identified particular limitations to model-based reconstructions, and suggested that model accuracy could be improved through the incorporation of topography, the extent of Arctic peatland, microclimate, and species life history characteristics.

The full text can be reviewed [here](#).

Research Highlights: Soil Calcium and Forest Decline

Novus participant John Battles (UC Berkeley) and co-authors recently published a paper in Environmental Science & Technology Letters titled “Restoring soil calcium reverses forest decline.” In this study, carried out at Hubbard Brook Experimental Forest, calcium was applied to forests to replace calcium lost over the 20th century due to anthropogenic influences.

The study showed that improved calcium nutrition increased aboveground net primary productivity and photosynthetic surface area. These results are the first to show that forest decline in growth and health due to acid deposition can be reversed with the addition of calcium.

The full paper can be reviewed [here](#).

Research Highlights: Walker & Syers

Novus participant Benjamin Turner (Smithsonian Tropical Research Institute) and Leo Condon co-wrote the opening editorial for a special issue of Plant and Soil titled “Pedogenesis, nutrient dynamics, and ecosystem development: the legacy of T.W. Walker and J.K. Syers.” The editorial details the Walker-Syers paradigm of nutrient cycling over pedogenic time scales and its importance for ecosystem studies. Turner and Condon’s article can be viewed [here](#). Other articles in the special issue can be viewed [here](#).
This summer, several Novus participants authored a paper for PNAS Early Edition analyzing fire regimes in boreal forests throughout the last 10,000 years. The study, spearheaded by lead author Ryan Kelly (University of Illinois, Urbana) and co-authored by Novus Steering Committee member Philip Higuera (University of Idaho), analyzed charcoal and pollen records from 14 lakes in interior Alaska.

These records indicate increased periods of burning under warm and dry conditions such as the Medieval Climate Anomaly (MCA, 1,000-500 cal year BP) and recent decades. During the MCA, vegetation feedbacks modulated the severity and frequency of fires, suggesting that vegetation dynamics could stabilize fire regimes in this region. Recent decades have seen extreme fire severity and biomass burning, surpassing the previous maximum set during the MCA. This unique fire regime could be stabilized by vegetation feedbacks similar to those during the MCA, despite additional warming in coming years.

The ecological and socio-economic importance of boreal forests underscores the importance of understanding long-term trajectories of fire regimes and associated feedbacks in response to climate change. The study was highlighted by Scientific American. Full text can be accessed here.

This spring saw extensive flooding in Estes Park, CO, where the Novus workshop II will be held. Extreme disturbances in this region from both fire and flooding will provide a real-world backdrop to discussing impacts of disturbance on ecosystems.

Research Highlight: Forest Resilience and Adaptation

Novus participant Brian Buma (University of Alaska Southeast) and Carol Wessman recently published a study assessing how the regeneration of coniferous forests under disturbance and shifting climate regimes are affected by managerial decisions.

The study utilized data from 112 sites representing different disturbance histories, in the southern Rocky Mountains of Colorado. Data from these sites was incorporated into the US Forest Service Forest Vegetation Simulator to simulate future climate change scenarios and managerial responses.

The study found that future climate strongly influenced carbon stocks, in some cases resulting in a shift to non-forest ecosystems. Carbon stocks and forest habitat were best maintained by active, adaptation-oriented management, though this included the establishment of non-local species.

The full paper can be reviewed here.

Research Highlight: Fire Regimes and Serotiny

Novus participant Brian Buma and colleagues recently analyzed the effects of changing fire regimes on serotinous species. Despite the presumed resilience to fire provided by serotiny, increasing fire frequency may actually decrease the resilience of some serotinous populations. The paper presents a conceptual framework examining these interactions on local and regional scales. The full article can be reviewed here.
Share Your Ideas for the Novus Blog and Newsletter!

We are always looking for new content for the Novus blog and newsletter. If you have new information to share, please send it to Laci Gerhart-Barley at rockchalk@ksu.edu.

Topics for newsletters include:
- Publication highlights
- New projects and grants
- New Novus products or personnel

Topics for blog posts include:
- Job announcements (all levels)
- Funding opportunities (grants, fellowships, stipends)
- Conferences and workshops

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