

Carbon and nutrient dynamics in semi-arid ecosystems: responses to climate change from mechanisms to landscape processes

Participants:

PI: Marie-Anne de Graaff (BSU)

Co-PI's: Jay Arnone (DRI); Paul Verburg (DRI); Heather Throop (NMSU)

Graduate Students: Amanda Sills (BSU); Patricia Xochi Campos (BSU); Brenda Nieto (NMSU)

Convened: 11/02/11 – 11/6/11

Location: Valles Caldera National Preserve Science and Education Center, Jemez Springs, NM

Aim of the meeting: To write a review paper addressing the uncertainties associated with soil C cycling in semi-arid and arid ecosystems in the northern hemisphere, and to use this paper as a foundation for development of a competitive proposal to be submitted to the National Science Foundation.

Pre-meeting activities: Conference call and data collection:

1. Discussion of review paper to be written during the workshop, including: (a) main message(s); (b) data compilation; (c) data analysis
2. Discussion of proposed agenda for NM. What things do we need to have in order prior to getting to the research station to use our time most effectively?
3. Division of tasks.
4. Collection of data for the review paper by each of the participants

Meeting activities:

11-2-11

Travel

11-3-11

Early morning: Discussion of the data we collected so far, identification of gaps in the data-set. Construction of a conceptual model, which led to the identification of key questions and data yet to be collected.

This activity involved all participants and was lead by the working group chair (Dr. de Graaff). The discussion was directed towards:

1. Generation of clear statements of what is currently known regarding C and nutrient dynamics in semi-arid ecosystems and their responses to climate change.
2. Identification of key areas where the mechanisms driving these responses are not understood

3. Establishing a road map forward to relate plot level mechanistic understanding to factors controlling landscape level processes.

Morning/ afternoon/ evening: Participants worked individually to finish a table to be used for the review paper with data extracted from the literature. Each student worked with a faculty member on data collection. The data collected included all results on response variables related to soil C cycling (i.e. ANPP, BNPP, NEP, NEE, soil CO₂ fluxes, soil microbial activity, C mineralization, N mineralization, microbial biomass C and N, litter decomposition, soil C and N pools, SOM pools, litterfall, DOC and DON) in semi arid and arid shrub-lands (both in the US and abroad).

11-4-11

Early morning: The workgroup chair proposed a specific outline for the review paper based on the data collected thus far. The group discussed the outline and continued to collect data for the review paper.

Morning/ afternoon/ evening: Data collection. From 3 pm – 6 pm we took a field trip to the Valles Caldera National Preserve.

11-5-11

Morning/ afternoon: Data collection by all group members, except by working group chair who merged all the tables into a comprehensive excel file. At the end of the afternoon we discussed which methods to use to analyze the data.

Evening: Discussion of pre-proposal to be written for NSF. Heather Throop made an outline for the proposal based on some of the preliminary conclusions drawn from the collected literature.

11-6-11

Early morning: Discussion of post meeting activities.

Post meeting activities:

Dec. 16th: Deadline for finishing up the data synthesis table. De Graaff will initiate a conference call on that date addressing: data analysis and the pre-proposal for NSF.

Jan. 7th: Pre-proposal for NSF due.

Jan 31st: Data analyzed, figures/ tables for paper finalized. Conference call to discuss the article.

Mar 1st: Rough draft of paper done. We would like to re-convene once more this month to finish the article. The article will be submitted to Nature-Geoscience.

Innovative Working Group members working at the Valles Caldera Research and Education Center.

