Agenda: Roots in Models
11-12 June, 2014

Wednesday, June 11, 2014 (SNS, Building 8600, Room C156)

Time	Topic	Speaker
Posters given to T. Pfeiffer for set-up during breakfast		
Overview: Current model and empirical understanding of roots and root processes		
7:30 am	Breakfast	
8:00 am	Introductions + meeting goals	C. Iversen / D. Stover
8:10 am	Model: Roots in TBMs	Peter Thornton
8:30 am	Overview: Root traits and root dynamics	Dave Eissenstat
9:10 am	Break (30 minutes): Networking	
9:40 am	Overview: Root physiology	Hans Lambers
10:00 am	Overview: Root-soil interface	Colleen Iversen
10:20 am	Group discussion + discussion goals (30 minutes)	
Bus departs for JICS building at 10:50 am		
11:00 am to 1:00 pm	Working lunch: Poster session on root processes (2 hours)	
Bus departs for SNS at 1:10 pm		
Theme 1: Root traits		
1:30 pm	Data: Root traits in TRY database	Jens Kattge
1:45 pm	Plant sizes below- and aboveground	Jochen Schenk
2:00 pm	Rhizosphere effects on root traits	Dave Weston
2:15 pm	Break (15 minutes)	
Theme 2: Root physiology		
2:30 pm	C partitioning / respiration / phenology	Jens-Arne Subke
2:45 pm	Root exudation	Rich Phillips
3:00 pm	Model: FUN, C cost of N uptake	Eddie Brzostek
3:15 pm	Model: Review of root function in models	Jeff Warren
3:30 pm	Break-out Discussions I (1 hour)	
4:30 pm	Group reports (30 minutes)	
5:00 pm	Adjourn	
5:40 pm	External participants depart Guest House for Riverside Grille in Oak Ridge for 6 pm dinner reservation	

Thursday, June 12, 2014 (SNS, Building 8600, Room C156)

7:30 am	Breakfast	
8:00 am	Data: Archives and data collection	B. Cook / A. Boyer
8:15 am	Model: Uncertainty quantification	Dan Ricciuto

Theme 3: Root distribution and dynamics

8:30 am	DNA barcoding	Andy Jones
8:45 am	Relating root C turnover to soil organic C dynamics	Roser Matamala
9:00 am	Minirhizotrons and scaling	Seth Pritchard
9:15 am	Model: Remote sensing + mycorrhizae	Josh Fisher
9:30 am	Break (15 minutes)	
9:45 am	Break-out Discussions II (1 hour)	
10:45 am	Group reports (15 minutes)	

Theme 4: Root-soil interactions

11:00 am	Root exudation	Marie-Anne de Graaff
11:15 am	New technology + mycorrhizae	Mike Allen
11:30 am	Model: Mycorrhizae + soil C storage	Adrien Finzi
11:45 am	Model: P cycling + rhizosphere	Xiaojuan Yang
12:00 pm to 1 pm	Working lunch: Group discussion on root trait database	
1:00 pm	Break-out Discussions III (1 hour)	
2:00 pm	Group reports (30 minutes)	
2:30 pm	Wrap-up and future directions	
2:45 pm	Break (15 minutes)	
3:00 pm	Field trip to SPRUCE prototype	
4:00 pm	Departure	
5:00 pm	Dinner in Oak Ridge for those staying Thursday night	

Break-out discussions and workshop products:

The goal of this workshop is to improve the representation of roots in the next-generation of terrestrial biosphere models.

During each break-out discussion, workshop attendees will break into four groups, each corresponding to a major cross-cutting topic. Each group will have a discussion leader, who will remain in that group for the duration of the discussion. All other participants will change groups after 15 minutes of discussion, so that they will have a chance to contribute to the discussion in each of the four topics. The discussion leader for each topic will report back at the end of each discussion section.

The cross-cutting topics are below, and discussion should focus on answering a few major questions that could be summarized in a publication:

1. **Big questions:** What are the gaps between current model representation of roots and our understanding of roots based on current measurements?

2. **Links with models:** Can the community of root and rhizosphere ecologists work together to develop an 'Ideal conceptual model' of roots and root processes that could be made numerical with help from the modeling community? What are the priorities for the next steps in the evolution of a root model / module? (This could be a complicated discussion, as it could be based on several factors, including sensitivity analyses, educated opinions of the community of root and rhizosphere ecologists, or even where the most data are available.)

3. **Knowledge base:** Where are the global data? Can we all contribute data on root traits and processes to a developing root database available for model use? What is the priority for future data collection?

4. **Response to environment:** What are the experiments / measurements / technological advances that are needed to improve our understanding of the relationship between root processes and environmental conditions, and the representation of these relationships in models?

Workshop participants

Participant	Organization	Email address
Mike Allen	UC, Riverside	michael.allen@ucr.edu
Allison Boyer	ORNL	boyerag@ornl.gov
Eddie Brzostek	Indiana University	edbrzost@indiana.edu
Joanne Childs	ORNL	childsj@ornl.gov
Bob Cook	ORNL	cookrb@ornl.gov
Marie-Anne de Graaff	Boise State University	marie-annedegraaff@boisestate.edu
Dave Eissenstat	Penn State University	dme9@psu.edu
Adrien Finzi	Boston University	afinzi@bu.edu
Josh Fisher	JPL	joshua.b.fisher@jpl.nasa.gov
Lianhong Gu	ORNL	lianhong-gu@ornl.gov
Paul Hanson	ORNL	hansonpj@ornl.gov
Colleen Iversen	ORNL	iversencm@ornl.gov
Andy Jones	Oregon State University	jonesfr@science.oregonstate.edu
Shujiang Kang	ORNL	kangs@ornl.gov
Jens Kattge	MPI for Biogeochemistry, Jena	jkattge@bgc-jena.mpg.de
Tony King	ORNL	kingaw@ornl.gov
Jitu Kumar	ORNL	kumarj@ornl.gov
Hans Lambers	University of Western Australia	hans.lambers@uwa.edu.au
Roser Matamala	ANL	matamala@anl.gov
Melanie Mayes	ORNL	mayesma@ornl.gov
Rich Norby	ORNL	norbyrj@ornl.gov
Rich Phillips	Indiana University	rpp6@indiana.edu
Shafer Powell	ORNL	powellas@ornl.gov
Seth Pritchard	College of Charleston	pritchards@cofc.edu
Dan Ricciuto	ORNL	ricciutodm@ornl.gov
H. Jochen Schenk	California State University, Fullerton	jschenk@exchange.fullerton.edu
Ingrid Slette	ORNL	sletteij@ornl.gov
Jens-Arne Subke	University of Stirling	jens-arne.subke@stir.ac.uk
Peter Thornton	ORNL	thorntonpe@ornl.gov
Collin Timm	ORNL	timmac@ornl.gov
Anthony Walker	ORNL	walkerap@ornl.gov
Gangsheng Wang	ORNL	wangg@ornl.gov
Jeff Warren	ORNL	warrenjm@ornl.gov
Dave Weston	ORNL	westondj@ornl.gov
Stan Wullschleger	ORNL	wullschlegsd@ornl.gov
Xiaojuan Yang	ORNL	yangx2@ornl.gov