

Mid-Atlantic Region Ecological Observatory ([MAREO](#)) A NEON Implementation

Report on November 2005 COREO Meeting W.K. Kellogg Biological Station Hickory Corners, Michigan

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To: MAREO Executive Committee and Membership

From: Eric Nagy (enagy@virginia.edu) and Robert Gardner (gardner@al.umces.edu), MAREO Representatives to the Consortium of Regional Ecological Observatories (COREO) attending the November meeting

The November 21-22 2005 COREO meeting held at Kellogg Biological Station was called primary to formulate recommendations to NEON Inc. and NSF in three areas: 1) the newly defined Domain Boundaries, 2) development of criteria for NEON installations, and 3) definition of the process for selecting NEON installation sites. A detailed agenda of the meeting is given below, and products of the meeting should show up soon at coreoneon.org. Following introductions, the meeting opened with a comprehensive presentation by Bill Michener of the NEON planning project Senior Management Team in which current / in-progress thinking (mostly on above items #2 and #3) were presented for our review and feedback.

NEON update from Bill Michener:

- The current NEON design is an order of magnitude over budget. Most NSF MREFC (Major Research Equipment and Facilities) projects run around \$300M; the working NEON budget projection is near \$3B. Significant “de-scoping” is expected in coming months.
- NEON is #2 in the NSF cue for Congressional consideration. Failure to hold this position (due to process slowdown) may drop NEON to a position many years in the future.
- Major equipment to be installed in each Domain now certainly includes NPOL S-band radar and canopy cranes (where appropriate).
- Partnerships with USFS, CENS, NCEAS, USGS, Ameriflux, Heinz Center, GEOS, LTER, and others formally defined in soon-to-be-released Science and Education Plan.
- Previously considered platform-wide experiments have been dropped (rain-out experiment and watershed study component).
- Prospectuses (=“proposals”) for NEON installations will be solicited for Domain installations (1/Domain) as well as “special facilities.”
- NEON planning project and NSF will be soliciting input and review by COREO in several areas including: review of Domain boundaries, review of the “Prospectus” (= installation proposal) procedure, mechanisms to

promote collaboration among Domains, planning a new “Continental Ecology Program” at NSF to support research that uses NEON, planning new education programs, planning human dimension programs, planning NEON-2

- Projected date for release of Science and Education Plan from NSF is January 1 2006
- NEON is intended to be a continental-scale instrument designed to draw stratified samples from the United States (states, territories and compact or treaty associates). Good analogy is a multi-antenna radio telescope pointed at the USA and tunable to different ecological “wavelengths.”
- A primary mission of NEON is ecological forecasting and tracking of change at a continental scale.
- Below is the current thinking on how NEON will be implemented:

Domain – an objectively defined (by NEON) contiguous geographic areas within the USA. Each Domain will host a single NEON unit, known as a “District.” There are 20 Domains. (**20 total in NEON**)

District – a ~200km length area within each Domain that will be composed of 3 “Sites” and 1 “Mobile Unit.” Because there is a single District in each NEON Domain, there will be a total of 20 NEON Districts (=installations). (**1 / Domain = 20 total**)

Site – the ~1sq-km area containing most NEON sensors and facilities. Sites will include terrestrial and aquatic components and are of 3 types: “wildland,” “managed,” and “urban.” The Mobile Unit is a kind of 4th Site hosted by each District. Some sensors may be located outside the 1sq-hm Site. Each Site hosts 15 Sensor Grids and 4 towers. “Research Reserves” are off-Site locations that will support Site activity. There will be three Sites in each District – 1 of each type. (**3 / District**)

Mobile Unit – contains most, or all, capability of a Site. Can be moved and deployed throughout the Domain, or outside the Domain, as needed. (**1 / District**)

Sensor Grid – 1ha plots inside the Site. There will be 15 Sensor Grids per Site. (**15 / Site**)

Towers – 1 Advanced Tower and 3 Basic Towers will be located inside, or very near, each Site. (**4 / Site**)

Research Reserve – vaguely defined. Museums, collections, off-Site field experiments might be defined as Research Reserves. (**undetermined #**)

- “Request for Prospectuses” will go out after May 2006. The prospectus is what NEON Inc. and NSF are calling a proposal to host a District. NSF does not want to call it a proposal since it is unsure how they will be reviewed.
- A draft “request for information” was circulated within the COREO meeting. This draft will evolve into the Request for Prospectuses.

Discussion and questions followed, including issues below. Michener did not give definitive answers for most of these questions. Instead he indicated there is much flexibility in what will be considered in a prospectus:

- What is meant by “managed,” “urban” and “wildland?”
- What kind of aquatic-terrestrial gradient is needed in each Site?
- When will we know exactly what variables we are measuring?
- Might we need 2 Mobile Units / District?
- How strict is the 200km District size?
- Can there be “satellite sites?” Is this what the Research Reserves are?
- How will a small District (~200 km) represent the entire Domain?

The remainder of the meeting was dedicated to formulating a COREO response to three issues – Domain Boundaries, criteria for NEON implementation (the structure outlined by Michener), the draft prospectus guidelines and how prospectuses will be developed (and by who).

COREOS responses (Eric and Bob’s notes; not official):

Boundaries:

- COREO endorses the NEON Inc. process of defining Domain Boundaries but hopes NEON will entertain proposals to make minor changes to boundaries given well justified arguments.
- COREO encourages among-Domain cooperation and coordination in the selection of District placement.
- COREO hopes institutions will be permitted to participate in more than one prospectus, and more than one Domain.

Implementation Parameters:

- COREO needs clarification on what constitutes wild, managed, and urban. Are these absolute or relative categories?
- COREO needs clarification on how strict the 200km District size is.
- COREO needs clarification on how strict the 1sq-km Site size is.

Prospective Issues:

- COREO recommends that each Domain submit a single prospectus. This prospectus may contain models for one or more Districts. COREO recognizes that independent efforts within Domains may result in multiple Prospectuses. But COREO strongly encourages cooperation within, and among Domains.
- Only prospectuses for entire Districts should be developed (no partial District proposals).
- COREO strongly recommends that the prospectus process not be overly burdensome or time consuming. Alternately a multiple tiered process should be devised to screen weak or inappropriate proposals early on in the process.
- COREO emphasizes the need for funds to aid Domains in prospectus development. NSF should support prospectus development.
- COREO endorses the traditional NSF peer-review process as a mechanism for reviewing prospectuses.
- COREO recommends flexibility in considering proposals for satellite sites (perhaps as education venues).
- COREO encourages the gathering of “in kind” synergies and support as part of prospectus development.

A COREO member put forth an offer by the USGS EROS project in South Dakota to host a workshop on use of spatial data in support of District placement efforts within Domains. COREO endorses the idea.

Meeting participants broke into three groups to draft consensus statements regarding COREO’s position on the three major issues outlined above. A final plenary session was held to revise and approve these changes (to be posted on the COREO website); elect the next chair for COREO (Phil Robertson will serve a second term); and support and encourage Todd Crowl in the submission of a proposal to NSF for additional COREO funding.

- **COREO Meeting Agenda:**

Monday, November 21

- 6:00pm Dinner (McCrary Hall)
7:30 Welcome, Introductions, Agenda (local host Robertson, incoming chair Crowl)
7:45 NEON update (Neon co-PI Bill Michener)
[where the process is, timeline & benchmarks, decisions made, decisions pending]
8:15 COREO update (out-going chair Dave Breshears)
[new members, dissolved members, role of Coreo, ISEP review process]
8:45 Domain reports from members
-5 minute reports from each domain identifying their view of proposed domain boundaries; these presentations will have been preceded by a 1-page synopsis distributed before the meeting to all participants; individual domain boundaries will not be open for discussion; rather the reports are to inform others of any changes desired by a coreo member
10:00 Adjourn (cash bar available)

Tuesday, November 22

- 7:00am Breakfast (McCrary Hall)
8:00 Site (platform) location criteria
-current thinking of planners - NNDC members
-discussion by COREO reps
10:00 Break
10:30 Process for choosing site locations (prospecti submission/evaluation)
-alternate models
-current thinking of planners – NNDC members
-discussion by COREO reps
12:00 Lunch
1:30 Coreo Report Development – Coreo reps only
Specific domain boundary recommendations
Specific recommendations for site criteria
Specific recommendations for siting process
3:30 Break
4:00 COREO planning and action items
-funding needs for 2006 (plan grant request)
-governance (elect new chair, bylaw development discussion)
-date for next meeting
5:30 Adjourn afternoon session to pre-dinner social (cash bar)
7:00 Dinner
8:00 Continuation of afternoon session as needed
Open facilitated discussion - topics tba
10:00 Adjourn meeting

Wednesday, November 23

7:00am Breakfast

Departures begin (COREO leadership writes report)