

Minutes and Suggestions on Site Selection for the Land Workshop Group of the NACP (9/06/01) as recorded by Ronald Follett.

Site selection is one of the most important considerations in the conduct of the terrestrial component of the NACP. The workshop breakout group devoted considerable time to this topic, including private discussions and phone calls following the meeting. Among the important criteria for site selection are the following considerations:

Criteria for Site Selection:

1. It is important that for more intensive sites that there be a history of collaboration and cooperation as well as the ability to do scaling, including on the temporal scale.
2. It will be important that the site selection process be coordinated with atmospheric scientists. Some sites will be better suited to “small towers” (here defined as Bowen ratio or eddy diffusion equipment) and others to “tall towers” (such as in the Ameriflux network).
3. There will need to be a dedicated effort to data collection and interpretation mechanisms for data consolidation.
4. More intensive sites must have more stringent criteria for the types and intensity of data that is collected.
5. Intermediate and low intensity sites will need to adapt more statistical approaches to aid in the interpretation of data.
6. Finally, there was considerable discussion of how landscape units might be defined. Such units need to extend across the borders between Canada, the United States, and Mexico. In fact such landscape units are, or are nearing, completion in the form of “ecological regions” as described by McMahon et al. 2001 along with related efforts described by Ecological Working Group 1995, and Pater et al. 1998). Specifically these efforts tie directly into the Ecological Framework for Canada, with similar types of coordination with Mexico. Within the US, these efforts mesh with the Major Land Resource Areas (MLRA's) and consequently also with the NRI. Because US Forest Service Personnel are active on the team, it is also assumed that the FIA points can also be accommodated within this same ecological region structure.
7. It is recommended that to better coordinate with the Land Management research component of the NACP, that the atmospheric scientists also consider the potential importance of basing the location of towers used in their studies on the ecological region approach described in item 6, above.

Types of Sites:

- 1 Extensive (low intensity) site network. Such a network may indeed contain perhaps 1000 sites or more and would consist of a network of some type. Two networks that appear to fit this description include the NRI and the FIA site networks. Both currently contain extensive amounts of historical data, are located in a statistical manner on the

landscape, and repeated temporal measurements will continue at these sites. Shortcomings of these sites are that, at least the NRI, covers primarily privately owned lands. Thus, the vast areas of non-forested publicly-owned lands is not well covered, unless the US Bureau of Land Management has some type of inventory network that could also be used. Additionally the measurements taken may not fit well with the NACP data needs. Additionally, the participants in this session are not aware of similar networks in Canada or Mexico, although they may well exist.

- 2 Intermediate intensity site network. Such a network could consist of a statistical subset of the NRI and/or FIA that could be sampled more frequently and that perhaps that could have additional types of data collected that would more nearly address the types of data needs of the NACP program. Other intermediate networks that could likely participate are the many USDA/Agricultural Research Service, Agriculture and Agrifood Canada, and possibly INIFAP research locations in Mexico as well as many of the Universities within the three countries where high quality data is already being collected, often including weather and climate information.
- 3 Intensive sites network. Such a site network could include nested chronosequences, sites where intensive measurements of the behavior of various signals of interest, ground truth measurements, and climate (perhaps decadal) and seasonal disturbances could be obtained. Such sites could, or already may, have small towers or perhaps could be equipped with additional small towers to supplement atmospheric information that is otherwise already planned or being collected.

Intensive sites can be located and participate in research on processes. Concerning the presence of either small or tall towers in cropland areas of the corn belt, there are eddy diffusion towers already located with the USDA/ARS lab in Ames, IA and with the University of NE in Lincoln, NE. In addition there is a desire on the part of a scientist at Michigan State Univ. to add the capability of an eddy diffusion tower to his research program. Atmospheric scientist at this meeting indicated interest in having some input on where to locate a tall tower. In either IA or NE there is good potential for scientific collaboration. Further discussion of the most interested atmospheric scientists with key members of the Land Management workshop planning group is advised before final selection.

There is need to link at least the intermediate and intensive sites to some type of time scale. There may also be some desirability to considering clustering of such sites. Site selection may have the potential to be model driven or geographically driven. The geographically driven concept should be possible to aid based upon the “ecologic region” approach discussed above. The working group did not identify any models that might be used. Criteria for a model driven approach might include, in addition to criteria discussed above, evaluating the most critical land-based (soil, plant, available plant water) parameters needed to assess fluxes and transport in some of the atmospheric transport

models. Other model-based factors would be flux intensities (either source or sink) and understanding why. These are suggestions and there must be the scientific capability available to provide such information at the site(s) selected, but perhaps the suggestion will be useful.

Finally, the sense of the working group was that “experiments are important”, and that there is opportunity to influence existing programs to help offset experimental costs.

Respectively submitted,

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