DEVELOPING SUSTAINABLE PARTNERSHIPS BETWEEN FIRE SCIENTISTS AND DECISION-MAKERS

Timothy Brown[1], Barbara Morehouse[2], Crystal Kolden[1]

[1]Desert Research Institute, Climate Ecosystem and Fire Applications
[2]University of Arizona, Institute for the Study of Planet Earth

1. BACKGROUND

The California and Nevada Smoke and Air Committee (CANSAC) is a consortium of fire weather and air quality decision-makers, managers, meteorologists and scientists who have partnered to provide operational meteorological support for wildland fire and smoke management, and advance the scientific understanding of atmosphere and fire interactions. CANSAC is one of five regional Fire Consortia for Advanced Modeling of Meteorology and Smoke (FCAMMS) established as part of the National Fire Plan, and is dedicated to fire and smoke management issues in the California and Nevada region. Currently, CANSAC related research is being undertaken through the USDA Forest Service Pacific Southwest Research Station, while the operational component has been implemented at the Desert Research Institute (DRI) Program for Climate, Ecosystem and Fire Applications (CEFA) in collaboration with the CANSAC partners.

In the spring of 1999, the California FIRESCOPE Fire Weather / Fire Danger Group met for the first time to discuss the possibilities of forming a consortium of federal, state, county and local fire and air quality agencies that for decision-making purposes would utilize value-added products from an operational mesoscale meteorology model. These products would include standard meteorological elements (e.g., temperature, humidity, wind, precipitation), and value-added information about smoke dispersion and transport, fire danger and fire behavior.

The interest in developing an operational facility to provide these products, and incorporating them to decision-making processes, had been growing in recent years with the realization that new tools and methods were becoming available that could improve forecasts and add substantial information value. This trend was driven in part by a consortium of user groups at the University of Washington. The catalyst arose circa 2000 when the California Air Resources Board began public hearings on amendments to Title 17 of the California Code of Regulations regarding Agricultural Burning Guidelines. Four of the five general new guidelines directly relate to prescribed burning, which is a subset of agricultural burning.

By mid-2001, a dozen federal, state, county and local agencies were identified as potential partners. In the fall of 2001, a charter was drafted that in effect served as a Memorandum of Understanding (MOU) among the agencies that would be directly involved in the project. During the following winter and spring, efforts to establish charter membership continued; in July 2002, a consortium Board of Directors (BOD) was formed and given the name California and Nevada Smoke and Air Committee (CANSAC). Two other groups were subsequently formed, the Operational Applications Group (OAG) and the Technical Advisory Group (TAG). OAG was assigned responsibility for determining product standards and requirements, and TAG was charged with making recommendations regarding hardware, software, models and research that would be used in the project.

Reaching consensus on doing something is one thing and often easy, but finding the supporting funding proved significantly more challenging. Though there were some periods of serious difficulty, in July

2003, funding commitments were fully realized from nine agencies. Implementation of CANSAC began in September and operational activities were initiated in June 2004. An expanded history of CANSAC can be found in Brown et al. (2003).

2. WHAT ARE "PARTNERSHIPS" AND WHAT MAKES A PARTNERSHIP EFFECTIVE?

Partnership structures have been defined as "one of the institutional forms through which urban (or rural) governance regimes may function." (Geddes 2000). The notion of partnerships involves a strong belief that benefits accrue from community-level participation in projects designed to provide benefits and/or service, and local acceptance of governance-related responsibilities. However, in reality, rather than being explicitly articulated in partnership planning activities and documents (Phillips 2001), such expectations are more likely to remain unexpressed assumptions. Much of the scholarly work on partnerships resides in public health research (see, e.g., Mitchell and Shortell 2000); however, interest in partnerships as an alternative means for collaboration extends across a much broader range of activities aimed at bridging the gap between science and society (e.g., Korfmacher 2000, Goldenkoff 2001). Among the longstanding examples of efforts to bridge this gap are programs involving "technology transfer" *from* science *to* society. More recently, in recognition of the pitfalls of such top-down approaches to linking science with society has led to interest in alternative forms of collaboration in development and implementation of scientific initiatives, from the most basic "laboratory" activities through to ultimate application in societal contexts. Ideally, the process is iterative both during and after implementation, allowing for refinement and adjustment as needed to attain mutually agreed upon goals and results (see, e.g., Lemos and Morehouse 2005). This emphasis on developing iterative science-society collaborations reflects, in part, a growing skepticism of the efficacy of traditional scientific knowledge transfer models for solving serious societal problems and a belief that, through direct participation in the scientific enterprise, the public will develop a proprietary interest in that science and its applications. Advocates of iterative science-society partnerships see such arrangements as a material foundation for sustaining productive science-society relationships. Ideally, through the process of building sustainable partnerships, "stakeholders" emerge who have the interest, social and economic capital, and motivation to sustain the enterprise.

Research indicates that synergy is an important component in successful collaborations, including partnerships. Lasker et al (2001) emphasize that synergy among participants can produce unique opportunities to explore differences in a constructive manner and to work toward solutions that transcend individual capacity to envision alternative possibilities. Synergistic relations also afford opportunities to combine resources in ways that lead to accomplishment of goals that otherwise could not be achieved alone. Synergy presents opportunities for creativity, challenging accepted wisdom, and discovering innovative ways to approach shared problems. Collaborations have also been recognized for fostering comprehensive, more holistic thinking; encouraging thinking that has more practical orientation; and transforming the fundamental assumptions and ways of working that members bring to the collaboration. One of the most important contributions of synergistic collaborations is the potential to undertake comprehensive action, including coordination in provision of reinforcing services, strategies, programs and other elements. Structured partnerships provide a clear framework for achieving synergy and, ultimately, for developing mutually agreed-upon strategies and products to address defined problems and needs.

3. CANSAC SURVEY

To assess the extent that CANSAC is a partnership given synergy characteristics and determinants, and how well the CANSAC structure is functioning in terms of a sustainable partnership, a formal survey was conducted of the BOD, OAG and TAG members. Initial findings are summarized below.

Twenty-one respondents completed the survey via a telephone interview process. Questions covered six general categories: partnership structure, organizational design, availability of resources, CANSAC management, CANSAC leadership, and CANSAC progress. The survey consisted of 45 statements/questions with scale rankings from 1 to 5 representing strongly disagree (1) to strong agree (5) for the first three categories, and similarly very poor to very good for the last three categories. Some example statements were: 1) a sufficient level of trust exists among CANSAC members; 2) CANSAC has the flexibility to be innovative in how it approaches its work; 3) funding is sufficient; 4) management accountability; 5) ability to harmonize differences in members' perspectives; and 6) level of integration with stakeholders. While the relatively small sample (21 cases) is insufficient to draw statistically significant inferences, relevant conclusions can be derived from basic summary statistics (e.g., median scores). In terms of stratification by group, BOD had 9, OAG had 7, and TAG had 5 responses, respectively.

Moderate agreement was a consistent score for all statements regarding partnership structure evaluations. BOD and OAG strongly agreed that their organization's interests are well integrated into the partnership. This is a positive outcome especially in the context of partnership participation. TAG was more skeptical regarding the statement on level of commitment, with an overall neutral score, indicating some ambivalence.

Moderate agreement scores were consistent for the organizational design assessments category. Exceptions included strongly agree by BOD on the CANSAC mission statement, and strongly agree by TAG on the statements that CANSAC's structure facilitates accomplishment of its goals and obtaining feedback on modeling and products. The statement with the largest spread of response was in reference to CANSAC having satisfactory access to the resources it needs. TAG ranked this with moderately agree, OAG with neutral and BOD with moderately disagree. All three groups ranked the flexibility to allocate resources statement as neutral.

For the availability of resources category, most scores were moderate agreement for all statements with a few exceptions. OAG and TAG were neutral on the funding statement, and BOD ranked this as moderate disagreement. Clearly all three groups are concerned about funding. Both BOD and OAG ranked the equipment and materials needs as neutral, though TAG indicated moderately agree. OAG strongly agreed that the skills and expertise to achieve project goals is present.

A ranking of moderately good was given for most statements on CANSAC management. Exceptions included a very good for project administration by OAG, but so-so for budget management and management accountability. So-so was given by all three groups in reference to funding stability.

In regards to the CANSAC leadership statements, BOD and TAG felt so-so about motivating members, and BOD felt so-so about harmonizing member differences. TAG indicated very good in terms of support from the BOD. Otherwise, moderately good was given for all other questions by the three groups in this category.

Moderately good dominated the rankings for the CANSAC progress statements. BOD expressed some concern regarding external communications and evaluation. OAG also expressed concern about the project evaluation process.

Overall, the survey results indicate at least a moderate level of satisfaction in terms of a CANSAC partnership. The fact that both BOD and OAG feel strongly that their organizations interests are well integrated into the partnership is an important component. It would be desirable for TAG to have a similar opinion. CANSAC resource issues appear to need improvement, as does the project and product evaluation process. Except for funding, there appears to be no significant breakdown in any category that

would seriously impact the partnership. With CANSAC operations effectively only one year old, it can be expected that demands for products will increase, and opportunities to build further on the partnership will be available. New membership is anticipated in time.

CANSAC, at present, can be identified with a number of observed and theorized aspects of synergistic partnership characteristics and determinants, and thus may be a useful model for scientist and decision-maker sustainable partnerships.

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Speaker bio: Dr. Brown conducts research in applied climatology and meteorology, with emphasis on the application of data analysis, statistical methods and scientific visualization to atmospheric sciences data. His primary research topics include analysis of wildland fire-climate and fire-weather relationships and applications product development for wildland fire management planning and decision-making. Dr. Brown established and is director of the Desert Research Institute Program for Climate, Ecosystem and Fire Applications (CEFA). He is graduate faculty in the Atmospheric Sciences Program at the University of Nevada, Reno.