

## **Executive Summary**

Since the 1970s there have been a number of United States wildland fire smoke research and development needs assessment activities which have successfully provided useful guidance to research and development. However, they have not resulted in a comprehensive government-wide linked research program. Successful efforts have largely been regional with national activities proving difficult to sustain and apply.

In 2007 the Joint Fire Science program (JFSP) conducted a wildland fire smoke needs assessment, hosting two parallel roundtables (in the eastern and western US) in which managers and scientists developed two lists of priorities. The outcome of the roundtables needed to be placed into an historical and regulatory context, considered in light of anticipated future developments and synthesised into a cohesive national smoke science research plan. This project developed that plan to provide the JFSP with guidance for funding smoke research for 2011-2015.

Historically, wildland fire smoke research needs assessments have been controversial. This has arisen for two reasons. Firstly, the issues involved are extremely complex from an air quality regulation perspective, often seemingly close to precipitating a collision between the needs of sound fire management practice and air resources management. Secondly, the scientific issues involved are often at the very cutting edge of atmospheric sciences and in themselves a matter of debate among scientists. These factors make gathering information on people's insights into smoke research needs challenging. The sheer scope and diversity of community interests is also a major influence on these factors

Early in the process of developing the Smoke Science Plan we broke with the traditional approach of holding a series of focus group meetings to gather advice and input. Rather, we chose to address the community of interest through a series of web-based questionnaires. Almost 900 people responded to the questionnaires, which, we believe, is the largest and most diversified set of responses to smoke research needs ever collected in the US. The resulting plan has four research themes as its foundation:

### **Smoke Emissions Inventory Research**

### **Fire and Smoke Model Validation**

### **Smoke and Populations**

### **Climate Change and Smoke**

Each theme has a clearly defined objective to be achieved within a five-year program of research. Each outlines yearly activities to incrementally move the program of research forward to achieve the thematic goals. These yearly activities are designed to complement research across themes so that synergisms are fostered and perhaps even open the door to serendipitous possibilities. In this way, the Joint Fire Science Program Smoke Science Plan breaks with past smoke research assessments as it creates a program of incremental work to progress towards specific objectives rather than defining science needs in general terms.