

Smoke Management

The smoke management studies are being conducted at Grand Canyon NP to advise park managers on the best weather conditions under which to carry out prescribed fires, which in the past have sometimes contributed to reduced visibility in the Canyon, and which could produce smoke drifting into the town of Tusayan on the South Rim. A conceptual model for the mean air motions in the Grand Canyon was developed using existing knowledge of airflow over cavities and abrupt steps, and available wind data. The model was tested with data produced by three wind sensors placed in or near the Canyon and by 39 pilot balloon launches within the Canyon. Some measurements important to understanding the airflow have also been made from aircraft and final recommendations await analysis of these additional data. Preliminary conclusions are that burning should be conducted only during periods when air above and within the Canyon is interacting, not when stable air fills the Canyon. Adverse conditions could be forecast using standard synoptic-scale data plus meteorological information from the Canyon rim and Tonto Plateau. To diminish drift of smoke into the town, most burning should be restricted to periods of southerly airflow and as much as possible to times before sunset.