THE THIRD NATIONAL CONFERENCE ON FIRE AND FOREST METEOROLOGY OF THE AMERICAN METEOROLOGICAL SOCIETY AND THE SOCIETY OF AMERICAN FORESTERS, APRIL 2-4, 1974. AT LAKE TAHOE, NEVADA.

SUMMARY DESCRIPTION OF CONFERENCE PROCEEDINGS

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The fire-weather conference proved to be a fruitful meeting for most who attended. The papers delivered were broken up into the following six sessions, each of which I will now summarize.

1. Fire-Weather Forecasting Services. Papers in this session mainly dealt with the forecasting of various meso-meteorological and micro-meteorological winds influencing fire behaviour. One such paper delivered by Dansy T. Williams, who is a meteorologist stationed at the Experiment Station at Macon, Georgia, may prove of some relevance to the situation along the south western coast of Western Australia. The paper described easy and accurate forecast procedures for predicting passage of sea breeze fronts along the Atlantic Coast of the south eastern United States.

The first session also contained an extremely interesting panel discussion on the possible effects of the proposed policy of 'cross utilization' of fire-weather services of the National Weather Service. This aspect will be discussed later.

2. Automation of National Fire Danger Rating Systems. In this session, several papers described the many uses and benefits provided by the interactive computing system that has been implemented to provide mass storage of fire danger rating observations and indices. Presently operating throughout California and Arizona, this system can handle all fire danger rating observations for the entire nation. Provisions for creating and routing text files permit users to exchange and broadcast messages throughout the network, a powerful tool for officers and zone dispatchers. The automatic information and retrieval system may have some definite advantages in our State.

3. Smoke Management and Air Quality. Papers delivered in this session dealt with several of the research programs currently in progress on the effects of smoke from wild fires and prescribed fires on air quality. A large comprehensive program at the Southern Fire Laboratory at Macon, Georgia was outlined. Co-operators in the program include Research, State and Private Forestry, and National Forests of the U.S.

Forests Service. Researchers are looking into the following areas: mechanisms of smoke generation, smoke quality and quantity, smoke modifications, smoke transport and dispersion and systems design for smoke management. No doubt many useful findings and papers dealing with smoke problems pertinent to our situation will shortly be produced from this program. Several early findings were presented at this session.

Dr. David Sandberg, a colleague at University of Washington, in his work on the relationship between slash fire intensity and smoke emissions, found that the quality of emissions was inversely proportional to fire intensity. He produced evidence to show that mass ignition or piling reduced emissions by 60% or more. Emissions increased dramatically with increased needle foliage content of slash piles.

4. Use and Application of Fire Danger Rating Systems. Several problems encountered, and improvements developed, in certain aspects of the N.F.D.R. system were presented. These were mainly of interest to the fire managers in the U.S.

5. Forest Management Applications. One paper presented in this session described a burn or no-burn decision method for prescribed burning, for forest management. The method is based on a prescribed fire's air pollution potential. Solutions of mathematical expressions representing concentration of background airborne material, amount of smoke expected from a prescribed fire and the atmosphere dilution potential for their combination are presented in a single figure. The method assumes that all prescribed burning is postponed or terminated whenever combination of background and fire-generated particulate matter can reduce the horizontal visual range at ground level below 0.5 mile.

6. Fire - Forest - Atmosphere Interaction. This session produced a mixture of topics. The more interesting included: a conceptual model for lightening fire prediction; wind and temperatures generated in chaparral fires; and a meteorological telemetry network technique for monitoring and forecasting surface temperature, relative humidity and wind velocity in forested mountain areas.

7. Wind Flow. Eight papers dealt with airflow velocities and behavior in several aspects; including forest clearings, large mountain valleys, and mountainous terrain. The paper on wind-flow behavior at forest clearings and forest boundaries was of particular interest with respect to fire behavior in plantation compartments.

The Forest Service and the Forest Organization. The conference afforded an opportunity to learn more about the relationship between the National Weather Service and the Forest Service and other land resource agencies, regarding the forecasting of fire weather.

The N.W.S. has been providing fire-weather forecasting services since the 1950s. Until recently, the meteorologist assigned to the duties of a fire-weather forecast held this position throughout the year. During the fire season, he would keep in close contact with the forest fire-control management, and endeavour to satisfy all their needs. In the off season, the forecaster conducted research relating to various aspects of fire-weather forecasting, such as some of those presented at the conference.

In order to familiarize himself with the fire-control manager's requirements, the forecaster would normally spend some time with the foresters of the region within his area of forecasting responsibility.

Furthermore, many of the major forest experiment stations employ meteorologists seconded from the N.W.S. to conduct full-time research for the benefit of fire-management organizations. It was stated at the meeting that up to 40% of fire-weather research is conducted by the N.W.S., and the remainder by the U.S. Forest Service. These figures demonstrate the strong interest displayed by N.W.S. in fire weather forecasting.

I learned at the meeting that the arrangement as described above was about to change as a result of the introduction of a 'cross utilization' policy, which provides that the weather forecasters rotate duties periodically through the year. This policy, which developed as a result of a shortage in manpower within the N.W.S., was seen by most forest managers present to threaten the very useful relationships existing between the two concerns. It was agreed that the quality of forecast and other services would deteriorate because the experience and expertise derived in the present arrangement would be lost. Off-season research would become limited, and the familiarization program would be terminated.

The capability to predict fire weather conditions accurately is of extreme necessity in the management and control of fire. So that we may improve on this capability in Western Australia, several suggestions regarding possible improvement in fire-weather forecasting are made, with the realiza-

tion that some of these may have already been recommended and acted upon since my departure for study leave in late 1972.

The suggestions are:

1. That some arrangements be made with the Weather Bureau, whereby one of their meteorologists is assigned the full-time duty of fire-weather forecaster and researcher throughout the entire year. This arrangement may need to entail secondment of the Weather Bureau officer to the Forests Department.

2. Failing the above, arrangements could be made for one or two of the forecasters to be exposed to a field familiarization program.

3. That the Forests Department provide a scholarship for post-graduate research in fire-weather forecasting in Western Australia. This scholarship could be offered to meteorology, science or forest graduates with the proviso that, on completion of his course, the applicant work for a minimum number of years with the Forests Department.