

COMPREHENSIVE RESEARCH ON RICE

PROGRAM AREA Crop Residue Management

PROJECT NUMBER & TITLE 69-23, (Wind patterns suitable for field burning)

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OBJECTIVES AND WORK IN PROGRESS

Since northerly winds have carried smoke from agricultural burning into heavily populated areas (especially Sacramento) during any of the burning seasons, even in conditions termed as "good ventilation", it is attempted to find other weather situations during which field burning would be less objectionable. For Yolo and Sacramento Counties it could definitely be proven that southerly winds keep air pollution at a minimum even though during the early part of the day they may have very low velocity and could easily be designated as air pollution "builders" if these lulls were not of short duration. By late afternoon this southerly influx of maritime air usually becomes quite strong and has been observed to last almost all night resulting in visibilities of about 30 miles in Sacramento on the following morning. The vertical structure of these southerly winds is of special interest since they reach peak velocities of 25 mph and more at a height of about 600 ft in the lower Sacramento and San Joaquin Valleys. This phenomenon occurs on about 90% of all days in summer, but declines to 25% in the fall months. Currently, work is aimed at obtaining wind flow information from the northern part of the rice growing area. A number of California Spot Climate Recorders were operated temporarily in summer and fall for exploration of areas that may furnish the most revealing data. They were installed at Woodland, Norman, Biggs, Richvale, Wheatland, Chico, Galt, Davis, and at three elevations in the Sutter Buttes, which were at 500, 700, and 2100 feet. The station at 500 feet was installed late in the season and appeared most relevant. The cooperation of Mr. Kermit Tarke is greatly appreciated. The 700 and 2100 ft levels often seemed to be above the zone of maximum wind speed. However, there were also many cases with high windiness at these higher levels. The tabulation of all recordings and the evaluation of these data is still in progress. Evidence of increased wind velocity at 500 ft was also found in balloon soundings at Davis and Woodland as shown in the example of the upper wind data obtained September 18 (display #1). In displays #2 and #3, it can be seen that the velocity during the night of the 17th to 18th was already 10 mph at the 500 ft "West Station" (on the Tarke Ranch), whereas "ground" stations like Davis and Norman had lower velocities. Only from late afternoon of the 18th, all stations in the valley had strong southerly flow.

WORKED PLANNED

In 1971, assuming that financial support may become available through (the) Project Clean Air, installation of equipment will begin early in spring since "late" field burnings are expected to take place. Balloon soundings will be made at various locations in the central and northern part of the rice area. These soundings will mainly be carried out during the night hours.

U. S. COAST AND
(7 miles East in
Yolo Causeway)

4-18-70

FIG. 1

EUGENE DIETZGEN CO.
MADE IN U. S. A.

NO. 340-M DIETZGEN GRAPH PAPER
MILLIMETER

4000'

3000'

2000'

1000'

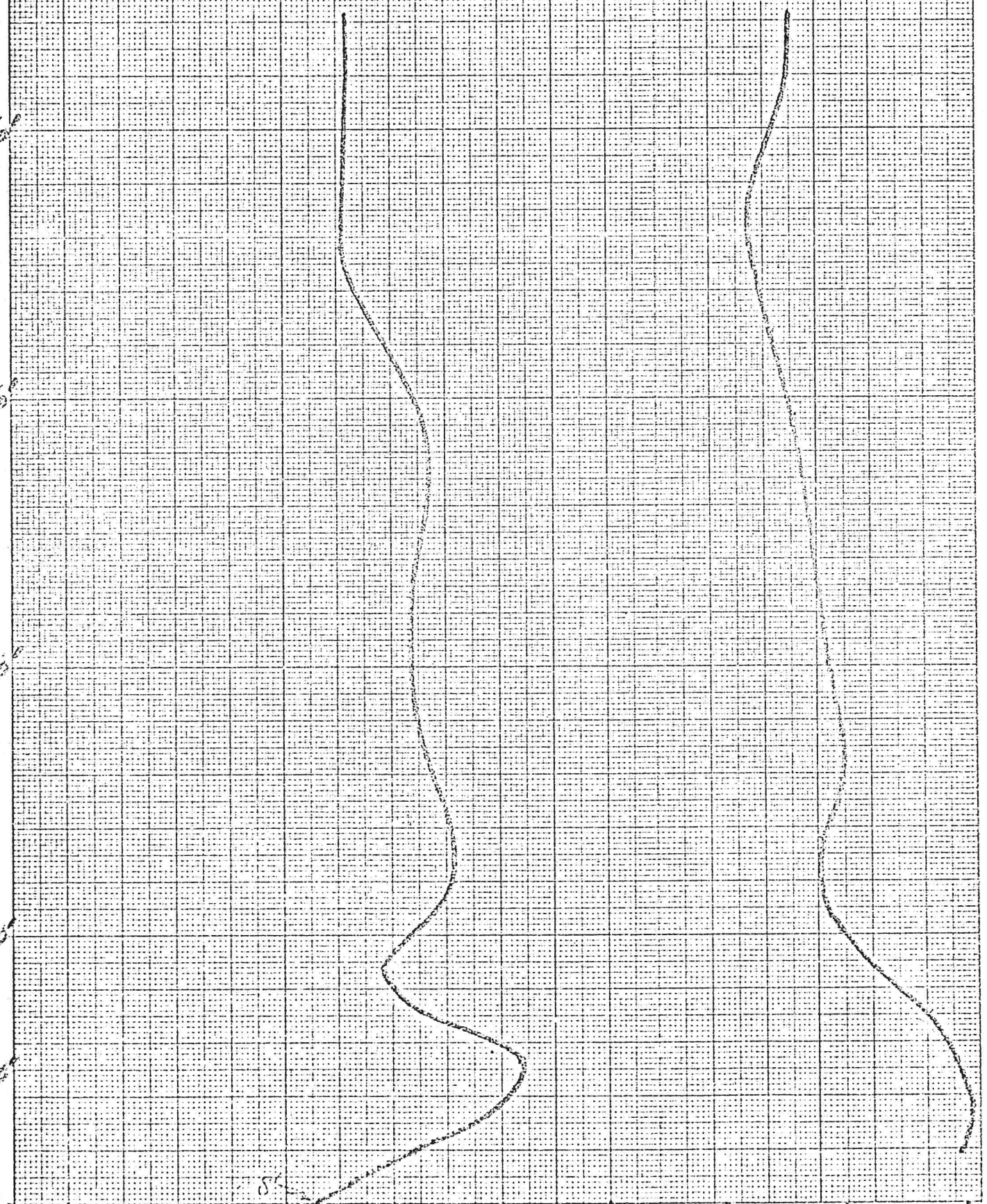
500'

0

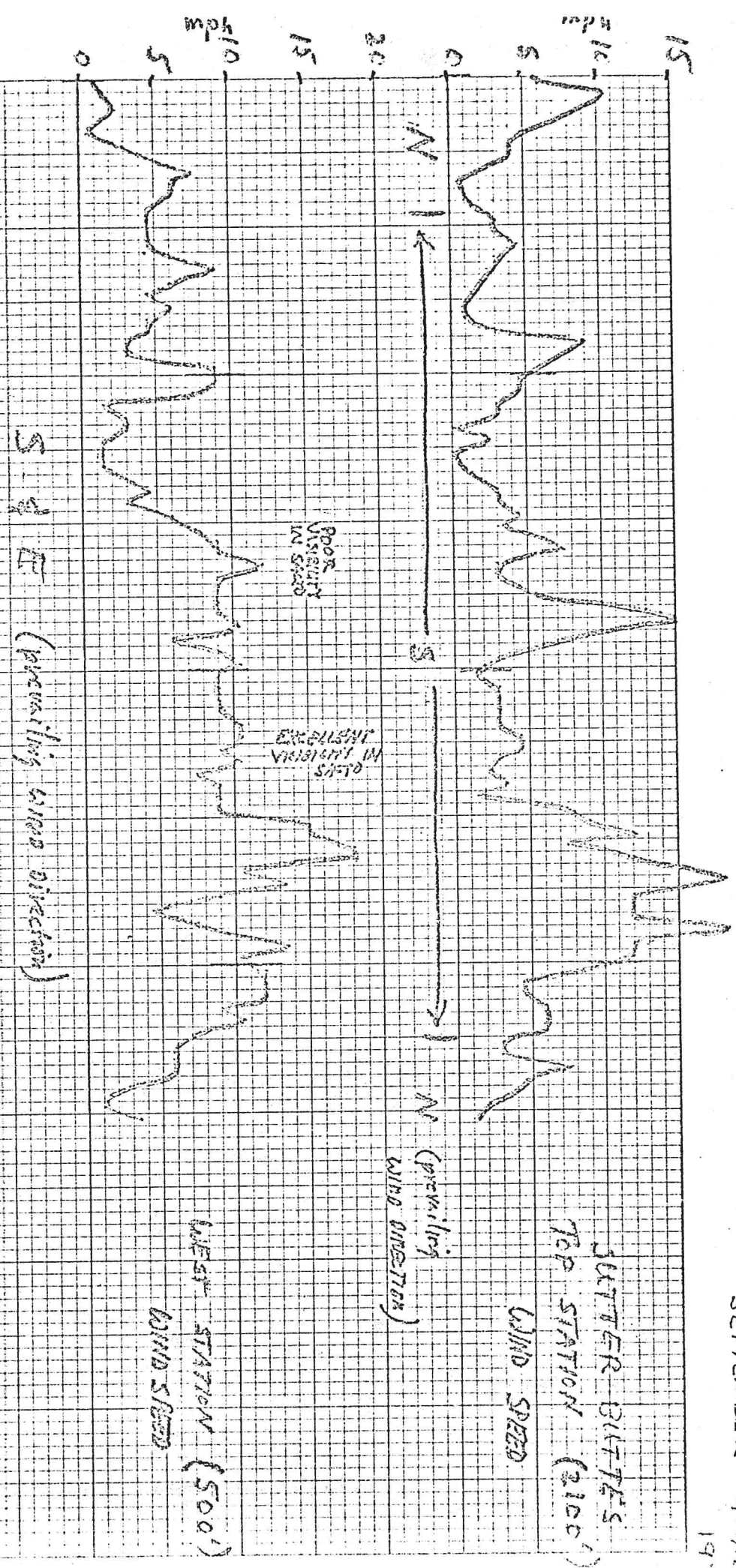
Speed (mph)

Direction

0 2 4 6 8 10 12 14 16 18 20 W WSW SW SSW



SEPTEMBER 16, 17, 18
19



10:00
16:15

15:00
17:15

20:00
18:45

01:00
19:15

S & E (prevailing wind direction)

N (prevailing wind direction)

WIND STATION (2100')

SEPTEMBER 16, 17, 18, 19
1970

