United States
Environmental Protection
Agency

Environmental Sciences Research
Laboratory
Research Triangle Park NC 27711

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January 1979

Research and Development

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Regional Air Pollution Study

Lambert Field Graphical Weather Summary

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EPA-600/4-79-001
January 1979

REGIONAL AIR POLLUTION STUDY
Lambert Field Graphical Weather Summary

by

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Potomac Research, Incorporation
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ENVIRONMENTAL SCIENCES RESEARCH LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NORTH CAROLINA 27711

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ABSTRACT

Three-hour meteorological observations from Lambert Field, St. Louis, Missouri are presented in graphical format for the three-year period July 1974 to June 1977.

INTRODUCTION AND DESCRIPTION OF GRAPHS

A graphical summary of National Weather Service (NWS) 3-hour weather observations from Lambert Field Airport, St. Louis, Missouri has been prepared for use by individuals involved in the analysis and application of Regional Air Pollution Study (RAPS) data. It is intended as a reference for selecting study periods with specific weather conditions or for determining weather conditions that existed during periods under investigation. The summary covers the data collection phase of RAPS from July 1974 through June 1977.

Lambert Field is located about 10 miles north west from downtown St. Louis at 38° 45' N, 90° 23' W, and 535 feet above sea level.

All graphs are presented on a monthly basis. The ten weather observations that are plotted are listed below. The Federal Meteorological Handbook Number 1, Surface Observations, contains detailed descriptions and NWS recording procedures for these parameters.

- Wind Speed (meters/second). The wind speed (WS) was given in whole knots and converted to meters/second by using the relation, WS in meters/second = .514097 x WS in knots.

- Wind Direction (degrees). The wind direction is expressed as the direction from which the wind blows, indicated to the nearest whole tens of degrees from true North (e.g. 90 for East, 180 for South, and 270 for West). A reading of 0 degrees indicates calm.

- Relative Humidity (percent). Relative humidity is the percent of water vapor in the air relative to the amount that would be present at saturation at the current dry bulb temperature.

- Dry Bulb Temperature (degrees Celsius). The temperature was given in whole degrees Farenheit and converted to Celsius by using the relation, C = 5/9 x (F-32)

- Sea Level Pressure (millibars). The local barometer readings were reduced to sea level pressure according to standard NWS practice. One millibar = 10^3 dynes/cm^2.

- Visibility (miles). Reported values are "prevailing" visibility, which is the greatest visibility attained or exceeded throughout at least half the horizon circle.

- Total Sky Cover (percent). Total sky cover is the amount of sky covered by clouds at all levels. It is visually estimated to the nearest whole ten percent.

- Ceiling Height (feet). Ceiling height is the height of the lowest layer of clouds or obscuring phenomena when that layer is reported as broken, overcast or obscuration. Ceiling was recorded in hundreds of feet above ground to nearest 100 feet up to 5000 feet, to nearest 500 feet up to 10,000 feet, and to nearest 1000 feet above that.

  The letter "U" on the graphs indicates an unlimited ceiling.

- Precipitation (water equivalent inches). Precipitation is given on a daily basis. The letter "T" on the graph indicates that a trace or immeasurable amount of precipitation was recorded.

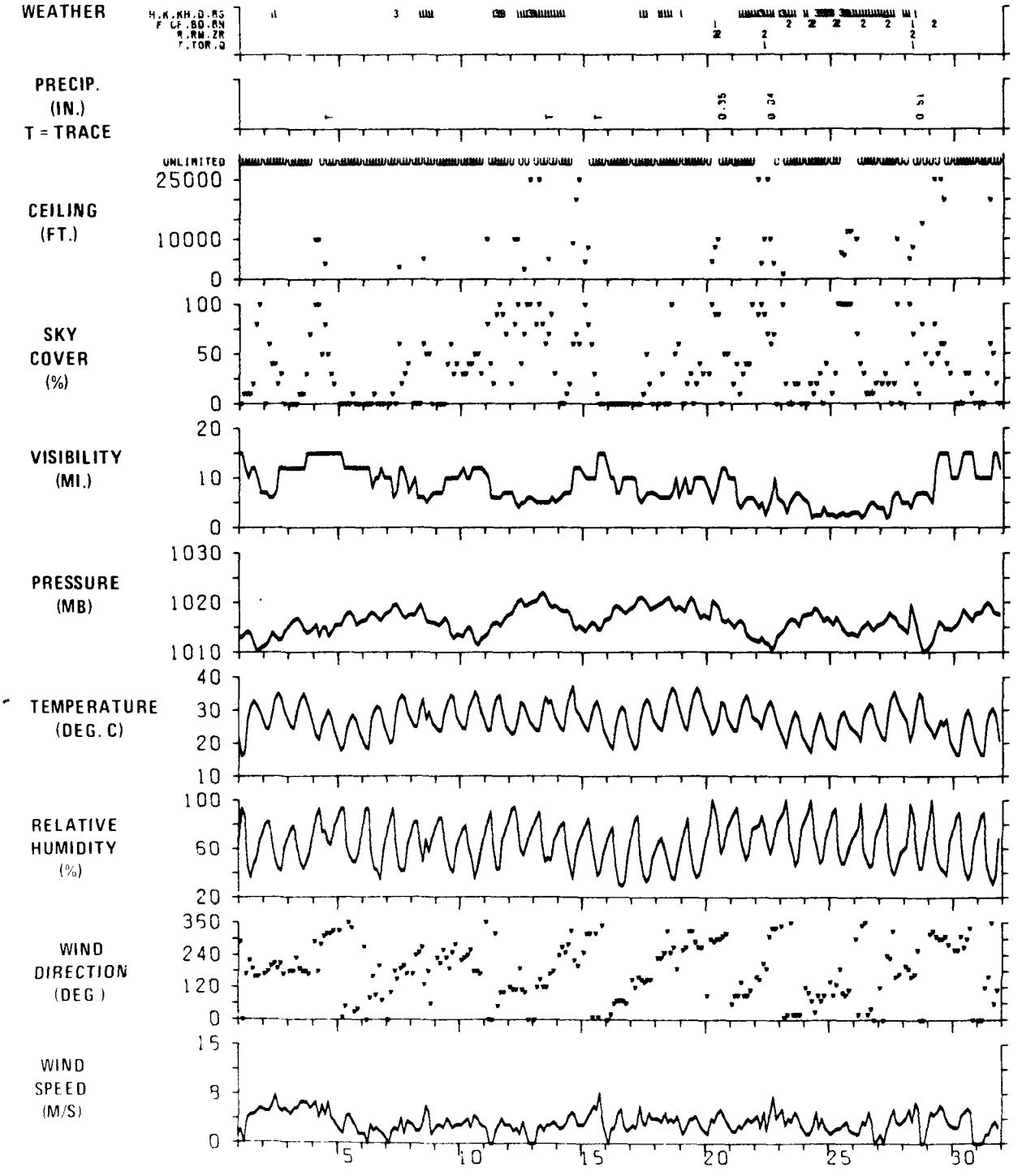
- Weather and/or Obstruction to Vision. This observation is defined by the codes, listed below, broken down into 8 groups. On the graph, the symbols for each group appear on one line at the left edge of the graph. Each number which falls along that line indicates which symbol was recorded based on its position within the group, counting from left to right. The groups are as follows:

  T = Thunderstorm, TOR = Tornado, Q = Squall
  R = Rain, RW = Rainshowers, ZR = Freezing rain
  L = Drizzle, ZL = Freezing drizzle
  S = Snow, SP = Snow pellets, IC = Ice crystals
  SW = Snow showers, SG = Snow grains
  IP = Ice pellets, A = Hail, AP = Small hail
  F = Fog, GF = Ground fog, BD = Blowing dust, BN = Blowing sand
  H = Haze, K = Smoke, KH = Smoke and haze, BS = Blowing snow

Occasionally, there will be precipitation during a day but no corresponding weather symbols. See October 4-5, 1974, for example. This can happen when the precipitation takes place between 3-hour observations. Observations represent instantaneous weather conditions taken just prior to the hour.

Data were supplied by the Environmental Data Service, National Climatic Center, National Oceanic and Atmospheric Administration. Printed copies of this data may be found in the publication "Local Climatic Data" (LCD) published by the U.S. Department of Commerce. The LCD may be obtained by writing to: Director, National Weather Records Center, Federal Building, Asheville, N.C. 28801. Also available from the National Climatic Center are the regular hourly observations from Lambert Field. These data are available on magnetic tape.

LAMBERT FIELD, ST. LOUIS WEATHER SUMMARY



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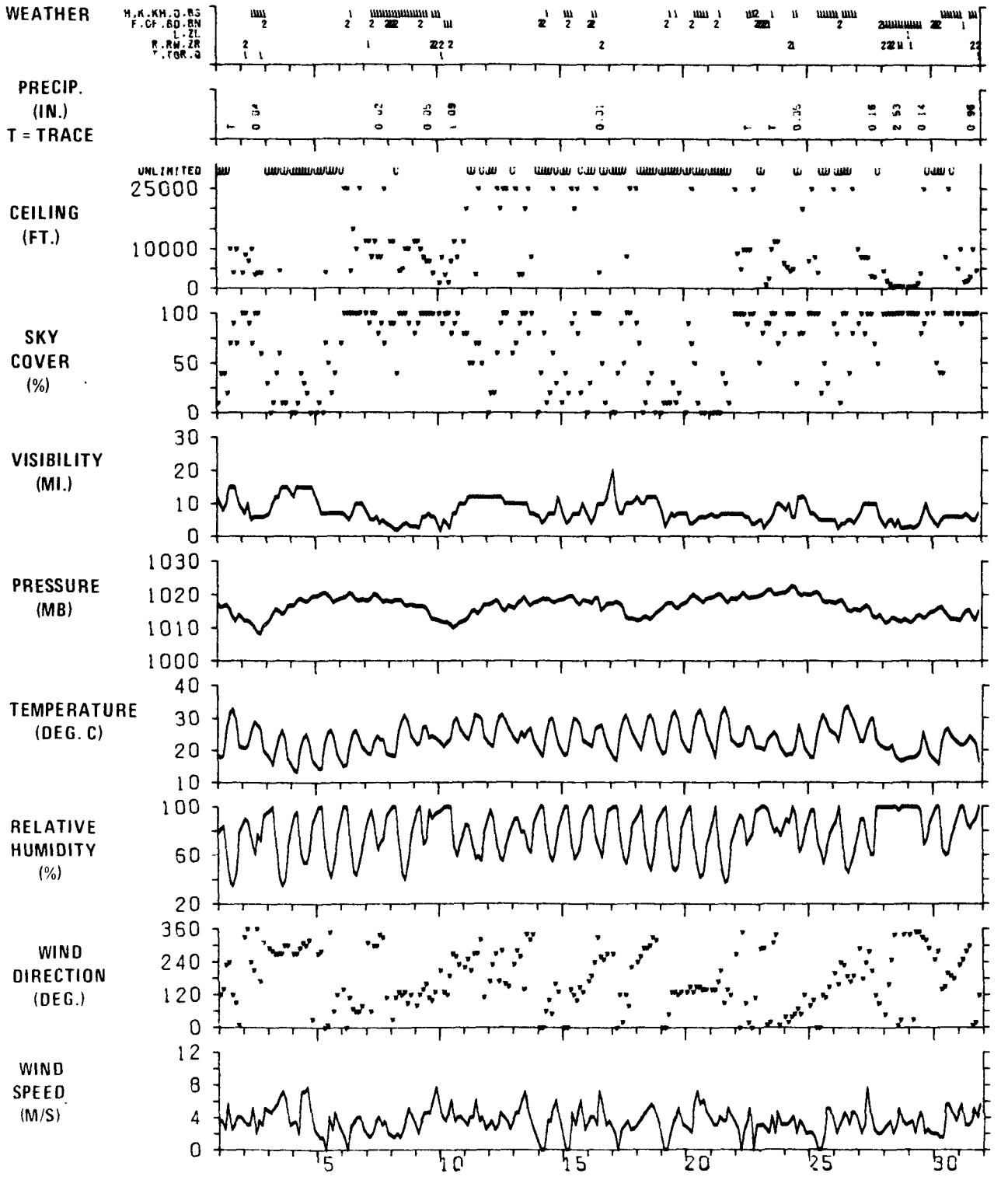

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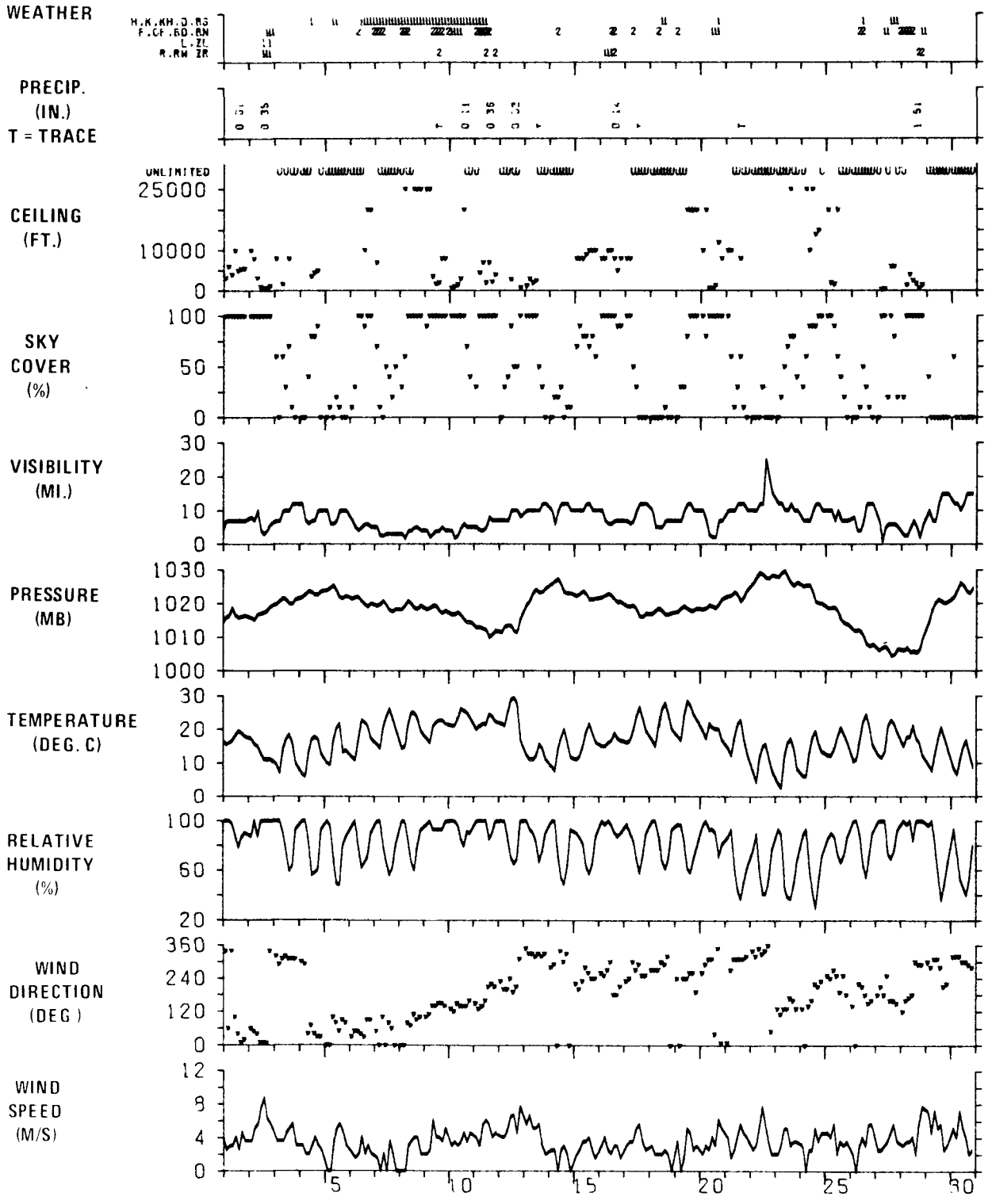
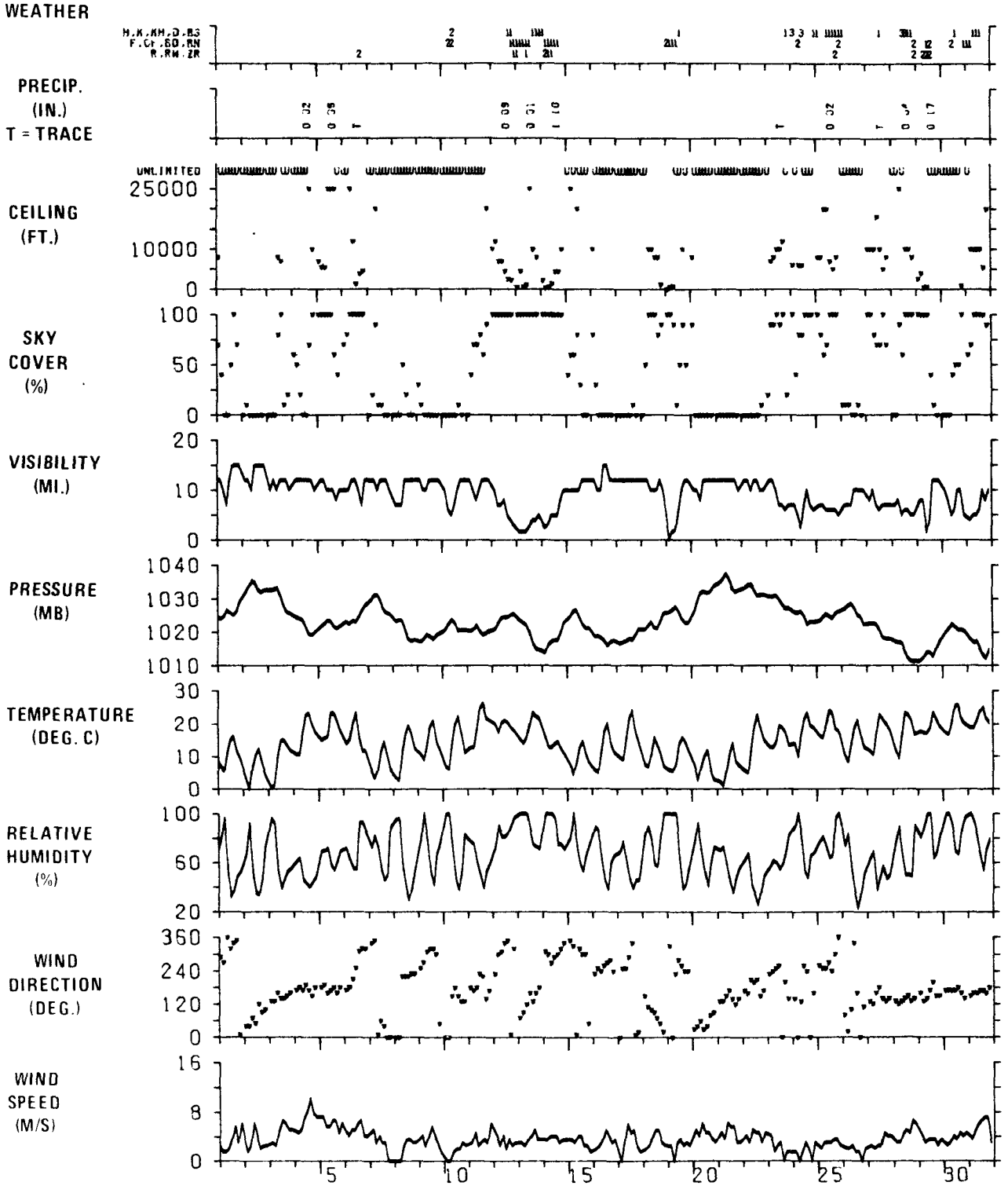


SEPTEMBER 1974

LAMBERT FIELD, ST. LOUIS WEATHER SUMMARY



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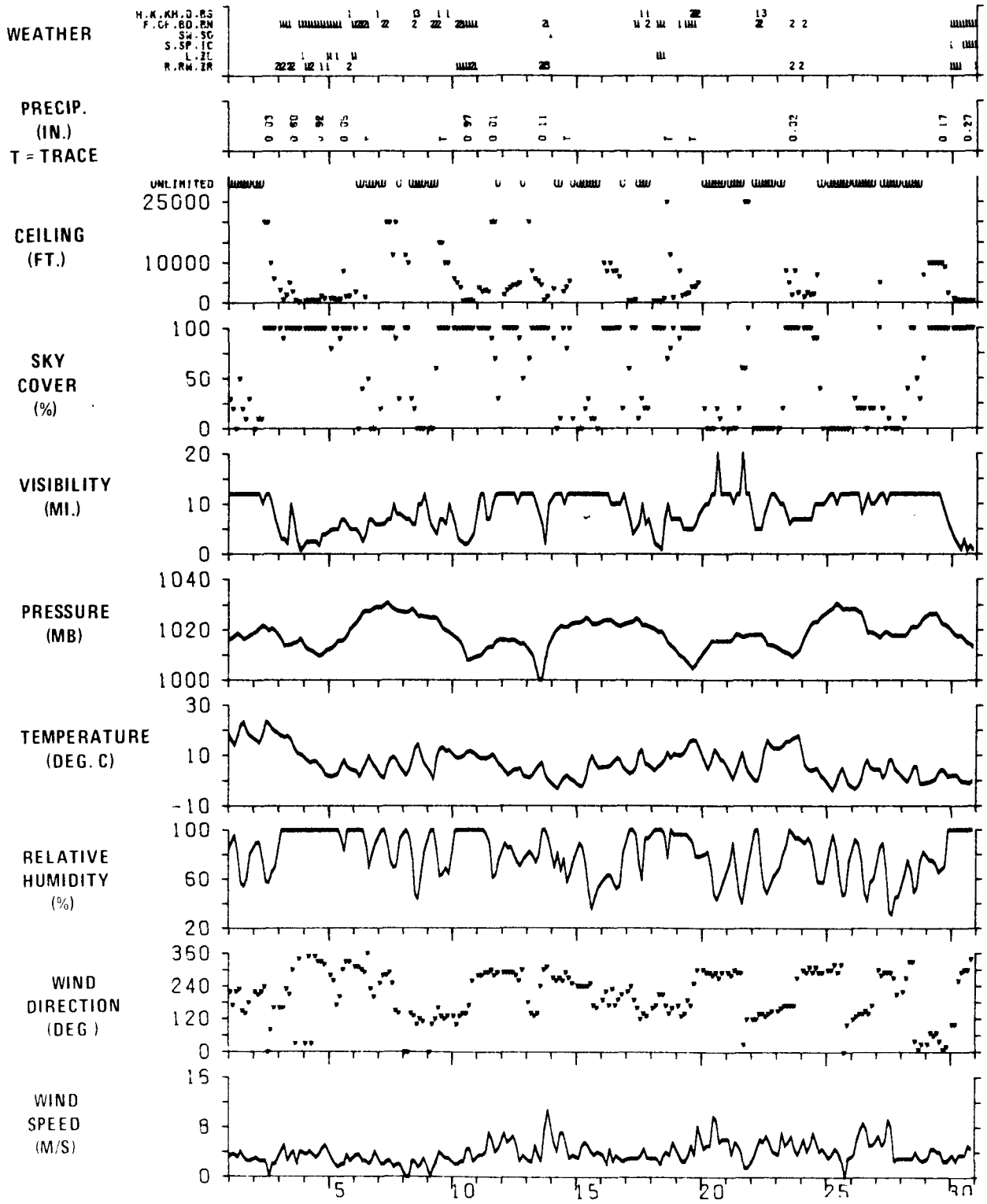

NOVEMBER 1974

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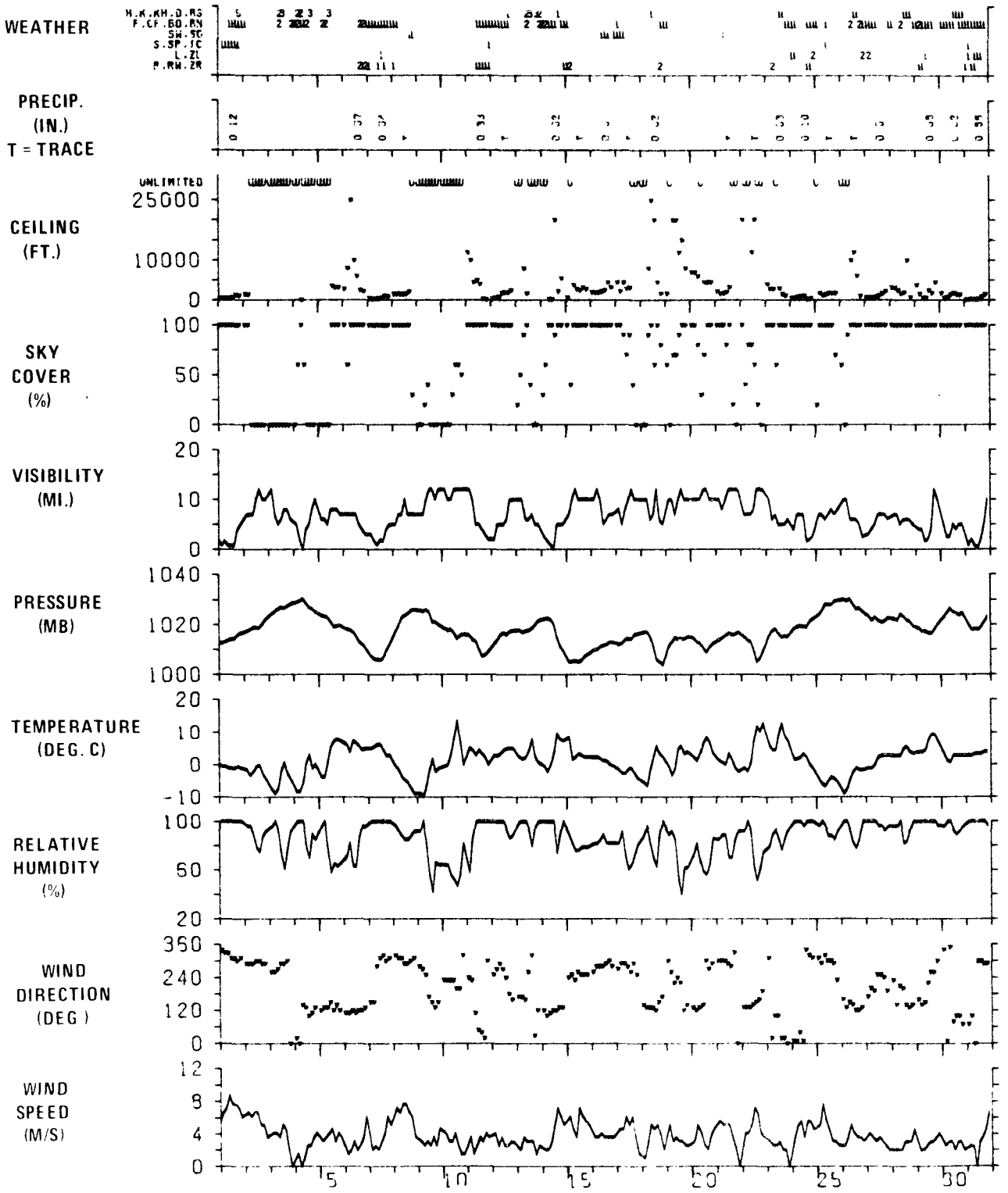

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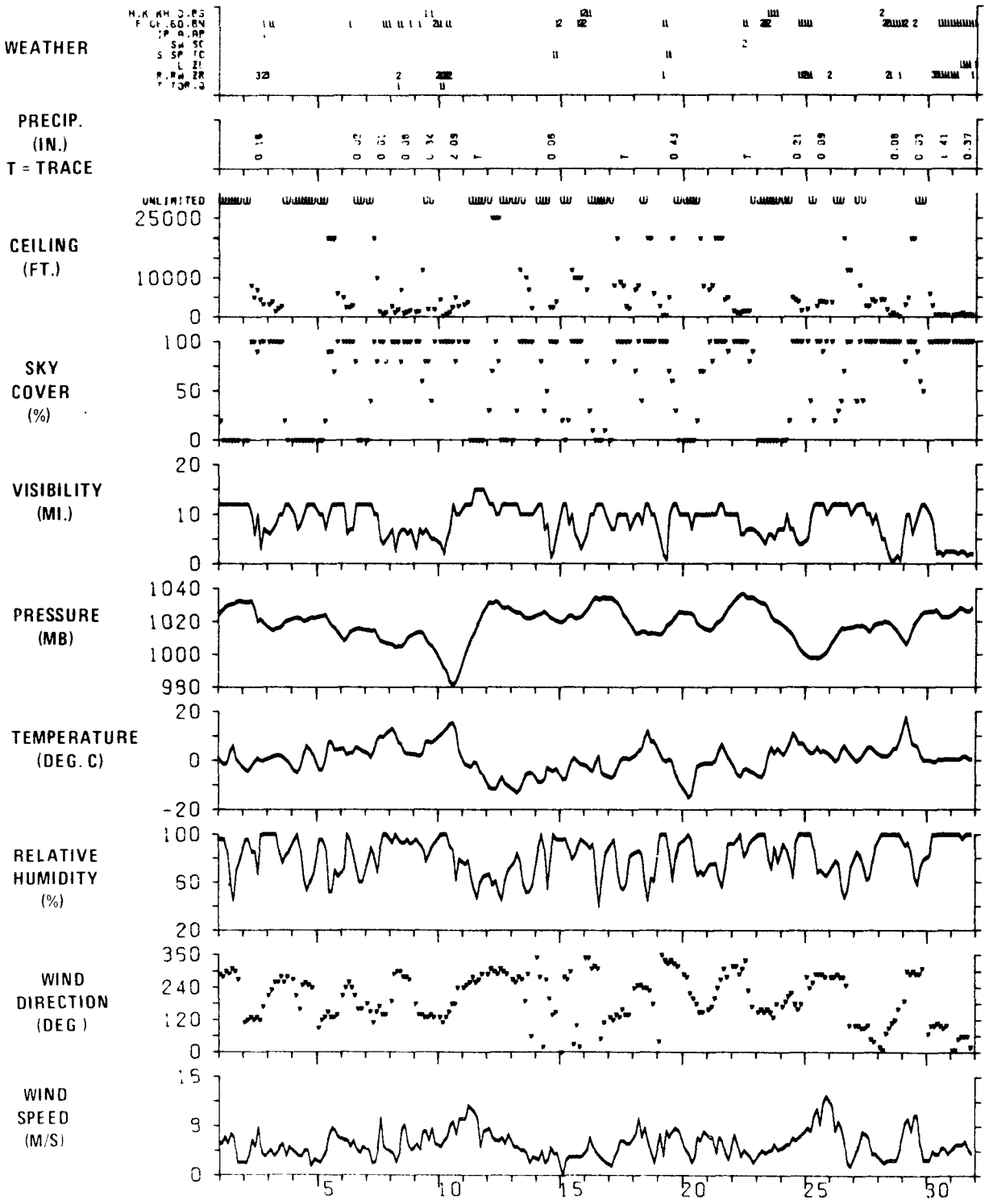

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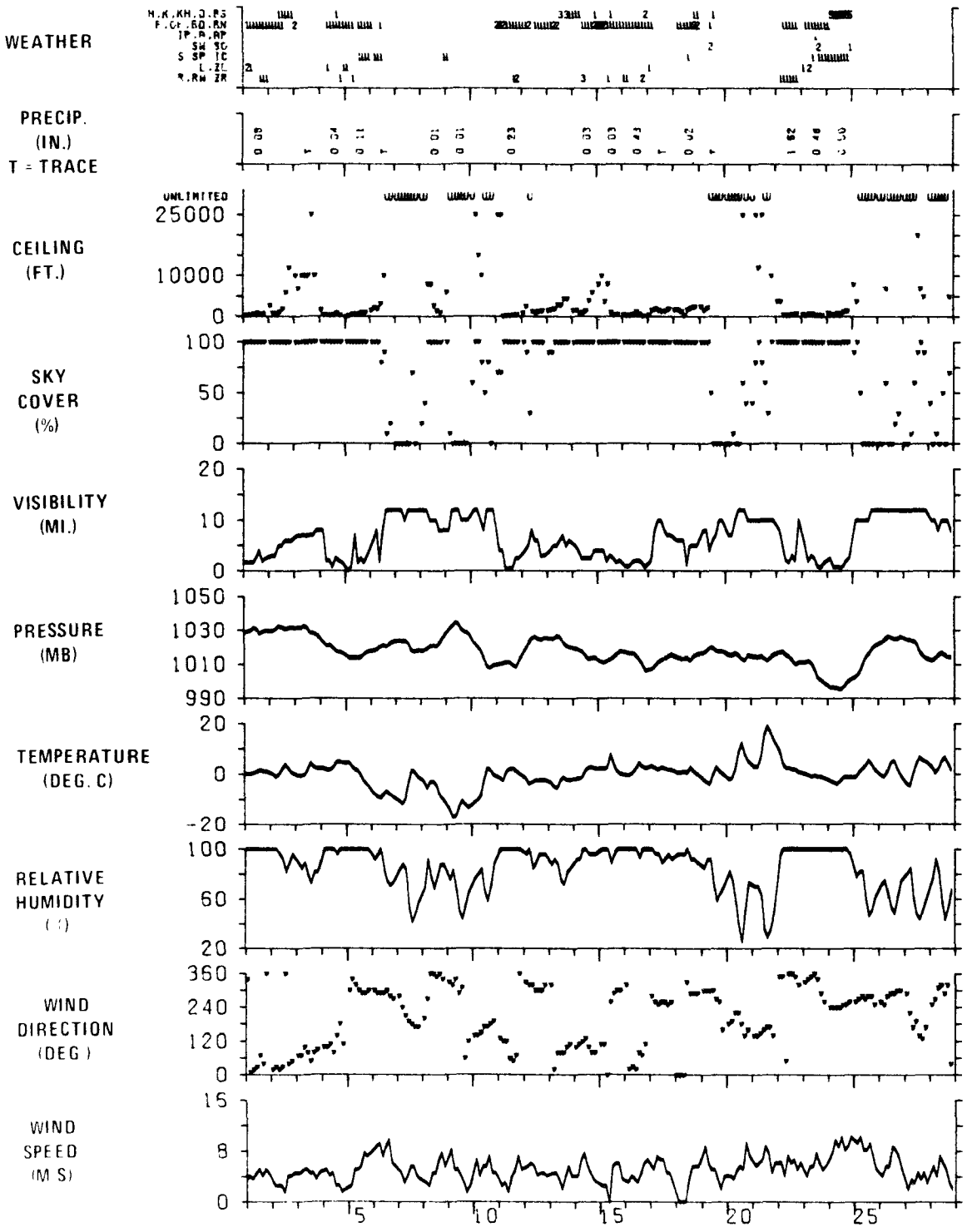

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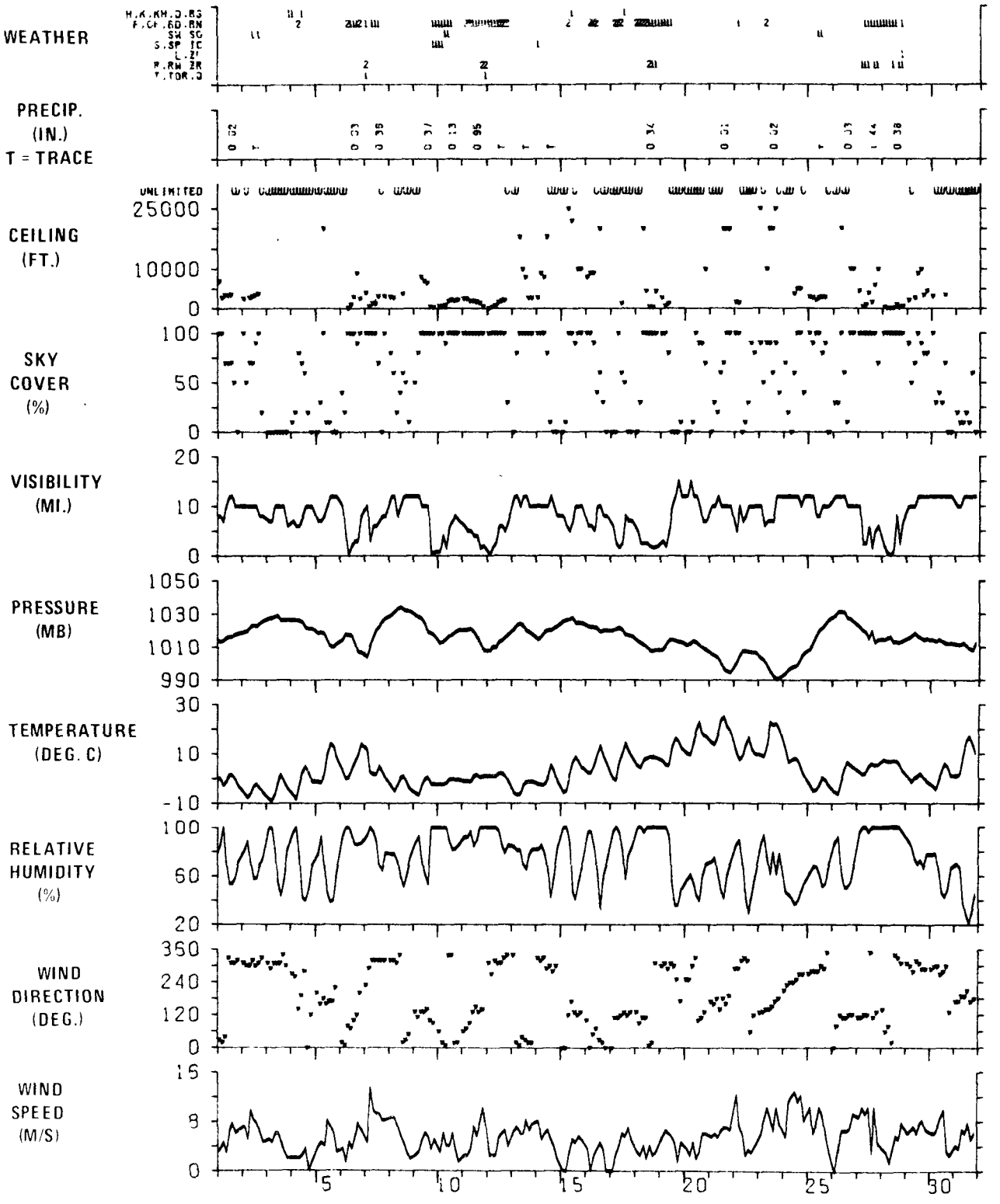

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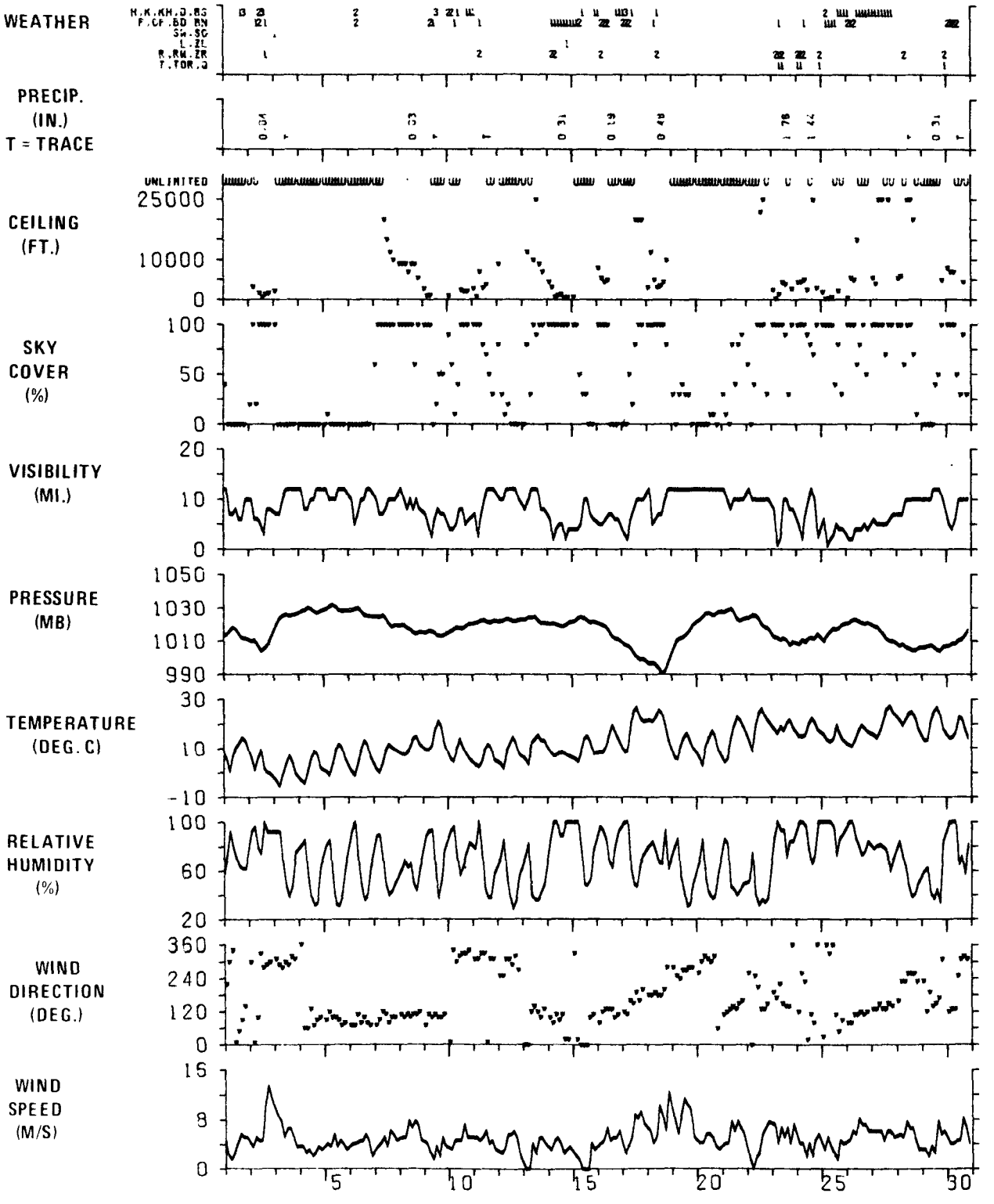

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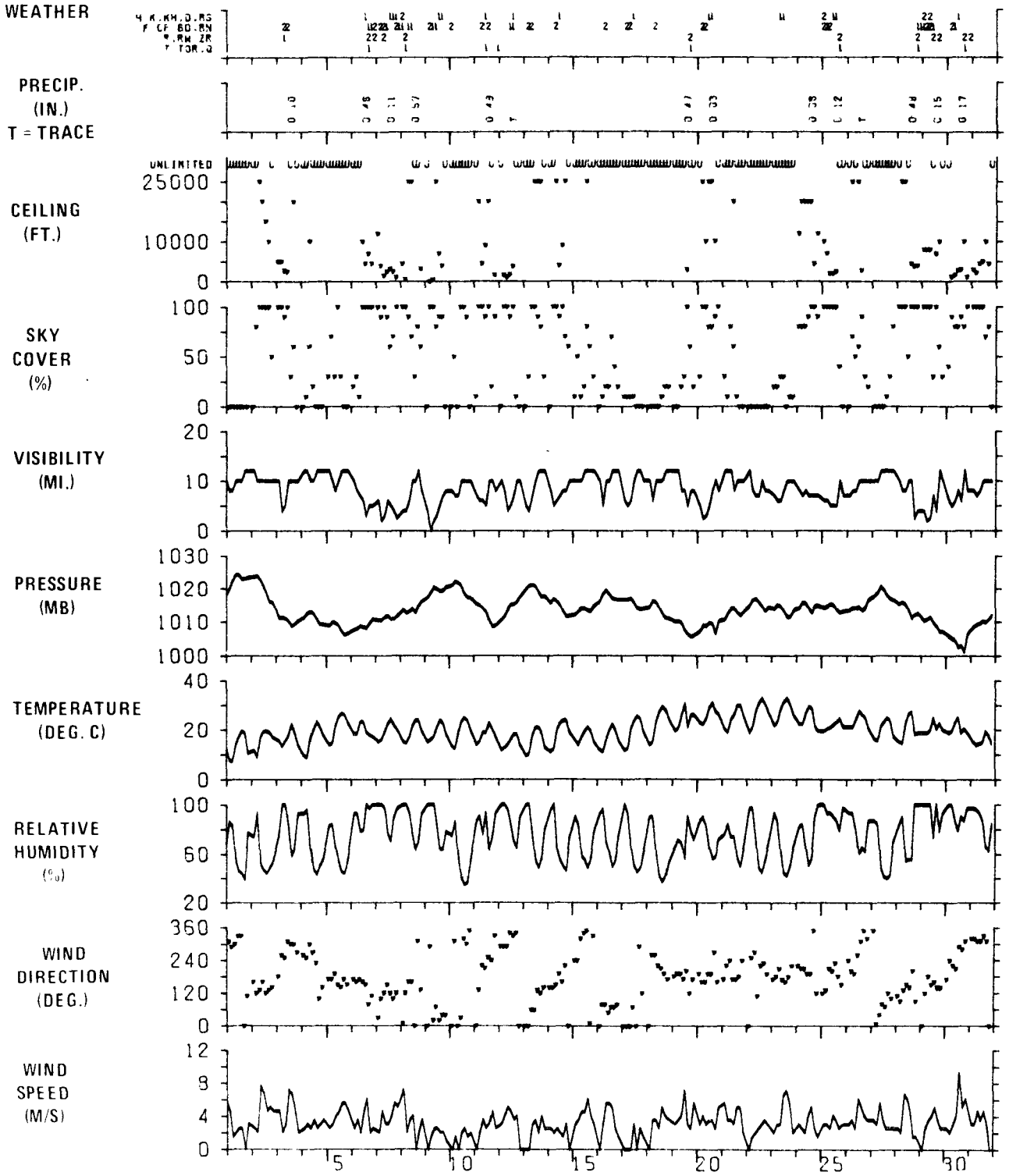

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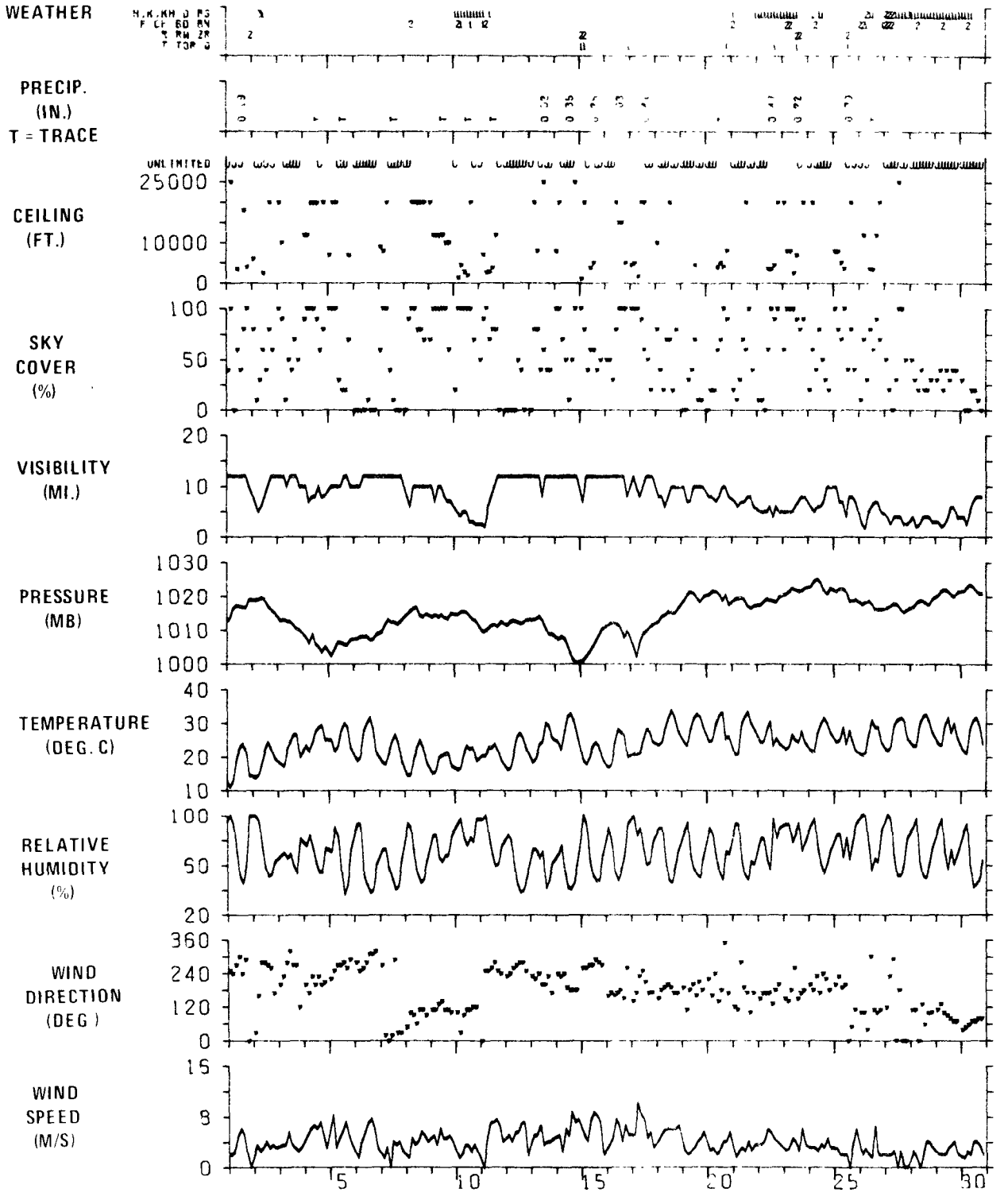

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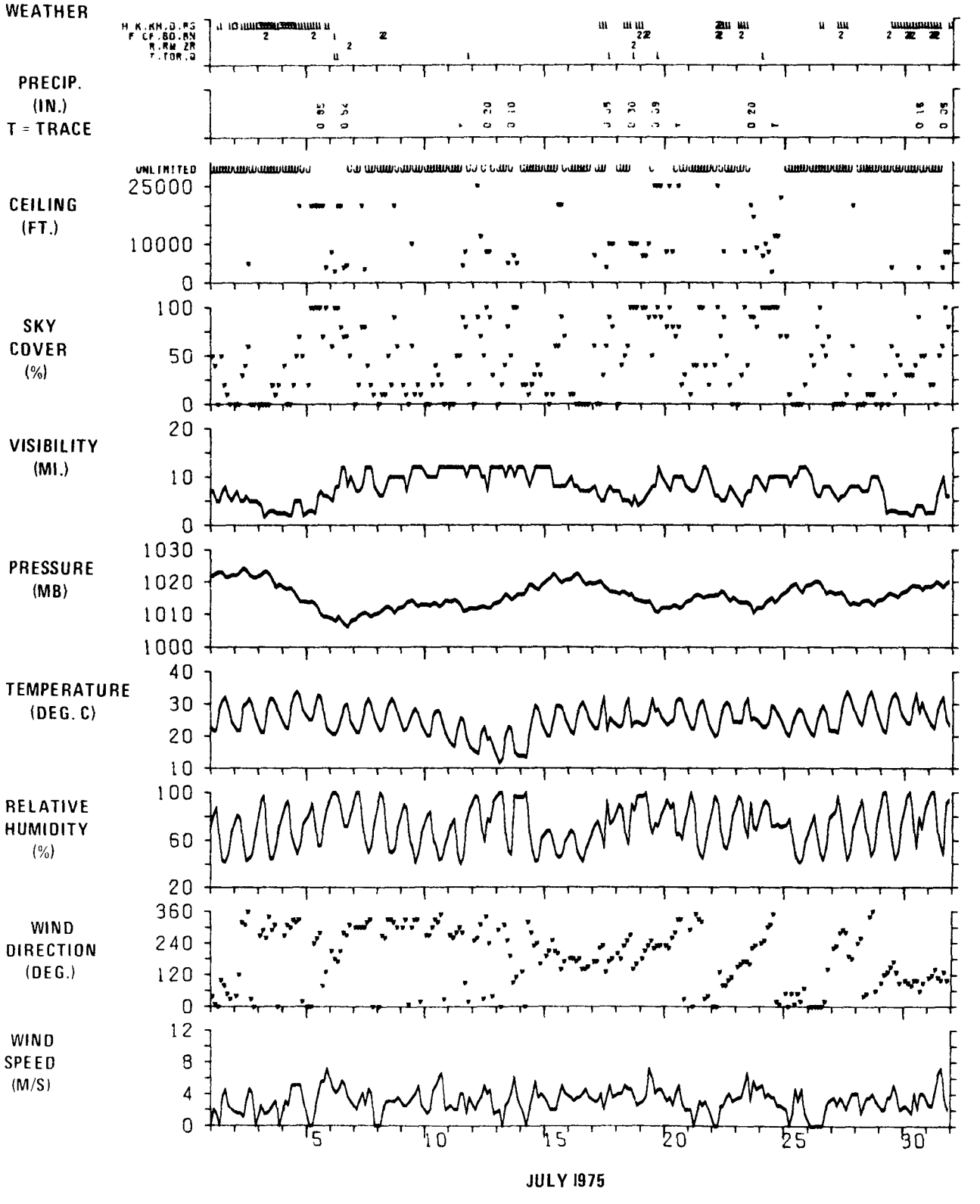

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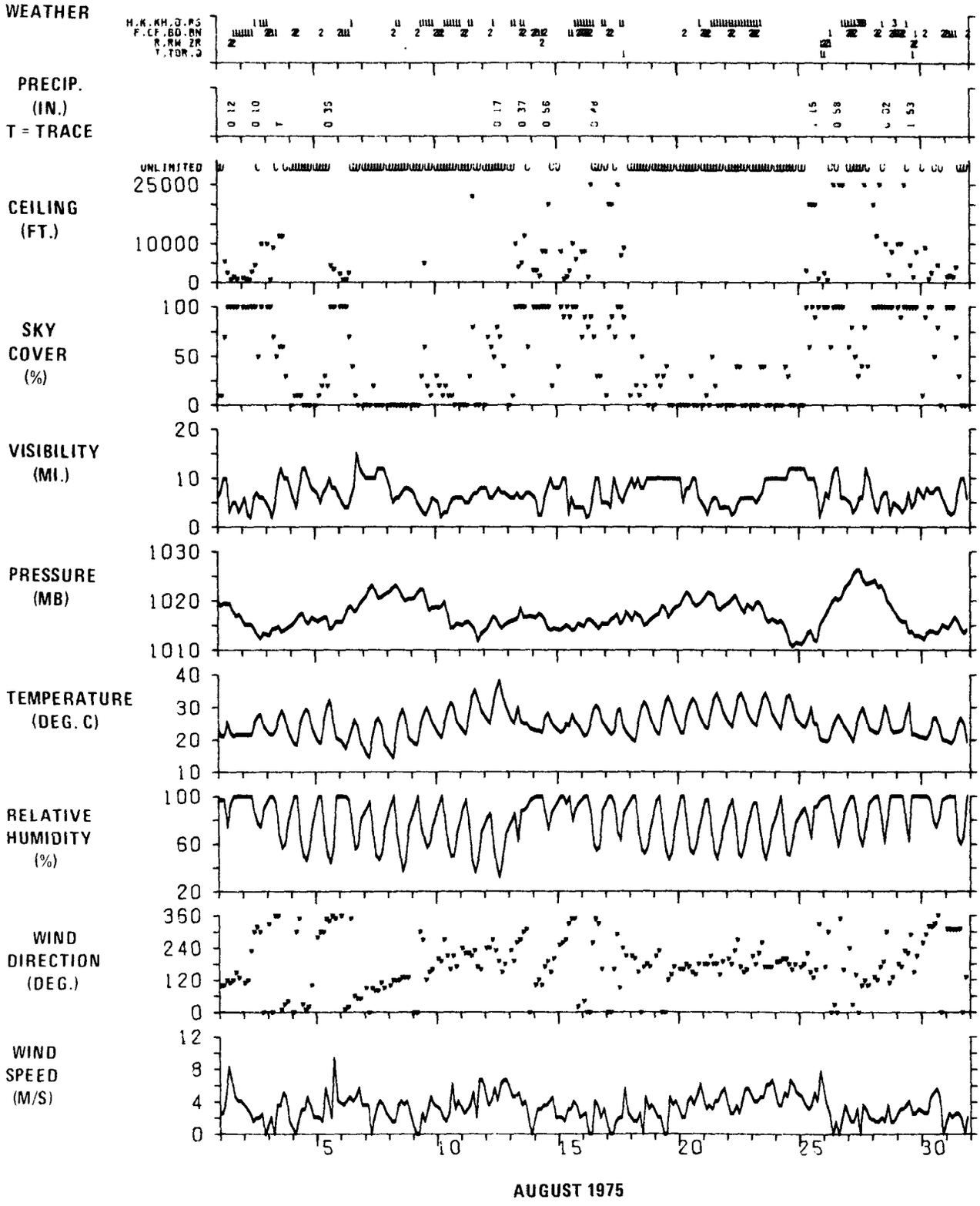

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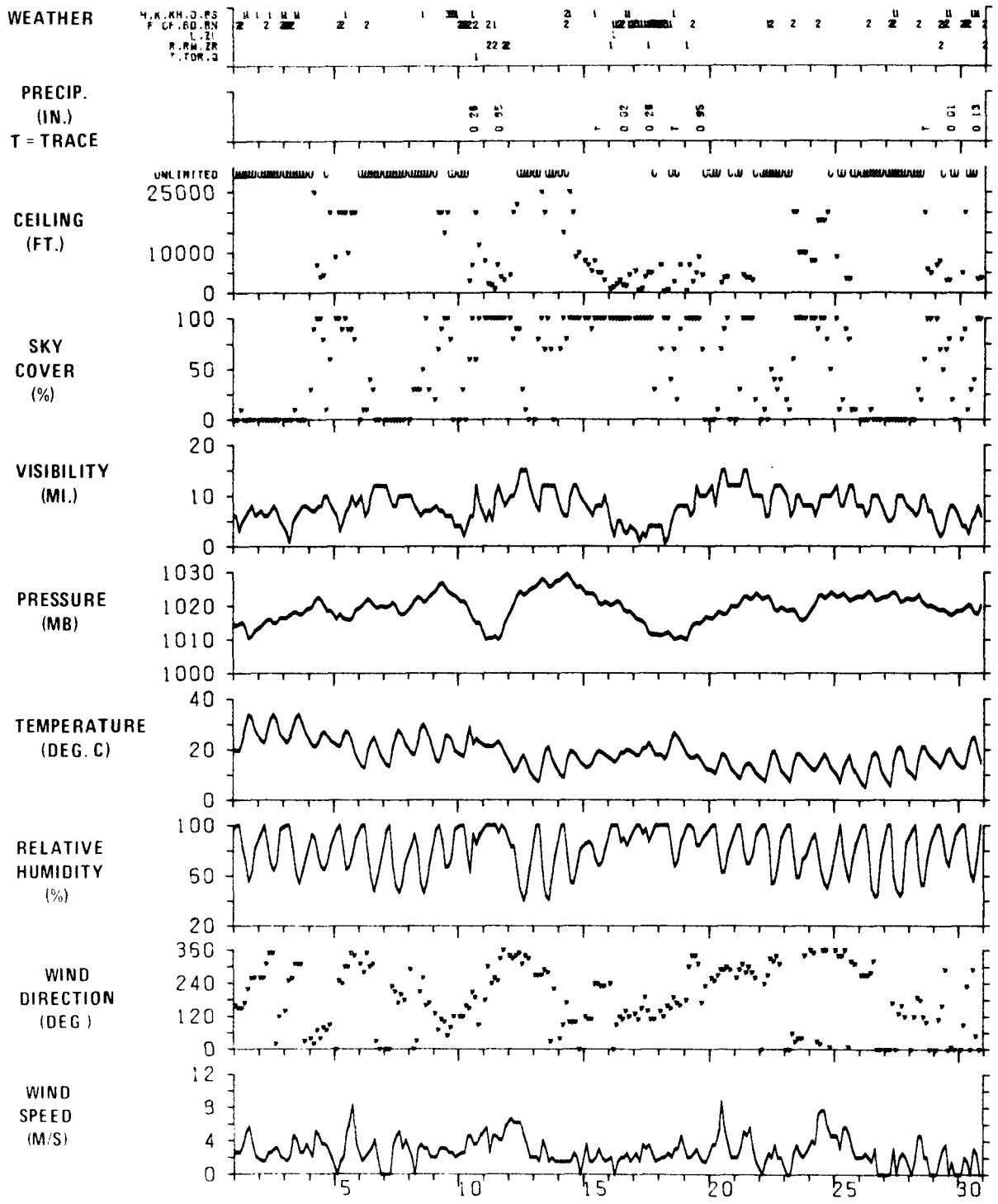

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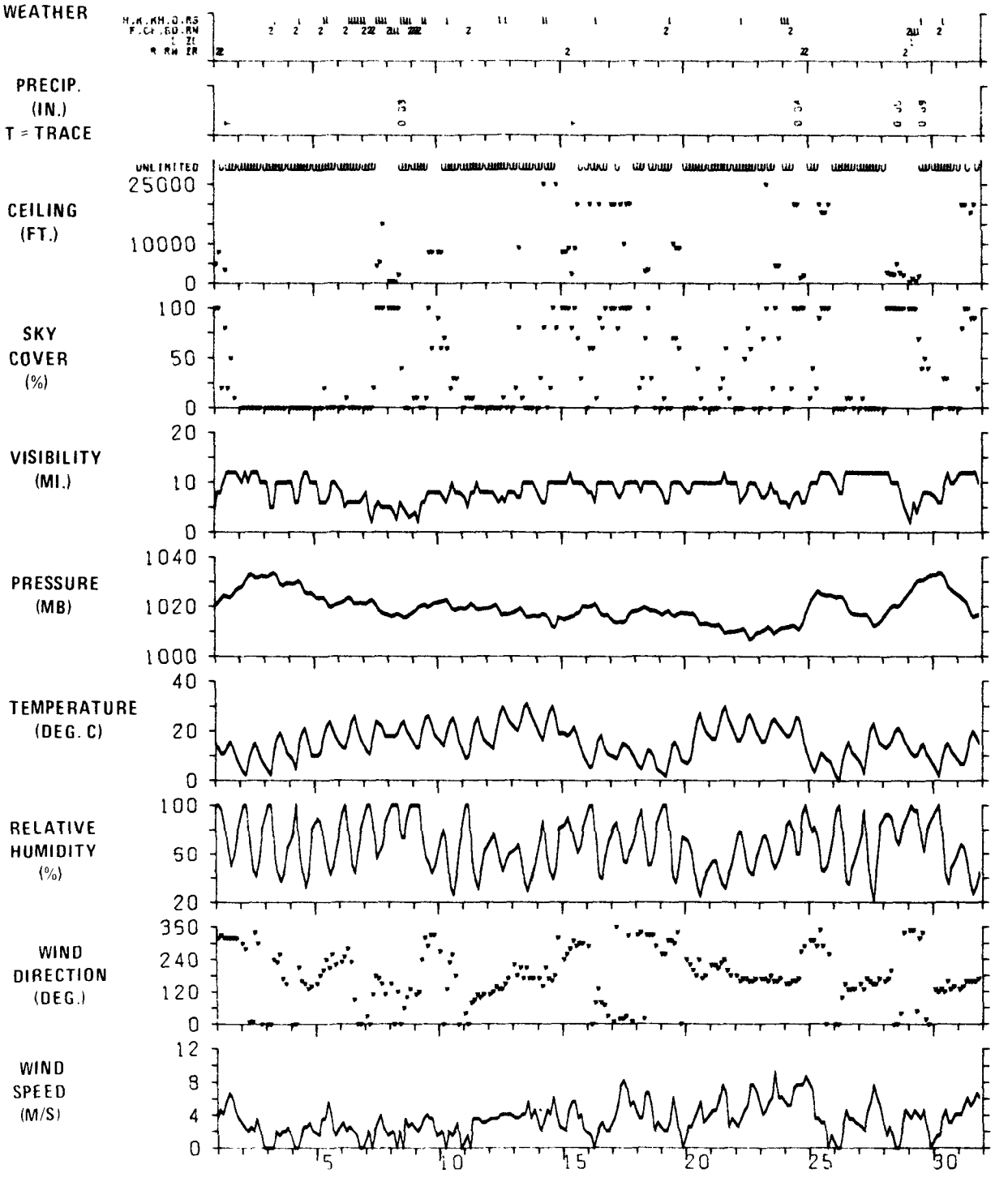

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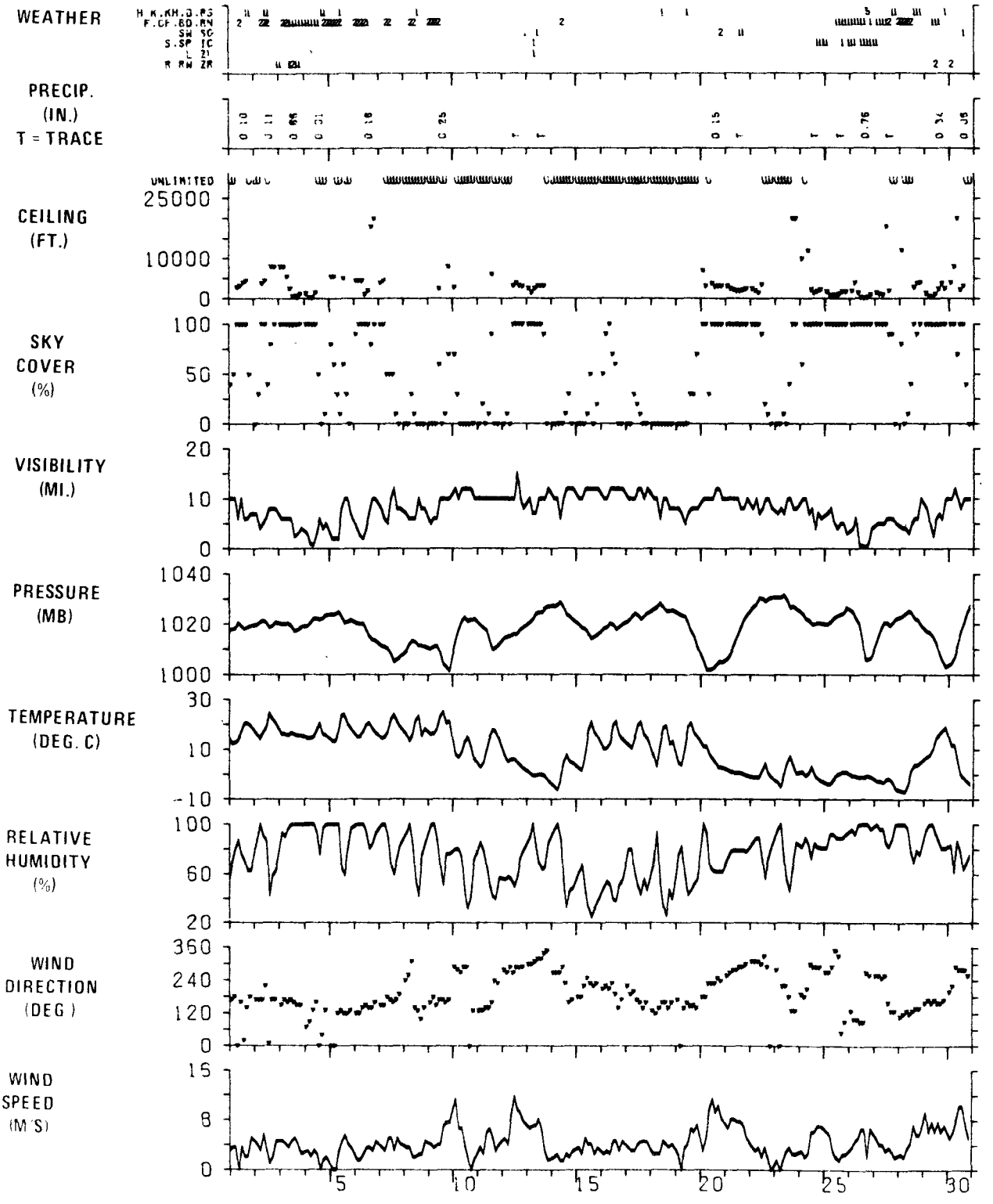

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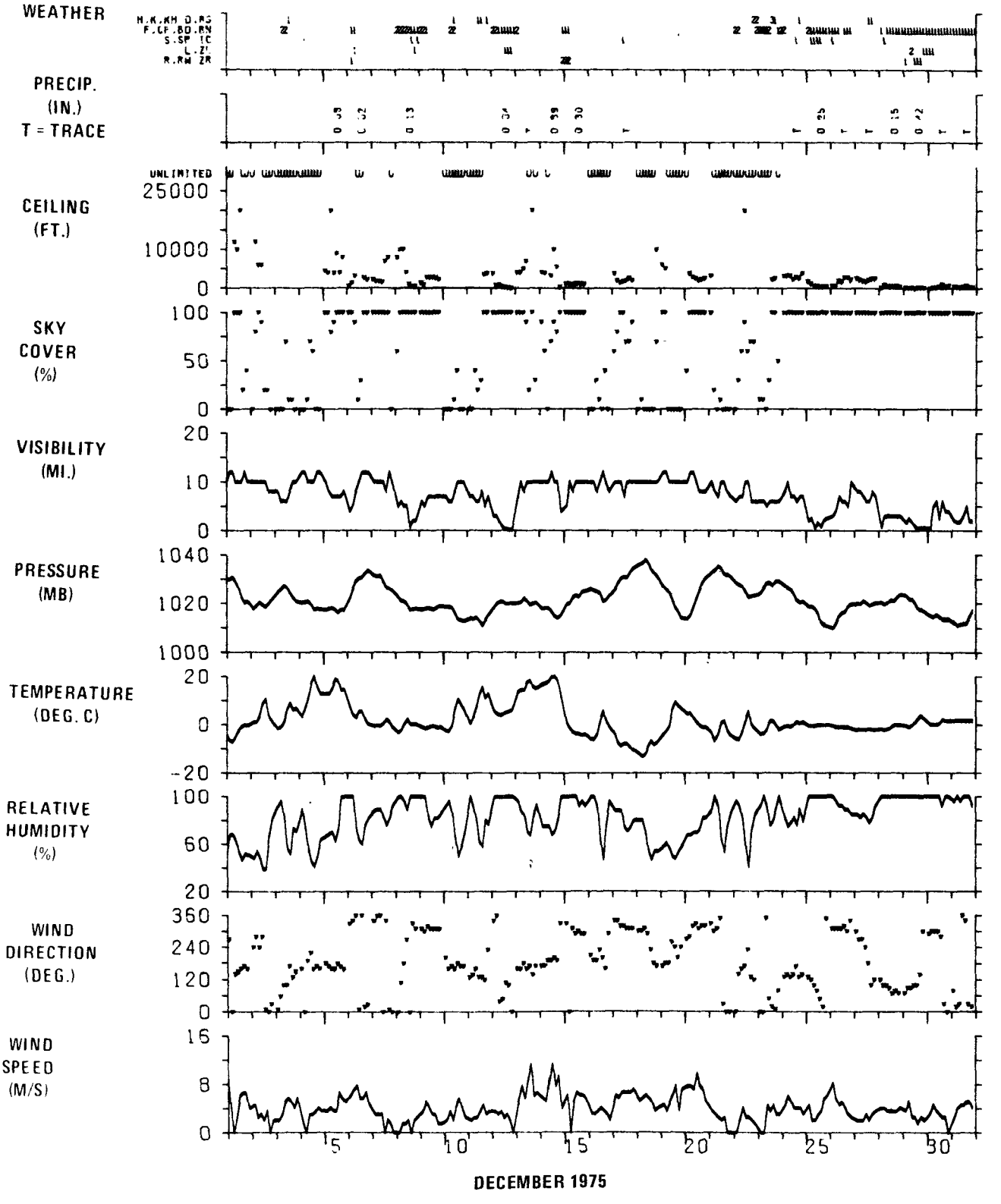

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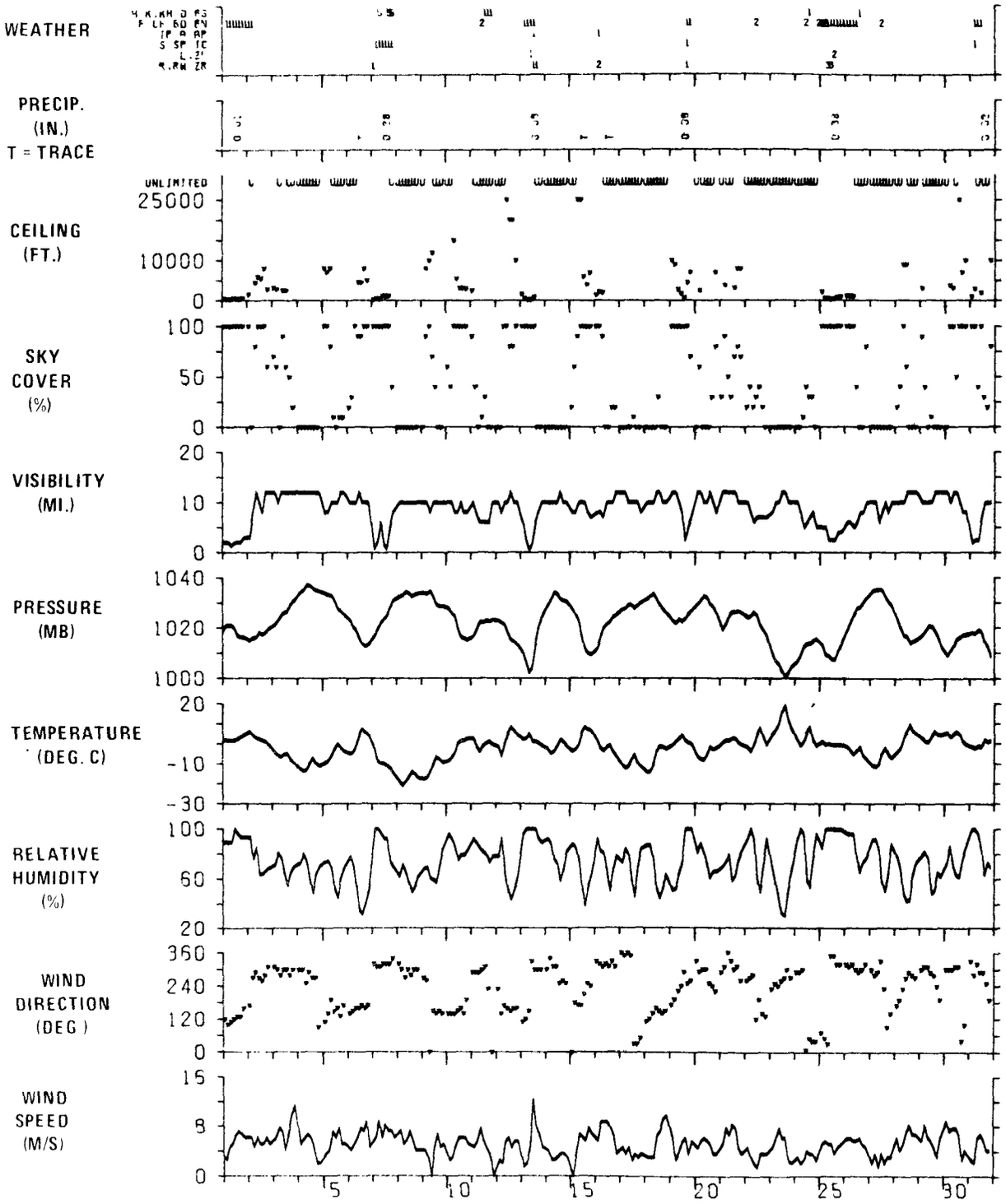

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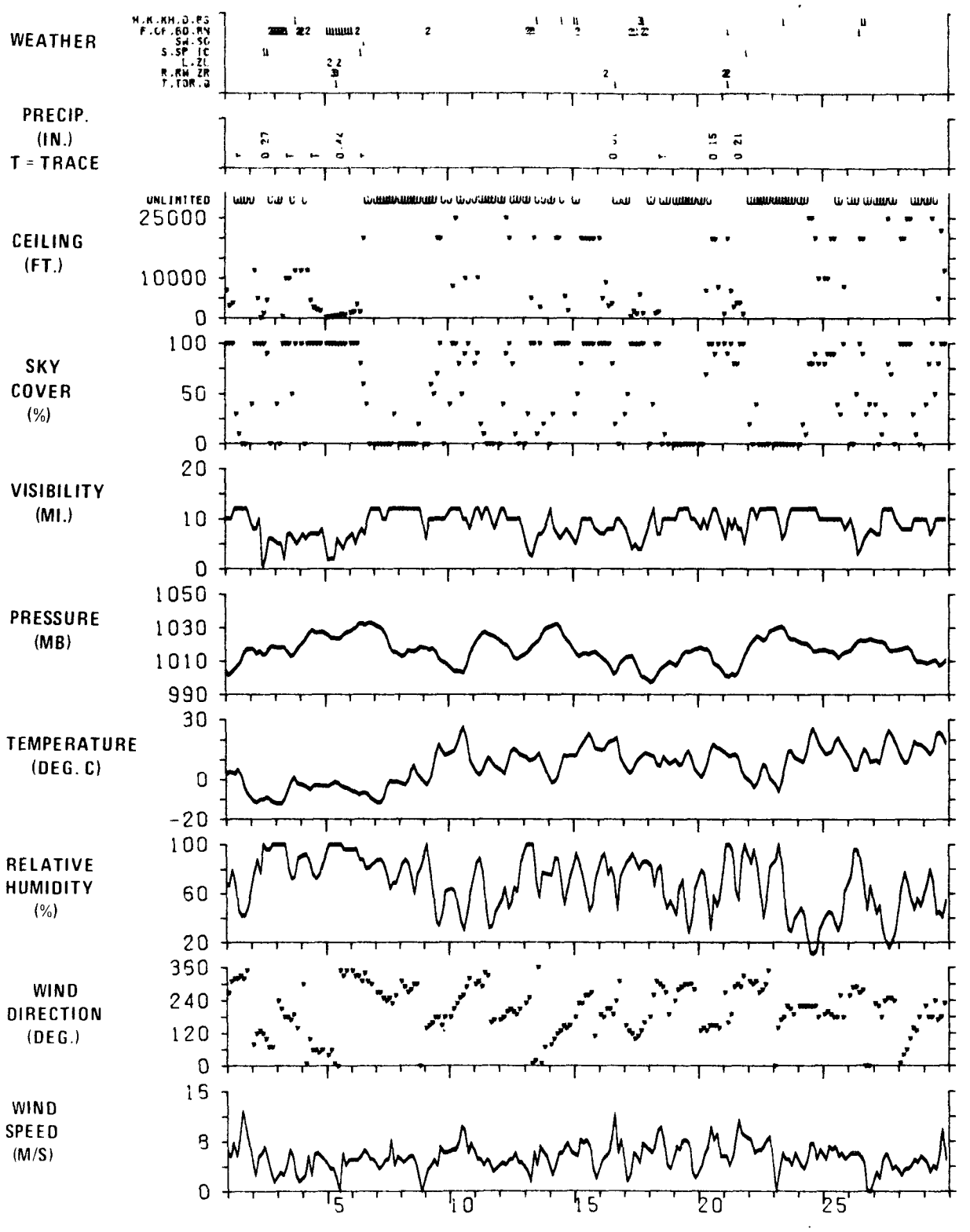

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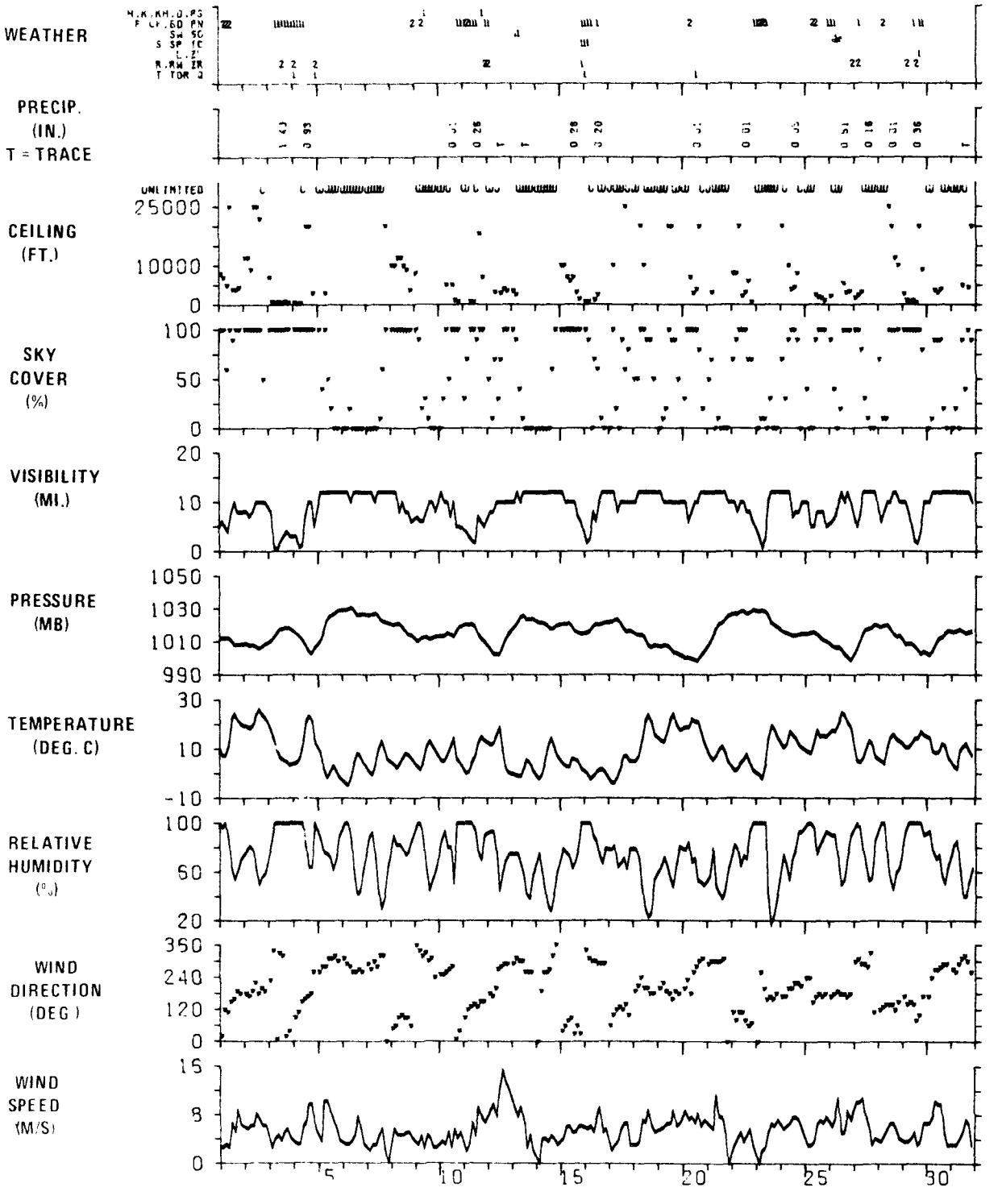

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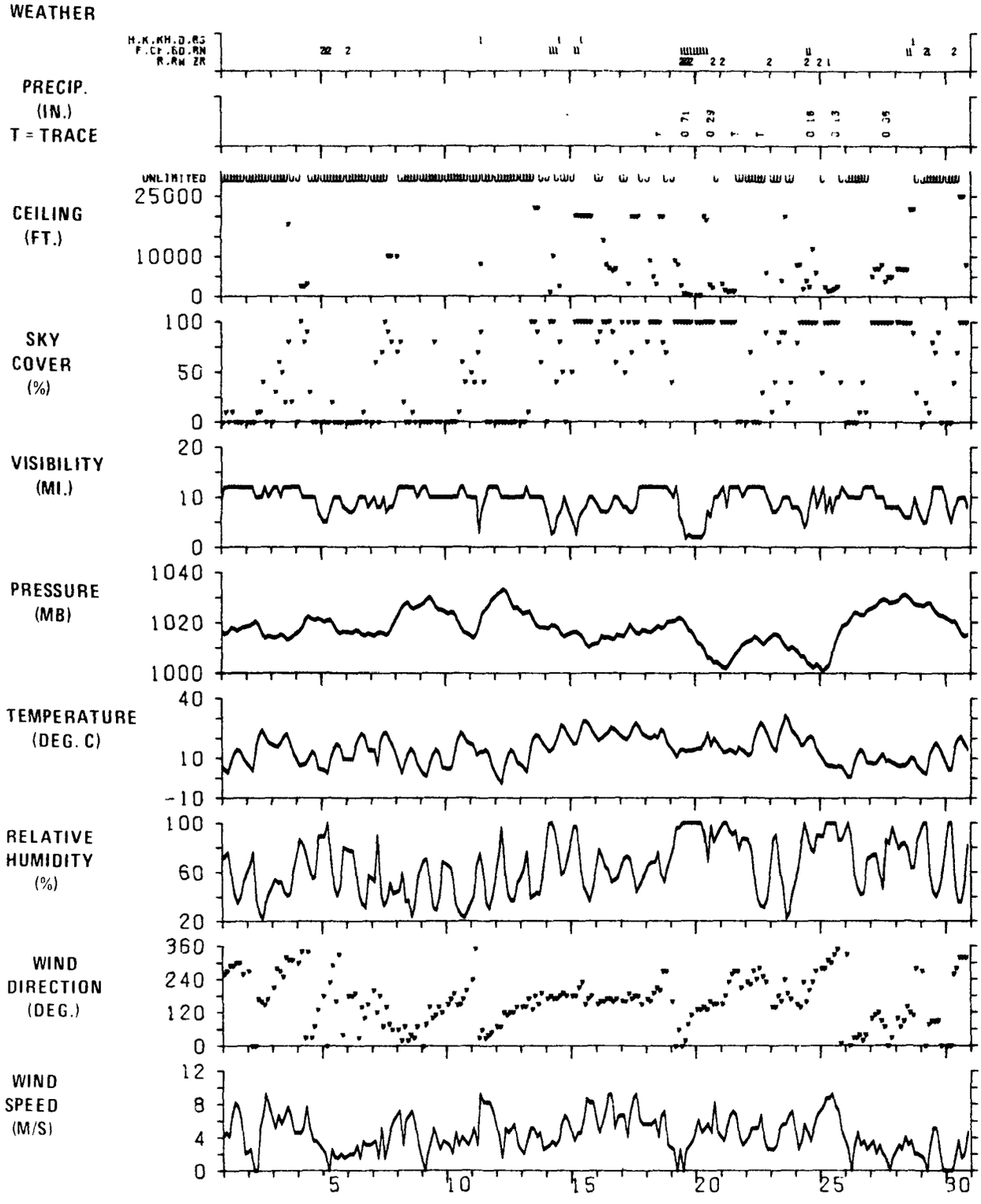

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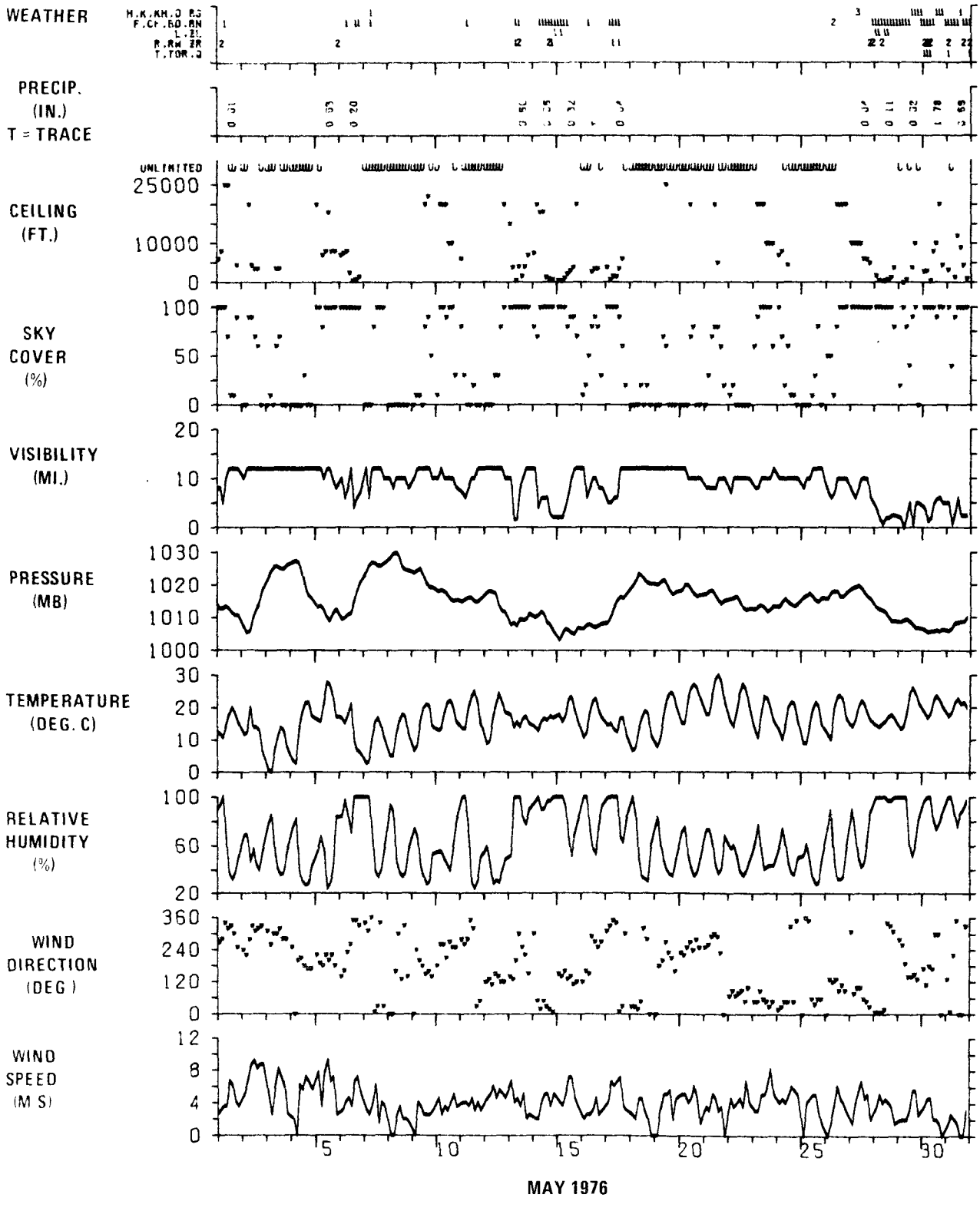

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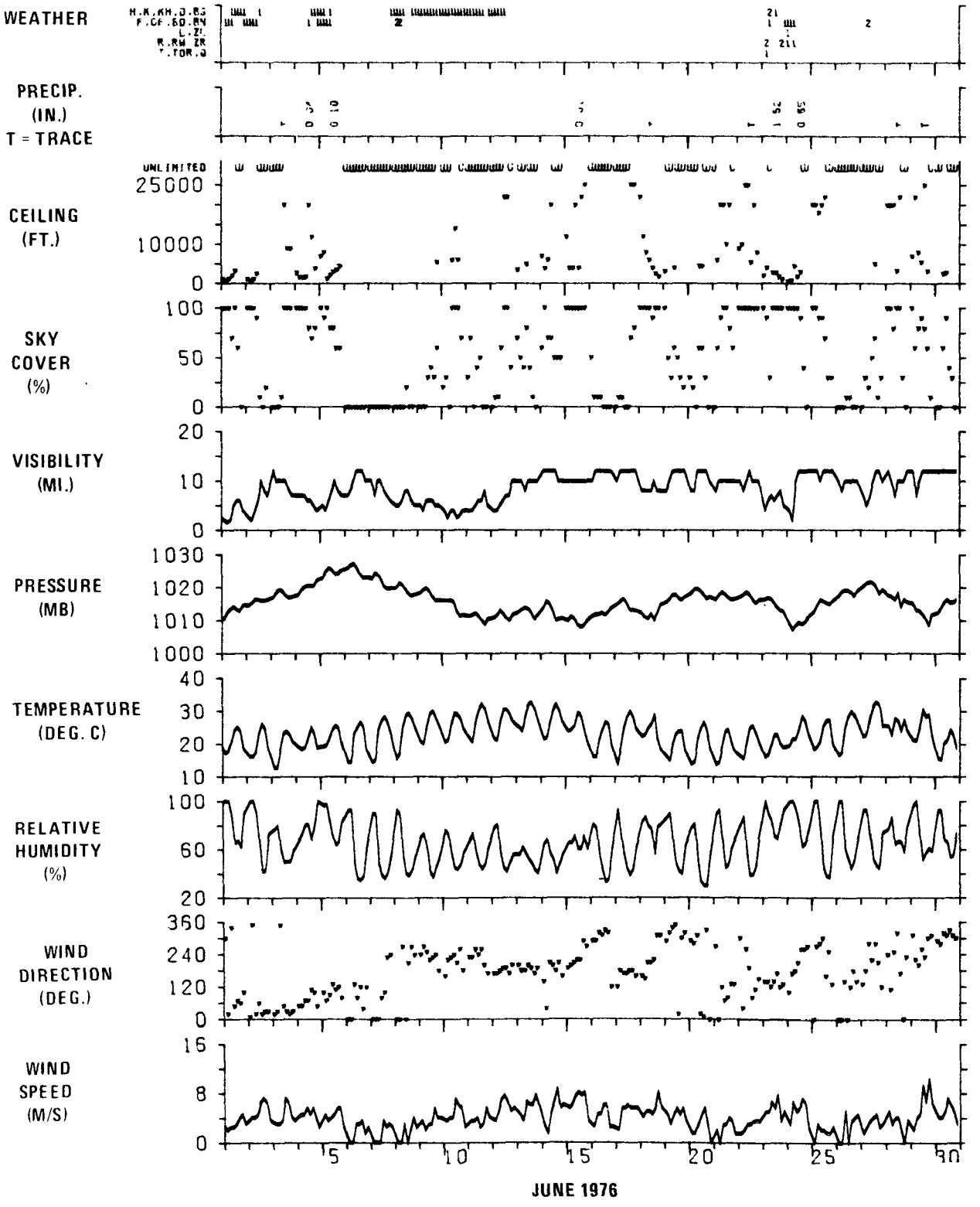

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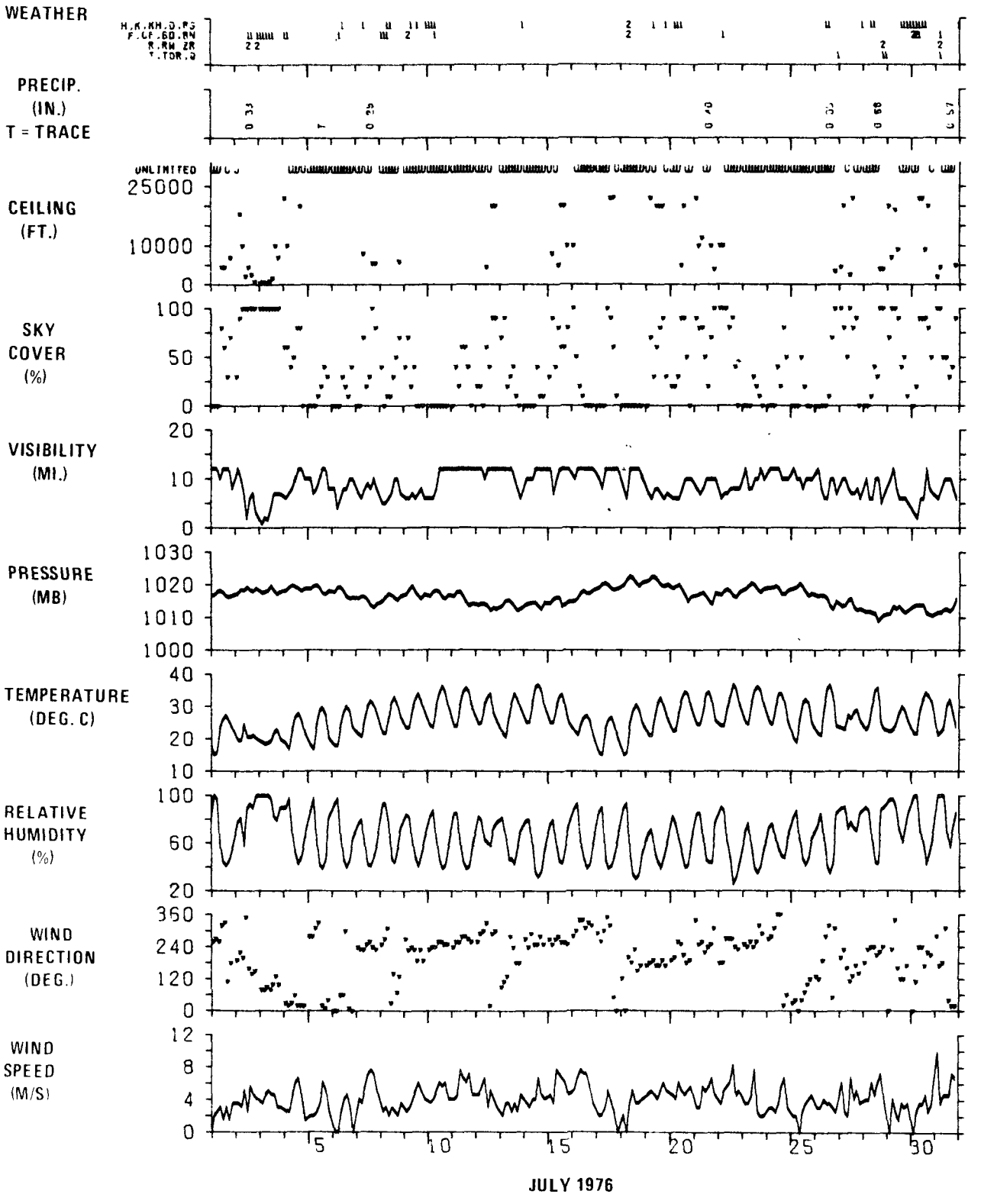

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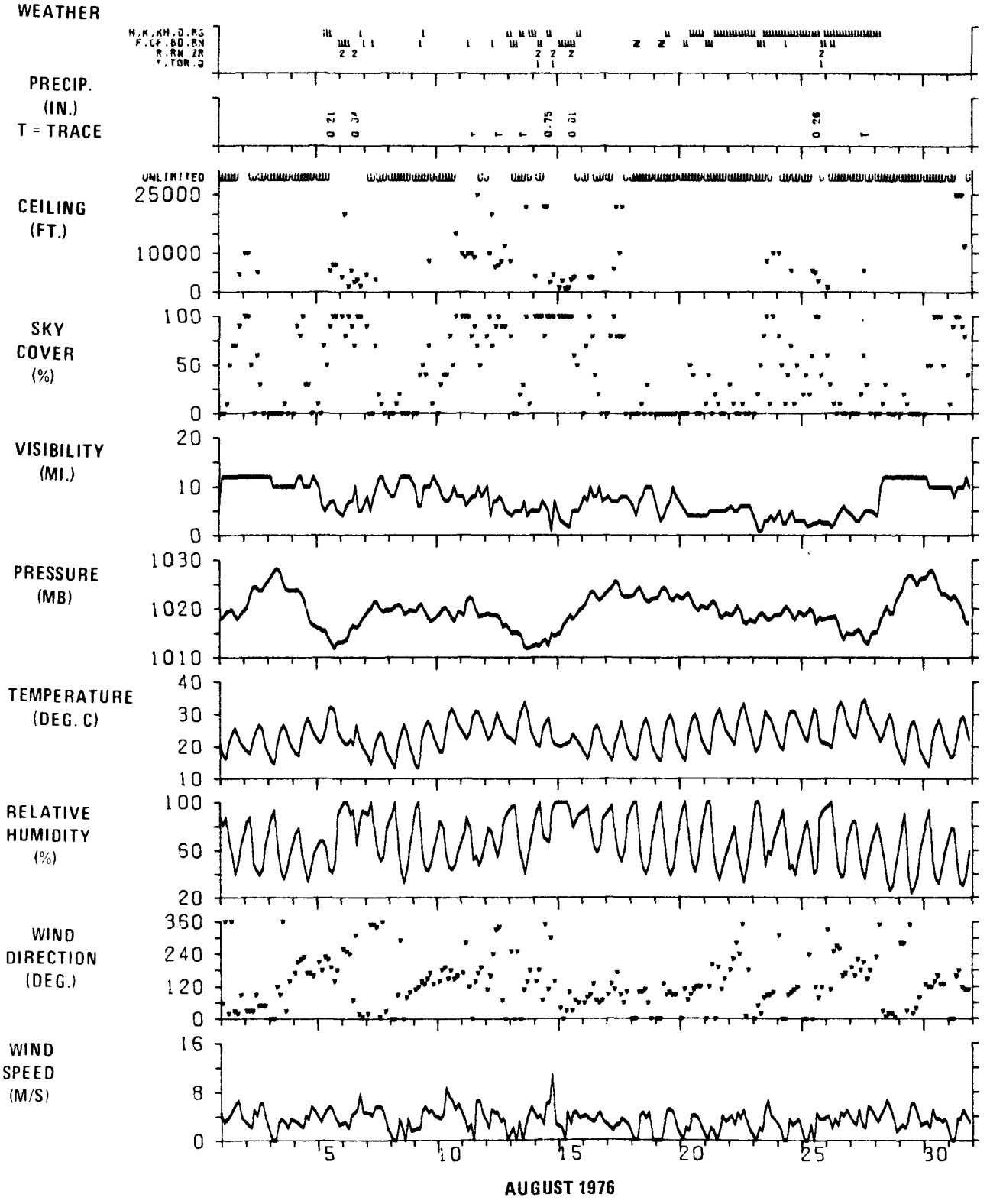

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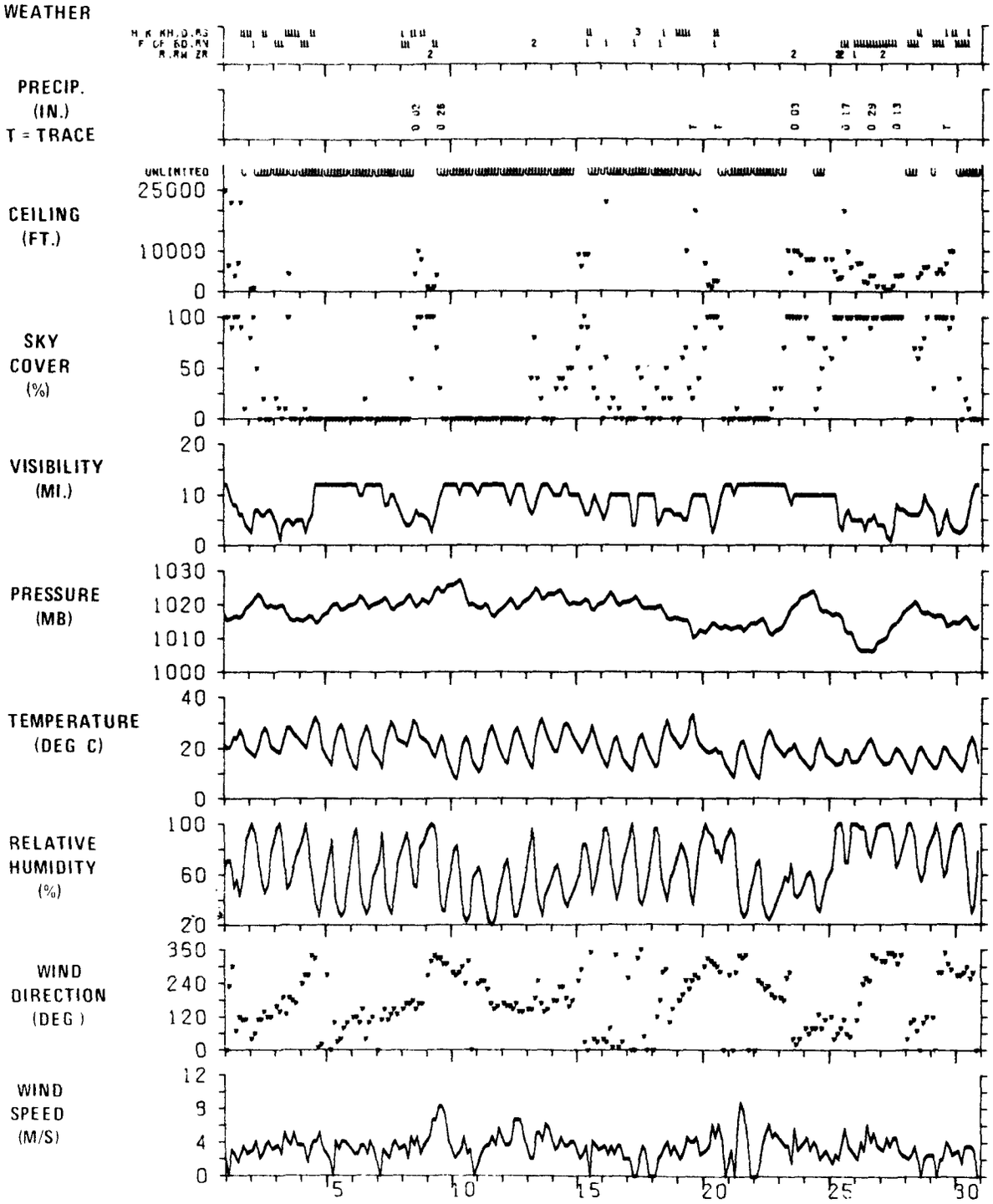

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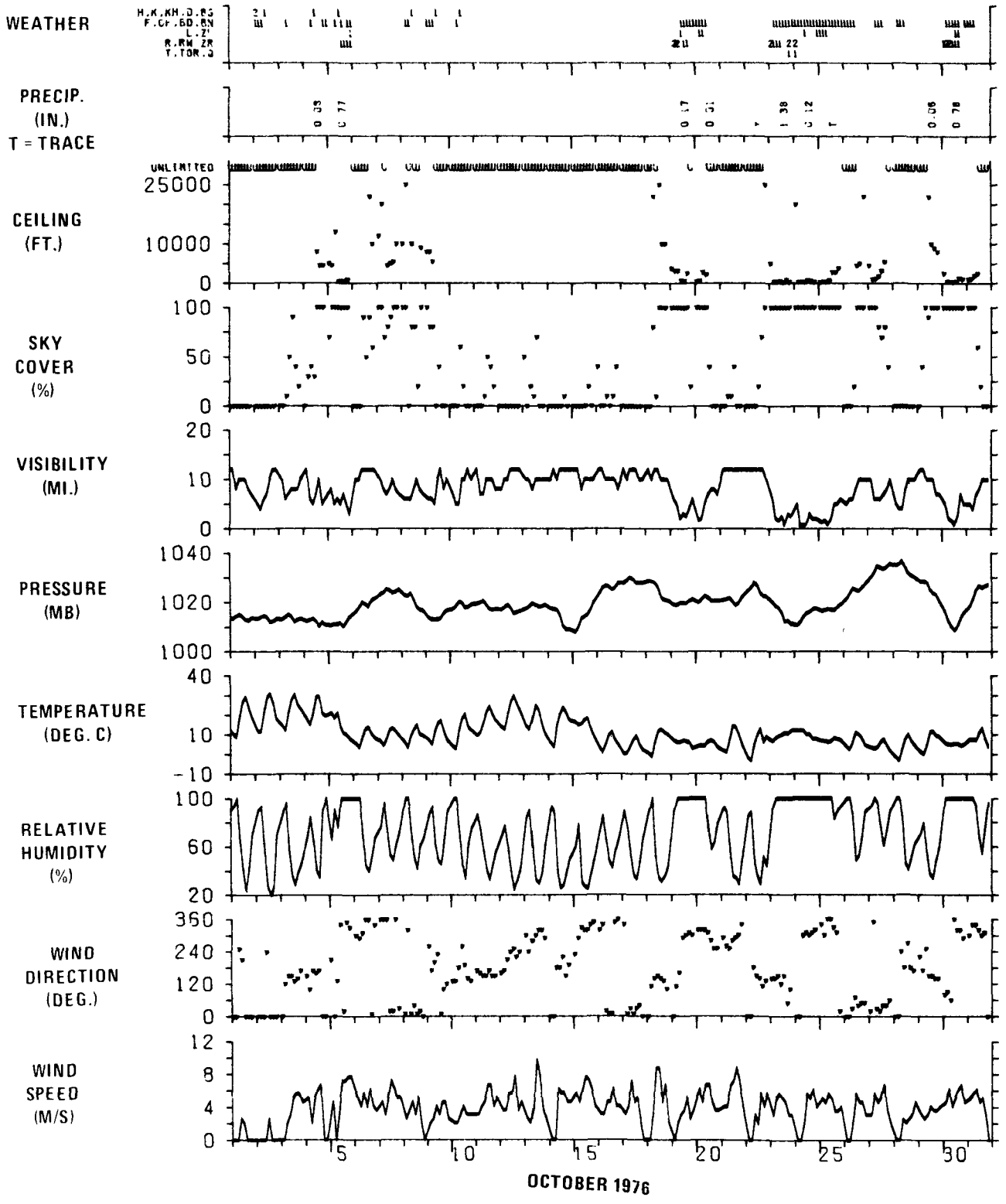

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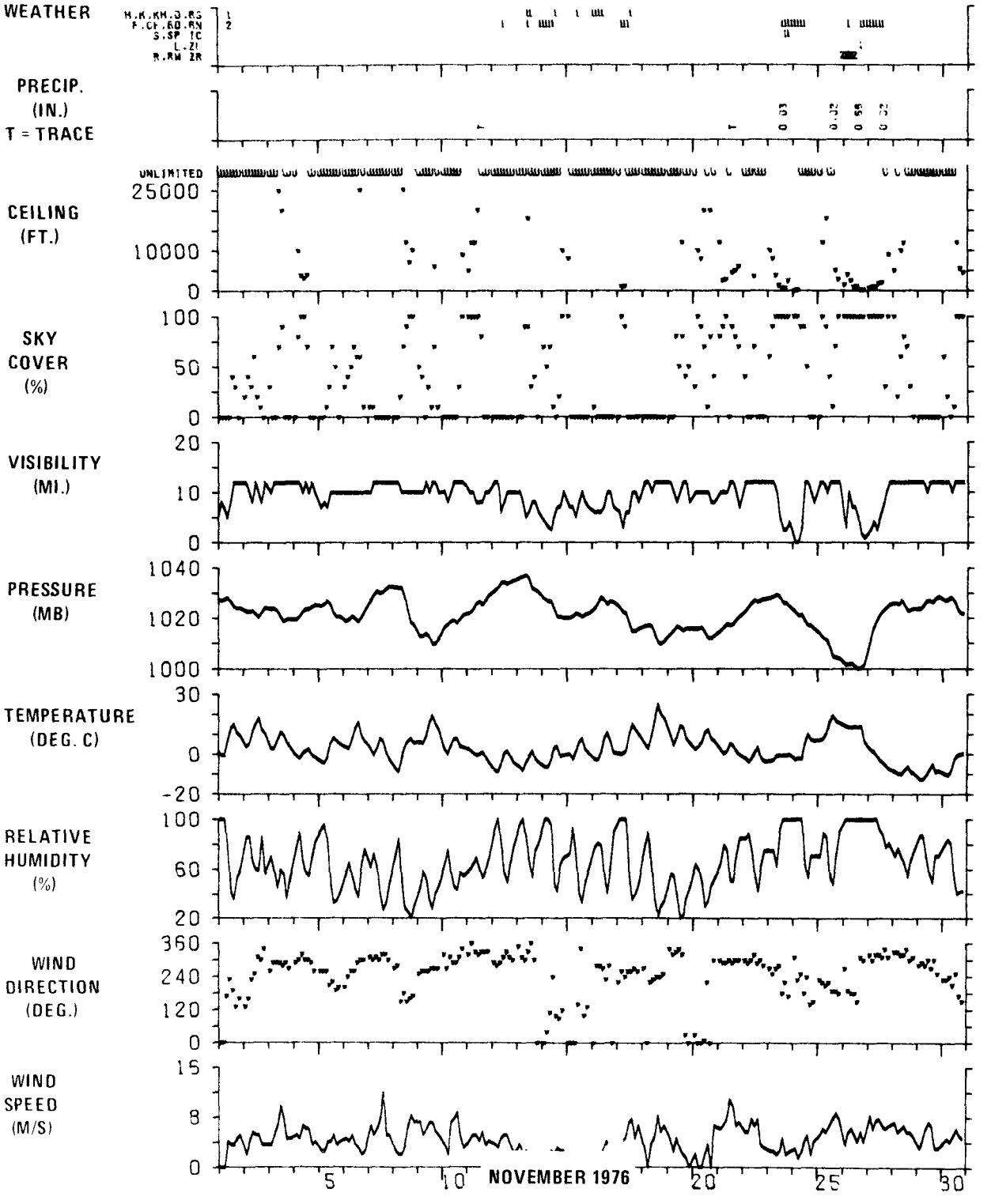

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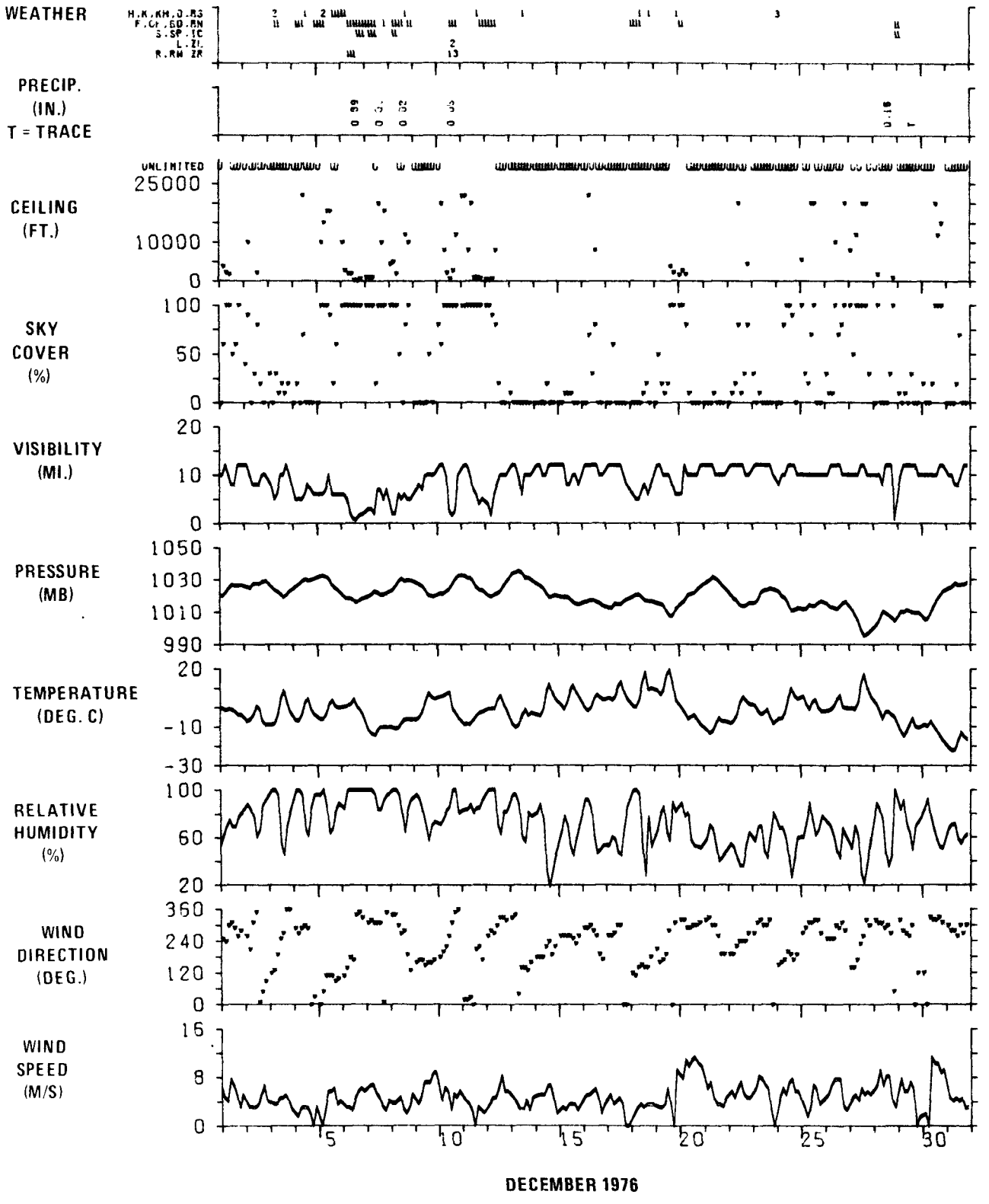

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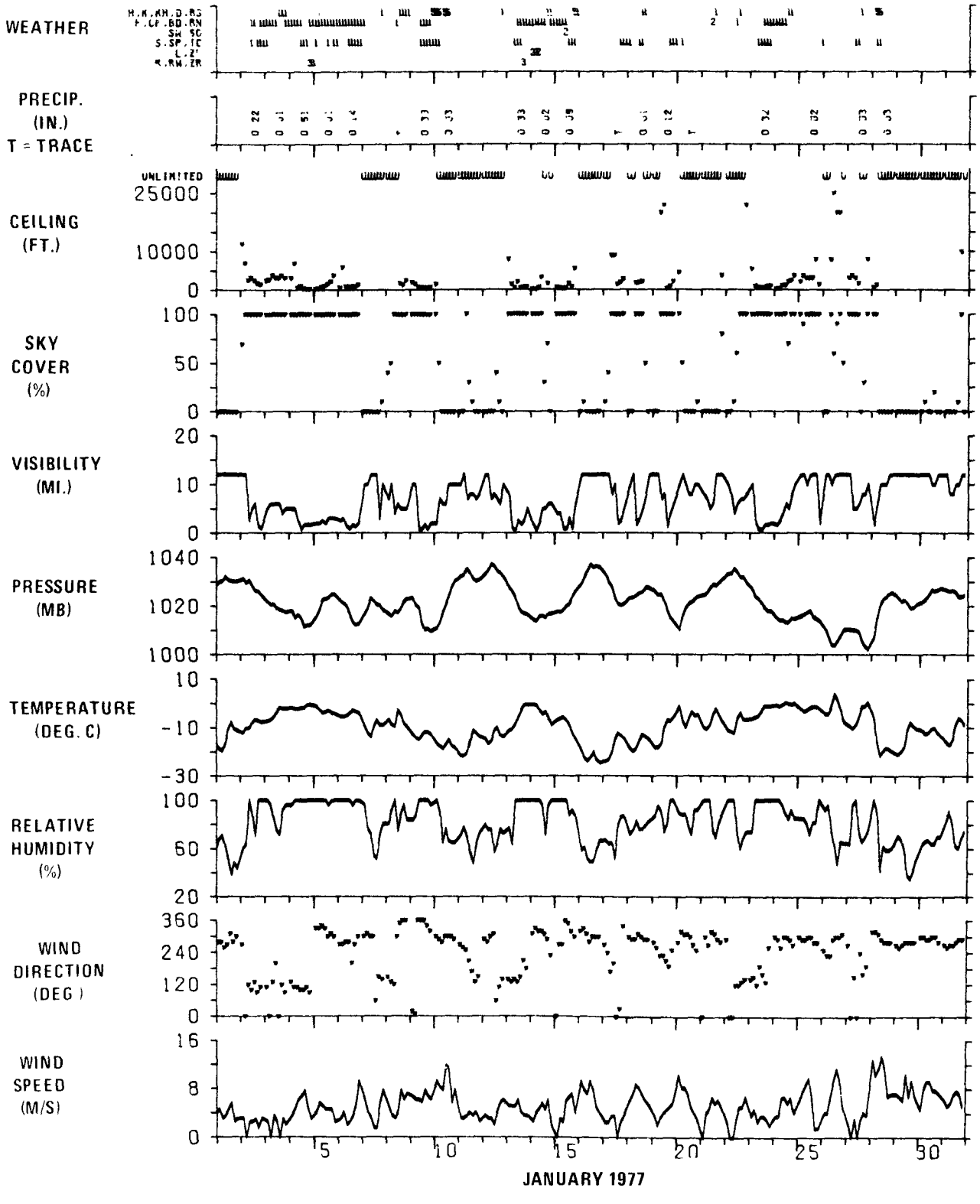

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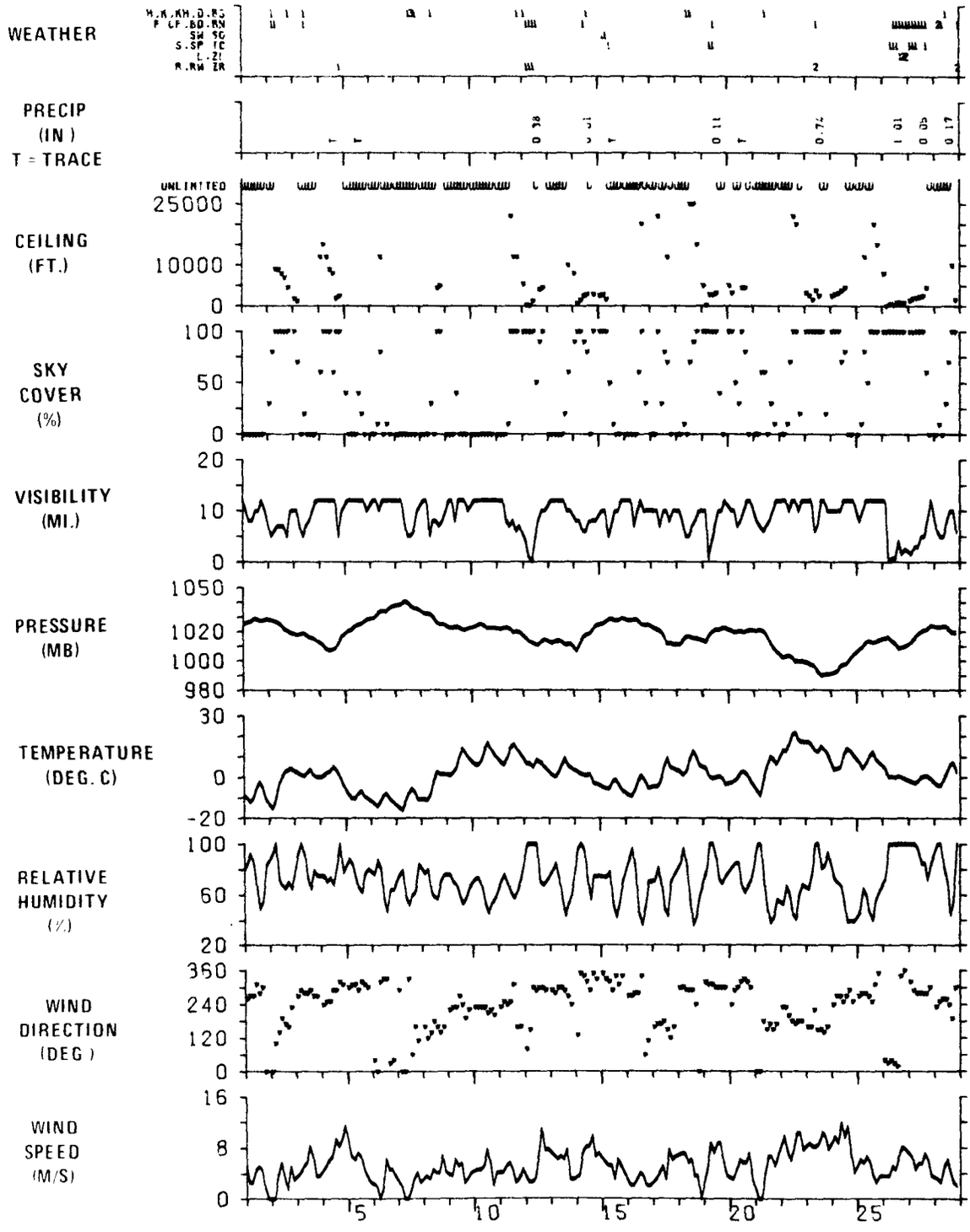

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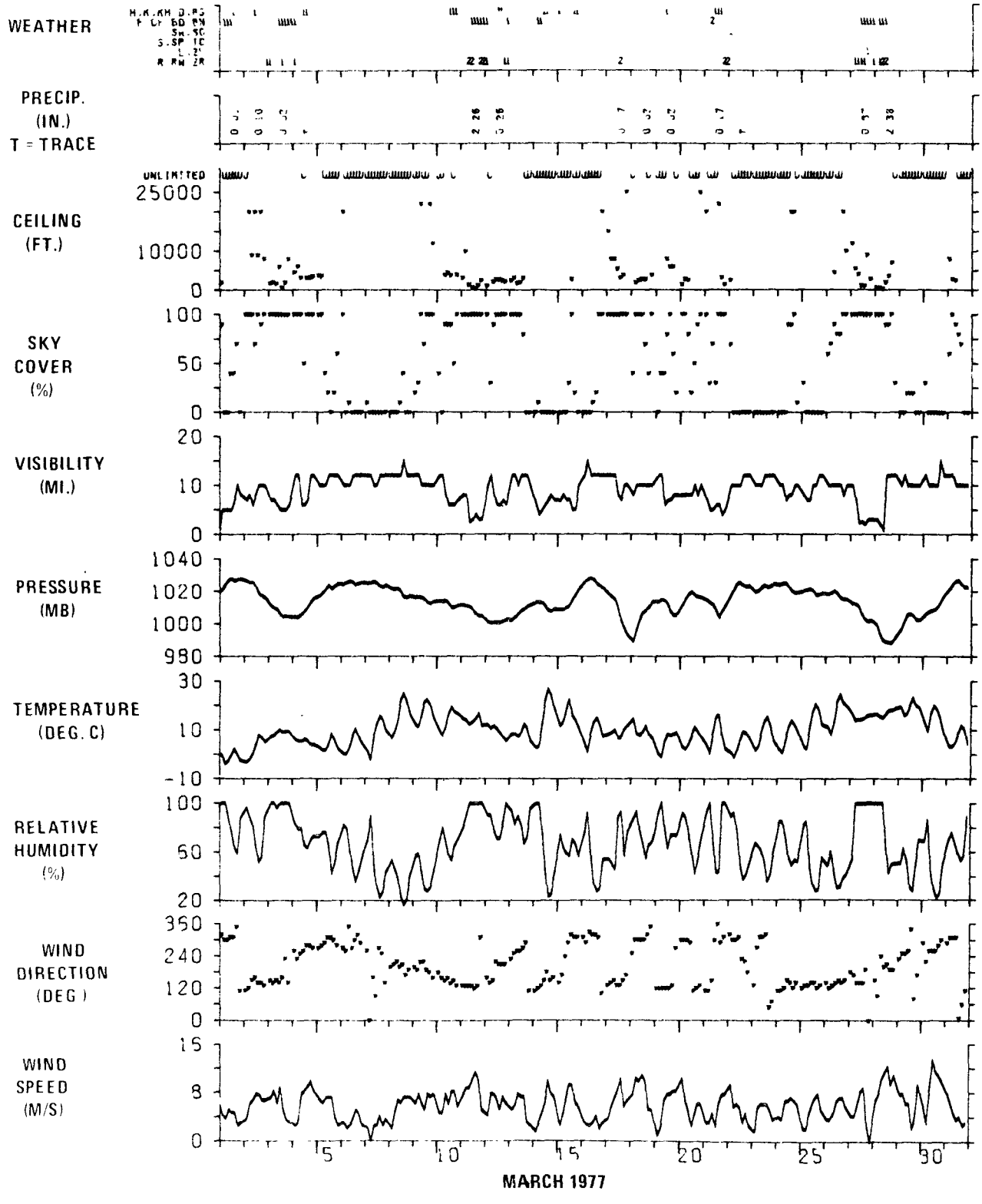

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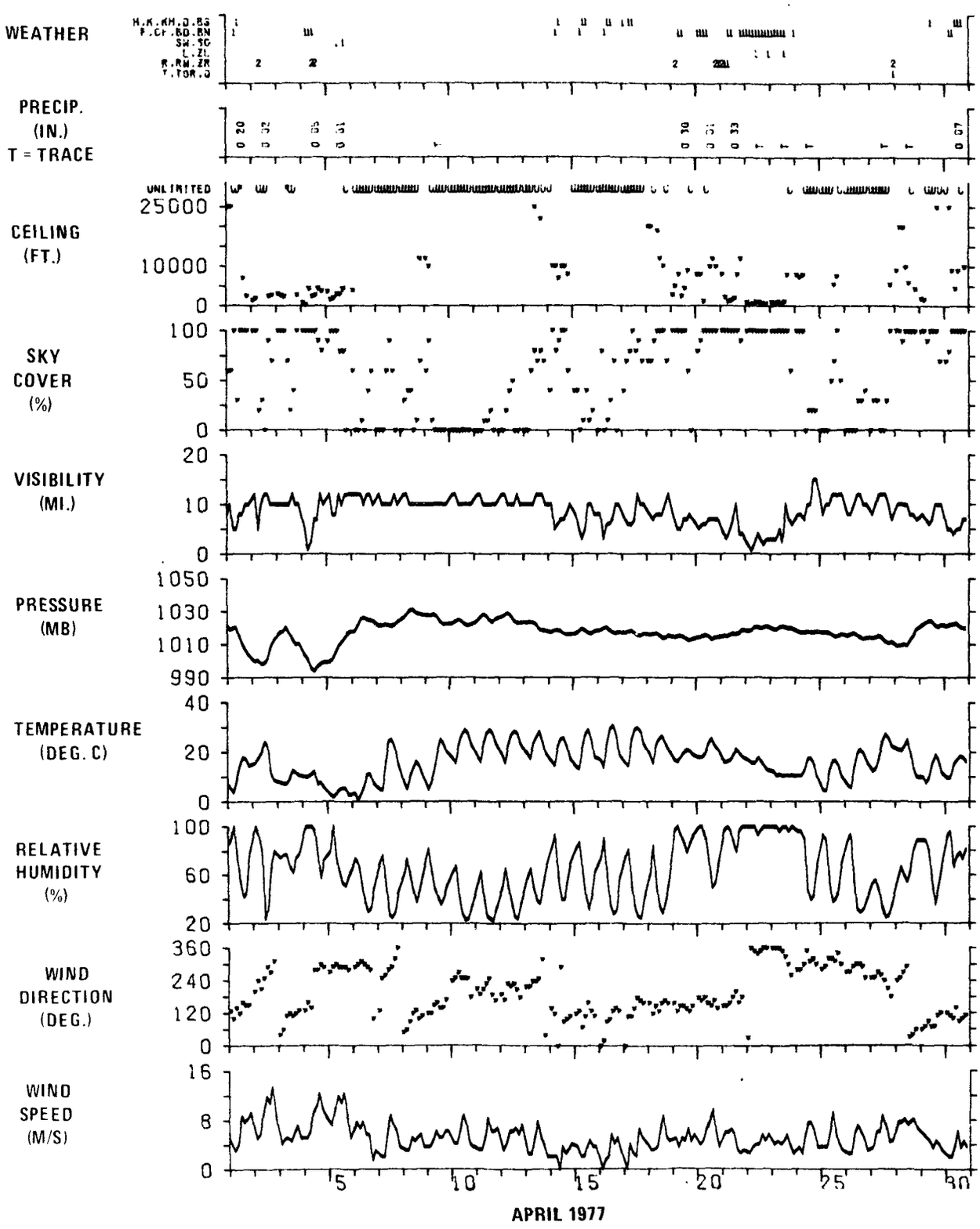

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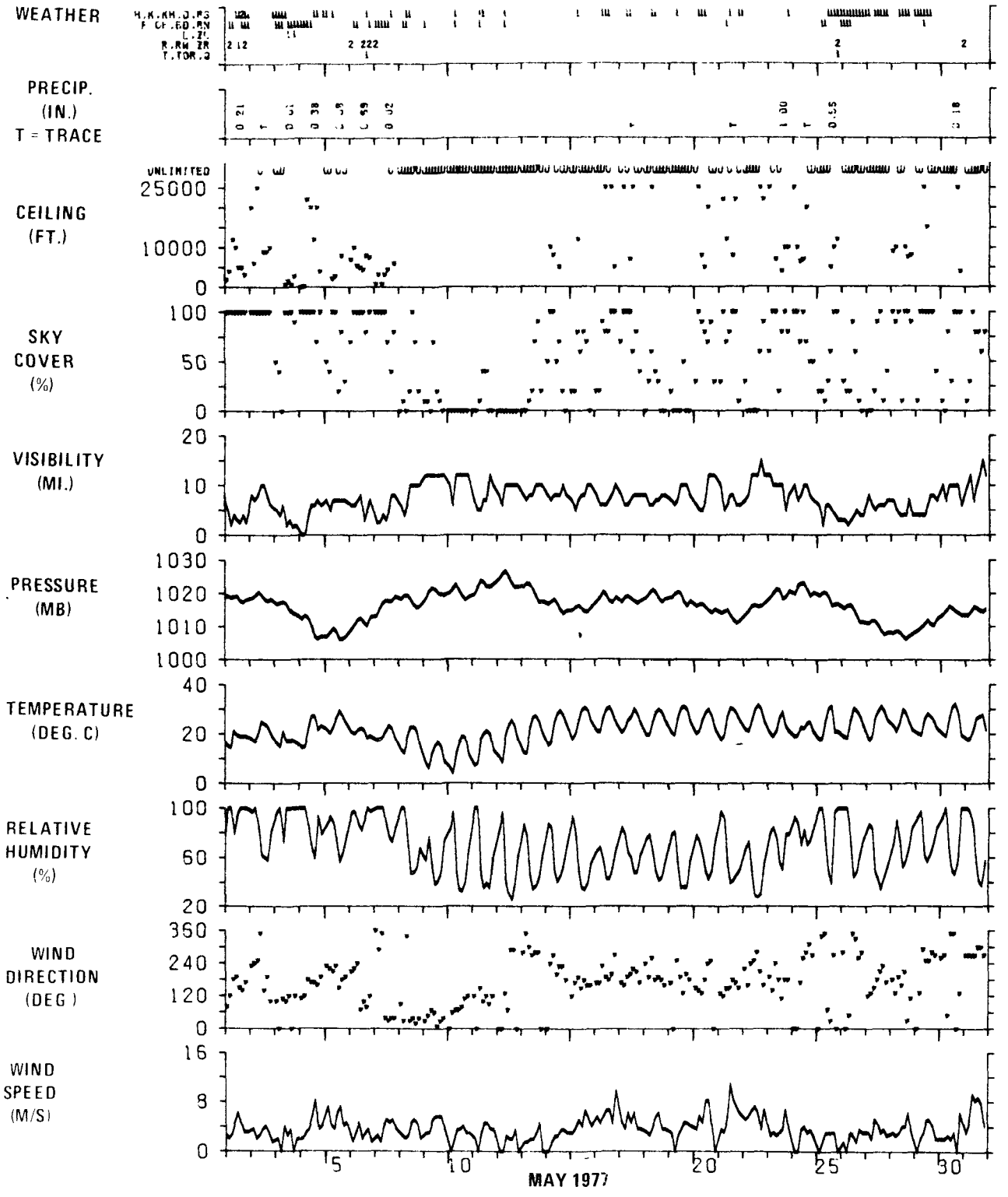

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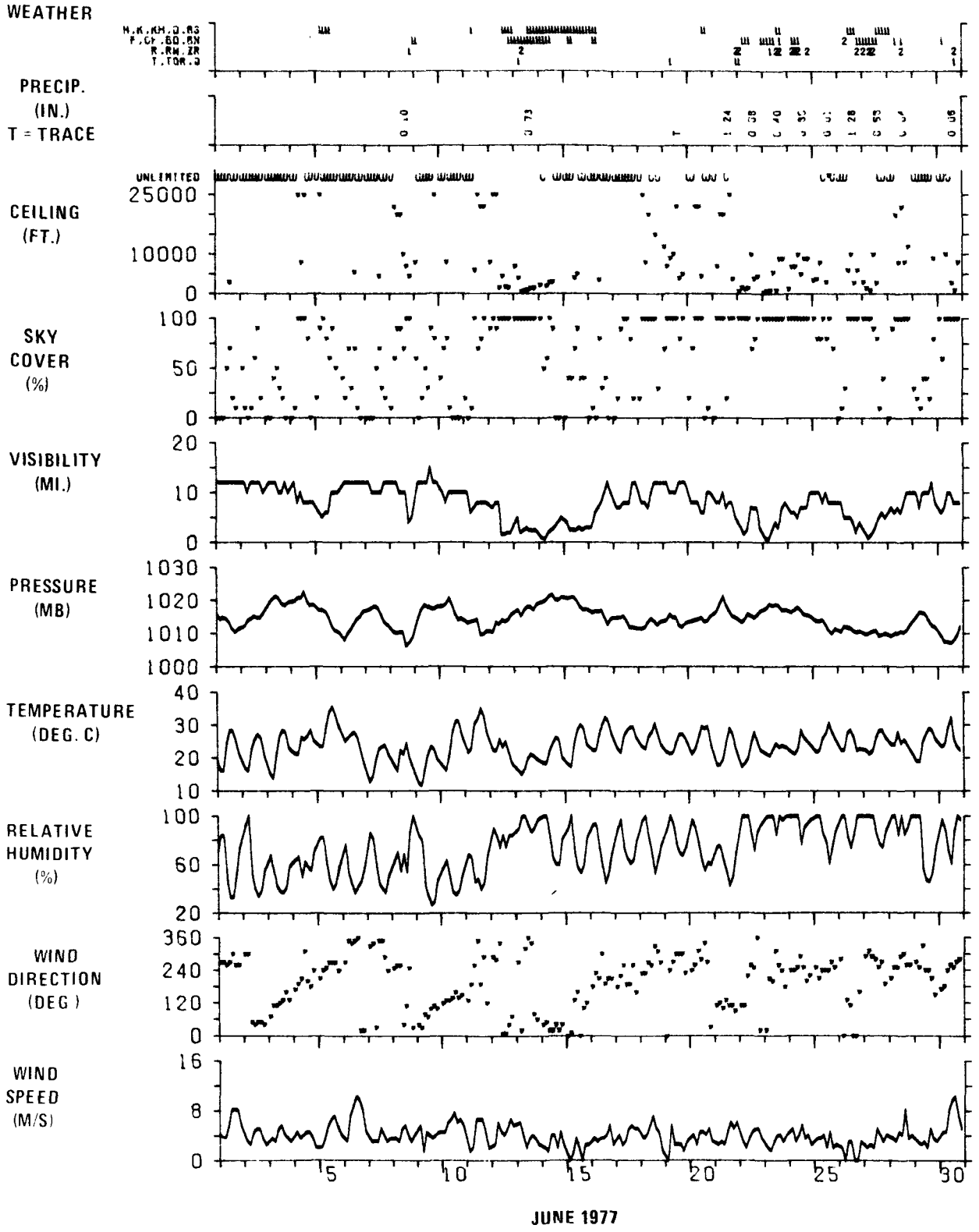

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4. TITLE AND SUBTITLE REGIONAL AIR POLLUTION STUDY Lambert Field Graphical Weather Summary		5. REPORT DATE January 1979
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) Robert B. Jurgens and William Ted Smith**		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS (Same as 12)		10. PROGRAM ELEMENT NO. 1AA603 AA-49 (FY-78)
		11. CONTRACT/GRANT NO.
12. SPONSORING AGENCY NAME AND ADDRESS Environmental Sciences Research Laboratory - RTP, NC Office of Research and Development U. S. Environmental Protection Agency Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED In-house
		14. SPONSORING AGENCY CODE EPA/600/09

15. SUPPLEMENTARY NOTES

** Potomac Research, Inc.
Research Triangle Park, NC 27711

16. ABSTRACT

Three-hour meteorological observations from Lambert Field, St. Louis, Missouri are presented in graphical format for the three-year period July 1974 to June 1977.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Air Pollution * Meteorological data Graphic Methods	St. Louis, Mo.	13B 04B 12A

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