12-1981

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RESEARCH REPORT 71, DECEMBER 1981

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ABSTRACT

Climate data and information users in Connecticut were inventoried by questionnaire. Categories of use and users were defined. Parameters used, frequency of use, adequacy of available data, sources of data, and user needs were summarized. Agriculture, Energy and Legal/Investigational categories comprise the greatest number of users of climatic data. Surface temperature and precipitation are the most frequently used parameters. Most users prefer the National Weather Service as their data source.

ACKNOWLEDGEMENTS

The authors wish to acknowledge Mr. Harold Thistle, University of Connecticut Research Assistant, for his work on the initial stages of this project.

This project was conducted with funds provided by the National Oceanic and Atmospheric Administration, National Climate Program Office, Grant number NA80AA00122.

The research reported in this publication was supported in part by Federal funds made available through the provisions of the Hatch Act.
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Received for publication August 27, 1981

CLIMATE DATA USE AND USERS IN CONNECTICUT

P.A. Palley and D.R. Miller

In July 1980 a survey was sent to approximately 1100 people to estimate who uses climatic data in Connecticut, what they use it for, and what their sources of data are. Names and addresses were obtained from mailing lists of various meteorological organizations and the National Climate Center. A total of 296 surveys returned from the original mailing were complete enough to be summarized. The returns were used to define categories of users and to compile statistics on climate information use within each group (Table I). Three categories were inadequately sampled in the original survey: the architects, the marine industry, and the construction industry. Therefore, an updated survey (Appendix I) was sent to one hundred people in each of these groups in February 1981. Again, names were obtained from mailing lists of professional organizations in each field. The results of the updated survey were statistically summarized and integrated with the original study results.

1) Parameters Used

On the whole, surface temperature and precipitation emerged most frequently as currently used climatic parameters with response rates of eighty-six percent and seventy-eight percent, respectively. Next were surface wind speed

(60%), humidity (36%), and solar radiation, with other types of data used less frequently. Figure I graphically portrays these results (a) by a summary of data used by all user groups; (b) by users within each parameter; and (c) by parameter use within each user group.

2) Frequency of Data

There was, by far, a preference for data collected on a daily basis (56%), which enforces a general complaint by respondents about the delay in receipt of data. Most of them commented that in order to be of value, data must be timely. The only user group that did not perceive a need for daily measurements was the architects, who preferred monthly averages. Figure II consists of three charts displaying user preferences for time intervals (a) in summary for all user groups; (b) by users within each time interval; and (c) within each user group.

3) Adequacy of Available Data

More than half of the users (54%) consider presently available data to be sufficient. (Appendix I, Question 8). However, if additional parameters were available and were made easily accessible, a majority (63%) indicated a definite use for it (Appendix I, Question 9). Another prevalent comment was that more localized data is needed: local conditions are not adequately represented by data obtained from current weather stations, and it is generally viewed as inaccurate to extrapolate data from one station to some other particular location. It was noted that extrapolations are especially difficult along the shoreline and in complex terrain situations. Additional parameters suggested as necessary were sea conditions; water temperature other than surface; long-range trends on atmospheric and soil pollution by region; solar angles per hour per day; direct, diffuse, and net-all wave radiation; and drought.

4) Sources of Data

The National Weather Service (NWS) is the most preferred (70%) source for climatic data. Communications media appears as the next most common source, being fairly well distributed among radio, television, and newspapers. Figure III shows (a) a summary of sources for all user groups; (b) users within each source; and (c) sources preferred within each user group.

Due to the misinterpretation by many of our original respondents of climate versus weather information, a question was included in the revised survey asking respondents to indicate if they use weather forecast data as opposed to climatic data, and if so, do they use daily, weekly or long-term forecast. Most (47%, Appendix I, Question 2) indicated the use of daily weather forecast data; some in addition to and some instead of climatic data. The sources of this information are presented in Figure III. In the overall data analysis it was assumed that all the respondents' answers were applicable to climate data.

5) Data Use by User Categories

Architects (33) mainly use surface temperature, surface wind speed, precipitation, solar radiation, and humidity data (70%, 64%, 61%, 58%, 58%, respectively). Thirty-nine percent of those surveyed use soil temperature data, trailed by air pollution and upper air wind speed data. The data are used for building siting and orientation, design concepts, planning and construction phases, heating and cooling requirements and drainage calculations. Atmospheric dispersion, synoptic events, hydrologic information, evaporation, barometric pressure and fog were not used by any of the respondents. The preferred data source is the NWS.

Construction (8) uses included precipitation and surface temperature (100% and 87%, respectively) for purposes of scheduling production and deliveries, determination of completion dates and construction progress and for the effects of both parameters on concrete and asphalt mixes. Other data used were surface wind speed (63%), humidity (50%) and soil temperature (25%). Additional applications of data included determination of costs and performance of construction projects. The following parameters were not used by any of the respondents: solar radiation, upper air wind speed, air pollution, atmospheric dispersion, synoptic events, hydrologic information, evaporation, barometric pressure, fog.

Few people in the construction industry answered the original questionnaire, and there were no returns of the updated survey. Follow-up phone calls confirmed that few people in the construction industry (i.e., contractors) use climate information at all or perceive a need for it.

Energy (83) was the only category in which responses indicated a use for all data parameters. Surface temperature emerged as the most used data (98%), generally for calculating degree days, heating and cooling loads, consumption (past, present and future), and home delivery scheduling. Humidity (57%), surface wind speed (52%), and solar radiation (43%) were the next most commonly used data, with applications such as evaluation of sites for wind generators and solar collectors. Precipitation (34%) was trailed in use by soil temperature (7%), upper air wind speed (6%), evaporation and barometric pressure (each 2.4%), and air pollution, atmospheric dispersion, synoptic events and fog (each 1.2%). Additional energy uses of climatic data listed were calculation of energy use for audits, budget preparation, energy education, research and conservation. This category had the greatest number of users and showed clear preference (71%) for the NWS as a data source.

Agriculture (73) data uses were predominately precipitation (97%) and surface temperature (89%), followed by surface wind speed (53%) and humidity (45%). Parameters less used were soil temperature (19%), solar radiation and upper air wind speed (each 8%), and hydrologic information, synoptic events and evaporation (each 1.4%). Agricultural uses of the data were to determine planting, harvesting, work and spraying schedules, irrigation and crop production. Data not used included air pollution, atmospheric dispersion, barometric pressure and fog. Most agricultural users get their data from media sources and the NWS.

Data Accumulation users (19) who keep and accumulate long-term records of data for hobby or business purposes were mainly interested in surface temperature (100%), precipitation (84%) and surface wind speed (63%). These were followed by solar radiation and humidity (each 32%), soil temperature (11%) and barometric pressure (5%). Uses included comparisons, forecasting, court testimony, maintenance of weather station and radio/television/library reports. Parameters not used were air pollution, atmospheric dispersion, synoptic events, hydrologic information, evaporation and fog. Eighty-four percent prefer the NWS for their source of data.

Water Resources category users (16) were primarily interested in rainfall (100%). Other parameters of interest included surface temperature (63%), surface wind speed and humidity (each 25%), and solar radiation, hydrologic information and evaporation (6.3% each). Data applications included: monitoring groundwater recharge and levels, watershed yields and reservoir water management, operation of public water supply and sewage system, and for hydrologic analysis and drainage basin studies. Parameters not used were soil temperature, upper air wind speed, air pollution, atmospheric dispersion,

synoptic events, barometric pressure and fog. The NWS, city and town departments and media were listed as preferred sources of climatic data.

Marine Industry data users (40) most frequently used surface wind speed (95%), precipitation (83%), surface temperature (65%) and solar radiation and fog data (50% each). They were also found to moderately use synoptic events (40%), hydrologic information (35%), and barometric pressure (28%), followed by less use of humidity (18%), upper air wind speed (15%), soil temperature (13%), and atmospheric dispersion (5%). There was no use indicated for either evaporation or air pollution data. The data is utilized for: shellfish harvesting, boat activity, commercial and private fishing operations, determining sea conditions and storms, and determining the effects of weather and climate upon various species. All the respondents in this category use some form of weather forecast data, as previously mentioned either instead of or in addition to climatic information. The NWS and media were the main data sources listed.

Hazardous Events Analysis users (17) indicated their greatest use was for precipitation data (100%) due to the nature of the category which applies the information to storm events such as blizzards and floods and the hazards associated with them. Data is used for storm prediction, flood control, storm drain design, runoff estimation and stormwater management, among others. Surface temperature was used by fifty-eight percent of the respondents, surface wind speed by thirty-five percent followed by solar radiation (24%), soil temperature (12%), and upper air wind speed, synoptic events and evaporation (each 6%). Humidity, air pollution, atmospheric dispersion, hydrologic information, barometric pressure and fog were not used. Eighty-two percent of the users in this category get their information from the NWS.

Legal and Investigational users (80) mainly included precipitation (100%), surface temperature (94%), and surface wind speed (66%). Additional data used were upper air wind speed and humidity (each 14%), soil temperature (9%), solar radiation (8%), atmospheric dispersion (4%), and synoptic events and hydrologic information (each 1.3%). Parameters not used were air pollution, evaporation, barometric pressure and fog. Main uses of the data included litigation and claims investigation, where data is used as evidence or to reconstruct conditions. Ninety-three percent rely on the NWS as their data source.

6) Data and Information Needs by User Categories

The statistics summarized so far in this report have been the users' perceptions of what they need. For many, the perceived needs did match the available data. Sixty-three percent of users (42% architects, 75% construction, 59% energy, 73% agriculture, 68% data accumulation, 44% water resources, 50% marine, 88% hazardous events analysis, 71% legal and investigational) indicated needs for additional types of information, while fifty-four percent of all respondents feel that data presently available is sufficient. It appears likely that many potential users of climatic data have not seriously considered the impact good climate information would have on their decisions, but we can infer that there would be substantial benefits to most users if "better" or "different" data were incorporated into their decision-making processes.

For example, architects and engineers need more high-quality observations collected on a long-term basis which are readily translatable for their particular needs. Unnecessarily large "safety factors" which are used in various calculations could be reduced considerably, saving time and energy costs. Heating and cooling requirements could be predicted more ac-

curately by those in the energy field with more localized and time-precise data available. Increased efficiency in water resources management would be the result of a wider distribution of observation stations throughout Connecticut recording on a long-term basis, or of increased availability of drought data.

The need for better spatial and time coverage data as well as the space-time interactions of these three user groups, architects/engineers, energy, and water resources, will be examined in depth as case studies in a cost/benefit analysis currently underway. The details of type of data needed the change from what is currently available, what/where the data sources are, an estimate of the cost of getting the information to the users and how the users will benefit are being examined and will be reported on in a later bulletin.

7) Future Cooperation

Considerable enthusiasm was evident relative to coordination of a state-wide data pool. All of the known people, companies and agencies that measure weather data in Connecticut have been contacted to ascertain the types, accuracies and forms of their data. The results of this study are currently being compiled and will be discussed in a separate report.

KEY TO USER GROUPS

A = Architects	K = Data Accumulation
C = Construction	L = Water Resources
E = Energy	M = Marine
F = Agriculture	N = Hazardous Events Analysis
	P = Legal/Investigational

Table I

USER CATEGORIES AND TYPES OF USERS IN EACH GROUP

User Category	Users
Architects	Architects, engineers
Construction	Contractors, builders, town building departments, industries producing construction materials
Energy	Engineers, homeowners, researchers, science centers, large and small corporations and businesses, public and private utilities, state and local agencies
Agriculture	USDA Forest Service, all types of farmers, grape growers, orchardists, agricultural engineers, plant scientists and horticulturists, researchers, extension agents
Data Accumulation	Meteorologists, hobbyists, co-op observers, environmental consultants, university professors
Water Resources	Water departments and water companies, health departments, USGS, USDA Soil Conservation Service, town sewer and wastewater divisions, engineers
Marine	Private and commercial fishermen, Coast Guard, university professors
Hazardous Events Analysis	Telephone and water companies, public works departments, DOT Bureau of Highways, engineers, insurance companies, Planning and Zoning Commissions
Legal/ Investigational	Attorneys, insurance and adjusting companies, private detectives, police officers, photographers, engineers, fire departments, postal inspectors, investigative firms

Figure I Key

Precipitation (all types of precipitation and accumulation: snow, ice, hail, rain, etc.)

Surface Temperature (including averages and normals; heat units calculated from surface temperatures)

Surface Wind Speed (including wind direction and velocity; wind chill factor)

Solar Radiation (including cloud cover, sunrise/sunset)

Soil Temperature (including ground frost)

Upper Air Wind Speed (including wave heights)

Humidity (including dew point, relative humidity, vapor pressure)

Air Pollution (including precipitation quality; acid rain, ozone and SO_2; pollutant concentrations)

Atmospheric Dispersion (mixing height; visibility; temperature lapse; atmospheric stability)

Synoptic Events (weather occurrences and hazardous events including lightning, frontal locations, storm activity)

Hydrologic Information (stream flows; water temperature, river forecast; floods; tides; soil moisture; irrigation; groundwater levels)

Evaporation (including evapotranspiration)

Barometric Pressure

Fog

FIGURE I

A

PERCENT OF ALL USERS BY PARAMETER

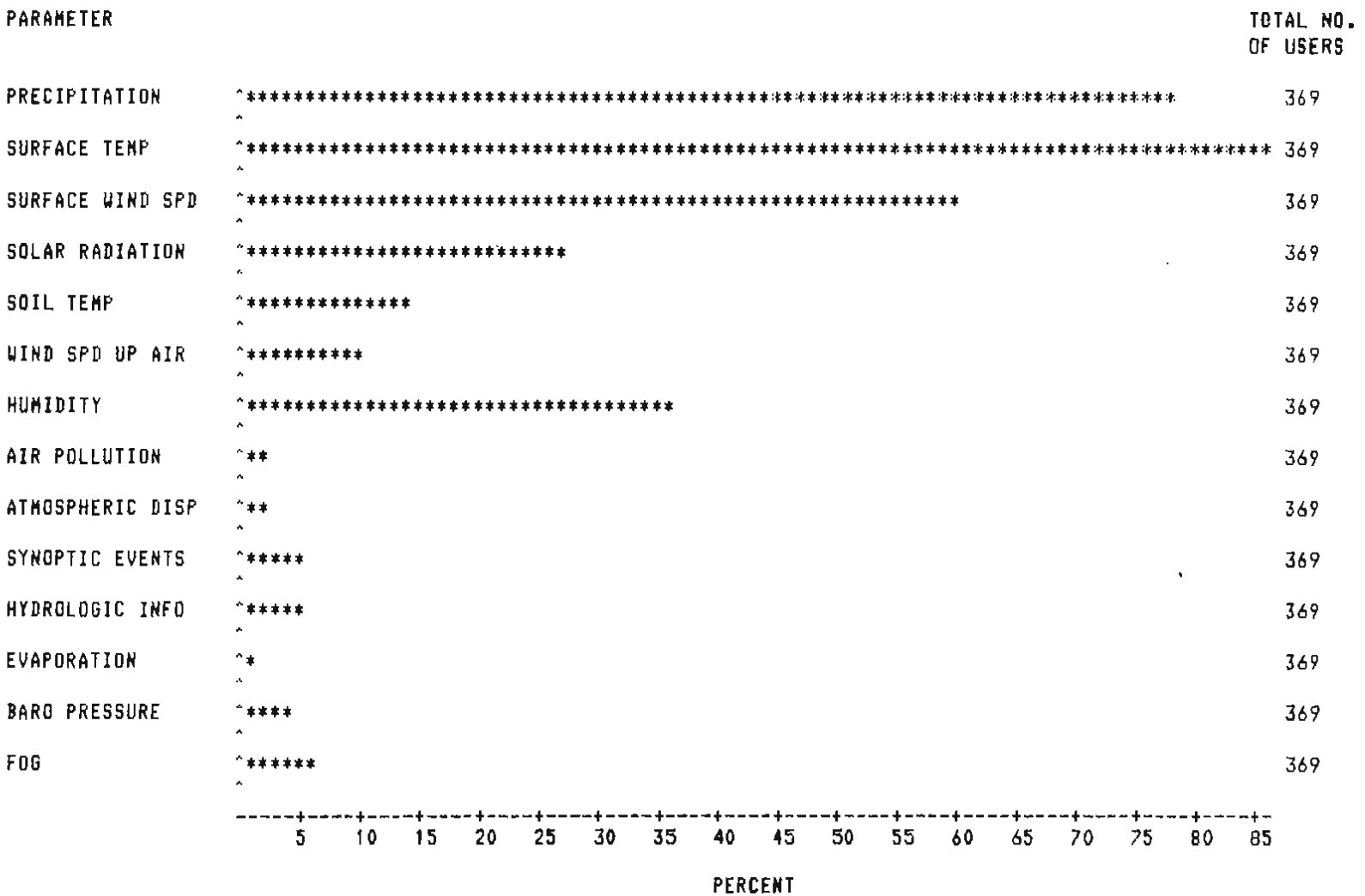

FIGURE I

B

PERCENT OF USERS BY PARAMETER

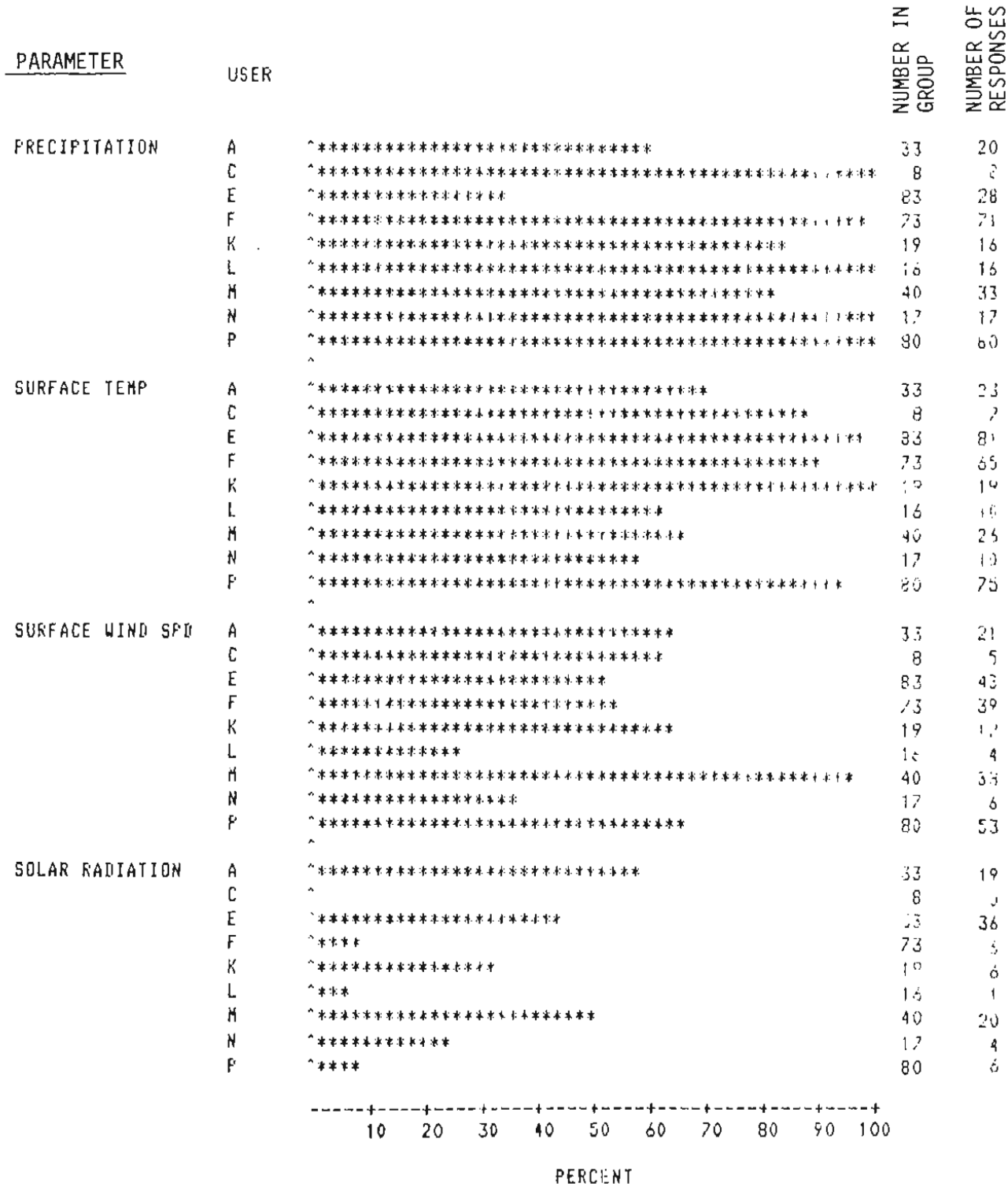

FIGURE I 8 (CONT'D)

PARAMETER	USER		NUMBER IN GROUP	NUMBER OF RESPONSES
SOIL TEMP	A	^**********	33	13
	C	^**********	8	2
	E	^****	83	6
	F	^**********	73	14
	K	^*****	19	2
	L	^	16	0
	M	^******	40	5
	N	^******	17	2
	P	^****	80	7
		^		
WIND SPD OF AIR	A	^*****	33	3
	C	^	8	0
	E	^***	83	5
	F	^****	73	6
	K	^**********	19	6
	L	^	16	0
	M	^********	40	6
	N	^***	17	1
	P	^*******	80	11
		^		
HUMIDITY	A	^**********	33	19
	C	^**********	8	4
	E	^**********	83	47
	F	^**********	73	33
	K	^**********	19	7
	L	^**********	16	4
	M	^*********	40	7
	N	^	17	0
	P	^*******	80	11
		^		
AIR POLLUTION	A	^********	33	5
	C	^	8	0
	E	^*	83	2
	F	^	73	0
	K	^	19	0
	L	^	16	0
	M	^	40	0
	N	^	17	0
	P	^	80	0
		^		
ATMOSPHERIC DISP	A	^	33	0
	C	^	8	0
	E	^*	83	1
	F	^	73	0
	K	^	19	0
	L	^	16	0
	M	^***	40	2
	N	^	17	0
	P	^**	80	3
		^		

PERCENT

----+----+----+----+----+----+----+----+----+----+
10 20 30 40 50 60 70 80 90 100

FIGURE 1 B (CONT'D)

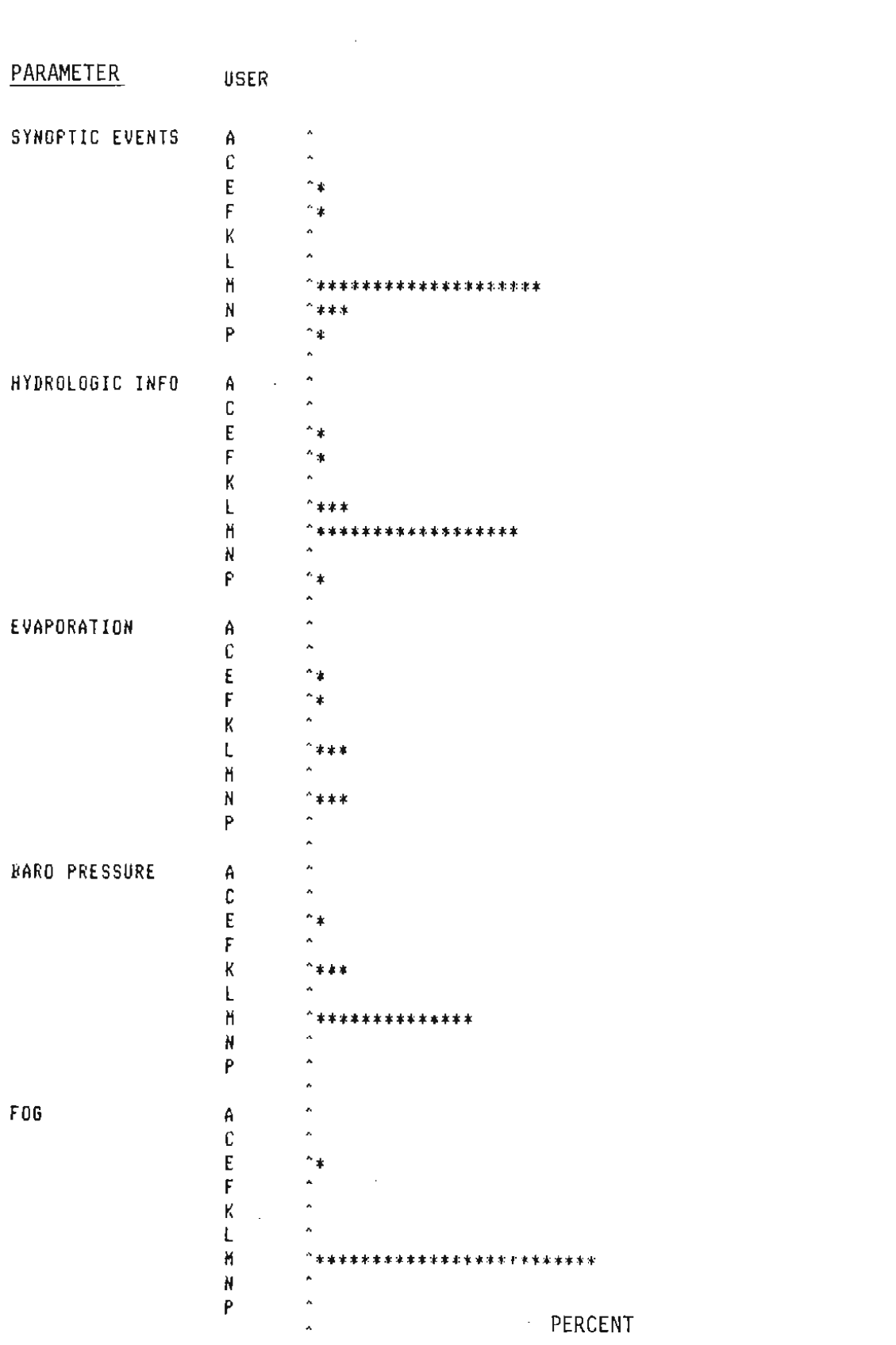

FIGURE I

C

PERCENT PARAMETER USE BY USER GROUP

USER	PARAMETER		NUMBER IN GROUP	NUMBER OF RESPONSES
A	PRECIPITATION	^**********	33	20
	SURFACE TEMP	^**********	33	23
	SURFACE WIND SPD	^**********	33	21
	SOLAR RADIATION	^**********	33	19
	SOIL TEMP	^**********	33	13
	WIND SPD UP AIR	^*****	33	3
	HUMIDITY	^**********	33	19
	AIR POLLUTION	^********	33	5
	ATMOSPHERIC DISP	^	33	0
	SYNOPTIC EVENTS	^	33	0
	HYDROLOGIC INFO	^	33	0
	EVAPORATION	^	33	0
	BARO PRESSURE	^	33	0
	FOG	^	33	0
		^		
C	PRECIPITATION	^**********	8	9
	SURFACE TEMP	^**********	8	7
	SURFACE WIND SPD	^**********	8	5
	SOLAR RADIATION	^	8	0
	SOIL TEMP	^**********	8	2
	WIND SPD UP AIR	^	8	0
	HUMIDITY	^**********	8	4
	AIR POLLUTION	^	8	0
	ATMOSPHERIC DISP	^	8	0
	SYNOPTIC EVENTS	^	8	0
	HYDROLOGIC INFO	^	8	0
	EVAPORATION	^	8	0
	BARO PRESSURE	^	8	0
	FOG	^	8	0
		^		
E	PRECIPITATION	^**********	83	28
	SURFACE TEMP	^**********	83	81
	SURFACE WIND SPD	^**********	83	43
	SOLAR RADIATION	^**********	83	36
	SOIL TEMP	^****	83	6
	WIND SPD UP AIR	^***	83	5
	HUMIDITY	^**********	83	47
	AIR POLLUTION	^*	83	2
	ATMOSPHERIC DISP	^*	83	1
	SYNOPTIC EVENTS	^*	83	1
	HYDROLOGIC INFO	^*	83	1
	EVAPORATION	^*	83	2
	BARO PRESSURE	^*	83	2
	FOG	^*	83	1

----+----+----+----+----+----+----+----+----+----+
10 20 30 40 50 60 70 80 90 100

PERCENT

FIGURE I C (CONT'D)

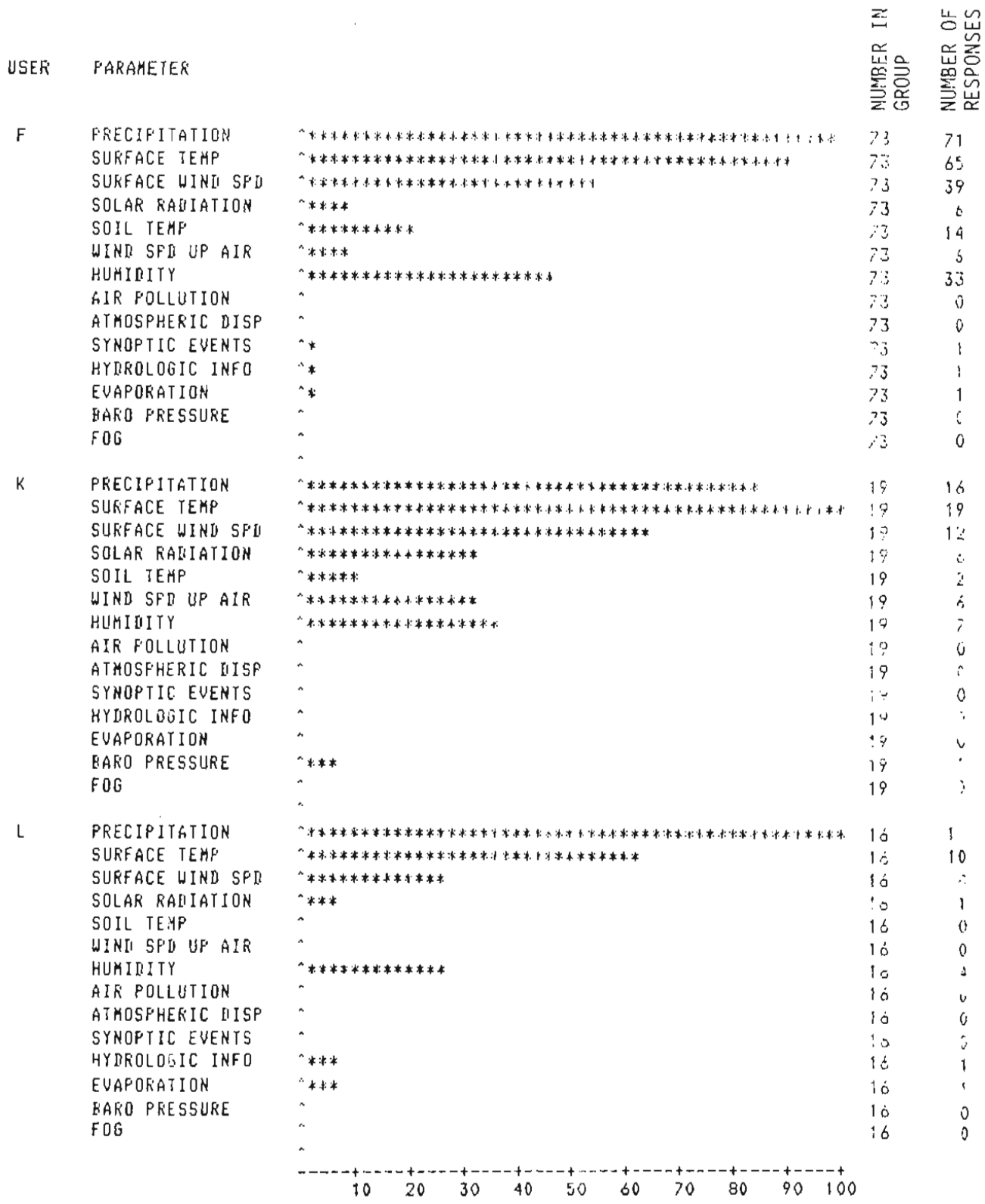

FIGURE I C (CONT'D)

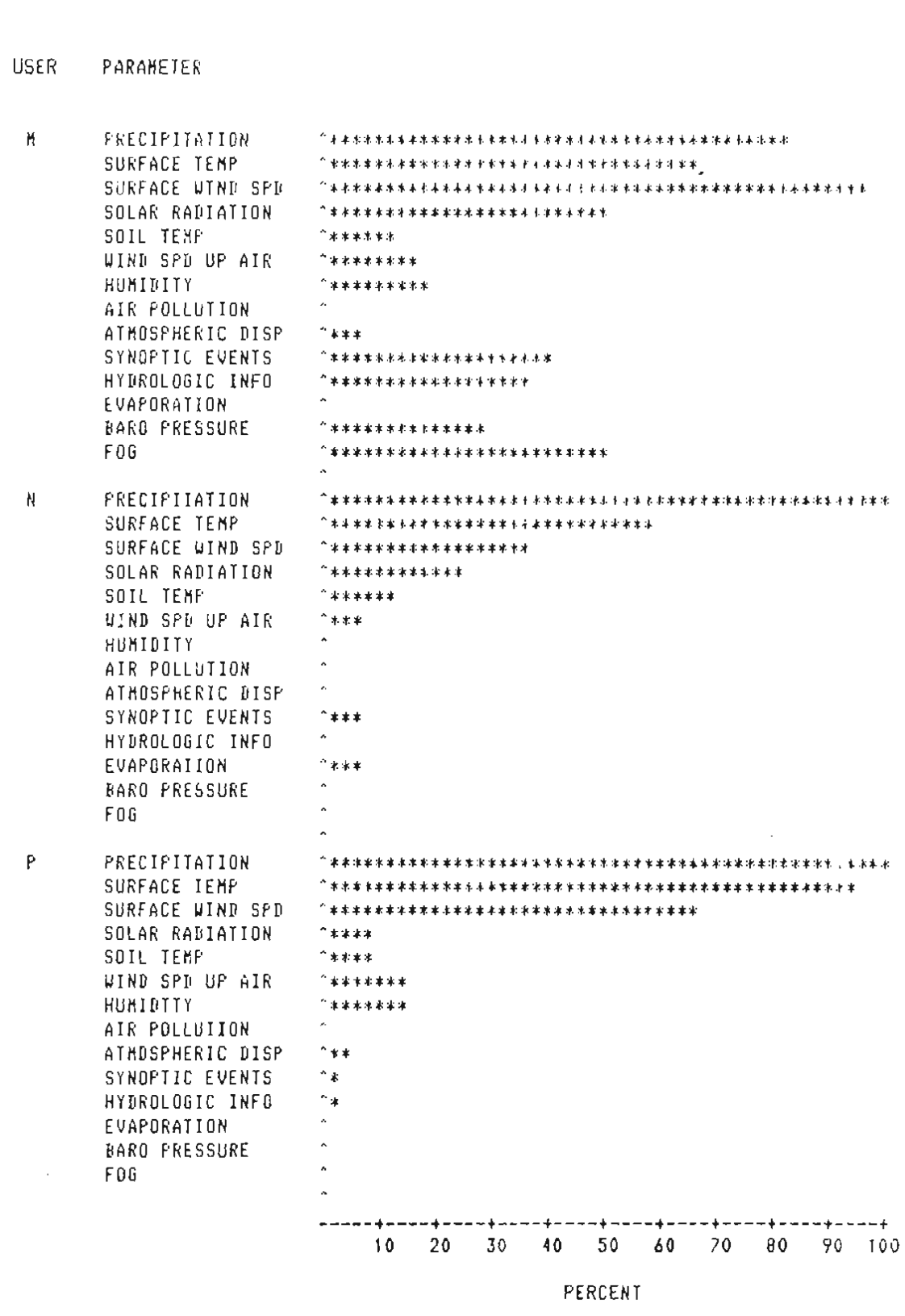

FIGURE II

A

PERCENT OF ALL USERS BY TIME INTERVAL

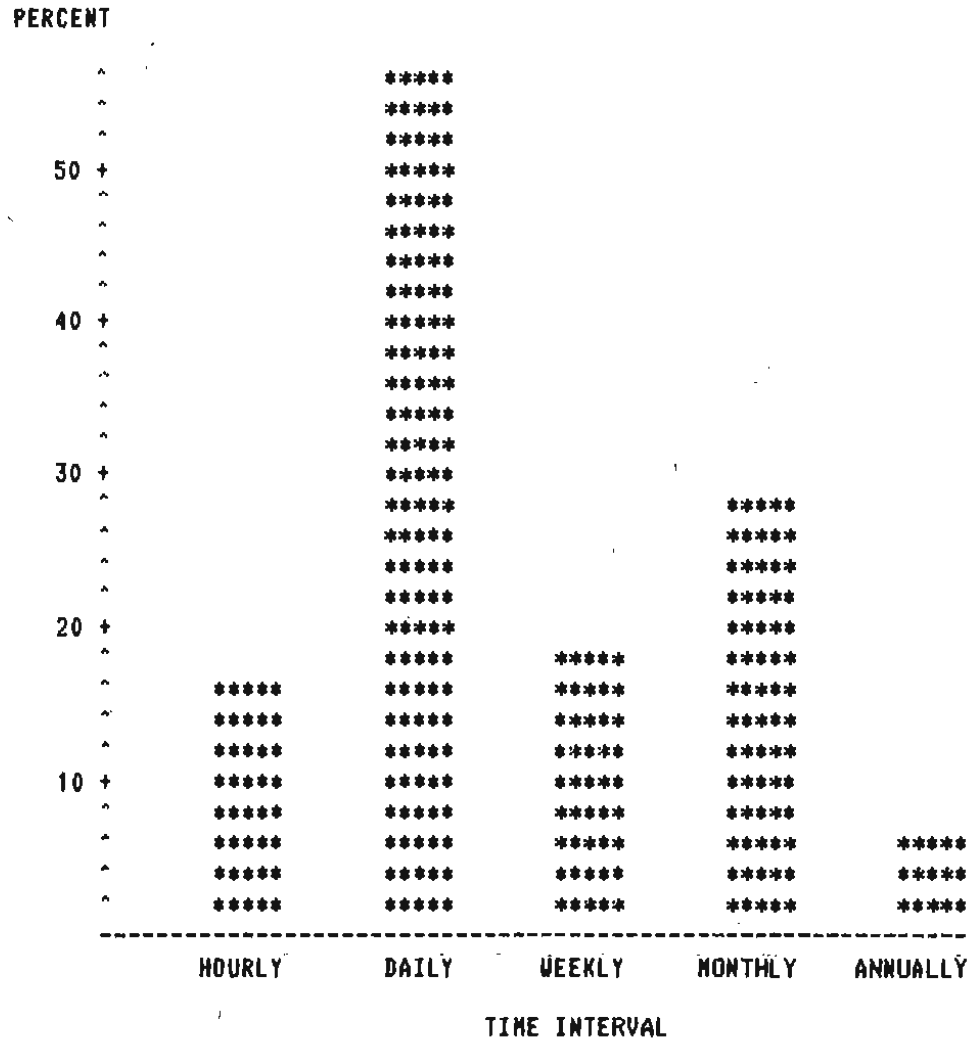

FIGURE II

B

PERCENT OF USERS BY TIME INTERVAL

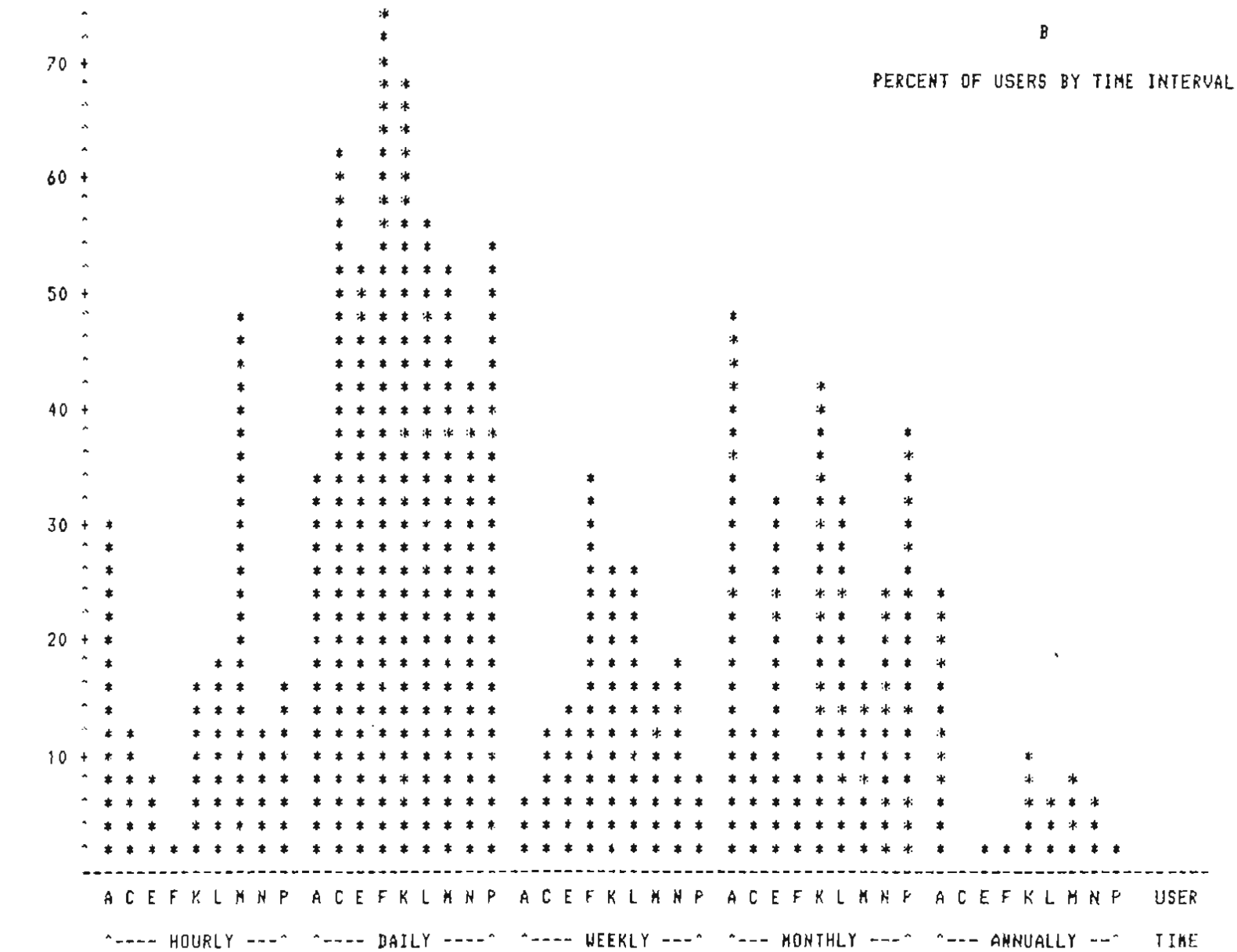

FIGURE II

C

PERCENT TIME INTERVALS BY USER GROUP

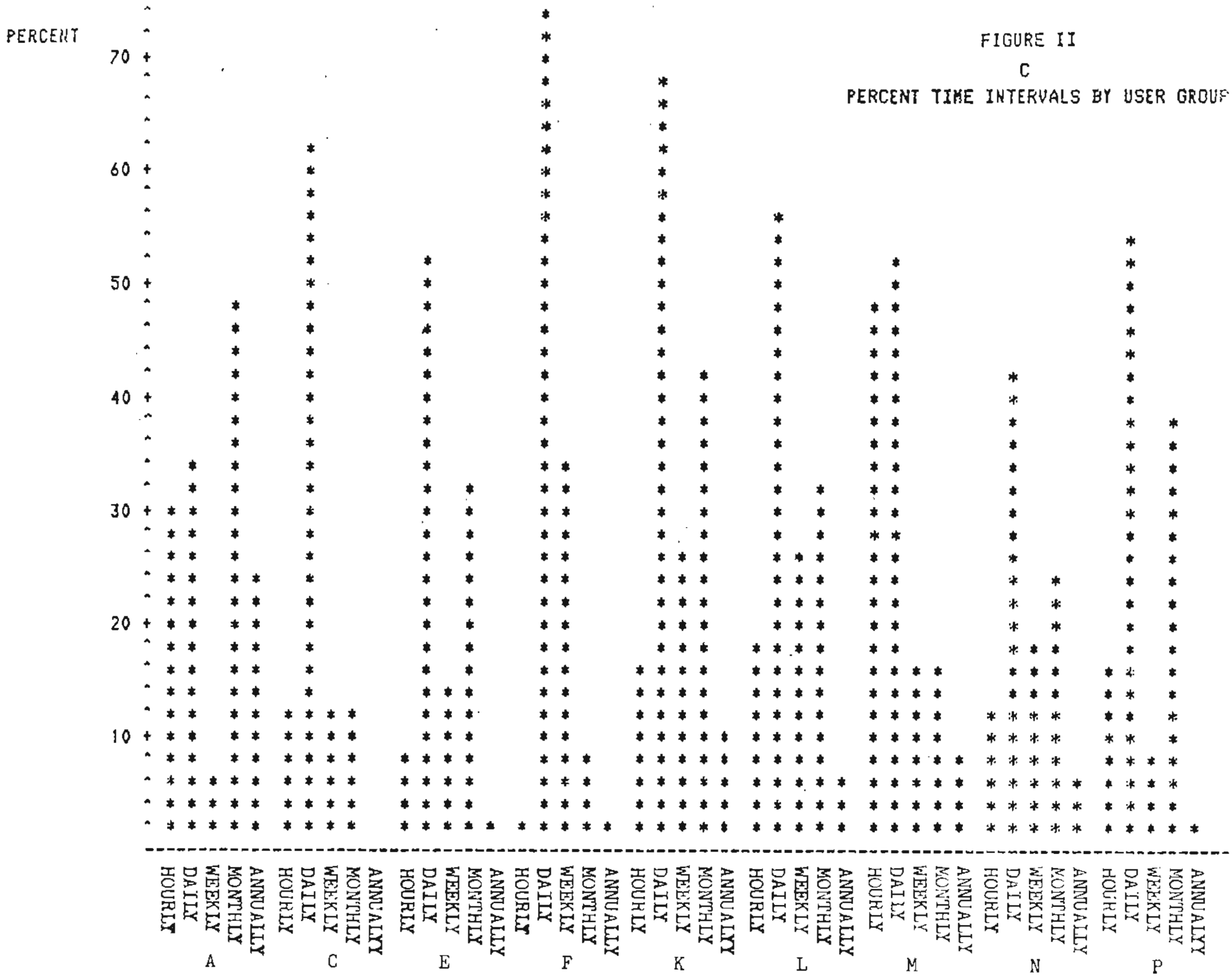

Figure III Key

Abbreviations Used:

NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service
1st & 2nd Order	First and Second Order Weather Stations
NCC	National Climate Center
NCAR	National Center for Atmospheric Research (Boulder, Colo.)
FAA	Federal Aviation Administration
USDA	United States Department of Agriculture
DEP	Connecticut Department of Environmental Protection

FIGURE III

A

PERCENT OF SOURCES USED BY ALL USER GROUPS

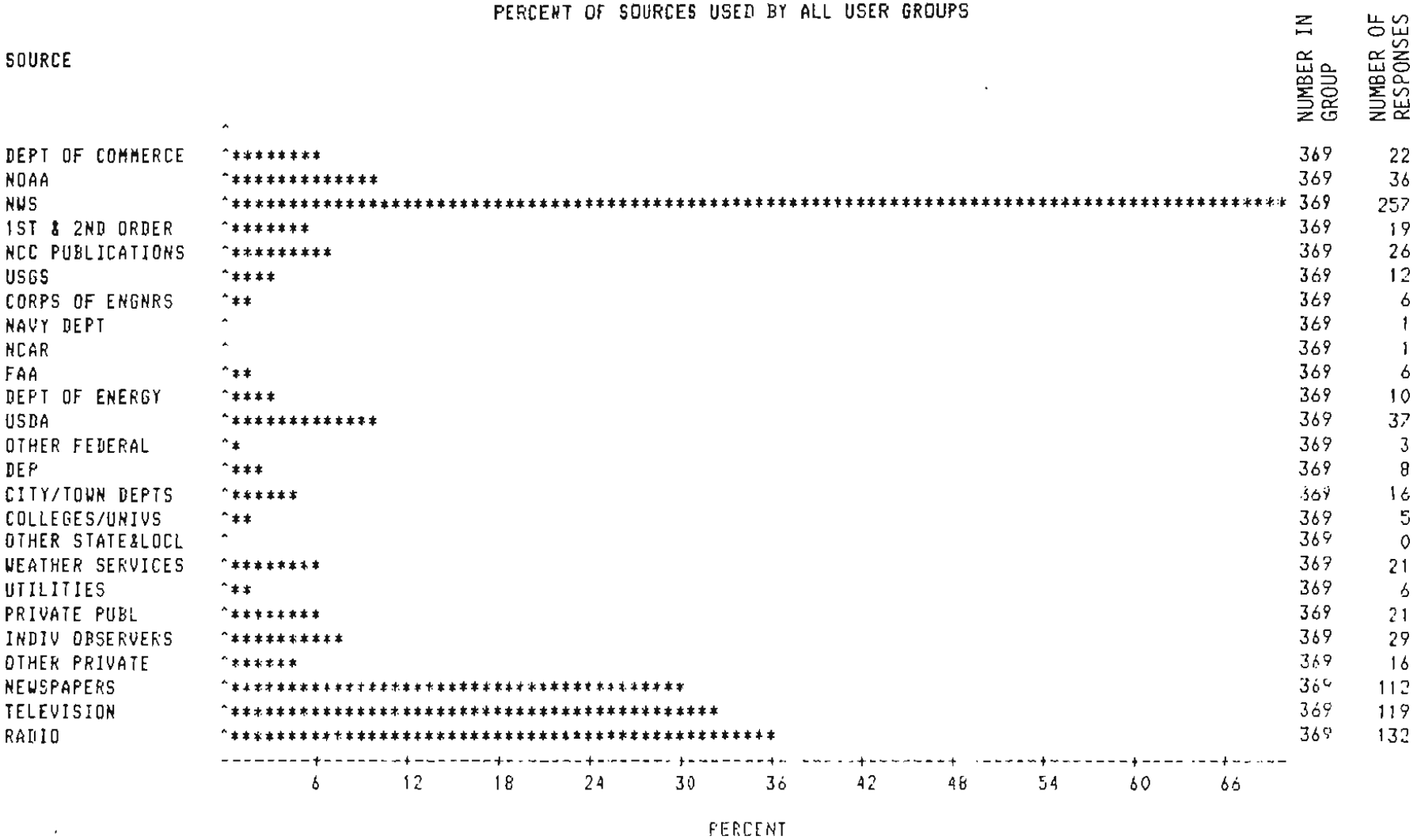

FIGURE III B

PERCENT OF USERS BY SOURCE

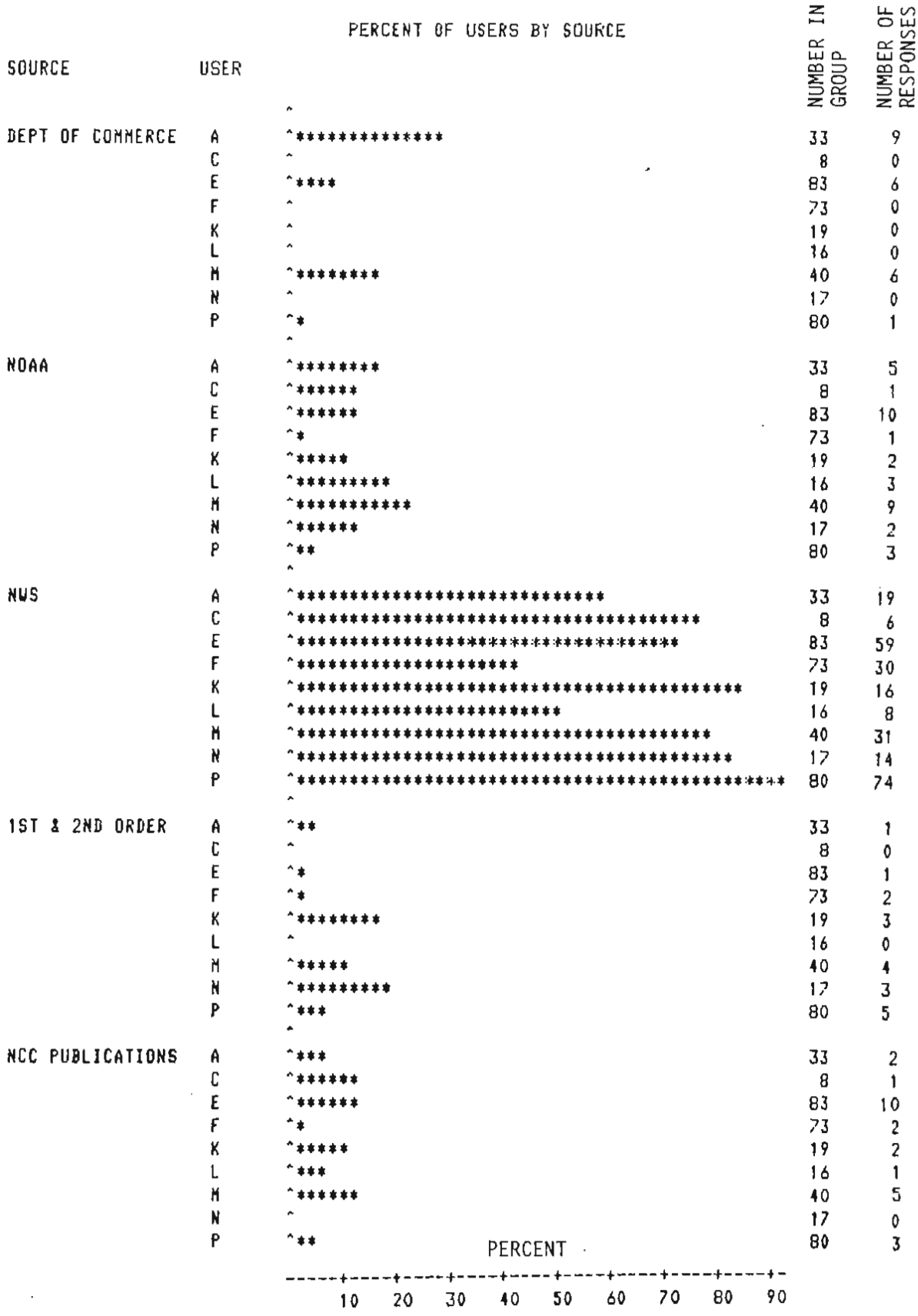

FIGURE III B (CONT'D)

SOURCE	USER		NUMBER IN GROUP	NUMBER OF RESPONSES
USGS	A	^************	33	8
	C	^	8	0
	E	^	83	0
	F	^	73	0
	K	^	19	0
	L	^*******	16	2
	M	^***	40	2
	N	^	17	0
	P	^	80	0
		^		
CORPS OF ENGNRS	A	^***	33	2
	C	^	8	0
	E	^	83	0
	F	^	73	0
	K	^	19	0
	L	^	16	0
	M	^*****	40	3
	N	^***	17	1
	P	^	80	0
		^		
NAVY DEPT	A	^**	33	1
	C	^	8	0
	E	^	83	0
	F	^	73	0
	K	^	19	0
	L	^	16	0
	M	^	40	0
	N	^	17	0
	P	^	80	0
		^		
NCAR	A	^	33	0
	C	^	8	0
	E	^	83	0
	F	^	73	0
	K	^	19	0
	L	^	16	0
	M	^	40	0
	N	^	17	0
	P	^*	80	1
		^		
FAA	A	^********	33	5
	C	^	8	0
	E	^	83	0
	F	^	73	0
	K	^	19	0
	L	^	16	0
	M	^*	40	1
	N	^	17	0
	P	^	80	0

PERCENT

10 20 30 40 50 60 70 80 90

FIGURE III B (CONT'D)

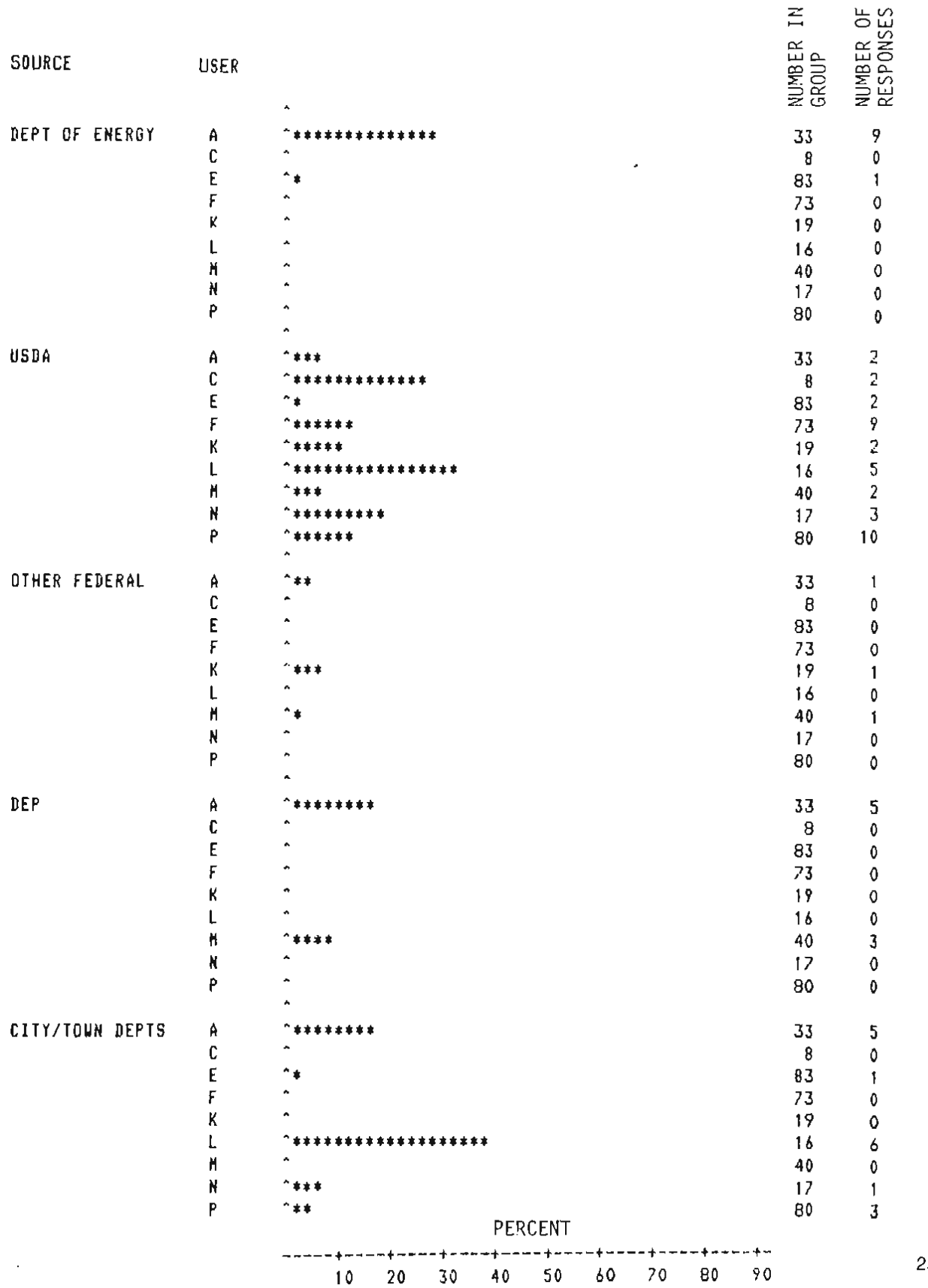

FIGURE III B (CONT'D)

SOURCE	USER		NUMBER IN GROUP	NUMBER OF RESPONSES
COLLEGES/UNIVS	A	^	33	0
	C	^	8	0
	E	^*	83	1
	F	^**	73	3
	K	^	19	0
	L	^	16	0
	M	^*	40	1
	N	^	17	0
	P	^	80	0
		^		
OTHER STATE&LOCL	A	^	33	0
	C	^	8	0
	E	^	83	0
	F	^	73	0
	K	^	19	0
	L	^	16	0
	M	^	40	0
	N	^	17	0
	P	^	80	0
		^		
WEATHER SERVICES	A	^********	33	5
	C	^	8	0
	E	^*	83	1
	F	^*	73	2
	K	^********	19	3
	L	^	16	0
	M	^******	40	5
	N	^******	17	2
	P	^**	80	3
		^		
UTILITIES	A	^******	33	4
	C	^	8	0
	E	^*	83	1
	F	^	73	0
	K	^	19	0
	L	^	16	0
	M	^*	40	1
	N	^	17	0
	P	^	80	0
		^		
PRIVATE PUBL	A	^*********************	33	13
	C	^	8	0
	E	^**	83	4
	F	^	73	0
	K	^	19	0
	L	^***	16	1
	M	^****	40	3
	N	^	17	0
	P	^	80	0

PERCENT

-----+----+----+----+----+----+----+----+----+-

10 20 30 40 50 60 70 80 90

FIGURE III B (CONT'D)

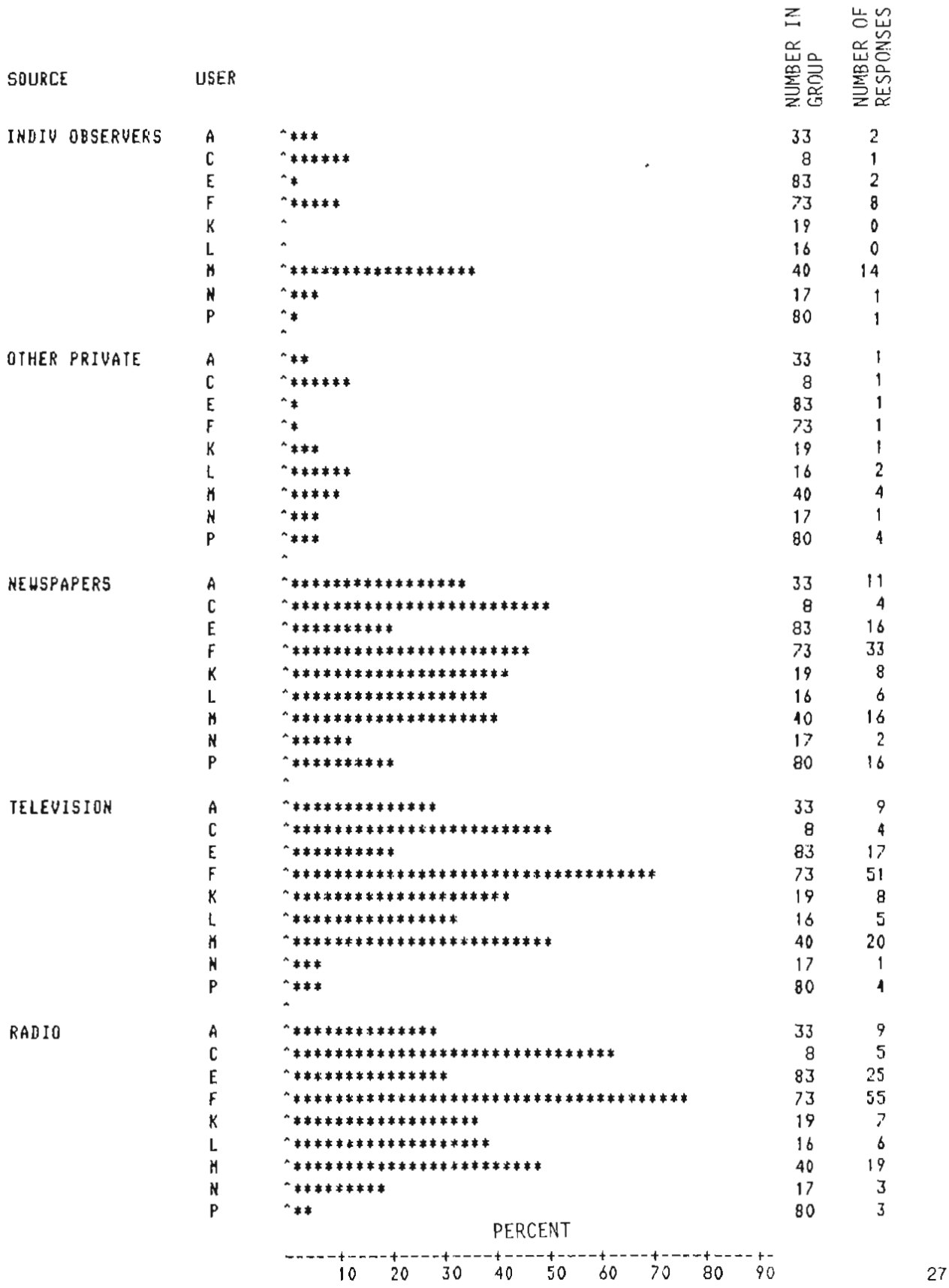

FIGURE III

C

PERCENT OF SOURCES BY USER GROUP

USER	SOURCE		NUMBER IN GROUP	NUMBER OF RESPONSES
		^		
A	DEPT OF COMMERCE	^***************	33	9
	NOAA	^********	33	5
	NWS	^******************************	33	19
	1ST & 2ND ORDER	^**	33	1
	NCC PUBLICATIONS	^***	33	2
	USGS	^************	33	8
	CORPS OF ENGNRS	^***	33	2
	NAVY DEPT	^**	33	1
	NCAR	^	33	0
	FAA	^********	33	5
	DEPT OF ENERGY	^***************	33	9
	USDA	^***	33	2
	OTHER FEDERAL	^**	33	1
	DEP	^********	33	5
	CITY/TOWN DEPTS	^********	33	5
	COLLEGES/UNIVS	^	33	0
	OTHER STATE&LOCL	^	33	0
	WEATHER SERVICES	^********	33	5
	UTILITIES	^*******	33	4
	PRIVATE PUBL	^**********************	33	13
	INDIV OBSERVERS	^***	33	2
	OTHER PRIVATE	^**	33	1
	NEWSPAPERS	^******************	33	11
	TELEVISION	^***************	33	9
	RADIO	^***************	33	9
		-----+----+----+----+----+----+----+----+----+-		
		10 20 30 40 50 60 70 80 90		

PERCENT

FIGURE III C (CONT'D)

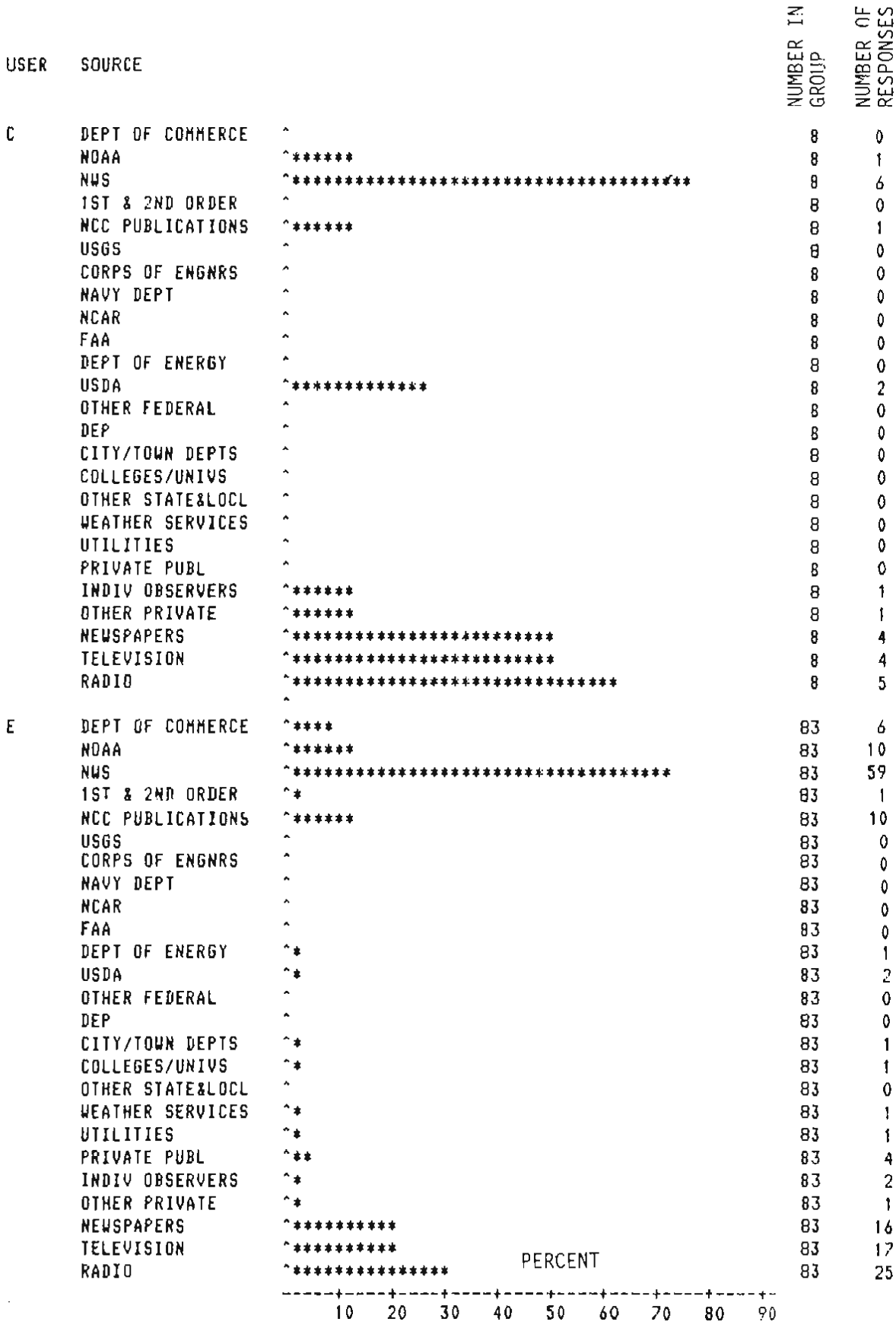

FIGURE III C (CONT'D)

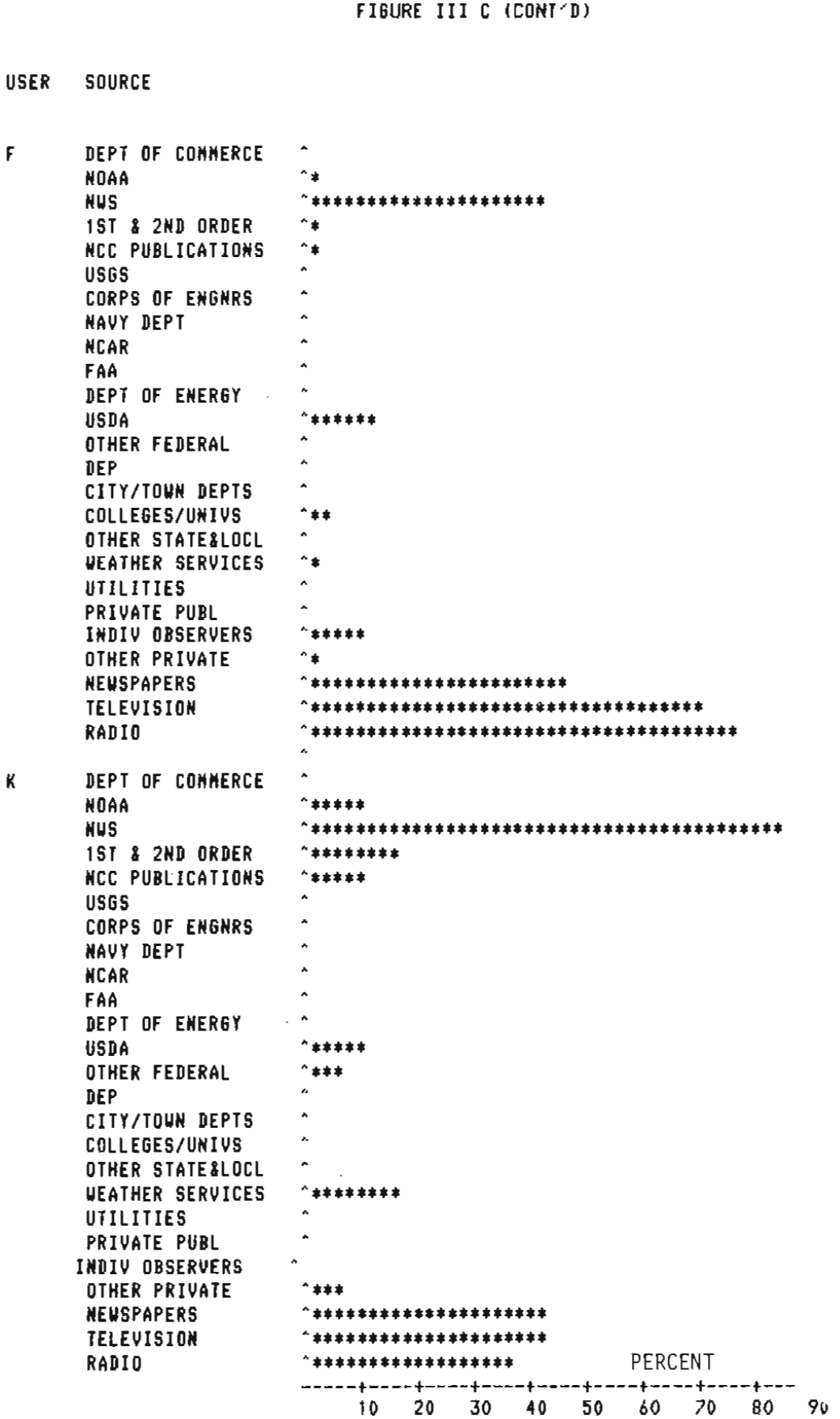

FIGURE III C (CONT'D)

USER	SOURCE		NUMBER IN GROUP	NUMBER OF RESPONSES
L	DEPT OF COMMERCE	^	16	0
	NOAA	^*********	16	3
	NWS	^************************	16	8
	1ST & 2ND ORDER	^	16	0
	NCC PUBLICATIONS	^***	16	1
	USGS	^******	16	2
	CORPS OF ENGNRS	^	16	0
	NAVY DEPT	^	16	0
	NCAR	^	16	0
	FAA	^	16	0
	DEPT OF ENERGY	^	16	0
	USDA	^****************	16	5
	OTHER FEDERAL	^	16	0
	DEP	^	16	0
	CITY/TOWN DEPTS	^********************	16	6
	COLLEGES/UNIVS	^	16	0
	OTHER STATE&LOCL	^	16	0
	WEATHER SERVICES	^	16	0
	UTILITIES	^	16	0
	PRIVATE PUBL	^***	16	1
	INDIV OBSERVERS	^	16	0
	OTHER PRIVATE	^******	16	2
	NEWSPAPERS	^********************	16	6
	TELEVISION	^****************	16	5
	RADIO	^********************	16	6
		^		
M	DEPT OF COMMERCE	^********	40	6
	NOAA	^**********	40	9
	NWS	^**	40	31
	1ST & 2ND ORDER	^*****	40	4
	NCC PUBLICATIONS	^******	40	5
	USGS	^***	40	2
	CORPS OF ENGNRS	^****	40	3
	NAVY DEPT	^	40	0
	NCAR	^	40	0
	FAA	^*	40	1
	DEPT OF ENERGY	^	40	0
	USDA	^***	40	2
	OTHER FEDERAL	^*	40	1
	DEP	^****	40	3
	CITY/TOWN DEPTS	^	40	0
	COLLEGES/UNIVS	^*	40	1
	OTHER STATE&LOCL	^	40	0
	WEATHER SERVICES	^******	40	5
	UTILITIES	^*	40	1
	PRIVATE PUBL	^****	40	3
	INDIV OBSERVERS	^******************	40	14
	OTHER PRIVATE	^*****	40	4
	NEWSPAPERS	^********************	40	16
	TELEVISION	^************************	40	20
	RADIO	^************************ PERCENT	40	19
		-----+----+----+----+----+----+----+----+----+-		
		10 20 30 40 50 60 70 80 90		

FIGURE III C (CONT'D)

USER	SOURCE		NUMBER IN GROUP	NUMBER OF RESPONSES
N	DEPT OF COMMERCE	^	17	0
	NOAA	^******	17	2
	NWS	^**********	17	14
	1ST & 2ND ORDER	^*********	17	3
	NCC PUBLICATIONS	^	17	0
	USGS	^	17	0
	CORPS OF ENGNRS	^***	17	1
	NAVY DEPT	^	17	0
	NCAR	^	17	0
	FAA	^	17	0
	DEPT OF ENERGY	^	17	0
	USDA	^*********	17	3
	OTHER FEDERAL	^	17	0
	DEP	^	17	0
	CITY/TOWN DEPTS	^***	17	1
	COLLEGES/UNIVS	^	17	0
	OTHER STATE&LOCL	^	17	0
	WEATHER SERVICES	^******	17	2
	UTILITIES	^	17	0
	PRIVATE PUBL	^	17	0
	INDIV OBSERVERS	^***	17	1
	OTHER PRIVATE	^***	17	1
	NEWSPAPERS	^******	17	2
	TELEVISION	^***	17	1
	RADIO	^*********	17	3
		^		
P	DEPT OF COMMERCE	^*	80	1
	NOAA	^**	80	3
	NWS	^**	80	74
	1ST & 2ND ORDER	^***	80	5
	NCC PUBLICATIONS	^**	80	3
	USGS	^	80	0
	CORPS OF ENGNRS	^	80	0
	NAVY DEPT	^	80	0
	NCAR	^*	80	1
	FAA	^	80	0
	DEPT OF ENERGY	^	80	0
	USDA	^******	80	10
	OTHER FEDERAL	^	80	0
	DEP	^	80	0
	CITY/TOWN DEPTS	^**	80	3
	COLLEGES/UNIVS	^	80	0
	OTHER STATE&LOCL	^	80	0
	WEATHER SERVICES	^**	80	3
	UTILITIES	^	80	0
	PRIVATE PUBL	^	80	0
	INDIV OBSERVERS	^*	80	1
	OTHER PRIVATE	^***	80	4
	NEWSPAPERS	^**********	80	16
	TELEVISION	^***	80	4
	RADIO	^**	80	3
		^ PERCENT		
		-----+----+----+----+----+----+----+----+----+-		
		10 20 30 40 50 60 70 80 90		

APPENDIX I

Office of the State Climatologist
Dept. of Natural Resources
Conservation
The University of Connecticut U-87
Storrs, CT 06268

Name _____

Address _____

_____

Affiliation _____

CLIMATIC DATA USER SURVEY

February 1981

1. Do you currently use climatic data (i.e., past records)? If yes, please indicate:

___ Professional use ___ Own use

2. Do you currently use weather forecast data? If yes, please indicate:

___ Daily ___ Weekly ___ Long-term

3. What types of climatic data "parameters" do you currently use? (✓ all applicable)

___ Precipitation (all types of precipitation and accumulation: snow, ice, hail, rain, etc.)
___ Surface Temperature (including averages and normals; heat units calculated from surface temperatures)
___ Surface Wind Speed (including wind direction and velocity; wind chill factor)
___ Solar Radiation (including cloud cover, sunrise/sunset)
___ Soil Temperature (including ground frost)
___ Wind Speed - Upper Air (including wave heights)
___ Humidity (including dew point, relative humidity, vapor pressure)
___ Air Pollution (including precipitation quality; acid rain; ozone and SO_2; pollutant concentrations)
___ Atmospheric Dispersion (mixing height; visibility; temperature lapse; atmospheric stability)
___ Synoptic Events (weather occurrences and hazardous events including lightning, frontal locations, storm activity)
___ Hydrologic Information (stream flows; water temp.; river forecast; floods; tides; soil moisture; irrigation; groundwater levels)
___ Evaporation (including evapotranspiration)
___ Barometric Pressure
___ Fog

4. How do you utilize the information?

Climatic Data User Survey

5. What time intervals would you prefer the above data to be collected in?

___ Hourly ___ Daily ___ Weekly ___ Monthly ___ Annually

6. How soon do you need the data after it is measured?

___ Day ___ Week ___ Month ___ Year

7. What are your sources for climatic data? (Check all applicable)

FEDERAL
___ Department of Commerce
  ___ National Oceanic and Atmospheric Administration
  ___ National Weather Service
  ___ 1st and 2nd Order Weather Stations
  ___ National Climate Center Publications
___ U.S. Geological Survey
___ Army Corps of Engineers
___ Navy Department
___ National Center for Atmospheric Research (Boulder, Colorado)
___ Federal Aviation Administration
___ Department of Energy
___ Department of Agriculture (indicate source within dept.) _____
___ Other (specify) _____

STATE AND LOCAL GOVERNMENT
___ Department of Environmental Protection
___ City/Town Departments
___ Colleges/Universities (specify) _____
___ Other (specify) _____

PRIVATE
___ Weather Services
___ Utilities
___ Private Publications (specify: newsletters, ASHRAE, books, almanacs, etc.) _____
___ Individual Observers (including yourself)
___ Other (specify) _____

MEDIA
___ Newspapers
___ Television
___ Radio

8. Do you feel that the data presently available to you is sufficient for your needs?

___ YES ___ NO

Climatic Data User Survey

9. Would you use any of the parameters listed in Question 3 that you did not check if they were more easily available to you than they currently are?

___ YES ___ NO

10. Could you use any additional types of climatic information other than those listed in Question 3?

If yes, please specify: _____

_____

11. Do you measure weather parameters?

___ YES ___ NO

If yes, please indicate:

Type	Length of Collection	Site Location

12. Would you be willing to share your data in a statewide data pool?

___ YES ___ NO

13. Please indicate any comments you may have in response to the survey:

THANK YOU FOR TAKING TIME TO COMPLETE THIS QUESTIONNAIRE