A PRELIMINARY LOOK AT AVE-SESAME II CONDUCTED ON APRIL 19-20, 1979

By Steven F. Williams, Nicholas Horvath and Robert E. Turner

June 1980

George C. Marshall Space Flight Center
Marshall Space Flight Center, Alabama
### PRELIMINARY LOOK AT AVE-SESAME II

Conducted on 19-20 April 1979

**ABSTRACT**

This report contains information on data collected, synoptic conditions, and severe and unusual weather reported during the AVE-SESAME II period. The information presented is preliminary. The purpose of the report is to provide to researchers a preliminary look at conditions during the AVE-SESAME II period.

**KEY WORDS**

AVE-SESAME

**DISTRIBUTION STATEMENT**

Unclassified—Unlimited

---

<table>
<thead>
<tr>
<th>1. REPORT NO.</th>
<th>2. GOVERNMENT ACCESSION NO.</th>
<th>3. RECIPIENT'S CATALOG NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NASA TM-78280</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. TITLE AND SUBTITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Preliminary Look at AVE-SESAME II Conducted on 19-20 April 1979</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. REPORT DATE</th>
<th>6. PERFORMING ORGANIZATION NAME AND ADDRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 1980</td>
<td>George C. Marshall Space Flight Center</td>
</tr>
<tr>
<td></td>
<td>Marshall Space Flight Center, Alabama 35812</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. AUTHOR(S)</th>
<th>8. PERFORMING ORGANIZATION REPORT NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steven F. Williams, Nicholas Horvath, Robert E. Turner</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9. PERFORMING ORGANIZATION NAME AND ADDRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>George C. Marshall Space Flight Center</td>
</tr>
<tr>
<td>Marshall Space Flight Center, Alabama 35812</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10. WORK UNIT NO.</th>
<th>11. CONTRACT OR GRANT NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12. SPONSORING AGENCY NAME AND ADDRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Aeronautics and Space Administration</td>
</tr>
<tr>
<td>Washington, D. C. 20546</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>13. TYPE OF REPORT &amp; PERIOD COVERED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Memorandum</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14. SPONSORING AGENCY CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>15. SUPPLEMENTARY NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared by Space Sciences Laboratory, Science and Engineering</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>16. ABSTRACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>This report contains information on data collected, synoptic conditions, and severe and unusual weather reported during the AVE-SESAME II period. The information presented is preliminary. The purpose of the report is to provide to researchers a preliminary look at conditions during the AVE-SESAME II period.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>17. KEY WORDS</th>
<th>18. DISTRIBUTION STATEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVE-SESAME</td>
<td>Unclassified—Unlimited</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>19. SECURITY CLASSIF. (OF THIS REPORT)</th>
<th>20. SECURITY CLASSIF. (OF THIS PAGE)</th>
<th>21. NO. OF PAGES</th>
<th>22. PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unclassified</td>
<td>Unclassified</td>
<td>56</td>
<td>NTIS</td>
</tr>
</tbody>
</table>

*Department of Meteorology, Texas A&M University, College Station, Texas 77843*
TABLE OF CONTENTS

<p>| LIST OF FIGURES | ............... | iv |
| LIST OF TABLES | ................ | vii |
| 1. OBJECTIVES AND SCOPE | ................... | 1 |
| 2. DATA COLLECTED | ................... | 1 |
| a. Rawinsonde Soundings | ................... | 1 |
| b. Surface and Upper Air | ............. | 4 |
| 3. SYNOPTIC CONDITIONS | ............... | 4 |
| a. Synoptic Charts | ............... | 4 |
| b. Radar | ............... | 5 |
| c. Satellite | ............... | 5 |
| d. Rainfall | ............... | 5 |
| 4. UNUSUAL AND SEVERE WEATHER REPORTED | .......... | 6 |
| REFERENCES | ................ | 49 |</p>
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Location of rawinsonde stations participating in the AVE-SESAME II experiment</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Synoptic charts for 1200 GMT 19 April 1979</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>Surface chart for 1800 GMT 19 April 1979</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Synoptic charts for 0000 GMT 20 April 1979</td>
<td>11</td>
</tr>
<tr>
<td>5</td>
<td>Surface chart for 0600 GMT 20 April 1979</td>
<td>14</td>
</tr>
<tr>
<td>6</td>
<td>Synoptic charts for 1200 GMT 20 April 1979</td>
<td>15</td>
</tr>
<tr>
<td>7</td>
<td>Radar summary for 1135 GMT 19 April 1979</td>
<td>18</td>
</tr>
<tr>
<td>8</td>
<td>Radar summary for 1435 GMT 19 April 1979</td>
<td>18</td>
</tr>
<tr>
<td>9</td>
<td>Radar summary for 1735 GMT 19 April 1979</td>
<td>19</td>
</tr>
<tr>
<td>10</td>
<td>Radar summary for 1935 GMT 19 April 1979</td>
<td>19</td>
</tr>
<tr>
<td>11</td>
<td>Radar summary for 2035 GMT 19 April 1979</td>
<td>20</td>
</tr>
<tr>
<td>12</td>
<td>Radar summary for 2235 GMT 19 April 1979</td>
<td>20</td>
</tr>
<tr>
<td>13</td>
<td>Radar summary for 2335 GMT 19 April 1979</td>
<td>21</td>
</tr>
<tr>
<td>14</td>
<td>Radar summary for 0135 GMT 20 April 1979</td>
<td>21</td>
</tr>
<tr>
<td>15</td>
<td>Radar summary for 0235 GMT 20 April 1979</td>
<td>22</td>
</tr>
<tr>
<td>16</td>
<td>Radar summary for 0435 GMT 20 April 1979</td>
<td>22</td>
</tr>
<tr>
<td>17</td>
<td>Radar summary for 0535 GMT 20 April 1979</td>
<td>23</td>
</tr>
<tr>
<td>18</td>
<td>Radar summary for 0635 GMT 20 April 1979</td>
<td>23</td>
</tr>
<tr>
<td>19</td>
<td>Radar summary for 0735 GMT 20 April 1979</td>
<td>24</td>
</tr>
<tr>
<td>20</td>
<td>Radar summary for 0835 GMT 20 April 1979</td>
<td>24</td>
</tr>
<tr>
<td>21</td>
<td>Radar summary for 0935 GMT 20 April 1979</td>
<td>25</td>
</tr>
<tr>
<td>22</td>
<td>Radar summary for 1035 GMT 20 April 1979</td>
<td>25</td>
</tr>
<tr>
<td>23</td>
<td>Radar summary for 1135 GMT 20 April 1979</td>
<td>26</td>
</tr>
<tr>
<td>Figure</td>
<td>GOES-East infrared satellite imagery for 1201 GMT 19 April 1979</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>24</td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>25</td>
<td>GOES-EAST visual satellite imagery for 1301 GMT 19 April 1979</td>
<td>27</td>
</tr>
<tr>
<td>26</td>
<td>GOES-East visual satellite imagery for 1401 GMT 19 April 1979</td>
<td>28</td>
</tr>
<tr>
<td>27</td>
<td>GOES-East visual satellite imagery for 1501 GMT 19 April 1979</td>
<td>28</td>
</tr>
<tr>
<td>28</td>
<td>GOES-East visual satellite imagery for 1601 GMT 19 April 1979</td>
<td>29</td>
</tr>
<tr>
<td>29</td>
<td>GOES-East visual satellite imagery for 1701 GMT 19 April 1979</td>
<td>29</td>
</tr>
<tr>
<td>30</td>
<td>GOES-East visual satellite imagery for 1801 GMT 19 April 1979</td>
<td>30</td>
</tr>
<tr>
<td>31</td>
<td>GOES-East visual satellite imagery for 2001 GMT 19 April 1979</td>
<td>30</td>
</tr>
<tr>
<td>32</td>
<td>GOES-East visual satellite imagery for 2101 GMT 19 April 1979</td>
<td>31</td>
</tr>
<tr>
<td>33</td>
<td>GOES-East visual satellite imagery for 2201 GMT 19 April 1979</td>
<td>31</td>
</tr>
<tr>
<td>34</td>
<td>GOES-East visual satellite imagery for 2301 GMT 19 April 1979</td>
<td>32</td>
</tr>
<tr>
<td>35</td>
<td>GOES-East infrared satellite imagery for 0001 GMT 20 April 1979</td>
<td>32</td>
</tr>
<tr>
<td>36</td>
<td>GOES-East infrared satellite imagery for 0101 GMT 20 April 1979</td>
<td>33</td>
</tr>
<tr>
<td>37</td>
<td>GOES-East infrared satellite imagery for 0145 GMT 20 April 1979</td>
<td>33</td>
</tr>
<tr>
<td>38</td>
<td>GOES-East infrared satellite imagery for 0315 GMT 20 April 1979</td>
<td>34</td>
</tr>
<tr>
<td>39</td>
<td>GOES-East infrared satellite imagery for 0401 GMT 20 April 1979</td>
<td>34</td>
</tr>
<tr>
<td>Figure</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>40</td>
<td>GOES-East infrared satellite imagery for 0501 GMT 20 April 1979</td>
<td>35</td>
</tr>
<tr>
<td>41</td>
<td>GOES-East infrared satellite imagery for 0531 GMT 20 April 1979</td>
<td>35</td>
</tr>
<tr>
<td>42</td>
<td>GOES-East infrared satellite imagery for 0701 GMT 20 April 1979</td>
<td>36</td>
</tr>
<tr>
<td>43</td>
<td>GOES-East infrared satellite imagery for 0801 GMT 20 April 1979</td>
<td>36</td>
</tr>
<tr>
<td>44</td>
<td>GOES-East infrared satellite imagery for 0901 GMT 20 April 1979</td>
<td>37</td>
</tr>
<tr>
<td>45</td>
<td>GOES-East infrared satellite imagery for 1031 GMT 20 April 1979</td>
<td>37</td>
</tr>
<tr>
<td>46</td>
<td>GOES-East infrared satellite imagery for 1101 GMT 20 April 1979</td>
<td>38</td>
</tr>
<tr>
<td>47</td>
<td>Total rainfall amounts in inches for the period 1200 GMT 19 April to 20 April</td>
<td>39</td>
</tr>
<tr>
<td>48</td>
<td>Severe weather reports between 1200 GMT 19 April and 20 April 1979 in the AVE-SESAME II area</td>
<td>48</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rawinsonde stations participating in the AVE-SESAME II experiment</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Teletype reports taken from NOAA weather wire and national weather summaries of severe and unusual weather from 1200 GMT 19 April to 1200 GMT 20 April 1979</td>
<td>40</td>
</tr>
</tbody>
</table>
A PRELIMINARY LOOK AT AVE-SESAME CONDUCTED ON 19-20 APRIL 1979

1. OBJECTIVES AND SCOPE

The objective of the AVE-SESAME experiments was to gather meso-synoptic data for the purpose of investigating atmospheric structure and variability associated with convection and severe weather. A data base consisting of rawinsonde, surface, radar, aircraft, and satellite provides researchers with the tools necessary for analytical, conceptual, and numerical efforts to better understand the formation, development, and maintenance of severe local weather and the interrelationships between convective activity and its environment.

This report contains information and a quick-look analysis of general weather conditions during the AVE-SESAME period. Synoptic charts, radar maps, satellite photographs, rainfall amounts, and a summary of severe weather reports assembled from the NOAA weather wire and the national weather summaries are compiled for 1200 GMT 25 April through 1200 GMT 26 April 1979. The purpose of this report is to provide to researchers a preliminary look at conditions during the AVE-SESAME period to assist in analysis and interpretation of the data. Additional information has been presented by Alberty et al. (1979).

2. DATA COLLECTED

a. Rawinsonde Soundings

Rawinsonde soundings were collected at 23 National Weather Service stations and at 19 special stations. A list of these stations is given in Table 1, and their locations are shown in Fig. 1. The dates and
Table 1. Rawinsonde stations participating in the AVE-SESAME II experiment.

<table>
<thead>
<tr>
<th>Station Number</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>NWS Stations</td>
<td></td>
</tr>
<tr>
<td>229 (CKL)</td>
<td>Centerville, Al.</td>
</tr>
<tr>
<td>232 (BVE)</td>
<td>Boothville, La.</td>
</tr>
<tr>
<td>235 (JAN)</td>
<td>Jackson, Ms.</td>
</tr>
<tr>
<td>240 (ICH)</td>
<td>Lake Charles, La.</td>
</tr>
<tr>
<td>247 (GGG)</td>
<td>Longview, Tx.</td>
</tr>
<tr>
<td>255 (VCT)</td>
<td>Victoria, Tx.</td>
</tr>
<tr>
<td>260 (SEP)</td>
<td>Stephenville, Tx.</td>
</tr>
<tr>
<td>261 (DRT)</td>
<td>Del Rio, Tx.</td>
</tr>
<tr>
<td>265 (MAF)</td>
<td>Midland, Tx.</td>
</tr>
<tr>
<td>270 (ELP)</td>
<td>El Paso, Tx.</td>
</tr>
<tr>
<td>327 (BNA)</td>
<td>Nashville, Tn.</td>
</tr>
<tr>
<td>340 (LIT)</td>
<td>Little Rock, Ar.</td>
</tr>
<tr>
<td>349 (UNN)</td>
<td>Monett, Mo.</td>
</tr>
<tr>
<td>354 (OCK)</td>
<td>Oklahoma City, Ok.</td>
</tr>
<tr>
<td>363 (AMA)</td>
<td>Amarillo, Tx.</td>
</tr>
<tr>
<td>365 (ABQ)</td>
<td>Albuquerque, Nm.</td>
</tr>
<tr>
<td>435 (SLG)</td>
<td>Salem, Il.</td>
</tr>
<tr>
<td>451 (DDC)</td>
<td>Dodge City, Ks.</td>
</tr>
<tr>
<td>456 (TOP)</td>
<td>Topeka, Ks.</td>
</tr>
<tr>
<td>469 (DEN)</td>
<td>Denver, Co.</td>
</tr>
<tr>
<td>532 (PIA)</td>
<td>Peoria, Il.</td>
</tr>
<tr>
<td>553 (OMA)</td>
<td>Omaha, Ne.</td>
</tr>
<tr>
<td>562 (LBF)</td>
<td>North Platte, Ne.</td>
</tr>
<tr>
<td>Special Stations</td>
<td></td>
</tr>
<tr>
<td>001 (ABI)</td>
<td>Abilene, Tx.</td>
</tr>
<tr>
<td>002 (BVO)</td>
<td>Bartlesville, Ok.</td>
</tr>
<tr>
<td>003 (COU)</td>
<td>Columbia, Mo.</td>
</tr>
<tr>
<td>004 (CDS)</td>
<td>Childress, Tx.</td>
</tr>
<tr>
<td>005 (CLL)</td>
<td>College Station, Tx.</td>
</tr>
<tr>
<td>006 (CNK)</td>
<td>Concordia, Ks.</td>
</tr>
<tr>
<td>007 (DUA)</td>
<td>Durant, Ok.</td>
</tr>
<tr>
<td>008 (FSM)</td>
<td>Fort Smith, Ar.</td>
</tr>
<tr>
<td>009 (GAG)</td>
<td>Gage, Ok.</td>
</tr>
<tr>
<td>010 (GLD)</td>
<td>Goodland, Ks.</td>
</tr>
<tr>
<td>011 (ICT)</td>
<td>Wichita, Ks.</td>
</tr>
<tr>
<td>012 (JCT)</td>
<td>Junction, Tx.</td>
</tr>
<tr>
<td>013 (MLJ)</td>
<td>Monroe, La.</td>
</tr>
<tr>
<td>014 (HRP)</td>
<td>Marfa, Tx.</td>
</tr>
<tr>
<td>015 (MTX)</td>
<td>Morton, Tx.</td>
</tr>
<tr>
<td>016 (OTM)</td>
<td>Ottumwa, Ia.</td>
</tr>
<tr>
<td>017 (POP)</td>
<td>Poplar Bluff, Mo.</td>
</tr>
<tr>
<td>018 (RTN)</td>
<td>Raton, Nm.</td>
</tr>
<tr>
<td>019 (UOK)</td>
<td>Oxford, Ms.</td>
</tr>
</tbody>
</table>
Fig. 1. Location of rawinsonde stations participating in the AVE-SESAME II experiment.
scheduled sounding times are as follows:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time (GMT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 April 1979</td>
<td>12, 15, 18, 21</td>
</tr>
<tr>
<td>20 April 1979</td>
<td>00, 03, 06, 09, 12</td>
</tr>
</tbody>
</table>

Sounding data interpolated to 25-mb intervals will be presented in a separate document that is under preparation. These data may be obtained in hard copy form or on magnetic tape from the Atmospheric Sciences Division, Space Sciences Laboratory, NASA, Marshall Space Flight Center, Alabama 35812.

b. **Surface and Upper Air**

Surface and upper air charts and data are available from the National Climatic Center in Asheville, North Carolina.

3. **SYNOPTIC CONDITIONS**

a. **Synoptic Charts**

Surface and upper air charts for the AVE-SESAME II period are presented in Figs. 2-6. Surface charts are presented at 6-h intervals and upper-air charts at 12-h intervals. These charts have been analyzed using National Weather Service data only. They show the general conditions during the experiment and should not be used for other purposes.

At 1200 GMT 19 April 1979 a cold front oriented north-south extended from Central North Dakota through West Texas. A low-level tongue of moist unstable air parallel to the front pushed northward into western portions of Texas, Oklahoma, Kansas, and South-Central Nebraska as the day progressed. By 1800 GMT thunderstorms began to develop in West Texas and the panhandle as the front moved eastward lifting the moist air. This storm system developed in a "tornadic" air mass (dry wedge in mid-troposphere) resulting in the formation of hail, funnel clouds, and tornadoes. These storms showed high radar reflectivities,
especially following 2100 GMT. A second storm system developed far in advance of the front on the Central Texas Coastal Plains. This system caused torrential rains and severe flooding. As the system moved eastward into Southern Louisiana, several tornadoes and hail were reported. However, these tornadoes were weak, short-lived, and rope-like, and hail sizes were mostly less than an inch in diameter. Fog, poor visibility, and low ceilings made observations difficult.

By 0000 GMT 20 April 1979 the cold front had moved into Central Kansas and Nebraska. As the moist unstable air moved in, additional severe weather developed. Tornadoes, hail, severe thunderstorms, and strong winds continued through 1200 GMT throughout Eastern Kansas and parts of Iowa and Missouri. By 1200 GMT, many south Texas cities still reported heavy rain and severe flooding.

b. Radar

Selected radar summary charts are presented in Figs. 7-23. These charts show areas of principal convective activity, heights of echoes, movement vectors, severe weather watch boxes, etc.

c. Satellite

Satellite photographs were taken at 15-min intervals during the AVE-SESAME II period. These photographs consist of both infrared and visual. Selected satellite photographs for each hour during the period are presented in Figs. 24-46.

d. Rainfall

Rainfall data from the National Weather Service for the AVE-SESAME II period were totaled and analyzed. Isohyets of rainfall in inches are presented in Fig. 47. This analysis utilizes only data from National Weather Service stations.
4. UNUSUAL AND SEVERE WEATHER REPORTED

The severe weather outbreak during AVE-SESAME II was a combination of two different types of severe weather systems. Reports of tornadoes, severe thunderstorms, hail, torrential rain, and flooding were compiled for the AVE-SESAME II period from the NOAA weather wire and national weather summaries when available and are presented in Table 2. Locations of observed tornadoes, observed funnel clouds, radar-indicated tornadoes, hail, and thunderstorms are shown in Fig. 48. A total of seven tornadoes and five funnel clouds occurred from Nebraska to the Texas Panhandle. Hill City, Kansas, reported four tornadoes and three funnel clouds all within an 80-km (50-mi) radius. Tornado damage was reported in Colby, Kansas. Baseball-size hail was reported in the eastern Texas Panhandle, with smaller size hail in other areas. Torrential rains and severe flooding occurred in Southeast Texas and Western Louisiana. One cooperative climatology station in Beaumont, Texas, reported over 7 inches of rain during the AVE-SESAME II period. Many low-lying areas and communities near the coast were completely inundated, resulting in millions of dollars of damage. A number of funnel clouds and three tornadoes also were reported in this area--two near Beaumont, and the third in Houston. Golfball-size hail was observed near Uvalde, Texas. AVE-SESAME II proved to be a highly successful experiment for the study of severe weather systems.
Fig. 2. Synoptic charts for 1200 GMT 19 April 1979.
Fig. 2. Continued.
Fig. 3. Surface chart for 1800 GMT 19 April 1979.
Fig. 4. Synoptic charts for 0000 GMT 20 April 1979.
(c) 700 mb

(d) 500 mb

Fig. 4. Continued.
Fig. 4. Concluded.
Fig. 5. Surface chart for 0600 GMT 20 April 1979.
Fig. 6. Synoptic charts for 1200 GMT 20 April 1979. **Original page is of poor quality.**
Fig. 6. Continued.
Fig. 6. Concluded.
Fig. 7. Radar summary for 1135 GMT 19 April 1979.

Fig. 8. Radar summary for 1435 GMT 19 April 1979.
Fig. 9. Radar summary for 1735 GMT 19 April 1979.

Fig. 10. Radar summary for 1935 GMT 19 April 1979.
Fig. 11. Radar summary for 2035 GMT 19 April 1979.

Fig. 12. Radar summary for 2235 GMT 19 April 1979.
Fig. 13. Radar summary for 2335 GMT 19 April 1979.

Fig. 14. Radar summary for 0135 GMT 20 April 1979.
Fig. 15. Radar summary for 0235 GMT 20 April 1979.

Fig. 16. Radar summary for 0435 GMT 20 April 1979.
Fig. 17. Radar summary for 0535 GMT 20 April 1979.

Fig. 18. Radar summary for 0635 GMT 20 April 1979.
Fig. 19. Radar summary for 0735 GMT 20 April 1979.

Fig. 20. Radar summary for 0835 GMT 20 April 1979.
Fig. 21. Radar summary for 0935 GMT 20 April 1979.

Fig. 22. Radar summary for 1035 GMT 20 April 1979.
Fig. 23. Radar summary for 1135 GMT 20 April 1979.
Fig. 24. GOES-East infrared satellite imagery for 1201 GMT 19 April 1979.

Fig. 25. GOES-East visual satellite imagery for 1301 GMT 19 April 1979.
Fig. 26. GOES-East visual satellite imagery for 1401 GMT
19 April 1979.

Fig. 27. GOES-East visual satellite imagery for 1501 GMT
19 April 1979.
Fig. 28. GOES-East visual satellite imagery for 1601 GMT
19 April 1979.

Fig. 29. GOES-East visual satellite imagery for 1701 GMT
19 April 1979.
Fig. 30. GOES-East visual satellite imagery for 1801 GMT
19 April 1979.

Fig. 31. GOES-East visual satellite imagery for 2001 GMT
19 April 1979.
Fig. 32. GOES-East visual satellite imagery for 2101 GMT
19 April 1979.

Fig. 33. GOES-East visual satellite imagery for 2201 GMT
19 April 1979.
Fig. 34. GOES-East visual satellite imagery for 2301 GMT 19 April 1979.

Fig. 35. GOES-East infrared satellite imagery for 0001 GMT 20 April 1979.
Fig. 36. GOES-East infrared satellite imagery for 0101 GMT 20 April 1979.

Fig. 37. GOES-East infrared satellite imagery for 0145 GMT 20 April 1979.
Fig. 38. GOES-East infrared satellite imagery for 0315 GMT
20 April 1979.

Fig. 39. GOES-East infrared satellite imagery for 0401 GMT
20 April 1979.
Fig. 40. GOES-East infrared satellite imagery for 0501 GMT 20 April 1979.

Fig. 41. GOES-East infrared satellite imagery for 0531 GMT 20 April 1979.
Fig. 42. GOES-East infrared satellite imagery for 0701 GMT
20 April 1979.

Fig. 43. GOES-East infrared satellite imagery for 0801 GMT
20 April 1979.
Fig. 44. GOES-East infrared satellite imagery for 0901 GMT
20 April 1979.

Fig. 45. GOES-East infrared satellite imagery for 1031 GMT
20 April 1979.

ORIGINAL PAGE IS
OF POOR QUALITY.
Fig. 46. GOES-East infrared satellite imagery for 1101 GMT
20 April 1979.
Fig. 46. GOES-East infrared satellite imagery for 1101 GMT 20 April 1979.
Fig. 47. Total rainfall amounts in inches for the period 1200 GMT 19 April 1979 to 1200 GMT 20 April 1979.
Table 2. Teletype reports taken from NOAA weather wire and national weather summaries of severe and unusual weather from 1200 GMT 19 April to 1200 GMT 20 April 1979.

<table>
<thead>
<tr>
<th>EVENT</th>
<th>LOCATION</th>
<th>TIME (GMT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLASH FLOOD WATCH</td>
<td>SAN ANTONIO, DEL RIO AND TEXAS HAVE A FLASH FLOOD WATCH IN EFFECT FOR TODAY.</td>
<td>1210</td>
</tr>
<tr>
<td>RAREP SAT</td>
<td>SCATTERED TRWS FROM SAN ANTONIO TO N OF DEL RIO AND S OF CORPUS CHRISTI AND LAREDO IN TEXAS. MOVEMENT TO NE AT 15 MPH WITH RAINFALL RATES UP TO 1 INCH PER HOUR. MAX TOPS TO 28,000 FT.</td>
<td>1235</td>
</tr>
<tr>
<td>RAIN</td>
<td>1 INCH OF RAIN AT KELLY AFB IN THE PAST 6 HRS.</td>
<td>1300</td>
</tr>
<tr>
<td>RAREP LCH</td>
<td>ISOLATED RWS AND -R FROM E OF ALEXANDRIA TO BATON ROUGE IN LOUISIANA, MOVING E.</td>
<td>1335</td>
</tr>
<tr>
<td>RAREP SAT</td>
<td>VERY HEAVY TRWS LOCATED IN EDWARDS CO. WITH OTHER RWS WIDELY SCATTERED FROM S OF SAN ANGELO TO DEL RIO AND SE INTO THE COTULLA-BEEVILLE AREAS IN TEXAS. MOVEMENT TO NE AT 15 MPH WITH RAINFALL.</td>
<td>1340</td>
</tr>
<tr>
<td>RAREP SEP</td>
<td>SCATTERED RWS FROM NEAR SAN ANGELO TO 25 MI. N OF SWEETWATER IN TEXAS, MOVING NE AT 10 MPH.</td>
<td>1350</td>
</tr>
<tr>
<td>RIME ICE</td>
<td>RIME ICE ON AIRCRAFT AT 17,000 FT ABOVE ST. LOUIS, MISSOURI</td>
<td>1356</td>
</tr>
<tr>
<td>FLASH FLOOD WATCH</td>
<td>CONTINUED WATCH ALONG AND W OF A LINE FROM LAREDO TO VICTORIA TO COLLEGE STATION.</td>
<td>1415</td>
</tr>
<tr>
<td>RAREP SAT</td>
<td>SCATTERED RW AND -R 35 MI SE OF OZONA, TEXAS, MOVING NE AT 15 MPH. RAINFALL RATE IS LESS THAN ¼ INCH PER HR. MAX TOPS TO 23,000 FT NEAR ROCK SPRINGS, TEXAS.</td>
<td>1435</td>
</tr>
<tr>
<td>RAREP SEP</td>
<td>-RWS WIDELY SCATTERED OVER AN AREA 30 MI WIDE FROM JUST N OF SWEETWATER TO NEAR SAN ANGELO MOVING NE AT 10 MPH. PRECIPITATION TOPS UNIFORMLY AT 18,000 FT.</td>
<td>1450</td>
</tr>
<tr>
<td>RAREP LCH</td>
<td>WIDELY SCATTERED -RWS WERE LOCATED BETWEEN NATCHEZ, MISSISSIPPI AND ALEXANDRIA, LOUISIANA S TO THE LOUISIANA BORDER.</td>
<td>1535</td>
</tr>
<tr>
<td>RAREP SEP</td>
<td>-RW SE OF SAN ANGELO MOVING NE AT 10 MPH.</td>
<td>1550</td>
</tr>
<tr>
<td>EVENT</td>
<td>LOCATION</td>
<td>TIME (GMT)</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>RIME ICE</td>
<td>RIME ICE ON AIRCRAFT OVER SAN ANTONIO, TEXAS</td>
<td>1554</td>
</tr>
<tr>
<td>FLASH FLOOD WATCH</td>
<td>FLASH FLOOD WATCH ISSUED EARLIER IS CANCELLED</td>
<td>1630</td>
</tr>
<tr>
<td>RAREP SAT</td>
<td>TRW DEVELOPED 30 MI E OF DEL RIO, TEXAS MOVING NE AT 15 MPH.</td>
<td>1635</td>
</tr>
<tr>
<td>FLOOD WARNING</td>
<td>WARNING ISSUED FOR SAN JACINTO RIVER AND LAKE HOUSTON AREA.</td>
<td>1642</td>
</tr>
<tr>
<td>RAREP GLS</td>
<td>VERY HEAVY TWS NEAR BELLEVILLE AND LAKE HOUSTON MOVING ENE AT 25 MPH.</td>
<td>1650</td>
</tr>
<tr>
<td>RAREP SEP</td>
<td>FEW HEAVY TRWs LOCATED NEAR LLANO TO FREDERICKSBURG AND JUNCTION IN TEXAS. MOVEMENT TO NE AT 15 MPH. TOPS NEAR JUNCTION TO 32,000 FT.</td>
<td>1650</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING ISSUED FOR JEFFERSON, CO TEXAS UNTIL 12:30 PM CST.</td>
<td>1706</td>
</tr>
<tr>
<td>Rotor Clouds</td>
<td>Rotor Clouds building over Denver Colorado.</td>
<td>1710</td>
</tr>
<tr>
<td>Hail</td>
<td>Hailstones fell on Hill City, Kansas.</td>
<td>1710</td>
</tr>
<tr>
<td>Flash Flood Watch</td>
<td>Watch issued this afternoon and tonight along and E of a line from College Station to Palacios.</td>
<td>1730</td>
</tr>
<tr>
<td>Rain</td>
<td>11½ inches of rain fell in the Conroe, Texas area over the past 24 hrs.</td>
<td>1730</td>
</tr>
<tr>
<td>RAREP LCH</td>
<td>Isolated -RWS OVER CENTRAL LOUISIANA. SCATTERED TRWS INCREASING OVER SE TEXAS AND SW LOUISIANA.</td>
<td>1735</td>
</tr>
<tr>
<td>RAREP SAT</td>
<td>-R OVER LARGE AREA: FROM DEL RIO TO SE OF SAN ANGELO, IN THE NW ACROSS S CENTRAL TEXAS TO THE COTULLA-VICTORIA-LAGRANGE AREAS IN THE SE. MOVEMENT IS TO THE NE AT 15 MPH. MAX TOP OF 23,000 FT 5 MI N OF VICTORIA.</td>
<td>1735</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING ISSUED FOR BORDEN CO, EFFECTIVE UNTIL 1:00 PM CST.</td>
<td>1750</td>
</tr>
<tr>
<td>RAREP GLS</td>
<td>Very heavy TRW located in extreme SE BEXARIA CO, TEXAS MOVING NE AT 25 MPH.</td>
<td>1750</td>
</tr>
<tr>
<td>RAREP MAF</td>
<td>SVR TRW LOCATED 8 MI SE OF GAIL, TEXAS MOVING N AT 18 MPH.</td>
<td>1800</td>
</tr>
<tr>
<td>Turbulence</td>
<td>SVR TURBULENCE ENCOUNTERED BY AIRCRAFT OVER TEXARKANA, ARKANSAS.</td>
<td>1807</td>
</tr>
<tr>
<td>EVENT</td>
<td>LOCATION</td>
<td>TIME (GMT)</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>------------</td>
</tr>
<tr>
<td>RAREP GGG</td>
<td>SCATTERED VERY HEAVY TRWS IN AN AREA 20 MI NW OF LUFKIN TO LAKE LIVINGSTON TO N OF BEAUMONT IN TEXAS. HEAVIEST STORMS WERE 10 MI SE OF CROCKETT AND 30 MI SW OF JASPER. MOVEMENT TO N AT 15 MPH.</td>
<td>1830</td>
</tr>
<tr>
<td>TURBULENCE</td>
<td>SVR TURBULENCE ENCOUNTERED BY AIRCRAFT OVER GILL, CO AND DOUGLAS, WY.</td>
<td>1830</td>
</tr>
<tr>
<td>RAREP SAT</td>
<td>HEAVY TRWS S AND 25 MI NW OF NEW BRAUNFELS, 25 MI SW AND 30 MI NW OF AUSTIN AND 5 AND 25 MI S OF SAN ANTONIO. RAINFALL RATES ARE UP TO 1 INCH AN HR. MAX TOPS TO 32,000 FT NEAR NEW BRAUNFELS. MOVEMENT TO NE AT 15 MPH.</td>
<td>1835</td>
</tr>
<tr>
<td>RAREP LCH</td>
<td>VERY HEAVY TRWS JUST NW OF DEQUINCY, LOUISIANA MOVING N. SCATTERED RWS AND TRWS OVER S HALF OF LOUISIANA.</td>
<td>1840</td>
</tr>
<tr>
<td>RAREP LCH</td>
<td>HEAVY TRWS LOCATED FROM NEAR COLLEGE STATION TO AUSTIN TO LAMPASAS, IN TEXAS, MOVING NE AT 15 MPH.</td>
<td>1850</td>
</tr>
<tr>
<td>RAIN</td>
<td>RAINFALL RATES OF 1 TO 2 INCHES PER HR WERE LOCATED NEAR BASTROP, CALDWELL AND COLLEGE STATION, IN TEXAS.</td>
<td>1900</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING EFFECTIVE UNTIL 2:00 PM CST FOR HARDIN CO TEXAS.</td>
<td>1900</td>
</tr>
<tr>
<td>FUNNEL CLOUD</td>
<td>CLOUD SPOTTED 3 MI N OF KNAPP, TEXAS MOVING N AT 20 MPH.</td>
<td>1912</td>
</tr>
<tr>
<td>TOPWADO WARNING</td>
<td>WARNING EFFECTIVE UNTIL 2:30 PM CST FOR SCURRY CO TEXAS.</td>
<td>1915</td>
</tr>
<tr>
<td>RAREP SAT</td>
<td>VERY HEAVY TRWS GROWING. MAX TOP OF 38,000 FT NEAR NEW BRAUNFELS.</td>
<td>1935</td>
</tr>
<tr>
<td>RAREP SEP</td>
<td>VERY HEAVY TRWS NEAR AUSTIN, TEXAS WITH TOPS TO 37,000 FT.</td>
<td>1950</td>
</tr>
<tr>
<td>FLOOD WARNING</td>
<td>WARNING FOR NUECES RIVER, HONDO CREEK, AND SECO CREEK, IN TEXAS</td>
<td>2000</td>
</tr>
<tr>
<td>RAREP LBB</td>
<td>RWS LOCATED JUST S OF GARZA CO TO MOTLEY CO. VERY HEAVY TRWS LOCATED OVER THE PANHANDLE AREA. ALL ACTIVITY MOVING NE AT 25 MPH</td>
<td>2022</td>
</tr>
</tbody>
</table>
**TABLE 2. CONTINUED.**

<table>
<thead>
<tr>
<th>EVENT</th>
<th>LOCATION</th>
<th>TIME (GMT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING ISSUED FOR W VERNON PARISH, LOUISIANA EFFECTIVE UNTIL 3:30 PM CST.</td>
<td>2025</td>
</tr>
<tr>
<td>FUNNEL CLOUD</td>
<td>CLOUD SPOTTED 15 MI SE OF SAN ANTONIO, MOVING NE AT 20 MPH IN TEXAS.</td>
<td>2030</td>
</tr>
<tr>
<td>FLASH FLOOD WARNING</td>
<td>WARNING EFFECTIVE UNTIL 6:30 PM CST FOR POTTER, RANDALL, CANSON, ARMSTRONG AND BRISCOE CO OF TEXAS.</td>
<td>2035</td>
</tr>
<tr>
<td>RAREP SAT</td>
<td>VERY HEAVY TRW 25 MI SE OF SAN ANTONIO WITH A RAINFALL RATE OF OVER 2 INCHES PER HR. MAX TOP AT 41,000 FT.</td>
<td>2035</td>
</tr>
<tr>
<td>TORNADO</td>
<td>POSSIBLE TORNADO ECHO ABOUT 20 MI SE OF SAN ANTONIO, MOVING NE AT 20 MPH IN TEXAS.</td>
<td>2040</td>
</tr>
<tr>
<td>TORNADO WATCH</td>
<td>WATCH NUMBER 90 ISSUED FOR CENTRAL AND SW KANSAS, NW OKLAHOMA AND NE PORTION OF TEXAS PANHANDLE, EFFECTIVE FROM 3:30 PM TO 9:30 PM CST.</td>
<td>2040</td>
</tr>
<tr>
<td>TORNADO WARNING</td>
<td>WARNING EFFECTIVE UNTIL 3:45 PM CST FOR GUADALUPE, GONZALES AND WILSON CO OF TEXAS.</td>
<td>2045</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING ISSUED FOR JACKSON AND LAVACA CO OF TEXAS. EFFECTIVE UNTIL 4:00 PM CST.</td>
<td>2045</td>
</tr>
<tr>
<td>FLOOD WARNING</td>
<td>WARNING FOR PINE ISLAND BAYOU AND VILLAGE CREEK, TEXAS.</td>
<td>2047</td>
</tr>
<tr>
<td>RAIN</td>
<td>PINE ISLAND BAYOU HAD 2.5 INCHES OF RAIN IN ONE HR.</td>
<td>2047</td>
</tr>
<tr>
<td>TORNADO WARNING</td>
<td>WARNING ISSUED FOR JEFFERSON CO, TEXAS EFFECTIVE UNTIL 4:15 PM CST.</td>
<td>2115</td>
</tr>
<tr>
<td>FUNNEL CLOUD</td>
<td>CLOUD REPORTED 5 MI SW OF BEAUMONT MUNICIPAL AIRPORT, MOVING E IN TEXAS.</td>
<td>2115</td>
</tr>
<tr>
<td>TORNADOES</td>
<td>AIRCRAFT SIGHTED 2 SMALL TORNADOES NEAR BEAUMONT, TEXAS, MOVING E.</td>
<td>2115</td>
</tr>
<tr>
<td>RAREP SAT</td>
<td>SCATTERED VERY HEAVY TRWS WITH RAINFALL RATES IN EXCESS OF 2 INCHES PER HOUR AND POSSIBLE HAIL WERE OBSERVED JUST N OF JOURDONTON, 30 MI S AND SE OF BEAUMONT IN TEXAS. MAX TOP AT JOURDONTON WAS AT 46,000 FT. MOVEMENT TO THE N AT 15 MPH.</td>
<td>2140</td>
</tr>
<tr>
<td>EVENT</td>
<td>LOCATION</td>
<td>TIME (GMT)</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING ISSUED FOR BEXAR, GUADALUPE, GONZALEZ AND WILSON CO IN TEXAS, EFFECTIVE UNTIL 5:00 PM CST.</td>
<td>2140</td>
</tr>
<tr>
<td>RAREP AUS</td>
<td>TRW ACTIVITY IN THE AUSTIN AREA DECREASING. RAINFALL RATES OF 1 INCH OR MORE PER HR OBSERVED IN TRW LINE 15 MI E OF AUSTIN. LINE MOVING NE AT 20 MPH.</td>
<td>2140</td>
</tr>
<tr>
<td>TURBULENCE</td>
<td>EXTREME TURBULENCE ENCOUNTERED BY AIRCRAFT OVER AMARILLO, TX.</td>
<td>2142</td>
</tr>
<tr>
<td>RAREP SEP</td>
<td>VERY HEAVY TRWS WERE OBSERVED NEAR WAXAHACHIE TO BRYAN, AUSTIN AND KILLEEN. HEAVIEST ACTIVITY WAS NEAR WACO AND TEMPLE. MAX TOP OF 50,000 FT LOCATED NEAR TEMPLE.</td>
<td>2150</td>
</tr>
<tr>
<td>FLASH FLOOD WATCH</td>
<td>WATCH HAS BEEN EXPANDED TO INCLUDE PART OF S CENTRAL TEXAS: AREA IS S AND E OF A LINE EXTENDING FROM LUFKIN TO AUSTIN TO SAN ANTONIO TO PALACIOS. WATCH IS IN EFFECT UNTIL 12:00 AM CST.</td>
<td>2200</td>
</tr>
<tr>
<td>FLASH FLOOD WATCH</td>
<td>WATCH ISSUED FOR THE AREA E OF A LINE FROM LUFKIN TO JACKSONVILLE TO 30 MI N OF LONGVIEW, TX.</td>
<td>2210</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING ISSUED FOR ATOSCOSA CO, TEXAS, EFFECTIVE UNTIL 5:00 PM CST. WARNING ALSO ISSUED FOR WILSON AND KARNES CO OF TEXAS, EFFECTIVE UNTIL 5:30 PM CST.</td>
<td>2220</td>
</tr>
<tr>
<td>HAIL</td>
<td>REPORT OF LARGE HAIL IN VERY HEAVY TRW IN N ATOSCOSA CO, TX.</td>
<td>2220</td>
</tr>
<tr>
<td>RAREP SAT</td>
<td>A FEW VERY HEAVY TRWS WERE LOCATED FROM JUST E OF PLEASANTON, NEAR FALLS CITY, 15 MI E OF FLORESVILLE AND 25 MI S OF GONZALEZ. RAINFALL RATES IN THESE TRWS WAS IN EXCESS OF 2 INCHES PER HR. MOVEMENT TO NE AT 15 MPH. MAX TOP OF 44,000 FT OBSERVED 15 MI E OF FLORESVILLE.</td>
<td>2235</td>
</tr>
<tr>
<td>HAIL</td>
<td>HAIL AND GUSTY WINDS OBSERVED NEAR EL CAMPO, TEXAS.</td>
<td>2245</td>
</tr>
<tr>
<td>FLASH FLOOD WARNING</td>
<td>WARNING ISSUED FOR WILSON AND GONZALEZ CO OF TEXAS, EFFECTIVE UNTIL 8:00 PM CST.</td>
<td>2245</td>
</tr>
<tr>
<td>TORNADO WARNING</td>
<td>WARNING ISSUED FOR ARMSTRONG, CARSON AND GRAY CO OF TEXAS PANHANDLE EFFECTIVE UNTIL 6:30 PM CST.</td>
<td>2250</td>
</tr>
<tr>
<td>EVENT</td>
<td>LOCATION</td>
<td>TIME (GMT)</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>RAIN</td>
<td>RAINFALL AMOUNTS FOR THE PORT ARTHUR, TEXAS AREA SINCE 7:00 AM CST: EVADALE-2.8 INCHES, KOUNTZE-1.2 INCHES, SOUR LAKE-3.7 INCHES, WAREN-1.1 INCHES.</td>
<td>2315</td>
</tr>
<tr>
<td>HAIL</td>
<td>1 INCH HAIL REPORTED AT CLAUDE, TEXAS AND GOLFBALL SIZE HAIL REPORTED JUST S OF GOODNIGHT, TEXAS.</td>
<td>2330</td>
</tr>
<tr>
<td>RAREP FTW</td>
<td>TRW WITH HEAVY RAIN OBSERVED OVER S PART OF FORT WORTH, TEXAS AT 5:30 PM CST.</td>
<td>2335</td>
</tr>
<tr>
<td>RAREP SAT</td>
<td>SVR TRW LOCATED 35 MI E OF VICTORIA WITH RAINFALL RATES OVER 2 INCHES PER HR AND WITH SMALL HAIL, MOVING E AT 15 MPH. MAX TOP TO 44,000 FT.</td>
<td>2335</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING ISSUED FOR DEWITT AND LAVACA CO OF TEXAS, EFFECTIVE UNTIL 6:40 PM CST.</td>
<td>2340</td>
</tr>
<tr>
<td>FUNNEL CLOUD</td>
<td>FUNNEL CLOUD TOUCHED DOWN BRIEFLY IN SW HOUSTON, TX.</td>
<td>2340</td>
</tr>
<tr>
<td>TORNADO WARNING</td>
<td>WARNING ISSUED FOR DONLEY CO, TEXAS EFFECTIVE UNTIL 7:00 PM CST.</td>
<td>0005</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING EFFECTIVE UNTIL 7:00 PM CST FOR HARRIS CO, TEXAS.</td>
<td>0005</td>
</tr>
<tr>
<td>FLASH FLOOD WARNING</td>
<td>WARNING ISSUED FOR WILLIAMSON AND MILAM CO OF TEXAS. 2 TO 3 INCHES OF RAIN HAS FALLEN ON THE N AND S FORK OF THE SAN GABRIEL RIVER.</td>
<td>0010</td>
</tr>
<tr>
<td>RAIN</td>
<td>INDICATIONS SHOW THAT UP TO 4 INCHES OF RAIN HAVE FALLEN IN THE PAST 3 HRS IN N KARNES CO, TEXAS.</td>
<td>0015</td>
</tr>
<tr>
<td>HOOK ECHO</td>
<td>HOOK ECHO ON AIRCRAFT RADAR OVER CDS.</td>
<td>0030</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING EFFECTIVE UNTIL 8:00 PM CST FOR COLORADO AND WHARTON CO OF TEXAS.</td>
<td>0035</td>
</tr>
<tr>
<td>RAREP SAT</td>
<td>VERY HEAVY TRWS 30 MI W OF VICTORIA WITH RAINFALL RATES IN EXCESS OF 2 INCHES PER HR. MOVEMENT TO E AT 20 MPH. MAX TOP TO 45,000 FT.</td>
<td>0035</td>
</tr>
<tr>
<td>EVENT</td>
<td>LOCATION</td>
<td>TIME (GMT)</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>TURBULENCE</td>
<td>SVR TURBULENCE ENCOUNTERED BY AIRCRAFT OVER HOUSTON, TEXAS.</td>
<td>0045</td>
</tr>
<tr>
<td>TURBULENCE</td>
<td>SVR TURBULENCE OVER DENVER REPORTED BY AIRCRAFT.</td>
<td>0050</td>
</tr>
<tr>
<td>RAREP LCH</td>
<td>SOLID RAIN WITH TRWS IN THE RAIN COVERED ALL OF W AND SW LOUISIANA AND SE TEXAS.</td>
<td>0050</td>
</tr>
<tr>
<td>RAREP SEP</td>
<td>VERY HEAVY TRWS IN AND N OF FORT WORTH AREA MOVING N AT 20 MPH. MAX TOPS TO 42,000 FT.</td>
<td>0050</td>
</tr>
<tr>
<td>RIME ICE</td>
<td>RIME ICE ON AIRCRAFT AT 11,000 FT OVER SHREVEPORT, LOUISIANA.</td>
<td>0114</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING EFFECTIVE UNTIL 8:30 PM CST FOR VICTORIA CO OF TEXAS.</td>
<td>0125</td>
</tr>
<tr>
<td>HAIL</td>
<td>3/4 INCH HAIL REPORTED IN THE SHADY OAKS SUBDIVISION ON THE GOLIAD HIGHWAY, IN TEXAS.</td>
<td>0125</td>
</tr>
<tr>
<td>RAIN</td>
<td>RAINFALL TOTALS UP TO 3.6 INCHES HAVE OCCURRED OVER SW HOUSTON UP TO THIS TIME.</td>
<td>0130</td>
</tr>
<tr>
<td>FUNNEL CLOUDS</td>
<td>FUNNELS REPORTED W OF WHEELER, TEXAS.</td>
<td>0145</td>
</tr>
<tr>
<td>HAIL</td>
<td>PEA SIZE HAIL REPORTED IN BEAUMONT, TEXAS.</td>
<td>0145</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING EFFECTIVE UNTIL 9:00 PM CST FOR VAL VERDE CO, TEXAS.</td>
<td>0145</td>
</tr>
<tr>
<td>TORNADO WATCH</td>
<td>WATCH IN EFFECT FOR CENTRAL AND SW KANSAS, NW OKLAHOMA AND NE TEXAS PANHANDLE.</td>
<td>0211</td>
</tr>
<tr>
<td>TORNADOES</td>
<td>TORNADOES SPOTTED IN HILL CITY, KANSAS, BARTLETT AND FRANKLIN, NEBRASKA, AND HOUSTON, TEXAS.</td>
<td>0217</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING EFFECTIVE UNTIL 10:00 PM CST FOR EDWARDS AND KINNEY CO OF TEXAS.</td>
<td>0240</td>
</tr>
<tr>
<td>FLOOD WARNING</td>
<td>WARNING FOR SIM'S BAYOU AND BUFFALO BAYOU, TEXAS.</td>
<td>0309</td>
</tr>
<tr>
<td>FLASH FLOOD WARNING</td>
<td>WARNING EFFECTIVE UNTIL 12:00 AM CST FOR BEAUMONT, TEXAS.</td>
<td>0315</td>
</tr>
<tr>
<td>RIME ICE</td>
<td>AIRCRAFT REPORTS RIME ICE OVER DENVER, COLORADO.</td>
<td>0320</td>
</tr>
<tr>
<td>EVENT</td>
<td>LOCATION</td>
<td>TIME (GMT)</td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>FLASH FLOOD WARNING</td>
<td>WARNING EFFECTIVE UNTIL 12:30 AM CST FOR LIBERTY, HARRIS AND BRAZORIA CO OF TEXAS.</td>
<td>0340</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>SVR TRW IN CENTRAL AND N KINNEY CO., TEXAS WITH HAIL AND RAINFALL RATES IN EXCESS OF 2 INCHES PER HR INDICATED. TOPS TO 50,000 FT.</td>
<td>0340</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING ISSUED FOR REAL AND UVALDE CO OF TEXAS EFFECTIVE UNTIL 11:00 PM CST.</td>
<td>0342</td>
</tr>
<tr>
<td>Flooding Statement</td>
<td>RECORD FLOODING EXPECTED ON PINE ISLAND BAYOU.</td>
<td>0430</td>
</tr>
<tr>
<td>Flash Flood Warning</td>
<td>WARNING IN EFFECT UNTIL 2:00 AM CST FOR PALO PINTO CO, TEXAS.</td>
<td>0435</td>
</tr>
<tr>
<td>Hail</td>
<td>GOLFBALL SIZE HAIL REPORTED IN UVALDE CO, TEXAS.</td>
<td>0450</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING ISSUED FOR FRIO CO, TEXAS EFFECTIVE UNTIL 12:30 AM CST.</td>
<td>0510</td>
</tr>
<tr>
<td>Flash Flood Warning</td>
<td>WARNING ISSUED FOR JACK AND COLLIN CO OF TEXAS EFFECTIVE UNTIL 2:00 AM CST AND PARKER AND WISE CO OF TEXAS, EFFECTIVE UNTIL 1:00 AM CST.</td>
<td>0525</td>
</tr>
<tr>
<td>Flooding</td>
<td>ALL CITY STREETS IN BEAUMONT, TEXAS ARE UNDER WATER.</td>
<td>0530</td>
</tr>
<tr>
<td>Rain</td>
<td>11.5 INCHES OF RAIN REPORTED NW OF BEAUMONT SINCE 5:00 PM CST.</td>
<td>0530</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING EFFECTIVE UNTIL 2:00 AM CST FOR LASALLE AND ATASCOSA CO OF TEXAS.</td>
<td>0635</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING ISSUED FOR BEXAR AND MCMULLEN CO OF TEXAS EFFECTIVE UNTIL 2:00 AM CST.</td>
<td>0720</td>
</tr>
<tr>
<td>SVR TRW WARNING</td>
<td>WARNING EFFECTIVE UNTIL 4:00 AM CST FOR LIVE OAK, DUVAL, BEE, JIM WELLS, AND SAN PATRICIO CO OF TEXAS.</td>
<td>0815</td>
</tr>
<tr>
<td>Rain</td>
<td>OVER 2 INCHES OF RAIN RECORDED AT LAKE CHARLES, LOUISIANA IN PAST 3 HRS.</td>
<td>0935</td>
</tr>
<tr>
<td>Flash Flood Watch</td>
<td>WATCH HAS BEEN EXTENDED FOR SE TEXAS THROUGH TODAY. AREA IS THAT PORTION OF S TEXAS ALONG AND E OF A LINE FROM COLLEGE STATION TO PALACIOS.</td>
<td>1030</td>
</tr>
</tbody>
</table>
Fig. 48. Severe weather reports between 1200 GMT 19 April and 1200 GMT 20 April 1979 in the AVE-SESAME II area.
REFERENCES

A PRELIMINARY LOOK AT AVE-SESAME II CONDUCTED ON 19-20 APRIL 1979

By Steven F. Williams, Nicholas Horvath, and Robert E. Turner

The information in this report has been reviewed for technical content. Review of any information concerning Department of Defense or nuclear energy activities or programs has been made by the MSFC Security Classification Officer. This report, in its entirety, has been determined to be unclassified.

WILLIAM W. VAUGHAN
Chief, Atmospheric Sciences Division

CHARLES A. LUNDQUIST
Director, Space Sciences Laboratory