Apr 1st, 8:00 AM

# Technology At Work For Television Meteorologists

Roy Leep
*Director, WTVT Weather Service, Gulf Coast Weather Service*

## TECHNOLOGY AT WORK FOR TELEVISION METEOROLOGISTS

ROY LEEP, DIRECTOR
WTVT WEATHER SERVICE
GULF COAST WEATHER SERVICE

Good Afternoon:

(1) During the next few minutes, I will take you on a visual tour of the WTVT Television Weather Service at Tampa, Florida. This may seem out of place at this meeting, but our service utilizes a vast array of weather equipment and communications not found in most TV stations. I plan to show you how such unique technology assists the meteorologist in his presentations and aids the viewer in better understanding the atmosphere.

(2) The WTVT Weather Service was organized in 1956 with one meteorologist and a couple of teletype circuits. Today, it employs five full-time meteorologists plus an electronic technician. Its office is open from 4:00 a.m. to midnight seven days a week and (3) is responsible for about 55 minutes of weather programming broadcast to Central Florida. (4) The programming includes three daily 10-minute programs which permit detailed analysis of national weather. (5) A great deal of automatic electronic sensing equipment serves as an input to the programs. (6) As an operational private weather service, a good deal of specialized forecasting is done outside of the television programs. (7) This forecasting is done under the name of the Gulf Coast Weather Service and serves various clients throughout the southern United States. Such activities to be successful require (8) a high degree of monitoring and a quick response time, and such attributes are also desirable in weathercasting (9). Therefore, the two services are natural counterparts and utilize the same facilities.

(10) Let's look at some of those facilities located in the Weather Central Office and show how these have been customized to provide maximum benefits. These are the main racks conveniently displaying many of the recorders. Briefly, in itemizing these recorders, we start with (11) sunshine and rainfall (12), both tipping bucket and weighing gages are used (13) and a roof-top solar switch senses sunshine duration. (14) A wind recorder continuously tracks direction and speed (15) from sensors 75' above the office. (16) A micro-barograph records atmospheric pressure. (17) Since Central Florida has more lightning than any other part of the nation, we utilize two monitor-recorders (17). This one will alert us to lightning within a 100-mile radius (18) from its roof-top antenna and allow a quantitative analys of electrical activity. (19) Another sensor at this location is a field mill which monitors the electrical field change and (20) displays the probability of a lightning stroke within 25 miles of the office monitor and recorder (21). An observer is, therefore, able to predict to some degree the possibility of a field collapse (discharge) within 25 miles. (22) A four-point recorder is used to continuously monitor air temperature and dew point at (23) our Tampa studio and St. Petersburg studio (24). Here you see the geographic area of the Tampa Bay region with the location of our main Tampa studios and our St. Petersburg studios. Since the National Weather Service has no office in St. Petersburg, we established a remote automatic (25) weather station there in 1968. Since then several weather parameters have been continuously relayed (26) from that waterfront location to our main Tampa office. (27) This general roof view of the remote station shows the distribution of the equipment sensors. (28) A mast supports wind speed and direction sensors (29) and a vane aspirated temperature sensor. (30) A dew cell is also exposed nearby as is the low (31) inertia tipping bucket rain gage. A water temperature sensor is below the building approximately three feet under the water surface. (32) Telemetry receivers located in our main Tampa office receive and translate the multiplexed signal from St. Petersburg. From there the signals go into their corresponding indicator or recorder such as wind (33) and wind speed recorder (34), and water temperature and tide (35). Temperature, dew point and rain are recorded in the four-point recorder mentioned earlier.

(36) Again, here is the overall view of the racks. Immediately to their left is the main radar console (37). The weather radar is a Vitro MR 781 solid state and built in 1970 to our specifications. The master console houses (38) a PPI, RHI, an A scope plus a Video-Intergrator-Processor unit which automatically determines six rainfall rates and permits video contouring of the PPI and/or RHI scopes. There is also a microphone for broadcasts plus a closed-circuit TV monitor and house intercom system. Audio broadcasts originate directly from this location during periods of severe weather, and during daily marine forecasts.

The radar antenna is located (39) on a 100-foot microwave relay tower (40). Its six-foot dish permits a 2 1/2° beamwidth with 250 kw peak power. It can rotate clockwise or counterclockwise automatically or manually from 1 to 15 rpm. Sector-scan mode either Azimuth or elevation can also be selected for 30°, 60° or 90° sectors. (41) Geographic overlays light automatically with each of four ranges. This is maximum range of 315 miles, (42) here is 150 miles and (43) this is 25 miles. 50-mile range is also available. Radar has been used since 1959 on our broadcasts and has produced an added dimension for the viewer during daily broadcasts but has been of immeasurable help during periods of severe weather.

The keystone of any weather forecasting office is communication (44). These radios permit convenient voice communication with several local County Civil Defense offices, National Weather Service and government agencies during periods of unusual weather. (45) In addition, a bank of speakers permit us to selectively monitor other audio channels. (46) Two special radio receivers allow us to utilize radio-teletype and radio-facsimile on a daily basis. Eleven (47) teletype circuits are used and two facsimile circuits. Teletype reports are filed according to city and time (49) over 300 hourly reports are received, (50) filing permits easy reference to past or current weather in these different cities. Various (51) maps and charts are received by the facsimile circuits (52) and are also filed for display.

(53) A central rack houses the satellite tracking station installed first in 1965. Today (54) the equipment has been updated to receive infra-red nighttime pictures, (55) as well as the regular visual day photos. (56) The roof-top antenna permits tracking the signal. (57) The Nems-Clarke receiver (58) allows the operator to acquire the proper level and signal for reproduction (60) at the recorder. Once received (61), the pictures are assembled (62) to make a cloud mosaic for North America and the Atlantic.

(63) Last year, we installed a pollution monitor to measure particulate matter. The indicator registers current levels of sub-micron particles/ cubic centimeter. The sensor (64) located at roof top (65) draws air continuously into a cloud chamber (66) where the count is measured (67) and relayed to the office indicator and recorder on (68) the weather set. This recorder is shown during each program with other current data. Later (69) the pollution charts (70) are analyzed and (71) averages are computed for future comparisons.

(72) In 1959 a network of cooperative observers was organized. It is known as the Central Florida Severe Weather Network and its job is to relay reports of severe weather to our office. Today (73) it is made of 300 observers from coast-to-coast. Reports received are screened, compiled and then (74) rapidly sent to the National Weather Service by a special teletype loop. These reports have been invaluable for warning the public during unusual weather periods.

(75) Through the years, WTVT's Weather Service has counseled young people on the career opportunities in meteorology as well as received many student tours. Our main task, however, is to provide the television public with the most comprehensive weather program available. I have attempted to show you the equipment and facilities we have to assist the meteorologist in this task.

(Note: numbers shown correspond with slide presentation.)