Preserving the Nation’s Weather and Climate History

People have observed and recorded the weather for thousands of years. Native American petroglyphs often depict rain, the sun, or lightning. Much later, colonists from Europe began recording journal entries about the weather and natural environment they observed. By the late 1700s, accurate weather instruments, such as thermometers, were available to professional and amateur scientists. Historical figures, including Thomas Jefferson, routinely recorded daily weather conditions.

For the next two centuries, these weather observations accumulated in archives scattered across the country. In 1951, the Federal Government moved all weather records to Asheville, North Carolina, where the archives at the U.S. Weather Bureau, Air Force, and Navy combined to form the National Weather Records Center (NWRC).

In Asheville, the Federal Government was already using one of the largest buildings in the South, the Grove Arcade. It was a desirable location to house millions of pages of weather observations and a rapidly expanding database of computer punch cards. Asheville was also relatively isolated and inland thereby protecting these critical records from both foreign enemy attack, and hurricanes, which were more likely to impact coastal locations.

The organization was incorporated, with all civil weather entities, as part of the National Oceanic and Atmospheric Administration (NOAA) in 1970. That same year, the NWRC changed its name to the National Climatic Center. In 1982, 12 years later, the organization was renamed the National Climatic Data Center (NCDC). The National Climatic Data Center moved into its current location, the Veach-Baley Federal Building, a block from the Grove Arcade, in 1995.

Grove Arcade: NWRC’s First Home

The Grove Arcade, an art deco masterpiece, was envisioned by E.W. Grove in the early part of the 20th century. When the Arcade opened in 1929, it was home to a collection of local shops and services. The Federal Government acquired the building in 1942 because it was large and located in a safe, remote place—important considerations in the war effort of World War II. After the NWRC moved to the Arcade, the archive grew until nearly 150 million paper records were kept in the basement and thousands of trays of punch cards were stored in filing cabinets throughout the building. At one point, it was feared that the combined weight of the filing cabinets and punch cards would cause architectural stress to the building.
We’ve Come a Long Way in Six Decades

Data come to NCDC from land-based stations, ships, buoys, weather balloons, radars, satellites, sophisticated weather and climate models, and even environmental recorders like tree rings and Earth cores. NCDC archives data from all over the world. From 2004 to 2014, NCDC’s digital archive increased from 2 to over 17 petabytes, and it continues to increase rapidly. It would take 4.43 million DVDs, which would stack 3.7 miles high, to hold 17 petabytes of data!

Technology used to store the data has also evolved. Originally, holdings were on paper and then moved to punch cards. With innovations, data moved to microfilm and microfiche and then to computer discs. Today, NCDC uses high-performance computer servers to house the greatly increasing quantities of data. With increasing sophistication of data collection equipment, such as new satellites and radars, data holdings continue to grow exponentially.

NCDC is positioned to provide access to this vast quantity of data to the public as well. In the 2014 fiscal year, the Center had more than one billion website hits for data, and 6.0 petabytes of NCDC-steward weather and climate data and information were provided to users via the web. Various industries, which use climate information for making key business decisions, accounted for the majority of the data downloaded from NCDC.

NCDC pioneers the future of weather and climate data and information services by providing the most accurate weather and climate records, improving long-term climate records from both ground-based and satellite data, and employing state-of-the-art data management techniques. NCDC strives to provide the public with the best available access to climate information. NCDC is the Nation’s official scorekeeper for trends in and the status of national and global weather and climate.