by Sean Potter

September 13, 1922: A Record Revoked

There's an old adage that claims that records are made to be broken, and perhaps nowhere is that more evident than in the world of weather and climate extremes. In the past year alone, the National Climatic Data Center—the official keeper of weather and climate records for the United States—reported more than 100,000 new daily records for temperature, precipitation, and snowfall at official weather reporting sites across the country. While they contribute collectively to the overall weather and climate record, most of these individual records are not particularly noteworthy. In the past year, NCDC reported about 5,600 monthly records and only 680 all-time records. Still, while this may seem like a large number, it represents data from thousands of locations. When it comes to breaking a new, all-time weather record for the entire globe, the odds become even greater.

While some records are made to be broken, others, it turns out, may not be records at all. This was the case with what had been accepted for nearly a century as the world's all-time record high temperature reading: 136.4°F (58°C), reported at El Azizia, Libya, on September 13, 1922. While cited for decades in nearly every compilation of world weather records, it turns out that experts had questioned the validity of the record almost since the time the observation was taken. Writing in *Monthly Weather Review* in 1930, for example, editor Alfred J. Henry provides a brief analysis of the record, comparing it with readings taken at surrounding stations. Based on the evidence, he was "inclined to believe that there is defective shelter against radiation or that the thermometer is located in a hollow."

In August 1958, the Italian newspaper *La Nuova Stampa* published an article about world weather extremes that cited the findings of Italian meteorologist Amilcare Fántoli, who concluded that the temperature at El Azizia on September 13, 1922, was likely somewhat lower than the 58°C recorded. "Measuring the temperature," the article noted, "which seems something so simple and basic, has in practice rather serious difficulties, especially in the case of measuring extreme values."

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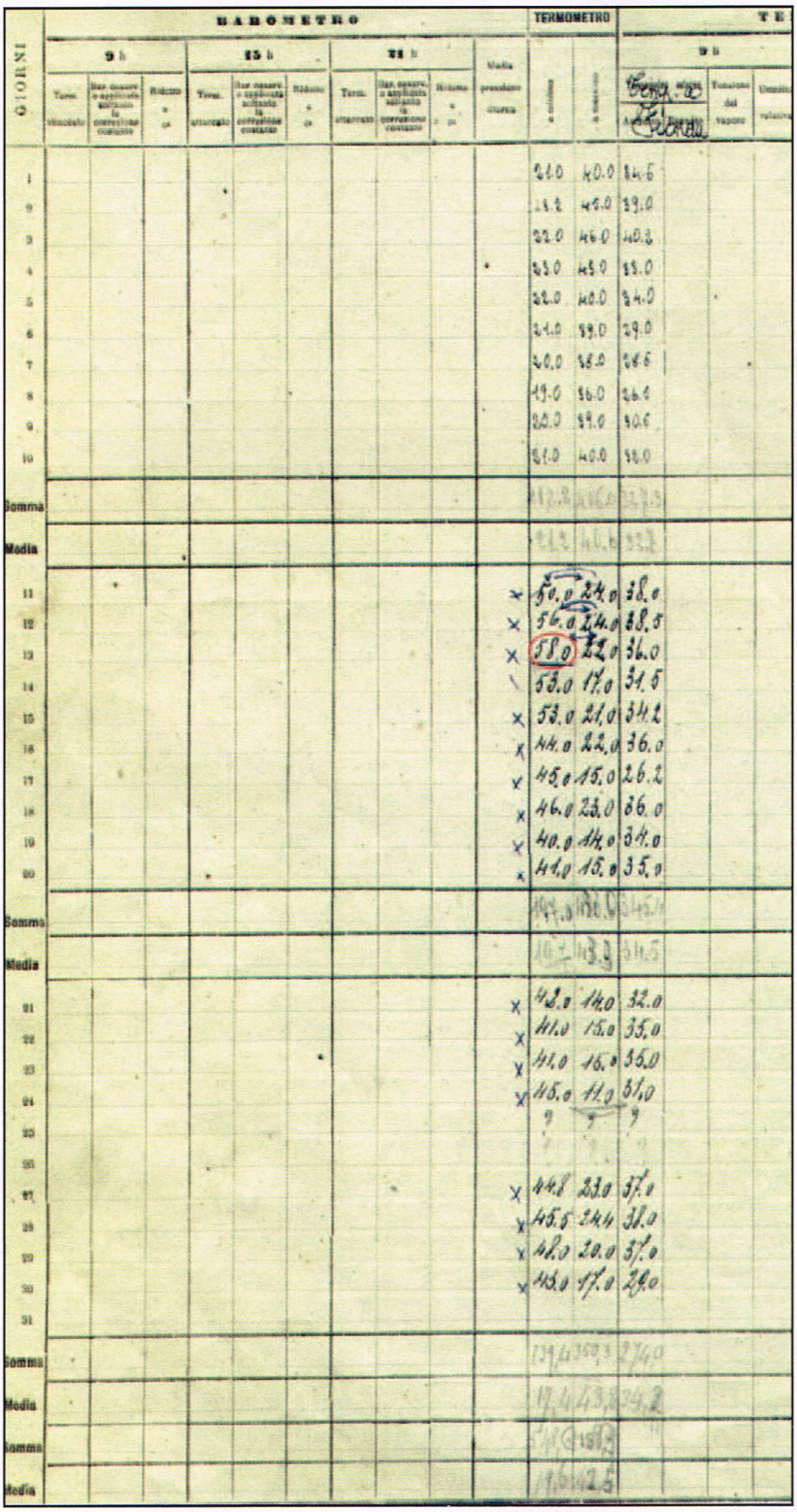
More recently, in 2010, weather historian Christopher Burt began to raise serious questions concerning the El Azizia record in his "Weather Extremes" blog for the Weather Underground. Burt followed up his assertions in an article titled "The World's Hottest Recorded Air Temperatures," which appeared in the March/April 2011 issue of *Weatherwise*. "There appears to be more evidence against the validity of this world record than for it," he wrote, citing, among other reasons, the fact that the record "is not officially recognized by the Libyan National Meteorological Center."

Burt began corresponding with Khalid El-Fadli, director of the climate department at the Libyan National Meteorological Center. At the same time, he contacted Dr. Randy Cerveny of Arizona State University, who, since 2006, has served as rapporteur on extreme records for the World Meteorological Organization (WMO). (Cerveny also serves as a *Weatherwise* contributing editor.)

Cerveny convened an ad hoc evaluation committee of the WMO's Commission of Climatology. The committee examined in detail the record from El Azizia for issues or inconsistencies related to the instrumentation used, the observer who took the reading, comparisons with other records from nearby locations, and subsequent records at that site. The committee concluded that "the most compelling scenario for the 1922 event was that a new and inexperienced observer, not trained in the use of an unsuitable replacement instrument that could be easily misread, improperly recorded the observation and was consequently in error by about seven degrees Celsius."

While examining the validity of the historical record at El Azizia, the committee's investigation itself became



LIBYAN NATIONAL METEOROLOGICAL CENTER

The meteorological observation form for El Azizia, Libya, for the month of September 1922, in which the record temperature of 58°C — which later proved to be invalid — was recorded.

caught up in international events of a historical nature when the Libyan revolution of 2011, which ultimately led to the overthrow of Libyan leader Muammar Gaddafi, broke out. For six months, the members of the WMO committee did not hear from El-Fadli and feared the worst. It turns out that El-Fadli was fine, though concern for his personal safety led to his incommunicado status. "During the revolution, it was very dangerous to call anyone outside," he said in an interview with *The New York Times*, recalling the situation during the previous year. "From March until July, I would go to my office—not regularly, not every day. Because there was no fuel, our life was very hard."

When the civil war ended, El-Fadli was finally able to resume communication with the committee, providing the members with valuable data to aid in their investigation. On September 13, 2012, nearly 90 years to the day after the El Azizia observation was taken, the WMO formally declared the record to be invalid. As result, the WMO recognized the previous record of 134°F (56.7°C), which was recorded at Greenland Ranch in Death Valley, California, on July 10, 1913, as the official highest recorded surface temperature on Earth. (For more on the Death Valley record, see the July/August 2010 Retrospect column in *Weatherwise*.)

Note: For more on the story of the investigation of the El Azizia record, see the Weather Underground's documentary "Dead Heat: Overturning the World's Hottest Temperature" at http://www.wunderground.com/deadheat.

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