# World's hottest temperature cools a bit

EurekAlert!

**Team of meteorologists overturn a reading from 90 years ago and make Death Valley the holder of the world's hottest temperature**

TEMPE, Ariz. – If you think this summer was hot, it's nothing compared to the summer of 1913, when the hottest temperature ever recorded was a searing 134 F in Death Valley, Calif. But while that reading was made 99 years ago, it is only being recognized today by the World Meteorological Organization (WMO) as the most extreme temperature ever recorded.

That's because an international team of meteorologists recently finished an in-depth investigation of what had been the world-record temperature extreme of 58 C (136.4 F), recorded on Sept. 13, 1922 in El Azizia, Libya. The group found that there were enough questions surrounding the measurement and how it was made that it was probably inaccurate, overturning the record 90 years to the day it was recorded.

"We found systematic errors in the 1922 reading," said Randy Cerveny, an Arizona State University President's Professor in the School of Geographical Sciences and Urban Planning. "This change to the record books required significant sleuthing and a lot of forensic records work," added Cerveny, who also is the Rapporteur of Climate and Weather Extremes for the WMO, the person responsible for keeping worldwide weather records.

Officially, the "new" world record temperature extreme is 56.7 C (134 F), recorded on July 10, 1913, at Greenland Ranch in Death Valley, Calif., USA.

"In the heart of every meteorologist and climatologist beats the soul of a detective," said Cerveny. In this case the weather detectives had to work around an unfolding revolution in Libya.

Cerveny said the El Azizia temperature had long been thought as dubious. It was recorded in 1922 at what then was an Italian army base.

The international meteorological team – which included experts from Libya, Italy, Spain, Egypt, France, Morocco, Argentina, U.S. and the UK – identified five major concerns with the El Azizia temperature record. They included the use of antiquated instrumentation, a likely inexperienced observer, an observation site which was not representative of the desert surroundings, poor matching of the extreme to other nearby locations and poor matching to subsequent temperatures recorded at the site.

The WMO evaluation committee concluded 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. The reading was consequently in error by about seven degrees Celsius (12.6 F).

The detective work Cerveny describes included finding and examining the original log sheet, which he said was very useful. In reconstructing the events, Cerveny describes a person new to making temperature measurements being asked to make the measurements with a "Six-Bellini thermometer," which even by 1922 standards was an obsolete piece of technology. By reviewing the logs, it became apparent that the person who recorded the temperature was transposing what he read from the thermometer, consistently scoring the readings in the wrong column of the log.

"One of the problems with a Six-Bellini thermometer is that the indicator—the pointer—to the temperature scale could conceivably be read at the top of the pointer or the bottom of the pointer," Cerveny explained. "If an inexperienced observer used the top of the pointer rather than the bottom, he would have been as much as 7 C in error. "

Other telling forensic information included the general location of where the measurement was made – El Azizia is roughly 35 miles southwest of Tripoli, which is on the Mediterranean coast – and the fact that the record temperature pretty much stood out among all of the other recorded values near the El Azizia location.

"When we compared his observations to surrounding areas and to other measurements made before and after the 1922 reading, they simply didn't match up," Cerveny said.

**Investigation during a revolution**

The investigation was launched in 2010 and soon after the revolution in Libyan started to form. The Libyan official on the team (Khalid El Fadli, director of the climate section of the Libyan National Meteorological Center) fell out of contact with the rest of the team for about eight months and the investigation went into a suspended state. Then El Fadli sent word that he was safe (although he and his family left Tripoli for a while to avoid being accidently shot in the turmoil) and he could resume his role in the investigation. But another three weeks passed before El Fadli was heard from again.

"Khalid El Fadli did this at great risk to himself," Cerveny said. "He was an official of the previous regime, so when the revolution began to turn, his safety was a key concern."

Fortunately, after the revolution, El Fadli could resume his duties as a lead meteorologist with the new government and the investigation started up again.

Beyond establishing bragging rights, Cerveny said the world record highest temperature does have some important uses.

"This is the highest recorded temperature of where people live, so this type of data

can help cities that exist in such environments to design buildings that are best suited for these extremes," he said. "Knowing the maximum temperatures certain materials must endure leads to better products and designs. That's why many auto manufactures have test tracks in the hot Mohave desert.

Cerveny added that there also are important basic science implications in this finding.

"This investigation demonstrates that, because of continued improvements in meteorology and climatology, researchers can now reanalyze past weather records in much more detail and with greater precision than ever before," Cerveny explained. "The end result is an even better set of data for analysis of important global and regional questions involving climate change."

###

A full list of weather and climate extremes is available at the WMO Archive of Weather and Climate Extremes (http://wmo.asu.edu/ [1]). This includes the world's highest and lowest temperatures, rainfall, heaviest hailstone, longest dry period, maximum gust of wind, as well as hemispheric weather and climate extremes.

Original release:
http://www.eurekalert.org/pub_releases/2012-09/asu-wht091112.php [2]

**Source URL (retrieved on *11/21/2014 - 1:01pm*):**
http://www.ecnmag.com/news/2012/09/worlds-hottest-temperature-cools-bit?qt-video_of_the_day=0

**Links:**
[1] http://wmo.asu.edu/
[2] http://www.eurekalert.org/pub_releases/2012-09/asu-wht091112.php