

# Climate Change Produces Simultaneous Extreme Impacts

By Don Sutherland

Over the past week, there were three climate change-enhanced events: unprecedented late-season heat in Phoenix, catastrophic flooding from Hurricane Helene in the southern Appalachians, and devastating flooding in Nepal. These events follow historic flooding in central Europe that the World Weather Attribution project found have become about 10% more intense and twice as likely in today's warmer climate.

Helene made landfall in Florida's Big Bend area as a category 4 hurricane with maximum sustained winds of 140 mph. That was the strongest hurricane to make landfall there since regular recordkeeping began in 1851. The storm brought with it a 15-foot storm surge. Afterward, it dumped historic amounts of rainfall in parts of the southern Appalachians. Jonas Ridge, NC saw 36.54" of rain that, if validated, would become a new state record. The prior record was set in 2018 when Hurricane Florence made landfall in North Carolina. As of this writing, whole towns have been largely swept away in the raging floods and dozens of communities remain stranded. Earlier this month, Carolina Beach, NC experienced a "once-in-a-thousand-year" rain event.

In Nepal, extreme rainfall brought landslides and massive flooding. Hundreds of lives had been lost at last word.

At the same time, parts of the Southwestern United States, including Phoenix were experiencing a late-season heatwave unlike any other past event. On September 28<sup>th</sup>, the temperature topped out at 117°. That not only broke the September record of 116° that was set on September 1, 1950 and tied on September 5, 2024, but also tied the highest temperature ever recorded in August. Moreover, the forecast mean temperature for the September 24-30 period in Phoenix is expected to match or exceed the figure had there been a heatwave comprised of all pre-2024 daily records for that period. Records in Phoenix go back to August 1895. The exceptional late-season heat in Phoenix will be documented in a subsequent blog entry.

Despite a year filled with extreme events and a global temperature that rivals the record set just last year, humanity has made no binding commitments to address the root cause of the warming: fossil fuel emissions. There is little indication that the forthcoming COP 29 conference will adopt commitments to do so.

Last year, COP 28 was a failure. If anything, COP 28 ensured that global heating will continue to proceed. . The conference failed to achieve its chief mission, as there were no binding commitments, much less enforcement mechanisms, to secure the Paris goal of limiting warming to 1.5°C (2.7°F). Worse, its language contained a "Trojan Horse" provision that declared that "transitional fuels can play a role in facilitating the energy transition while ensuring energy security." "Transitional fuels" is widely understood to refer to a fossil fuel—natural gas.

On humanity's present course, global heating will continue. Moreover, as the world grows warmer, extreme outcomes including heatwaves, severe drought, and intense rainfall events will increase in frequency and magnitude in non-linear fashion.

2024 has been a bad year as far as climate change-enhanced extremes are concerned. 2024 will be a mere appetizer for what will unfold in an even warmer world.