

LIGHTNING DATA CENTER MINUTES

July 10, 2020
ST. ANTHONY HOSPITAL
www.lightningdatacenter.org

Monthly Quote: "If hugs were lightning, I'd send you the thunderstorm." - Quotesgram.com

1. Members Present: Clark, Coomer. Attending via Zoom: Yarnell, Wachtel, Swanson, Langford, Stemple. Clark moderated. Meeting began at 11:45 AM and ended at 12:45 PM.
2. **VERY IMPORTANT – PLEASE READ!** Two of us were at St. Anthony Hospital for our July meeting and five others joined via Zoom. For the time being, we will continue to meet at the hospital; however, readers are urged to pay attention to e-mails and meeting announcements, since the COVID-19 situation is highly fluid and cases have increased here in Colorado since early June. Along with the in-person meetings, we will put the meeting on Zoom for those who physically cannot attend for whatever reason. **STAY TUNED!**
3. The LDC is accepting donations, either as cash or check. If you donate via check, please make your check payable to Steve Clark at 755 S. Clinton Street, #2A; Denver, CO 80247. He will cash the check and keep the cash holdings specifically for the LDC. When the LDC incurs expenses, Steve will pay for services rendered through his bank account using the cash from LDC's cash holdings. A log will be maintained detailing the inflow and outflow of monies. At the present, the LDC has \$469.00 in cash.
4. A young girl was struck and killed by lightning on Friday, July 3, 2020, while she, her older sister and her mother were hiking in Colquitt County, Georgia. The three had taken cover under a wooden shelter waiting for a thunderstorm to pass. Lightning hit a nearby tree and traveled to the bench she was sitting on. The older sister was seriously burned and airlifted to a burn center. As of the time of the article, the older sister was hospitalized and in critical condition. This was the first lightning fatality in Georgia since July 4, 2018.

In a separate incident in Pennsylvania, on Monday, July 5, 2020, four men had taken shelter under a deer stand. Lightning hit the stand and traveled down an aluminum ladder. Two of the men were touching the ladder when the lightning hit and were killed. The other two men were taken to a trauma center and were reported to be in stable condition.

5. In advance of International Lightning Safety Day on June 28, the World Meteorological Organization (WMO) announced two new lightning records: the greatest distance for a single lightning flash in Brazil and the longest duration of a single lightning flash in Argentina. The new record distance was 709 +/- 8 km (440.6 +/- 5 mi.) across parts of southern Brazil on October 31, 2018. This is approximately the distance between Boston and Washington, D.C. in the United States. In Europe, the distance is approximately from London to the border of Switzerland near Basel. The new record flash duration is 16.73 seconds from a flash that occurred over northern Argentina on March 4, 2019. The old records were 199.5 miles and 7.74 seconds, for distance and duration, respectively.

6. The lightning safety brochure that Barb Stemple initiated is done and is posted on the LDC website under "Safety".
7. The May 2020 edition of the *Bulletin of the American Meteorological Society* had some items of interest to the lightning community.

A new book on ball lightning has been written by Herbert Boerner, who holds a Ph.D. in high-energy physics. The title is "Ball Lightning: A Popular Guide to a Longstanding Mystery in Atmospheric Electricity". The book contains a forward written by Earle Williams, a leading lightning researcher at MIT.

An article about the increasing use of small satellites for monitoring the earth's environment mentioned "RaioSat", a Brazilian satellite project designed to detect intracloud and cloud-to-ground lightning flashes simultaneously, using a 3U optical sensor and a VHF antenna. The project was deemed to be feasible as of 2019.

The question was asked: "How can planes be made less susceptible to lightning strikes?" A short report said airplanes are nearly electrically neutral and trigger 90% of the lightning strikes that strike aircraft. Researchers at MIT and Universitat Politecnica de Catalunya concluded planes with a negative charge will be less likely to trigger lightning. The research performed will encourage further development of lightning reduction methods for aircraft. The study and the results were published in the January 16, 2020 edition of JGR Atmospheres.

8. On Thursday, July 9, Steve Clark and Carl Swanson attended a Zoom lecture given by Dr. Steven Lazarus with the Florida Institute of Technology, titled "Thunderstorm Lightning of the Unusual Kind". The talk was on the meteorological conditions that favor the formation of "Gigantic Jets". Here are my rather incomplete notes from a good presentation.
 - Gigantic jets are a subset of so-called Transient Luminous Events (TLEs), which also includes sprites, elves and halos.
 - Gigantic jets are relatively rare versus other forms of TLEs.
 - Gigantic jets are most likely to form above weakening tropical storms and hurricanes.
 - Gigantic jets tend to favor the overshooting tops of thunderstorms where the air is diverging from the top.
 - In transition from the troposphere to the tropopause, a sharp change in the temperature trend from cooling to warming will favor the formation of gigantic jets. If the transition from cooling to warming is not sharply defined, the potential for gigantic jets is reduced or even eliminated.
 - A higher tropopause will favor the formation of gigantic jets.

A few short videos were shown of these events as related to the meteorology. Thank you to LDC member and FIT alumnus Rick Russon for bringing this to our attention.

9. A video of nearly constant lightning in a Florida storm was posted to YouTube. A viewer of the video recounted how he had hit by lightning in 2004. Steve Clark extracted two replies from the guy that was hit. The first reply was made to a different YouTube viewer and the second reply was to LDC member Robert Gift.

“Well. Had a black toe nail for 12 years until it grew out. Hurt like hell sometimes. Have a black spot on my right knee just below and interior of my knee cap. Exit wounds. I had welts on my legs and back from flying hot tree bark. All within a second. I've met others who have some of the same remnants. My daughter saw it all, said she saw my bones. Crazy stuff. Wasn't my time. Silly as this sounds, it's the way to go. No warning, no pain, just black. Peaceful. Coming around after a few minutes was weird. There's more weirdness but lengthy. Some other time. No videos.”

“2004 Jensen Beach Florida. I lived in a beautiful place called Edenlawn. My cottage a 2 story A frame was covered by live oaks, probably over a 150 years old. I was about to walk in the slider when bang. As I have said, one flip flop on my left foot. The tree the bolt bounced off of was about 4 feet from me. A branch about 2 feet in diameter was cut off by the bolt. It then hit me and shoved me and my deck chairs about 12 feet. I of course was unconscious for about 1 minute or so. I had welts on my legs and back for a while. The electricity apparently went down my right side. Black toe nail and still a black spot on my inner right knee. Came to with my daughter standing over me and she was freaked out. Patches of hair falling out of my head. I still have no hair on my legs to speak of. My head hair grew back very weird so I shaved my head. Yes, went to the St. Lucy Medical Center ER that evening at my girl friends' pleading. Already had a nurse in the area take my vitals and ask the usual questions. Passed. They call it a splash hit. Like when golfers get hit all in a row. All vitals fine. Doc was amazed and of course had me back for check ups. I'm all good man. Gonna live to 120 is what my doctor today says, healthy as a horse and eat like one too. lol The bolt went around the house and took out all electric on the first floor, melted the hot water PVC over the top of the water heater like candle wax. My cars' computer said I was doing 280 mph until I reset it. I've met other survivors and they mostly have had the same black toe nails that hurt like hell for a few months or so. No ferning but my skin above and to the right of center on my knee does occasionally go numb. And yes...when lightning strikes close to where I am now, I can feel it. Sort of tingles but not too much. Once as they say is enough thanks.”

Thanks to Robert for finding this.

10. Carl Swanson's First Responder Data Collection Project has not reported any fatalities or injuries from lightning so far this year. Ken Langford found a notice of a fatality on June 6, 2020 in La Plata County, per a NWS website. So far, the NWS has reported five lightning fatalities in the U.S. in 2020. Carl said he would reach out to first responders in LaPlata County, since they are part of his data collection network.

Research following the meeting showed two people, a female and her male friend, were hit by lightning on the morning of Saturday, June 6, 2020. They were walking in a subdivision in Durango, Colorado when they were hit. Authorities determined the lightning hit a tree and moved laterally to strike the woman and kill her. The unidentified man was injured, but could not recall what happened.

11. Phil Yarnell asked if there is any physical manifestation of electric shock analogous to lightning strikes? People hit by lightning may have ferning and/or ruptured eardrums. Howard Wachtel mentioned there does not need to be any physical manifestation for people to be injured by either electric shock or lightning. From the City of Farmer City (Illinois) website, we see the following:

“Know How to Identify and Help an Electric Shock Victim

Would you know what to do if you encountered an electric shock accident? Knowing critical information ahead of time will help protect you and could save someone’s life. The Safe Electricity program encourages you to be prepared by learning the symptoms of electric shock and knowing how to help someone who gets shocked by electricity. In many cases, electric injury is obvious with the electricity causing heart stoppage, burns, broken bones and seizures. In other cases, the injury might not be as evident, because electrical contact affects the body from the inside out.

If you or a loved one is involved in contact with electricity and there are no obvious injuries, watch for these symptoms that something is wrong:

Changes in alertness

Headache

Problems with vision, swallowing, or hearing

Irregular heartbeat

Muscle spasm and pain

Numbness or tingling

Breathing problems

If you come upon someone who you believe is in contact or has just suffered an electrical shock:

Look first. Do NOT touch. The person may still be in contact with the electrical source and be energized. Touching the person may pass the current through you. If there are others nearby, make sure they do not touch the person either.

Call, or have someone nearby call, 911 and the electric utility.

Turn off the source of electricity, if known and if safely possible (i.e., circuit breaker or box). If you are not sure, wait for help from the emergency responders.

Only once the source of electricity is OFF, check for signs of circulation (breathing, coughing, or movement). Provide any necessary first aid.

Prevent shock. Lay the person down and, if possible, position the head slightly lower than the trunk with the legs elevated.

Do not move a person with an electrical injury unless the person is in immediate danger.

Remember—DO NOT touch the person with your bare hands if he or she is still in contact with the electrical current. Do not get near high-voltage wires until the power is turned off. Call 911 and the utility to have them come and de-energize the lines.

Anyone who has come into contact with electricity should see a doctor to check for internal injuries, even if he or she has no obvious signs or symptoms.

For more information on staying safe around electricity, go to SafeElectricity.org.

<https://safeelectricity.org/>

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12. Barb Stemple said it appears the storms in her area are not as strong as in previous years. Steve Clark said this year has been hot and dry, with less thunderstorm activity. He said the activity should start to pick up around mid-July, right around when the North American monsoon begins.
13. LDC welcomes your medical questions. Please send them via e-mail to Steve Clark at sclarktoto@gmail.com. Your medical questions will be forwarded to Dr. Phil Yarnell for his review and will usually be taken up for discussion in the next month's meeting. Please be advised any questions posed are for the general consideration by the group and do not constitute a formal medical opinion. If a formal evaluation is requested, arrangements can be made directly with Dr. Yarnell. If you have a medical emergency, please call 911 or your local EMS.
14. Questions, comments, notification of errors, and critiques of these minutes are welcome. Please forward those to Steve Clark. Please keep your communications professional and respectful. Communications will be forwarded to the appropriate author(s) of the minutes and addressed accordingly.
15. LDC Disclaimer: These minutes do not represent official positions of the LDC or its members. They simply reflect the comments made at the meeting. Furthermore, the LDC does not implicitly or explicitly recommend or endorse any product or service. Any product or service presented in these minutes is done so for purposes of discussion and analysis. The merit (or lack thereof) is open for the consideration and review by the entire membership.
16. Next meeting: Electronic Meeting via Zoom and/or at the hospital. Friday, August 14, 2020, from 11:45 AM to 1:00 PM MDT.

Respectfully Submitted,
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Lightning Links

This is a monthly listing of periodicals, websites, and videos about lightning and allied areas from a variety of sources. A headline or description is listed, followed by the link. Please note that some of the links are perishable, which means you'll need to go to the source for the information.

9News.com, 2020: Photographing the Flash of Lightning (Video). *KUSA-TV*. June 25, 2020. Link: <https://www.9news.com/video/weather/accuweather/photographing-the-flash-of-lightning/607-97729df3-6e3e-4e4f-bdcd-d26ae2553354>

Fedschun, T., 2020: Lightning Strike In Georgia Kills “Sweet” Girl, 9, Seriously Injures Sister. *Fox News*. July 7, 2020. Link: <https://www.foxnews.com/us/lightning-strike-georgia-moultrie-severe-weather-girl-killed-sister-injured-safety-shelter>

Butler, C., 2020: Victims Identified in Bradford County Lightning Strike. *PA Homepage*. July 6, 2020. Link: <https://www.pahomepage.com/top-stories/two-killed-two-injured-in-bradford-county-lightning-strike/>

World Meteorological Organization, 2020: WMO Certifies Megaflash Lightning Extremes. Press Release #26062020. *World Meteorological Organization*. June 24, 2020. Link: <https://public.wmo.int/en/media/press-release/wmo-certifies-megaflash-lightning-extremes>

Pavan, C., P. Fontanes, M. Urbani, N. Nguyen, M. Martinez-Sanchez, J. Perairie, J. Montoya and C. Guerra-Garcia, 2020: Aircraft Charging and its Influence on Triggered Lightning. *JGR Atmospheres*, January 16, 2020. Link: <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2019JD031245>

American Meteorological Society in Nowcast - Parcels, 2020: Just Charge It! *Bulletin of the American Meteorological Society*, May 2020, p. 367. Link: <https://cdn.coverstand.com/43726/665633/d9c1f67abeb87ed84fc46913ad778e9bf28892de.3.pdf>

American Meteorological Society, 2020: The Miniaturization Revolution in Earth Observing. Adapted from “The Emerging Technological Revolution in Earth Observations,” by Graeme Stephens (JPL/California Institute of Technology), Antony Freeman, Erik Richard, Peter Pilewskie, Philip Larkin, Clara Chew, Simone Tanelli, Shannon Brown, Derek Posselt, and Eva Peral. Published in *BAMS* online, March 2020. For the full, citable article, see DOI:10.1175/BAMS-D-19-0146.1. *Bulletin of the American Meteorological Society*, May 2020, pp. 373-378. Link: <https://cdn.coverstand.com/43726/665633/d9c1f67abeb87ed84fc46913ad778e9bf28892de.3.pdf>

American Meteorological Society in Readings – In Brief, 2020. Contains a short description of the ball lightning book. *Bulletin of the American Meteorological Society*, May 2020, p. 405. Link: <https://cdn.coverstand.com/43726/665633/d9c1f67abeb87ed84fc46913ad778e9bf28892de.3.pdf>

Rabbit Ran, 2020: The Wildest Lightning Storm I’ve Ever Seen (Florida), a YouTube Video. Link: <https://www.youtube.com/watch?v=ouPslrepoSE>

Armijo, P., 2020: Woman Killed by Lightning in Edgemont Subdivision. *The Durango Herald*. June 7, 2020. Link: <https://durangoherald.com/articles/327291>

Know How to Identify and Help an Electric Shock Victim. City of Farmer City. Link: <http://www.cityoffarmercity.org/know-how-to-identify-and-help-an-electric-shock-victim/>

YouTube Video, 2018: Lightning Striking Tree in 4K – Tree Catches on Fire! *Pecos Hank*. August 17, 2018. Link: <https://www.youtube.com/watch?v=Y-LPERIRHYA>