

LIGHTNING DATA CENTER MINUTES

July 9, 2021

ST. ANTHONY HOSPITAL

www.lightningdatacenter.org

Monthly Quote: “A Rube Goldberg machine is, in its essence, a trial-and-error thing.”
Adam Sadowsky. Source: <https://quotestats.com/topic/rube-goldberg-machine-quotes/>

Members present: Clark, Terry, Swanson, Wachtel, Yarnell and Stemple. Clark moderated.
Meeting began at 12:00 PM and ended at 12:55 PM.

1. **VERY IMPORTANT – PLEASE READ!** As of July 2021, we will continue to hold meetings via Zoom only. The number of COVID cases here in Colorado fell during early and mid-June. The case numbers are low, but they leveled off in late June/early July and as of July 9 have risen slightly. There are still concerns about the spread among younger people and those who are not vaccinated or partially vaccinated. There are also concerns that the Delta variant of COVID may become the dominate strain of the virus. At the present, mask requirements in Colorado have been be lifted. Local governments and business will be able to require mask use as they wish.
2. 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 \$632.00 in cash.
3. Next year in 2022, the LDC will be hosting the 33rd Annual Conference of the Lightning Strike & Electric Shock Survivors International (LS&ESSI). A questionnaire will soon be sent to members to find out how many people may attend and what is most important to them. Members present viewed the questionnaire and were asked for ideas on what to include.
4. Dr. Phil Yarnell posed a question. A man was on a ladder leaning against a truck. It was raining hard. He had reached up, grabbed a switch and was going to pull it when a blue arc of light went into his hand. He was stung, but he climbed down the ladder and laid down. He thought he was hit by lightning, but there was no thunder. Lightning data indicated the nearest flash was about 3 miles away. The truck engine was turned off and the truck was not connected to the grid or any other conductor. After discussion, we determined the incident was most likely an electric shock and not a lightning strike. We also suspect the switch may not have been properly grounded.
5. Carl Swanson presented a news media story about a lady hiking a “14er” (a 14,000+ foot-tall mountain) when she was almost struck by lightning. Her party reached the summit by 10:30 AM and she leaned back against a rock and her knee received a shock. The couple next to them stepped on some nearby rocks and hear a loud sound like a wire had fallen. Her party ran a short distance down the mountain and sought refuge among some boulders in an effort to limit their exposure. Later, they made a safe descent. The forecast had called for clear skies.

6. Steve Clark presented two articles.

Our ball lightning expert in Russia, Dr. Mikhail Shmatov and Karl Stefan with Texas State University coauthored a paper addressing the hazards to people and equipment on aircraft from thunderstorm-generated gamma-rays and x-rays. They determined the hazard potential is fairly low for both people and equipment, but not zero. Unshielded electrical components such as computer memory chips could be damaged and if damage does occur, it would be difficult to trace. They also found humans could, on rare occasions, be exposed to a sufficiently high amount of radiation to produce noticeable symptoms.

An article discussing neutron bursts caused by fair-weather cosmic ray showers was presented. A system had been set up to detect terrestrial gamma-ray bursts from lightning. The system ran for about two years, but the researchers did not see anything that appeared to be terrestrial gamma-ray bursts from lightning; however, on fair-weather days, they did see high counts of gamma-ray bursts. These occurrences had been documented earlier by scientists in Russia, who coined the term “neutron bursts”. These bursts are caused by cosmic ray showers which hit the ground not unlike a rain shower. When the showers hit the ground, neutrons are produced which are captured by soil particles. The capturing of the neutrons produces gamma-rays. When the gamma-rays are produced in sufficient numbers, they appear as a slow explosion or a burst.

7. Following last month’s meeting, we discussed the idea of reaching out to the fisherman, whose story Ken presented in a video clip from the Discovery Channel’s “Raging Planet” series. Steve tried to reach out to him, but so far has not been successful. He will keep trying.
8. In last month’s meeting, Carl shared the idea of having LDC provide a patient referral service for survivors. Steve Clark declined the idea, citing concerns over liability to the LDC and to the hospital. Following the meeting, a suggestion was made that LDC could possibly host a website or a chatroom where survivors could refer other survivors, with a disclaimer stating the opinions and recommendations are those of the survivors and that the presence of said opinions and recommendations are not to be construed as being endorsed by the LDC. Dr. Yarnell was opposed to the idea. LS&ESSI’s Facebook page already allows for those exchanges.
9. Finally, I owe the LDC membership an apology. I have been remiss in discussing my communications with Dr. Chris Andrews on the idea of getting a code inserted into the DSM manual for lightning. In the December 2018 minutes, I mentioned a paper he, Dr. Mary Ann Cooper and Dr. Andrew Reisner had written on the subject in 2017. I sent to Dr. Andrews a list of lightning strike cases and their injuries. In February 2021, Dr. Andrews concluded the LDC dataset is a good archive of injuries, but the dataset lacks clinical detail, study and support. He said the data need to be clinically comprehensive and tested against medical investigations. Later on, he said for a code to be added to the DSM manual, the test proposed in their 2017 paper would have to run on two sets of people – those who have been independently judged as injured by lightning and those who have been independently judged as NOT injured by lightning. The full medical history for both sets of people would need to be gathered. When the data for both sets of people are placed in a basket and randomly run through the test, ideally, the test should be able to sift out those who were injured by lightning from those who were not injured by lightning. If that happens, in theory, a code for lightning could be inserted into the DSM manual.

10. Barb Stemple has handed out 4,000 lightning safety brochures. She has received positive feedback from the people she has given them to. She also said her cardiologist in California, who was hit by lightning and has treated lightning patients, may be interested in presenting at the LS&ESSI conference.
11. 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.
12. Questions, comments, error notifications, 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.
13. 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.
14. Next meeting: Zoom meeting. Friday, August 13, 2021, from 11:45 AM to 1:00 PM MDT.

Respectfully Submitted,

Steven E. Clark
Consulting Meteorologist

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.

Cotton, CB, 2021: Colorado Native Escapes Lightning on 14er, Experts Encourage Summer Hiking Safety. *KMGH-TV*. July 7-8, 2021.

Link: <https://www.thedenverchannel.com/news/local-news/colorado-native-escapes-lightning-on-14er-experts-encourage-summer-hiking-safety>

Shmatov, M. and K. Stephan, 2021: Hazards to Aircraft Crews, Passengers and Equipment from Thunderstorm-Generated X-Rays and Gamma-Rays. *Radiation*. June 29, 2021.

Link: <https://www.mdpi.com/2673-592X/1/3/15>

Bowers, G., X Shao, W. Blaine, B. Dingus, D. Smith, J. Chaffin, J. Ortberg, H. Rassoul, C. Ho, L. Nellen, N. Fraija, C. Alvarez, C. Arteaga-Velazquez, V. Baghmany, E. Belmont-Moreno, K. Caballero-Mora, A. Carraminana, S. Casanova, E. De la Fuente, M. Gonzalez, F. Hueyotl-Azhuantitla, O. Martinez, J. Matthews, E. Moreno M. Newbold E. Perez-Perez and I. Torres, 2021: Fair Weather Neutron Bursts from Photonuclear Reactions by Extensive Air Shower Core Interactions in the Ground and Implications for Terrestrial Gamma-Ray Flash Signatures. *Geophysical Research Letters*. February 24, 2021. Link to abstract: <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2020GL090033>
