

LIGHTNING DATA CENTER MINUTES

November 13, 2020
ST. ANTHONY HOSPITAL
www.lightningdatacenter.org

Monthly Quote: “Wisdom is a river that runs deep and slow. Inspiration and intuition are lightning flashes reflected on its surface.” - Anonymous. Source: https://todayinsci.com/QuotationsCategories/L_Cat/Lightning-Quotations.htm

1. Members Present: Clark, Wachtel (Howard & Clara), Swanson, Beckmann, Stemple & Terry. Clark moderated. Meeting began at 11:50 AM and ended at 1:05 PM.
2. **VERY IMPORTANT – PLEASE READ!** We will continue to hold meetings via Zoom only. Since last month’s meeting, the number of COVID cases has skyrocketed here in Colorado.
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 \$382.00 in cash, a decrease of \$102.00 since last month due to the purchase of lightning strike data for last month’s survivor.
4. RIP Rich Collier. B: July 6, 1936, D: October 15, 2019. Longtime LDC member Rich Collier passed away in Paonia, Colorado. He grew up in Vernal, Utah and went to college at the University of Utah, where he earned his B.S. degree in 1958. He served with the U.S. Navy and then earned his Master’s in physics from the University of Colorado in Boulder. His career as a physicist included stints at NIST and NASA. In August 2005, he gave a talk to the LDC on “Mathematical Modeling of Lightning Environments”. He also contributed greatly to our roundtable discussions. His presence will be missed. Photo credit: High Country Shopper.



5. Richard Kithil sent an e-mail reporting on the filming of red sprites over the Ural Mountains by an amateur astronomer in Russia. The link to the video is in the Lightning Links section.
6. Carl Swanson advised the website “struckbylightning.org” is no longer operational and that the domain name is up for sale and if the LDC is interested in purchasing the domain, we should contact them. Members present generally thought that is worth exploring.
7. Barb Stemple reported after her strike, her nerve endings were in pain. Now, she says the nerve endings have a sensation. She tries to shake in order to minimize the sensation, but it is still there. Dr. Phil Yarnell said abnormal sensations are common and recommended Aspercreme.
8. Last month, we met with a lightning survivor. I have been given permission to list her name and use photos to better document the strike. Her name is Amanda Cornwall. She sent me a list of corrections to last month’s minutes and also updated information, listed below

CORRECTION: She does not remember getting from the ledge to being halfway down the trail. She was disoriented and remembers her heart racing. She felt like she was walking on water or something made of elastic. She was scared. She remembers someone trying to call the local trauma center. She was shaking and remembered arriving at the hospital.

CORRECTION: “She slept the next day.” No, she slept for most of the next three days.

Now the updates...

- Numbness and tingling are still present over most of the right side of her body and will occasionally lessen in intensity.

- A neuro-ophthalmologist told her she has lost 17% of of the optic nerve and tissue in both eyes. Her pupils are still asymmetric and the eyes do not converge like they should. She is training to regain that capability, hoping not to have to wear special glasses. Vision is blurred and there are floating bright spots in the right eye.

- Additional symptoms: Pain in right ear, pain in jaw, crackling and clicking in left ear, sensation of wet ears with occasional visible fluid, decreased memory, ataxia, headaches.

- Unknown cardiac changes. She wears a heart monitor and was scheduled for an echo.

- She can hear fine, but there are auditory processing errors. Testing shows there are problems translating what she hears.

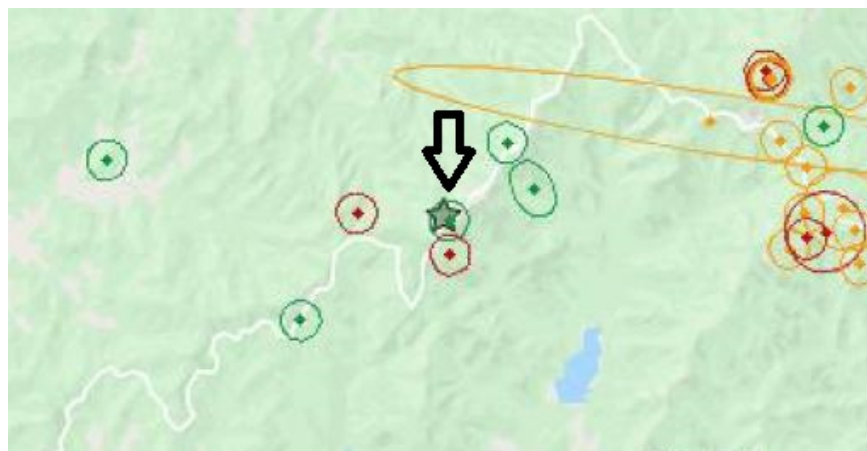
In addition to calling over 100 neurologists for help, she tried calling major hospitals in the area and not one was of any help or knew where to send her.

Dr. Phil Yarnell suggested the pain in the right ear might be a case of localized neurological dysfunction.

Steve Clark examined the weather conditions associated with her strike. The photo below shows Craggy Pinnacle in North Carolina. She was standing on top of the rock shown by the arrow when she was hit. The elevation here is approximately 5800 feet.



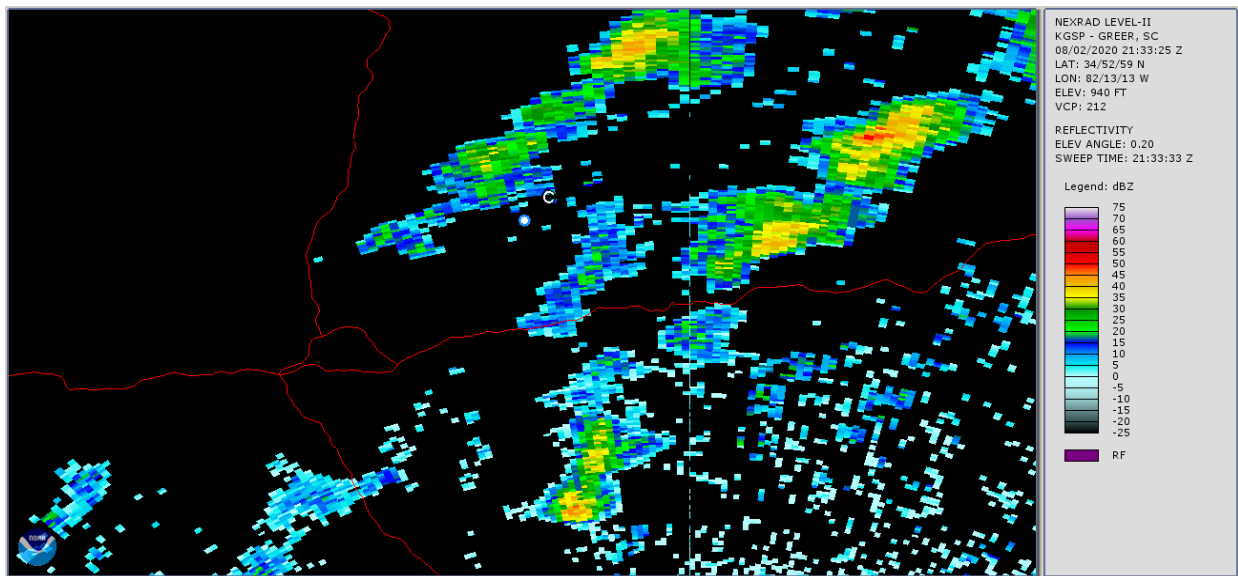
The next image is from the CoreLogic Strikenet report. The star is Amanda's location. Notice the circles and ellipses with "+" signs inside of each one. The circles and ellipses indicate areas within which it is 99% probable lightning hit somewhere inside that circle or ellipse. When the ellipse is long and skinny, that means the direction finders showed great uncertainty on the location of the strike along the long axis of the ellipse. On the skinny axis, the placement of the strike is pretty good. The strike which hit Amanda, pointed at by the black arrow, lies within the small circle on the star. Since the circle is small, the confidence in this being the strike is very high.



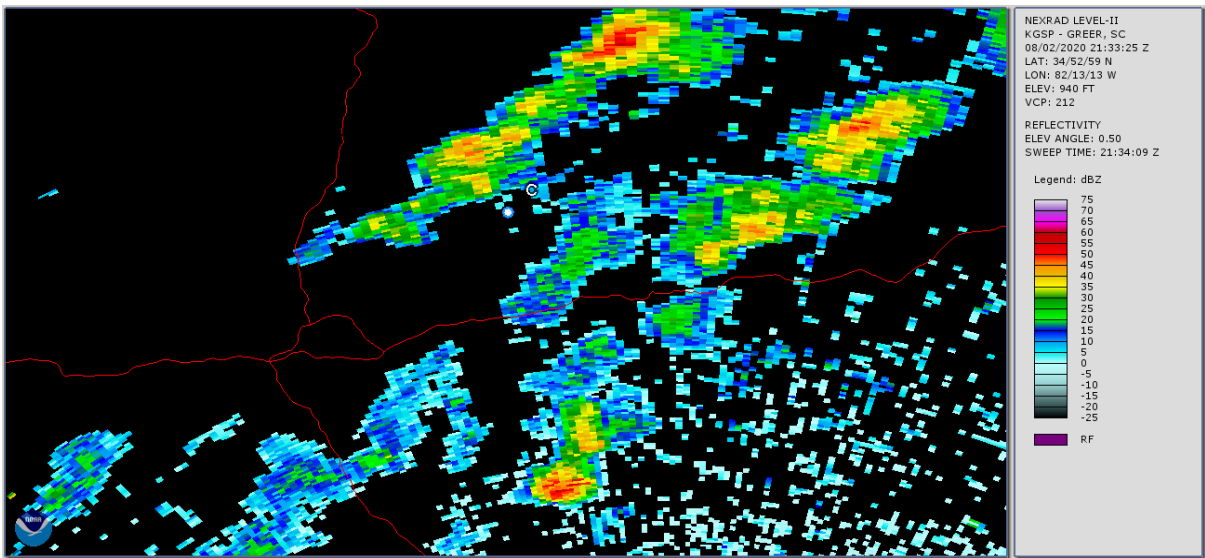
Steve also presented some radar images and strike data from CoreLogic. Below is a screenshot of the strike data. The strike which hit Amanda is highlighted in orange and it occurred at 5:31:59 PM with a current of -17.4 kA. There were strikes before and after. The one before was approximately 4 minutes earlier and the one after was approximately 2 minutes afterwards. Both strikes were approximately 10 miles away, which suggests she would not have heard any thunder prior to her strike.

2020-08-02	16:29:23	-5.1	7.4	12	35.7318840026855	-82.2495040893555
2020-08-02	16:49:03	-15.3	13.6	21.9	35.7997055053711	-82.1662368774414
2020-08-02	17:27:44	-8.3	5.5	8.8	35.7160797119141	-82.4735946655273
2020-08-02	17:31:59	-17.4	0.1	0.2	35.7021484375	-82.3761978149414
2020-08-02	17:33:38	-7.4	6.7	10.7	35.7574272155762	-82.4755935668945
2020-08-03	05:04:40	81.9	8.7	13.9	35.7843933105469	-82.2597732543945

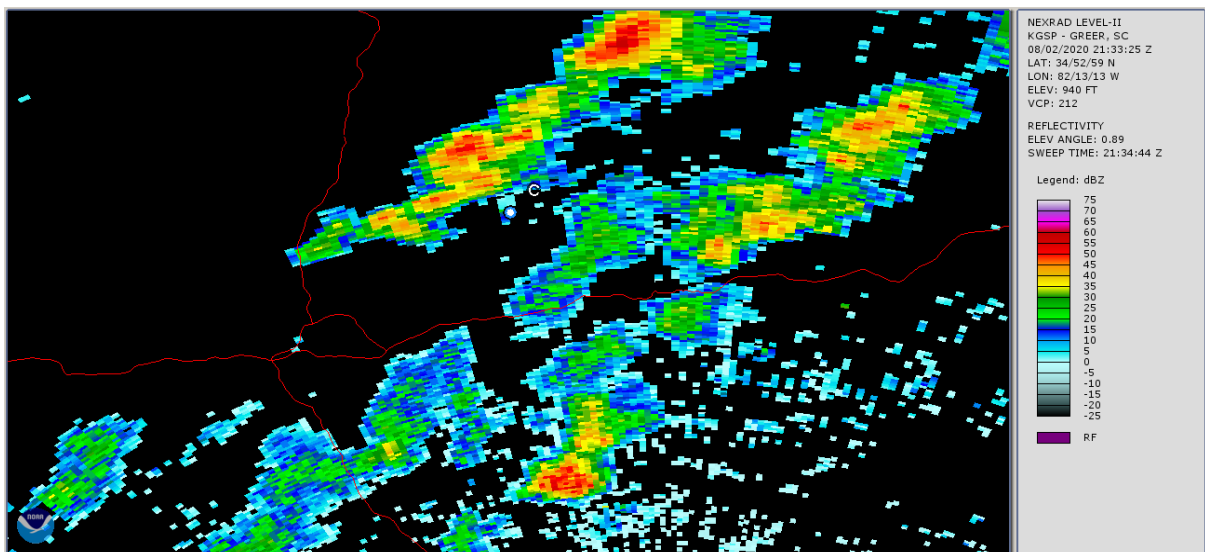
Three radar images are shown below. The “C” in each image is her location when she was hit. The first image was recorded at 5:33:33 PM and shows what appears to be a benign rain shower to the north and northwest of her location. The next two images, shot at increasing radar elevations, show an increase in the intensity aloft. The cell was approximately 1.9 miles away from Amanda’s location.



Recorded at 5:33:33 PM, radar beam elevation was 0.2 degrees.



Recorded at 5:34:09 PM. Radar beam elevation was 0.5 degrees.



Recorded at 5:34:44 PM. Radar beam elevation was 0.89 degrees.

9. Earlier this year, LDC member Bruce Beckmann with Alpine Search & Rescue gave a virtual backcountry safety talk to several Colorado rescue agencies. Part of his talk addressed lightning safety. Oftentimes, mountain rescues are done above timberline and the question was asked about lightning safety for rescuers evacuating a patient on a metal litter. The photo on the next page shows such a litter.



The litter is made of titanium and is supported by one fat tire in the center. The people on the front and rear push and pull the litter according to terrain and the people in the middle help keep it stable. The trail in this photo was generously wide. Some trails are narrow, single-track trails, which makes it hard for the people at the sides to maintain stability. During Bruce's presentation, they spent 15-20 minutes addressing lightning safety, with no real clear solutions. In our meeting, we discussed some options.

- 1 – Fewer people hold the litter. Fine, except it makes keeping the litter stable very difficult, especially in windy conditions.
- 2 – Portable Faraday cage. Not very easy to erect in the wind and it would need to be grounded. The manpower needed for that makes it difficult for the others to keep the litter stable.
- 3 – Helicopter evacuation. Helicopter evacuation is limited by the wind speed – usually around 25 mph for Flight For Life. The Army's Blackhawk helicopters are able to fly in somewhat stronger winds. In addition, insurance companies may deny a helicopter evacuation due to the patient's condition not being medically necessary for such an evacuation.
- 4 – The only solutions we came up with were standing with legs together and the lightning crouch. Even those actions may not be feasible in a given rescue scenario.

Bruce is seeking guidance from other members – especially those with EMS or mountain rescue experience. We asked if any litter rescues have been hit by lightning and Bruce did not know of any. Please come forward with any suggestions you have.

10. 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.
11. 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.
12. 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.
13. Next meeting: Zoom meeting. Friday, December 11, 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.

Siberian Times Reporter, 2020: Spectacular Red Sprites – Ultrafast Bursts of Electricity – Filmed Over the Urals. *The Siberian Times*. September 29, 2020. Link:

<https://siberiantimes.com/other/others/features/spectacular-red-sprites-ultrafast-bursts-of-electricity-filmed-over-the-urals/>

Rich Collier Obituary, *High Country Shopper*, October 30, 2019. Link:

https://www.highcountryshopper.com/announcements/obituaries/richard-s-collier/article_687bd0c0-fb49-11e9-9e0e-fb1220a93c88.html