

LIGHTNING DATA CENTER MINUTES

December 8, 2017
ST. ANTHONY HOSPITAL WEST, LAKEWOOD, CO
www.lightningdatacenter.org

HAPPY HOLIDAYS TO ALL!

1. Members Present: Clark, Langford, Wells, Nibbe, Wachtel, Yarnell, Gift and Cui-Gift. Clark moderated. Meeting began at 11:50 AM and ended at 1:05 PM.
2. Steve Clark brought in two articles.

In the first article, researchers in Japan discovered gamma ray bursts from lightning react with the air to form radioactive isotopes and positrons. In 2017, four detectors recorded a large gamma ray burst which actually turned out to be three separate gamma ray bursts. The first was less than a millisecond in duration; the second was a gamma ray afterglow which took several milliseconds to decay and the third was an emission lasting for approximately one minute.

In the second article, researchers in the University of Washington and NASA's Marshall Space Flight Center found the frequency of lightning strikes along ship routes in the South China Sea and the eastern Indian Ocean is nearly double that of adjacent areas. The ship routes are narrow and congested and the increase in lightning is clearly correlated with the shipping routes. Efforts were made to rule out natural causes for this phenomenon. Examination of weather records and satellite data did not show any anomalous changes along the shipping routes; therefore, the researchers concluded emissions from the ships directly contribute to the increased lightning along the routes.

3. Ken Langford showed us a video where lightning struck a very large pine tree in Quebec, Canada, just 10 seconds after a man crossed the compound in front of the camera. The video shows a structure with two metal roofs – one slightly above the other and farther to the left. Lightning struck a tall tree next to the building. Large limbs fell from the tree and hit the roof of the building, causing damage. Ken spent almost three hours analyzing the video and extracting still images. His analysis of the still images suggests this video is real. From the still images, there were three return strokes, which devastated the tree being struck. The side of the tree was stripped of its bark and the upper half of the tree fell onto the roof and parking lot of the lodge. The electrical portion lasted for just 2 seconds. Ken captured a series of 22 still images from the video, which were "pin registered", so they are all aligned (correcting for camera motion) and showed these images sequentially. Of particular interest is the electrical arcing that can be observed on various parts of the metal roof. Major arcing occurred in two locations between an upper roof and a lower roof: one area being the peaks of the two roofs and the other area being near the bottom of the roofs, near the eaves. Other, more faint arcing, appeared to have occurred in a channel between two roof planes and on other parts of the roof surfaces. This is the most spectacular footage of lightning striking an object at close range that Ken has ever seen!

4. Phil Yarnell presented an electrocution case. A lady wrote to Phil stating her husband had a low-voltage electric shock while at work approximately two years ago. An animal enclosure with a broken light fixture had begun to fall. He grabbed the enclosure and lowered it to the ground; otherwise if he had not, the animal would have died. While lowering the enclosure to the ground, he had held it for approximately 10 to 15 seconds. During that time, there was pain and tingling in his right arm, followed 15 minutes later by a severe headache. The headache improved over several days, but still remained. He also exhibits light sensitivity. He is able to perform day-to-day activities, but he cannot work due to the pain. The headache is in the front and top of his head and it feels like his head is being squeezed. He also feels it on the inside of his head about 2 inches down. CT and MRI scans obtained shortly after the incident did not show anything significant, except the presence of an existing sinus infection and a migraine. In the months following, several therapies were attempted, including various medications, neurotoxin injections, nerve blockers, and electrical stimulation on his head, all to no avail. Later, he went to a headache facility and received infusions, which helped reduce the pain level slightly. Doctors have told the family there is very little research on headaches associated with electrical shocks, but they are doing the best they can and are treating this as a case of migraine headache.

According to Phil, the therapies attempted include much of what is accepted by headache neurologists. Phil also said the passage of time and the lack of knowledge on what the electric shock did to him makes things more difficult. During discussion, Transmagnetic Stimulation (TMS) was mentioned as a possible solution, but according to Phil, it is not a licensed technology and he is not familiar with it. Phil also said photophobia is often associated with electric shock. Phil thinks he has migraines.

Some questions about this case arose during discussion:

Where was he standing?

What parts of his body were in contact with the cage?

What is the nature of the power supplying the light fixture?

Were there any burns or pain where he was touching the cage?

Do photophobic people have better night vision than people without photophobia?

What do the electroencephalograms show?

5. Questions, comments, notification of errors, and critiques of these minutes are welcome. Please forward those to Steve Clark at: sclarktoto@gmail.com. Please keep your communications professional and respectful. Communications will be forwarded to the appropriate author(s) of the minutes and addressed accordingly.
6. 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.

7. Next meeting: Friday, January 12, 2018, from 11:45 to 1:00 PM at St. Anthony Hospital West.
Room: Conference Rooms E & F. Meeting Format: TBA.

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.

Enoto, T., 2017: Lightning, with a Chance of Antimatter: Netizens Help Scan Lightning for Gamma Rays. *Science Daily*. November 22, 2017. Link:
<https://www.sciencedaily.com/releases/2017/11/171122131353.htm>

Chang, S., 2017: Ships Cause Their Own Stormy Seas. *Physics Today*. November 2017. Link (first page only): <http://physicstoday.scitation.org/doi/abs/10.1063/PT.3.3755?journalCode=pto>

YouTube Videos of Quebec Lightning Strike:

Short Version (1:36): <https://www.youtube.com/watch?v=szOnAUnuMLk>

Long Version (9:38): <https://www.youtube.com/watch?v=afctVo5gInU>