

**LIGHTNING DATA CENTER MINUTES**  
**April 13, 2012**  
**ST. ANTHONY HOSPITAL WEST, LAKEWOOD, CO**

Monthly Quote: "The conference was fantastic! It is great to be in the same room as Lightning Scientists and Lightning Enthusiasts, and there was a great exchange of information." From Ken Langford, on the International Conference on Lightning Meteorology, held during April 2012.

1. The meeting began at 11:45 AM and adjourned at 1:05 PM. Members present: Clark, Yarnell, Gift, Cui-Gift, Elder, Claus, Stewart, Keen, Schoessow, Wells, Nibbe and Wachtel. Clark moderated the meeting.
2. Steve Clark presented abstracts from two articles – one discussing the ion concentrations above heavily forested areas as opposed to grassy areas, and the other, which discusses the under-reporting of lightning-related property losses in Storm Data versus insurance company loss data. Citations for both are included in the "Lightning in the News" section.
3. Clark also circulated a photo of a tree that had been struck by lightning near E. 6<sup>th</sup> Avenue and Steele Street in Denver, during the storms of April 11, 2012.
4. Clark presented a question posed on the Yahoo lightning users group. A telecom company wants to install a communications tower on a water tower. Water tower authorities are leery due to what they think would be an increased chance of the tower being hit by lightning.
5. Greg Stewart presented a case from the website "struckbylightning.org" about the inadequacy of just "any shelter" from rain on 4-11-12 in Ponchatoula, Louisiana. According to the record, a father and son were found dead inside an abandoned tin shelter. Officials believe the two were seeking shelter from the fierce storms on the Northshore, when lightning instantly killed them. Evidence of lightning was visible due to severely damaged trees in the vicinity of the shelter.
6. Phil Yarnell introduced us to Dr. Martin Hertzberg, an internationally recognized expert on explosions, among other areas. Dr. Hertzberg gave us a wonderful forensic reconstruction of the events associated with a deadly explosion at the Sago coalmine in West Virginia, which was apparently caused by lightning. A rare thunderstorm was in the area on January 2, 2006. Lightning struck at 2 locations near the mine, per USPLN, at 6:26 AM. Both flashes were approximately 2 miles away from a sealed chamber, which exploded. Normally, a sealed area is not an emission source, but methane was out gassing into the hollow void. The ratio of methane to oxygen in the confined space was optimal for an explosion, around 10%. Methane concentrations with time were estimated to be at 5% after 10 days, 10% after 20 days, and 15% after 30 days. It is not known how current from the lightning reached the chamber, as there are not any

obvious conductors to the chamber. Finally, a seismometer at Virginia Tech University detected ground waves from the explosion, which were commensurate with the time of the lightning flashes. Rescue operations ensued, but were mostly unsuccessful.

7. Ken Langford summarized some of the presentations made at the International Lightning Meteorology Conference, attended by approximately 100 people. Here are some highlights, with links in the “Lightning in the News” section below.
  - Dr. Mary Ann Cooper opened the conference with a presentation on the history of lightning safety entitled: “Lightning Safety Campaigns: USA Experience”. The LDC was mentioned as an early gathering place for those interested in lightning safety. The LDC was also mentioned in the context of Dr. Cherington’s paper addressing the underreporting of lightning injuries and deaths in Colorado.
  - One of Ron Holle’s presentations addressed the diurnal variation of NLDN cloud-to-ground lightning in two-hour blocks of time.
  - Dr. Holle also asked the LDC to consider gathering data on building fires and what percentage are lightning-caused, and of those, what is the breakdown according to type of building (mobile home, industrial, etc.)
  - Bill Roeder gave an excellent talk on Lessons Learned in Communicating Lightning Safety. His summary was: Lightning safety education needs to be correct, consistent, credible, easy to use, easy to remember, and interesting to learn.
  - Roeder also presented the paper entitled: “Is an Open Field Actually Safer from Lightning than a Forest?” Roeder’s statistics suggest “yes”, but Langford disagrees since he recalls more injuries in open fields.
  - Steve Hodanish gave a talk on “Utilizing a Lightning Safety Toolkit for Outdoor Venues”, which is a National Weather Service set of guidelines intended to enable event promoters to implement venue-appropriate lightning safety measures for event staff and attendees, before lightning strikes, and when lightning is threatening.
  - Hodanish also presented his excellent lightning case histories and also his maps showing the lightning climatology of Colorado. One of those maps was displayed during our meeting. Some members think there may be some bias (underreporting) in the map associated with the “lightning minimum” in the area near Weld County, as that area is a “tornado maximum”.
  - Rich Kithil presented “Employee Safety and the Role of Lightning and Open Pit Mines”, “Colorado High Altitude Lightning Protection: A Case Study at 10<sup>th</sup> Mountain Hut Association”, and Lightning Detection and Lightning Protection at Military Explosives Storage Facilities”.
  - John Gookin, from Lander, Wyoming, presented: Development of the NOAA Brochure “Lightning Risk Management for Hikers and Campers”. John has been invited to speak at one of our meetings. Ken handed out some flyers from John at our meeting. John would appreciate any feedback on the flyers at: [john\\_gookin@nols.edu](mailto:john_gookin@nols.edu).

- Stephane Pedeboy from France gave an interesting talk on “Identification of the Multiple Ground Contacts Flashes with Lightning Location Systems”.
  - Gabor Fricksa from Canada showed us a Canadian Lightning Risk Display, which attempts to warn the public of the risk of lightning using color-coded shading on a map. In Canada, lightning kills approximately 10 people each year and injuries approximately 100 to 150 more. Clark noted these numbers were similar to the actual ratio of fatalities to injuries in Colorado.
  - At the end of the first day, participants took a tour of the Vaisala facility in nearby Louisville. There, they saw several meteorological instruments and lightning sensors.
  - Last, but not least, Ken gave a presentation on Lightning Streamers just before lunch on the last day. Ken gives a special thanks to Ron Holle for making this possible at the last minute.
  - Ken thanks the organizers and staff for making this conference a success.
8. LDC Disclaimer: These minutes do not represent official positions of LDC or its members. They simply reflect the comments made at the meeting. Furthermore, the LDC does not explicitly or implicitly recommend or endorse *any* product or service. Any service or product presented in these minutes is done so for the purpose of discussion and analysis. The merit (or lack thereof) is open for consideration and review by the entire membership.
9. Next meeting: Friday, May 11, 2012 at 11:45 AM at St. Anthony Hospital West in the Bighorn Room. Subject: PLEASE NOTE: The Bighorn Room is now the “official home” of the LDC.

Respectfully Submitted,

Steven E. Clark, Consulting Meteorologist

### **In Case You Missed It...Lightning in the News**

**This is a monthly listing of news and videos about lightning and allied areas as reported in the media. A headline is listed, followed by a link to the article. Please note that some of the links are perishable, which means you’ll need to go to the source for the article. Enjoy!**

Novel Discovery in Australia: Trees Generate Electricity!

<http://sciencelay.com/biology/ecology/novel-discovery-in-australia-trees-generate-electricity/>

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An Overlooked Source of Weather-Related Property Damage in the Southeast: Lightning Losses for Georgia, 1996-2000.

<http://www.coss.fsu.edu/geography/stallins/reprints/Southeastern%20Geographer.pdf>

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Links to the fatal lightning incident in Louisiana, as noted by Greg:

<http://www.examiner.com/weather-in-jackson/father-and-son-on-fishing-trip-found-dead-from-lightning-strike-louisiana> and

<http://struckbylightning.org/news/dispatchdb.cfm>

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Some background information on Dr. Martin Hertzberg:

<http://www.explosionexpert.com/pages/1/index.htm>

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**Links from the International Lightning Meteorology Conference now follow.**

Ron Holle: “Recent Studies of Lightning Safety and Demographics”

<http://ams.confex.com/ams/91Annual/webprogram/Manuscript/Paper183420/AMS2011%20Safety-Paper.pdf>

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Bill Roeder: “Lessons Learned in Communicating Lightning Safety” While I could not find a paper with that title, I did find an earlier paper by Roeder, Holle, Cooper, and Hodanish entitled: “Communicating Lightning Safety Effectively”

<http://ams.confex.com/ams/91Annual/webprogram/Manuscript/Paper180648/5MALD-1.2-Communicating%20Lightning%20Safety-Paper.pdf>

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Bill Roeder: “A New High-Quality Lightning Fatality Database for Lightning Safety Education”

<http://www.lightningsafety.noaa.gov/statistics.htm>

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Bill Roeder: “Is the Risk of a Lightning Casualty Actually Less in an Open Field than a Forest?”

<http://ams.confex.com/ams/91Annual/webprogram/Manuscript/Paper180673/5MALD-317-Lightning%20Safety-Open%20Field%20vs%20Forest-Paper.pdf>

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Steve Hodanish: “Utilizing a Lightning Safety Toolkit for Outdoor Venues” (2 Links)

[http://www.lightningsafety.noaa.gov/resources/large\\_venue.pdf](http://www.lightningsafety.noaa.gov/resources/large_venue.pdf)

<http://www.lightningsafety.noaa.gov/toolkit.htm>

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Steve Hodanish’s Lightning Case Histories can be found here:

[http://www.crh.noaa.gov/pub/?n=/ltg/case\\_studies\\_index.php](http://www.crh.noaa.gov/pub/?n=/ltg/case_studies_index.php)

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Richard Kithil: “Employee Safety at Open Pit Mines in Peru, Tanzania, the Dominican Republic, and the USA”

[http://www.lightningsafety.com/nlsi\\_history/Employee-Safety-at-Open-Pit-Mines-in-Peru-Tanzania-Dominican%20Republic-USA.html](http://www.lightningsafety.com/nlsi_history/Employee-Safety-at-Open-Pit-Mines-in-Peru-Tanzania-Dominican%20Republic-USA.html)

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Richard Kithil: “Lightning Protection at Military Storage Explosives Facilities”

[http://www.lightningsafety.com/nlsi\\_history/Lightning-Protection-at-Military-Storage-Explosives-Facilities.html](http://www.lightningsafety.com/nlsi_history/Lightning-Protection-at-Military-Storage-Explosives-Facilities.html)

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Richard Kithil: “Fourteen Points to Lightning Safety”

[http://www.lightningsafety.com/nlsi\\_history/14-Points-to-Lightning-Safety.html](http://www.lightningsafety.com/nlsi_history/14-Points-to-Lightning-Safety.html)

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High-speed lightning video from Tom Warner:

<http://ztresearch.wordpress.com/>

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Last but not least, a dramatic lightning safety awareness video:

<http://www.youtube.com/watch?v=cSDveSizTtg>