

LIGHTNING DATA CENTER
MINUTES
DECEMBER 10, 2004
ST. ANTHONY HOSPITAL
DENVER

Quote of the Month:

“Genius is not always in the initial observation, but in the interpretation of that observation.”

Peter Moore, *E=MC² : Great Ideas that Shaper Our World*.
2002, p 28.

1. Meeting began at 11:30 am and adjourned at 1:30 pm.
2. Members present: Breed, Burrows, Cherington, Clark, Gift, Glancy, Hodanish, H Keen, R Keen, Langford, Mains, McDonough, Moore, Mullan, Neily, Nibbe, Olson, Richardson, Stewart, Wachtel, Wallace, Wells, Yarnell.
3. I brought the following articles (abstracted in part here):
 - a. Schwartz SA. Franklin's forgotten triumph: Scientific testing. One of his least-known contributions to modern life is also one of his most important. Amer Heritage Oct. 2004: 65-69.

“...the blind protocol has become the gold standard of the life sciences. But where did the idea come from? Even scientists are surprised to learn that it was created by Benjamin Franklin. Mesmer maintained that any living thing could be magnetized. Franklin and other members of the commission were satisfied that the experiments conducted under the conditions of blindness had settled the question of whether animal magnetism was real. It was not.”
 - b. Sommer LK, Lund-Andersen H. Skin burn, bilateral iridocyclitis and amnesia following a lightning injury. Acta Ophthal Scand. 2004;82:5960598.

“A 54-year old woman was referred with blurred vision, bilateral intraocular hypertension and facial skin symptoms. One week earlier she and some friends had gone for a walk on a small island, the patient recalled that during her walk the weather had suddenly changed to rain and thunder. This amnesia may be due to shock.”
4. Steve Hodanish brought the following article (abstracted in part here):
 - a. Hodanish S, Holle RL, Lindsey DT. A small updraft producing a fatal lightning flash. Weather Forecasting 2004;19:627-632.

“An 18 year old male was fatally wounded by a lightning flash on the summit of Pikes Peak, Colorado. Radar and satellite data indicated that the cell that

produced the flash was quite shallow and exhibited marginal reflectivity characteristics typically associated with electrified storms the National Lightning Detection Network indicated that this was the first and only cloud-to-ground flash associated with this convective cell.”

5. Today’s speaker -- Steve Hodanish. Steve is the lightning program leader at NWS in Pueblo, CO. Steve has been a meteorologist with NOAA/NWS for over 13 years. He has written articles on severe thunderstorm and lightning issues. His topic: Meteorological case studies of lightning strike victims in Colorado. Steve gave an outstanding presentation that evoked much discussion from the members. I cannot do justice to Steve’s talk in these minutes. The information below is taken from my notes and Steve’s handouts.
 - a. The talk deals with the meteorology associated with 7 Colorado lightning strike cases. They occurred in the period August 2000 to July 2004.
 - b. He hoped to answer the following questions: How much CG lightning was in the vicinity prior to the injury? Were only a few or many flashes in the vicinity? Did a ‘bolt from the blue’ strike the person? What was the intensity of the rain? Was the person struck by the first flash of the storm? Did the person have a chance to seek safe shelter?
 - c. Much of the meteorological data in Steve’s presentation was obtained from 2 technologies: radar and NLDN (Vaisala).
 - d. 18 year old man was fatally wounded on Pikes Peak. This case resulted from the first flash from the convective cell.
 - e. 59 year old man on a motorcycle was killed instantly when lightning struck.
 - f. 25 year old woman was killed while hiking on mountain trail with her husband. They were below tree line. There were numerous flashes prior to the fatal flash. Hikers should complete their hikes early in the morning.
 - g. 28 year old woman was killed while walking on mountain trail. Two others walking with her did not receive electrical injuries. CPR was tried for 10 minutes. They were below tree line. Interestingly, people who were walking above the tree line were not hit.
 - h. 9 year old boy struck at sports complex. Light rain during time of flash.
 - i. 43 year old man struck while golfing. “First flash of the storm.”
 - j. Young man southeast of Keystone on Continental Divide. “First flash of the storm.”
 - k. Some conclusions from these cases: Don’t hike during afternoon in mountains. The “first flash from the storm” hit many or there was infrequent lightning. In nearly all cases there was only light rain or no rain. Storms did not appear to be moving too fast.

6. Several members (Mains, McDonough, Moore, and others) discussed cardiac arrest and the vulnerable part of the cardiac cycle (repolarization period coincides with the vicinity of T-wave). Speculation – this might explain why, when several people are in the same environs of a lightning strike, there is only one fatality. Ken Langford introduced another hypothesis – According to Colorado data, 10% of lightning strikes in Colorado are fatal. The vulnerable repolarization period represents about 10% of the cardiac cycle. These two observations might suggest a cause and effect relationship. Gil McDonough told

us about a study of people with hiccups. The hiccups, with a frequency much less than the heart rate, were always synchronous with the vulnerable T-wave period of the cardiac cycle. Howard Wachtel suggested that both cardiac cycle and hiccups were influenced by vagus nerve stimulation.

7. I provided material about ICOLSE (International Conference on Lightning and Static Electricity). Dr. Quang H. Nguyen sent an email with the information about the meeting in Seattle on September 19-23, 2005. Dr. Chris Andrews will be chairing the session on Keraunomedicine. More information can be found at the ICOLSE web site: www.icolse.org. This should be an exceptional conference.
8. Greg Stewart brought information about recent lightning events that he found on the Internet. He mentioned a news report about lightning striking a bowling green where there were 48 participants. There were no fatalities. This report can be found in the Pretoria News (November 20, 2004). Greg cited another a report on electrical storms associated with volcanic activity. Steve Hodanish commented that for electrification to occur, two elements are essential: a. charge separation; b. particles. An article by David Adam in Guardian Unlimited refers to research by Earle Williams and Stephen McNutt. They suggest that volcanic lightning might be caused by the build up of ice. Lightning requires the presence of ice and water.
9. These minutes do not represent official positions of LDC or members of LDC. They simply reflect comments of members made at the meeting.
10. The next meeting will be at 11:30 am on January 14, 2005 in the Main Auditorium of St. Anthony Central Hospital.

Respectfully submitted,

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