

Lightning Data Center  
August 11, 2000  
Minutes  
Centura Health  
St. Anthony Hospital

Quote of the Month:

"During lightning storms Tesla would sit in his office on a black mohair couch and applaud the spectacular performances outside his picture window. The master of lightning was now merely a spectator."

Margaret Cheney, Robert Uth in Tesla: Master of Lightning, 1999

1. Meeting began at 11:30 am and adjourned at 1:20 pm.
2. Members present: Anderson, Bergschneider, Boice, Cherington, Cohen, Hodanish, Keen, Langford, Lines, McDonough, Sellon, H. Wachtel, Wallace, Wallin.
3. New members:
  - a. Richard Cohen, MD, Surgeon. St. Anthony Hospital
  - b. Russel Boice, Chemistry Department, University of S Colorado
4. I brought the following articles (abstracted in part here):
  - a. Price C. Evidence for a link between global lightning activity and upper tropospheric water vapour. Nature 2000;406:290-293.

"..continental deep-convective thunderstorms transport large amounts of water vapour into the upper troposphere and thereby dominate the variations of global upper-tropospheric water vapour while producing most of the lightning on Earth. As global lightning induces Schumann resonances, an electromagnetic phenomenon in the atmosphere that can be observed easily at low cost, monitoring of these resonances might provide a convenient method for tracking upper-tropospheric water-vapour variability...the intensity of the convection. Influences the electrification processes in these convective clouds."
  - b. Blakeslee S. Lightning's shocking secrets. NY Times, Science Times 2000; July 12. PpD1, 6.

"Researchers...observed updraft regions in clouds where all lightning suddenly ceased. Moments later, tornadoes formed in that area. If lightning-free zones usually precede tornadoes, they said, weather forecasters might be able to watch for these 'electrical holes' in the clouds and make better short-term predictions for severe weather, including large hail, heavy rain and tornadoes."
5. I received an email from Dr. Coffey of California asking if cordless phones of 900 mhz or 3.2 ghz variety present higher electromagnetic radiation risk to the brain than mobile phones because cordless phones are used for longer times. Several members discussed the question of health risks, if any, from cell or cordless phones. All agreed that there is no definitive answer at this time. Leland Anderson brought 3 articles on these matters: a.Foster KR, Moulder JE. Are mobile phones safe? IEEE Spectrum Aug. 2000
- b.Kalb C, Springen K. Is you cell really safe? Newsweek, Aug 7 2000.

c. Stuchly MA, Dawson TW. Interaction of low-frequency electric and magnetic fields with the human body. Proc IEEE 2000;88;643-664.

Leland reported that maximum specifications include 1.6 watts/kg body tissue. 2.5 times this exposure increases the chance of chromosomal abnormalities. Howard Wachtel and Russel Boice stated that non-ionizing radiation effects on DNA, if any, are of a thermal nature. Ionizing radiation (e.g. X-rays), by contrast, can break chemical bonds. Rich Keen pointed out that the cell phone is more powerful because transmission distance is very long; by contrast, the cordless phone (less powerful) transmits only a few feet. Russel stated that the top of the cell phone antenna is the most active part. Therefore, if the exposed antenna was extended much above the user's head, there would be reduced radiation exposure. Gene Lines said that Japan has been on the forefront of cell phone use, and he wondered if there was data from Japan on the subject of cell phone use and health hazards. Howard Wachtel emphasized that perhaps the major danger related to cell phone use was the increase in automobile accidents caused by distracted drivers.

6. Rich Keen reported that the Coal Creek Canyon Observatory records more thunderstorm days per year than any where in the United States with exception of Central Florida. Rich also commented on the possible relationship of skin cancers (including melanoma) and lightning strikes. He wondered if there was another factor: could these persons be out of doors more than others, and therefore have more sun exposure.

7. Steve Hodanish provided interesting meteorological data surrounding the tragic lightning-related fatality on Pikes Peak on July 25, 2000. An 18 year old visitor to Colorado was struck about 1 pm. At the time there was a low deck of stratus clouds. Steve reported that the man was struck by the first lightning flash of the day in the vicinity. Steve speculated that cloud to cloud flashes usually precede cloud to ground (CG) strikes. This might be useful with future technology to warn people of impending CG lightning dangers.

8. Leland Anderson informed us that the next (7th) International Symposium of Ball Lightning will be held at the University of Missouri in St. Louis in June 2001. Dr. Stanley Singer is President; Professor Peter Handel is the Organizer of the meeting.

9. Jeff Sellon introduced a colleague who suffered an electrical burn near a mine in Western Colorado. The accident happened in the following sequence. He was holding on to cables that were attached to marble rock. When a truck driver moved the vehicle so that a tall crane made contact with power line, the patient received an electrical shock and could not let go of the cables. Fortunately, the crane separated from the power line, allowing the patient to release his grasp of the cable. Otherwise, the accident could have been much more tragic. When the crane made contact for a second time with the power line, the patient sustained a burn to his right wrist and left foot. However, he did not have a grasp of the cable and, therefore, was not fixed to the source of electricity. He was subsequently taken to the hospital. An ECG 2 days after the incident was normal.

10. Ken Langford brought a newspaper article (Sun-Sentinel, South Florida, June 10, 2000, by J Milarsky) that reports on the drowning of 2 boys after lightning struck the pool where they were swimming. The "medical examiner...found no sign that either boy had been struck by lightning...Because both boys knew how to swim well, he found it highly likely that lightning struck the water, knocking the two boys unconscious long enough for them to drown." Howard Wachtel stated that electrical current tends to dissipate in a lateral fashion (not so much in a downward fashion). If this is correct, scuba divers in a lake or ocean under the surface of the water would be safer than

swimmers on the surface when lightning strikes. There is more danger when electrical current enters a closed space (e.g. bathtub or swimming pool). Steve Hodanish speculated that the two boys mentioned in the article might drowned after being paralyzed rather than having lost consciousness when lightning struck the pool.

11. These minutes reflect the comments of members present and do not represent official positions of LDC.

12. Speakers scheduled at future LDC meetings:

September 8, 2000 Gene Lines and Jeff Sellon will speak on Lightning Rods and NFPA.

Second item on the September agenda to be announced later.

October 13, 2000 E. Philip Krider, PhD, Department of Atmospheric Physics, University of Arizona.

13. Next meeting: Friday, Sept 8, 2000 at 11:30 am in the Main Auditorium of St. Anthony Central Hospital.

Respectfully submitted,

Michael Cherington, MD  
Chair, Scientific Committee, LDC

