

The Environmental News Periodical of

**The Packerland Chapter Of
The American Meteorological Society**

STORM SPOTTER TRAINING

On May 2, 2006 Jeff Last, NOAA's National Weather Service Warning Coordination Meteorologist will conduct the annual Storm Spotter training. Storm Spotters are the NWS "eye on the sky" when severe weather threatens. These volunteers keep NWS forecast staff updated on local conditions, and must attend training at least once every four years. This training is included in the PCAMS lecture schedule and is open to the public. Location is UW-Green Bay Union Christie Theater at 7:00 pm.



What's it really like to be a Storm Spotter? Read on.....



Heavy rainfall from an approaching shelf cloud over lower Green Bay on June 13, 2004

Storm Spotting Q & A

We sent a few questions to Dave Levorson, a veteran spotter and amateur radio operator in Wausau. Dave gives us a “day in the life” of spotting storms for NWS.

- Q:** Are you assigned a particular area to cover, or just go wherever the best observation point seems to be?
- A:** I don't have an area assignment. I usually spend time analyzing the storm's approach as it moves in from other counties before I go mobile. After I've studied the storm track & damage history (if any), then I take a look at current surface observations, and then I have somewhat of an educated guess as to where I might start spotting.
- Q:** What is your main source of activation (weather) information?
- A:** Myself. (see next question)
- Q:** Describe the steps, in order, to take after activation.
- A:** 1. If the NWS Storm Prediction Center (SPC) or NWS Weather Forecast Office in Green Bay says 1-2 days out that severe storms are a possibility, I'm on alert.
2. The night before and on the “target” day, I spend time studying the weather, as well as seeing what NWS Green Bay and SPC have to say.
3. I will contact some of the more dedicated spotters I know, and discuss their observations and prepare a game plan.
4. Fuel up the vehicle, have a go-bag ready, and when the time comes, deploy to the field.
- Q:** When was the most impressive storm you have spotted?
- A:** Most definitely, the Oakfield Tornado! July 18, 1996. Front row seat from start to finish.

Continued →

(Storm Spotter Q & A continued)

Q: Have you ever felt physically threatened by a storm you were spotting?

A: Even after 21 years spotting, when it's pitch black except for brilliant lightning, hailing, and wind rocking my truck, I still feel threatened. The power of a severe storm IS threatening and unpredictable. You have to respect the awesome power around you.

Q: What made you want to be a Storm Spotter?

A: Severe storms intrigued me when I was a kid. I still remember the Ohio Valley tornado outbreak of April 3-4, 1974. The TV was full of news from that tornado outbreak!

Q: What is the hardest part of being a Storm Spotter?

A: Taking your weather education up to the next level. Some of the topics are tough!

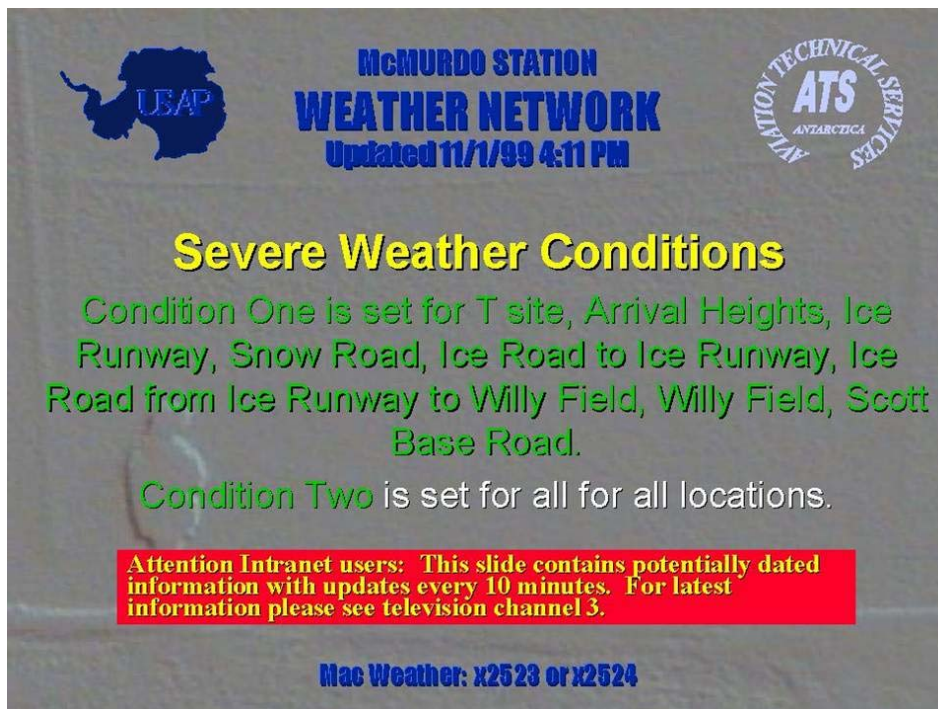
Q: What's your best advice for a new Storm Spotter?



A: Calm down, and don't run right out without obtaining some education. Lights and radios don't make a good spotter. Education and safety awareness does.

 **Observe Earth Day 2006** 

Saturday April 22, 2006 marks the 36th anniversary of Earth Day. Check the news media for events close to you, then resolve to set an example in your neighborhood, and help others get involved. A good starting point is researching the recycling guidelines for your municipality. http://www.co.brown.wi.us/Solid_Waste/index.htm lists the guidelines for Brown County. An important feature of this site is how to dispose of hazardous wastes properly. Everyday products like household cleaners, for example, may pose a more widespread threat than you realize. Make a difference in YOUR environment!






McMURDO STATION
WEATHER NETWORK
 Updated 11/1/99 4:11 PM
 

Severe Weather Conditions

Condition One is set for T site, Arrival Heights, Ice Runway, Snow Road, Ice Road to Ice Runway, Ice Road from Ice Runway to Willy Field, Willy Field, Scott Base Road.

Condition Two is set for all for all locations.

Attention Intranet users: This slide contains potentially dated information with updates every 10 minutes. For latest information please see television channel 3.

Mac Weather: x2523 or x2524

MacWeather: Weather Operations at McMurdo Station, Antarctica

This is an excerpt from a journal entry by Bruce Smith, PCAMS member and participant in the Teachers Experience Antarctica (TEA) program. Bruce was stationed at McMurdo Station during the Southern Hemisphere summer of 1999. The journal entry is from November 2, 1999. The complete journal is available at the website below:

http://tea.armadaproject.org/tea_smithfrontpage.html#calendar

The weather continues to be the story here. It was pretty nice this morning but this afternoon the snow started and the wind began to blow. A strong pressure gradient across the Ross Iceshelf was causing gusty surface winds. Skies remained mostly cloudy across the area. Flights from Christchurch and to South Pole were cancelled. McMurdo is a bit crowded right now. Many people headed to the South Pole for the summer are stuck here because of the weather. Many of the groups going to field camps are like-wise stuck in Mactown. The lines at supper are quite long and the dining room is crowded. With weather being such a critical issue in Antarctica, you can well imagine that the Weather Forecasting Office in McMurdo, or MacWeather, is a pretty busy place. I went to visit MacWeather the other day to see how the business of forecasting weather here differs from the weather offices back home. The first thing you realize is that the forecasters here have much fewer tools to work with than back in the states. First there is data. If you look at a typical weather map of the US (You can get a good one at <http://www.comet.ucar.edu/dstreme/>.) it shows hundreds of weather reporting stations and this represents only a fraction of the stations that are reporting data. In Antarctica, there are very few reporting stations and they may be hundreds of miles apart. The University of Wisconsin maintains a network of about 40 automated weather observing stations around the continent. You can see the locations of the sites at <http://uwamrc.ssec.wisc.edu/aws/AntAWS.gif> and you can get current temperatures around the continent at <http://uwamrc.ssec.wisc.edu/~amrc/AWSANT.GIF>. In addition there are 30 occupied sites that operate the entire year in Antarctica. Most of these are located on the coast and very few in the interior of the continent.

Continued →

(MacWeather continued)

MacWeather relies heavily on observations made by scientific teams in the field. I attended a briefing for field teams conducted by Ted, the head weather observer at MacWeather. He taught the field teams how to estimate cloud cover, cloud heights, wind speed and wind direction. Not only is this information vital to help MacWeather make better forecasts, it is also important for flights going out to pick up the field teams.



There is a weather satellite image of Antarctica available to the forecasters. It comes from a polar orbiting satellite that passes over the continent. You can view the latest image at <http://uwamrc.ssec.wisc.edu/~amrc/COMP.GIF>. You will notice when you view the image that there is a large black space where there is no image. Due to the way polar orbiting satellites cross Antarctica, there is a time period for any location where there is no image available. The weather satellites that cover North America are geo-stationary satellites. They stay in the same position over a point on the Earth giving continuous coverage. For McMurdo the blackout is about 6 hours meaning the forecasters at MacWeather do not have a satellite image for one-fourth of the day.



There is no weather RADAR in McMurdo. National Weather Service Offices like the one in Green Bay, Wisconsin have sophisticated Doppler Radar at their disposal. Upper air data from balloon soundings are critical for forecasters to understand what is happening in the atmosphere above the surface. In the United States there are about 50 balloon launching sites. At these sites, weather balloons are launched twice a day, every day. These launches allow weather forecasting computers to develop models of

how the atmosphere is behaving and help forecasters make better forecasts. In the entire continent of Antarctica there are a total of 9 balloon launch sites.

Continued →

(MacWeather continued)

I had an opportunity to help with a weather balloon launch at MacWeather. (See picture below.) If you would like to view the latest data from the McMurdo balloon sounding, go to <http://uwamrc.ssec.wisc.edu/~amrc/SKEWTMCM.GIF>.

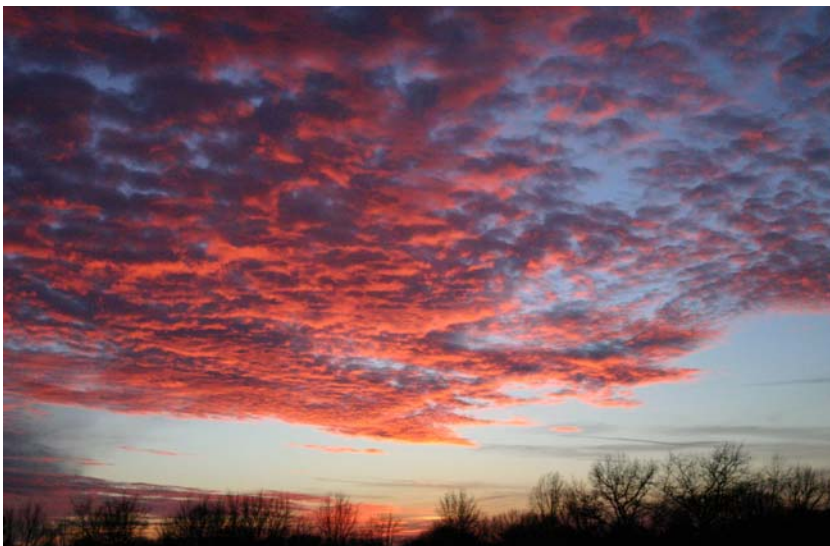


Despite this lack of information, MacWeather is responsible for making weather forecasts for plane flights to New Zealand, South Pole and other locations around the continent. Ted made a great analogy that illustrated how difficult their job is. He said forecasting for flights across Antarctica is like knowing only the weather observations in Kansas City and Seattle and trying to forecast the weather for a flight from Miami to Alaska! The forecasters have to rely heavily on previous experience and the observations made by pilots and

people in the field. Despite their best efforts, however, weather in Antarctica can change without warning. It is important that each person keeps watching the sky and be his or her own weather forecaster.

~ Photos supplied by Bruce Smith

Cloud Corner



Altostratus Stratiformis are the most common type of altostratus, and are responsible for some of the most photogenic sunrises and sunsets. The bases of altostratus clouds are typically between 6,500 and 15,000 feet, and are comprised mainly of water droplets in the summer, and ice crystals and water in the winter. Altostratus clouds usually form by convection in an unstable layer aloft.

~ Summary by Jeff Last

Collecting Upper Air Data

by PCAMS News editors Peg Zenko and Brian Hulse

On 2006/02/13 we had the opportunity to observe the launch of a weather balloon at sunset from the “inflation station” at the NWS Green Bay Office, 2485 South Point Road. The balloon launches are at 05:00 and 17:00 CST, 06:00 and 18:00 CDT. The inflation and launch were done by Scott Cultice, a hydrometeorological technician for upper air and area climatology. The following is a synopsis of *Upper Air Observations* from NOAA’s National Weather Service Forecast Office web page.

Twice a day, seven days a week hundreds of stations around the world release weather balloons into the atmosphere to obtain upper air weather information. Under the helium or hydrogen-filled balloon a small instrument, called a radiosonde, dangles on a string broadcasting continuous weather data back to the launch site.

The radiosonde consists of a radio transmitter, temperature sensor (called a thermistor), humidity sensor (called a hygristor), and pressure sensor. The winds aloft can be computed from the measured elevations and azimuth of the radiosonde at a given pressure (recall pressure decreases with elevation). The height of the balloon can also be calculated. So, from this simple instrument, the complete temperature, moisture, wind and pressure field in the vicinity of the launch station can be obtained. Data up to 100,000 feet can be collected.

The radiosonde instrument is visible as a small white box. The object just below the balloon is the parachute, which allows the instrument to float safely back to earth. Some are found and returned to the NWS for refurbishing so that the instrument can be re-used. Many, though, fall harmlessly into a forest or a large body of water. The data collected by the network of radiosonde stations is the basic ingredient in producing the forecast charts from which all forecasts are derived. The radiosonde data is transmitted over computer networks to all NWS stations, and to weather stations across the world.

<http://www.crh.noaa.gov/grb/>



Continued →

(Collecting Upper Air Data continued)



The release is a successful one against the darkening sky. Scott and Brian (right) discuss the launch as the balloon drifts out of sight.



CORRELATION OF THUNDERSTORMS TO HAUNTED HOUSES

Tim Vasquez
Norman, Oklahoma

Since the early writings of William Shakespeare, mainstream literature and anecdotal evidence have shown that electrical thunderstorms are frequently associated with haunted houses, ghosts, monsters (including skeletons), and various evil deeds (Disneyland, 1964, et al). These unusual weather phenomena, often referred to as *Satanic convection anomalies*, are very common occurrences around paranormal activity. For many years their impact on weather forecasting and climatology has largely been ignored, and requests to parameterize them into National Weather Service numerical weather prediction models have fallen on deaf ears. A field experiment was recently conducted, however, that yielded the first quantitative insight into a typical satanic weather event.

Background

Satanic convection anomalies have always been associated with large quantities of cold, drafty air in or around a haunted house. This air either remains deathly still or rushes into rooms where ghosts are (Anson, 1977). In recent years, the concept of a small-scale vertical circulation with upward vertical motion at the center (Figure 1) has been widely adopted to account for the rain and thunderstorms that develop in proximity to haunted houses.

The impact of satanic anomalies on American taxpayers is quite significant in light of the National Weather Service's 1988 funding of a \$450 million Doppler radar network across the United States. The Federal government's haphazard implementation of a dense radar network in the Midwest and south central United States with inadequate coverage in locations prone to satanic weather occurrences (Figure 2) is noteworthy. The northeast United States is especially prone to these incidents (King, 1989, et al) and estimates from the insurance industry have shown that over \$900 trillion in losses were attributed to unforeseen thunderstorms and wind events around Maine alone.

Early studies have also shown that there is a positive correlation of lightning strikes to evil deeds and the reanimation of mechanical monsters (Shelley, 1818). This phenomenon is being researched at present by the U.S. Navy as part of Senate Pork Barrel Appropriations Subcommittee Grant #99023-M12, and is believed to be related to thermal energy transformations within the storm environment.

It is important to point out that satanic weather events are not entirely confined to thunderstorms. In 1979, a blizzard developed in response to evil occurrences at the Overlook Hotel¹ in the Colorado Rockies (Kubrick, 1980). Additionally, storms earlier attributed to katabatic winds in Antarctica dur-

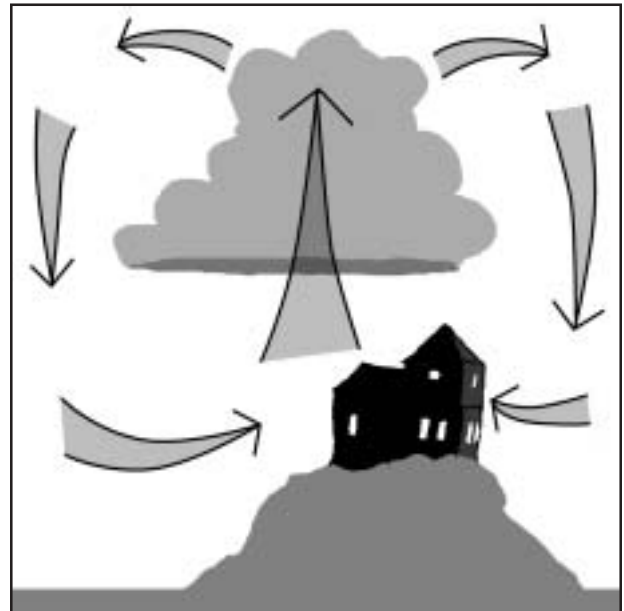


Figure 1. Conceptual model of tropospheric circulation around haunted houses (Key, 1999).



Figure 2. Distribution of Doppler weather radars (“plus” symbols) and haunted houses (dots). We noted on border welcome signs that British Columbia calls itself “Super, Natural,” so a haunted house was assumed to be in every town with more than 5,000 people. Haunted house locations from Sringati, 1985.

¹ Data comparison showed an increase in snowfall rate at Denver Stapleton Airport within one hour after Jack was let out of the freezer.

ing the discovery of an alien lifeform (Carpenter, 1982) are now thought to be the result of satanic weather anomalies.

Field Experiment

On 2-3 May 1999 a mobile observation team, nicknamed Geophysical Haunting Observatory for Synoptic Thermodynamics (GHOST) was deployed to Sudbury, England to conduct field experiments at Borley Rectory, a well-known haunted house in Great Britain. After an initial briefing at 1730 GMT at the Salty Dog Pub, the team departed at 2000 GMT to begin the experiments with the onset of night. Detailed measurements of temperature, pressure, and wind, using direct measurement and remote sensing, continued through 0200 GMT, at which point the team decided a data assessment was in order. This assessment² was promptly held at 0210 GMT at the Salty Dog Pub and concluded at 0730 GMT.

Analysis of data from the GHOST field experiment confirmed the suspected tropospheric circulation associated with satanic convection anomalies. Before sunset, mobile temperature measurements showed a thin layer (about 200 feet deep) of unusually cold air present around the haunted house, covering 2.7 km² and later expanding to 225 km². After sunset, C-band Doppler radar measurements began showing organized areas of upward motion, with velocities exceeding 0.65 m s⁻¹ only 92 min after sunset. Thunderstorms developed over the haunted house with numerous sightings of ghosts in and near the structure at this time. Radar measurements began showing convergence in the lower troposphere and divergence in the upper troposphere. As convection strengthened, sferic measurements showed a cloud-to-ground lightning flash maximum centered on Borley Rectory's graveyard.

Summary

Absorption of energy by evil entities³ is thought to be responsible for the formation of microscale cold pockets near the haunted house, a finding which is supported by the presence of cold air well before convective initiation. These cold pockets are generally mixed out by solar heating during the day, but at night they spread out along the Earth's surface on a scale of tens of kilometers or more and become quite significant. The forward edge of the cold air takes on all the properties of a typical cold front, with isentropic lift⁴ occurring where the environmental wind direction contains a component of motion towards the cold air (Ondasofa, 1984). This lift results in saturation of the air mass, producing clouds and rain shortly after dark.

The release of latent heat steepens lapse rates in the troposphere and in many cases leads to convection and thunderstorm activity.

An exceptionally evil entity is often associated with violent thunderstorms and even tornadoes (Hooper, 1982, et al). These entities absorb larger amounts of heat, amplifying the strength of the initial cold pocket. This in turn increases the slope of potential temperature surfaces, creating stronger lift and ultimately causing much stronger thunderstorms due to the enhanced forcing (Cunningham, 1980).

Orographic lift, upward motion resulting from terrain, can be a significant contributor to thunderstorm development. In Transylvania, orographic lift up the sides of mountains and castles accelerates the saturation of air and the release of latent heat (Fisher, 1958). However in most cases isentropic lift is suspected as the dominant process in satanic weather events.⁵

Acknowledgements: The following people were helpful in the completion of this manuscript: research assistant Shannon M. Key, for illustration; and assorted graduate students who participated in the field experiment, whose names we forgot already.

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² A beverage spill due to fisticuffs damaged the lightning detection laptop computer; all data after 0100 GMT was lost.

³ It's just a hunch; trust me.

⁴ Vertical motion forced by ascent of an air parcel along sloped potential temperature surfaces.

⁵ What say we go get a burger now?



Hope you enjoyed reading *Correlation of Thunderstorms to Haunted Houses!* Our thanks to Tim for letting us use it ☺
Visit Tim's website at <http://www.weathergraphics.com/>

(Editor's note: It is highly recommended that new Storm Spotters practice at Haunted Houses)

Strange Days

January 2006 went into the weather record books for high temperatures, and most of us probably noticed that that we did not experience any sub-zero temps the entire month. This has happened only 5 times previously, since reliable record-keeping started for Wisconsin, in 1895! Average temperature for the month was 30.5 degrees. On January 28 the "Frozen Tundra" most definitely lost some of the edge on its icy reputation with the high temp a literally unheard of 51 degrees. Here's a milestone that made the spiders living in my snowshoes happy: The least amount of snowfall for January, with only 2.0 inches. There is another, more dubious record, that you might not have heard about: The highest number of consecutively cloudy days (75% cloud cover during daylight hours), December 24, 2005 to January 9, 2006. That 18 day streak toppled the old record of 15 cloudy days, December 26, 1991 to January 9, 1992. Even with sub-zero temps back for a spell in February and more snow ahead, we can count down to Spring, and we don't need a groundhog to predict it. The Vernal Equinox occurs on March 20 at 12:26 pm CST.



~ Resource: NOAA Climate Research



AMS Bulletin



by Steve Meyer, PCAMS President

One way to measure how active and successful our chapter has been is to look at the number of times our chapter has been published in the "Chapter Channel" section of the *Bulletin of the American Meteorological Society*. In the last six months, summaries of our chapter meetings have been selected three times as worthy of being published. This is a real honor and tribute that speaks volumes regarding the quality of the presentations at our monthly meetings, not to mention the note-taking and writing abilities of our chapter's scribes. The three summaries published were: "Seasonal Outlook Performance in Wisconsin" (August 2005, vol. 86, pp. 1059-1060), "Renewable Energy: Anything New Under the Sun?" (December 2005, vol. 86, pp. 1722-1723) and "The Storms of November" (January 2006, vol. 87, p. 16). Nice going PCAMS members!!

“Serendipity Stop” is a regular feature of the Chapter News. Each issue we will feature a wayside stop along a Wisconsin highway that is well worth following that arrow pointing off the main road.



Serendipity Stop



Long Slide Falls

Marinette County



Though not as impressive as its sister waterfalls along the famed Niagara Escarpment, 50-foot Long Slide Falls on the Pemebonwon River produces breathtaking sound and fury in contrast to the surrounding serene woods. Follow the signs from Hwy. 141 north of Pembine, Wisconsin. Long Slide is the highest falls in Marinette County. The park is accessible from a narrow path through the woods, and has no steps or handrails to detract from the rustic beauty of the overlook.

This photo, taken July 3, 2003 shows the upper part of the falls. The water level was higher than normal for summer due to above average precipitation in May and June, but the remarkable blocks of granite along the river's course are still clearly visible.



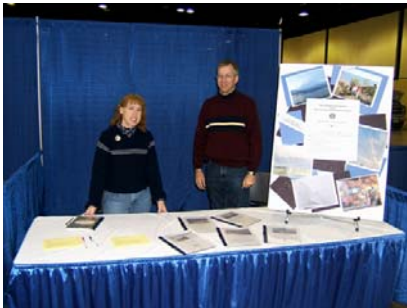


Member Photo

Amy Drew-Hannon of Green Bay discovered a beautiful surprise from the top of Lower Falls in Yellowstone National Park last June: A rainbow in the mist! Lower Falls is a spectacular 308-foot drop on the Yellowstone River.



PCAMS and NWS at the Einstein Science Expo on January 14, 2006



Peg & Brian at PCAMS Display



Brian talks about PCAMS



Jeff & Jill Last at NWS Display

Email submissions/feedback to: amschapter@yahoo.com
Visit our website at: <http://www.ametsoc.org/chapters/packerland>

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Photos by Peg Zenko unless otherwise noted