When the Weather Becomes Deadly

(in the Greater Varna area)

Simon St.Laurent
January 26, 2012

At a complicated intersection

- Varna is NOT in 'Tornado Alley' or hurricane territory, but...
- We get a combination of:
  - continental weather coming from the west
  - arctic weather coming from the north
  - Atlantic weather coming from the south and occasionally east.
- Usually weather comes from the west, but it can shift around and complicate forecasting.

Yes, it can happen here

- Floods – 1935, 1954 (Hazel), 1972 (Agnes), 1981, 2011 just a little further east
- Blizzards – 1914, 1945, 1958, 1993, 2003
- Extreme temperatures - 103 in 1936 and -35 in 1934
- Tornadoes and windstorms – 1969 - Dryden, 1983 - Varna, 1994 - Dryden, 1996 - Etna

Floods

- 1935 – disastrous in unsuspecting Trumansburg, serious in Dryden, Freeville.
- 7.9” of rain total, nearly 3” in 6 hours.
- Trumansburg Flooding (video)

Floods

- 1954 – Hurricane Hazel, local flooding and winds. 81 deaths in Toronto, Ontario.
- 1972 – Hurricane Agnes washes out Varna-Etna Lehigh Valley tracks.
- 1976 – An old mill dike gives way on Ellis Hollow Creek Road.

Floods

- 1981 – Virgil and Fall Creeks
  - Freese Road bridge approaches broken.
  - Village of Dryden experiences major flooding. Huge volume of Virgil Creek water, West Main Street Bridge plugged up with debris.
- January 1996 – Fall Creek
  - Pinckney, Lower Creek, George, Johnson, Mill, Route 366 closed.
  - Snowpack plus 2.67” rain not a good combination.

2011 – A near miss

- Hurricanes Irene and (remnants of) Lee
- Major flooding in Catskills, Binghamton, Owego
- Virgil Creek dam (from 1996) helped
- Highway Superintendent Jack Bush, 9/9/11 - 'There is no doubt that the town & village land bordering Virgil Creek was saved by the Dam. As you will see the past high level water mark on the pole was under water I believe 12" to 18".'

2011 – A near miss

- 7:04am, 9/8/2011

Photo by Jack Bush

2011 – A near miss

- 11:48 am, 9/8/2011

Photo by Jack Bush

Crispell Dam provides a pause

Photo by Simon St.Laurent

2011 – A near miss

- German Cross Road bridge, 9/9/2011

Photo by Simon St.Laurent

Flash Floods

- Surprised not to find more mention of these, given hills and snow melt. Anyone have stories?

Blizzards

- At least we expect these, right?

Main Street, Dryden - February 14, 1914 - 3 feet deep on the level.

Photo from
Elsie Gutchess

Blizzards

- January 1945 four-day blizzard stranded students in Dryden schools for a week.
- 15-foot drifts on Gee Hill Road in 1958.
- 1993 blizzard shut down nine-county area. (I lived on Buffalo Street then – people were skiing down the street.)
- Milder storms in 1997, 2003 – 2003 with bonus ice storm.

Ice storms

- Massive occasional ice storms tend to happen further south, but we get smaller ones regularly.

Photo by
David Makar

Extreme Cold

- 1934 seems to be the record
  - February 8th: -16º
  - February 9th: -35º
  - February 10th: -22º
  - Pipes froze, power lines snapped.
- Temperatures in negative teens and twenties not as unusual.

Extreme Heat

- Raw temperatures less terrifying – 90s and occasional hundreds.
- Extreme heat can last longer than extreme cold, however. Weeks in the 90s more common than weeks below zero.

Tornados etc.

- 1969 tornado in Village of Dryden
- 1983 tornado? in Varna.
- 1994 tornado in Village of Dryden
- 1996 75mph wind, 'flash storm', damaged airplane in Etna, mobile homes, circle around Etna/NYSEG. Warning arrived AFTER weather.
- 2011 tornado on Jersey Hill / East King / Coddington. Also New York State Thruway.
- Usually F1, not F5. (Massachusetts had F3 in 2011, F4 in 1953, though!)

“The Year Without a Summer”-1816

- Caused by the Mount Tambora volcanic eruption of 1815.
- 'The year 1816 was known as the "cold season," in which nearly all of the crops were destroyed by summer frosts, and great scarcity, almost a famine, resulted….there were no such means of transportation then as now to relieve a section where the crops had failed, and no great supply of produce was carried over from year to year.' - George Goodrich, *Centennial History of Dryden*. (1898)

Emergency Response and Weather

- Even 'invisible' weather can have effects. Cayuga Medical Center reported that they have waves of pregnant mothers delivering babies when barometric pressure drops.
- It doesn't have to be a disaster – a little rain or ice can substantially increase the risk of motor vehicle accidents.

Forecasts

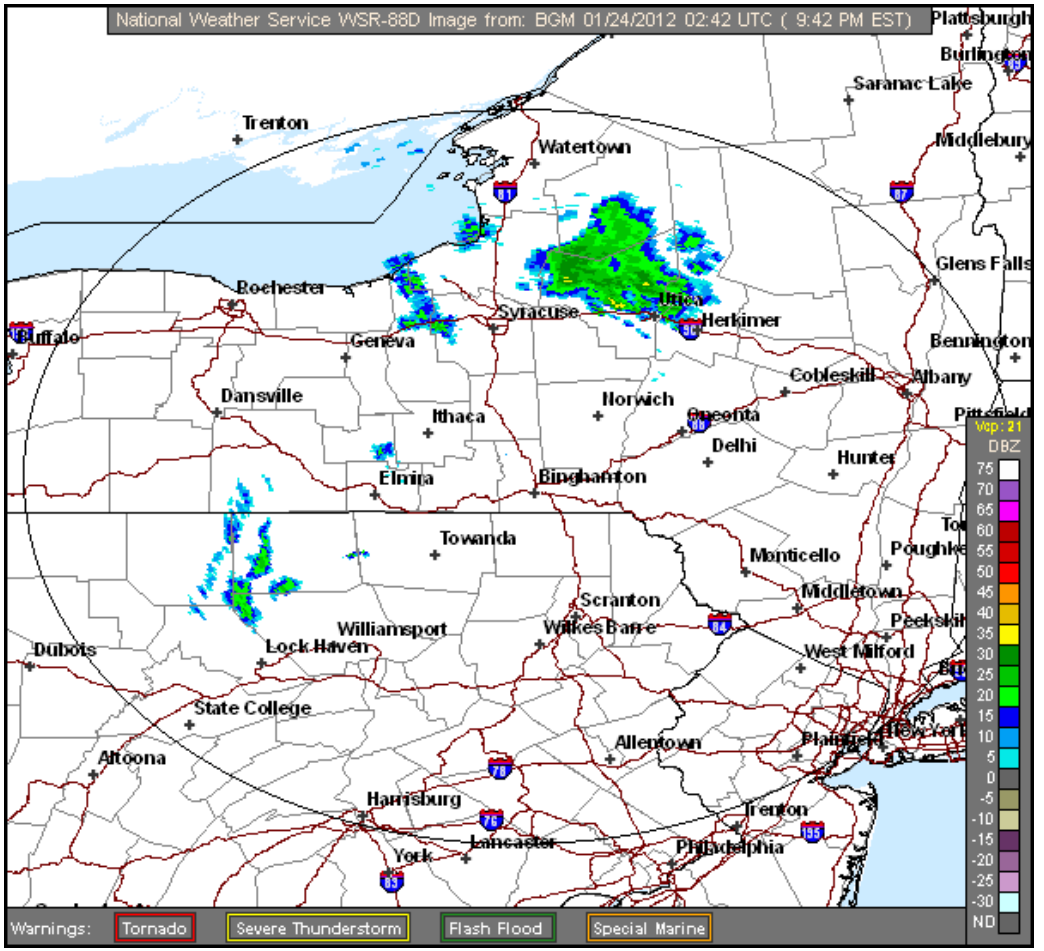
- Getting better all the time. More readings, more satellites, more weather balloons, more radar, more AVAILABLE.
- Anyone can watch the radar now, from The Weather Channel to computers to cell phones.
- Forecasts usually good at rough temperature, precipitation patterns 2-5 days out.
- Forecasts not so good at details of where precipitation falls, wind gusts, and local differences that can make a huge difference.

Warnings

- The National Weather Service used to refuse to give tornado warnings for fear of creating panic. Changed only in 1950s-1960s.
- Today, warnings a normal part of forecasting.
- Specific Area Message Encoding-enabled weather radios can be tuned to give just warnings for given counties with SAME codes. (Tompkins is 036109.)
- If you ever hear “Particularly Dangerous Situation”, assume major danger on the way.

Local National Weather Service

- The NWS office is in Binghamton, near the airport. They have their own NEXRAD Doppler radar there.
- Also radar in Buffalo, Albany, Montague (near Lowville)

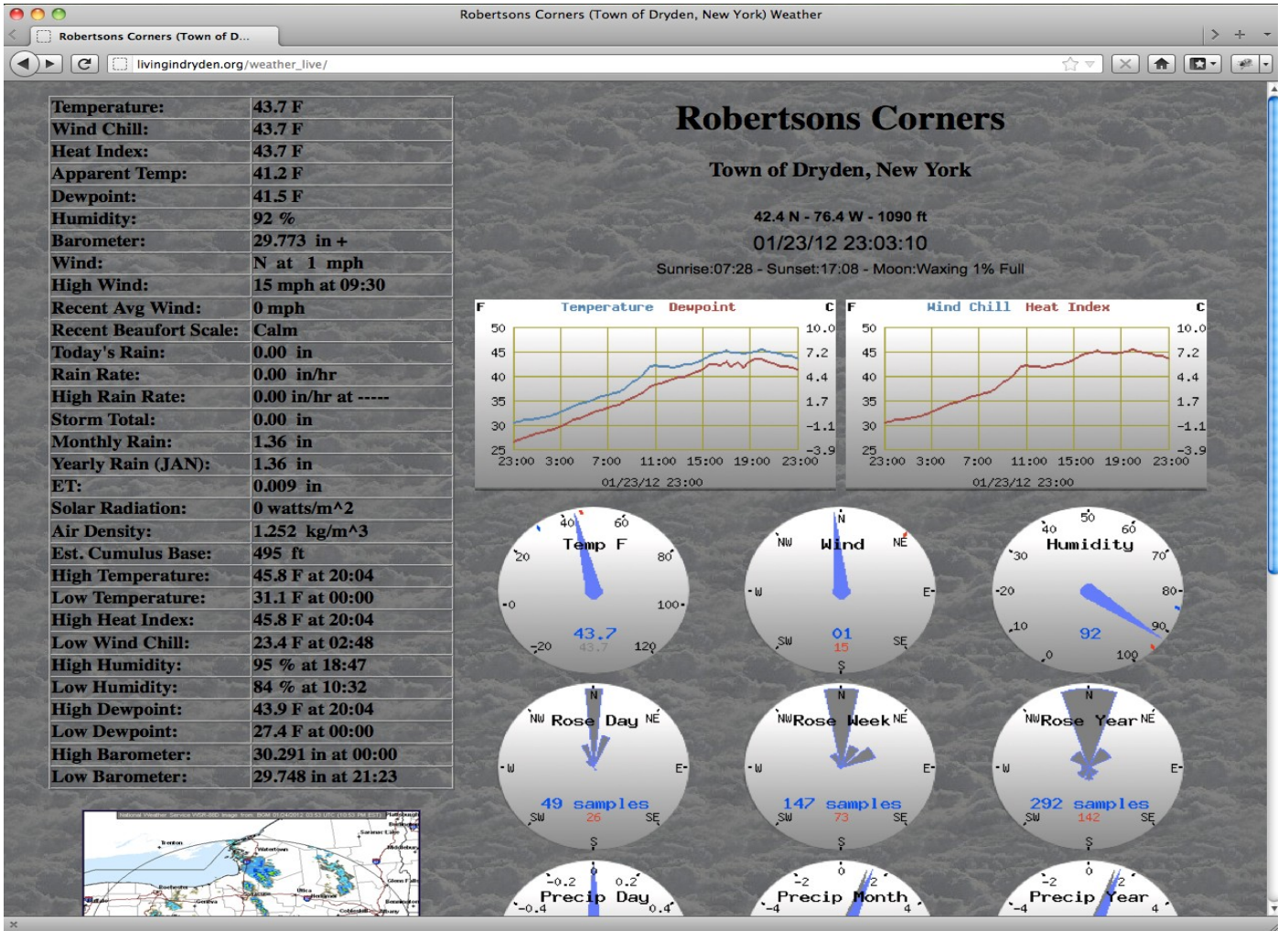


Cornell Weather Stations

- http://www.nrcc.cornell.edu/climate/ithaca/
- Lists Game Farm Road, Ithaca Airport, Cornell Orchards, and Harford.
- That same page includes links to history, climate information, and snow survey maps.

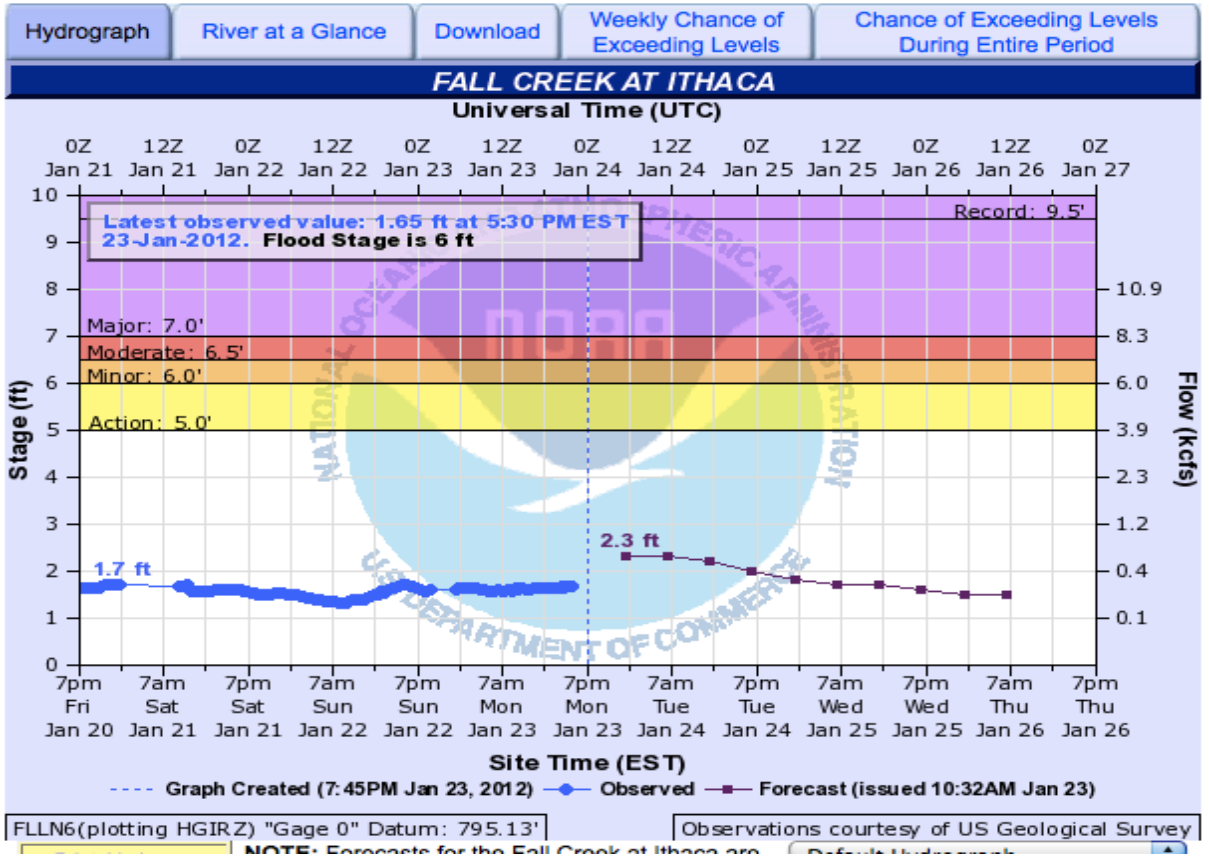
Sample Weather Station

- http://livingindryden.org/weather_live/ (mine, at 1259 Dryden Road)



Watching the Streams

- US Geological Survey maintains stream gages, including one on Fall Creek at Forest Home.



Commercial Weather

- The NWS makes its data available to private weather companies – think AccuWeather – and many other distributors from the Weather Channel to Weather Underground and more.
- That data is likely what you're seeing on your TV, computer, or phone. (You can get some NWS data, like radars, directly.)
- If you can sort through meteorological jargon and maybe too many maps, lots of good information available from various sites and blogs.

Limitations

- Do NOT rely on radar to guess where tornadoes or high winds will be. Delays and inaccuracies are dangerous.
- Radar images are not always great at detecting freezing rain, which often depends on road temperature, not just air temperature.
- Detail within rainstorms is often good; detail within snowstorms is not. Light constant snow may not even be visible to radar.
- Sometimes the radar is off or down for repair.

Microclimates (big)

- Lake effect snow takes many forms. We think of Lake Ontario, but sometimes Cayuga Lake gives snow.

From weather.com.

Microclimates (small)

- Even within the Varna coverage district, probably a dozen different areas with noticeably different weather (if you watch carefully).
- Elevation – downtown Varna to the top of Mount Pleasant.
- North and south sides of hills.
- Shelter from wind, and lack of it.
- Close to creeks, and in gorges. May vary with water flow.

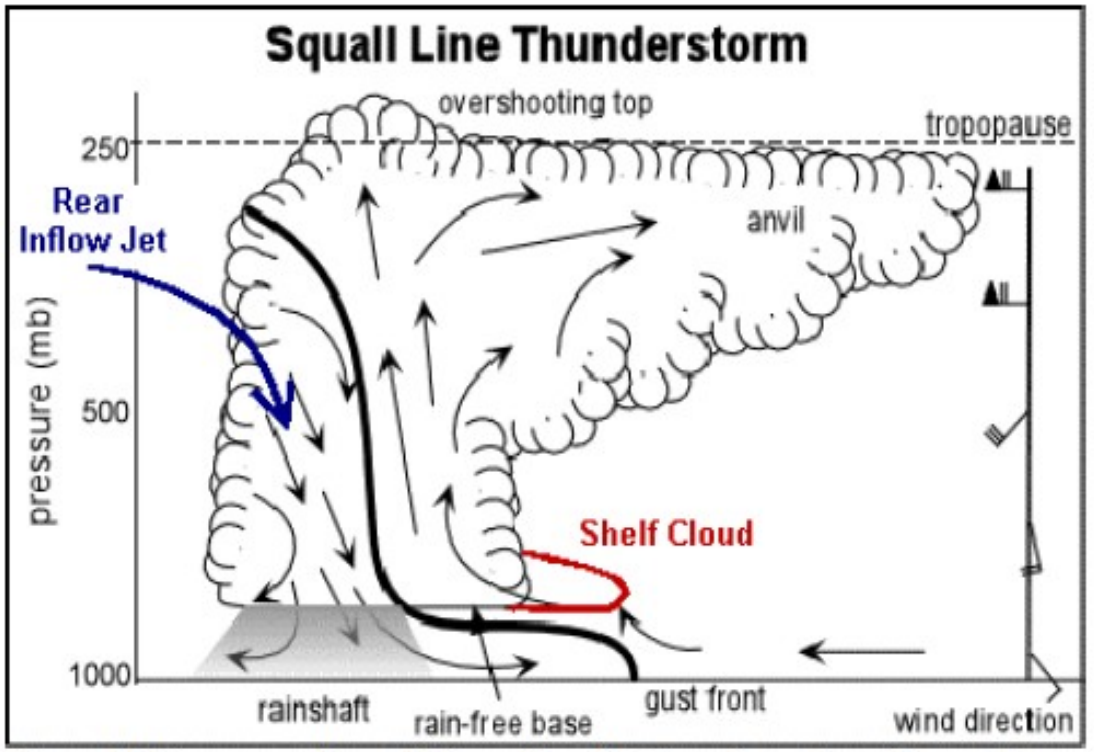
SKYWARN

- You can report weather, not just experience it.
- Doesn't mean you'll be out chasing tornadoes.
- Requires training, though modest – 3 hours for first class.
- Training discusses storm formation and what to watch for – hail, tornado warning signs.
- Cloud formations and especially rotation critical.
- Gives you a direct phone line to the NWS office for reporting, and lets you into eSpotter online.

Tornado signs

- Thunderstorms, sometimes green sky
- Anvil cloud

From NOAA
Spotter Quick Reference Guide



Squall line moving right. Shelf Cloud on leading edge.

Tornado signs

- Wall cloud projecting down from main cloud

From NOAA
Basic Spotters' Field Guide

Figure I 2: Wall cloud. Photo - NSSL.

- Rotation of cloud is the key – if you see rotation, even if no funnel, danger!

Tornado spotting dangers

- Tornado chasing may be popular in the Great Plains where you can see a long ways, but it's much trickier here.
- Take a picture or call the NWS, then take cover. Even small tornadoes can be deadly if you're exposed or in a vehicle.
- “If a tornado appears to not be moving but *does* appear to be growing larger, then it is coming right at you.” - *Warnings*, 21

Other options

- Storm reporting with Twitter, #wxreport
- Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS.org). Requires a rain gauge and registration.
- Citizen Weather Observer Program (CWOP) involves setting up a station and sending data over the Internet. Also radio versions.
- Local weather stations, reporting to sites like wunderground.com or weatherbug.com.

Where to Learn a Lot More

- NWS Spotter training when it comes again
- *The Ultimate Guide to American Weather*, from the American Meteorological Society.
- *Warnings*, by Mike Smith on how warnings and tech evolved.
- *Air Apparent*, by Mark Monmonier, on how weather forecasting came to be.
- *Eric Sloane's Weather Almanac* for a look back at weather lore.