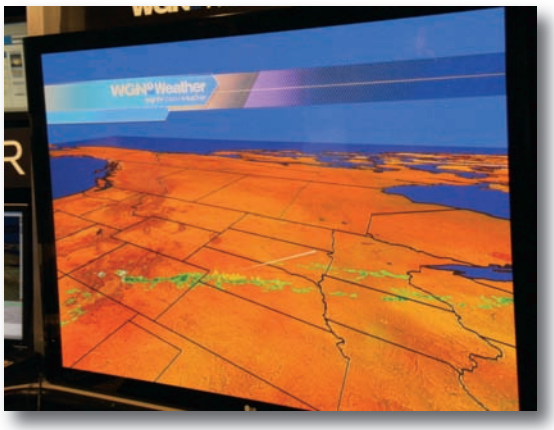
FEATURE II
Steve Partyka, *White Pines Golf Course*

# Chicago's Most Recognizable Meteorologist

*There are two people in my life that I have always wanted to meet. The first is Buffy the Vampire Slayer (Sarah Michelle Gellar), and the second is Tom Skilling. I'm still working on meeting Buffy (short of being arrested for stalking). This past summer my wife and I had got the opportunity to meet Tom Skilling. Being a Greens Superintendent I, like many of you, am a weather junkie. I'm always watching the weather, preferably Tom Skilling at 12:30 p.m., 5:30 p.m., and 9:30 p.m.*

Tom is as approachable a guy as you're ever going to meet. I had so many questions I wanted to ask. Tom was more than happy to talk at length about Door County and Alaska before getting down to business with this weather junkie's important questions. He was good enough to take us on a tour of The WGN Weather Center, showing us the computer models and websites that he uses to prepare each day's weather. After the tour we got a chance to ask the following questions:



**1. What is the percentage or number of days you can predict the weather?**

In general, day to day details of the weather are predictable out to seven days. General features of the evolving weather pattern can be identified out to two weeks. Clearly, certain patterns and weather features are more accurately predicted than others. For instance, precipitation – because of HUGE variations in its distribution – provides the greatest challenge. Temperature, pressure and wind are most accurately predicted. This is particularly true of higher altitude winds, like the jet stream, which operate in a region of the atmosphere less affected by factors like frictional drag from the ground or feedbacks from snow and ice cover and bodies of water. Great progress has been made in weather forecasting with the advent of high speed computing. There have also been vast improvements in remote sensing – the term applied to inferring weather conditions by using readings from satellites, microwave sensors, in-flight transponders on aircraft, and Doppler radar inferred winds and precipitation. To predict the weather at a given spot, it's necessary to know the state of the atmosphere over the entire planet. This is because what's happening at one location is inextricably linked to the large-scale pattern. There can still be huge variations in predictions of the large-scale pattern, because there are a dozen or more global computer models that forecasters use. Being able to look at ALL of these models can provide clues about which models are going off on an inaccurate forecasting tangent.

Having said all of that, here's the bottom line. Predictions of temperature for the next two days are correct to within five degrees more than 90% of the time. Forecasts at a range of seven days are as accurate as two-day predictions were in the late 1960s. In the past ten years, weather predictions have increased in accuracy by more than a day and a half. Progress continues as modeling gets us down to the scale of individual thunderstorm clusters. Individual thunderstorms are still the feature that causes weather forecasters the most grief. Cool air gushing out of thunderstorms – their so-called outflow boundaries – can and does displace heavy rains and alter temperature in ways which at times prove difficult to predict. When there are errors in weather forecasts these days, it's often thunderstorm outflows that have, in one way or another, interfered with the predicted evolution of our weather. At more distant time ranges, forecasters can offer a general sense of when and where precipitation may occur, but the details of scattered rains, snows, or thunderstorms become increasingly difficult to pinpoint in ranges of time greater than several days. Studies show weather forecasts have achieved a

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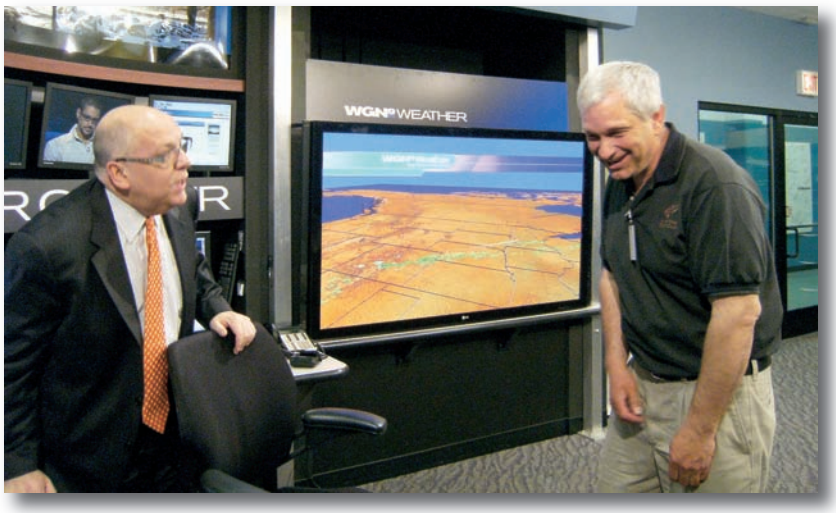
60-percent skill score at seven days out, which is why day-to-day predictions are made for a seven-day period. Forecasts of day-to-day weather beyond that period of time exist, but they exhibit limited skill.

**2. How do you predict the weather?**

That's a broad question which I'll boil down to basics. The process is complex and time-consuming if done properly. A forecaster today has so much computer forecast information available, he or she could literally report to work and produce a forecast by associating words with the numbers which come off the computer models. But it's always been my view that forecasting involves a man-machine mix. The human forecaster will always be in a position to add value to a computer model, or so-called 'machine' forecasts, and ought to strive to do so. This has never been more possible than in the spectacular world in which the weather forecaster operates today. Several decades ago, forecasters had one short range and one longer range model to analyze. Today's forecasters have access to the global forecast models run by the major weather processing centers of the world. They can combine the best of all of them, while fairly intelligently eliminating the "bad" forecasts. On a daily basis, I download temperature and precipitation projections from 33 runs of 10 different computer models. This includes models run by the National Weather Service, the Canadian Meteorological Agency, the European Center for Medium Range Forecasting, the U.S. Navy, the UK Met Office, a number of universities, and a proprietary set of comparatively high resolution forecast models run by our data provider, WSI. When I've finished with my daily analysis of these models, I have gathered 1,200 individual temperatures readings at 5,000 feet for as much as 16 days into the future. These temperatures are averaged—or "ensembled" as we say today. Then I "warm" these readings down to the surface, correcting for cloud cover, wind direction and speed, "fetch" or distance over water if these winds are interacting with the Great Lakes, and snow cover if that's necessary. It is through this process that I generate my seven-day temperature forecast and estimates of general temperatures projected out to two weeks. I also analyze moisture content of the air and the means, if any exists, to lift and cool this moisture in order to produce precipitation. I determine when this "cooling" is to occur, in order to predict precipitation timing and intensity. By analyzing a whole set of models rather than one or two, a better, often more accurate, forecast emerges. This process is time consuming. It depends on wisdom derived from 40+ years of predicting the weather. It's the basis on which I can, as knowledgeably as possible, correct a number of errors or misdiagnoses that can come from a raw computer forecast.




*Tom Skilling is serious about the weather and likes to share his knowledge with his fans.*

**3. Why does a system look promising coming across the Mississippi River and then dissipate when it reaches the Chicagoland area, only to reform over the lake?**

There can be many reasons. I'm convinced that one major variable in certain weather situations can be the state of soil moisture. I've watched squall lines dry up after barreling across the Mississippi when they've encountered the dry soil between here and there. The atmospheric conditions that create the "lift," which cools and saturates air to produce precipitation, can abate as the system heads this way. The dome of cool air that hovers over the lake can, and sometimes does, introduce a means to lift air as a dissipating system approaches, reinvigorating its ability to produce precipitation.

**4. If a system needs heat from the day to form a system, then how can a system form at night, when there is no heat from the day?**

Great question. One way involves the formation of what's called a "nocturnal" or nighttime low-level jet stream. Once the sun sets in this type of situation, humid air streaming north from the Gulf of Mexico holds onto a good deal of daytime warmth while dry air, often to the west, begins cooling quickly because of the lack of sunlight. A huge temperature variation can develop between the dry and humid air. A wind, sometimes as strong as 70 mph several thousand feet above the ground, can blow all the way from the Gulf into the Midwest. This wind field is referred to as a "low-level jet." The fast erupting thunderstorm clusters which develop on the northernmost nose of this jet – so-called MCSs, for "mesoscale convective systems" – often produce deluges and spectacular lightning, features which have produced some of the country's most devastating floods.

**5. Is it better to fly in the summer or winter, which has less turbulence?**

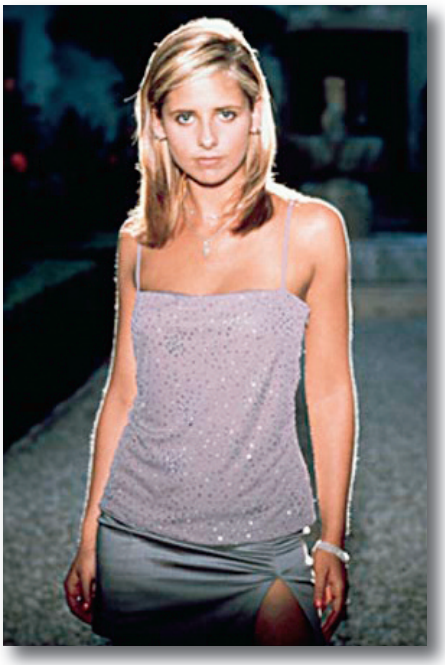
Low level turbulence decreases in the cold of winter. Thermals, comparatively small columns of rising air, don't form as frequently in winter as they do in summer. That cuts down on the turbulence of flying at lower altitudes. On the other hand, winter jet streams, up in the 18,000 to 45,000 ft. range, are capable of producing larger scale turbulence. They grow very strong in the cold season because of the huge north to south temperature differences across the mid-latitudes. This can actually increase higher altitude turbulence in winter. In general, however, the winter environment, because it is colder and denser than the one encountered in summer, provides smoother overall flight conditions.

**6. Do you believe in the Farmers' Almanac?**

Oh, my! It's absolutely a fun read. But I have as much faith in the Farmers' Almanac as I do in the ground hog. I'm distrustful of any prediction derived through "secret" techniques that aren't subject to analysis and review.

**7. How come every weatherperson, including the Weather Channel has different predications for the weather?**

Another great question. It's not at all unusual for the computer models we look at everyday to provide varied forecasts. It happens all the time! That's the big challenge facing forecasters in this day and age. In short, how do we reconcile differences, and sometimes HUGE ones, in the computer projections we all look at? As a forecaster, you have a set of global weather observations that go into the full range of computer models that are run today on the fastest computers in the world. Because we don't measure this vast global atmosphere of ours perfectly, you can make a whole set of varying assumptions on how we are going to describe the starting structure of the atmosphere in comparatively "data void" areas of the planet. When you run supercomputer models with each different description of the initial set-up of the atmosphere, you arrive at scores of different forecast outcomes. In fact, given the speed with which we can run supercomputers today (the Weather Service's IBM supercomputers are up to 17.9 trillion mathematical operations per second and growing faster all the time) that's exactly what the major weather computing centers are doing. They are running what are called "ensembles," entire sets of forecasts from the same model by entering different interpretations of the atmosphere's starting state – each completely and scientifically valid – and looking for common themes in the resulting forecasts. These sets of forecasts are being averaged into what's called an "ensemble forecast," which is far more accurate than a single forecast from the model would be. So when even machines arrive at vastly different forecasts from a single set of initial weather observations, it's not surprising that human forecasters, who also bring different levels of experience and training to the table, do the same.



*Next on Steve's list... Buffy the Vampire Slayer, Sarah Michelle Gellar.*

**8. Why do people who work outside versus inside get more tired?**

I haven't a good answer to this. I've got to be honest in saying this is a bit outside my area of expertise.

**9. What is thunder snow?**

Thunder snow is the result of embedded thunderstorms produced by strong, upward, vertical motions generated in some winter storms. Summer thunderstorms depend heavily on warm season heating. But other features can produce upward vertical motion that is strong enough to induce thunderstorm development. In winter, this often involves vertical motions produced in and around strong pockets of wind in the jet stream known as "jet streaks." It's interesting to note that the lightning produced in winter snowstorms is often the higher amperage, more powerful, and potentially injurious "positively charged" lightning. On average, only 10% of the cloud-to-ground lightning discharges in summer storms are this positively-charged type.

**10. Can it be possible to have a thunderstorm/ tornado at 40°F? If so, how?**

Absolutely! I remember a day when I was working in Milwaukee that hovered at 39° with rain and fog off the lake. All of a sudden, a tornado emerged and destroyed 16 homes in Brookfield, Wisconsin, which is located in Milwaukee's western suburbs. This happened as humid 70+-degree-air just south of a warm front interacted with the front and the jet stream to produce severe thunderstorms.

**11. Can you advise again, what is used to take the temperature reading. You talked about the weather balloons, but you were also talking about in-flight data. Can you advise me more on this?**

Atmospheric temperatures can be measured directly by thermometers or sensors, such as "thermistors" employed in the payload (instrument) packages of weather balloons or they can be inferred by using radiation measurements both from infrared and microwave sensors on satellites.

**12. You used to have a computer model 1 & 2 to check for rain, is there any way you can get this back? I miss it.**

Actually, we've moved beyond that. I think the product we now offer is more accurate in its precipitation predictions because of a much larger set of even more sophisticated model forecasts. Now we look at eight or twelve model precip projections. What we do now is even more useful. We offer a range of predictions from these eight or twelve models, plus an average of all of them. This is better than looking at just two models, and it shows how much more information is available to us these days.

**13. How many years have you been doing this, and what schools did you attend.**

I've been a broadcast meteorologist for 41 years, 31 of them at WGN. I attended the University of Wisconsin-Madison, but when you're a weather forecaster, you go to school every day. With the pace at which new research and forecast techniques emerge today, you are always updating your training through scientific papers and training sessions, many of which are online these days.

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**14. You spoke about Alaska, is that were you want to retire?**

That's my dream! Alaska is a special place for anyone who visits, but I think it has a special lure among those who do what I do for a living. There are few places on earth in which the atmosphere and surrounding terrain are interacting in such interesting ways!

**15. How many pets do you have?**

I have one cat, Vorticity, who is 17 years old and going strong, I'm happy to say. Sadly, I lost my second cat Hercules two years ago to kidney disease. Hercules was 18 years old at the time of his passing.

**16. What is your favorite restaurant and food?**

I've been on a salad routine the past few months and probably will be from now on. These salads are real culinary productions with everything but the kitchen sink in them. But I have preparing them down to a bit of a science to save time as I get them ready to bring to work with me.

**17. Who is your favorite weatherperson?**

I love all who do what I do. Mike Hamernik of our CLTV operation is among my favorites. I like and respect his analyses of developing weather situations and the fact that he thinks outside the box, using computer models as I hope I do, as tools for producing forecasts, but with a very healthy dose of intelligent interpretation. He doesn't merely word associate with computer-produced forecast numbers. I like that very much. He's also one heck of a severe weather analyst!

**18. When you are on vacation do you have any input with the Tribune column?**

I am blessed to work with such a talented group of colleagues, including people like Steve Kahn, Richard Koeneman, Paul Dailey, Frank Wachowski and my producer Bill Snyder, as well as our Tribune weather page artists Tom Valle and Nelson Turac, that I truly am able to break away from our operation during vacations. I've found, too, that my getaways usually happen at about the right time, when my brain is close to being erased by the day-to-day mix of radio, television, Internet, and newspaper duties. I do love and feel blessed to be able to pursue all of these. I wouldn't trade my job for anything in the world. It has been and continues to be a joy!!! I will tell you, though, that I keep in touch with our team while away and love following the work produced by my talented colleagues!

**19. Who are your favorite actor and actress?**

Having worked as an advisor on "The Weatherman," Nicolas Cage is definitely a favorite. But, I admire and respect many actors and actresses and know how hard so many of them work at their craft. Their work brings us such joy – and also makes us think.

As an added bonus, Tom asked if we would to stay and watch the 11:30 a.m. newscast, which we did. In our experience, everyone at the station was exceptionally nice, from the security guard to the producer. We especially want to thank Tom Skilling for taking the time out of his busy schedule to meet with us. Regrettably he doesn't know Buffy, so I'm still on my own for meeting her. **-OC**