



AFTER A PERFECT

Storm

**Bloggers from around
the nation share their
frontline stories
from the summer of 2010**

Trust your training

Grant Huffman relied on his instincts to persevere through one of the most challenging summers in recent memory.

I was excited about the opportunity when I asked to submit an article about the summer of 2010. This summer was my toughest mental test in a decade within the industry. However I managed to get through without any noticeable turf loss, and as the summer went along the turf became healthier. Nothing I am about to say is going to be “earth shattering” but I hope the key points to my success this past year can help others in this business succeed in the future.

Fertilizers: When it comes to granular fertilizer I kept applications closer together with slightly less than typical half pound of N rates. Fairways and rough applications were organic and spaced out every month and a half and tees were on a monthly cycle. On greens and tees I used organic fertilizer and sulfate of potash during aeration in the spring, with a gypsum application before the summer stress hit, followed by a standard dormant feeding in the fall. Liquid fertilizer was applied every two weeks and incorporated into the spray program on tees and fairways with weekly applications on greens. I added standard liquid fertilizer in every spray with a rotation of molasses, manganese, processed fish meal, iron, kelp, and calcium. This rotation was performed every month during the growing season. This allowed for keeping away from the “peaks and valleys” and made for a consistent N and micronutrient feeding all season long.

Regulators: When the dry and hot weather hit a lot of people backed off on the amount of regulators being used. I use rates that have been termed “suicidal” by some but didn’t back off. I think this plus the use of multiple

“ This was definitely a summer for uninformed players to ask questions such as, ‘Why don’t you just run the water at night?’ or ‘How come the rough is turning brown?’ or ‘Don’t you guys put any water out here?’”

Preparing for combat

Justin Ruiz says his region’s annual “monsoons” are a double-edged sword.

Imagine you are working at a club taking care of the course for an elite and affluent membership. You wake up on a nice morning at the start of summer knowing that you have one less day of water to use this summer. Welcome to The Rim Golf Club.

At the start of every summer we have a total of about 60 to 65 days of storage. We rely on the summer monsoon season to come at the end of June or the early part of July to give us relief from the hot dry summer. The arrival of the monsoon weather is a double edge sword. It may relieve us from the hot dry conditions but it also brings the pressure of hot humid conditions.

What we have done to combat such a difficult season is two-fold. First, we combat the hot dry conditions and limited water storage with efficient and creative water use. We have done extensive programming changes to our central control and physical adjustments in the field to become more efficient on our nightly water applications. To continue to extend our efficiency we have created portable irrigation. We can effectively target smaller, localized areas that large rotors would be in-effective at watering. We have also started to bring the perimeter of the course back to the irrigation heads so that we don’t waste water out in the native areas. All these techniques are enhanced with the use of a quality wetting agent to ensure adequate infiltration.

Second, we have created a successful IPM program to defend ourselves from

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regulators in the program had a huge impact on the performance of the turf.

Cultural Practices: REMEMBER THE BASICS! Most everyone pulls cores but who remembered to verticut, spike, groom, top-dress, and deep-tine tees, greens, and fairways this past season? How many of you think your turf would have performed better if you did? Tees and greens were verticut three times and fairways once. Top-dressing and spiking greens was performed every two weeks. I got more from my spiking unit by taking the turf guards off which allowed for deeper penetration with little more disruption than with the guards on. Find a good large area spiking unit and your fairways will be thanking you all season long. Greens were groomed once a month with a deep-tine aerification in the fall.

Soil and Water Testing: When is the last time you had a soil/ water test done? Do you guess as to what the soil and turf is lacking and do you just assume your water supply is free from pollutants? I have two separate soil/ water tests done each year. The spring and fall soil tests came back with everything in acceptable ranges. I believe this is another major reason the turf not only survived but thrived this season. The spring water test came back with high sodium levels and the fall test was perfect. I could address the sodium issues before even charging the irrigation system because this simple test was performed. If soil and water chemistry is in balance success will generally follow.

Employee Training: How many of you took the time to properly train your employees on how to hand water or mow properly? Do you notice your employees take the same route across the turf day in and day out? Are you confident your assistant(s) could keep the course alive and thriving if an emergency were to arrive? Too much water is a recipe for disaster but just the right amount is priceless. Showing a crew member the proper way to turn a mower around and training them to take different routes across the course can save your turf from stress. I check myself a few times a year by showing up 30 minutes late when everyone is out the door and then observe what is taking place. The only thing this year I would have changed was a crew member taking a triplex with groomers instead of one with verticutting units. I didn't blame him... I blamed myself!

Water Management: Knowing how much water to apply is by far the most stressful part of my job. I went to school to study agronomy... not predict the weather! Use a thermometer. Take a pocket knife and cut a piece of turf and tug on the roots. Use a soil probe. Never guess. It will only lead to disaster. One water management technique that works well is making paper copies of your greens, tees, and fairways, and highlighting the areas that seem to burn out and get "hot" the quickest. Use the newer wetting agent/ surfactant technologies to your fullest advantage.

Get Rid of the Poa: Another reason I survived this year is that I have been on an aggressive *Poa* eradication program and letting desirable grasses take over. *Poa* is almost nonexistent in tees and fairways and the greens are up to 75-85 percent bentgrass. There are few sweeter sights than seeing *Poa* being encircled by bentgrass! Use herbicide and regulator advancements and verticut to promote lateral growth in bentgrass. Also, is it really going to break your budget to purchase a little more bentgrass seed? It is worth the investment.

Maybe the best advice I can give is trust your instincts... what is your gut telling you? Nothing is wrong with seeking advice, but most likely you know your facility and turf needs better than anyone else. Don't be afraid to experiment and think outside the box. If some of you think that everything discussed in this article seems expensive I oversee the maintenance for a thirty-six hole property with a maintenance budget under \$750,000. If anyone has questions or would like to know more detail on something particular that is summarized in this article I can be reached through my Website at www.onparwithgranthuffman.com. Here's to better weather and fewer sleepless nights in 2011.



GRANT HUFFMAN, superintendent,
Heritage Hills Golf Resort, York, Pa.,
www.onparwithgranthuffman.com



Justin Ruiz: "This past summer has been another year that validates our efforts toward water conservation and effective plant management."

the hot humid weather that partners with the monsoon season. Counting degree days, scouting and trapping insects are some of the techniques we have been successful at over the past three years. Ensuring that pesticides are used at the correct timing, we avoid over applying chemicals or even worse missing the correct timing. The IPM program has gone hand in hand with our efforts toward water conservation. If we can keep the root feeding insects at bay it is inevitable that less water is needed to keep quality conditions.

Each summer has been more difficult in one way or another. If the monsoons are late then we are counting down the days that we have left of our storage and are challenged by getting more and more creative on how we can keep the course playable. If the monsoons are plentiful, we await the onslaught of turfgrass disease to challenge the accuracy of our knowledge and foresight.

This past summer has been another year that validates our efforts toward water conservation and effective plant management. Using a few simple procedures we have been able to continue to keep our water usage reduced and our problematic pests at bay. As the weather seems to get more extreme each year it just makes us strive to get a little more creative and a lot more humble.

JUSTIN C RUIZ, CGCS, The Rim Golf Club, Payson, Ariz.

www.therimgolfclub.blogspot.com

Overcoming adversity

For Tom Shephard, his crisis wasn't weather related. Instead, overseeding presented its own unique hell.

“ After everything was finally seeded and we just needed to keep the new seed wet until it germinated, we encountered a major problem. On Sunday afternoon around 1 p.m., our irrigation computer crashed – ever experience that wonderful feeling?”

We encountered more adversity over-seeding process this year than we ever have. Hat's off to my staff for not only overcoming it, but for keeping on schedule as well. It all started when our Turf Vacuum – used for picking up the scalped clippings – blew its engine a week before we closed for overseeding. We ended up having to borrow a disabled Sweeper from another nearby club and between the two, got one working. Next, our fairway mower broke its frame in four different places. Then our spring rake broke down three separate times. That was followed by our top-dresser blowing one of its four rear tires. Of course, it was an inside tire and it was fully loaded with sand at the time. Add into the mix that we had nine separate 2-inch lateral waterline breaks and four 6-inch mainline breaks during the process, and you can understand the challenges.

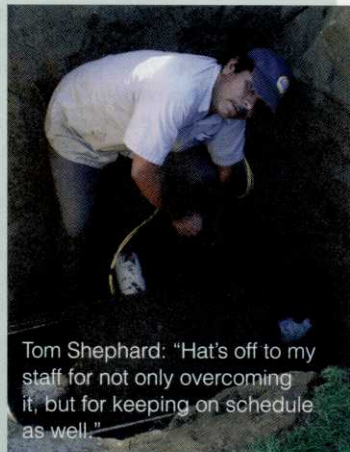
Compounding the problem, the day we finished seeding the front nine fairways and roughs, we discovered that we had a communication wire broken between our irrigation computer and the field controllers that operate the front nine watering. We had to call in a specialist who took two days to track the underground wires and find the break, which was between No. 2 green and No. 3 tee.

After everything was finally seeded and we just needed to keep the new seed wet until it germinated, we encountered a major problem. On Sunday afternoon around 1 p.m., our irrigation computer crashed – ever experience that wonderful feeling? That left us with no way to water our new seed. We contacted Rain Bird Irrigation Support and were told that the only thing that could be done was for them to build us another computer on Monday and ship it to us from Tucson, Ariz. They said we should have it sometime on Tuesday. However, we had already been watering the seed for three and a half days and it was starting to swell up, indicating that it was about ready to germinate. At this critical time we could not afford to go two or three days without water. Once the seed starts to swell, it must be kept wet or it will dry out and die.

Anyway, to make a long story short, I rushed home and got my laptop computer. Then I spent the next seven hours loading up the software and drivers to operate the system and figuring out how I could connect the laptop to the irrigation communication wires running to the controllers. This was after contacting Rain Bird again and getting permission to install and use their software on a non-Rain Bird computer. There is a key code needed to load the software.

It was a good thing we got the laptop going, because the FedEx plane had a mechanical problem and we didn't get our replacement computer until Wednesday afternoon.

Well, everything was going great for the next three days, until one of our 100-hp irrigation pumps went down. Fortunately, we were able to adjust the irrigation computer software to operate with fewer gallons per minute and we were able to get by temporarily with one pump less. I really have to hand it to my staff because they really put forth an extraordinary effort to overcome this unique sequence of adversities.



Tom Shephard: "Hat's off to my staff for not only overcoming it, but for keeping on schedule as well."

Ten minutes from disaster

Summer was very challenging, and Ken Thompson reminded his crew of that fact every day.



It is no secret that the summer of 2010 was one of the warmest and challenging years that I have faced in over 20 years as a golf course superintendent. Between March and September, we recorded 14 record daytime highs, 44 days over 90 degrees, and received less than 6 inches of rain from June thru August – all of it totally unprecedented! There was not a day that did not, in some new way, challenge our staff. But when it was finally over, our course had survived and was still in great shape.

I credit our success first and foremost to our staff of men and women who endured the tortuous heat to "hold" the course through hand watering. Most work days lasted over 10 hours, and were mostly spent moving from green to green, tee to tee, fairway to fairway, and rough to rough dragging 100-foot hoses.

Our staff began each day performing the basic duties of mowing and course set up. As these tasks were finished, they would then switch over to hand watering. By mid morning, our full-time staff of 10 was "on a hose" watering hot spots or syringing. As we have done since I arrived here in 2003, we only used the irrigation system when hand watering and syringing was not enough to hold the course. By the summer's end, we had hand watered for a total of 1,175 person hours.

We were most careful to not over water the greens and tees. For the greens we normally had three persons syringing – applying a very fine mist over the green with a specialized nozzle which was done to keep the surface temperatures from climbing too high. These persons were instructed to raise the nozzle up in the air instead of downwards, and to get on and off the green within the count of "7." This team was followed by my assistant or me to check each green for hot spots. In this way, only what needed water received it, while the entire green was evenly cooled down. We did a very similar program on the tees.

Our program of syringing fairways was to run a two-minute cycle during the early and mid afternoons. At the same time, a team walked each fairway and rough with hoses watering hot spots.

This program of syringing and hand watering prevented the soils from becoming wet, balanced the evapotranspiration rates, and controlled surface temperatures. It also helped with disease suppression and prevented any significant turfgrass root loss.

Some other things we did to reduce plant stress was to use solid rollers on all our mowing equipment, do our mowing in the early morning, roll greens in place of cutting them on the hottest days, raise cutting heights (by only a few 1000ths), and needle tine the greens and tees to keep the soils breathing. Over the past years we had held to an aggressive aeration program which had reduced our thatch and increased our soils pore space, contributing to having a healthy plant going into the summer.

It was a very challenging summer – and I told the staff every day that if we let our guard down we were "only ten minutes away from a disaster!" Our staff responded to the task ahead and never gave up to the heat. To them I give all the credit.

“ There was not a day that did not, in some new way, challenge our staff. But when it was finally over, our course had survived and was still in great shape.”

KEN THOMPSON, superintendent,
Greate Bay Country Club, Somers Point N.J.

<http://greatebaycc.blogspot.com/>

TOM SHEPHARD, superintendent, Desert Falls Country Club, Palm Desert, Calif.

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Dustin's inferno

When it comes to defining the "Summer from Hell," Dustin Riley asks just what is your definition of "hell?"

Many are referring to Summer 2010 as the "Summer from Hell". But how do turf managers define "hell?" Too hot, too cold, too wet, too dry, high disease pressure, reduced fungicide budget etc., etc., etc.

As we reflect back on the Summer of 2010, we may have varying criteria for the "hell" each of us remember. But in the end, we are all referring to the environmental stress that was applied to our golf course turf.

The summer of 2010 was not the typical summer. If you proceeded with the same old programs, you probably encountered some issues. The weather stress was just too great on the turf and adjustments in management needed to be made. Surviving such a difficult summer requires implementing stress relieving practices before the onset of those stresses. I know, easier said than done. The one key change I expanded into my turf management program is practice of rotational venting of the putting surfaces.

Rotational venting? Yes, rotational venting. Many of us were reminded that high nighttime temperatures can be more stressful to the turf than a 90-degree day. The soil relies on the nighttime temperatures to cool down and drawn in fresh air. When soils are wet from repeated rainfalls and continually absorbs solar heat each day, but cannot cool down at night, the turf becomes stressed.

Venting is the practice of poking very small holes on the putting surface.

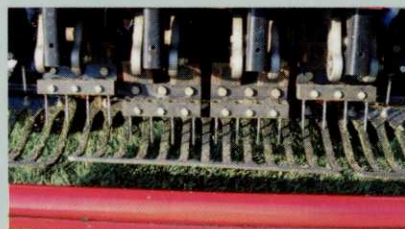
Millions of vent holes allow warm soils to cool and allow fresh air to penetrate the soil. Creating these vent holes will help keep a fresh supply of oxygen to the turf roots. In a sense, the venting process allows the greens and soil to breathe easier. The fresh air promotes healthier and more expansive root systems. The stronger the root system, the stronger the plant and the better it'll handle summer stresses. In addition, the small vent holes will also provide wonderful mini-channels for irrigation and rain water to enter the soil profile during dry conditions.

The venting process can be performed frequently through the summer if a scheduled rotation can be coordinated. For me, I utilize three

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walking greens mowers with separate mowing route assignments. Each week, a different mowing route is targeted for venting. The actual venting process per green requires the same amount of time to complete as mowing (15-20 minutes) By targeting only six to seven greens per event, the venting process can be completed ahead of a greens mower and any early morning golfers. My venting program runs from late-May through mid-August



(core-aeration). As a result, each green is vented on a three-week rotation and four times throughout the summer.

This rotational venting program provided a valuable agronomic benefit to my putting surfaces and helped me survive the stressful Summer of 2010.

Summer replay

Chris Lecour considers Summer 2010 the "best ever."

While many Superintendents across the country are wishing the summer of 2010 never happened, I look back and wish I could relive much of it all over again. 2010 was the year I stopped being a superintendent. Let me tell you how I spent my summer vacation.

Like many golf clubs in North America, my club was struggling. Designed as a golf and residential community, the golf course was the centerpiece for the entire development. When the recession hit in 2008 everything, everywhere, just seemed to stop. With the arrival this past winter of a new majority partner to rescue the development, who also owns a neighboring golf course just minutes away, my position soon became obsolete. One superintendent would manage both golf courses and by the end of July, I was gone.

The truth is I enjoyed my best summer ever. I spent more time with my kids than I can remember, more time with my wife than she'd care to remember and I loved every minute of it. I slept in late, stayed up late, rode my bike, enjoyed weekends (full weekends mind you, not half a weekend after working a full day on Saturday) at the cottage with friends, and saw New York and Chicago for the first time. Essentially, I did many of the things I wish I had done over the past five years; things I could have easily done in the past five years if I had kept my job and my responsibilities in perspective. Too often I put my job ahead of my family. The last few years saw a shift away from that attitude, but still it became too easy to come up with an excuse to go back to the course in the evening "just in case something went wrong." Let me share some wisdom gained over the past few months: If you're responsible and doing a good job, as most of us are, things just "don't go wrong." When you leave the course for the night, don't come back until morning. It will still be there upon your return.

I'd be lying if I said I'd been living carefree since my departure. There have been a few anxious moments, usually when I'm reminded of the reality of a shrinking job market in a very slowly recovering economy. Really, I was no better or no worse than any number of good superintendents faced with a similar life crisis; I simply came out on the wrong side of the numbers game. Almost anybody could find themselves on the wrong side over the next 5 years. However, a good friend reminded me, "The cream always rises to the top." I may not come out of this lull with the highest paying job in the area, but I know where the top is now and I intend to be there, enjoying it with the people who are most important to me.

The life of a superintendent moves pretty quick. To go from zero to 60 back to zero again in the middle of the season is not easy. I'm grateful for all the support I received since I left the club and I'm reminded of a chance encounter and conversation I had with a local superintendent at the end of September. When I told him how I had been spending my time he replied, "Man, I really envy you." That comment helped put things in perspective, and I couldn't have agreed with him more.



CHRIS LECOUR, former superintendent.
The Raven Golf Club at Lora Bay, Collingwood, Ontario, Canada.

<http://chrilecour.blogspot.com/>
Lecour's final post was dated July 30, 2010

Just do it

Under the most trying of circumstances, Paul Sabino and his team persevered by paying attention to the fundamentals.

What "Summer from Hell"? The season that included more than 33 days of temperatures breaking 90 degrees, consistently extreme levels of humidity, intense downpours or contrasting drought? How did we keep predominately Poa Annuua, push up style greens alive with a reduced operational budget which included a labor budget that equaled our actual from the year 2000? Smoke and mirrors baby!

In my honest review of this season's success, under the most trying of circumstances, we did it by paying attention to the

“ We truly did have some of the best playing conditions in one of the worst weather years in my 20 years as superintendent at The Farms CC.”

fundamentals. We focused on planning, prioritizing, experience, solid agronomics, adaptability, execution and communication.

I went into the season with a good plan. The key to the plan was managing budget reductions while still maintaining course conditions at a high level. I focused on what I thought course conditions should be and compared it to member expectations. I found that some conditions I considered noticeably sub-par were not as apparent to our members. I reduced expenses in their "non-priority" areas and channeled the funding into the higher priorities.

The veteran maintenance staff was an integral component

to the plan. My assistants are proficient at pest scouting. My top five employees are proficient on wilt patrol. Every single staff member knows and is required to pay attention. If it doesn't look right, say something! This management style afforded us the flexibility to adapt to everything that was thrown at us all year. In addition, we kept the bodies fresh with rotating vacation time. We always had staff coverage and overtime was almost nonexistent. I couldn't be more proud of them. They were the preverbal glue.

2010 started with a good agronomic foundation. We had aerified aggressively in the fall of 2009. Half inch tines on the Pro-Core and three quarter inch tines on the Verti-Drain. The members were not thrilled with putting conditions in late 2009, but I think it really made a difference. Ground conditions were firm in March, 2010 and I was able to aerify early with quarter inch tines.

Balanced and consistent water soluble fertilization, in conjunction with growth regulator applications, was key to the consistent quality of the putting surfaces. The greens received an average of .15 pounds of nitrogen per thousand and Primo Maxx at six ounces per acre every ten days. We did not apply any bio-stimulant products at all but did supplement with iron and micronutrient products. When we backed off on fertility levels to prepare for an important event we would time our next application so it would be "kicking in" immediately following. This was important to



Paul Sabino: "In my honest review of this season's success, under the most trying of circumstances, we did it by paying attention to the fundamentals."

relieving stress following repetitive days of double cutting and rolling.

The triplex mowers were set at .115 inches, with Wiehle rollers, for the entire season and we skipped the cleanup passes three times per week. We rolled the greens three to four times per week on average. Mowing and rolling frequency was dictated primarily by the golf schedule. We pushed it too. When we had gaps in the schedule we reduced mowing and rolling and performed needle-tining and hydrojecting. These practices helped to offset the severe environmental and mechanical induced stresses.

Our fungicide program went seven percent over budget. I was pleased with that considering the duration of the intense disease pressure. The constant rotation of chemistry classes and preventative treatments were successful.

Ahhh, irrigation! We had one employee scouting for wilt almost every day, from eleven to five, for nearly four

months. If he got overwhelmed, we immediately pulled people off other jobs, regardless of their importance. Our primary focus was hand syringing instead of automatic irrigation. Hand watering and vigilant scouting was everything! The extensive use of a variety of wetting agents applied by injection, sprayer and proportioner aided tremendously.

Finally, and I can't stress this enough, communication with the membership was huge. Whether I used my new blog (best tool ever!), mass emails, personal contact, or planes flying overhead toting banners, our members knew everything that was going on every step of the way!

We truly did have some of the best playing conditions in one of the worst weather years in my 20 years as superintendent at The Farms CC. We lost some grass but it was very minimal. Heck, that happens every year and that's why they sell white paint. If turf dies, and it will, no matter how good you are, know how to fix it and communicate that too.

How did we get through the Summer from Hell? We just did what we do.

PAUL SABINO, superintendent, The Farms Country Club, Wallingford, Conn.

<http://farmscsuperintendent.blogspot.com/Sabino> is also a part-time blogger for CTgolfer.com: www.ctgolfer.com/blogs/paul_sabino/



SUMMER 2010: A weather expert's recap

In 2010 weather became a crucial factor for the survival of the golf course industry. The industry had hoped for an upswing in the rounds played following the previous year's economic downturn.

Warmer than normal sea surface temperatures in the far equatorial regions of the Pacific Ocean – known as El Niño – influenced atmospheric patterns and cold, stormy winter weather across the U.S. in January and February. Blustery and, in some cases, near-record cold kicked off the New Year. Winter golfers from the Carolinas to Florida encountered the coldest January in 17 years and the wettest in the last four. Most notable was the persistent cold air that penetrated deep into Florida. Southern Florida courses refused to warm up during the second week of January. On nine mornings the temperature cooled to morning lows in the 30's in Palm Beach County and during one seven-day stretch the mercury briefly topped 60. On January 9 the high in Melbourne on Florida's central Atlantic Coast peaked at 40 degrees after an early morning low in the 20s.

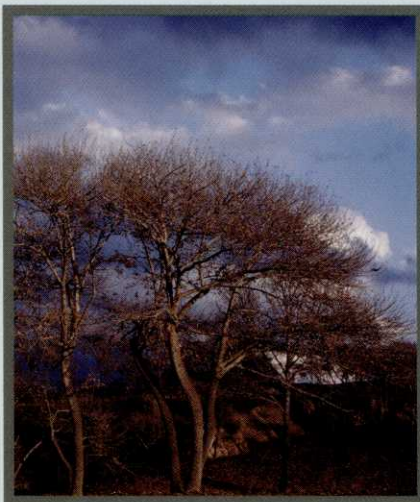
February brought stubbornly cold and windy weather. In the transitional states of Texas and Oklahoma to the Carolinas, Georgia and even Florida was some of the coldest in the last 100 winters. Each experienced one of the top ten coldest Februaries ever with morning temps in the 20s and 30s.

March rolled in those warm Pacific Ocean temperatures began to cool. The resulting La Niña – cooler oscillation phase of the tropical Pacific surface temps – brought a rather abrupt end to the long-lasting cold that plagued much of the U.S. From the Pacific Northwest through the Midwest and Northeast temperatures warmed to above normal. Rhode Island had its warmest March ever and Maine is second warmest. The Deep South remained slightly cooler than normal, but saw some recovery with relatively mild weather. South Carolina and Georgia courses warmed above 60 most of the time with at least 10 days above 70. However, January-March remained the coldest ever in Florida and second coldest ever in Louisiana.

Despite the arrival of warmer weather in the Northeast, the change in weather patterns delivered one of the wettest months ever to much of the area. March's signature storm on the 13th hit courses hard from southern and coastal sections of New Jersey through Massachusetts, littering fairways and greens with trees and branches. The storm, one of the most intense Nor'easters in a dozen years, knocked out power and dumped rainfall amounts from six to ten inches in Massachusetts, Maine, New Hampshire and New Jersey with wind gusts to near Hurricane (70-75 mph) force. Unfortunately, many flooded courses were hit hard again just two weeks later with another

deluge which brought rainfall totals for the month to their highest ever, with nearly 10 inches in the New York City area, up to 15 inches in the Boston region and almost 17 inches in parts of Rhode Island. Fairways that succumbed to the inundation of rain took the entire month and even longer to dry out and return to normal.

At the start of **April**, the rest of the country was beginning to experience more typical spring conditions. Southern California courses were warming up nicely with near perfect conditions for much of the month, and the Deep South – although still cooler than normal – was delivering a high number of playable days. By the end of the month, even the northeast began drying out. Precipitation was light for most areas east of the Mississippi and only the Pacific Northwest



experienced above normal rainfall. Golf courses across parts of the Great Lakes and Midwest, which had seen mostly light precipitation for much of 2010, needed irrigation more often than not during the spring. Little did we know this would be a harbinger of the more severe heat and drought conditions that would prevail across most of the east during the summer?

As **May** and **June** arrived the combination of a strengthening La Niña, lingering heat from El Niño and some of the warmest Atlantic surface temperatures ever produced continued warmer than normal atmospheric conditions from the leeward slopes of the Rockies to the East Coast. Wet conditions returned to the Midwest and Great Lakes with flooding in the upper Mississippi. It was the wettest ever in Michigan and among the wettest in Iowa and Illinois, as well. May brought the first of many hot days to the Northeast. The Washington DC area saw its first 3 days of 90 degree heat, followed by another nineteen 90 degree plus days in June and one topping 100. The heat intensified during the period from Maine to Florida. In June, Myrtle

Beach courses hit the 90s on all but five days.

July and **August** continued to bake many East Coast courses. The four-month period from May to **August** became either the hottest ever or in the Top 3 hottest for every contiguous state from Maine to Florida. The heat intensity was so great that afternoon temperatures topped 100 on more than one occasion as far north as New England. The mercury soared above 90 on about 50 days in the Philadelphia area and an unbelievable 70 days in the District of Columbia, Northern Virginia area. This shattered previous records. Unfortunately, while air temperature reported by weather stations is measured at about 6 feet above the ground, turf surfaces exposed to full sunshine likely reached 110 to 120 degrees or more during the hottest of the summer days. In some cases, 20 consecutive days or more of 90 degree-plus heat prevailed with little or no rain.

In contrast, La Niña's cooling effects on the West Coast continued to produce near ideal conditions from California to Oregon during much of the summer. It was perhaps a bit too cool in Washington State at times, but a great deal more comfortable than what the east was dealing with.

As **autumn** arrived the hottest heat of the summer came to an end but still remained above normal. Overall, the fall weather was the most favorably and forgiving to both courses and players across the U.S. Florida, however, was exceptionally arid for much of the fall, recording a record dry **October** with only an average .39 inches state-wide. The hurricane season was quieter than normal with only minimal affects along the Atlantic and Gulf coasts. Most storms veered out to sea before hitting the mainland.

As 2010 closed, atmospheric steering currents in the northern Pacific again shifted southward, bringing a series of large long-lasting storms to the Pacific coast states and record rains from Oregon to southern California. After escaping the extreme weather most of the year, December brought the "Great California Flood." Although Northern California fared the best, some courses in San Diego County became almost entirely consumed by flooded waters.

The Climate Extreme Index (CEI) is a value that accounts for extreme variation in weather from year to year and has been measured by the National Oceanic and Atmospheric Administration since 1996. In 2010, the index value was 9 percent above normal, a confirmation that yes, the weather during the year did produce more extremes. The good news is that CEI values have been as high as 20 percent above normal back as recently as the late 90s and have been in a decline since. **GC**

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