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ATLANTIC COAST OBSERVER NETWORK, MD / DE / DC CHAPTER WITH DATA FROM NEARBY AREAS

ROLLERCOASTER TEMPERATURES MAJOR MID MONTH STORM

March saw wide swings in temperatures. Temperatures averaged close to above normal despite periods of extreme cold and heat while precipitation was above normal in the north regions and below in the southern regions.

The first major precipitation event, which was all rain, began during the afternoon and evening hours of the 1st and ended mid day of the 2nd. Rainfall amounts generally were in the 1/2" to 1" range with the heaviest amounts of around 1 1/2" in the extreme north and the least around 1/3" in St. Marys County.

West to northwest winds of upwards of 50 MPH ushered in much colder temperatures on the 5th. Temperatures on the 6th and 7th remained below freezing. Single digit minimum temps occurred in the Western Maryland mountains.

Snow fell on the 7th. Amounts were generally in the one to two inch range. Less than half an inch fell in St Marys County while three inches fell in Carroll County and five inches in Washington County. The heaviest reported snowfall was 10" by **Rebecca Harvey of Eagle Rock**, 9.0" by **Greg Latta of Frostburg** and 8.3" by **Nate Mullins of LaVale**.

Following the snowstorm the coldest March temperature in recent years occurred on the morning of the 8th. **Max Hutto of Smithsburg 1.5 SW** reported 5 degrees below zero, **Eric Glass of Emmittsburg 2SE** 4 degrees below zero, and **Greg Keefer of Hagerstown 1E** 3 degrees below zero (see observer comments for more details).

Temperatures rebounded quickly. The afternoon of the 8th saw temperatures in the upper 30's to upper 40's. By the 10th 60 degree temperatures were common. 69 degrees occurred at **Oxon Hill** and 68 at **Glenmont 1NNE**, **Forest Glen** and **Hollywood**.

The 11th was a little cooler and breezy. Temperatures warmed up to unseasonable levels from the 13th to the 15th. 70's with many 80's on the 14th

were common. The warmest reported was 85 by **Joe Manfre of Baltimore 2 SE** and 84 by **Stan Rossen of Glenmont 1 NNE**.

Arctic air moved in on the afternoon of the 15th. Temperatures fell from the 70's on the 15th to below freezing on the 16th. Rain spread northwards during the afternoon and evening hours of the 15th. and continued into the 16th. Rain changed to sleet and then to snow in the colder northern and western regions as the temperatures fell below freezing. 70 degree plus temperatures one day then frozen precipitation the next day is very unusual for this area. An inch or more of sleet fell west and north of a line from the Washington DC western suburbs north to west and north of Baltimore and then eastward into northern Delaware. Two plus inches fell north of a line from Northern Delaware westward north of Baltimore into Carroll County. The sleet changed to snow earlier from Carroll County westwards. 2.5" to 5.5" fell in Carroll County. The heaviest fell from Washington County westward into the Maryland Mountains. Over 6 inches of snow was reported by the following ACON observers: **Eric Glass of Emmittsburg 2SE** 9.0", **Greg Latta of Frostburg** 7.8", **Jim Vaughn of Smithsburg 2 NE** 7.5", **Nate Mullins of LaVale** 7.0", **Greg Keefer of Hagerstown 1E**, 6.7", **Max Hutto of Smithsburg 1.5SW** 6.3".

The 17th was windy and cold. Afternoon temperatures were generally in the mid to upper 30's. Temperatures rebounded quickly and by the 22nd they rose into the 70's. Temperatures rose into the 80's in St Marys County on the 23rd.

A cold front which moved south brought some light rain on the 23rd and 24th. Dense fog was reported in Central Maryland the evening the 24th and morning of the 25th.

The 27th was windy and very warm. Temperatures rose quickly into the 70's and 80's. **Joe Manfre of Baltimore 2 SE** reported 86 while 85 was reported by

EXTREMES REPORTED BY

ACON OBSERVERS

MAXIMUM TEMPERATURE

Baltimore 2 SE	86
Jug Bay Wetlands	85
Bryans Road 2 ESE	85
Hollywood	85

MINIMUM TEMPERATURE

Smithsburg 1.5 SW	-5
Emmittsburg 2SE	-4
Hagerstown 1 E	-3

WARMEST AVG. TEMP.

Oxon Hill	49.1
Hollywood	49.1
Ridge	49.0

COLDEST AVG. TEMP.

Davis 3 SE WV	37.6
Eagle Rock	37.8
Frostburg	38.2

MAXIMUM PRECIPITATION

Davis 3 SE WV	5.70
Newark AG Farm	5.35

MINIMUM PRECIPITATION

UofD Warrington Farm	2.78
Ridge	2.80

MAXIMUM SNOWFALL

Davis 3 SE WV	33.8
Eagle Rock	24.5
Frostburg	21.5

MINIMUM SNOWFALL

Ridge	0.2
Hollywood	0.2

Marty Brumback of Bryans Road 2 ESE, and **Floyd Abell of Hollywood**. Thunder was reported the afternoon but most stations reported little if any rain.

The remaining days of March saw seasonal temperatures and no rain.

**WELCOME NEW MEMBER
ERIC GLASS OF EMMITTSBURG 2SE**

OBSERVER COMMENTS FOR MARCH 2007

Gary Gallaher of Bear 2 SW, DE

Rollercoaster temperatures—75 degree spread between the monthly max and min temperatures. 57 consecutive day streak with min temps of 32 or below ended on the 13th.

16th - Rain changed to heavy sleet during the afternoon accumulated by freezing rain.

Nate Mullins of LaVale

Two major winter storms (7th & 16th) made it the snowiest March since 1999

7th - Snow began early this morning. It continued moderate to heavy at times before tapering off around 3 PM.

8th - Very cold morning with clear skies Low was 9 F. A MesoWest station 1 mile to the east and slightly lower in elevations reported 2 F.

16th - Snow began before dawn and continued moderate to occasionally heavy. It mixed with sleet at times. The snow ended as snow showers late this evening.

Dan Hanson of Pasadena 3 SW

16th - Sleet

Jeff Stoudt of Laurel 2 E

16th - Steady rain changed to sleet mid afternoon, ended as a little snow late evening.

27th - Stray thundershower around 6 PM.

Al Kreinik of Parkton 5 SW

2nd - AM heavy rain.

16th - Early AM rain; snow, sleet, glaze PM.

27th - Distant thunder late afternoon—no precipitation.

Marty Sharrow of Owings Mills

5th - Sunshine with strong afternoon winds.

6th - Sunny, windy, and very cold.

16th - Stormy; rain to sleet to snow, cold.

Joe Manfre of Baltimore 2SE

14th - Variable cloudy, very warm.

27th - Mostly cloudy, PM thunderstorm, windy.

Greg Klein of Westminster 5 SSE

16th - Morning rain changed to mostly snow and some sleet in the afternoon and evening.

Ralph Hartsock of Westminster 4 SSE

2nd - Moderate to heavy rain AM. Sunny and mild PM.

6th - Very cold, sunny, & windy. 25 F daytime high.

8th - Ice fog, thick rime.

16th - Heavy rain then sleet and snow.

Bobby Miller of Millers 4 NE

Greatest extreme temperature range for any month of 78 deg.

14th - Windy, warmest since 10/10/2006.

15th - Thunder 1 AM. PM showers and colder.

25th - Very early fog. 25th anniversary of the station.

30th - Some AM frost, heavy in the valley.

Rebecca Harvey of Eagle Rock

16th - Glaze

20th - Heavy fog.

Rich Giannola of JHU/APL

2nd - PWG 43 MPH from WSW @ 11:47 AM.

5th - PWG 45 MPH from WNW @ 11:49 AM.

8th - Many contrails in the afternoon.

Rob Cohen of Potomac 4 N

4th - Brief flurry.

27th - Thunder heard, no rain.

Rich Giannola of Olney 1 S

13th - First crocus bloomed.

15th—16th - Rain began late the afternoon of the 15th, and mixed with sleet mid afternoon of the 16th. It became all sleet by 4 PM. Snow and sleet mix by 7 PM and then mostly all snow by 8 PM.

Stan Rossen of Glenmont 1 NNE

16th - Rain to sleet to snow.

Kevin Shaw of Gaithersburg 2 WNW

8th - 9 degrees - First March sub-teen temperature since 2002.

15th—16th - 2/3rd of the months precipitation fell.

Joe Terry of Forest Glen

Wild temperature swings. Large even for March. Second very windy month in a row.

2nd - Rising AM temps with moderate rain ended by dawn. 40 degree dew point drop in 4 hours (0830 to 1230). Minimum relative humidity 12%.

15th - Very warm then strong front around 1400 hours was followed by sharply falling temperatures and a cold rain.

Brian Smith of Oxon Hill

20th - AM low 53 degrees.

Floyd Abell of Hollywood

7th - Early AM (0.2") and late day (0.1") snow, cloudy.

17th - Light sleet and flurries at times.

24th - Cloudy, drizzle, fog.

25th - Morning fog, fair afternoon.

John Zyla of Ridge

15th - Thunderstorm 5:00 - 5:30 PM.

Max Hutto of Smithsburg 1.5 SW

6th - Colder, sunny, very windy.

8th - -5 Coldest temperature ever recorded at this station.

13th - Warmer, mostly sunny, windy.

Greg Keefer of Hagerstown 1 E

2nd - Overnight moderate to heavy rain ended by 9 AM.

8th - Record low of -3 broke the old record of +2 set in 1960. This was also the third lowest temperature for March since 1898. March's record low is -7 set in 1900. The last time it was below zero in March was in 1934.

16th - Rain and sleet overnight changed to all snow by 11 AM. Moderate to heavy snow fell during the afternoon.

Jim Vaughn of Smithsburg 2 NE

1st to 6th - PWG 40 MPH or greater ties a record.

6th & 7th - New daily low maximum temperature set.

Lance Shaffer of Sterling 4 N VA

28th - 55 degrees, balmy start.

Dave Leshner of Davis 3 SE WV

8th - Max snow depth 27"

24th - First day with no snow on the ground this month.

Compiled by Gary Gallaher, MD/DE ACON Data Collector and Report Writer, from data received from dedicated observers. Without your observations each month this report will not be possible.

Below is an article which appeared in the March 20, 2007 New York Times. **Herb Close**, our ACON member from Manchester, is quoted in the last paragraph. Herb's complete report can be found in the January 2006 ACON.

Snowflakes as Big as Frisbees?



By [WILLIAM J. BROAD](#)

Published: March 20, 2007

NY Times

Since at least the 19th century, people have periodically claimed to see giant snowflakes falling from the sky — big ones the size of saucers and plates or even larger, their edges turned up, their heaviness making them descend faster than small flakes.

But the evidence was always sketchy and, because of the fragile nature of snowflakes, fleeting. The giant flakes were not quite in the category of sea monsters or U.F.O.'s. Even so, skeptics noted the human fondness for exaggeration, as well as the lack of convincing photographs. And the organizations that compile weather records never made tracking big flakes an observational requirement. So the giants languished in a twilight world of science, their existence claimed but seldom documented.

Now, theorists, weather historians and field observers are concluding that most of the reports are true and that unusually large snowflakes two to six inches wide and perhaps wider fall regularly around the globe, surprisingly big and fluffy, if seldom witnessed or celebrated. Guinness World Records lists the largest snowflakes as having fallen during a storm in January 1887 at Fort Keogh, in Montana. A rancher nearby, the book says, called them "larger than milk pans" and measured one at 15 inches wide. But no corroborating evidence supports the claim.

"Who of us has seen a hailstone the size of a golf ball or a baseball?" asked Kenneth G. Libbrecht, a snowflake devotee at the [California Institute of Technology](#) who runs the physics department there in his spare time. "But, clearly, they exist, because people pull them out of their freezers. Some of these things can be very, very rare, but not impossible."

So too with giant snowflakes, Dr. Libbrecht said. "As big as a basketball?" he asked. "Who knows? It's not out of the question."

The laws of physics, he said, suggest no obvious restrictions on the size of very large flakes. But in the real world, Dr. Libbrecht added, wind might break up the fragile compilations, putting an effective size limit on what flutters down from the sky.

Some of the new interest stems from weather historians who have scrutinized old reports and found recurring claims of giant snowflakes. At times, they say, independent observers of the same storm have corrob-

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ated the extraordinary falls.

William S. Pike, a British weather observer for the Royal Meteorological Society, found 11 poorly known reports, which he described in *The Journal of Meteorology* in January 1988. He wrote that reliable observers of big flakes estimated their diameters at anywhere from two to six inches.

"There is every reason to suppose that such instances might occur almost every day during winter somewhere in Europe or the maritime fringes of North America and Asia," he said. But, he added, such extraordinary snowfalls "are seldom reported or authenticated."

In an interview, Mr. Pike said he got into the topic partly because he himself watched in amazement one day in Vancouver, British Columbia, as giant snowflakes began to transform the winter landscape. "They were two or three inches across," he recalled. "So I became a believer, having once witnessed it myself."

He added that scientists were starting to understand the atmospheric conditions that give rise to big flakes and that this knowledge presented an opportunity for enthusiastic amateurs.

"Any kid with a ruler and a camera can make a contribution," he said. "If they see something special, it's worth recording and talking about. After all, records are meant to be broken."

More by accident than design, scientific field studies in recent years have begun to document the existence of very large flakes with laser probes that can make precise measurements. Two expeditions in the Canadian wilds have done so from airplanes flying through heavy winter storms.

In the future, [NASA](#) and its international partners are to join the hunt for giant snowflakes with satellites that measure global precipitation, including snowfall. The work is seen as crucial for climate studies. The first satellite is to fly in 2013, at an overall mission cost of roughly \$1 billion.

"For the first time, we'll be able to make a good estimate of the snowfall rate and potentially of snowflake sizes, including the presence of very large flakes," said Walter A. Petersen, a senior research scientist at the [University of Alabama](#), Huntsville, who is working on what is known as the Global Precipitation Measurement mission. "It's a big deal."

Dr. Petersen said understanding snowflake sizes and shapes was important because big ones, if unaccounted for in the global measurements, could fool space sensors into overestimating the amount of precipitation.

The usual image of a snowflake — a perfect star with six arms, the kind found on ski sweaters and holiday cards — is actually a single snow crystal. As Dr. Libbrecht of Caltech notes in his book "The Snowflake" (Voyageur Press, 2003), the word snowflake is a general term that can refer to a single ice crystal, a small cluster of them or a large aggregation that forms when crystals "collide and stick in midair, falling to earth in a flimsy puffball."

Hundreds or perhaps thousands of crystals will come together to form a giant snowflake, scientists say. But it turns out that even a single crystal can be surprisingly large.

Dr. Libbrecht, who grew up on a farm in North Dakota and fell in love with snow at an early age, now specializes in studying and photographing snow crystals. In an interview, he mentioned how in his 2003 book he described the biggest snow crystals found in nature as about the size of a pea.

After that, he said, he was on field study in northern Ontario when he found himself surrounded by star-shaped crystals falling from the sky that were the size of dimes.

"They were huge," he recalled. "It was very impressive."

Dr. Libbrecht features one of the giants in "Ken Libbrecht's Field Guild to Snowflakes" (Voyageur Press, 2006). "It's quite a sight," he wrote, "to see such enormous ice flowers drifting through the air and landing on your sleeve!" (In his laboratory, he has managed to grow single crystals even larger, up to an inch wide.)

Snow crystals, despite their legendary diversity, come in a relatively small number of general shapes, including prisms, columns, stars, cups, plates, bullets and needles. Technically, the big crystals that Dr. Libbrecht observed in Canada are known as dendrites, from the Greek word for tree, because their arms are quite elaborate, like branches thick with leaves or flower stems rich in petals. Dendrites are the largest snow crystals.

Scientists have found that dendrites have a tendency to join together faster than their simpler relatives.

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Their complicated arms, it appears, more easily form bonds. "As the branches interlock," said Dr. Petersen of the University of Alabama, "you get these huge aggregates."

Scientists have also found that particularly large dendrites, like the ones Dr. Libbrecht observed, can become the "seeds" or "nuclei" from which big flakes grow.

Mr. Pike's article in *The Journal of Meteorology* mentions the rancher's giant Montana flakes, but finds that report questionable. The rest of his cases tend to be better documented and corroborated, often by meteorologists. For instance, weather officials in Berlin reported a winter storm of January 1915 that produced snowflakes up to four inches wide.

The big flakes, German officials said in *The Meteorologischen Zeitschrift*, "not only fell more rapidly than the small flakes, but also did not swirl about to the same extent." The officials added that "most were shaped like round or oval bowls or dishes with upturned rims. They did rock to and fro in the wind but at no time were they observed to turn over completely so that the concave side would face downward."

Mr. Pike also reports on a winter storm that hit Laramie, Wyo., in September 1970, producing flakes up to three inches wide. A witness watched two relatively small flakes collide and merge to form a large snowflake. Using a stopwatch, the observer also found that the big flakes fell more than twice as fast as smaller ones.

Mr. Pike, generalizing from the reports, concluded that the big flakes tended to form when the temperature was just above freezing, making them wet and sticky. "Ideally," he wrote, "winds should also be relatively light to avoid 'bunches' disintegrating."

The agglomerations seem to start relatively high in the atmosphere, Mr. Pike added. When flakes of modest size form, he said, "there is a fair likelihood that these will continue to grow by collision and merger, especially at the expense of smaller flakes and crystals falling in their paths at two-thirds or half the speed."

An airborne expedition near St. John's, Newfoundland, went further in illuminating the origin of the big flakes. The work began during a fierce storm in February 1992 as scientists of the Canadian Atlantic Storms Program tried to understand the nature of winter gales that lash the coast.

Suddenly, a laser on the side of the plane began to track the presence of snow crystals up to a fifth of an inch wide — about the size of a pea. The team made measurements all over the region and then, back on the ground, found that large snowflakes up to two inches wide were falling and collected samples. After compiling all the weather data and doing extensive computer modeling, the team came up with a detailed explanation.

The drama had begun more than three miles up — unusually high — when large dendrites formed in moist winds that blew slightly upward, keeping the crystals aloft. "That gave them time to grow," recalled R. Paul Lawson, a team scientist then working at the National Center for Atmospheric Research, in Boulder, Colo. "And it let them fall for a long time."

Eventually, the big crystals fell through a region of regular snowfall, Dr. Lawson said, bumping into smaller dendrites and needles along the way, gathering them up to form increasingly large clusters.

"As they fell, they tended to accumulate," he said. "Everything has to come together for it to work."

The team published its findings, "Observations and Numerical Simulations of the Origin and Development of Very Large Snowflakes," in the November 1998 issue of *The Journal of the Atmospheric Sciences*.

Herbert H. Close Jr., an amateur weather observer in Manchester, Md., knows the magic up close.

One night last winter, amid bolts of blue lightning and peals of thunder, he watched in astonishment as giant flakes began to fall around him. They were so big that the surrounding snow cover turned lumpy.

"It's a matter of being at the right place at the right time," Mr. Close said of the unusual show. "Sometimes you get lucky."