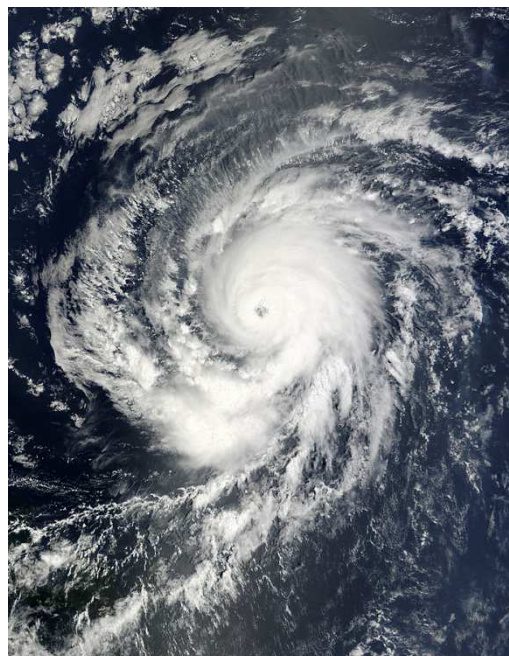


2009

ATLANTIC HURRICANE SUMMARY



Hurricane Bill



Hurricane Fred



Hurricane Ida



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2009 Atlantic Tropical Storm/Hurricane Statistics and Summary

NAME	DATES	INTENSITY	CAT	LOWEST* PRESSURE	MAX** WIND	DEATHS
				MBS	KTS***	
ANA	August 11 – 16	Tropical Storm		1004	35	
BILL	August 15 – 24	Hurricane	4	943	115	2
CLAUDETTE	August 16 – 18	Tropical Storm		1006	45	2
DANNY	August 26 – 29	Tropical Storm		1006	50	1
ERIKA	September 1 – 4	Tropical Storm		1004	50	
FRED	September 7 – 12	Hurricane	3	958	105	
GRACE	October 4 – 6	Tropical Storm		986	60	
HENRI	October 6 – 8	Tropical Storm		1005	45	
IDA	November 4 – 10	Hurricane	2	976	90	10 +

Total Hurricanes 3
Total Major Hurricanes 2
Total Sub-Tropical Storms 0
Total Tropical Storms 6
Total US Landfalls 2
Total Named Tropical Cyclones 9

* Lowest pressure during the life of the storm.

** Highest maximum wind during the life of the storm taken from NHC advisories.

*** To obtain wind speed in miles per hour (mph), multiply the wind by 1.15.

SEASON HIGHLIGHTS

The 2009 hurricane season was below normal with the development of nine named storms, three which intensified into hurricanes, two of which became major hurricanes (Category 3 or higher). This was the fewest named storms, hurricanes and major hurricanes since 1997. The development of El Niño during the summer caused the lack of activity due to strong wind shear, which limited storm development and longevity.

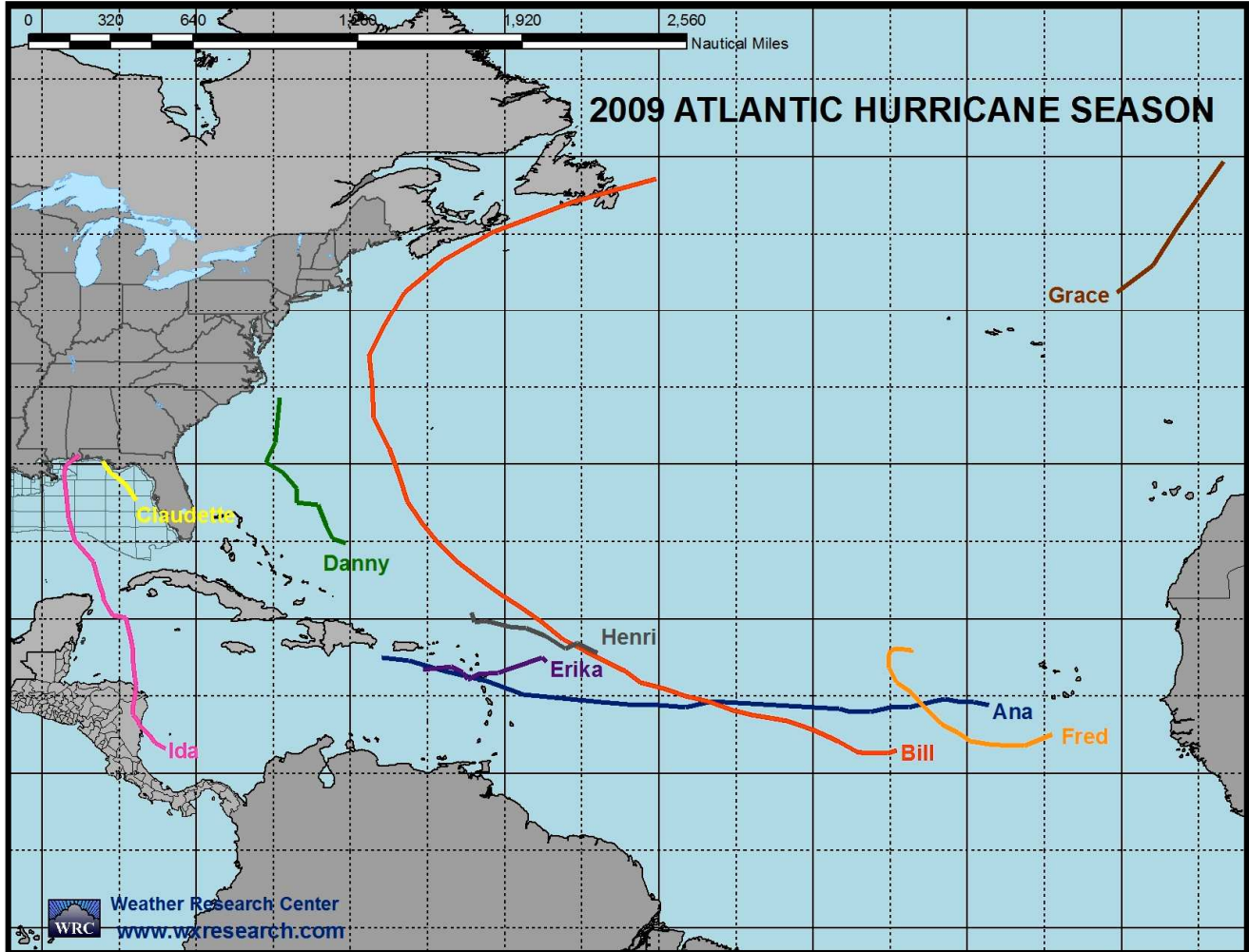
The season began slowly with the first tropical storm not developing until the middle of August. The last season when there were no named storms in June or July was 2004. Both Tropical Storm Ana and Tropical Storm Bill developed on August 15 in the central Atlantic. This was the latest named "A" storm since Andrew in 1992. Conditions remained favorable the next day when Tropical Storm Claudette formed in the Gulf of Mexico, marking August 16 as the only day of the season when three systems were active. By August 17, Ana dissipated over the northeastern Caribbean, Bill strengthened into a hurricane (the first of the season) and Claudette made landfall near Santa Rosa Island, Florida as a tropical storm. Hurricane Bill continued to strengthen and reached Category 4 status before taking a turn to the northwest over the western Atlantic. Fortunately, Bill remained well east of the United States coastline, although the system did make landfall along the Burin Peninsula in Newfoundland as a tropical storm on August 24. The month ended with the development of Tropical Storm Danny north of Hispaniola on August 26. Danny moved erratically toward the northwest for a few days then merged with a frontal low to the east of North Carolina on August 29.

September is usually very active since it is the peak of hurricane season, however this year's activity was below average, with only two named storms developing - Tropical Storm Erika and Hurricane Fred. Both Erika and Fred were short lived and dissipated because of strong wind shear. Even though Fred only lasted six days, the system did intensify into the second major hurricane of the season. Hurricane Fred was also the third storm on record to reach major hurricane status east of 35°W.

Only two tropical storms, Grace and Henri, formed in October, making this the quietest September and October since 1994. The development of Tropical Storm Grace about 115 nautical miles west of Lajes, Azores is the farthest northeast that a storm has ever formed in the Atlantic. On October 6, Grace was absorbed by a front and Tropical Storm Henri developed east of the Leeward Islands. Henri was short lived and could not survive strong wind shear, like other systems earlier in the season.

It was nearly a month before the next tropical storm developed. Tropical Storm Ida formed on November 4 and strengthened into the third hurricane of the season the next day prior to making landfall near Tasbapauni, Nicaragua. Ida weakened while over land then reintensified into a tropical storm then hurricane over the northwestern Caribbean and Gulf of Mexico. Hurricane Ida became only the second hurricane to reach hurricane status in the Caribbean in November during an El Niño year. As Ida moved north through the Gulf of Mexico, the system weakened to a tropical storm prior to making landfall near Dauphin Island, Louisiana on November 10. Ida was the second latest tropical cyclone to make landfall along the Gulf Coast and one of only six tropical storms to make landfall in

the United States during November. This was the first time since 2006 when no hurricanes made landfall and no major hurricanes made landfall since 2005. 2009 was the second consecutive year that no Category 5 hurricanes developed. The last time there were two or more consecutive years with no Category 5 hurricanes was 1999-2002.



SAFFIR/SIMPSON DAMAGE POTENTIAL SCALE

CATEGORY	WIND SPEED [KTS]	PRESSURE [MB]	SURGE [FT]
1	64-82	> 980	4 - 5
2	83-95	965-979	6 - 8
3	96-113	945-964	9 - 12
4	114-135	920-944	13 - 18
5	>135	< 920	18

NATIONAL SUMMARY

1. Tropical Storm ANA: August 11-16, 2009

Ana developed from a tropical wave that moved off the west coast of Africa on August 8. Thunderstorm activity increased and became better organized as a small surface low formed along the wave on August 10. The low developed into the first tropical depression of the year early on August 11, nearly 200 nautical miles west of the Cape Verde Islands. Briefly the next day, Tropical Depression One became Tropical Storm Ana with peak winds of 35 knots. However, later in the day, thunderstorm activity dramatically decreased as conditions deteriorated, and early on August 13, Ana degenerated into a remnant low. The remnants then quickly tracked to the west with little activity. On August 14, the system showed new life as convection increased and early the next day, Ana regenerated into a tropical depression. Just 6 hours later, Ana was upgraded back to tropical storm strength, again at a maximum of 35 knots and stayed at that intensity for the next day. Strong upper level winds and dry air began to impact the system, causing it to weaken, and early on the August 16, it weakened back to a tropical depression, just 350 nautical miles east of the Lesser Antilles. Ana continued to rapidly weaken, and by the afternoon of August 16, it lost its well-defined center and dissipated soon afterwards.

2. Hurricane BILL: August 15-24, 2009 – Burin Peninsula, Newfoundland

A strong tropical wave imbedded within an associated broad area of low pressure moved off the western Africa coast on August 12 and tracked west, while remaining south of the Cape Verde Islands. Steady intensification continued over the next day and early on August 15, the low became the second tropical depression of the year, 330 nautical miles west-southwest of the Cape Verde Islands. With favorable conditions present along its path, the depression continued to strengthen and became Tropical Storm Bill on the evening of August 15 then became the first hurricane of the season early on August 17. Hurricane Bill continued to strengthen and reached its peak intensity of 115 knots (Category 4 strength) on August 19, while 300 nautical miles east-northeast of the northern Leeward Islands, and remained at this strength for the next 18 to 24 hours. Bill tracked mainly in a west to west-northwest direction, but as it neared the Northern Antilles on August 20, the track shifted more toward the northwest, taking it into an area of increased shear which caused it to begin to weaken. Bill passed just 150 nautical miles west of Bermuda on August 22 as a Category 2 hurricane and buffeted the island with tropical storm force winds. The hurricane then recurved to the northeast with an increase in forward speed, brushed the southern coast of Nova Scotia early on August 23 then made landfall along the Burin Peninsula in Newfoundland as a tropical storm early on August 24 while transitioning into an extratropical cyclone. Bill became fully extratropical that morning then continued to move to the east, becoming absorbed by a larger extratropical cyclone early on August 26 near the British Isles. Two deaths were associated with Bill. Its winds fueled high waves and coastal flooding over a large portion of the Atlantic Coast.

3. Tropical Storm CLAUDETTE: August 16-18, 2009 – Santa Rosa Island, Florida

Tropical Depression Four began as a tropical wave whose thunderstorms started to become organized as it interacted with an upper level low over the Turks and Caicos Islands on August 14. The wave moved over the Florida Keys on August 15 then rapidly organized early on August 16 in the southeastern Gulf of Mexico, leading to the development of the first tropical depression in the Gulf. Conditions were extremely favorable for additional strengthening in the immediate area and early that afternoon, the depression became Tropical Storm Claudette with peak winds of 45 knots. However, after tracking to the northwest for the next few hours, the storm moved into an area of strong shear which kept it from strengthening past 45 knots. Claudette continued to move in a northwest motion, around the edge of an area of high pressure over the southeast US, making landfall just after midnight on August 17, near Santa Rosa Island, Florida. Claudette is responsible for two deaths. After formation, Claudette was very well forecast as it remained close enough to land that RADAR sites were able to supply valuable data.

4. Tropical Storm DANNY: August 26-29, 2009

Danny formed from an area of disturbed weather east of the Bahamas late in the morning on August 26. Air Force Reconnaissance found tropical storm force winds to the north and northeast of the circulation. Though, at this time, Danny was marginally more tropical than subtropical and was very poorly organized with an exposed center and remained in this condition for nearly the entire duration of its lifespan. Despite these conditions, Danny was able to gradually strengthen as it moved to the northwest, reaching its peak intensity of 50 knots 24 hours later. Over the next 24 hours, conditions for strengthening became less favorable as Danny meandered in a general west-northwest to northwest direction, marking the beginning of a weakening trend. On the morning of August 28, Danny was a minimal tropical storm with a nearly completely exposed center and maximum sustained winds of just 35 knots, found well away from the main circulation as a result of strong shear. However, Danny was able to maintain itself for the next 18 to 24 hours, while accelerating in a more northward direction. On the morning of the August 29, Danny was absorbed by a frontal low, becoming extratropical and marking the end of the life of the system. One fatality was caused by Danny in North Carolina.

5. Tropical Storm ERIKA: September 1-4, 2009 – Guadeloupe

Erika was a weak tropical storm that may have never had a closed circulation. Erika formed from a tropical wave that emerged off the coast of West Africa on August 25. A broad area of low pressure formed along the wave late on August 27, about 340 nautical miles southwest of the southernmost Cape Verde Islands. Shower and thunderstorm activity slowly organized over the next 24 hours and then diminished considerably on August 29. On August 30, convection redeveloped as the system moved over much warmer waters, 950 nautical miles east-southeast of the Leeward Islands. Thunderstorm activity gradually became more organized over the next 24 to 36 hours and while data showed that it was producing tropical storm force winds,

satellite images showed it lacked a well-defined circulation center, a prerequisite for storm formation. On September 1, the center finally became better defined and by that afternoon, air reconnaissance found a very broad closed circulation and the system was classified as a tropical storm, 250 nautical miles east of Guadeloupe, with maximum sustained winds of 45 knots. Over the next 24 to 36 hours, while under strong vertical wind shear, Erika moved to the west while its center diminished and reformed in different locations twice. On the afternoon of September 2, Erika crossed Guadeloupe, causing it to weaken. Erika briefly re-strengthened early on September 3, then as upper level winds increased, the storm began to rapidly weaken and became a depression that afternoon, then a remnant low overnight. It dissipated early on September 4 about 70 nautical miles south of the southwestern tip of Puerto Rico.

6. Hurricane FRED: September 7-12, 2009

Fred developed from a tropical wave that pushed off the west coast of Africa early on September 6. Later that day, a broad area of low pressure formed east of the wave. Forward motion slowed from 15-20 knots the next day, allowing for thunderstorm activity to increase and a tropical depression to form on the afternoon of the September 7, about 190 nautical miles south-southeast of the Cape Verde Islands. The depression continued to strengthen, becoming a tropical storm just six hours later. Then, an eyewall developed late on September 8, signaling the development of a hurricane. Over the next 12 hours, Fred rapidly strengthened while moving to the west-northwest, with the central pressure falling from 983 mbs to 958 mbs, a difference of 27 millibars, and winds increasing to their peak of 105 knots. At this time, Fred registered as the strongest hurricane on record south of 30°N and east of 35°W. However, intensification came to a halt later on September 9 as both an eyewall replacement cycle and strong southwest shear began to impact the hurricane. Fred shifted to the northwest on September 10 ahead of a front and continued to weaken as it was impacted by cool ocean waters and increased wind shear, becoming a tropical storm during the afternoon of September 11 then a remnant low 24 hours later. Over the next week, the remnant circulation drifted west. During this time, deep convection redeveloped numerous times but never became organized enough for regeneration. Finally, on September 19, the remnant low was absorbed by a cold front off the southeast coast of the US.

7. Tropical Storm GRACE: October 4-6, 2009

The genesis of Grace was almost completely unexpected. Grace originated from a large extratropical low that formed along a cold front on September 27, about 410 nautical miles east of Cape Race, Newfoundland. The low occluded on the morning of September 28, moved in a general east to southeast direction with varying forward speeds over the next 48 hours, then started to make a counterclockwise loop on October 1. Though only producing limited thunderstorm activity, the low gradually became better organized and lost its frontal features on the afternoon of October 3. Twelve hours later the low became Tropical Storm Grace, about 115 nautical miles west of Lajes, Azores, making this the farthest northeast a storm has ever formed in the Atlantic. Late on October 4, Grace developed an eye-like feature and began to

strengthen, reaching peak winds of 55 knots early the next day. Moving over much cooler waters on October 6, Grace merged with a frontal boundary and transitioned back to an extratropical low, then dissipated on October 7.

8. Tropical Storm HENRI: October 6-8, 2009

Henri formed from a tropical wave that pushed off the west coast of Africa on October 1 and produced disorganized thunderstorms over the next few days as it tracked to the west. Thunderstorm activity increased on October 4 near the wave leading to the formation of a broad area of low pressure. The low continued to become better defined, and despite the fact the majority of convection was displaced to the east of the circulation, it was organized enough to reach tropical depression status early on October 6. Further strengthening occurred that day and the depression became Tropical Storm Henri. Early on October 7, Henri reached its peak strength, with maximum sustained winds of 45 knots. However, wind shear increased nearly immediately afterwards, exposing the center and starting the beginning of the weakening process. On the morning of October 8, Henri diminished back to a depression, then into a remnant low 12 hours later. For the next day or so, the remnant circulation moved in a westerly direction, then dissipated over the high terrain of Hispaniola.

9. Hurricane IDA: November 4-10, 2009 – Tasbapauni, Nicaragua; Dauphin Island, Alabama; Near Bon Secour, Alabama

Ida formed from a broad area of low pressure over the southwestern Caribbean Sea on the morning of November 4. The depression strengthened rapidly as it tracked to the west-northwest, becoming a tropical storm six hours later, and then a hurricane late in the morning on November 5, just before making its first landfall near Tasbapauni, Nicaragua. Ida moved over Nicaragua and Honduras over the next 36-48 hours and became a tropical depression again on the morning of November 5. Ida moved on a more northward track than originally thought, keeping it over relatively flat land. Had the storm moved just a few miles further west, the track would have taken it over much more mountainous terrain and could have dissipated the system. Ida reemerged over the open waters of the western Caribbean early in the afternoon of November 6. Initially, waters remained cool, preventing Ida from strengthening but by nightfall, this changed. Ida began to quickly strengthen, becoming a hurricane again after midnight on November 8, then reaching Category 2 strength later that morning in the southeast Gulf of Mexico, with maximum wind speeds of 90 knots late on November 8. Ida's track then took it into an area of much cooler waters and strong wind shear, signaling the beginning of a fairly quick weakening process. Late in the morning of November 9, Ida weakened back to a tropical storm and began to track to the north at a rapid pace. By midnight on November 10, Ida was located just 63 miles south of Gulfport, Mississippi. A weak cold front began to quickly lift the storm to the northeast, and Ida made its second landfall later that morning over Dauphin Island, Alabama and its final landfall near Bon Secour, Alabama. At least ten deaths are attributed to Ida.