CLIMATE AND WEATHER

Florida's official nickname, the "Sunshine State," reflects the economic importance of climate to its visitors and residents. Often called Florida's most important natural resource, the climate is usually pleasant and uniform. General climatic conditions range from a zone of transition between temperate and sub-tropical conditions in the extreme northern interior to the tropical climate found in the Florida Keys. The chief factors affecting the state's climate are latitude, proximity to the currents of the Atlantic Ocean and the Gulf of Mexico, and numerous inland lakes.

Summers throughout the state are long, warm, and relatively humid. Winters, although punctuated with periodic invasions of cool to occasionally cold air, are mild due to the southerly latitude (between 24° 20' and 31°N) and relatively warm adjacent seawaters.

Coastal areas in all sections of Florida average slightly warmer temperatures in winter and cooler ones in summer than do inland points at the same latitude. The Gulf Stream, which flows around the western tip of Cuba through the Florida Straits and northward around the lower east coast, exerts a warming influence to the southern east coast because of the prevailing easterly winds in that area.

TEMPERATURE

In winter, southern Florida is one of the warmest places on the United States mainland. Summers generally are hot throughout the state, although sea breezes tend to modify the climate along the coastal areas. Even though southern Florida is 400 miles closer to the tropics than northern Florida, it has fewer hot days each summer because of the sea breezes. Summer heat is tempered in all areas by frequent afternoon or early evening thunderstorms. These showers, which occur on the average of about half of the summer days, are accompanied frequently by a rapid 10- to 20-degree drop in temperature, resulting in comfortable weather for the remainder of the day.

Because most of the large-scale wind patterns affecting Florida have passed over water surfaces, hot drying winds seldom occur.

The highest recorded temperature was 109 degrees at Monticello, in North Florida, on June 29, 1931. The lowest recorded temperature was 2 degrees below zero, 30 miles away at Tallahassee on February 13, 1899.

AVERAGE ANNUAL TEMPERATURES FOR SELECTED LOCATIONS

Location	*Minimum*	*Maximum*
Daytona Beach	61	80
Fort Lauderdale	67	84
Fort Myers	64	84
Gainesville	58	82
Jacksonville	59	79
Key West	73	83
Lakeland	64	82
Melbourne	63	81
Miami	69	83
Naples	64	85
Ocala	59	83
Orlando	62	83
Pensacola	59	77
St. Petersburg	66	82
Sarasota	62	83
Tallahassee	56	79
Tampa	63	82
West Palm Beach	67	83

In Florida, more people die from excessive heat than from lightning. Medical experts explain that the human body temperature rises dangerously when hot days combine with high relative humidity because perspiration cannot evaporate and cool the body.

A National Weather Service Heat Index chart defines how hot the weather is on a given day. The chart combines Fahrenheit air temperature and relative humidity.

HEAT INDEX CHART

Percentage of Relative Humidity

T		30	35	40	45	50	55	60	65	70	75	80	85	90	95
		APPARENT TEMPERATURE													
E	**115**	135	143	151											
M	**110**	123	130	137	143	150									
P	**105**	113	118	123	129	135	142	149							
E	**100**	104	107	110	115	120	126	132	138	144					
R	**95**	96	98	101	104	107	110	114	119	124	130	136			
A	**90**	90	91	93	95	96	98	100	102	106	109	113	117	122	
T	**85**	84	85	86	87	88	89	90	91	93	95	97	99	102	105
U	**80**	78	79	79	80	81	81	82	83	85	86	86	87	88	89
R	**75**	73	73	74	74	75	75	76	76	77	77	78	78	79	79
E	**70**	67	67	68	68	69	69	70	70	70	70	71	71	71	71

The chart's apparent temperatures are readings in shady, light-wind conditions. For full sunshine, calculate a 15-degree increase.

Elderly persons and small children, or persons who are on certain medications, overweight, or have an alcohol habit are particularly vulnerable to heat stress.

Symptoms and treatment of various levels of heat stress are:

Sunburn—Skin redness, swelling, pain, blisters, fever, and headaches. Ointments help mild cases; more severe sunburns should receive medical help.

Cramping—Occurs in legs and occasionally in the 'abdomen. Gentle massage may help, as do sips of mild salt water (teaspoon of salt to 8 oz. of water). If persistent, see a doctor.

Heat Exhaustion—Marked by profuse sweating, weak pulse, and severe fatigue. Skin may appear pale and feel cold and clammy. Fainting and vomiting signal greater severity. Person should be moved

to cool location, preferably air-conditioned, where cool compresses should be applied. Continuing symptoms require medical attention.

Sunstroke—High (106°) temperature, rapid and strong pulse, and hot, dry skin. Once a victim is moved to a cool location, medical help should be summoned while cool, wet compresses are applied. This condition can be fatal.

FROST

Although average minimum temperatures during the coolest months range from the middle 40s in the north to the middle 50s in the south, no place on the mainland is entirely safe from frost or freezing. With few exceptions, these cold waves seldom last more than two or three consecutive days. It is rare for temperatures to remain below freezing throughout the day anywhere in the state. On the first night of a cold wave there usually is considerable wind which, because of the continual mixing of the air, prevents marked temperature differences between high and low ground. By the second night, winds usually have subsided and radiational cooling under clear skies accelerates the temperature drop after sundown.

Some winters, often several in succession, pass without widespread freezing in the southern areas. The most distressing winters to the agriculture industry are those with more than one severe cold wave, interspersed with periods of relative warmth. The later freezes almost always find vegetation in a tender stage of new growth.

Noteworthy cold spells of the 20th century were in January 1905, December 1906, December 1909, February 1917, January 1928, December 1934, January 1940, February 1947, the winter of 1957-58, December 1962, January 1977, January 1981, January 1982, Christmas 1983, January 1985, and Christmas 1989. It was the 1962 freeze that killed many tropical palms and Australian pines throughout the central part of the state, but the most severe freezes recorded in the state were those of 1894, 1895, 1899, 1983, 1985, and 1989.

One of the longest and most widespread freezes occurred at Christmas in 1989. Freezing temperatures penetrated as far south as Miami. Falling snow and sleet on Dec. 23 forced the closing of icy interstate highways and airports in most of north and central Florida. The freezing temperatures and fallen snow lingered through Dec. 25, causing power outages statewide.

HUMIDITY AND FOG

Florida's humid climate is attributed to the fact that no point in the state is more than 60 miles from salt water and no more than 345 feet above sea level.

Humidity is the degree of wetness or dryness of the air and is measured by a percentage ratio called "relative humidity." This is a ratio of the amount of moisture and temperature at a given spot to the maximum amount (99 percent) of moisture

that could be contained by the same air at the same spot. The warmer the air becomes, the more moisture it can hold. Therefore a person can feel stickier on a warm day with 80 percent humidity than on a cold day with the same humidity.

The climate of Florida is humid. Inland areas with greater temperature extremes enjoy slightly lower relative humidity, especially during hot weather. On the average, variations in relative humidity from one place to another are small.

Heavy fog is usually confined to the night and early morning hours when the humidity range is about 85 to 95 percent. Fog is more prevalent in the late fall, winter, and early spring months. It occurs, on the average, about 35 to 40 days per year over the extreme northern portion; 25 to 30 days per year in the central portion; and less than 10 days per year in the extreme southern areas. Fog usually dissipates soon after sunrise. Heavy daytime fog is seldom observed in the state.

AIR QUALITY

Florida is one of just three states, and the only highly urbanized state, east of the Mississippi that meets all National Ambient Air Quality Standards established by the U.S. Environmental Protection Agency. On a typical Florida day, the Air Quality Index throughout the state, including its major metropolitan areas, stands at "Good," the highest ranking on the federal scale. Three areas of Florida—Cape Coral-Fort Myers on the West Coast, Port St. Lucie-Fort Pierce on the East Coast, and Tallahassee in North Florida—are considered to be among those places having the nation's cleanest air.

PREVAILING WINDS

Prevailing winds over the southern peninsula are southeast and east. Over the remainder of the state, wind directions are influenced locally by convectional forces inland and the sea breeze, from the west in the morning, the east in the afternoon. Consequently, prevailing directions are somewhat erratic but, in general, follow a pattern of northerly in winter and southerly in summer. March and April are, on average, the windiest months. High local winds of short duration occur occasionally with thunderstorms in summer and with cold fronts moving across the state in other seasons. Average annual wind speed in Florida is 8.6 miles per hour.

RAINFALL

The state's rainfall is varied both in annual amount and in seasonal distribution. Individual rainfall measuring stations have annual averages from about 50 to 65 inches. In the Florida Keys, annual averages are only about 40 inches. The main areas of high annual rainfall are in the extreme northwestern counties and at the southeastern end of the peninsula. Many localities have received more than 100 inches in a calendar year. In contrast, most localities received less than 40 inches in a calendar year.

Although the state average rainfall is 53 inches (averaging 150 billion gallons of water daily), evaporation reduces the "available" rainfall amount to about 40 inches annually.

In the summer "rainy season," there is close to a 50-50 chance some rain will fall on a given day. During the remainder of the year, the chances are much less, some

rain being likely on one or two days per week. The seasonal distribution changes somewhat from north to south. In the northwestern counties or Panhandle, there are two wet periods: late winter or early spring, and again during summer, and one pronounced low point, October-November. A secondary low point occurs in April and May. On the peninsula, the most striking features of the seasonal distribution are the dominance of summer rainfall (generally more than half the average annual total falls in the four-month period June through September) and the rather abrupt start and end of the summer "rainy season."

Most localities have at some time experienced two-hour rainfalls in excess of three inches, and 24-hour amounts of near or greater than 10 inches.

WINDCHILL

		Degrees Fahrenheit											
W	0	75	65	55	45	35	30	25	20	15	10	5	0
I	5	74	64	53	43	33	27	21	16	12	7	1	-6
N	10	69	58	45	34	21	16	9	2	-2	-9	-15	-22
D	15	68	56	42	29	16	11	1	-6	-11	-18	-25	-33
	20	67	54	40	26	12	3	-4	-9	-17	-24	-32	-40
M	25	66	52	36	23	7	0	-7	-15	-22	-29	-37	-45
P	30	65	50	34	21	5	-2	-11	-18	-26	-33	-41	-49
H	35	65	49	33	20	3	-4	-13	-20	-27	-35	-43	-52
	40	65	49	32	19	1	-4	-15	-22	-29	-36	-45	-54

The chart shows the wind chill factor for exposed skin, your face, for example, on a brisk, windy day. To read the chart, find the air temperature on the top line, then locate the wind speed in the column on the left. Follow the wind speed line over to the temperature column and read the approximate chill on your bare skin.

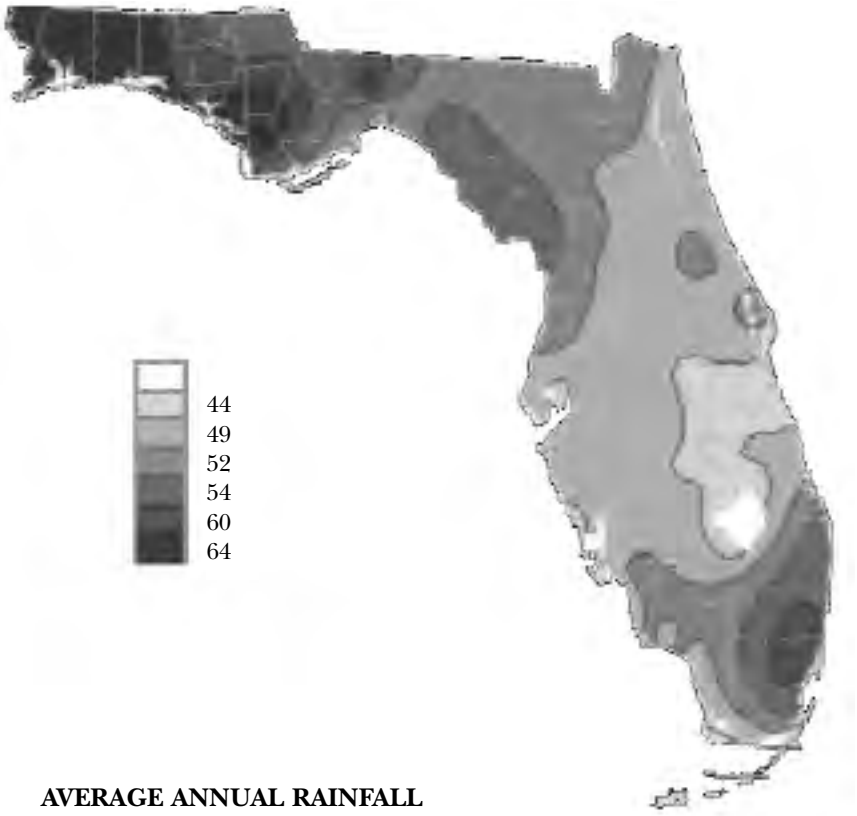
Record 24-Hour Rainfalls

Year	*Location*	*Amount* (inches)
1941	Trenton	.30
1950	Yankeetown	.38.7
1950	Cedar Key	.34
1969	Fernandina Beach	.22
1980	Key West	.23.3

The above totals, with the exception of the Fernandina Beach figure, occurred in connection with a tropical disturbance or hurricane. Maximum daily rainfall has been reported in all months except December, but more than 60 percent of extreme rainfall has occurred in September and October.

THUNDERSTORMS

Florida is the thunderstorm capital of the nation. A study by the National Oceanic and Atmospheric Administration shows Fort Myers averages 100 days with lightning annually, the Tampa Bay area, 90, and Miami, 76. The so-called "lightning belt" in Florida is an area from between Orlando and Tampa south along the west coast to Fort Myers



AVERAGE ANNUAL RAINFALL

and east to Lake Okeechobee. One study revealed 120 days of thunderstorms occurred in one year within a 50-mile radius of Tampa.

Few of the state's thunderstorms last more than two hours. They are attributed to hot, wet air close to the ground combined with an unstable atmosphere. An average lightning bolt lasts just a thousandth of a second and packs around 30,000 degrees Fahrenheit in a one-inch channel that can deliver a shock in the 6,000-25,000-amp range. But Florida's lightning frequently packs a walloping 45,000 amperes. Researchers believe Florida lightning is particularly powerful because it is born of tall, more highly charged storm-cloud formations.

The state has the nation's worst record of deaths by lightning, with storms occurring nearly every day from June to September, usually in the afternoon. Since 1960, lightning has killed an annual average of 10 and injured 45 in Florida. Lightning is the leading weather cause of death in Florida, responsible for more than half of all such fatalities.

Florida Lightning Deaths

Location	*Percentage*
In an open field	27%
Under a tree	13%
On water	25%
Using heavy equipment	6%
On a golf course	3%
Unknown or unreported	25%

Lightning injuries to trees appear to be governed by the voltage of the charge, the moisture content of the tree, and the species of the tree. "Hot" bolts—those with temperatures above 25,000 degrees—will make an entire tree burst into flames; "cold" lightning can make a tree explode, as it strikes at 20,000 miles per second. Tall trees or those growing alone in open areas, and trees with roots in moist soils or those growing along water, are most likely to be struck.

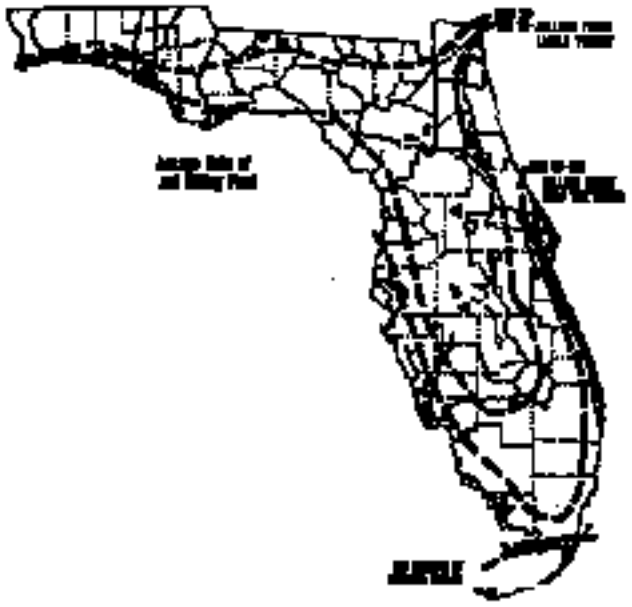
Some species are more resistant to lightning strikes than others. Commonly hit are oak, pine, and maple. Experts point out that trees high in oil, such as birch and beech, are poor conductors of electricity, but oaks and pines have high starch contents, making them good conductors. Deep-rooted and decaying trees also appear more susceptible to lightning. Some trees are known to have been hit by lightning up to seven times.

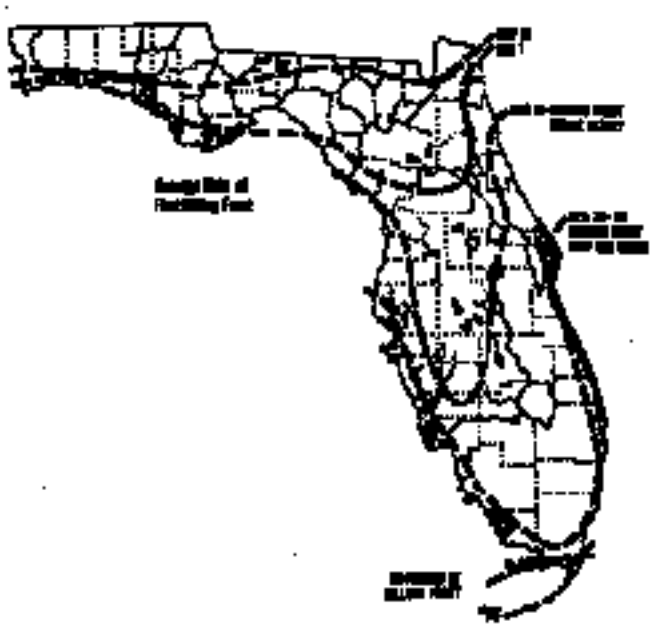
Experts suggest the following precautions be taken during a thunderstorm:

1. Avoid using electrical appliances, especially the telephone. Lightning can strike telephone lines and utility poles and the current may be carried through the wires.
2. Avoid water—whether it's in the shower, at the beach, or out on a boat. Water conducts electricity and lightning tends to strike the highest point on a plain. Your boat or your body could be the highest point on a level area. If you are out on your boat, take extra precautions and head for a protected shoreline or marina if possible.
3. If outside, especially on a golf course or other open area such as a ball field, seek shelter anywhere but under trees. These are primary lightning targets. If no shelter is available, lie low in the deepest ground depression around.
4. Never hold onto any lightning attractants such as golf clubs, metal tennis rackets, or fishing poles. Avoid proximity to other electrical conductors such as wire fences, clotheslines, or metal pipes.
5. If riding in a car, stay inside but avoid touching any metal parts.
6. A tingling sensation or your hair standing out from your head may indicate a bolt is close to striking nearby. Drop to the ground and lie flat.
7. Be aware of the lightning season—July to August is the peak period—and schedule outdoor activities for times other than the mid-afternoon, when most thunderstorms occur.
8. In the event someone is struck by lightning, cardiopulmonary resuscitation must be administered immediately.

FROST LINES

Average dates of first and last killing frosts in Florida.





SNOW

Snowfall in Florida is rare. The greatest recorded snowfalls in Florida occurred on the same date, February 13, in 1899 and 1958. In 1899, four inches were measured at Lake Butler in Union County, and one-half inch at Bartow in Polk County. In 1958, most of Florida west of the Suwannee River received two to three inches of snow while areas east of the river and north of about Latitude 30 degrees measured one to two inches. Three inches measured at Tallahassee in February 1958 is the greatest ever recorded there since records began in 1886.

It's doubtful, however, that Florida ever experienced as wide-ranging a snowfall as occurred in the winter of 1977. Recorded as the most consistently cold January on record, the first month of that year saw the appearance of snow all the way from the Georgia border into Miami. Traces were measured in Broward and Miami-Dade counties, in Palm Beach, and in Miami Beach for the first time. A half-inch was measured in the Tampa Bay area, and an inch in St. Augustine and parts of Volusia County. Snow and sleet fell on three different days during that month in 1977 in Jacksonville. And in Fort Myers, recordkeepers recorded snowflakes during that spell for only the fourth time in its history. Pensacola also measured an inch, and Orlando reported snow on two consecutive days. Florida's most recent snowfall came at Daytona Beach on January 24, 2003.

DROUGHT

Drought is a prolonged period of below normal or expected precipitation. The annual cycle of temperature and rainfall leads to seasonal droughts in many areas of the state. Drought conditions in south Florida occur every year that winter rainfall is even slightly below normal. In north Florida, a seasonal drought occurs most often in fall and spring.

A study of several regions of the state from 1980 to 1982, when compared against a 30-year mean (1951-1980), revealed a decline in rainfall for the Pensacola, Tallahassee, Jacksonville, and Lake Okeechobee areas. By contrast, that same study revealed a rise in rainfall for the Fort Myers and West Palm Beach areas.

The most severe lack of rainfall was recorded for the Pensacola area during the years 1889-94, when three consecutive years recorded less than 45 inches of rainfall. Florida's latest drought began in 1998, with the year 2000 being the state's driest on record. The return of El Nino rains in 2002 brought rainfall, rivers, aquifers, and lakes back to normal, or near normal, levels.

EARTHQUAKES

Florida is relatively free of earthquakes, thanks to the limestone base that supports the land and tends to act as a shock absorber for any subterranean shifting that might occur. Nevertheless, some earthquakes have been recorded in the state, all of a minor magnitude. The earliest recorded and most severe quake occurred January 12, 1879, near St. Augustine. Tremors lasted about 10 minutes there and at Daytona Beach. Damage was limited to falling plaster in some buildings, but the shock was felt as far

north as Savannah, Georgia, and as far south as Tampa.

Six other earthquakes were recorded in the state, but only one was outside the state's northern region. The latter occurred December 22, 1945, when Miami Beach residents reported tremors but no damage. Authorities later determined that the tremors were actually vibrations associated with an earthquake centered in Cuba. Key West was rocked by two strong earthquakes in Cuba on January 22 and 23, 1880. The northwest coast was jolted by the famous 1886 Charleston, South Carolina, earthquake.

Altogether, there have been between 30 and 40 tremors reported in Florida since 1879. Only seven were confirmed by seismographic recording and the others were written off as the result of explosions and sonic booms.

A 250-year review of the state's seismic activity by the University of Florida indicates fewer bona fide seismic events than previously thought. Just as with the 1945 Miami Beach tremors, seismic experts report that most of Florida's so-called quakes were really vibrations felt in connection with activity outside the state or were explosions that could not be verified. Two authentic quake tremors, according to university seismologists, occurred in 1973 and 1975 in the Daytona and Sanford areas when the earth's crust made a minor adjustment. Florida has no active faults, no emerging volcanoes, and no growing mountain ranges, which are the geological prerequisites to most major earthquake activity.

The University of Florida, in Gainesville, is headquarters for the state's network of seismographic recording stations affiliated with the national network that monitors earthquake activity. The Florida network includes seismographic recording stations in Gainesville, the Oscar Scherer State Recreation Area near Sarasota, the Everglades National Park, and Wakulla Springs in Florida, and one station in Waycross, Georgia.

TORNADOES

April, May, and June are considered peak periods for tornadoes. Florida, with 20 twisters a year, ranks eighth in the nation's annual numbers of tornadoes. Fortunately, many of Florida's tornadoes are the weaker, waterspout type of storm. The more severe tornadoes, associated with a squall line, occur mainly in Florida's Panhandle during February and March.

Tornadoes can surpass hurricanes in deadly force. The counterclockwise, upward movement of air within the twister causes rapid expansion, cooling, and condensation, which contribute to the formation of the dark cloud of the tornado funnel. A tornado is seen most often in muggy, oppressive weather when large thunderstorms are apparent. Rain, hail, and flashes of lightning may precede the storm. Inside the funnel, air pressure is so low it can cause structures to explode. Destructive paths of tornadoes average about a quarter-mile wide and 16 miles long, although many in Florida are shorter. Tornadoes travel from southwest to northeast.

Tornado Categories

For the purpose of study, weather researchers rate tornadoes based on miles per hour of wind speed and damage that can be expected to result from the storm.

Rating	*Category*	*Wind Speed*	*Damage*
Weak	F-0	40-72	Light
Weak	F-1	73-112	Moderate
Strong	F-2	113-157	Significant
Strong	F-3	158-206	Severe
Violent	F-4	207-260	Disastrous
Violent	F-5	261-318	Incredible

In addition, seven other tornado categories exist, at least for research purposes. These categories range from F-6 to F-12 and have wind speeds from 319 miles per hour to the speed of sound.

Fortunately, Florida tornadoes are rarely recorded as doing more than moderate damage. Over water, a tornado takes the form of a waterspout. It is safe boating practice to stay away from any thunderstorm cell, especially any so-called "anvil-shaped" clouds whose level bases can form the deadly swirling winds.

If a tornado is spotted, move away from it. Persons in open country should seek a depression and hide inside it. In a house, residents are advised to open windows to help balance the air pressure and then move to a secure location such as a bathroom or another room centrally situated within the house.

If tornado conditions are present, weather forecasters will issue warnings or watches on emergency broadcasting stations. A "tornado watch" means tornadoes and severe thunderstorms are possible in the area; a "tornado warning" means a tornado has been detected in the area.

Florida Tornado Deaths

1882	Gadsden-Baker Counties	6
1892	Orange County	1
1901	Miami	1
1909	Polk County	1
1917	Hillsborough County	1
1925	Miami	5
1926	Palm Beach County	1
1928	Lake County	1
1929	Duval County	1
1932	Escambia County	1
1934	Escambia-Alachua Counties	2
1936	Washington County	7
1939	Jacksonville	4
1941	Marion County	1
1945	Leon County	1
1947	Franklin County	2
1948	Gadsden County	2
1951	Franklin County	3
1954	St. Lucie County	2
1958	Palm Beach County	1
1959	Orange County	1

1960	Lee County	1
1962	Okaloosa-Santa Rosa Counties	18
1966	Tampa-Lakeland-Davenport	11
1967	Okaloosa-Bay Counties	2
1968	Charlotte and Collier Counties	4
1972	Okeechobee-Hendry and Jackson Counties	8
1973	Okaloosa County	1
1974	Gadsden County	1
1975	Bay and Marion Counties	2
1976	Pinellas County	1
1977	Putnam County	1
1978	Pinellas County	3
1979	Polk County	1
1980	Broward County	1
1982	Hendry and Okeechobee Counties	2
1983	Highlands and Citrus Counties	4
1985	Venice	2
1986	Hillsborough County	1
1987	Mount Dora	1
1988	Madison County	1
1989	Franklin County	3
1992	Pinellas County	4
1993	Levy and Alachua-Lake Counties	5
1994	Brevard County	1
1995	Marion, Okaloosa, and Gadsden Counties	3
1996	Putnam and Okeechobee Counties	2
1997	Hillsborough County	1
1998	Winter Garden-Kissimmee-Daytona	42
2003	Miami	1

Hurricanes also generate tornadoes. 2004's Hurricane Ivan, for instance, spawned more than 90 verifiable tornadoes that may, or may not, have accounted for five deaths in the panhandle.

HURRICANES

Florida and other Gulf and Atlantic coastal states lie in the general path of tropical hurricanes. Most of these vicious storms spawn in the Caribbean Sea or in an area east of the Lesser Antilles in the Atlantic Ocean.

Florida's vulnerability varies with the progress of the hurricane season. August and early September tropical storms normally approach the state from the east or southeast, but as the season progresses into late September and October, the region of maximum hurricane activity concerning Florida shifts to the western Caribbean. Most storms that move into Florida approach from the south or southwest, entering the Keys, the Miami area, or along the west coast.

Caused by wind rushing toward a low-pressure area, hurricanes take the form of huge doughnuts. In the Northern Hemisphere, high winds revolve counterclockwise around a calm center or "eye." The movement is clockwise in the Southern Hemisphere.

The lowest sea level pressure ever recorded in an Atlantic storm was 882 mb, recorded by Hurricane Wilma on Oct. 19, 2005. It broke the record of 1988's Hurricane Gilbert that stood at 888 mb. Wilma formed as a tropical depression October 15 southwest of Jamaica. It became a tropical storm two days later and was named Wilma, the first storm to reach "W" since alphabetized names for storms was introduced in 1950. Moving slowly northwest, it became the 12th hurricane of the season on Oct. 18. It began that day as a tropical storm,

but in the afternoon, the storm's pressure began to drop at an unprecedented rate, diving 90 mb in 24 hours. In the same period it went from a storm to not just a hurricane but a Category 5 hurricane with sustained winds climbing in the same period from 70 mph to 185 mph. Its intensity was underscored by the size of its eye, which shrank to less than two miles in diameter, one of the smallest eyes ever recorded. It was on that day, Oct. 19, that the pressure fell to the record low. Winds slackened slightly late that night, reducing it to a Category 4 storm. But even in that category, Wilma remained unprecedented, the first Category 4 storm with a pressure below 900 mb. As a 4 or a 5, Wilma was the most intense hurricane in recorded history. Wilma made landfall Oct. 21 on the resort coast of Mexico's Yucatan Peninsula with winds of 150 mph. Some areas endured hurricane winds for more than 24 hours. On Oct. 23, Wilma exited the Yucatan and entered the Gulf of Mexico as a Category 2 storm. But it reintensified to a 3, veered east, and made landfall again in Southwest Florida the following day, flooding the Naples metropolitan area, severely damaging the Everglades, and, undeterred, slamming its now 35-mile wide eye into the Miami-Ft. Lauderdale-Palm Beach metropolitan area causing heavy damage throughout. Its storm surge also flooded Key West and the keys. It entered the Atlantic, reintensified to a category 3 over the Gulf Stream, and hit the Bahamas. Ten days after it began, Wilma gradually weakened and was classified as extratropical. Still, south of Nova Scotia, its winds howled at hurricane force. Hurricane Gilbert, now the second most intense storm, also hit the Yucatan but spared Florida. The third most intense storm didn't. The infamous "Labor Day" hurricane hit the Florida Keys in September 1935. One of the few remaining weather records of the storm was its pressure, 892 mb. All other measuring equipment was literally blown away before the peak of the storm, a feat estimated to require winds of 200 to 250 mph.

Ranging from 60 to 1,000 miles in diameter, a hurricane is defined by winds of more than 74 mph, accompanied by heavy rains, extremely large waves, and dangerously high tides. Immediately outside the eye, winds may surge as high as 125 to 150 mph or more, blowing rain in horizontal sheets. The storm itself has forward movement and can travel very slowly or at speeds of more than 60 mph.

Once a hurricane is formed, it poses a multiple threat to people and property in its path. Wind, rain, waves, and storm surge are its four most destructive forces. Any one of these forces is capable of causing severe damage.

The Most Intense Hurricanes

1. Wilma	2005	882 mb
2. Gilbert	1988	888 mb
3. "Labor Day"	1935	892 mb
4. Rita	2005	895 mb
5. Allen	1980	899 mb
6. Katrina	2005	902 mb
7. Camille	1969	905 mb
7. Mitch (tie)	1998	905 mb
9. Ivan	2004	910 mb
10. Janet	1955	914 mb

Hurricane rains often come as a

blessing to parched lands, but they may also come too fast and cause wholesale flooding and destruction. The average hurricane will drop some six inches of water over a given area. The extremes of this average range from practically no rain to downpours measured in feet.

After an average of eight to 10 days of blowing, the normal hurricane dies by either running too far from the tropical latitudes of its birth, or by advancing over land. Uneven land masses hinder the free flow of winds and fail to offer the supply of moisture the storm needs to keep going. Many hurricanes lose their punch while still at sea and hit land classified only as tropical storms (winds under 74 mph).

How to Estimate Wind Speeds (mph)

Calm	under 1	Smoke rises straight up, nothing moves
Light air	1-3	Smoke drifts, leaves barely move
Light breeze	4-7	Wind is felt on face
Gentle breeze	8-12	Wind extends light flags
Moderate	13-18	Small breeze, branches move
Fresh breeze	19-24	Small trees move, small crests on waves
Strong breeze	25-31	Large branches move, twigs break, moss falls, wires hum
Moderate gale	32-38	Large trees move, difficulty walking
Fresh gale	39-46	Small and weakened limbs fall
Strong gale	47-54	Slight structural damage
Whole gale	55-63	Small trees uprooted, much damage
Storm	64-74	More damage
Hurricane	75+	Severe, life-threatening damage

Hurricanes form over all tropical oceans except the South Atlantic and the eastern South Pacific.

The Gulf of Mexico and the Atlantic Ocean produce an average of 10 hurricanes annually. As few as two, and as many as 15, have been recorded in individual years.

In 1898, during the term of President McKinley, the United States established meteorological stations in the West Indies to keep watch on low pressure areas and establish a warning system for the U.S. mainland. Today the National Hurricane Center is located in Miami and, aided by reports from ships at sea, hurricane reconnaissance aircraft, radar detection equipment, and satellite reports, weathermen follow each tropical disturbance closely. The hurricane season runs from June 1 to November 30, but late hurricanes have occurred. Hurricane Alice, for example, formed off the Windward Islands in January 1955.

STORM TERMS USED BY THE NATIONAL WEATHER SERVICE

Advisory—A method for disseminating hurricane and storm data to the public every six hours.

Special Advisory—A warning given anytime there is a significant change in weather conditions or change in warnings.

Intermediate Advisory—A method

of updating regular advisory information every two to three hours as necessary.

Gale Warning—Wind speeds of 39 to 54 mph expected.

Storm Warning—Wind speeds of 55 to 74 mph expected.

Tropical Disturbance—An unsettled area of thunderstorms moving in the tropics.

Tropical Depression—A low-pressure area with rotary circulation of clouds and winds up to 38 mph.

Tropical Storm—Counterclockwise cloud circulation with winds from 39 mph to 73 mph. At this time the storm is assigned a name.

Hurricane Watch—A hurricane may threaten the area.

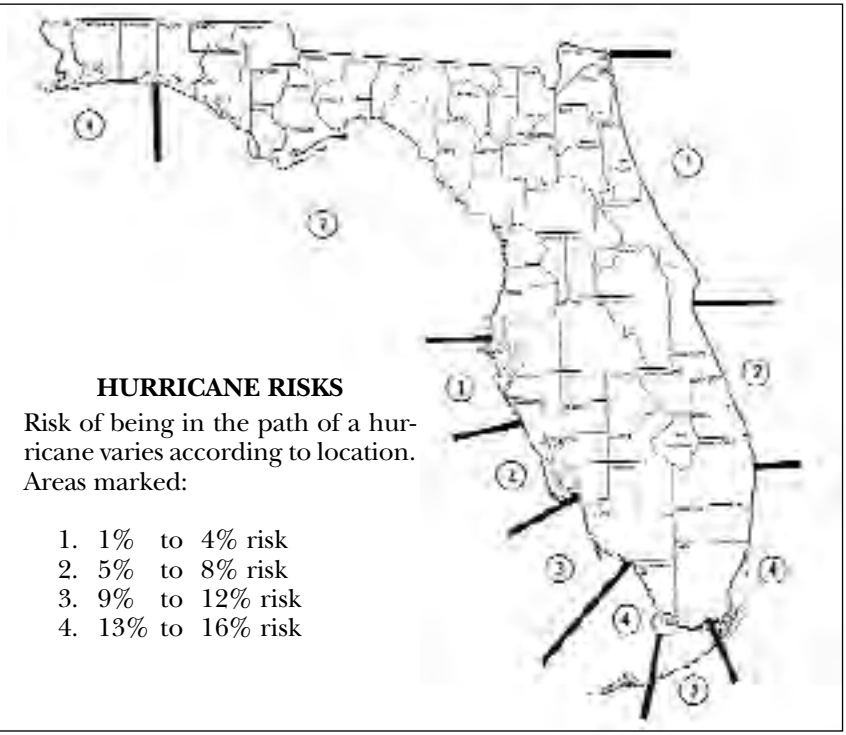
Hurricane Warning—A hurricane is expected to strike the area within 24 hours or less.

Hurricane—A tropical storm that reaches winds of 74 mph.

Storm Surge—Domes of water caused when strong and swirling winds combine with low atmospheric pressure to cause sea level to rise. There are higher than normal waves on the top of the storm surge, but they do not constitute "tidal waves."

HURRICANE CATEGORIES

Hurricane intensity is measured in one of five categories, each determined by the maximum velocity of the winds leading the frontal system. Categories change frequently as wind speeds increase or die down, and forecasters refer to hurricanes as being upgraded or downgraded from one category to another. The categories are as follows:



HURRICANE RISKS

Risk of being in the path of a hurricane varies according to location. Areas marked:

1. 1% to 4% risk
2. 5% to 8% risk
3. 9% to 12% risk
4. 13% to 16% risk

Category 1: 74-95 mph
Category 2: 96-110 mph
Category 3: 111-130 mph
Category 4: 131-155 mph
Category 5: over 155 mph

Worst Florida Hurricanes

A study of the entry points and direction of the motion of hurricanes passing over Florida between 1885 and 1980 reveals some regions are more susceptible to hurricanes than others. South Florida and the Panhandle are the most susceptible.

1559: Aug. 19—The first recorded Florida hurricane drove five Spanish ships ashore in Pensacola harbor.

1846: Oct. 11—An intense hurricane hit the keys and flooded Key West, perhaps the richest city in America, with five feet of water. Fort Taylor was destroyed.

1848: Sept 25—Unnamed hurricane entered at the Tampa Bay area and destroyed Fort Brooke.

1886: July 19—The third hurricane in one month crossed Florida and cut a swath of destruction from Cedar Key to Jacksonville.

1896: Sept. 22-Oct. 1—Entered at Cedar Key, moving northeastward to Pennsylvania. Claimed more than 100 lives and damage to Florida estimated at $7 million.

1919: Sept. 2-14—Classified as one of the great storms of the century. The Florida Keys were severely damaged before the storm died in the Gulf of Mexico.

1921: Oct. 21-31—One of the most severe storms to strike the central west coast. Entered at Tarpon Springs and slowly passed into the Atlantic between St. Augustine and Daytona Beach. Adequate warnings kept loss of life to eight persons; damage estimates ranged from $2 to $10 million.

1926: Sept. 6-22—Miami, in the storm's direct path, received the worst damage in the city's history. Three miles of dike along Lake Okeechobee failed to stand against floodwaters of 10-12 feet at Moore Haven and up to 5 feet at Clewiston. More than 250 persons were drowned near Clewiston and more than 130 at Moore Haven. Property damage was estimated, statewide, at between $27 and $37 million.

1928: Sept. 16—Struck Palm Beach with gusts up to 130 mph. It moved inland over an earthen dike, pushing a wall of water over settlements at Belle Glade, Pahokee, South Bay, Pelican Bay, Canal Point, and surrounding areas. The staggering loss of life is newly estimated at more than 2,500 persons.

1935: Aug. 31-Sept. 8—The "Labor Day Hurricane" that is still considered the most severe in terms of wind velocity, central pressure, and resulting storm tides. It passed over the Keys and moved up the Gulf to enter at Cedar Key. The storm killed 405.

1944: Oct. 13-21—Entered near Sarasota, followed a northeasterly course to the Atlantic south of Jacksonville, and reentered Georgia. This large hurricane extended 200 miles to the east and 100 miles to the west of its eye. Damages were among the highest ever recorded with crop losses estimated at $63 million. Evacuation is credited with keeping the death toll at 18, nine of whom were seamen who drowned when their boat capsized.

1945: Sept. 12-19—Noted for

damage caused to Richmond Air Force Base near Homestead, when hangars caught fire. Property losses estimated at between $30 and $35 million.

1960: Aug. 29-Sept. 13—Hurricane Donna is rated as second in intensity to the Labor Day Hurricane, with winds gusting to 175 mph. Total damage estimate was more than $140 million, including $60 million to the state's citrus crop. Twelve persons were killed, 144 hospitalized and another 1,000 injured.

1964: Aug. 25-29—Hurricane Cleo directly struck Miami and then cut a path up the east coast of Florida and into the south Atlantic states. This storm left an estimated $128 million damage in its wake.

1965: Sept. 8-15—Hurricane Betsy entered through the Keys and Miami and exited into the Gulf heading northwest. Before dying in Louisiana, Betsy killed 74 persons.

1966 June 9—Hurricane Alma hit the eastern Florida panhandle, the earliest landfall on the U.S. mainland on record.

1975: Sept. 23—Hurricane Eloise hit Florida's Panhandle with winds up to 135 mph. Only one death was attributed to the storm, but property damage between Panama City and Fort Walton totaled about $100 million and 17,000 residents in the area were left homeless.

1985: Hurricane Elena formed Aug. 29 in the Caribbean, moved around in the Gulf, and battered the state's west coast from St. Petersburg to Pensacola, forcing the evacuation of 1.2 million people and causing $1 billion in damage. The year's final storm, Kate, hit Florida's Panhandle and killed four persons.

Hurricanes in Recent Years

1992: Only one hurricane made landfall in the contiguous U.S.—but it was Hurricane Andrew. After more than a decade of research into its workings, Andrew has been reclassified as a Category 5 storm, the most severe. The storm proved to be unprecedented in its economic devastation along a route from the northwestern Bahamas, across the southern Florida peninsula, to south-central Louisiana. With damage in the U.S. estimated at $30 billion, Andrew was at the time the most expensive natural disaster in U.S. history. It caused 26 deaths in and around Miami and left 250,000 people homeless. Andrew became a hurricane on Aug. 22. Maximum sustained surface wind speed for Andrew by the time it hit Florida two days later, near Homestead Air Force Base, is now estimated at more than 165 miles per hour, with peak gusts of more than 200 miles per hour. Andrew faded away finally by Aug. 28, leaving its mark in the history books.

1994: Although fewer tropical storms and only three hurricanes developed during this season, it nonetheless ended with a bang—Hurricane Gordon, which caused massive flooding throughout the state. Tropical Storm Alberto began the season, developing in early July in the Caribbean and later causing an estimated $40 million in flood damage in six Panhandle counties. Later in the month, Tropical Storm Beryl brushed into the Panhandle with 35-mile-per-hour winds and rain, causing even more flooding.

Hurricane Gordon was just barely a hurricane. Born Nov. 8 off the tip of Nicaragua, it zigzagged as a tropical storm through the Caribbean, killing more than 500 in Haiti before snaking west to east across Florida, where it battered homes and crops. Gordon then meandered up the East Coast, turned around, crossed its own earlier path, and died as a tropical storm again. Its rains caused at least $336 million in damage to the state's agriculture industry.

1995: The year was the busiest tropical storm season since 1933 and the third worst since record-keeping began in 1871. There were 19 storms, 11 of them hurricanes. Sixteen of them bothered Florida not at all. But the other three bothered the entire state greatly. The season had just opened when Hurricane Allison appeared almost without warning off the Gulf Coast and stayed there, creating 20-foot waves and leaving 1.4 million people without power. It finally came ashore at Florida's Big Bend, but was a comparatively light blow. However, to a state still rattled by the memory of 1992's devastating Hurricane Andrew, and with three years' worth of new and inexperienced population, the first storm of the season seemed like an omen. There was nearly a month of peaceful weather but on August 2, Hurricane Erin, which formed just two days before, hit Vero Beach with flooding rains and an unusually high number of tornadoes. Two major ships sank off the coast and one million people lost power. Landfall brought a technical lull to Erin, which was downgraded to tropical storm status. Still a fierce storm, however, it kept coming across the peninsula south of Orlando and north of Tampa to emerge in the Gulf of Mexico the next day. Having dropped enough rain to have, in popular thought, single-handedly ended Central Florida's 20-year drought, Erin almost immediately recharged over the Gulf's warm waters, regaining its hurricane status. Expected to continue west farther into the Gulf, Erin instead headed north and slammed into Florida's Panhandle. In 48 hours, it had hammered Florida's east coast, west coast, and south coast. Perhaps because the state ordered the evacuation of three-quarters of a million residents, Erin killed only 11 people. It caused $700 million in property damage. Hurricane Opal formed on September 27 and was viewed from afar as Central America's problem. After killing 50 there, it would continue heading west. But like Erin, it recharged in the Gulf and headed north toward the U.S. Opal crashed into the Florida Panhandle October 4 near Ft. Walton Beach with sustained winds of 125 mph and gusts of 145. It tore a swath through 120 miles of beaches and brought havoc to Pensacola before traveling on and up into Alabama, finally dying in North Carolina. In Florida alone it caused $1.8 billion in damage. It was the third most destructive storm in Florida's recorded history.

1996: No hurricanes hit Florida during 1996 and only one tropical storm reached its shores, even though the Atlantic and Caribbean hurricane alleys were their busiest since 1961 with 13 named storms, six of them Category 3 or higher.

The season began with Hurricane Bertha roaring toward the peninsula. But after 500,000 people evacuated the east coast, the storm veered north to miss Florida completely, doing damage instead to the Carolinas. It remained quiet until Tropical Storm Josephine, an obscure low-pressure system languishing in the Gulf of Campeche, came to life October 4 and immediately raced across the Gulf of Mexico to hit the underpopulated Big Bend area at St. Marks October 7. Moving so quickly, it did little direct damage. However, its accompanying rains flooded the Jacksonville area far to the east. Josephine's trailing winds coupled with high tides also caused heavy flooding in the Tampa Bay area.

1997: The season got off to a late and lazy start but got serious with Danny, one of the most unusual storms in history. A small disturbance in the Gulf of Mexico just south of New Orleans, it became a tropical storm July 17 and passed over the barrier Grand Isle, Louisiana, leaving heavy flooding in its wake. It became a minimal hurricane the next day and traveled along Mississippi's very short shore before standing off and then entering Mobile Bay, Alabama, on July 19, as its winds passed back and forth over the 75 mph mark. The following day, it finally moved north over land, into Alabama and Mississippi, downgraded to a tropical depression. It had left 30 inches of rain along the way and 41 inches at Mobile Bay, with heavy flooding from Louisiana to the Florida Panhandle. Although its winds were minimal, it left the ground so saturated that its relatively small hurricane breezes toppled big trees rooted only in mud.

1998: Florida got its first hurricanes since 1995 with the '98 storm season which saw the state hit by two, Earl and Georges, battered by a third, Frances, and scared witless by a fourth, Mitch. Tropical Storm Earl formed Aug. 31 in the Bay of Campeche and headed for New Orleans. But off the Louisiana coast it turned 90 degrees and headed east along the Gulf Coast and achieved hurricane status. Traveling parallel to the coast, it brought high winds and rain to Louisiana, Mississippi, Alabama, and Florida's Panhandle. A large, gangly, disorganized hurricane, Earl came on shore at Panama City, making it Florida's first hurricane of the season. It killed two commercial fisherman who were within sight of but never made Panama City. Earl also carried an unusual band pattern that formed an extensive eastward tail that whipped Florida's peninsula with storms, tornadoes, and heavy rains even as Earl faded away up the U.S. mainland. Storm damage in Florida was estimated to be relatively light at less than $25 million. A week later, on Sept. 9, Tropical Storm Frances formed in the western gulf and aimed at Texas. But instead of heading west, it went north, causing heavy flooding in Houston on Sept. 11. Like Hurricane Earl, Frances had a very wide band pattern, and its eastern side spread heavy rains into Florida's western Panhandle. Tropical Storm Georges formed Sept. 16 off the Cape Verde islands and reached hurricane status the following day, quickly displaying all the characteristics of a major and

classic storm. Georges hit the U.S. Virgin Islands and Puerto Rico the next day, killing five. Both were declared disaster areas. On Sept. 22, Georges continued on to Hispanola. Key West began evacuations, calling on tourists and visitors to leave while they could, over the two-lane highway connecting it with the mainland. There are no hurricane shelters in Key West. The next day, hurricane warnings went up for the keys and both South Florida coasts, and 80,000 were ordered off the Keys as Georges hit the east coast of Cuba and headed west across the length of the island. The storm killed more than 300 in the Caribbean. As wind and rain threatened the bridges of U.S. Highway 1, evacuation of the Keys ended on Sept. 24 with remaining residents told to find what shelter they could. Georges hit Key West at dawn the next day with the eye passing over the city at midday, the first time the city had experienced an eye since Inez in 1966. Both the city and the other keys were hard hit by the storm but there were no deaths or serious casualties. The storm left most of the city's famous houseboat population homeless and the city without power. Damage to Key West and the keys was heavy, with 20,000 structures damaged. A tornado was spawned as far north as Cutler Ridge and 200,000 homes lost power, bringing to the greater Miami area the spectre of 1992's Hurricane Andrew. The rain shield ran as far north as Sebring. On Florida's west coast, more than a half million people as far north as Citrus County came under a mandatory evacuation order and those on the flood-prone coast obeyed. But after passing the keys, Georges did not fulfill the worst fears (a direct turn north), but instead slowly continued its west northwest passage over the Dry Tortugas and entered the Gulf of Mexico just far enough away from Florida's Gulf Coast to keep rain, wind, and flood to a minimum. Georges slowly rose up the Gulf, threatening Louisiana, Mississippi, or the Florida Panhandle. It came to the virtual stop, building strength before smashing into land at Biloxi, Mississippi at dawn on Sept. 28, delivering high winds and copious rainfall. Almost immediately, Georges declined into tropical storm status but the rains kept coming. Pensacola, on the eastern side of the hurricane, registered two feet of rain as the storm with steadily declining winds turned into Alabama and into Georgia. Rivers flowing into the state quickly overflowed. The Blackwater River, which floods at 11 feet, ran at a record 26 feet. More than 200 people were rescued by the National Guard on the Florida Panhandle. The Panhandle's barrier islands took the brunt. Dunes only recently restored after 1995's Hurricane Opal were again destroyed. Navarre Beach in Santa Rosa County briefly disappeared under water. Heavy rains continued the following day. On Sept. 30, 15 days after Georges formed, what remained of the eye moved over the Panhandle, drenching Georgia while its last bands raked the northern Peninsula of Florida. Both ends of the state were declared disaster areas. Florida's second primary election was delayed a week in Monroe County. In its more than two week run,

Georges caused $2 billion in damage, half in the Caribbean, half in the Keys and northern Gulf. Mitch was not only the worst storm of the season; it may have been the worst storm of the century. It began innocently enough as a low-pressure system in the Caribbean and became a tropical storm October 22, a thousand miles south of Jamaica. That night it became a hurricane and by October 26 it was a Category 5 storm, the most severe, heading north. But before hitting Jamaica, it veered due west and settled in just off the coast of Honduras, where it remained October 27-28 as a 350-mile wide, Category 4 hurricane. Then it came on shore. Although diminished back to being a tropical storm, Mitch dropped more than five feet of rain on Honduras for two more days, killing more than 8,000, with another 11,000 missing and presumed dead. More than 1.5 million people were left homeless. In neighboring Guatemala and Nicaragua, 2,000 more people died. Although further diminished by mountainous terrain, Mitch's fury reached the Central American Pacific Coast. Then it turned back and began moving north up Mexico's Yucatan Peninsula, emerging into the Gulf of Mexico as a tropical storm again on November 3. Heading east, it streaked toward Florida, which it hit the morning of November 5. It came ashore near Naples and rushed through southern Florida on a path toward the Bahamas and then out into the north Atlantic. The lower peninsula received five inches of rain in just a few hours but the storm caused only light damage, except at Key Largo where, accompanied by tornadoes, it destroyed homes on the island. However, no lives were lost in Florida.

1999: The long range forecast made '99 the year Florida would be battered by hurricanes. Instead, it was just brushed. However, doing the brushing was Hurricane Floyd, the biggest storm in history, which while missing Florida still generated the largest evacuation in American history. Tropical Storm Floyd formed out in the Atlantic Sept. 9 and became a hurricane the next day, quickly moving into the Caribbean to grow greater. By Sept. 14, Floyd was a monster storm, a Category 4 with 155-mph winds. But in addition to its fury, Floyd was notable for its gigantic size: 650 miles across, it covered 170,000 sq. miles, capable of holding five Hurricane Andrews. While it pummeled the Bahamas, its gale force winds and rains extended into the Gulf of Mexico and its forces so menaced Florida's east coast that 1.3 million people were evacuated and, for the first time, the entire east coast fell under a hurricane warning at the same time. Disney World closed Sept. 14 for the first time in its history. But the next day, Floyd passed Florida, raking the coast but doing relatively little damage, causing few injuries and never making landfall. Tropical Storm Harvey formed Sept. 19 in the Gulf of Mexico. It was a strange fast-moving, one-sided storm with all its fury in front as it headed for Tampa Bay. But in the middle of the night it turned south off the Gulf Coast, and raked it with rain (10 inches at Naples) before coming ashore at Everglades City. By the time its eye was over the Everglades, it was producing just a rainy day in Miami.

2000: Florida didn't have a hurricane season, it only had a tropical storm season. Although there was an above-average number of tropical storms, fourteen, Florida enjoyed a very mild season, providing landfall for just two tropical storms and serving as an incubator for one very unusual—and deadly—late-season storm. Gordon was a depression that formed off the Yucatan peninsula on September 14. Drifting into the Gulf of Mexico, it became a tropical storm the following day. It finally made it to minimum hurricane strength on September 17, but when it came ashore at Cedar Key, it was back to being a tropical storm. More than a quarter-million people were evacuated. It dropped heavy rain and caused flooding along the Gulf Coast as far south as Charlotte County. But it caused no deaths and only minimal damage. While Gordon crossed the Gulf, the tropical depression that eventually became Helene was in the mid-Atlantic. But first it weakened further and when it reached the Caribbean, it was just a rainstorm. On September 19, it strengthened and entered the Gulf of Mexico, where two days later it developed into a named tropical storm and accelerated up Florida's Gulf Coast, crossing Gordon's path of a few days before. But much like Gordon, Helene weakened before hitting land at Fort Walton Beach on September 22. It dumped flooding rain on the Panhandle including ten inches at Tallahassee. The two landfalls at Cedar Key and Fort Walton Beach, within days of each other, marked the only encounters that Florida, and the nation, had with a tropical storm because Leslie didn't count. Leslie became a tropical storm on October 5, approximately 300 miles off St. Augustine. Like most of the season's storms, it just faded away at sea. But prior to becoming a tropical storm, Leslie was dubbed, for lack of a better name, Subtropical Storm Number One and as such, did the damage. As a depression, it formed off the lower east coast of Florida. When it ran into a stalled frontal boundary over the lower peninsula on October 2, its copious rain flooded Southeast Florida, causing $700 million in damage and killing three. It became better organized as it moved first to Sarasota, then to Orlando before moving off the east coast again to briefly achieve tropical storm status.

2001: Fifteen named storms (including nine hurricanes—four intense, with winds over 110 mph) formed during the 2001 season, well above average. Only three tropical storms, but no hurricanes, affected Florida, and they were the only named storms to make landfall in the United States. All three storms formed in the Gulf of Mexico. Tropical Storm Allison was the worst of the three. It did not strike Florida but still took its toll. It formed in the western Gulf the first week in June and quickly moved ashore at the Texas-Louisiana border. It lingered over land for nearly two weeks, causing widespread flooding, death, and destruction before the system exited in the Atlantic. It was blamed for nine deaths in Florida. Tropical Storm Barry made landfall between Fort Walton Beach and Panama City August 6, just below hurricane

strength. It, too, brought heavy rains and extensive flooding to the Panhandle but caused no fatalities. Tropical Storm Gabrielle was also primarily a rainmaker when it came ashore September 14 between Venice and Sarasota, causing widespread flooding and knocking out power to a half-million people. The only taste of the season on Florida's east coast came in the final days of the season, when a rare November hurricane, Olga, formed far off in the Atlantic and headed away from Florida. It did, however, deliver 14-foot waves to the coast off Jacksonville.

2002: For the third year in a row, Florida escaped hurricanes. Only two tropical storms, Hanna and Edouard, had an impact on the state. Three Floridians died while swimming in proximity to Hanna; it is believed they were drowned by riptides caused by the storm. Tropical Storm Edouard formed in the Atlantic on September 1 and came ashore just north of Daytona Beach less than a week later. It promptly declined to a tropical depression and dumped rain across the peninsula before dissipating in the Gulf of Mexico. Despite the fatalities, Hanna, which formed in the Gulf a week after Edouard, died there and never hit Florida. The state's general good fortune was chalked up to the return of El Nino, the warming of the Pacific that historically has suppressed tropical activity in the Atlantic. Later in the year, El Nino was credited with providing much of Florida with heavier-than-usual, but not tropical, rainfall.

2003 Despite being one of the longest and busiest hurricane seasons on record, Florida suffered hardly at all. There were 16 named storms including seven hurricanes in a season that stretched from April through December, but only one storm reached the state. Tropical Storm Henri formed in the eastern Gulf of Mexico on Sept. 3 but was already downgraded to a tropical depression when it crossed the coast near Clearwater three days later. It delivered gusty winds and localized heavy rains to Central Florida before exiting north of Daytona Beach and dissipating Sept. 8. Its primary effect was to add to what was already one of the state's wettest years.

2004: No living Floridian had ever experienced such a hurricane season. There were 15 tropical storms and nine hurricanes including six classified as major. An unprecedented four hurricanes affected Florida, destroying 20 percent of the state's homes and killing 117 people in two months. All five of the season's storms to make landfall in the U.S. made it in Florida. The state's season opened with Tropical Storm Bonnie, which formed Aug. 9 in the southern Gulf of Mexico and headed north. It hit the panhandle Aug. 12 with rain and sustained winds of 50 mph. The next day, Hurricane Charlie hit Florida. Charley also formed on Aug. 9, off Trinidad and Tobago, before moving west across the Caribbean Sea. It reached hurricane strength on Aug. 11 just south of Jamaica and turned in a northerly direction. Continuing into the Gulf of Mexico, Charley became a Category 4 storm with winds of 145 mph and a projected path toward Tampa Bay. An estimated 800,000 evacuated that sea level metropolitan

area for inland Orlando. Traveling up the peninsula coast, Charley ticked a degree to the east and slammed instead into Punta Gorda and Port Charlotte. Maintaining hurricane strength, Charlie traveled north-northeast up the center of the peninsula, causing heavy damage to the towns in its path including Arcadia and Winter Haven before hitting Orlando, swelled with evacuees from the state's west coast. It remained a hurricane as it exited on the east coast. It was the strongest and most costly storm to hit Florida since 1992's Hurricane Andrew, causing approximately $14 million in damage. Hurricane Francis formed Aug. 25 as a tropical storm in the eastern Atlantic and reached hurricane force the next day as it moved westward. By Sept. 4 it lay off Palm Beach, battering the coastline before coming ashore as a Category 2 the next day at Sewell's Point with winds of 105 mph. It, too, passed over Winter Haven on its way to the Gulf of Mexico. But it wasn't through. Downgraded to a tropical storm with winds of 65 mph, it hit St. Marks in Florida's big bend on Sept. 6. Less than two weeks later, the eye of Hurricane Ivan hit Gulf Shores, Alabama, Sept. 16 as a Category 3 storm, its northeast brunt clobbering Pensacola and breaking Interstate 10's spans across Escambia Bay. Working around the clock, engineers reopened the bridges to two-way traffic in 17 days. As a tropical storm, Ivan formed on Sept. 3 and became a hurricane Sept. 5 and within another day developed into a Category 4, a major storm. On Sept. 9 it reached Category 5 strength and with winds of 150 mph, it devastated the Cayman Islands Sept. 11. It passed between Yucatan and Cuba into the Gulf of Mexico two days later, moving north-northwest but slowly weakening to a Category 3 before coming ashore with its center at Gulf Shores. Its rainfall added to major flooding caused by previous storms in the Southeast. But Ivan wasn't through. It left the U.S. mainland off the Delmarva Peninsula three days later as nothing more than a low-pressure area. It looped to the south and crossed Florida Sept. 21. In the gulf it regained its tropical storm status and came ashore at the extreme southwestern tip of Louisiana three days later. It dissipated over eastern Texas the next day. Hurricane Jeanne formed as a tropical storm Sept. 14 as it moved across the Leeward Islands. It dumped a deluge of rain on Puerto Rico and Hispanola. It reached hurricane strength briefly while approaching Hispanola, but that island's mountains knocked it back down to a tropical storm. It regained hurricane strength on the 20th and reached the Category 2 level as it looped in the Atlantic before heading toward Abaco and Grand Bahama which it hit as a Category 3 on Sept. 25. The next day, 20 days after Frances, Hurricane Jeanne came ashore at Sewall's Point, the first time in recorded history that two hurricanes made landfall at the same location. It, too, crossed the state and became the third hurricane of the season to pass directly over Winter Haven. The names of all four Florida hurricanes—Charley, Frances, Jeanne, and Ivan—were retired.

2005: And it just kept coming. It was a record-setting hurricane season. There were 27 named storms, six more than the previous record of 21 set in 1933. Of those 27 storms, 15 became hurricanes, three more than the previous record of 12 in 1969. And three Category 5 Hurricanes hit the U.S., three more than the previous record two set in both 1960 and 1961. Seven tropical storms formed before August 1, two more than the previous record of five in 1997. There were more records still to be set. In Florida the season opened on June 9 with the first storm of the season. Tropical Storm Arlene formed June 8 in the southwest Caribbean Sea and moved north, crossing western Cuba. On June 11, just short of hurricane status, it hit the Florida panhandle causing only moderate damage but killing one. Hurricane Dennis formed as a tropical depression July 4 and became the season's first major hurricane and the strongest Atlantic hurricane to form before August in recorded history. Unlike the season's previous three storms, it developed in the southwest Caribbean. Almost immediately it hit the island of Grenada and was upgraded to tropical storm status as it moved west-northwest. It became a hurricane July 6 and on the 7th it had achieved Category 4 strength. Passing between Haiti and Jamaica the storm battered both before making landfall in Cuba. It lost strength over the island's mountains but reemerging over water it reintensified at an astonishing rate. On July 9, Dennis was again a Category 4 storm registering record intensity for a July storm and heading for Florida's panhandle. Fortunately, and as had the previous year's Hurricane Ivan, it deintensified, dropping to Category 3 just before making landfall at Santa Rosa Island July 10. Despite losing steam, the storm claimed 42 lives and caused $2.23 billion damage in the panhandle. It finally disappeared three days later in Illinois. Tropical Depression 10 came off Africa August 13 and almost immediately fell apart. Its remnants drifted northwest and virtually disappeared. But just enough remained to be folded into another minor system off the Leeward Islands. Together they became Tropical Storm 12. And that became Hurricane Katrina. As nothing more than disturbed weather, it hovered over the Bahamas and became a tropical depression on August 23, a tropical storm the following day, and a hurricane August 2, making landfall in south Florida and sweeping across the state the same day. In the Gulf it rapidly intensified to Category 5 and headed for the northern Gulf Coast where it slammed into Louisiana and Mississippi as the worst natural disaster in American history. Almost lost in the statistics of the storm was the fact that in its few short hours over Florida, Katrina killed 13. Hurricane Ophelia settled in off Florida's east coast on September 8, three days after forming as a tropical depression over the Bahamas. It lingered off Jacksonville for two days, its high surf killing one and causing coastal erosion before moving on to North Carolina. On September 18, Rita formed as a tropical depression over the Turks and Caicos Islands. Two days later, it

passed south of the Florida Keys as a Category 2 hurricane and intensified into a Category 5 in the Gulf of Mexico before heading into history and toward Louisiana and Texas as Katrina's little sister. Tropical Storm Tammy sprang as a surprise from virtually nothing to a full-fledged tropical storm October 5 north of the Bahamas and made landfall at Mayport that night. It did little damage in Florida but brought heavy rains to Georgia and the Carolinas before being considered as the major cause of the year's record flooding in the northeast U.S. No storm gave more warning or was the subject of more precise forecasting than Hurricane Wilma. It formed as a tropical depression October 15 southwest of Jamaica. Two days later it was a tropical storm. On October 18, the storm developed a very small but well-defined eye and began intensifying. It reached Category 5 strength the next day. The intensification from tropical storm to Category 5 hurricane happened in 24 hours, making it the fastest developing storm in the history of Atlantic hurricanes and the second fastest in world history. Wilma slowed and weakened as it approached Mexico but still hit Cozumel and Cancun as a Category 4 hurricane October 22. As predicted, when it reentered the Gulf of Mexico, it moved northeast, straight for Naples which it hit October 24 as a Category 3. It flooded Everglades City, hammered the Everglades, and hit the Greater Miami-Fort Lauderdale area as it speeded into the Atlantic. Despite its international ferocity, most of its fatalities occurred in Florida where 35 died. It also did $16.8 billion of damage in the state, making it the third-costliest hurricane to ever hit the United States. It also indicated that all of the upgrades, preparations, and precautions the state had taken in the wake of 1992's Hurricane Andrew and the onslaught of 2004 were not enough. Despite new codes, commercial buildings, especially high-rises, in the South Florida metro, fared poorly in the storm. And too much of the Broward and Miami-Dade population did, too. Despite all the storms, all the warnings, and all the experience, after Wilma completely unprepared crowds gathered for such essentials as water, ice, food, and gasoline. While they received aid, they got little sympathy. At this point and for the first time, the national weather service ran out of names. But there was more to come for the record. Tropical Storm Alpha formed on October 22 and merged with Wilma. Hurricane Beta formed October 26, Tropical Storm Gamma on November 15, Tropical Storm Delta on November 23. Hurricane Epsilon reached that status on December 2, two days after the end of the "official" hurricane season. And equally undeterred by the calendar, Tropical Storm Zeta formed December 30. It ended the 2005 season when it dissipated January 6, 2006 as the longest-running January tropical storm ever in the Atlantic. None of the Greek-alphabet storms affected the state.

2006: Despite expert predictions that Florida faced its third consecutive devastating hurricane season, it proved to be the quietest in a decade. There were only nine named storms and only two made it to Florida, both as shadows of

recent storms. Alberto formed as a depression south of the western tip of Cuba to kick off the season June 10. It became a tropical storm the next day. Entering the Gulf of Mexico, Alberto made landfall at Apalachicola June 13, never having attained hurricane status. Although it did little damage, as the first storm of the season it was not a good omen, and the state prepared for the worst. It didn't happen. Ernesto, the first hurricane of the season, formed August 24 southeast of Martinique and moved west. It achieved tropical storm status on the 25th and strengthened briefly to a minimum hurricane on August 27 off the coast of Haiti. But it faltered back to being a tropical storm when it made its first landfall August 28 at Guantanamo Bay. Torn by the mountains of Cuba, Ernesto remained a tropical storm when it drenched the Keys on its way to making landfall with just 45 mph winds at Plantation Key south of Miami on August 30. It moved up the peninsula before exiting into the Atlantic at Cape Canaveral. The season's seven other storms came nowhere near the state.

HURRICANE SURVIVAL GUIDE

One of the state's gravest concerns is the number of its residents who have never experienced a Florida hurricane and who have settled along its coasts. Also of concern is the number of long-term residents and even Florida natives who have mistakenly learned to take such storms lightly and who convey hurricanes to new residents as an event to be enjoyed.

But as recent hurricane history should have taught all, hurricanes are literally deadly and awesome in their destructive power.

A review of Florida hurricanes reveals many don't just affect the coasts. They move inland along the Panhandle; they cross the state at varying speeds and varying angles after crossing the coasts on the Gulf or the ocean. Either with storm surges or deluges of rain, hurricanes flood rivers, lakes, creeks, and streams and fill wetlands. Since 1970, freshwater flooding from rainfall has claimed more lives than any other hurricane-related phenomenon.

More than half of all hurricanes that make landfall in the United States do so in Florida, and all hurricanes each season are capable of hitting the state.

Long Before the Storm

Before a hurricane is on the horizon, even before the hurricane season "officially" begins on June 1, it is time to get your emergency preparedness in order.

A priority: buy insurance. In Florida, agents cannot write homeowners insurance when a hurricane watch or warning is in effect and flood insurance requires a 30-day waiting period. Review the policies you have and know what they cover. Inventory your possessions, making a list of everything you own, with receipts, date of purchase, model numbers, costs—whatever will support your eventual claim, should the need arise.

Have a plan and heed the warnings.

Get and store: nails, plywood, duct tape, and sheets of clear plastic. Opaque plastic not only covers roof damage, it masks it as well. Install new high tech storm shutters.

Get prescriptions filled.

Learn where your gas, water, and electrical shutoffs to your home are located and how to operate them.

Inspect your trees and shrubs and trim as necessary to minimize overhang damage. But do not do it in the face of a storm. It only increases the supply of flying debris. There will be no trash pickups during a hurricane and, depending on damage, some period after a storm.

Delegate responsibilities among family members and establish a communication plan. Organize, evaluate, and maintain your emergency supplies. Experts recommend emergency supplies sufficient to meet your needs for at least two weeks.

Emergency Kit

That two-week supply should include:

First-aid materials
Portable radios, and TVs, flashlights, clocks—all with extra batteries
Portable, battery-powered lanterns, extra batteries
Infant requirements, including baby food, formula, disposable diapers
Extra clothing
Pillows, blankets, sleeping bags
Essential needs, such as eyeglasses, toiletries
A manual can opener (the most frequently forgotten item)
Other tools that are battery- or hand-operated
An ice chest and ice
Quiet games, books, playing cards
A fire extinguisher
Mosquito repellent
Disposable plates, glass, utensils
Straight bleach
Trash bags
Water-storage containers
Potable water, three gallons per person
Fuel cans and fuel (gasoline)
Sterno, firewood
Propane
Charcoal
Special dietary foods
Peanut butter and unrefrigerated jelly
Powdered or shelf-pack milk
More bottled water
Canned meats, fruits, vegetables, soups, puddings, milk
Dried fruit
Powdered or individually packaged drinks
Instant coffee and tea
Disposable washcloths and paper towels
Crackers, cereal, cookies, snacks
Condiments
Pet food
A full tank of gasoline

In addition, you should be prepared to have and to keep on your person:

Driver's license or other valid photo ID

Cash: Have enough money on hand to meet your needs for two weeks on your own and don't forget your credit, debit, and ATM cards, and keep them safe! While useless during a power outage, they will be among your most valuable possessions when power is restored, and the consequences of lost or stolen cards could match other storm damages. If you or members of your family routinely wear "medic alert" or similar information jewelry, don't forget it.

Prepare and secure a waterproof container or a resealable plastic bag, or both, containing:

All medicines and prescription medicines in their original containers

Important papers, including insurance policies; inventory; additional valid identification; health records; birth, marriage, and death certificates; social security cards; passports; car titles; and property deeds. If you're eligible for government benefits (food stamps, unemployment compensation, etc.), safeguard your card or other documentation that indicates you're eligible. There is often unemployment following a hurricane. Have a pay stub or other documentation to file for unemployment benefits. Noncitizens should keep safe their passport, visa, or green cards.

If important or valuable items cannot be easily and safely stored at home or transported, make arrangements to transfer them to a more secure place.

If you are responsible for others, especially the elderly, follow the same procedures on their behalf as you do for yourself. In addition, keep a checklist of their prescription medications and other special needs. If any person within your responsibility needs special consideration in evacuation, because of age, physical disability, or medical concerns, register with county Civil Defense or Office of Emergency Management well in advance of an approaching storm. Many counties have established shelters especially for those with special needs. Floridians receiving home-health care or who depend on electrical life-support equipment should make emergency arrangements with a hospital.

Plan for the care and well-being of pets. Most shelters will not accept them, nor will many hotels or motels. While some veterinarians and kennels will board pets during emergencies, most have limited space and give priority to regular clients.

Evacuation

If many emergency items and preparations seem similar to those taken for a trip, it's because a trip is what you may be taking. Increasingly, evacuation, including massive movements of millions of people, is the focus of the state's preparatory options.

A voluntary evacuation order is just that. It is voluntary. It is also prudent.

A mandatory evacuation order is also just that.

Residents of high-rise buildings and mobile homes can expect mandatory evacuation orders, as can residents of coastal communities, especially beach communities. In a mandatory evacuation, while emergency officers may advise you, even plead with you, they will not drag you from your home, but neither will they come back and get you, not because they don't want to but because they will be unable to.

Know where you're going. Decide—do not guess—where you will go if you evacuate voluntarily or are subject to a mandatory evacuation.

Make at least preliminary arrangements for an evacuation destination, and plan your evacuation route and alternative evacuation routes. Evacuation routes are marked on Florida's roads and highways. The best and safest route, however, will be determined by the path of the storm. Study evacuation

maps. Traffic may be rerouted. Know your alternatives. Family and friends or accommodations outside the path of the storm are the best destinations.

Mandatory evacuation may be called at night. "Stay tuned" and know your alternatives. For reasons ranging from agriculture, through tourism, to hurricanes, the state's media industry is hypersensitive to weather and has made a massive investment in ensuring they remain operational in the worse conditions. Many operate weather services that match or exceed those operated by government.

Although Emergency Service officials will do what they can, governments actually make only two decisions at the approach of a storm: to order evacuations and to open public shelters.

If you take pets with you, make sure your dog is collared with proper identification tags, including address and phone number, and take any appropriate paperwork. Keep your dog on a sturdy leash. Small dogs, cats, birds, snakes, and pocket pets should be in carrying containers, along with all necessities.

But you cannot take pets to most public shelters. Neither can you arrive at any public shelter with alcoholic beverages, weapons, valuables, or food other than special dietary needs. You will need your own bedding at a shelter. Pack your toothbrush and paste, soap, and washcloth.

Those fortunate enough to find a public shelter that does accept pets must have a proper identity collar and rabies tag license, vaccination paperwork, carrier or cage, leash, and an ample supply of pet food.

While planning for evacuation is necessary, know that the more elaborate or necessary your plan is, the more time it will take to accomplish it. If you have to move or otherwise secure a boat or a travel trailer, or aid a relative, the more time it will take to accomplish a safe evacuation.

If you have a working fireplace, cover the chimney. The force of torrential rains can force flooding right down the flu.

If you evacuate, turn everything off. Unplug everything.

Before the Storm

If you must ride out a hurricane at home, don't be fooled by calm, clear, mild weather prior to a storm. Stay alert and protect your home and your family as best you can. In addition to taking your planned emergency precautions, pick up outdoors around the house: garbage cans, garden tools, patio furniture, etc.—anything that can become a weapon in the wind. A 74-miles-per-hour wind, the minimum hurricane strength, has the ability to drive a 2 x 4 lumber through a reinforced concrete wall 4 inches thick.

Prepare a safe room, which can be an interior room, a large closet, or a windowless hallway. Equip it with mattresses or seat cushions to protect during the height of a storm. Garages, spacious rooms, areas with windows, sliding glass doors, and other entrances are considered unsafe in a storm. (Upper stories are, too, but offer some refuge from flooding.)

Close your house up as tightly as possible. Opening a window to reduce air pressure is a myth. The

house will not explode if sealed, and wind entering through a window can do great damage.

Know what's in your refrigerator and freezer. Power is likely to be lost at any point during a hurricane and could remain off for a considerable time afterward. You'll want to open those refrigerated cabinets as infrequently as possible.

Prepare to store water. Clean bathtubs before filling with water. Do not use this water for drinking, but you don't want additional contaminates such as soap scum, even for washing or flushing.

Your realistic drinking-water needs are one gallon per person, per day. Don't ration water. If you run out, you can find or make more. Boiling water (a rolling boil for 10 minutes) is the safest way to create clean drinking water. (It will taste a lot better after cooling if poured back and forth between two clean containers.)

GENERATOR SAFETY

The hurricane season of 2004 and 2005, with power outages affecting millions of people for long periods of time, vastly increased the popularity and use of gasoline-powered portable generators for the home. But at least 12 people were killed and hundreds made seriously ill during the period by carbon monoxide emitted by generators.

Carbon monoxide is a colorless, odorless, and poisonous gas that generators send into the atmosphere at a faster and higher rate than other sources including natural gas, LP gas, oil, kerosene coal, wood, charcoal, and even automobiles.

Virtually all such incidents stemmed from the placement of the generators in poorly ventilated areas, including many that seem obvious. Aftermath studies also indicated that few new generator owners bothered to carefully read the operating instructions, safety precautions, and warnings accompanying the product.

People placing and operating generators in their garages with doors closed or open, placing them right inside or outside open windows, or placing them indoors within their enclosed homes, accounted for nearly all the deaths and illnesses.

Compounding the problem is that carbon monoxide poisoning is difficult to diagnose. Its common symptoms are nonspecific and similar to those of the flu, including headache, dizziness, weakness, nausea, chest pain, and confusion. State healthcare workers have been advised to consider such common symptoms as a sign of carbon monoxide poisoning following power outages.

People operating generators, especially those using the machines for the first time, are advised to:

Read and follow the manufacturer's guidelines listed in the owner's manual for correct operating procedures and power output capabilities.
Never attempt to run more appliances than a generator can handle. Use a generator only on appliances most critical to need.
Never connect a generator directly to a home's wiring.

Never run a generator inside in the home, including the garage.
Always run a generator in a well-ventilated area AWAY from the home.
Always use heavy-duty, indoor/outdoor rated extension cords to connect a generator to appliances.
Always turn off all electrical appliances connected to the generator before turning off the generator.
Never attempt to refuel a generator while it is running.
Always let a generator cool down before attempting to refuel it.
With the advent of "sealed" climate-controlled homes, carbon monoxide detectors have become popular. Similar to smoke alarms, the detectors can provide a warning but cannot mitigate the problem.

During the Storm

Remain indoors but stay away from windows and doors. Monitor rising water. Have a supply of cement blocks to raise furniture if necessary. If possible, move to second floor or attic if your home begins to flood. Have an ax up there to cut through the roof if necessary. Just because you're not on a beach doesn't mean a storm surge can't get you. A wind-driven dome of water to the right of the center of a hurricane can reach 25 to 30 feet and can travel inland for miles.

If the center, or "eye," of the storm passes directly over your home, stay put. There will be a lull in the wind. Make only emergency repairs if necessary, and make them as quickly as possible. The wind can return suddenly, from the opposite direction and at greater force.

Despite the natural tendency, don't "watch the storm." Use the safe room.

After the Storm

Notify your relatives of your safety and whereabouts, and seek medical care at hospitals for persons injured during the storm. Call the local Red Cross or similar agencies if you have immediate or special needs after a storm.

If you've evacuated, be patient. Access to affected areas will be controlled, and if you've evacuated, you won't be allowed to reenter such areas until search, rescue, and safety operations are completed. Even then, access may be restricted, and you'll have to show identification and proof that you live in the affected area. Stay out of other closed areas as well.

If you've never left the area and conditions are still difficult, begin with your necessities. Eat your perishable foods first. In a well-filled, well-insulated freezer, food will be frozen at the middle, and safe to eat, for at least three days. Try to eat at least one well-balanced meal each day and take in enough calories to do any necessary work.

For emergency cooking, use a fireplace. Use charcoal grills or camp stoves outdoors only. Although canned food may be eaten right from the can, you can heat canned foods over candle warmers or Sterno in a sauce plan, chafing dish or fondue pot. (If you heat a can, open it and remove the label first.) Beware of spoiled food and throw away any food touched by floodwater. Before eating or drinking, wash your hands

with soap and boiled or treated water. After a storm, the threat of disease is everywhere.

Use extreme caution entering a building that may have been damaged, especially your home. Don't touch loose, dangling, or damaged wires; report them to emergency services. Check for leaking gas lines by smell only. If gas leaks are detected inside the home, open the windows and doors and leave. If a propane tank has been in any way affected by the storm, don't use it; call the fire department to remove it. Make fire prevention a priority. Likely low-water pressure will make firefighting difficult.

If you are able, make temporary repairs to correct safety hazards and minimize additional damage. Hire only licensed contractors to do major repairs. If flooded, don't turn on any electricity until an electrician checks site. Report broken sewer and water lines. Assess and photograph damage to your home and its contents.

Beware of snakes, insects, and animals driven to higher ground by the storm, and be very cautious of stray animals. Think twice before allowing children or pets outdoors. Secure food sources and remove all animal carcasses to avoid attracting rats. Wear insect repellent throughout the ordeal.

Drive, if you must, cautiously. Debris-littered streets can be slick and dangerous. Road washouts can be common after a hurricane; never drive in water of unknown depth.

If flood has caused damage, disinfect and dry buildings and all items in them. Clean and disinfect anywhere and anything that has been touched by flood. If something cannot be disinfected, throw it away.

Don't Bother

There are many things done by people facing a hurricane that do no good at all. Among the worthless exercises: Crisscrossing windows with masking or duct tape; parking the car inside the garage with the front touching the garage door; drilling holes in the center of plywood panels covering windows; opening windows on the side of the house facing the wind; opening windows on the side of the house not facing the wind; protecting windows only on the windward side; doing nothing.

Hurricane Names

Early Spanish explorers named the severe storms they experienced after certain saints on whose special days the hurricanes first appeared. Much later, these storms were identified by latitude and longitude. The next method of identification was use of phonetic alphabet letters: Able for A (the first hurricane), Baker for B, and so on.

By 1953, the weather bureau began naming the storms with female names, still following the alphabet. Origin of naming storms after females is obscure, but some say it is based on the World War II servicemen's practice of naming Pacific storms after their wives or sweethearts. Protests from women became so strong by 1978 that the following year every other storm was given a male name.

Names of minor hurricanes may be reused a good number of years later, but to avoid confusion, the National Hurricane Center has a policy of permanently retiring the name of any storm that takes a heavy toll in lives and/or property.

Retired Hurricane Names

1954: Carol, Hazel
1955: Janet, Connie, Diane, Ione
1957: Audrey
1960: Donna
1961: Carla, Hattie
1963: Flora
1964: Cleo, Dora, Hilda
1965: Betsy
1966: Inez
1967: Beaulah
1968: Edna
1969: Camille
1970: Celia
1972: Agnes
1974: Carmen, Fifi
1975: Eloise
1977: Anita
1979: David, Frederick
1980: Allen
1983: Alicia
1985: Elena, Gloria
1988: Gilbert, Joan
1989: Hugo
1990: Diana, Klaus
1991: Bob
1992: Andrew
1995: Luis, Marilyn, Opal, Roxanne
1996: Cesar, Fran, Hortense
1998: Georges, Mitch
1999: Floyd, Lenny
2000: Keith
2001: Allison, Iris, Michelle
2002: Isidore, Lili
2003: Fabian, Isabel, Juan
2004: Charley, Frances, Ivan, Jeanne
2005: Dennis, Katrina, Rita, Stan, Wilma

2007 Hurricane names:
Andrea, Barry, Chantal, Dean, Erin, Felix, Gabrielle, Humberto, Ingrid, Jerry, Karen, Lorenzo, Melissa, Noel, Olga, Pablo, Rebekah, Sebastien, Tanya, Van, Wendy.

2008 Hurricane names:
Arthur, Bertha, Cristobal, Dolly, Edouard, Fay, Gustav, Hanna, Ike, Josephine, Kyle, Laura, Marco, Nana, Omar, Paloma, Rene, Sally, Teddy, Vicky, Wilfred.

The Busiest Months

Despite their association with summer, tropical storms and hurricanes occur most frequently in September and October in Florida.

The "hurricane season" is from June 1 through November 30.

The monthly breakdown of such storms that have affected Florida from 1885 through 2005 follows.

June 25
July 15
August 39
September 61
October 57
November 9

VALUABLE COAST

Florida's coastline is the nation's most valuable, based on insured value. In 2004, the coasts were insured for $1,937.3 billion, $35 billion more than runner-up New York. Florida's coasts accounted for 79 percent of the state's insured exposure.

HOT, HOT, HOT

The highest temperature ever recorded in Florida was 109, on June 29, 1931, at Monticello.