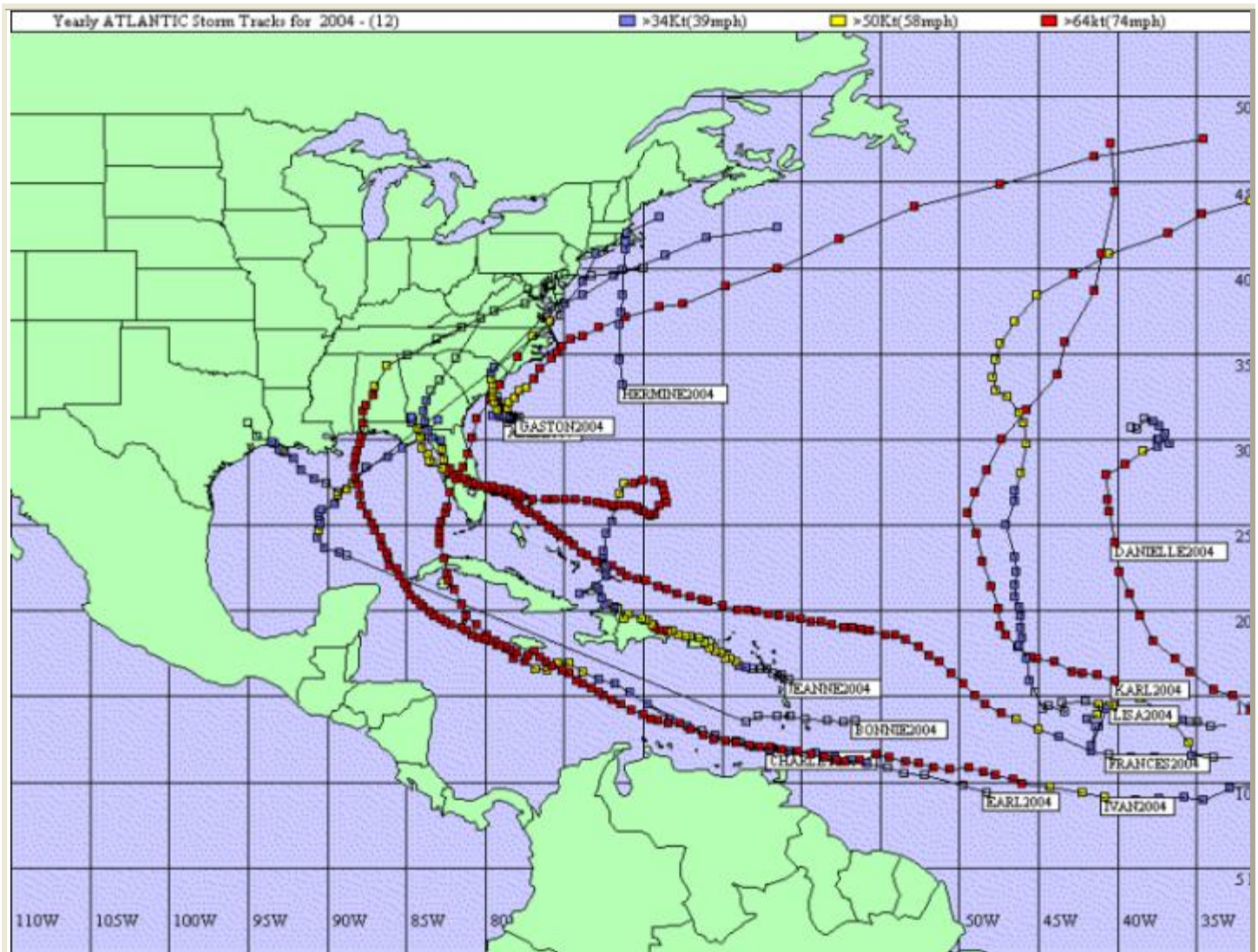


# Hurricane Season Local Summary

Disclaimer: The final official tropical cyclone summary will be at the National Hurricane Center's Website.



2004 will be known throughout the Sunshine State as the "Year of the Hurricane". As of this writing (mid October), four hurricanes ravaged the state, including one Category 4 (Charley), two Category 3 (Ivan and Jeanne), and one Category 2 (Frances). There was even one tropical storm (Bonnie). Officially, only four of these storms made direct landfall (Ivan's center struck Gulf Shores, AL), but for all intents and purposes, Ivan's impact was equally great on each side of the border, as the eastern inner eyewall was felt, full force, in Pensacola.

All counties in Florida experienced some kind of impact from the five storms, either wind damage, heavy rains, storm surge flooding, or tidal run-up.

## "Eye"-Opening statistics

- If you count Ivan, 2004 was the first time since 1886 (Texas) that one state sustained four hurricane impacts. However, the storms to strike Texas were, in order: A Category 2, a Category 4, a weak Category 1, and another Category 2. Those in 2004 were more intense.
- Total insured property damage will likely exceed \$15 billion. However, adding uninsured damage, as

well as agricultural damage, this number will at least double. Final storm related damage will not be known until 2005.

- Each storm that struck Florida has been, or will be, retired. Dollar damages from Charley alone made it the 2nd most costly hurricane in real dollars (Andrew was number 1; Hugo may eventually become number two in adjusted dollars). Dollar damages from Ivan, Frances, and Jeanne will likely place each in the top five or six; the intensity of Ivan and the unfortunate death toll from Jeanne in Haiti automatically qualify those names for retirement.
- Coincidentally, and perhaps unprecedented for a single hurricane season, two storms of similar magnitude (Frances and Jeanne) made landfall just miles apart on Florida's Treasure Coast.
- The last time Florida was hit by multiple storms of similar magnitude was in 1964. Hurricanes Cleo, Dora, and Isbell all affected the Florida Peninsula; the remnants of Hurricane Hilda affected the western Florida panhandle. The state's population was at least 4 times less than it is today.

### Why Now? Why Us?

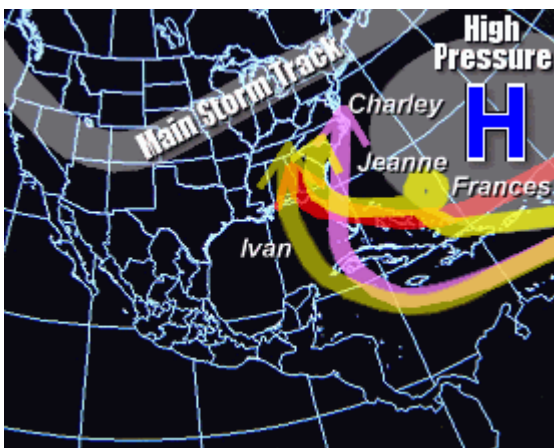
Since 1995, there has been a notable increase in Atlantic tropical cyclone activity, with the majority of years equalling or exceeding 12 named storms. Studies have shown that since the mid 19th century, tropical cyclone occurrences have oscillated between active periods and quieter periods. For example, the period from the 1930s to the 1950s was considered active, while the period from the 1960s to the 1980s was quiet. Have we entered a more active period? Well, aside from moderate to strong El Nino years (1997, for example), it seems like it. Only time will tell.

In 2004, ample moisture in West Africa aided the "train" of tropical waves along the convergence zone, and low atmospheric shear from the Cape Verde Islands through the Caribbean allowed uninhibited development of most storms. Thus far, there have been six major (Category 3 or higher) Hurricanes, and all but one (Alex) originated from an eastern Atlantic tropical wave.

The reason for Florida's season lies in more predictable short term weather patterns. Like a jigsaw puzzle, all the pieces must fall into place for such a situation to develop. In 2004, these pieces included a strong high pressure ridge centered in the North Atlantic, where easterly flow on its southern periphery steered each system west, with all storms remaining south of 25°N Latitude while tracking west of 70°W Longitude. At the same time, a persistent trough in the eastern and central United States - the same trough which provided a generally cool and wet summer to these areas - was able to help turn the storms, but generally not until they passed 80°W, which roughly parallels Florida's Atlantic coastline. Charley and Ivan, and to some level Frances and Jeanne, were affected by these steering currents.

### Summary of Florida Events

#### *Bonnie and Charley: Dangerous Pair*



"Bonnie and Clyde" may best have described these storms, which affected the Panhandle/Big Bend and the central peninsula on successive days. Each had impact on the Suncoast. Bonnie, a 65 mph tropical storm, accelerated from the central Gulf late on the 11th to the northeast Gulf by midday on the 12th, making landfall near Apalachicola. A brief period of southwest winds in excess of 25 mph produced minor coastal flooding in Citrus and Levy Counties during the afternoon of the 12th, and a line of thunderstorms may have produced tropical storm force gusts as it moved across Levy, Citrus, Hernando, and northern

Pasco Counties. Bonnie was a mere nuisance compared to the powerful punch of Charley, which ripped through

the peninsula from the Lee County Islands to near Daytona Beach just 24 hours later.

***Frances and Jeanne: Sister, Sister?***

Just a mere three weeks apart, Frances and Jeanne remarkably tracked generally east to west across the central peninsula, each making landfall on the Treasure Coast near the Martin/St. Lucie County line. There were some notable differences, however: Frances was a classic Cape Verde storm which steady tracked across the tropics and just north of the Island nations of the northern Caribbean before affecting the Bahamas.

Jeanne was a much weaker system and briefly became a Hurricane west of Puerto Rico before landfalling along Hispanola's northern coast, weakening to a Tropical Storm but dumping perilous rains in Haiti before moving north and regenerating, almost as if waiting for the strongest ridge of the season to drift off the mid Atlantic coast and send it west.

While Frances was weakening as she slowed her approach to the Florida peninsula, Jeanne strengthened while keeping a steady, moderate pace. While faster Jeanne produced more wind damage over the Central and eastern peninsula, Frances two day barrage dumped heavier rains, especially along the Suncoast north of Tampa Bay.

***Ivan the Terrible***

The "perfect" storm of the season this was, maintaining a record (at least 8 days) of Category 4 or greater strength, and landing in the top 5 all-time for lowest observed pressure (910 mb). Ivan ravaged, in order, Grenada (as a Cat 4, direct hit), Jamaica (Cat 4, eyewall), and Grand Cayman (Cat 5, eyewall) before moving through the Yucatan Channel and into the open Gulf. Its large girth and location in the central Gulf produced incredibly raised seas, as high as 52 feet south of Alabama and 36 feet 210 NM west of Captiva. Though it weakened a bit just prior to landfall, Ivan and its feeder band tornadoes produced the most direct fatalities in Florida. Tidal flooding and beach erosion was seen along the entire Suncoast.

**Table of Storms to Affect Florida in 2004**

<b>Storm</b>	<b>Date(s)</b>	<b>Location(s)</b>
<b>Trop Storm Bonnie</b>	<b>August 12</b>	<b>Big Bend/Panhandle</b>
<b>Hurcn Charley</b>	<b>August 13</b>	<b>SW/Central/E Central peninsula</b>
<b>Hurcn Frances</b>	<b>September 4</b>	<b>Treasure Coast</b>
	<b>September 5</b>	<b>E Central to W Central peninsula</b>
	<b>September 6/7</b>	<b>Nature Coast/Big Bend</b>
<b>Hurcn Ivan</b>	<b>September 15/16</b>	<b>Western/Central Panhandle</b>
<b>Hurcn Jeanne</b>	<b>September 25</b>	<b>Treasure Coast</b>
	<b>September 26</b>	<b>E Central to W Central peninsula</b>