The 2009 Hurricane Season in Bermuda

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Overview

Only 1 tropical system moved close enough to have affected Bermuda during the 2009 Atlantic hurricane season: Hurricane Bill, which passed the island to the west. Hurricane Bill evolved from an Easterly African Wave and approached Bermuda recurving from the south, passing 166nm to the west at 12 midnight (ADT) on Saturday 22 August 2009 as a Hurricane of Category 2 intensity on the Saffir-Simpson Hurricane Scale. Figure 1 shows the wind speed at three automated observing stations listed in Table 1, which outlines statistics on the storm's impact.

Watches and Warnings

As a precaution, based on the uncertainty inherent in the forecast track, Bill's size and its recent Category 4 intensity over the previous night, it was deemed prudent to issue a Hurricane Watch from 12 noon (ADT) on Thursday 20th of August. The timing between the issuance of that watch and the closest point of approach was 36 hours.

The similarity in track to Fabian caused some major concern mid-week, but like Fabian 2003 (Fabian was a Cat 3 Hurricane which made a direct hit and caused widespread damage and 4 deaths in September 2003), Bill 2009 was a well forecast system – once again thanks goes to the NHC for their excellent prediction of the system. The message regarding early preparedness was well received by the decision makers and the Bermuda public alike.

Between 15 and 24 ADT on the 21st there was an eastward 'wobble' in the track (See Figure 2) that caused the forecasters some concern at BWS, but was not indicated to be of serious concern by the RSCM Miami Hurricane Specialists. Thankfully, the storm returned to the forecast track as predicted, but had Bill's track been as little as one degree further east, that eastward jog would have made a large impact on the local weather. This wobble and the aforementioned earlier uncertainty in track made for some stimulating debate between the NHC Hurricane Specialists and the BWS Duty Forecasters.

Thunderstorms and Rainfall

In addition to the swell and tropical storm force winds experienced in Bermuda, there were also some severe thunderstorms associated with Bill' s rainbands (see Figure 3). These caused the winds to briefly increase to in excess of 50 knots (10-minute sustained), and attain gusts of 84 knots at the Commissioner's Point automated observing station. Despite the thunderstorms, only 0.55 inches of rain was recorded at BWS for the duration of Bill's passage.

Waves, Swell and Surge

Bill produced swells onto the southeastern shoreline as early as Thursday 20 August, prompting beach closures and surf advisories to be posted by the Parks Department (see Figure 4). On the morning of the 21st, waves observed visually in Castle Harbour were estimated to be of a potentially damaging nature, so a decision was made by the Emergency Measures Organisation that morning to close the Causeway connecting St. David's with the Main Island overnight. Although this was a successful exercise in the interest of public safety, the absence of wave/surge measurement equipment made it necessary to visually estimate the wave characteristics inside and outside Castle Harbour, and this highlighted the need for more quantitative information to be made available locally on waves and surge. Efforts are underway to address this deficiency in wave height and surge verification.

Country: Bermuda
Tropical Cyclone: Hurricane Bill
Date of data: August 21-22, 2009 Date of issue: August 26, 2009

Station	Maximum Sustained Wind			Maximum Wind Gust			Calm	Total Rainfall	Minimum Sea Level Pressure
	Direction ° True	Velocity Knots	UTC Date/Time	Direction ° True	Velocity Knots	UTC Date/Time		mm	hPa
Bermuda Airport TXKF (10 min avg)	110	40	21/2355	110	52	21/2355		13.97	1011.3
Bermuda Maritime Operations Centre[1] (formerly Harbour Radio)									
Fort Prospect[2]	090 & 133	34.1	21/2320 & 22/0320	101	58.1	21/2340			
St. David's[3]	134	45.0	22/0340	127	63.6	22/0230			
Commisioner's Point[4]	102	53.1	21/2340	102	84.6	21/2340			

TABLE 1: POST STORM COUNTRY REPORT

1 32° 22' 49.5582"N, 64° 40' 56.769"W Elevation 255ft AMSL – 1- minute average
2 32° 17' 57.6882"N, 64° 45' 53.4774"W Elevation 230ft AMSL - 10-minute average
3 32°21.825' N 64°39.368'W, Elevation 159ft AMSL - 10-minute average
4 32° 19' 44.5584"N, 64° 49' 55.9596"W Elevation 262ft AMSL - 10-minute average

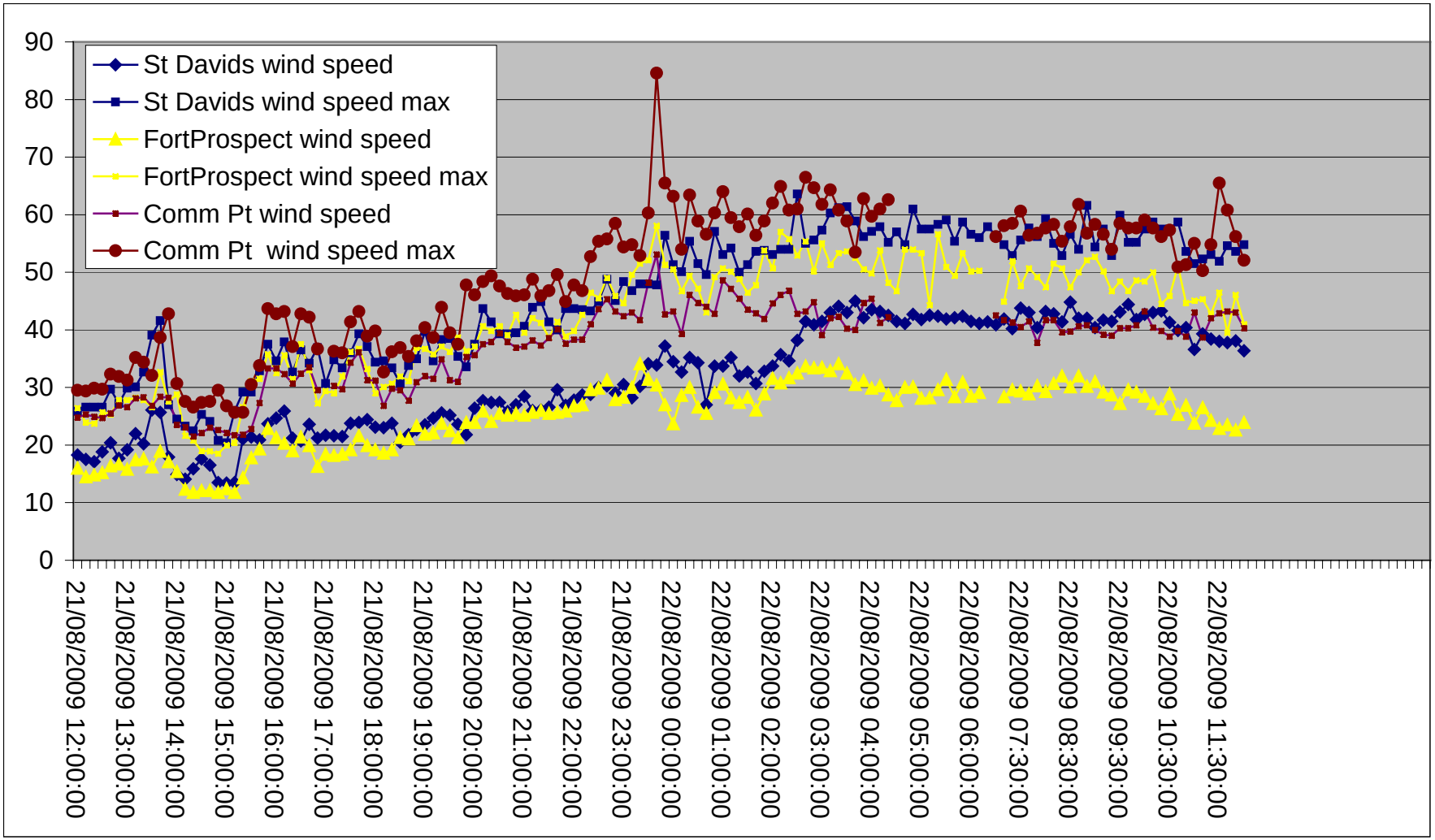

Figure 1 – 10-minute mean wind speed (in knots), measured during Hurricane Bill's passage, at 3 automated observing stations. Time is in ADT.

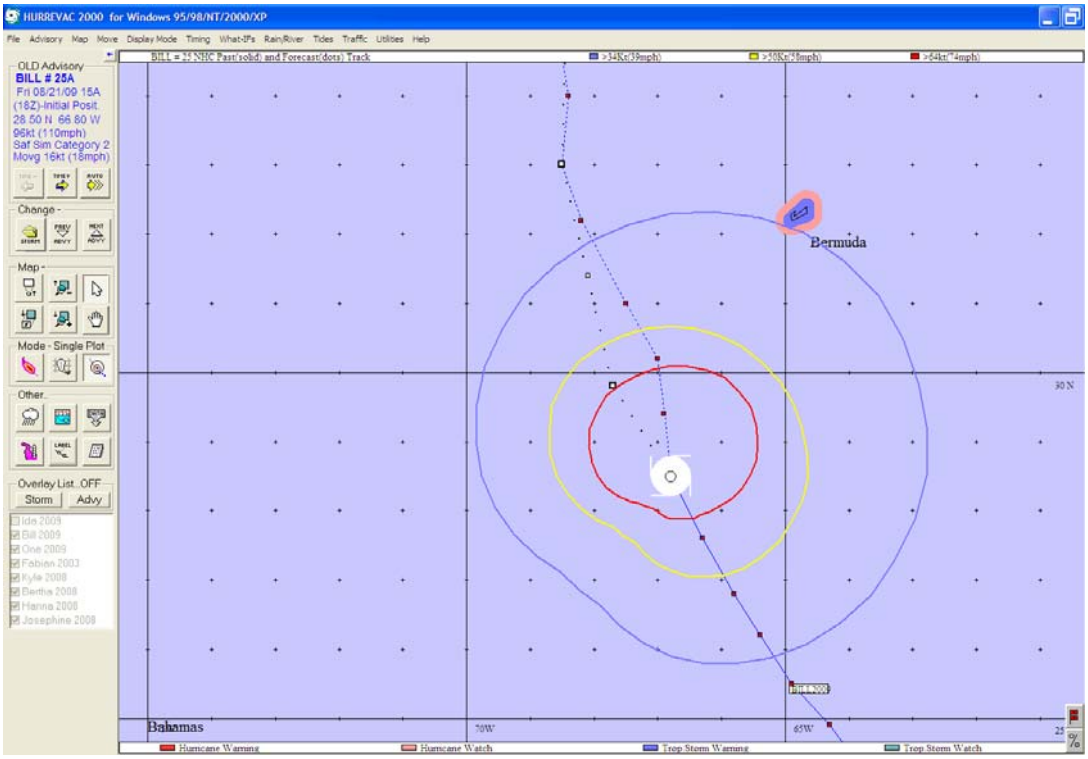

Figure 2 – forecast (Blue dashed line, red dots) and actual track (black dotted line, white dots) of Hurricane Bill, and associated wind radii (red solid: ≥64 knots, yellow solid: ≥50 knots, blue solid ≥34 knots). The blue and pink outlines of Bermuda indicate Tropical Storm Warning and a Hurricane Watch, respectively.

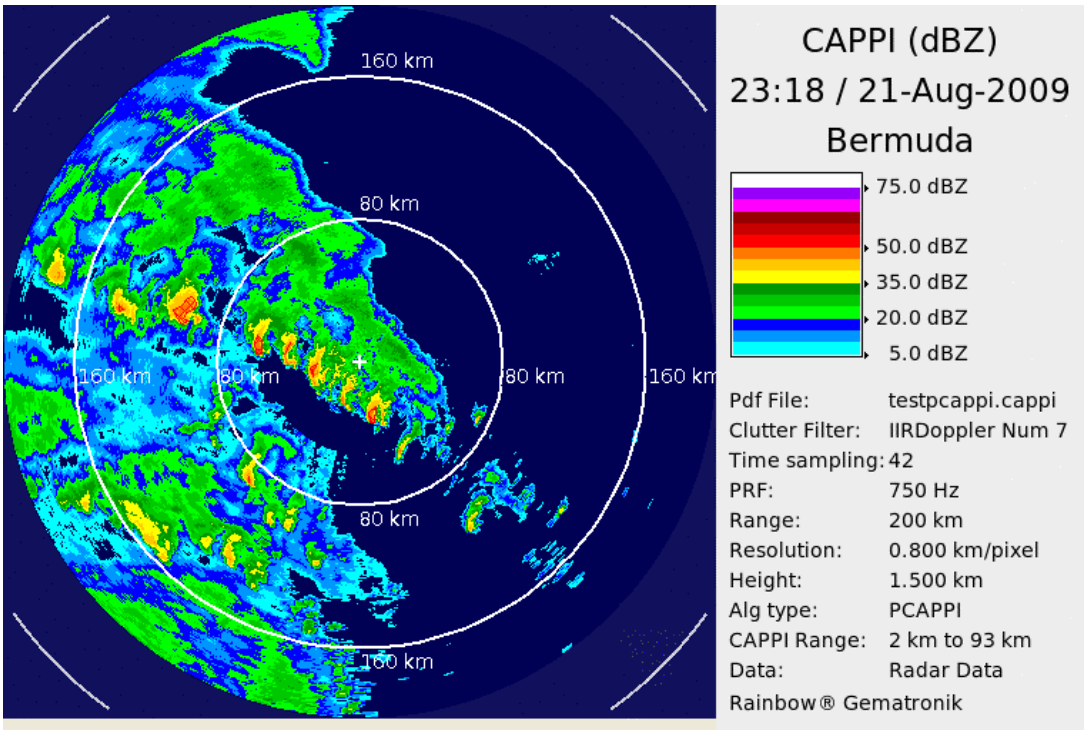

Figure 3 – Doppler Radar Constant altitude PPI reflectivity display at 2318 UTC (2018 hours ADT). Radar location at Cooper's Island, near LF Wade International Airport indicated as a white cross at centre of image.

Figure 4 – waves at John Smith's Bay Beach (on the southeast shore of Bermuda) on August 20th.