Living with HURRICANES

by Steven Schultz

By the end of 2004, it was clear something was very, very wrong in the Caribbean. Between 15 tropical storms and eight hurricanes, more than 3000 lives were lost in the Atlantic hurricane range (includes Atlantic Ocean, Caribbean Sea and Gulf of Mexico).

As one of the worst seasons on record, 2004 surpassed the brutal 2003 Atlantic hurricane season, which was, at the time, the fourth worst hurricane season on record. And, as it turned out, even deadly 2004 was nothing compared to 2005, the worst Atlantic hurricane season ever.

This trend was disturbing, to say the least. With three of the ten worst hurricane seasons on record occurring in a five year range, another harsh season was predicted for 2006. Luckily, an El Niño weather pattern calmed the Atlantic and the Caribbean, providing a much-needed respite to the battered Atlantic range. Still, William Gray, PhD, Professor Emeritus of Atmospheric Science, and Research Associate Philip Klotzbach of Colorado State University, Fort Collins, Colorado, USA, predicted a more active than average 2007 Atlantic hurricane season with double the normal number of named storms[1]. *(See Figure 1).*

With more and stronger hurricane activity predicted, and the associated loss of life and property, it's interesting to note the dive industry's lack of attention to what may well be a long-term, and growing, series of natural disasters.

There are a number of factors that may make us complacent. Primarily, we may have become desensitized because of the sheer number of natural disasters in recent years. In the 13 months between September 2004 and October 2005, natural disasters – including the Indian Ocean tsunamis and the Kashmir earthquake – were responsible for the loss of approximately 300,000 lives. The relatively small number of deaths from Caribbean and Gulf of Mexico hurricanes mercifully pales in comparison, though the related economic losses are many times greater. The world press has, quite rightly, centered it's coverage on these much more deadly disasters and the human suffering they bring. *(See Figure 2).*

Satellite photo of Hurricane Ivan courtesy of NOAA

By the end of 2005, what with the earthquakes, tsunamis and the worst Atlantic hurricane season in history, disasters had come with such regularity that it was beginning to look as though the earth was trying to shake the human race from her surface.

But, the relatively minor effects of Atlantic and Caribbean hurricanes were soon forgotten as the press concentrated on Southeast Asia tsunami relief efforts and rebuilding New Orleans, Louisiana, USA, in the wake of Hurricane Katrina. Adding to this, the El Niño pattern that calmed the Caribbean in 2006 helped accelerated storm cycles in the Caribbean slip from general attention, for now.

We in the dive industry cannot afford to let that continue.

Considering that most scientific models and predictions call for increases in hurricanes – in both strength and numbers – it would serve the dive community well to consider strategies to prepare for and recover from these storms, from both a business and environmental perspective.

Business Survival Strategies

Anyone who has lived in an area plagued by hurricanes, tornados, ice storms or earthquakes has heard the recommendations: Store enough non-perishable food, water, flashlights, batteries and other sundry items to last for about a week or two. The US-based Federal Emergency Management Agency (FEMA) recommends that each household in the United States store a minimum of emergency supplies for individuals to be self-sufficient – able to live without running water, electricity and/or gas and telephones – for at least three days following a natural or man-made disaster[2].

But, these recommendations don't address business continuity, and once the winds die down, the dead are buried, the injured cared for and the displaced sheltered, the struggle to get life and business back to normal takes priority. The press is rarely around to cover this process.

I had the opportunity to visit three different dive resorts, post hurricane, over the past year. These were Ocean Frontiers Dive Center, Grand Cayman Island, British West Indies; Pro-Dive Mexico, Puerto Aventuras, Mexico; and Playa Azul Resort, Cozumel, Mexico. Each of these operations was devastated by separate hurricanes and each is now fully recovered while many competitors have gone out of business. Their stories offer sound business survival strategies.

Atlantic Hurricane Seasons Statistics

Figure 1

	2003	2004	2005
DEATHS	92	3,132	2,280
DAMAGE	$4.8 Billion US	$45 Billion US	$124 Billion US
TROPICAL STORMS	16	15	28
HURRICANES	7	8	15
MAJOR HURRICANES (CAT 3+)	3	6	7
ACTIVITY RANKING	6	4	1

Hurricane Ivan

On 11 September 2004, Hurricane Ivan passed within 56 kilometres/35 miles of Grand Cayman Island with winds of up to 273 kilometres/170 miles per hour. By the time it blew out, Ivan would be responsible for the deaths of 91 souls and the cause of $3 billion US in damage in the Caribbean.

As Ivan was busy destroying his dive operation, Ocean Frontiers, and his brand new resort, Compass Point, Steve Broadbelt was hunkered down in a shelter not far away.

But, Broadbelt had planned well for this eventuality. Everything that could be moved from his businesses had been placed in safe storage well away from the coastline. That included his dive boats, which were safely moored in protected mangroves, icemakers, computers, dive gear and other expensive items that would have been destroyed had they been left behind to face Ivan's fury. None of the stored items were lost.

Unfortunately, and as previously mentioned, the dive center and hotel still experienced extensive damage, especially on the lower floors, which were gutted by the storm. It took a full ten weeks of rebuilding before Ocean Frontiers was up and running again.

Major 2004-2005 Natural Disasters

Figure 2

	HURRICANE IVAN	INDIAN OCEAN EARTHQUAKE TSUNAMIS	HURRICANE EMILY	HURRICANE KATRINA	KASHMIR EARTHQUAKE	HURRICANE WILMA
DATE	11 Sept. 2004	26 Dec. 2004	18 Jul. 2005	28 Aug. 2005	18 Oct. 2005	21 Oct. 2005
DEATHS	91	229,866	9	1,836	73,000	63
DAMAGE	$16 Billion US	$4.5 Billion US	$0.5 Billion US	$84. Billion US	$0.5 Billion US	$29 Billion US

[1] *Extended Range Forecast of Atlantic Seasonal Hurricane Activity and U.S. Landfall Strike Probability for 2007 - HTML Format* Philip J. Klotzbach and William M. Gray 3 April 2007. http://typhoon.atmos.colostate.edu/forecasts/

[2] *http://www.fema.gov/media/archives/2007/033007.shtm.*

Cayman recovery: Left, working to turn lights back on. Right, beach clean up.

Like most dive operations, however, Ocean Frontiers was fully insured. Still, after the storm, insurance couldn't fix damaged infrastructure, i.e., power, telephone and water lines. That was the Caymanian government's job and it would take some time. The first few days after Hurricane Ivan were about surviving, not rebuilding.

Soon after the recovery process began, a team of divers from Ocean Frontiers went out to assess the reefs. Storm damage was very extensive to corals near the surf line, but deeper than 12-15 metres/40-50 feet damage was minimal. When I visited, about a year after the storm, it was difficult to find evidence of hurricane damage deeper than 10 metres/35 feet. Fish and coral life were just as breathtaking as they were during my previous visit, which had been just a few months prior to Ivan.

As part of its recovery plan, Ocean Frontiers immediately engaged in a post-hurricane communications strategy. A few weeks after the storm, Broadbelt was able to contact his webmaster in the United States and post a short statement of thanks and a request for support on Ocean Frontiers' website. And, the support poured in, helping fund his recovery.

It might seem wasteful or thoughtless to devote time to marketing after a hurricane has knocked your business into the Stone Age, but that is when it's most important. To concerned family, friends and guests worldwide, Broadbelt's message was a sign of hope, indicating Ocean Frontiers was okay, and readying itself to reopen.

Additionally, Broadbelt and business partner Mo Fitzgerald rebuilt their business with further ease of recovery from future storms in mind. After Ivan, the pair had to replace the facility's dock and so designed the replacement to be – in a sense – hurricane proof. Now, should another monster storm hit, the dock can be easily dismantled and stored safely away in just hours, thus helping Ocean Frontiers reduce recovery time and get back to business much faster than before.

Hurricane Emily

Hurricane Emily made landfall in Puerto Aventuras, Mexico, on 18 July 2005, after passing over Cozumel and causing moderate damage. Puerto Aventuras wasn't so lucky. The storm took out much of the town, including the Sunscape Puerto Aventuras resort, where Pro-Dive Mexico, a PADI 5 Star facility, was located.

Upon returning to assess the damage to his business after the hurricane, Ralph Pistor, one of Pro-Dive Mexico's owners, was amazed to find his dive operation, including compressors, offices, classrooms and retail space, fully intact. Gear had been moved to safe locations and dive boats pulled from the water, so damage to his facility's capabilities was minimal.

The Sunscape Hotel, however, was devastated. And, that knocked out Pro-Dive Mexico's business base while the hotel recovered. "It took over three months to get the place repaired with thousands of man hours and millions of dollars," said Pistor, who wasn't about to sit around waiting for business to come back to him.

Long before the storm, Pistor and his partners established partnerships with resorts up and down the Yucatan coast and with travel agencies in the USA, Canada and Europe. Pistor took advantage of these partnerships to get paying divers back on the reefs soon after the storm.

"The biggest difficulty was not the rebuilding – which was astonishingly quick. The worst damage was from the sensationalistic news coverage, particularly in the US, including rumors that Cozumel did not exist anymore. Therefore, tourism suffered. Just a few months after the storms our clients would be amazed to see that there was no visible damage to our reefs, and that the news reports were completely wrong," said Pistor.

One bright spot after Hurricane Emily was the Mexican government's response. About this, Pistor said, "The Mexican government was prepared. They had more than 2000 electrical workers prior to the storm staged at the Riviera Maya, and started restoration of service literally hours after the storms had passed. It was great!

"President (Vicente) Fox visited the day after, and then two more times during the first month. They poured $20 million into Cancun right off the bat, realizing that a fast and efficient response was key for tourism."

Additionally, community support in the hurricane-ravaged area was amazing and the teamwork dedicated to protecting the tourist industry was not limited to government and business owners. "In Cancun, low-income hotel employees were cooking meals in their damaged homes for tourists so that they would have a warm meal and not think badly about Mexico," said Pistor.

Hurricane Wilma

On 21 October 2005, with winds of 241 kilometres/150 miles per hour, Hurricane Wilma (following in Hurricane Emily's wake) crashed into Cozumel on her way to wreak havoc on the Yucatan Peninsula.

Once again, Puerto Aventuras took a solid hit, but this time, Cozumel took it much, much worse.

Fernando Beristain, General Manager of the Playa Azul Resort on Cozumel, is a second-generation dive operator with more than 30 years of experience on the island and a lot of experience responding to hurricanes.

Beristain's experience with hurricanes and his 15 years at the helm of the Playa Azul resort ensured he was ready when two major hurricanes hit within 90 days of each other. After Emily, the resort was up and running the next day, but Wilma was a disaster of monumental proportions. All of the small, upscale resort's 50 rooms were badly damaged.

With a good deal of government support, and a lot of help from the local community, Beristain kept his employees working. Cleanup efforts began the day after the hurricane – 22 October – and by 1 January 2006, Playa Azul was almost fully operational. Dive operations resumed in May 2006. "Our golfers returned before our divers," said Beristain, "because travel agents had no idea how fast we had recovered. It didn't help that North American travel agents were told by the media that Cozumel had been completely destroyed. And, here we were running as though nothing had happened."

Indeed, at the resort, the only thing that seems out of place now is the beach. While there is plenty of sand, the beach is shorter than it used to be, and there are quite a few new boulders obstructing the surf line. Other than that, Playa Azul is as beautiful as ever and running at near peak capacity.

The original dive operation at Playa Azul was a casualty of the storm and never reopened. Instead, Pro-Dive Mexico rebuilt in its place and is now running full dive and instruction services. Cozumel's reefs also fared well, but not without some changes. "Some dive sites," reported Beristain, "are gone. Others have popped up to replace them. Overall, the reefs are as healthy as they were before the storm."

When asked what, if anything, he would do differently if he knew another major hurricane was headed his way, Beristain was quick to say, "Nothing. We had good insurance and we've seen big storms before. We took care of our people and they took care of us."

The remnants of a dock destroyed by a hurricane.

How you can prepare your business

After the one-two punch of Hurricanes Emily and Wilma, many dive operations and resorts on Cozumel and in Puerto Aventuras closed their doors, never to reopen. It is quite a different case, however for Pro-Dive Mexico, which has not only reopened its operation at the Sunscape Puerto Aventuras, but also at the nearby Catalonia Hotel and the Playa Azul Resort on Cozumel. How did this and other operations survive?

- Insure your business. Where available, make absolutely sure to get both flood and wind storm insurance, in addition to regular insurance.

- Have a disaster plan in place and respond quickly. When you know a storm is on its way, implement your disaster plan. Make sure you give yourself enough time to pull boats out of water, move equipment and make all other preparations outlined in your plan.
- Support your employees during recovery efforts. Make sure you have non-perishable food items, as well as water, tools and building supplies set aside for employee use to help in recovery and rebuilding efforts. In Mexico and on Grand Cayman Island, fast recovery depended on mutual support between employers and employees.
- Develop and maintain good relations with your neighbors and within your local communities. You might not be able to depend on deliveries of supplies, goods and services from the mainland or other locations/sources when your local infrastructure is down. When you're out of food, fuel and shelter is not a good time to start making friends. Make your connections beforehand.
- When a storm is on the way, move everything you can away from the water. Storm surge went right through the entire first floor of Playa Azul, destroying everything stored inside. In buildings about 100 metres/330 feet further inshore, items stored on the ground floor were fine.
- Pull dive boats from the water or move them out of the hurricane's path, if at all possible. A major storm is too powerful

LESSONS FROM KATRINA

About a month after Hurricane Emily made landfall, Hurricane Katrina devastated the city of New Orleans, Louisiana, USA.

New Orleans was destroyed mostly by flooding. Built largely below sea level, and sheltered by "protective" levees, Katrina illustrated with great clarity the dangers of ignoring potential hurricane damage, as well as the folly and danger involved when developers drain wetlands, build on barrier islands and over-develop in areas where hurricanes are common.

Sadly, New Orleans and its environs have not shown the same resilience as Mexico and Grand Cayman Island in terms of recovery for a number of reasons, many still under debate. But, clearly those reasons include poor environmental policies, inadequate local, regional and federal disaster plans and a poorly executed response effort. More than two years after Hurricane Katrina, New Orleans continues its struggle to rebuild, while Mexico and Grand Cayman are well on their way to complete recovery.

Environmental Effects

Caribbean reef systems can survive hurricanes, mostly because millions of years of evolution have ensured it. And, having personally visited the three locations discussed in this article immediately before and several months after the storms, I can safely say these reefs show no appreciable storm damage.

Many Caribbean islands, as well as shorelines along Mexico's Yucatan Peninsula are covered with low-lying trees and surrounded by mangrove swamps, which are designed to survive and even benefit from hurricanes. In low-lying wetlands, such as those surrounding New Orleans, Louisiana, USA, or within Florida's Everglades, native flora and fauna are far less affected by hurricanes than are man-made structures and non-native plants and animals.

When hurricanes make landfall they weaken immediately. Mangrove swamps and wetlands serve as buffer zones, where hurricanes can burn off much of their energy before moving inland. In New Orleans, and in the neighboring state of Mississippi, many swamps and wetlands have been drained, developed and populated. New Orleans itself is located on what was once such an area.

Without even considering the devastating effects destroying these wetlands has caused to the wildlife nurseries they once hosted, it is clear New Orleans could have fared much better if these buffer zones had not been dredged and developed.

Further, because there was no plan for a storm of this magnitude, and codes for production and storage of toxic materials were inadequate or not properly enforced, New Orleans was flooded with a cocktail of raw sewage, bacteria, pesticides, heavy metals, millions of gallons of oil and a host of other noxious chemicals. This water was eventually pumped into Lake Pontchartrain, but the residue will remain in New Orleans' soil for many years to come.

This has not been the case in the Caribbean and Mexico, where fewer barrier wetlands and islands are developed. It is clear that wiser environmental considerations, with regards to building and development, are in order for the future, especially considering the ongoing rebuilding efforts in New Orleans and the growth booms that are currently underway in Mexico and on Grand Cayman Island.

Satellite photo of Hurricane Katrina courtesy of NOAA.

Hurricane backlash: Beaches and businesses damaged in Cozumel. Without insurance, recovery is difficult.

HURRICANE UPDATE

In August 2007, the Caribbean's short rest from the intense cycle of named storms ended with deadly results: From 17-20 August, Hurricane Dean roared through the Caribbean, killing as many as 39 people and causing an estimated $4 billion US in damage, according to early reports.

When it slammed into the Yucatan Peninsula of Mexico on 21 August, Hurricane Dean was a Category 5 hurricane, packing sustained winds of 265 kilometres/165 miles per hour, with gusts over 322 kilometres/200 miles per hour, according to reports from the Associated Press. Hurricane Dean is now the third most powerful storm on record to make landfall.

Luckily for Pro-Dive Mexico and Playa Azul, Hurricane Dean hit further south than did Emily and Wilma. Ralph Pistor reported via email that Puerto Aventuras did not lose power from the storm and Cozumel, even further away, was barely affected. Grand Cayman Island, however, did not fare quite so well.

Hurricane Dean hit Grand Cayman with all its might (thankfully, not with the strength of Hurricane Ivan, but still a very powerful storm). Ocean Frontiers and Compass Point did sustain some damage, but it's important to note that due to smart pre-storm preparation and a lucky storm path, most of the damage was cosmetic.

On the up side, it seems those on Grand Cayman have learned from their experiences with Ivan. Power, water and lights were back up and running in a day, and the folks at Ocean Frontiers were diving four days after the storm. According to early reports from Steve Broadbelt, it is expected that Ocean Frontiers and Compass Point will be fully recovered by early September, well before this article goes to print.

"The government is getting a lot better at dealing with this stuff, and so are we," Broadbelt said over the phone during a short break from his clean up duties.

Sadly, the modular dock that Broadbelt and Mo Fitzgerald designed did not survive the storm. Still, the idea was sound and an excellent adaptation to business threats posed by current – and future – Caribbean storm cycles. And, that's the best anyone can hope for when dealing with a powerful and angry environment.

and unpredictable to trust your life and property with tie-offs and moorings.

- Build sectional docks, whenever possible, that can be broken down and stored until the storm passes. Ask yourself, "Will I be able to tear this down and move it to high ground, if need be?"
- Plan for weeks without electricity and fresh water. If you plan for the worst-case scenario, you will be ready for anything less. By keeping your people safe and working, you and your business will be back *in* business faster.
- Partner with other resorts and businesses. Pro-Dive Mexico was able to bring in divers from Europe and run them from other hotels long before its host hotel was up and ready for business.
- If leading dive trips into the Caribbean, especially during hurricane season, it's a good idea to recommend trip insurance to your customers and keep an eye on weather patterns as your trip approaches. Be prepared to cancel a trip if it means taking your customers into harm's way.
- Communicate with your customers as soon as possible after a storm. They may not write to you on a regular basis, but they do care about you and will want information on your status. Letting customers know how hard you were hit, when you plan to be back up and running and how they can help in any recovery efforts is a smart business move that encourages customer loyalty and will help you get paying customers back to your facility faster.

How you can help reduce human environmental effects

You can't stop a hurricane, but you can help minimize policies that may make them worse. Regardless of where you live, be aware of *and oppose* policies and organizations that promote the development of beach areas, barrier islands, mangrove swamps and natural wetlands.

Further, it is important to encourage your government to engage in sound environmental policy. On a global and national level, supporting the Kyoto Protocol, the United Nations' Framework Convention on Climate Change, is a good place to start. The Protocol has been signed by more than 160 nations in an effort to reduce greenhouse gasses and stop global warming. And, although global warming may or may not be responsible for the current storm cycles we have had and continue to experience, it has been blamed for coral bleaching and other threats to the environment and our dive businesses – our livelihoods.

Review your national emergency management agencies' disaster plans. If you find gaps in planning or coverage, as was the case with FEMA (Federal Emergency Management Agency) in the United States during Hurricane Katrina, write your representatives to make known your desire for better and stronger measures. Your votes do count, and letters often make a difference.

Locally, provide input to zoning boards explaining the need to preserve and maintain natural lands that serve as hurricane barriers, such as wetlands, mangrove swamps, etc. Get involved with your local disaster planning council so you and your neighbors are ready to respond should any disaster – natural or man-made – hit. And, finally, remember this: You aren't just working to save your livelihood; you're also working to save your planet.◆