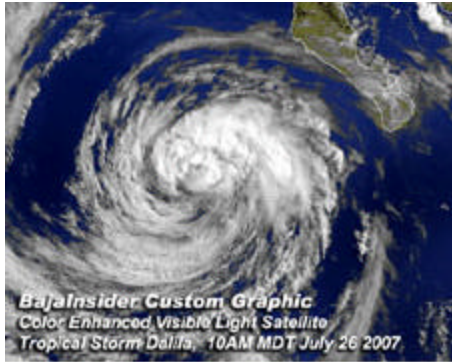


## Eastern Pacific Hurricane Watch - Dalila Passes & Hurricane Computer Models



Click to enlarge

**07/31/07** Here we are already at the first of August. The time is rapidly approaching that we will have to keep a much more watchful eye on the weather. The earliest tropical cyclone to make landfall on Baja in the last 50 years of record keeping was on Aug 15th. (Hurricane Doreen -1977, Magdalena Bay) Last Year Hurricane John got us at the end of the month and in 2003 Ignacio got us from August 24-27th.

This past week Tropical Storm Dalila passed within 225 miles of Cabo San Lucas. The storm reached its maximum intensity as it near it's closest point to Baja Sur with winds just short of Hurricane Status. Dalila lasted from July 22 when it formed as TD7E until July 27, when it dissipated into a trof some 800 miles west of the Baja peninsula.

This year is running way behind the norm in named storms. Usually, in the Pacific Basin by August 1, we have had 7 named storms 3 hurricanes and 1 of them being a major hurricane. (category 3 or greater) So far, in 2007 we have had 5 named storms, 1 hurricane and nothing even close to a major storm. With the posting of this article TD8E has been upgraded to the 5th storm of the season. Cosme, the one hurricane we are credited with this season formed so close to the western boundary of what meteorologists define as the Eastern Pacific, it hardly qualifies as ours. Additionally the storm spent the vast majority of it's life the Central Pacific Basin.

OK, so I've been promising to talk about the computer models for hurricane forecasting. My research comes from several sources for this as with all hurricane articles. The NHC website and the British Meteorological Society provide some excellent information. I use several books as well, many of these articles facts come from "The Devil's Music" by Pete Davies.

Below right is a graphic that show the actual path of last year's Hurricane John. We then overlay the 5 computer models from a graphic that the Weather Channel produces from data provided by the National Hurricane Center. The evolution of the storm tracks is evident. Initially the models predicted a wide range of storm tracks. As the storm matured, and it's development became more predictable, the eventuality of a Baja landfall becoming the consensus.

As the storm developed there was plenty of chatter about, here in La Paz, "...this model has it slamming into the mainland." "No, that model has it moving harmlessly out to sea. I was even sucked in, and at the expense of a great deal of time, compiled the progressive animation of the computer forecasts that you now see to the right. It struck me as strange, that with the information being generated by the NHC, why I couldn't find this graphic representation in public domain anywhere on the NHC site. Here is a little Insider Information that will set you apart from this years pack of Chicken Littles – The models are not intended to be viewed individually!



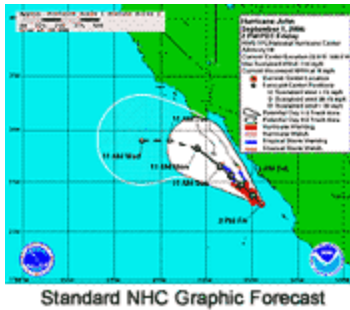
The above graphic show the actual course of Hurricane John in 2006. The projected paths of five of the computer models that the NHC uses to derive it's forecast from are then shown to evolve over the course of the storm. Note how at various moments in the hurricane's life different models were more accurately predicting the course of the storm.

That's right! The NHC uses 12 or more different models based on entirely different mechanics. The Weather Channel graphic displays the favorite 5. The reality of storm history proves the consensus model we are familiar with, shown left, is all the NHC really wants us to pay attention to. In fact, here is what the NHC says about it from their own website...

***"The National Hurricane Center (NHC) does not generate a graphic of the models it uses to produce its forecasts. We do this because our past experience indicates such plots have confused users and***

**detracted from our final message, which is producing official tropical cyclone forecasts and advisories. Some users have also become too reliant in the individual forecast scenarios presented by the many model forecast lines, some of which have little or no chance of being correct. This is not the message the NHC wants to send."**

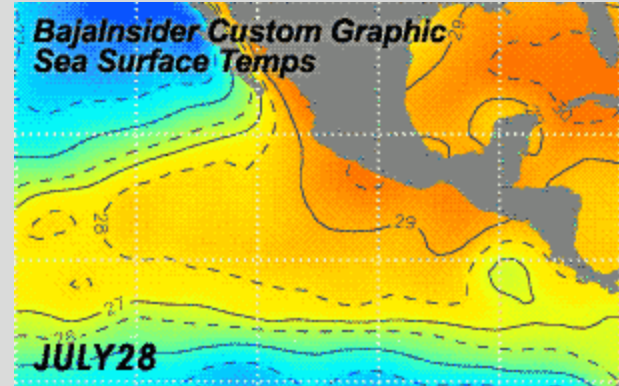
The models are built upon two different schemes and blends of the two, statistical models and numerical models. The models have become more sophisticated over the years, the newest of which creates a three dimensional model of the global atmosphere. None of these applications would run on your PC however. The GFDL model for example is run on a Cray Supercomputer.



The most trusted model at the NHC is the GFDL or Geophysical Fluid Dynamics Laboratory developed at Princeton. GFDL is a numerical model with hybrid modifications. Numerical models

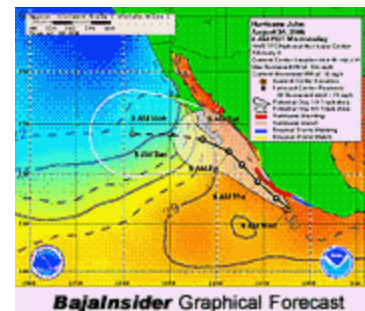
suffer from the way data points are calculated, grid points are calculated at about 100 mile apart, except on the best models. With a hurricane eye in the Eastern Pacific ranging from 20 to 35 miles, the eye itself is below the resolution of the model. Forecasters must then plug in a 'bogus vortex' so that the model can then explain the weather phenomenon around the eye. GFDL gets around this by generating more data points close to the storm, giving the model higher 'resolution' for it's calculations around the part of the weather you really care about THE STORM! However, focusing more tightly can cause the model to 'miss' weather phenomenon more distant, that could have an effect on the development or path of the storm, particularly long term. Pure Numeric models treat each hurricane like it's the first hurricane ever. Hybrid models combine the regular pattern of storm behavior in the region into the mix.

## SST Analysis



**Tropical cyclones thrive in waters warmer than 26° C and degenerate in waters below that temp. Areas south and east of the red line have the potential for a tropical storm strike**

In a discussion I had last year with the NHC meteorologist he explained how this effects us here in Baja. The most trusted models don't include the effects of land, in fact they see Baja as a flat strip of land. The mountains and passes of Baja seemed to have played a role in the course of two of our last three hurricanes, Marty and John. These storms basically followed the same path, up the spine of the mountains of Baja Sur.



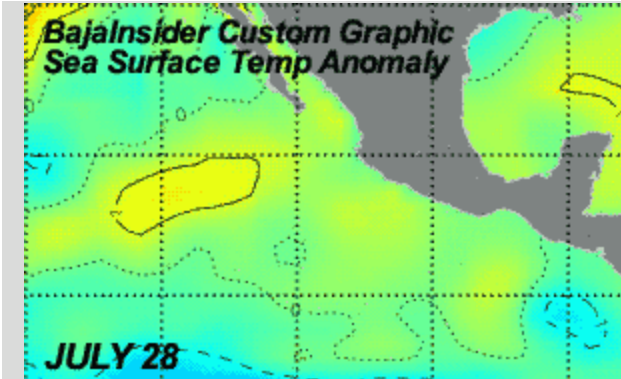
The other type of modeling is statistical. Statistical models compare the current storm behavior to every storm track recorded, in great detail. The analogy author Pete Davies uses is that of a storm being a steel bearing and all the previous storm tracks are etchings on a piece of glass. The storm behaves on it's own, but is likely to select one of the historical tracks as a guide.

Neither type of modeling provides the consistency the NHC needs to keep from driving all of us crazy with warning on/ warning off predictions. Instead, the NHC uses a blend of these models, ultimately interpreted by the forecaster that puts his name on the forecast.

I've spent a lot of space talking about models, let's wrap this up! I've squeezed out usual SST and SST anomaly graphics in where they fit. On the Anomaly graphic the warm bubble of water that was up to 2°C warmer than normal has migrated WNW and diminished significantly, possibly showing the effects of the

energy removed by the passing of TS Dalila. Now, pretty much all our area of concern from Acapulco to Loreto is just about seasonal in temperature.

## SST Anomaly



The colors represent deviation of this years water temperatures from the norm. Green is normal, blue colder than normal and yellow warmer than normal waters.

The SST Analysis chart show the +30°C water close to the southern coast of Mexico have nearly vanished, the 29°C water as well. Only the massive expanse of the 28°C water has spread westward. Cold water along the equator continues to push north. The cold water down south and two large pockets of water as much as 7°F above normal covering areas each about the size of Texas in the Western Pacific and another along the California Coast may be contributing to this usually dry weather we are having this late in the season, and lack of tropical cyclones. The all important 26°C thermo cline now encompasses the entire tip of Baja Sur, making landfall physically possible of a tropical cyclone.

**So now the fun part, my prognostications.** looking into my crystal ball and using the Ouija Board improved my standings last time. I give myself about a 90 on the past forecast. I was correct in both weeks prior, a quiet

week the first week, and a Tropical Storm moving west into the Pacific the second week. I deducted 10 points because, whether it was intoned in my writings or not, I expected the storm to remain much further away from Baja, as Dalila moved with in 225 miles.

The next forecast really doesn't call for a Ouija Board, rather a look at the surface chart. First, TD8E which formed earlier today has just been upgraded to Tropical Storm Erick. But that system is already more than 1/2 way to Hawaii, so let's discount that one. . It is likely that an area of disturbed weather SW of Manzanillo will develop as it moves NW over the next few days. Our ridge of high pressure and dry air persists over Baja, so it is likely that this storm will follow a similar track to Dalila or even further to the SW following what has become TS Erick. Late this week two tropical waves in quick succession will enter the basin. With things starting to pop in the hurricane birthing zone, we could have a storm early next week, unless the first system clears out the basin. So, money down, Tropical Storm late this week, a Hurricane late next week, both will be kept from Baja by the ridge of High pressure

Until August 7th ... Clear skies and fair winds!  Tomas

**Our Eastern Pacific Hurricane Watch is an editorial/entertainment analysis of data from the National Hurricane Center, NASA and NOAA and is based on information provided by the same, but is an amateur endeavor. For actual storm information readers should refer to notices and warnings posted by the National Hurricane Center. or visit the Mexican Nation Metrological website for more information.**