



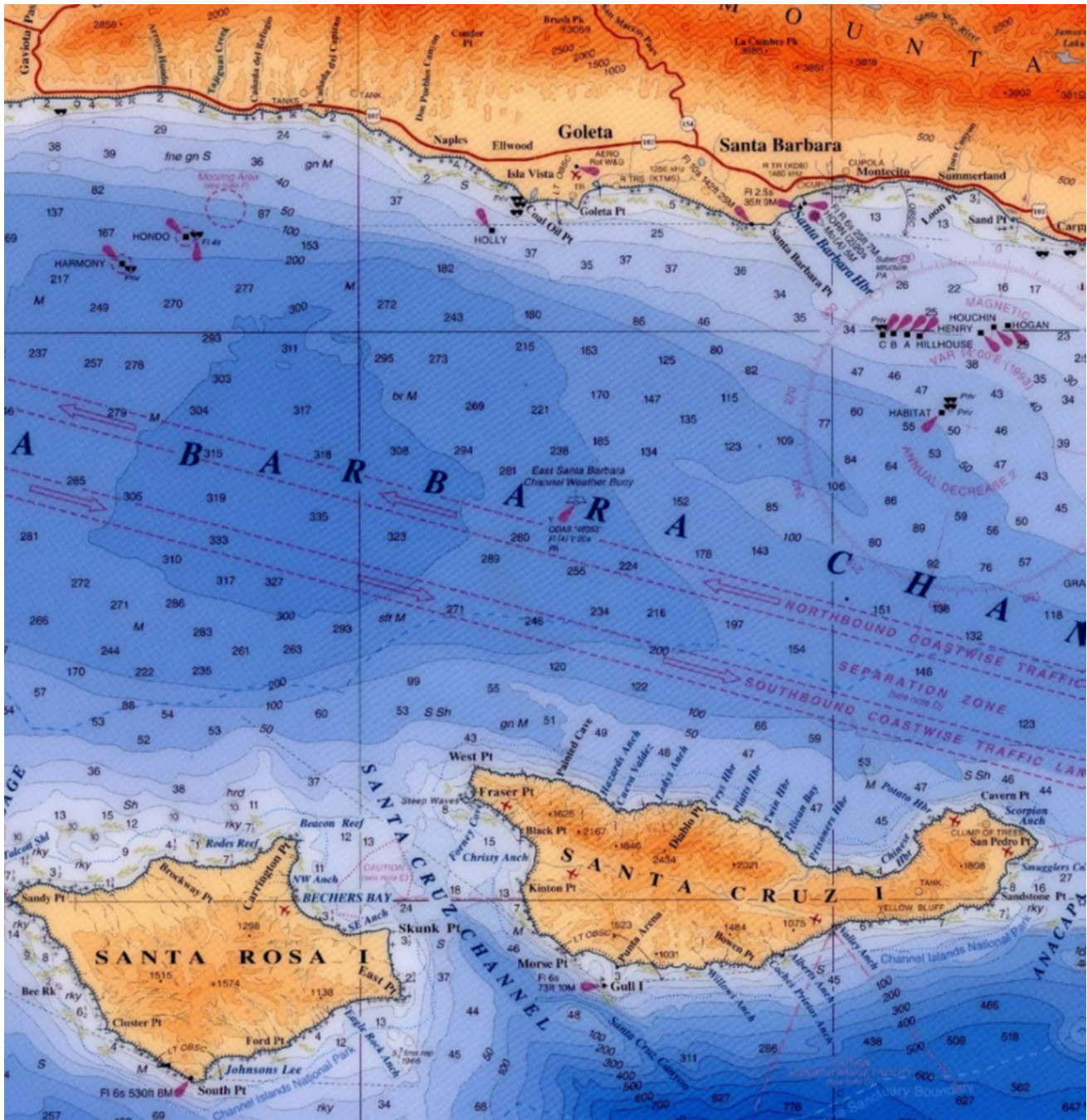
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Signal Hoist



Santa Barbara Sail & Power Squadron

Monthly Newsletter August 2020





COMMANDER'S MESSAGE

Cdr. Virginia Johns, P

This month we are starting up our first Thursday monthly meetings!

The August 6th meeting will be at 6:00pm (earlier than we usually meet). We will be using Zoom to keep us all safe. We will start with a speaker and finish with a business meeting. I am so excited to get together with you again! Eric has lined up a great speaker.

Our August 6th speaker is Penny Owens. Penny, Education & Outreach Director for Santa Barbara Channelkeeper, will talk about Channelkeeper's 20 years of keeping watch for clean water along the Santa Barbara Channel and its watersheds. This promises to be an educational and informative presentation that is not to be missed. Penny will be discussing Santa Barbara Channelkeeper's clean water successes, current challenges, and the good work they do aboard their 31' lobster boat. You can learn more about them at <https://www.sbck.org>.

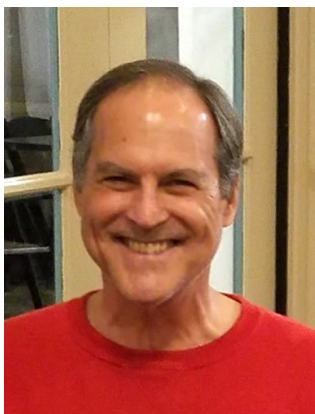
Please contact me if you haven't used Zoom before, we want to help you in advance to make sure you are comfortable with this tool.

I read a very interesting article this past month which is an excerpt from Jimmy Cornell's latest book *200,000 Miles – A Life of Adventure*. Jimmy has been conducting a survey every 5 years since 1985 on the global movement of boats. This excerpt describes the differences he found 2010 to 2015.

<https://cornellsailing.com/2017/08/jimmy-cornell-where-do-all-the-boats-go/>

Stay safe and stay connected! Hoping to see you Thu Aug 6 at 6pm.

And....if you have a few minutes, please respond to the very short (5 questions) survey that I sent out to members in early July. I would really appreciate your input.



ADMIN OFFICER'S MESSAGE

Lt/C Dennis Johns, AP

Scott Burns reports the July Cruise to Santa Cruz Island happened as scheduled at Lady's anchorage. The good news is that s/v *Benchmark* had a very enjoyable weekend with a spirited sail back to the harbor. Alternately, the bad news is that s/v *Benchmark* was the only boat there. We are sorry to note that the squadron's fleet is not getting out of the harbor much this year. *Libertad* would be out if we could but it won't be ready for another month or so...

Speaking of *Libertad*, here's an update on progress of the refurbishing. After over seven weeks since the surveyor reviewed the damage, we still haven't received a report or any notice from the insurance company on what they plan to cover. This is a bit of a concern, but we've been moving forward regardless. Virginia and I spent about a month cleaning and rinsing the equipment and materials that sea water had impacted. The engine was a total loss and it's been removed and disposed. We spent about two weeks cleaning the engine compartment which had a stubborn film of oil all over it after being exposed to thirty-eight years of a leaking Perkins 4-154 engine. The electricians are scheduled to begin replacing the batteries and electrical wiring this week. I haven't ordered a replacement engine yet because I'm torn between the only two viable options: Yanmar 4JH80 and Volvo Penta D2-60. The original engine was 65 hp and neither of these two companies makes a 65 or 70 hp engine. The 80 hp Yanmar seems like overkill and I may be disappointed by the loss of power in the 60 hp Volvo Penta. I'd be happy to hear anyone's opinion on helping me choose.

When we prepared the Squadron Activities Calendar back in February, I didn't have a point person(s) for the Catalina Cruise. Since we've entered the Corona-19 parallel universe I haven't pursued establishing a point

person (I thought maybe Virginia and I would be it but that idea evaporated in May). So this event is still a possibility if anyone has a desire to make the round trip to the Isthmus to escape the cabin fever we are all experiencing. If you plan to head for Catalina in August please let me know so I can advise the rest of the fleet.

Scott Burns advises that he still plans an island cruise on the weekend of August 28 to Cuyler's Harbor on San Miguel. If weather is not good, there will be an alternate destination. We had an afternoon cruise scheduled for August 22 to invite those who don't have boats as additional crew out on the water with an "After Cruise Get Together" at The Endless Summer Café. Well, we can't maintain social distancing with extra crew on board and the Endless Summer Café is closed, so it's been proposed to revise that event to a rally around an oil platform on Thursday, August 20, meeting at 3:00PM by the red buoy on the entrance to the Harbor. In addition, on Saturday, August 15, we have a proposal to have some boats leave the harbor for a day and travel up to Goleta Beach for a lunch on the water and perhaps some anchoring practice. Let me know if you'd like to be the point person for the rally around the oil platform or for a trip out to Goleta Beach. Finally, we had a proposal for a fishing trip out to Four Mile Reef. The date for this can be anytime in the upcoming summer months, so if you would like to be the point person for this activity let me know.

Upcoming Activities

Aug 6	Thurs - 6PM	Speaker Penny Owens of Santa Barbara Channelkeeper will speak via Zoom. Business meeting to follow. For more details, see Cdr. Johns article above.
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Aug 4 CATALINA CRUISE IS NOW TBD

Aug 15	Sat - 10AM	Travel to Goleta Beach for Lunch and anchoring practice
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Aug 20	Thurs - 3PM	Meet by red buoy to rally around the platforms
Aug 28	Fri - 7AM	Cruise to Cuyler's on San Miguel Scott Burns - point person
Sept 12	Sat - 12PM	Annual Meeting — Rancho Santa Barbara

POSTPONED
UNTIL OCT - DATE TBD

Trip to Lady's Harbor

Lisa Burns



Westerly at anchor

A double-overnight at Lady's Harbor, Santa Cruz Island occurred July 17-19th in lieu of the Power Squadron's annual trip to PCYC. Leaving 8am on Friday with glassy seas and overcast skies allowed a quick four-hour motor across the channel with sightings of common and bottlenose dolphin pods. We were the only boat on Friday, and only us and Westerly on Saturday.

We traveled with Tim & Co Mason, our former Benchmark partners. Tim was the official unofficial commodore of the Catalina Club. He and his wife's regular sailing habit was to take several guests with them to Santa Cruz Island, especially comfortable on their 36' Mirabelle. As times are different, we two couples managed to socially-distance sufficiently on the 30' Benchmark.



Tim Mason and Scott Burns

Tim is known for helping weary sailors anchor, which he had the opportunity to do when the 36' Catalina "Westerly" arrived late Saturday afternoon, after experiencing windy conditions on their sail across the channel.. Because of the late afternoon winds, placement of Westerly's anchor was assisted by Scott using a dinghy. Fortunately for Scott's back, Westerly has aluminum anchors, which are lightweight! Tim instructed Scott to lend them our spare "third anchor" to further secure the Westerly from being blown into rocks, so they had a snug evening's rest. Happy hour was by visiting dinghies rather than onboard social hour.

1 GOOD, 5 BETTER, 3 NEXT

Last Part

Neil Ablitt, P

Admit it! I didn't do it. We never got to drive **Mex 3**. We only discovered its connection to **5** in February and our plan was to return in April. But **COVID-19** got in the way and from the looks of it we may now never be able to do it. And from all the cards and letters I've received I know this is the one highway everyone wanted to hear about most: "**3 NEXT**." The highway connecting **Mex 1** in **Ensenada** on the Pacific to **Mex 5** at **El Chinero** on the Sea of Cortez ... and it cuts through **Sierra de San Pedro Martir National Park** - where there is an observatory - and is **snow packed** in the winter! And a mountain peak over **10,000 feet!** And in **BAJA!** And now we **can't go!** I know how disappointed you are so scrounged around finding something else to submit. Please see the excerpt from the log of **s/v Shearwater**.



Observatory in San Pedro Martir

From the log
s/v Shearwater,
29 ft Trintella,
November 1993

Somebody's Gotta

It's not that easy. I sit below, feel the bumps and water still sneaks in. Another pan crashes and a banana hits against the port side. It's my job to know where we are, where we're going and when we'll get there. I also keep the cabin neat, clean up the messes like salt water spray, bananas and spilled beer, not to mention wash dishes and cook. It's just another day and there's another bump again and more salt water. I've one foot propped against a cooler and the other against the stove. I'd open another beer except the last spilled in three places. I had it propped against the engine cover with a box of crackers on the up side. The bump made it jump straight up, roll over the engine cover, miss the sink and onto the stove then the floor. Another mess to clean up and now Sue wants something. I remove tossed books and charts, quickly wipe up beer and salt water and grab the paper towels. Slowly I open the hatch and quickly toss her the towels to clean her glasses and slam the hatch closed. Too late I still get sprayed by the wave. But I am consoled in my own mind knowing that she appreciates all that I do.

How Accurate are Weather Forecasts?

By Lt/C Rich Ciolino, JN

Ever wonder how accurate weather forecasts are? Silly question for sailors. As a sailor, when it comes to weather forecasts I find myself being most interested in what the wind forecast is instead of the temperature, cloud condition, or rain. Sea state is also important but usually big seas come with big winds and a little rain is not so bad. I'd guess that most sailors have complained about weather forecast accuracy because of personal experiences when the actual conditions encountered were, well, not what we had hoped for.

At some time during our six-month cruise in Mexico in 2015-16 I became aware of a forecasting service called Predict Wind. It seemed to work pretty well for us and upon returning home I've been using Predict Wind as my primary source of sailing weather conditions.

Even before adopting Predict Wind I've often wondered – just how accurate are wind forecasts? How could I compare a forecast with what actually occurred? We get a small example when we check a forecast and then go sailing and we sort of make a mental comparison, which seems to be mostly not in agreement with the forecast. I thought there has to be a way to be a bit more analytic about gauging the accuracy of a forecast. Well, I found one way to do it using three neat features of available forecasting, measuring, and analytic tools: (1) Predict Wind presents hour by hour, day by day wind forecasts at specific locations one can select that can be saved to a computer; (2) NOAA has weather monitoring stations that create real weather data, including of course wind, that can also be saved to a computer; (3) And finally, Microsoft Excel software will accept this saved data so it can be readily analyzed.

In order to measure the accuracy of forecasted wind I needed data from a reliable weather monitoring station. We have several NOAA weather buoys in and around our Santa Barbara Channel and I chose the one that pretty much is due south of UCSB (#46053) and about 12 nm SW of Santa Barbara harbor. Their website gives current weather data and collects that data every 10 minutes, 24/7, as long as it's not broken, and saves the data in files that can be accessed on-line. So, with hourly forecasts from Predict Wind set for the NOAA buoy location, the NOAA buoy data, and the power of

Excel, I thought I should be able to collect forecast and actual wind data to play with.

The Process

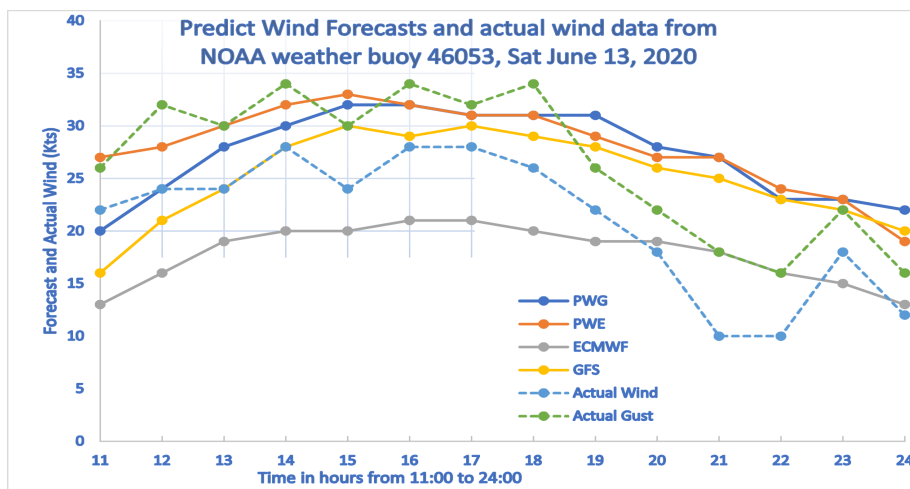
The basic process I've been using is to copy the PW forecasts into the Excel spreadsheet, wait a few days and copy the actual NOAA wind speed data into the spreadsheet, and for every hour of each of the four forecasts subtract the actual wind value from the forecasted wind value to see how

Weather buoy 46053.																												GMT		8														
Date	Sat June 13 2020																												Sun June 14, 2020															
Local time	11	12	13	14	15	16	17	18	19	20	21	22	23	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16														
PWG	20	24	28	30	32	32	31	31	31	28	27	23	23	22	19	17	16	15	13	11	9	8	7	8	8	7	7	14	22	25														
Fcst-Act	-2	0	4	2	8	4	3	5	9	10	17	13	5	10	3	1	0	-3	-1	5	5	8	3	8	2	1	1	6	16	17														
PWE	27	28	30	32	33	32	31	31	29	27	27	24	23	19	18	18	16	14	12	11	8	7	6	8	6	5	7	18	23	24														
Fcst-Act	5	4	6	4	9	4	3	5	7	9	17	14	5	7	2	2	0	-4	-2	5	4	7	2	8	0	-1	1	10	17	16														
ECMWF	13	16	19	20	20	21	21	20	19	19	18	16	15	13	12	12	11	10	8	6	6	4	4	4	6	8	9	8	6	5														
Fcst-Act	-9	-8	-5	-8	-4	-7	-7	-6	-3	1	8	6	-3	1	-4	-4	-5	-8	-6	0	2	4	0	4	0	2	3	0	0	-3														
GFS	16	21	24	28	30	29	30	29	28	26	25	23	22	20	19	17	14	12	10	8	6	4	4	5	5	7	10	11	13															
Fcst-Act	-6	-3	0	0	6	1	2	3	6	8	15	13	4	8	3	1	-2	-6	-4	2	2	4	0	5	-1	-1	1	2	5	5														
GMT	19	20	21	22	23	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24														
Actual W	22	24	24	28	24	28	28	26	22	18	10	10	18	12	16	16	16	18	14	6	4	0	4	0	6	6	6	8	6	8														
Actual G	26	32	30	34	30	34	32	34	26	22	18	16	22	16	20	20	20	24	18	6	4	2	6	2	8	6	8	10	8	10														

close the forecast was to the actual wind. Needless to say this creates a lot of numbers but that's where Excel excels – manipulating lots of data. Here's a typical Excel spreadsheet view of one set of data:

The four forecasts are PWG and PWE that use two proprietary Predict Wind forecast models, the ECMWF forecast that uses a European model, and the NOAA GFS forecast. The Actual NOAA Wind and Gust data are shown on the bottom two rows (tan) and the Actual is subtracted from the Forecasted wind for each case as shown in the green rows (Fcst – Act).

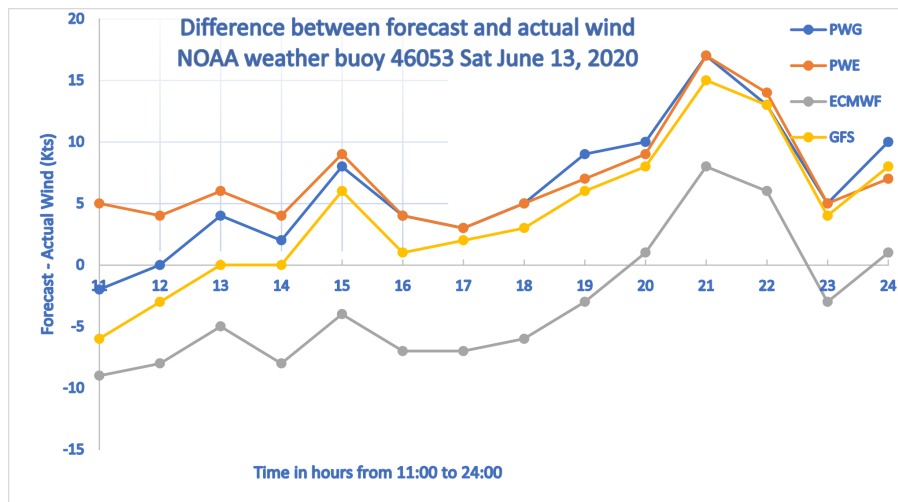
Analyzing the Data



There are many ways to look at the data shown in the table above in order to get a better understanding of what is going on. One way is to graph the Forecasted Wind with the Actual

Wind and Gust values as shown in the graph above. In this graph the Actual Wind and Gust are shown as dashed lines and the individual forecasts are shown in different colors. This graph shows day one from 11:00 to 24:00 and in this example the PWE, PWG, and GFS forecasts were fairly close to the actuals for most of the time period except for the last several hours, while the ECMWF forecast was much lower than actual except for the last several hours.

But we're interested in **forecasting error** so the following graph gives an example that plots "Forecast minus Actual Wind" from the table above (Fcst-Act), for each



forecast. In this presentation a zero forecast error means the forecast was correct, a positive value means the forecast was higher than the actual wind, and a negative value

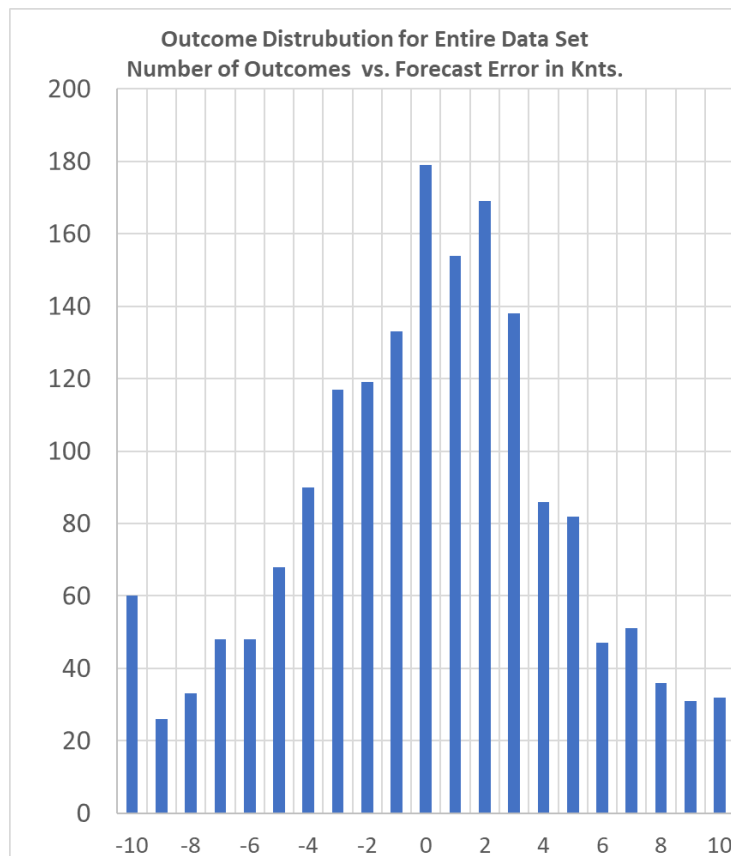
means the forecast was lower than the actual wind. One takeaway from this graph is that the ECMWF forecast (gray) was much lower than the actual wind as seen by the large negative values of "Forecast minus Actual Wind" and the other forecasts were mostly higher than actuals with positive values.

So how much of this data have I collected and processed so far? Beginning in May I have 15 sets of 2-day data (30 hours of data for each of four forecasts) amounting to 1800 individual data points, which sounds like a lot, but in the scheme of things it's not that much for trying to learn something about the forecasting accuracy which is why I plan to continue adding data.

Some Preliminary Results

While these graphs shown above are interesting I felt I had to do some sort of statistical analysis in order to come up with a meaningful measure of the forecast accuracy. I am not a statistician, so I could be all wet with this approach, but I thought the most straightforward way to analyze all of the individual forecast data (1800 to date) was to look at the distribution

(statistical term) of the errors (forecast minus actual values). By distribution I mean: how many times and by how much was the forecast higher than the actual wind; how many times was it perfect at 0 knots error; how many times and by how much was it lower than the actual wind; etc. By analyzing the entire data set I could see what the average performance of the four forecasts is. Excel came to the rescue with a simple way to calculate such a distribution and the current distribution for all the data to date is shown below.



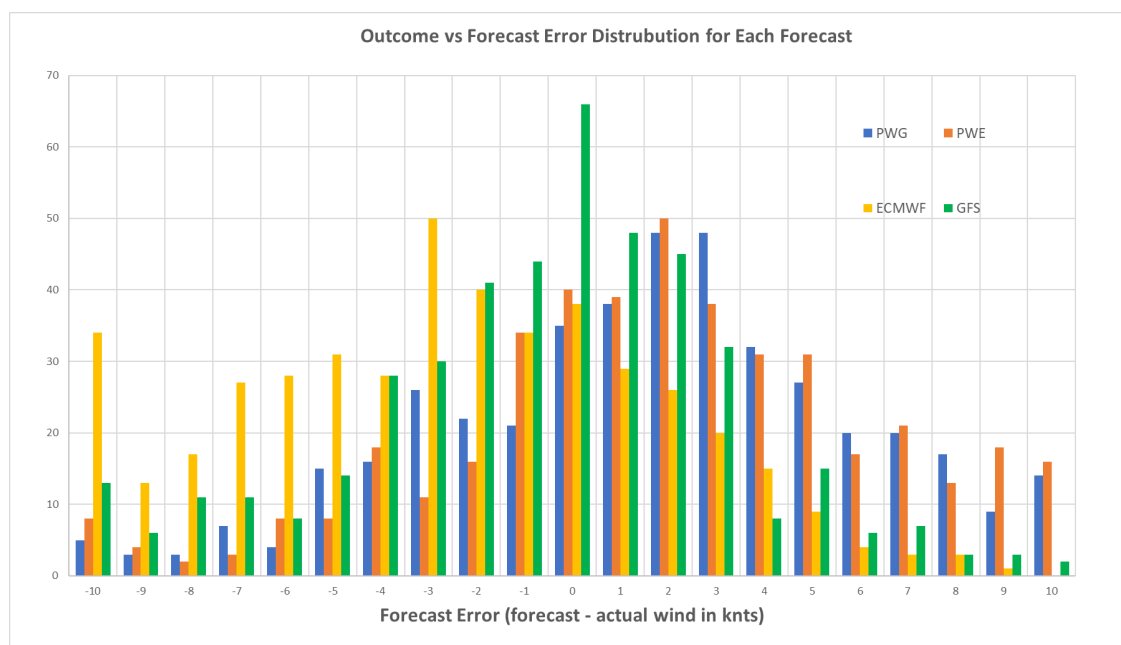
This graph shows how many times in the entire data set (1800 pieces of data) of errors (Forecast minus Actual wind) the error was any value between -10 knts and +10 knts. (I elected to not include any errors that were greater than 10 knts, and there were some.) So, for instance if one looks at zero error, that is how many times it was perfect, the value is a bit less than 180, which is about 10% of the time – so 10% of the time the predicted wind was perfect! Not so good I think. Let's consider another error value, say ± 3 knts. In the graph one can add up the errors from -3 to +3 knts

(approximately) $115 + 120 + 130 + 180 + 155 + 170 + 135 = 1005$ or 58% of the time - so 58% of the time the predicted wind was within 3 knts of the actual. Still not that good. If you do the same thing for an error of ± 4 knts we would get 68% which is starting to look pretty good. Further calculations would show 76% for a ± 5 knts error and 82% for a ± 6 knts error.

Remember these numbers apply to the entire data set of all four forecasts and therefore represents a forecast where one used the average of the four forecasts.

Notice how most of the data points are clumped a bit closer to zero and tail off the larger the error is. It looks like the errors are distributed similarly to but not exactly like what statisticians call a Normal or Gaussian distribution, and this is what one would like to see for a process like weather forecasting, that is, the errors are randomly sometimes positive and sometimes negative and they tail off similarly on both sides of zero.

I also created distribution data for the individual forecasts and this is shown below. Note that at each error value there are four bars of different colors



corresponding to the four forecasts as identified in the legend in the right-hand corner. A few things jump out to me from this graph. If we look at the zero error outcomes the green GFS forecast has the largest number of outcomes – not that many in the scheme of things but much better than the others. Many of the yellow or ECMWF forecasts are on the left side of the graph, or negative, indicating they tend more to forecasting winds that are lower than the actual winds. On the other hand, the blue and brown, PWG and PWE, forecasts seem to have a large number of positive outcomes indicating they are likely to forecast higher winds than actually occur.

Some Nitty Gritty Results

OK, these graphs are pretty and we can learn from them but what does an analysis tell us? Let's distill this data into some numbers that can summarize the performance of these forecasts. Table 1 summarizes the

Table 1 – Percentage of error data within error range					
Error Range (kts)	ALL	PWG	PWE	ECMWF	GFS
± 3	58	55	54	53	69
± 4	68	67	65	62	78
± 5	76	76	74	71	84
± 6	82	82	80	78	87

results of this analysis that looks at ALL the data and the data for each forecast and presents the percentage of error outcomes for several error ranges. You'll see the ALL (average of four forecasts) data ±3 knt error range that was calculated manually above in the first data row, at 58%. Looking at the four forecasts it is seen that the GFS forecast is within ±3 knts 69 percent of the time and within ±5knts 84 percent of the time. In fact one could conclude by comparing the GFS values to the other three forecasts that it is the most accurate of the four forecasts, but not significantly. To illustrate that the other forecast error ranges are not significantly different compared to the GFS forecast look at Table 1a.

I've highlighted the percentage of GFS ±3 knt error range of 69% in gold and then looked at the other forecasts to see at which error range do they

Table 1a – Percentage of error data within error range					
Error Range (kts)	ALL	PWG	PWE	ECMWF	GFS
± 3	58	55	54	53	69
± 4	68	67	65	62	78
± 5	76	76	74	71	84
± 6	82	82	80	78	87

achieve something close to that percentage value of 69% and highlighted those values in green. What we see is that the other forecasts achieve a percentage value similar to the ±3 knt GFS value of 69% with an increase in the error range of one to two knots, that is ± 4 or 5 knts instead of ±3 Knts.

Table 2 addresses the question of the forecasts being typically greater or less than the actual wind. It's interesting that the PWG and PWE forecasts exhibit similar characteristics with about 72% of the time being **greater than or equal** to the actual wind and about 36% of the time their forecasts are **less than or equal** to the actual wind. The ECMWF forecasts are pretty much just the opposite in that 76% are **less than or equal** to the actual wind. Looking at the GFS forecasts we see they are only slightly biased at 62% versus 53%. Looking at ALL the data it's pretty evenly split as well at 58% versus 53%.

Table 2 – **Percentage** of forecasts greater than or less than actual wind

Forecast wind	ALL	PWG	PWE	ECMWF	GFS
Greater than or equal to actual wind	58	72	74	33	53
Less than or equal to actual wind	53	37	36	76	62

Another question I wondered about was what's the forecast like during our prime afternoon sailing time. To find out I ran the numbers from 11:00 to 18:00 each day and found that the PWG and PWE forecasts were about 10% better. See the following Distribution graph and Table 3 below for a summary of those results showing the increase in percentage of data within the ± 3 knt error range when looking at only the Sailing Time data.

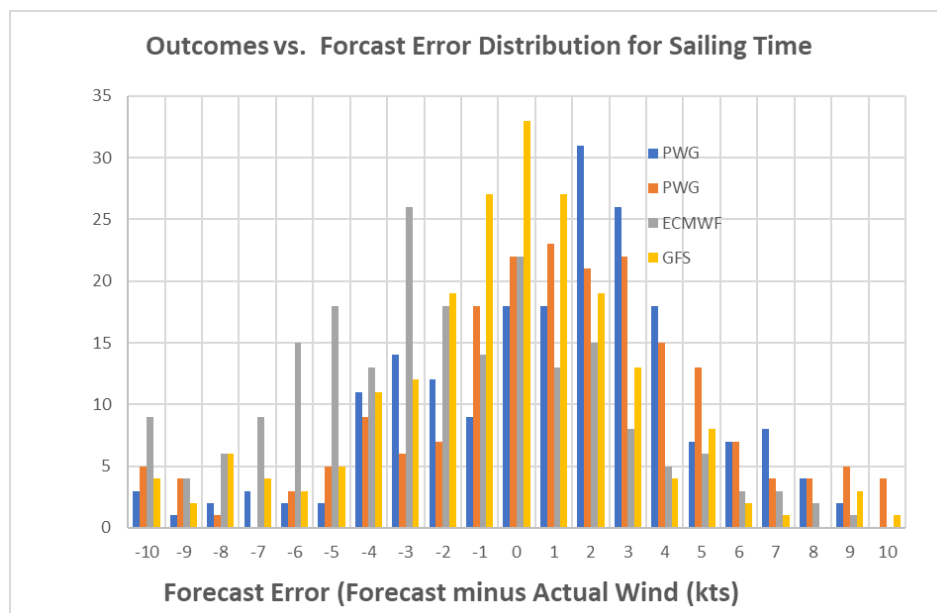


Table 3 - Percentage of error data within a ± 3 knt error range		
Forecast Model	All Time data	Sailing Time Data
PWG	55	65
PWE	54	60
ECMWF	53	55
GFS	69	73

Sailing Time performance seems to be better than looking at the entire data set.

Summary of Results and Future Plans

What are the main takeaways from this study so far?

1. Not so surprising, one cannot expect perfection from weather forecasts.
2. That said, I think these forecasts are not too bad.
3. The GFS forecast seems to be the most accurate of the bunch at a ± 3 knt error 69% of the time.
4. The other forecasts have ± 4 or 5 knt error 69% of the time.
5. The PWG and PWE forecasts are most conservative with forecasts greater than actuals 73% of the time. (I define conservative meaning the actual winds are lower than forecasted.)
6. The ECMWF forecasts are least conservative with forecasts less than actuals 76% of the time.
7. The forecasts during our prime sailing time in Santa Barbara (11:00 – 18:00) are noticeably better than the overall data suggests.
8. Statistically there is always the chance that the actual wind will exceed, sometimes significantly, the errors presented here.
9. I want to examine the actual wind over time to see if it is representative of a wide variation in wind, which is necessary for good results.
10. I think I've got the process down pretty well so now I want to try and introduce features that eliminate manual entries that could be a source of error – make the calculation of the errors more automatic. Continue taking data.
11. Questions, suggestions, discussions, etc are welcome



19 July 2020

Chief Commander C/C Mary Paige G. Abbott, SN-IN

Phone Number: 239.395.9409 Cell Number: 239.246.9687 mpgabbott@gmail.com

The America's Boating Club Fall Conference scheduled for September 8-13, 2020, is hereby cancelled.

The Board of Directors remains vigilant in monitoring the situation in North Carolina. The reasons stated below have factored into our decision:

- The Governor of North Carolina is not allowing the state to go to Phase III until August 30th. This dictates that only 10% of any room space be utilized. A room that normally holds 50 people will be permitted to have only 5; this impedes the possibility of having any type of social gathering.
- The Hilton Hotel corporate headquarters now will not allow any large events until after the end of the calendar year. This is a change from the expansions planned with Phase III. The North Hills Hilton hotel has thus downsized from 160 employees to 30.
- The North Carolina Humanities Council, our keynote speaker provider, has cancelled all existing speaking engagements until further notice.
- The hotel no longer has the capability to host any group meals; they only offer a 'snack bar'.

We regret any inconvenience this may have caused you. Due to the changing situation, and along with the fact we did not have any non-reimbursable financial commitments, we could afford to wait as long as we did to make this decision.

Be safe, smart, and healthy. We ask that you please stay in touch with as many members as possible; this is important for all of us.

On behalf of the Board of Directors,

Mary Paige Abbot

Chief Commander

The Signal Hoist is the official publication of the Santa Barbara Sail & Power Squadron. Articles of interest to the membership should be forwarded in writing via email to the Editor by the 20th of the month in order to be included in the next issue. We solicit the submission of your articles on safety, boating, cruising, racing, and squadron activities. Accompanying relevant photos are appreciated. We encourage articles by our members. Send us your true or tall tales. Articles, opinions, and advertisements published herein do not necessarily reflect squadron policy or endorsement unless so designated.

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