

AbsoluteClimo Has the World's Back

Hurricane Season Climate Forecasts: Consistent & On Target

Supplemental: Struggling AI Models Flop Trivial Hurricane Beryl Weather Forecasts

Honolulu (4th of July 2024) - With the 2024 North Atlantic hurricane season off to a quick and intense start, AbsoluteClimo continues to have the world's back with our long lead consistently skillful, directionally accurate probabilistic hurricane season forecasts of placement, intensity and frequency of tropical cyclones.

Figure 1 shows AbsoluteClimo's forecast of tropical cyclone frequency anomalies for a key tranche of the North Atlantic from our global climate and machine learning models. [Beryl](#), the first North Atlantic hurricane of 2024, has not only broken early season intensity and formation placement [records](#), it unsurprisingly has formed and tracked / is tracking quite well within and along our long lead 2024 above normal forecast (in yellows, oranges, and reds).

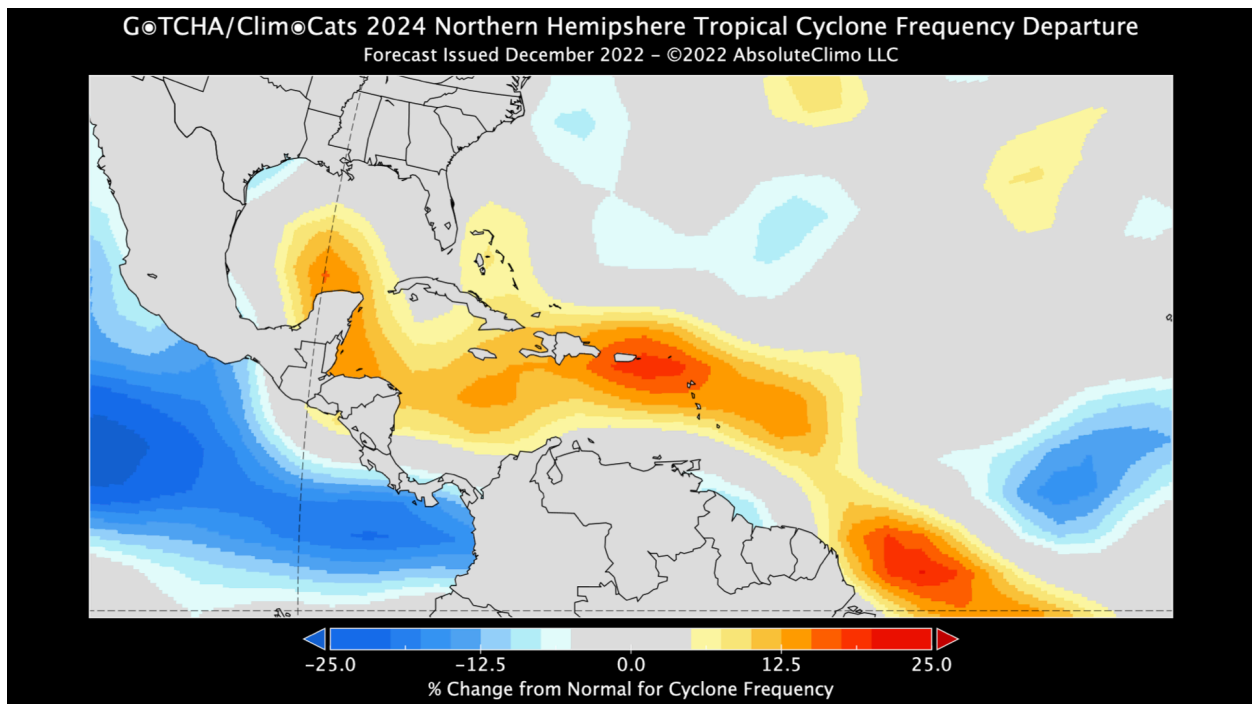


Figure 1. AbsoluteClimo's GOTCHA and ClimoCats ensemble mean forecast of tropical cyclone frequency departures (% change from normal) for 2024, issued December 2022.

Figures 2 and 3 show a history of Beryl's surface winds and track up to Beryl placed at Jamaica's doorstep, per NOAA's National Hurricane Center [report](#) No. 20A issued at 2 p.m. Eastern Daylight Time (18:00 Coordinated Universal Time) on Wednesday July 3rd 2024.

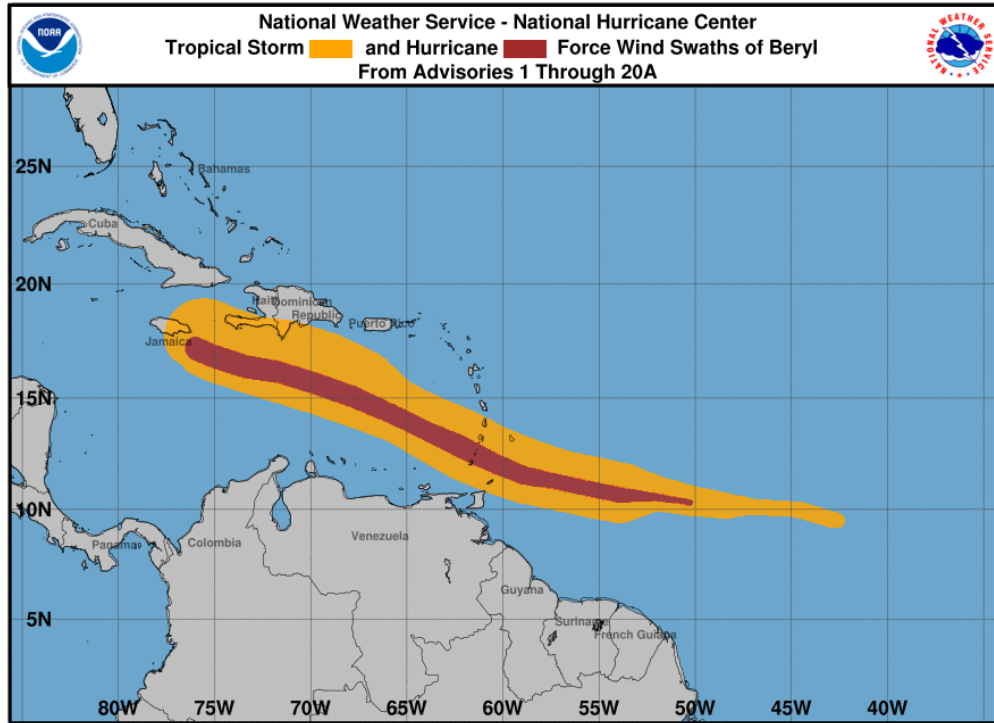


Figure 2. Beryl's wind intensity and swath history through 2 pm EDT July 3rd 2024.

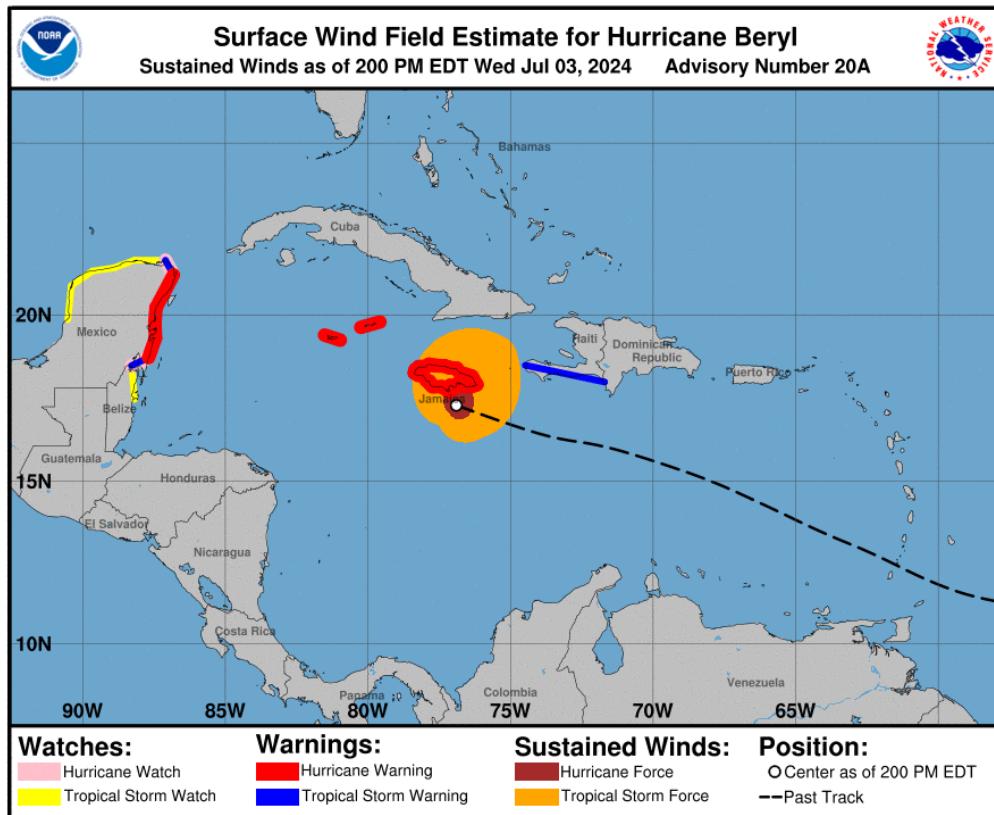


Figure 3. Hurricane Beryl's wind field estimates and past track as of 2 pm EDT July 3rd 2024.

This month AbsoluteClimo celebrates the start of our 9th year in business. Nearing a decade as a going concern, we have an outstanding proven track record of providing our clients and partners with reliable long lead time climate and related financial forecasts backed by our hallmark world-first unrivaled success-based business model.

Our scenario-free product lineup includes hurricane and typhoon landfall (placement) and intensity forecasts worldwide. We also provide related financial forecasts e.g. economic or insured losses from landfalls. Tail (risk or opportunity) forecasts from tropical storms are also provided to our clients with plentiful lead time for making un-rushed better informed decisions ex-ante including underwriting, hedging and project planning.

AbsoluteClimo has the world's back for hurricanes and more. Abetted by our time tested integrated machine learning, our climate forecasts – including placement, frequency, intensity and financials – help people and businesses prepare and become more resilient by acting proactively. Asset owners and managers of real estate or infrastructure, including energy projects, also benefit from our forecasts e.g., (impact) investor due diligence.

► **Supplemental: AI Weather Models Bust Trivial 18-hour Hurricane Beryl Forecasts**

- Hardly a day passes without raucous noise about artificial intelligence (AI), making it very difficult for the world to separate hype from reality including in weather and climate.
- The European Centre for Medium-Range Weather Forecasts (ECMWF) has been running and reviewing experimental weather forecasts produced by five machine learning (AI) models.
- All five ECMWF chaperoned models severely **busted** their short term 18-hour storm intensity forecasts of mean sea level barometric air pressure (in units of millibars aka hectopascals), of the record setting hurricane Beryl, forecast for when NOAA expected Beryl to be at Jamaica's doorstep on July 3rd 2024 at 18:00 Coordinated Universal Time (UTC). All five models were run by ECMWF with a base time of 00:00 UTC July 3rd 2024.
- On July 3rd 2024 at 18:00 UTC NOAA's National Hurricane Center report No. 20A stated hurricane Beryl was observed to be a **Category 4** hurricane with estimated maximum sustained winds near **140 mph (225 km/h)** and estimated minimum central surface barometric air pressure of **959 millibars**, as hurricane conditions were about to spread into Jamaica with the eye of Beryl approaching. See also Figures 2 and 3 above.

- At 18 hours lead time, all five AI models run by ECMWF forecast a low pressure system near Jamaica, but **none** forecast a hurricane strength storm or even a tropical storm strength low pressure system at Jamaica's doorstep.
- Bereft of any AI, the United Kingdom Meteorological (UKMet) Office's age old deterministic unified global weather prediction model run by Australia (ACCESS-G) comparatively **massively** outperformed all five of the ECMWF AI models.
- What the results show is how inept these sometimes hyped machine learning weather prediction models are when needed most: for **impacts**, including the potential of saving lives and property. A saying comes to mind, "Go big or go home."
- **NVIDIA's FourCastNet** model (Figure 4 in the Appendix) was **one of the worst performers**, predicting Beryl to be a measly approximate 1005 millibar minimum closed isobaric low pressure system which generally equates to maximum sustained winds of about 40 mph (64.4 km/h) in the North Atlantic basin, nowhere close to the NOAA observed estimated 959 millibar Category 4 hurricane and maximum sustained winds near 140 mph (225 km/h).
- **Google DeepMind's GraphCast** model (Figure 5 in the Appendix) predicted Beryl to be a mere approximate 995 millibar minimum closed isobaric low pressure system. A lower central minimum barometric pressure of about 990 millibars, for example, would be considered a marginal tropical storm. Google DeepMind's forecast was nowhere close to the observed Category 4 hurricane Beryl estimates from NOAA. In an ironic twist, CNN recently [reported](#) "**Google's greenhouse gas emissions are soaring thanks to AI**" and stated: ' Now, Google is calling its goal to reach net-zero emissions by 2030 "*extremely ambitious,*" and said the pledge is likely to be affected by "*the uncertainty around the future environmental impact of AI, which is complex and difficult to predict.*" '
- **Huawei's Pangu-Weather** model (Figure 6 in the Appendix) joins NVIDIA as **one of the worst performers**, also predicting Beryl to be an approximate 1005 millibar minimum closed isobaric low pressure system, a far cry from the observed estimated 959 millibar Category 4 hurricane with maximum sustained winds near 140 mph (225 km/h).
- **Fudan University of Shanghai's FuXi** model (Figure 7 in the Appendix) not only severely missed the mark predicting Beryl to be an approximate 1005 millibar minimum closed isobaric low pressure system, it didn't even plot a customary letter 'L' on the map for indicating the low pressure system in the center of the closed minimum isobar. Oops.
- **ECMWF's** very own Artificial Intelligence/Integrated Forecasting System, **AIFS** model (Figure 8 in the Appendix) proved unreliable by predicting Beryl to be an approximate

1000 millibar minimum closed isobaric low pressure system. This AIFS forecast was out to lunch and very distant from the non-artificial real world per NOAA's observed estimates.

• **Final AI Weather Takeaways:**

- A lot of noise about AI, including in weather and climate, has left some people fatigued.
- Short term 18-hour weather forecasts from AI weather models did not help with hurricane Beryl as it approached Jamaica with severe impacts to life and property.
- Comparatively, an old deterministic global model from the UK Met Office and the Australia Bureau of Meteorology **crushed it** as one of the best performing 18-hour weather forecasts of hurricane Beryl upon Jamaica's doorstep.
- These AI weather prediction models give humans **no confidence** they are making a difference when it is needed most: at times of **impact** when lives and property are at stake from record setting storms such as hurricane Beryl. The AI was clueless.
- These AI weather prediction models give **no confidence** they can be extended beyond weather into climate when they can't benefit society within less than a 1 day forecast.

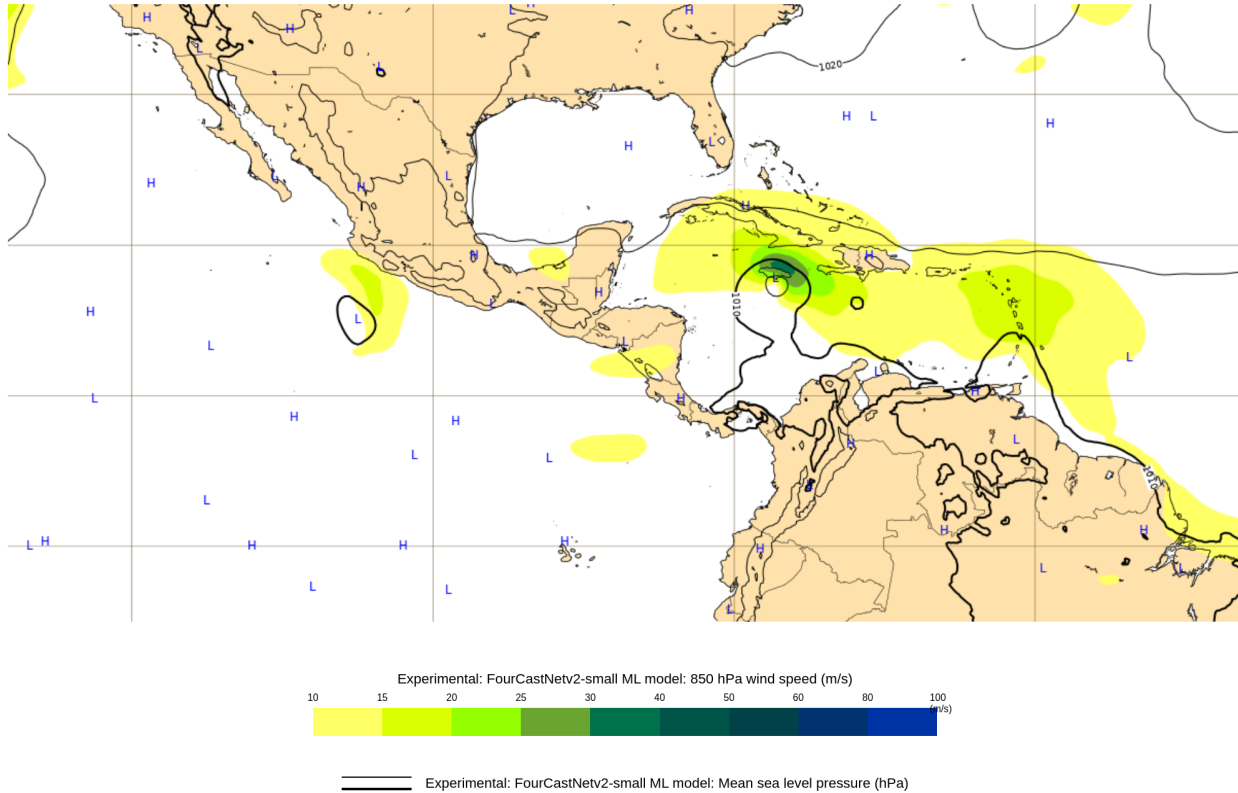
About AbsoluteClimo LLC

AbsoluteClimo's (absoluteclimo.com) mission is bettering life on Earth (☉) by helping people impacted by climate variability and change. AbsoluteClimo LLC, founded in 2016 is a Hawai'i headquartered world leading climate forecasting and risk management company created and operated by pioneering reputable climatologists, meteorologists and seasoned entrepreneurs with accomplished scientific and business industry track record including NASDAQ/NMS listing and successful M&A. We serve business in energy, agriculture, water resources, tourism, human health, financial services including re/insurance, insurance-linked securities, pensions, superannuations, private equity and sustainable investments markets. We occasionally provide guest [lectures](#) on climate risk and insurance at the University of Hawai'i at Mānoa Shidler College of Business and thought leadership [presentations](#) and [panels](#) at [events](#) worldwide.

Appendix

Experimental: FourCastNet ML model: Mean sea level pressure and 850 hPa wind speed

Base time: Wed 03 Jul 2024 00 UTC Valid time: Wed 03 Jul 2024 18 UTC (+18h) Area : Central America



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Figure 4. NVIDIA's FourCastNet V2 (small), is a deep learning model for weather prediction. This forecast is valid at 18:00 UTC July 3rd 2024, run by the ECMWF with a base time of 00:00 UTC July 3rd 2024. Note: the color legend is for wind at a higher (850 hPa) pressure level of the atmosphere, not at or near the sea level surface.

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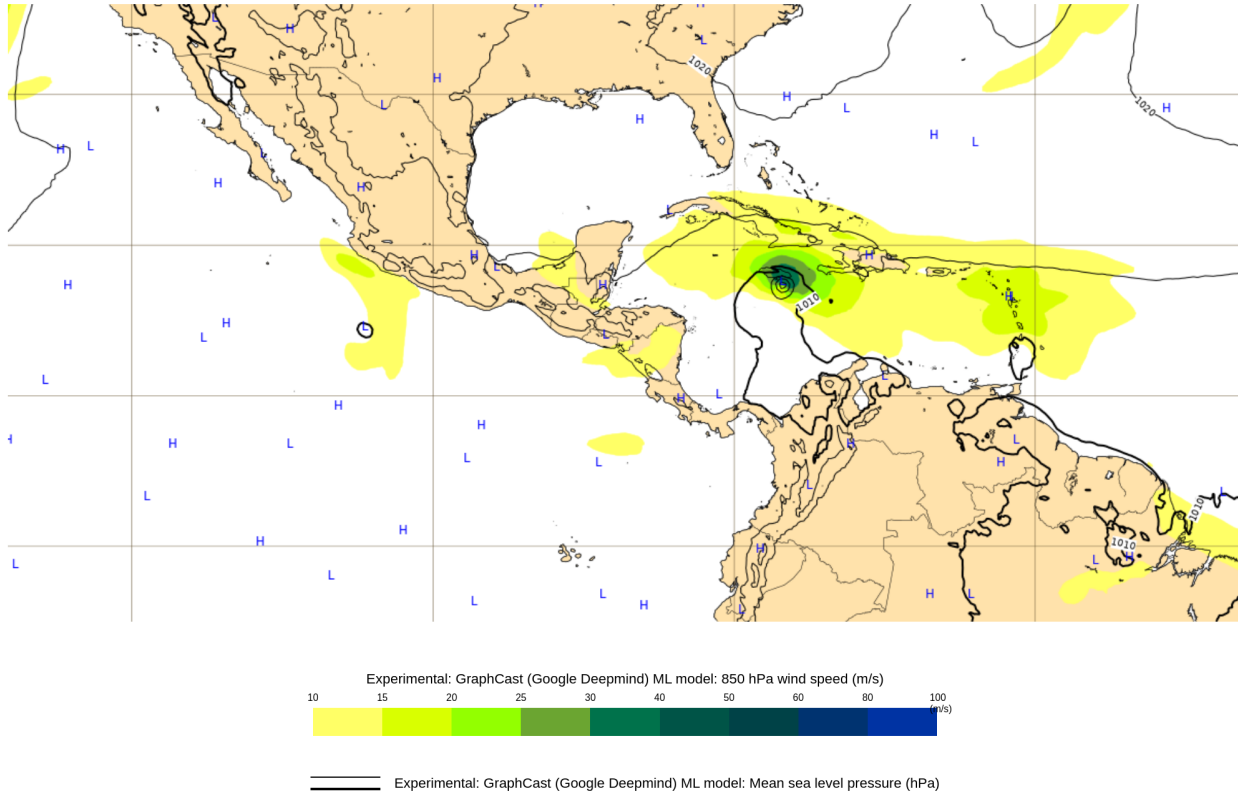
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Experimental: GraphCast ML model: Mean sea level pressure and 850 hPa wind speed

Base time: Wed 03 Jul 2024 00 UTC Valid time: Wed 03 Jul 2024 18 UTC (+18h) Area : Central America



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Figure 5. Google DeepMind's GraphCast forecast valid at 18:00 UTC July 3rd 2024, run by the ECMWF with a base time of 00:00 UTC July 3rd 2024. Note: the color legend is for wind at a higher (850 hPa) pressure level of the atmosphere, not at or near the sea level surface.

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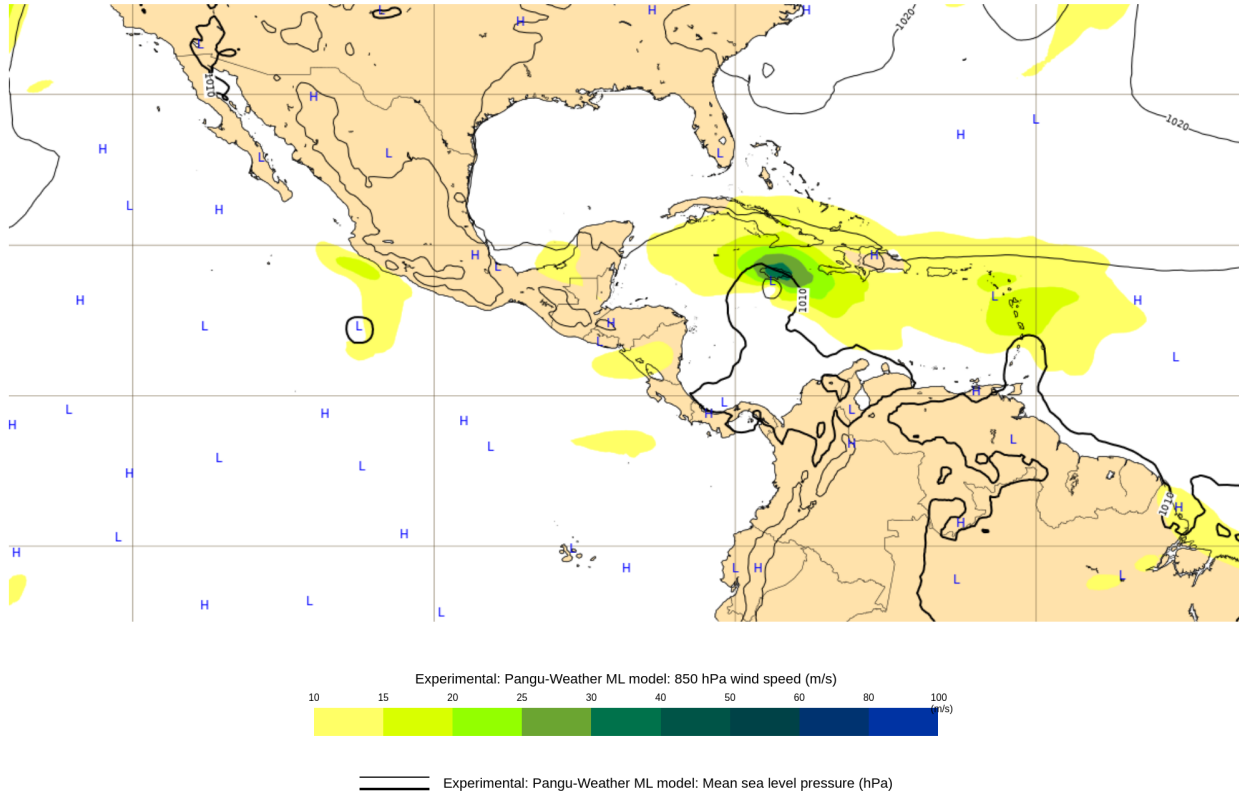
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Experimental: Pangu-Weather ML model: Mean sea level pressure and 850 hPa wind speed

Base time: Wed 03 Jul 2024 00 UTC Valid time: Wed 03 Jul 2024 18 UTC (+18h) Area : Central America



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Figure 6. Huawei's Pangu-Weather model forecast valid at 18:00 UTC July 3rd 2024, run by the ECMWF with a base time of 00:00 UTC July 3rd 2024. Note: the color legend is for wind at a higher (850 hPa) pressure level of the atmosphere, not at or near the sea level surface.

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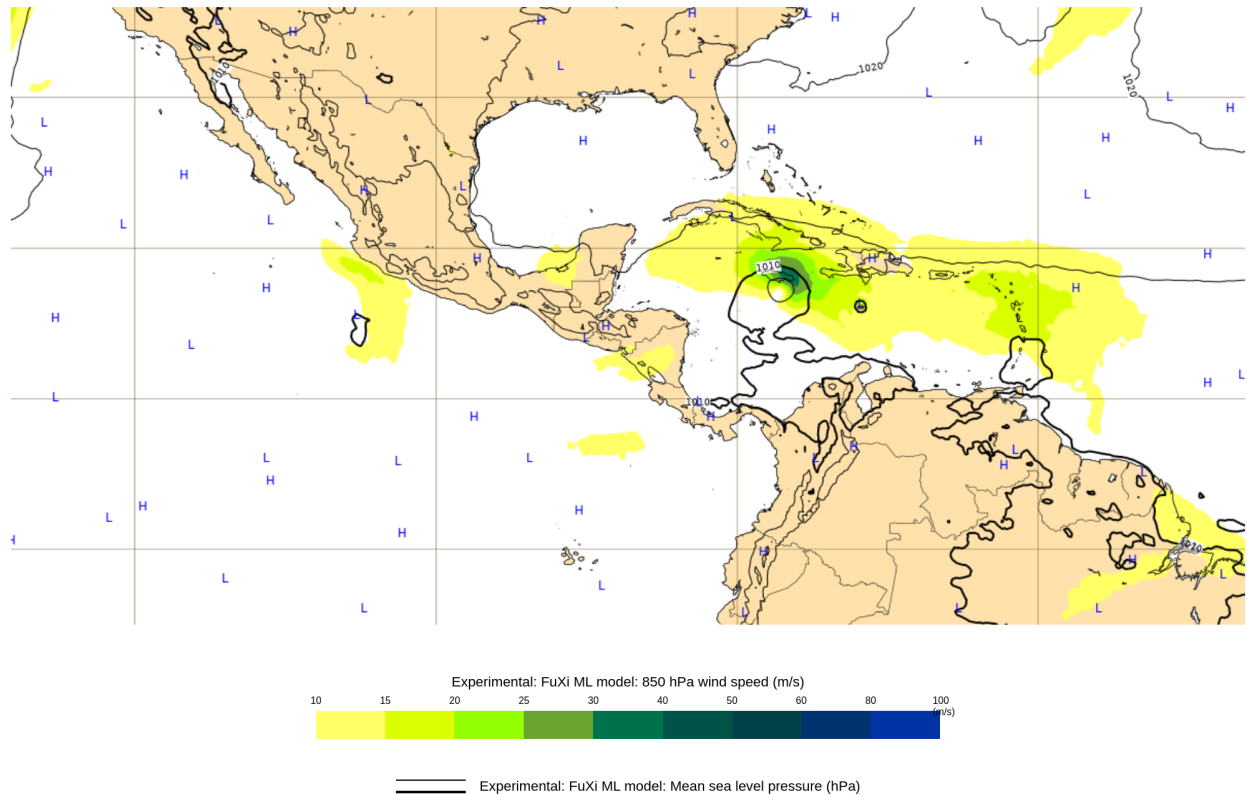
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Experimental: FuXi ML model: Mean sea level pressure and 850 hPa wind speed

Base time: Wed 03 Jul 2024 00 UTC Valid time: Wed 03 Jul 2024 18 UTC (+18h) Area : Central America



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Figure 7. Fudan University's FuXi model forecast valid at 18:00 UTC July 3rd 2024, run by the ECMWF with a base time of 00:00 UTC July 3rd 2024. Note: the color legend is for wind at a higher (850 hPa) pressure level of the atmosphere, not at or near the sea level surface.

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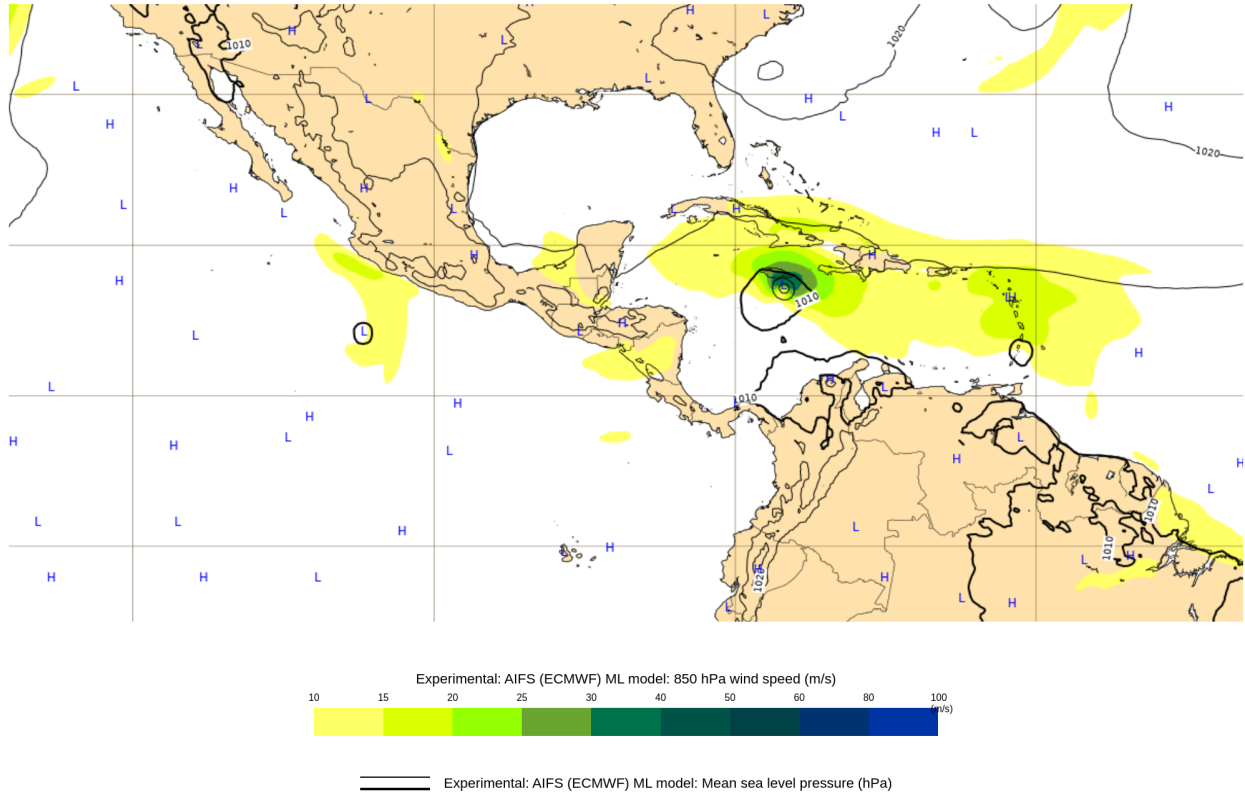
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Experimental: AIFS (ECMWF) ML model: Mean sea level pressure and 850 hPa wind speed

Base time: Wed 03 Jul 2024 00 UTC Valid time: Wed 03 Jul 2024 18 UTC (+18h) Area : Central America



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Figure 8. ECMWF's AIFS model forecast valid at 18:00 UTC July 3rd 2024, run by the ECMWF with a base time of 00:00 UTC July 3rd 2024. Note: the color legend is for wind at a higher (850 hPa) pressure level of the atmosphere, not at or near the sea level surface.

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