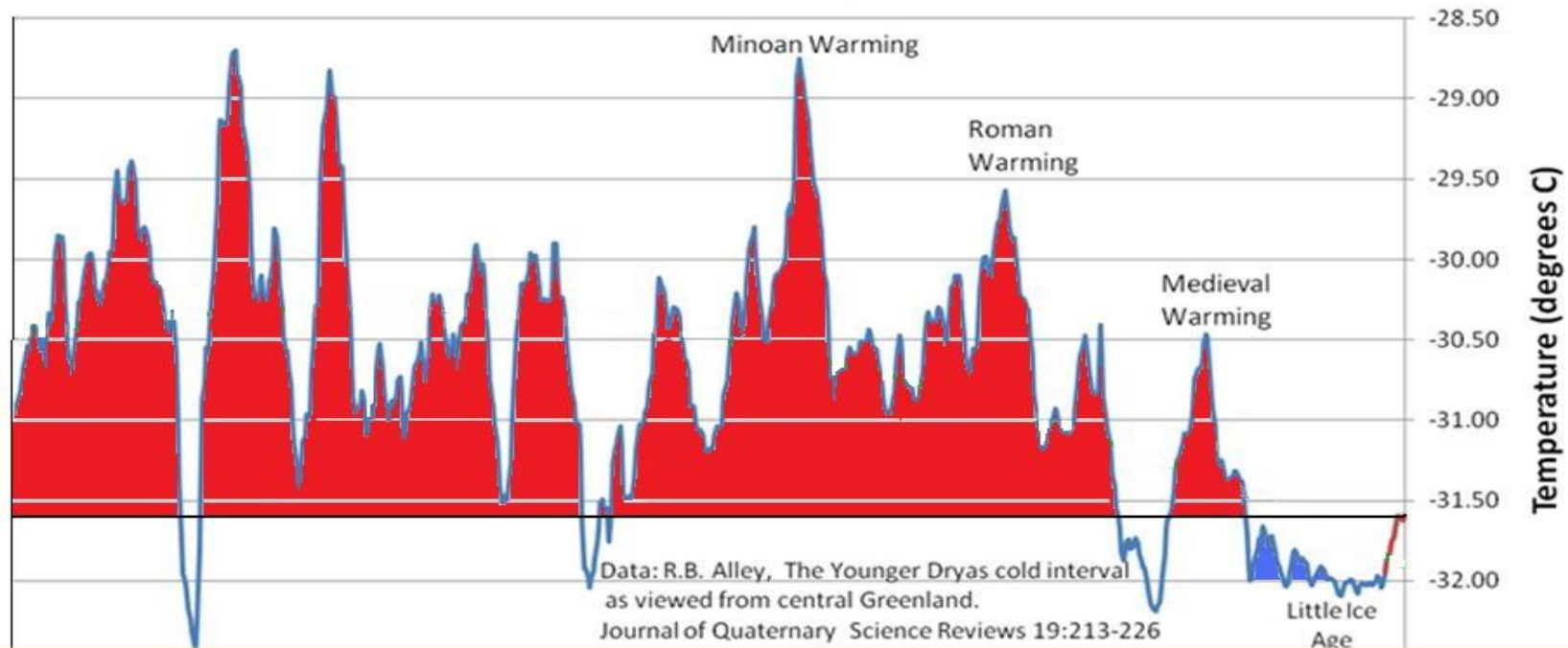


Doubting Catastrophic Anthropogenic Climate Change

“Meteorological Implications of the Hot Spot”



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26 Apr 2019

Cruces Atmospheric Sciences Forum

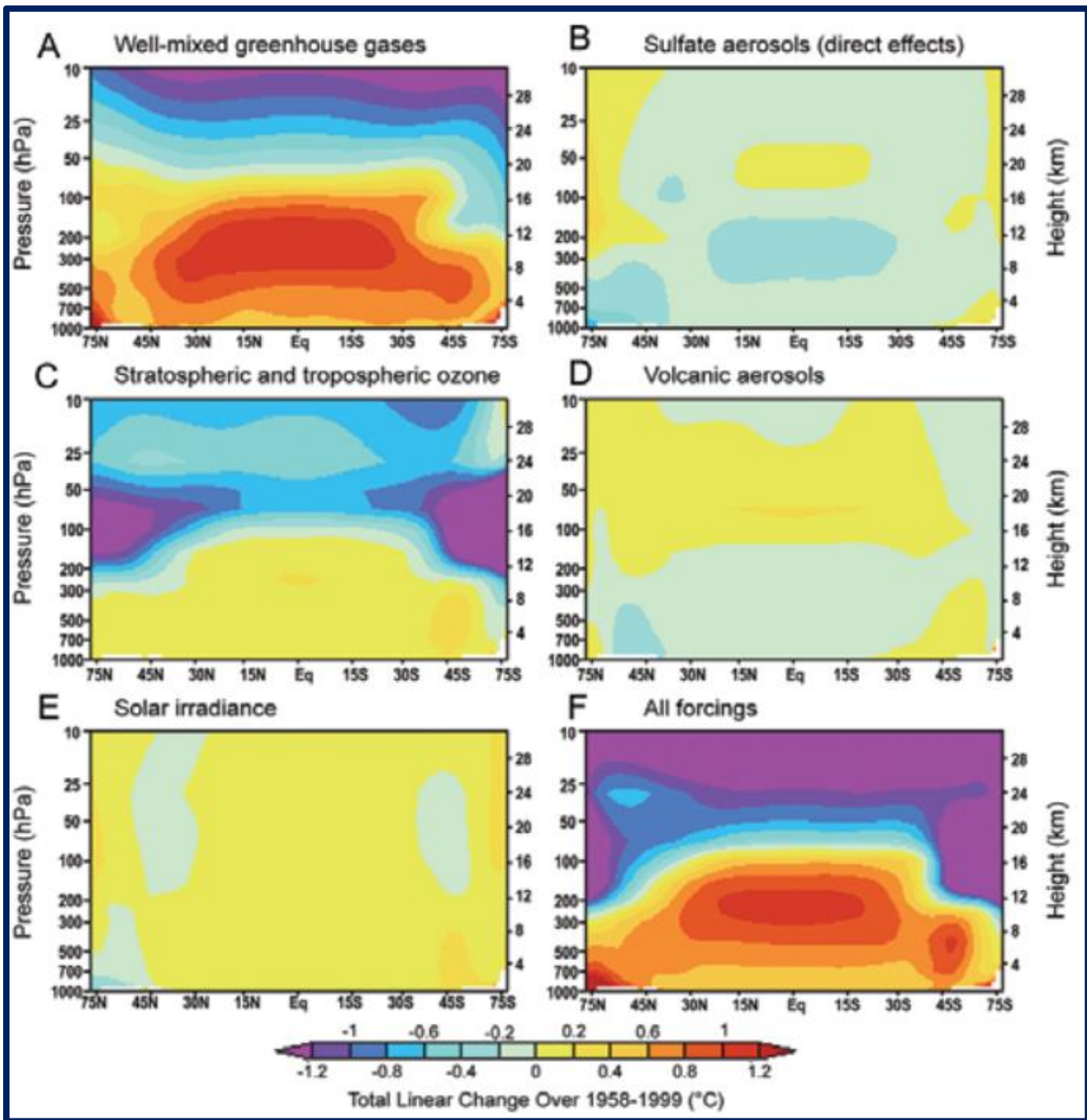
The U.S. Climate Change Science Program

This is from NOAA's Geophysical Fluid Dynamics Laboratory (GFDL)

https://www.gfdl.noaa.gov/bibliography/related_files/vr0603.pdf

Figure 1.3.
...simulations of the vertical profile of temperature change due to various forcings, and the effect due to all forcings taken together (after Santer et al., 2000)

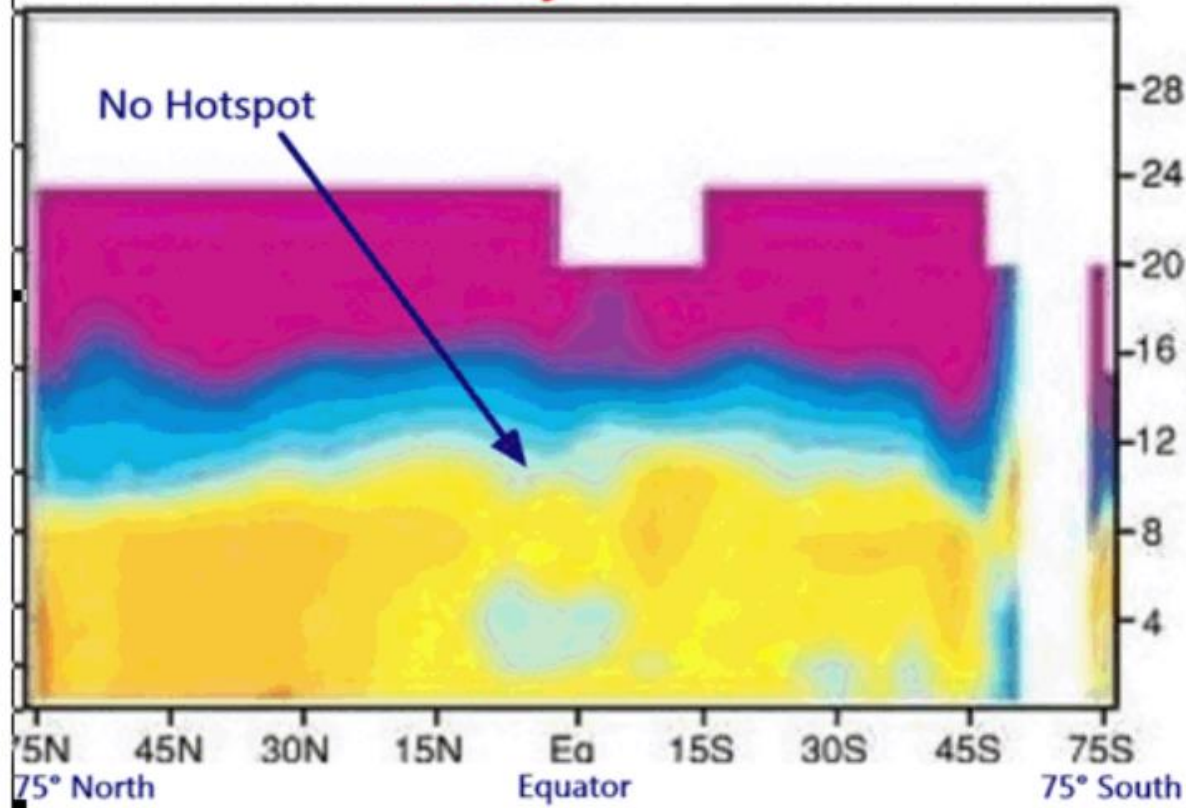
GFDL, other Alarmist organizations, published that CO2, other greenhouse gases, create a "Hot Spot" ~30,000 ft, extending to ~30 Deg north and south of the equator.



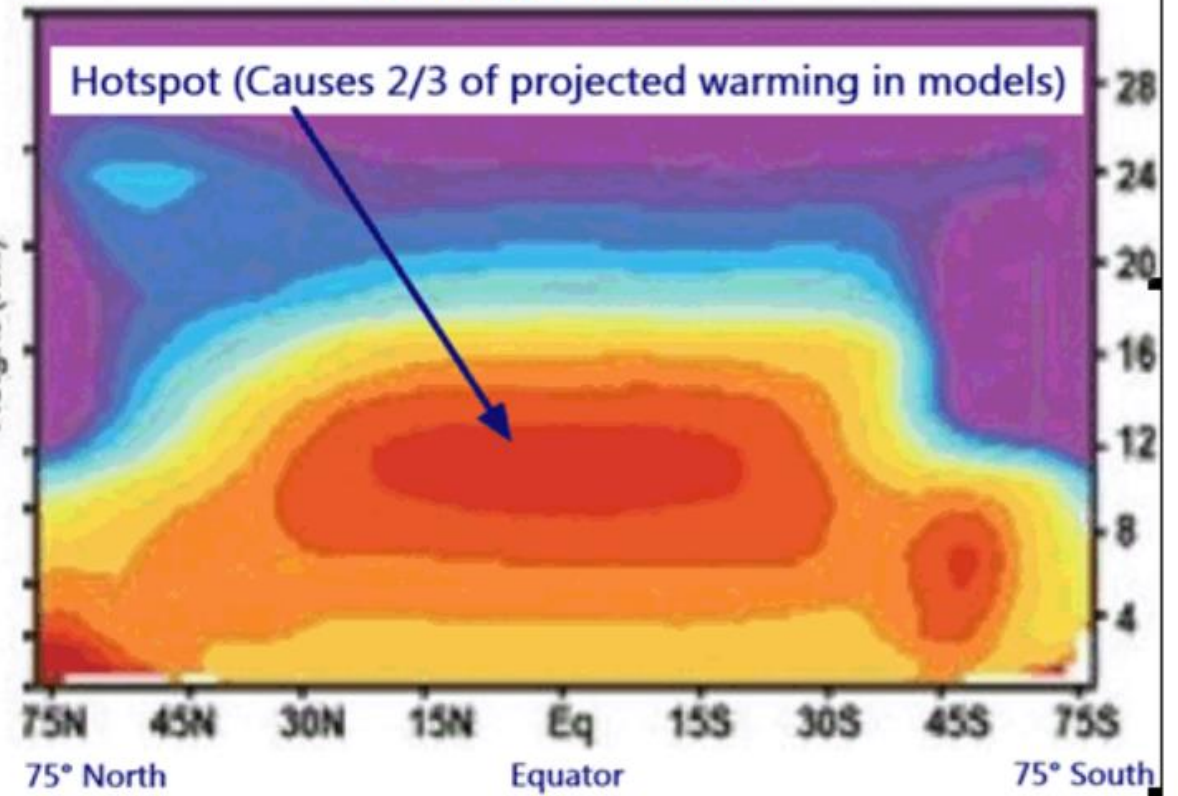
<https://cbdakota.files.wordpress.com/2011/09/fourfatalpieceshotspot.gif>

Atmospheric Warming 1979 - 1999

Reality



Climate Models



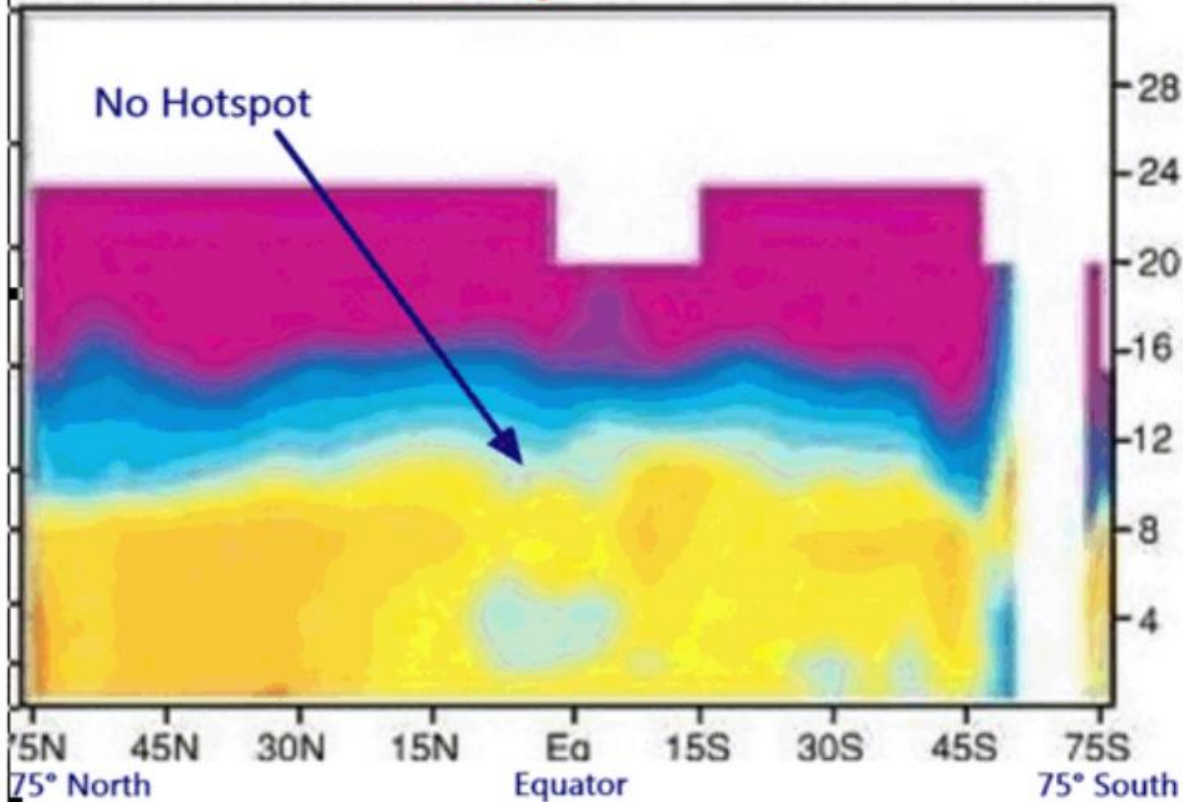
JoNova

It's obvious Government claims of a theoretical and physical understand the climate are fundamentally wrong.

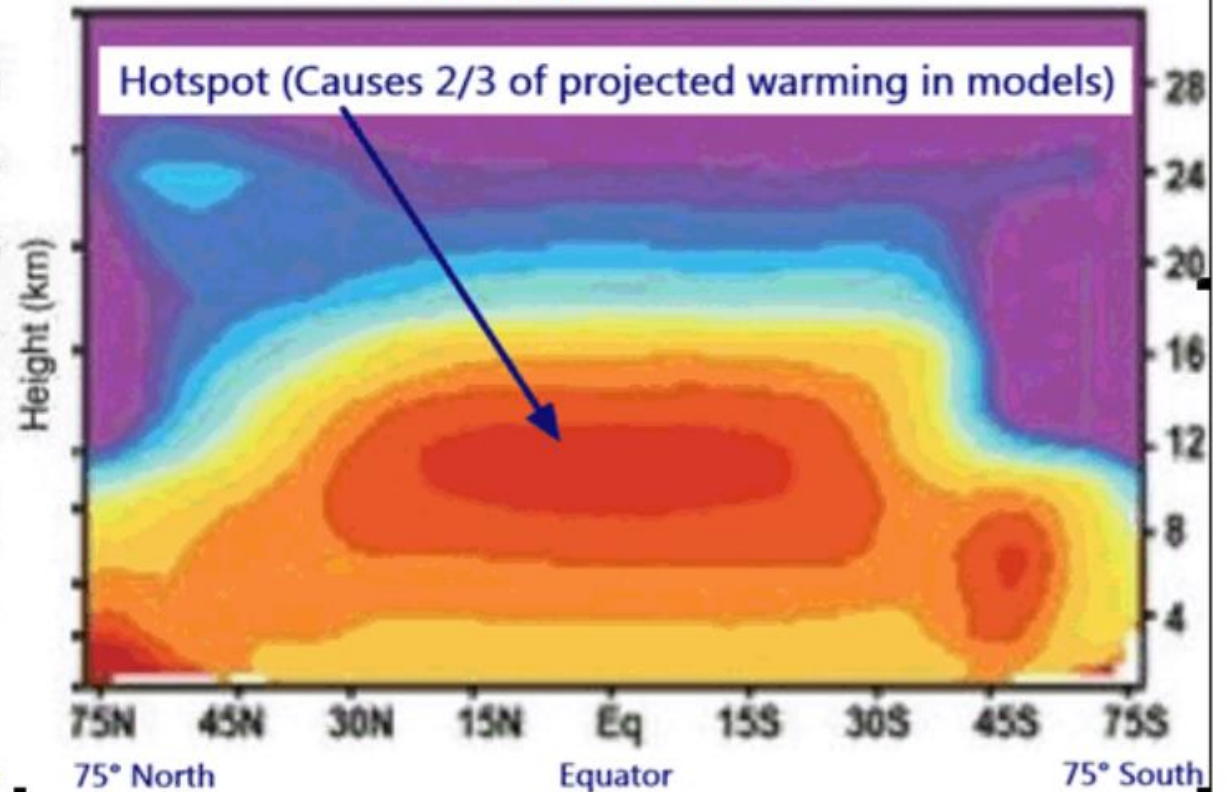
The hot spot in the models upsets the thermodynamics which allows accurate predictions of tropical rainfall patterns. The hot spot inhibits the natural rainfall patterns which bring the “rainy season” to tropical Africa and South America and the monsoons of India, Southeast Asia, the Philippines and North America, among others. It’s ludicrous that “climate scientists” ignore this fundamental deficiency when advancing climate forecasts.

Atmospheric Warming 1979 - 1999

Reality

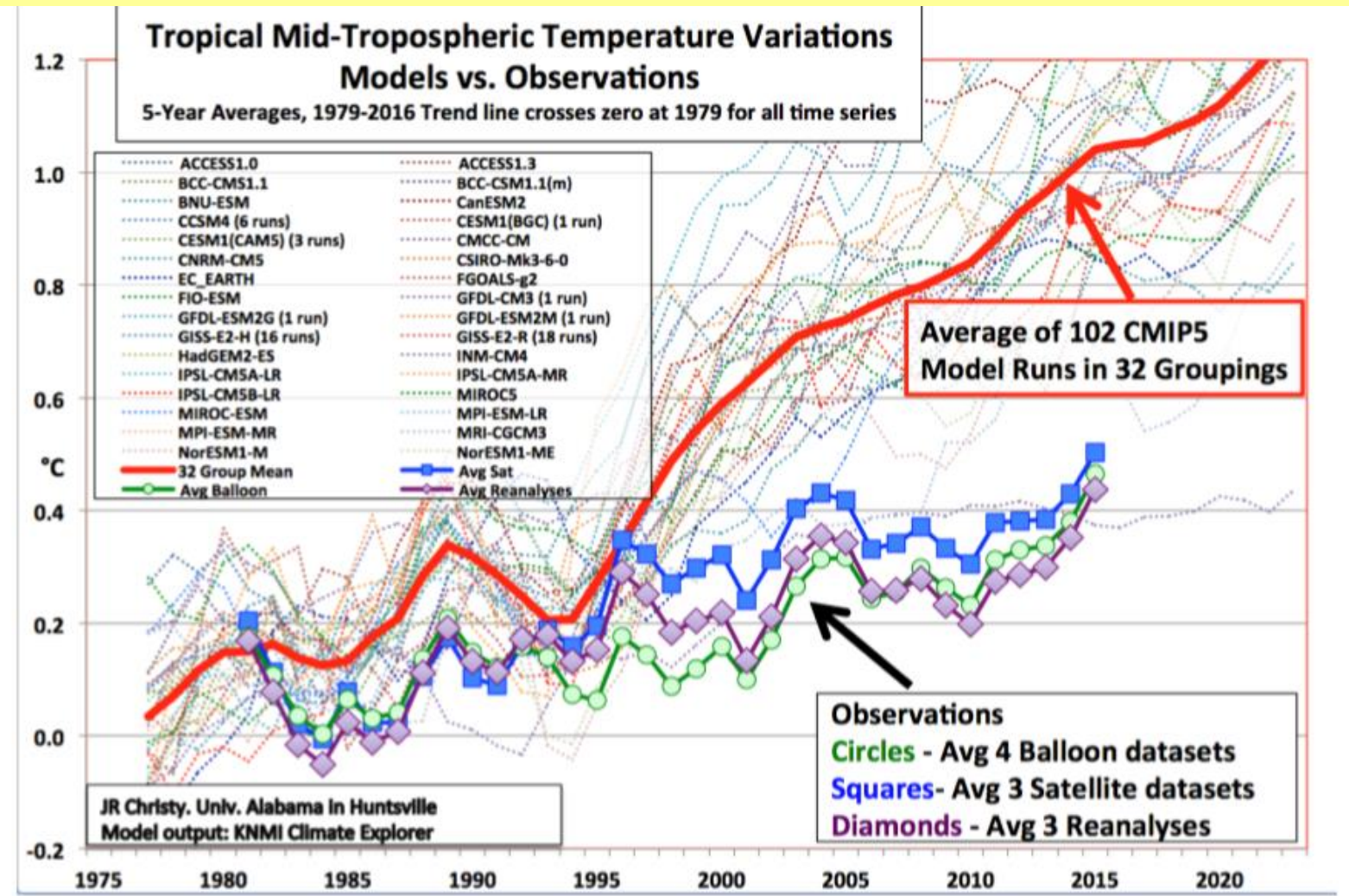


Climate Models



Computer models of the Atmosphere are Fundamentally Flawed.
They all “run hot,” when compared with Observations.

TMT means Temperature of the Middle Troposphere.
CMIP5 means Coupled Model Intercomparison Project Phase 5, an attempt to validate and compare the various models.



Five-year averaged values of annual mean (1979-2016) tropical bulk TMT as depicted by the average of 102 IPCC CMIP5 climate models (red) in 32 institutional groups (dotted lines). The 1979-2016 linear trend of all time series intersects at zero in 1979. Observations are displayed with symbols: Green circles - average of 4 balloon datasets, blue squares - 3 satellite datasets and purple diamonds - 3 reanalyses. The last observational point at 2015 is the average of 2013-2016 only, while all other points are centered, 5-year averages.

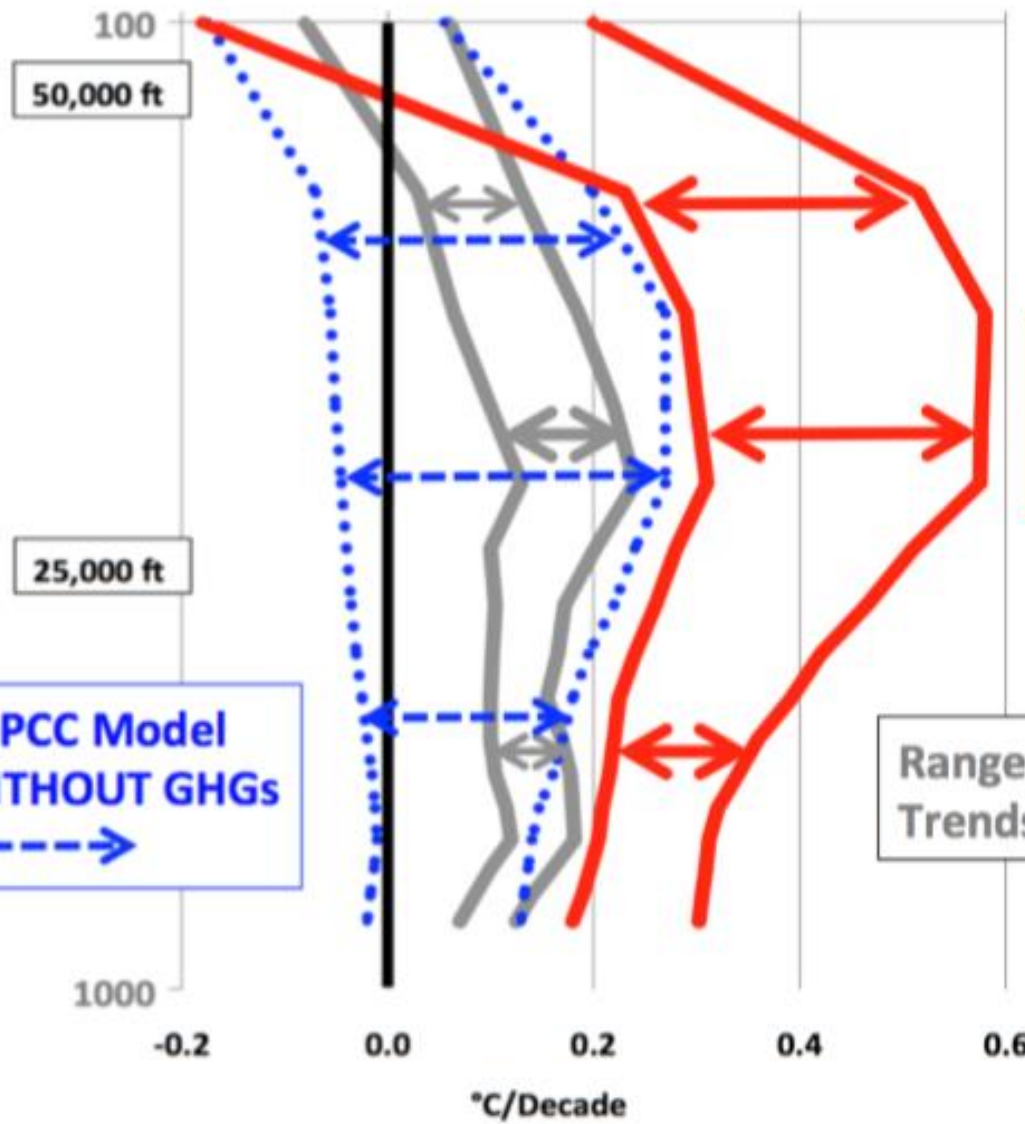
**Vertical Tropical Temperature Trends
Models and Observations
1979-2010
IPCC Fig. 10.SM.1**

Computer Models with Greenhouse Gases (GHGs) are fundamentally Flawed.

Range of IPCC Model Trends WITHOUT GHGs

Range of IPCC Model Trends WITH GHGs

Range of Observation Trends



The colored lines represent the range of results for the models and observations. The key point displayed is the lack of overlap between the GHG model results (red) and the observations (gray); the non-GHG model runs (blue) overlap the observations almost completely. **In practical terms, this diagram shows the “greenhouse-gas models” will always produce poor forecasts.**

Two of the building blocks of forecast models are the

Equation of State $P = \text{Rho} \cdot R \cdot T$

P: pressure = Rho: density R: Gas constant for Dry Air 0.287 ergs/g/Deg K T: Temp Deg K

and the **Hypsometric Equation**, integration of the Equation of State in the vertical to get the thickness of the layer of the atmosphere between pressure levels p_1 and p_2 ...

The hypsometric equation is expressed as:^[1]

$$h = z_2 - z_1 = \frac{R \cdot \bar{T}}{g} \cdot \ln\left(\frac{p_1}{p_2}\right),$$

where:

h = thickness of the layer [m],

z = geometric height [m],

R = specific **gas constant** for dry air,

\bar{T} = mean **temperature in kelvins** [K],

g = **gravitational acceleration** [m/s^2],

p = **pressure** [Pa].

In the graphic to the right, the height or thickness of a layer between two pressure levels depends solely on the mean Temperature of that layer, the T with the bar on top.

All of the rest of the elements of this equation are constants or knowns.

Because the models run hot, that thickness

will be in error!

The thickness will be **thicker than the real world.**

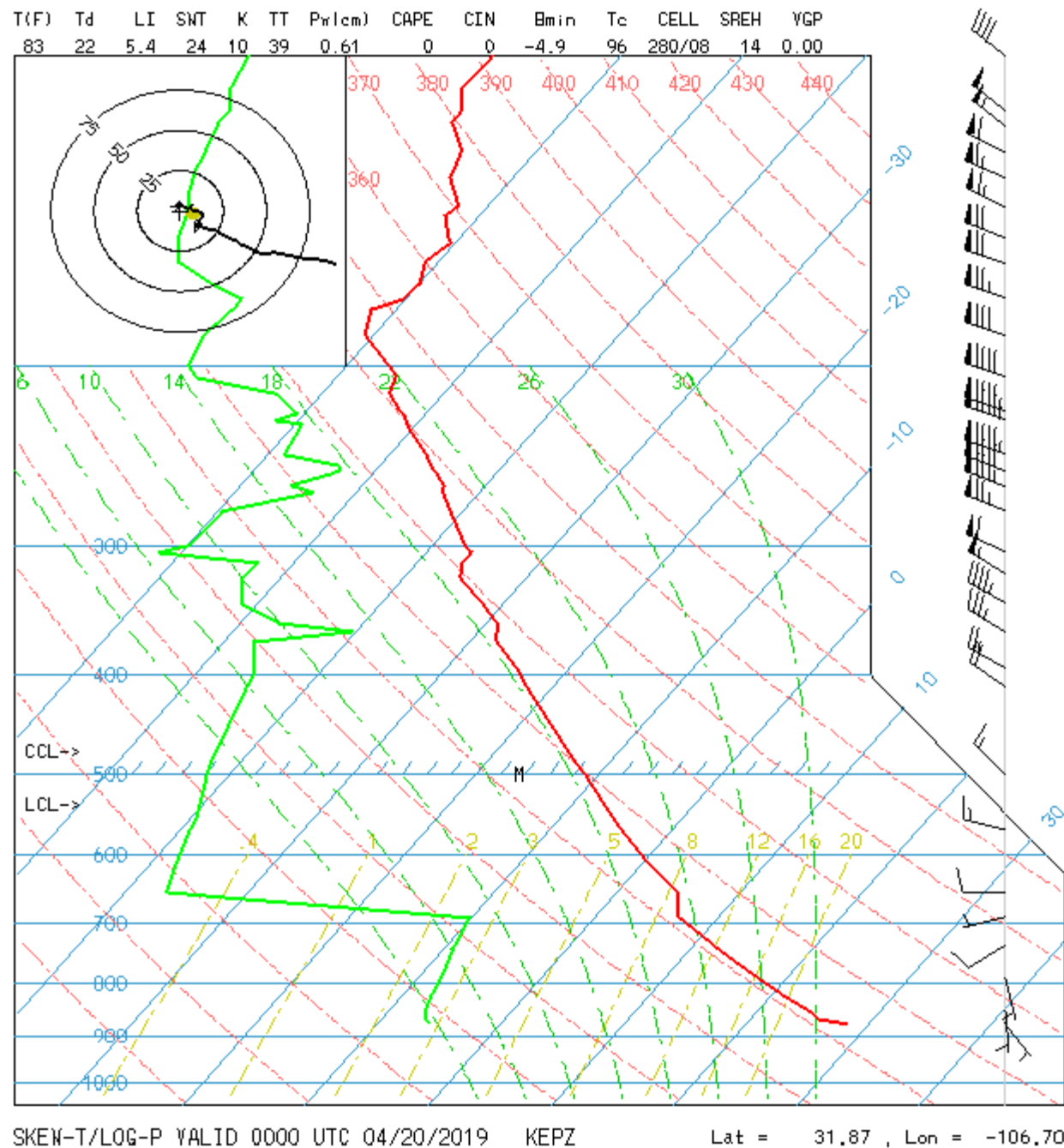
We send balloons aloft every 12 Hours to measure temperature, pressure, moisture, and winds.

This is the KEPZ sounding from 0000Z, 20 Apr 2019, plotted on a Skew-T Log P thermodynamic diagram.

An introduction to the Skew-T is found

<https://casf.me/olli-week-one/>

<https://casf.me/olli-week-two/>



500 mb Heights (dm) / Temperature (°C) / Humidity (%)

In principle, we start with a picture of the atmosphere at a given time... called **Initialization of the model**

Shown is the 0000Z Saturday 20 April 2019 picture at 500 millibars, ~18,000 ft MSL.

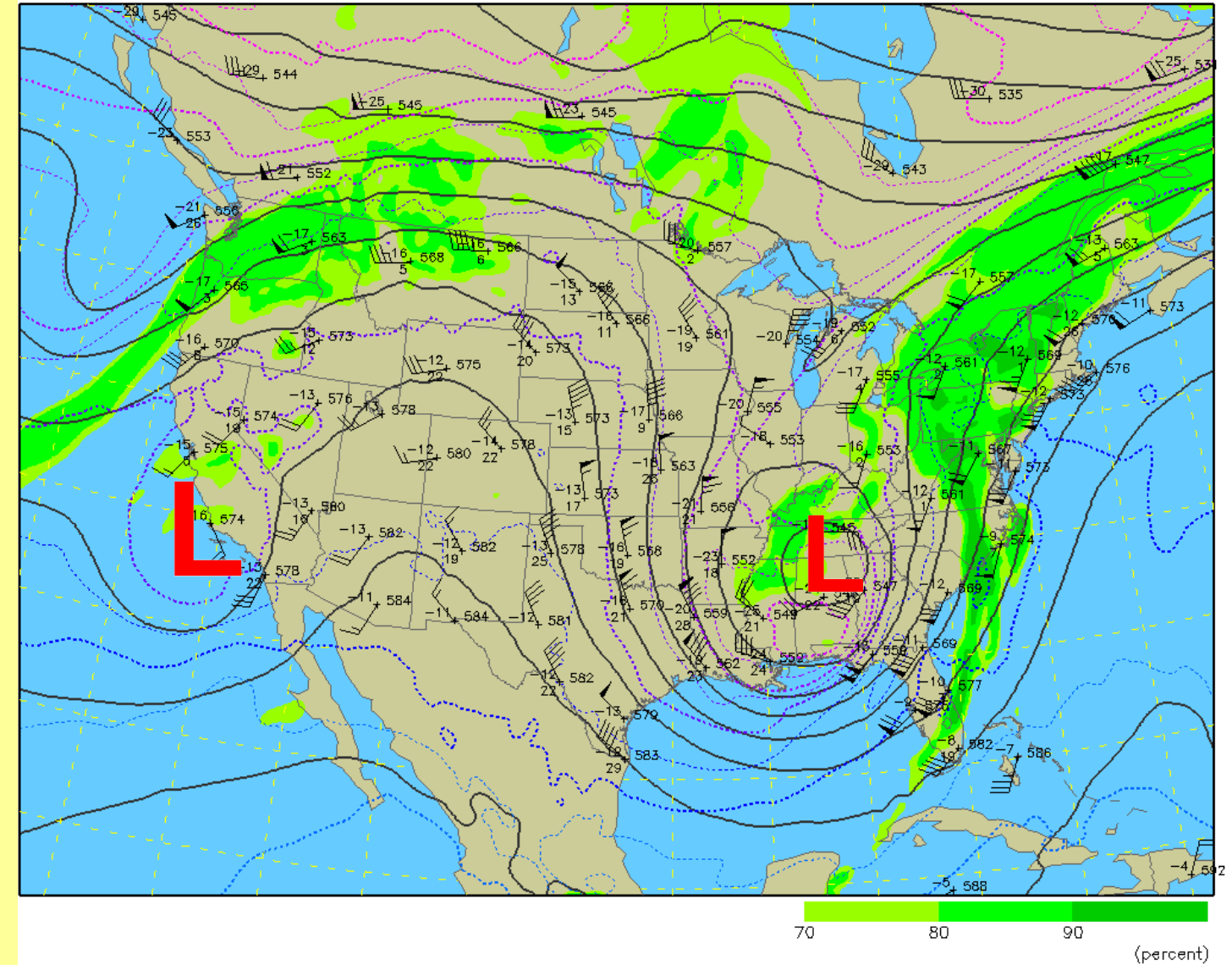
Computer models then add the calculated thickness from, e.g., 500 mb to 300 mb to estimate winds at 300 mb or 30,000 ft MSL, the jet stream level... which steer the storms.

The idea is if you can forecast the temperature, the **hypso metric equation** allows you to stack the thickness of the 500 to 300 mb air, then you can forecast the winds (at each level) and ... steer the disturbances over time.

In principle, you can forecast and locate the Subtropical Ridge and the semi-permanent lows...in the Gulf of Alaska and the Iceland Low

0-hour analysis valid 0000 UTC Sat 20 Apr 2019

RAP (00z 20 Apr)



This chart helps show the hot spot that exists in the climate models.

This means that the “Delta-Z” between 500 mb and 300 mb based on the Hypsometric Equation will make the thickness thicker than in the real world

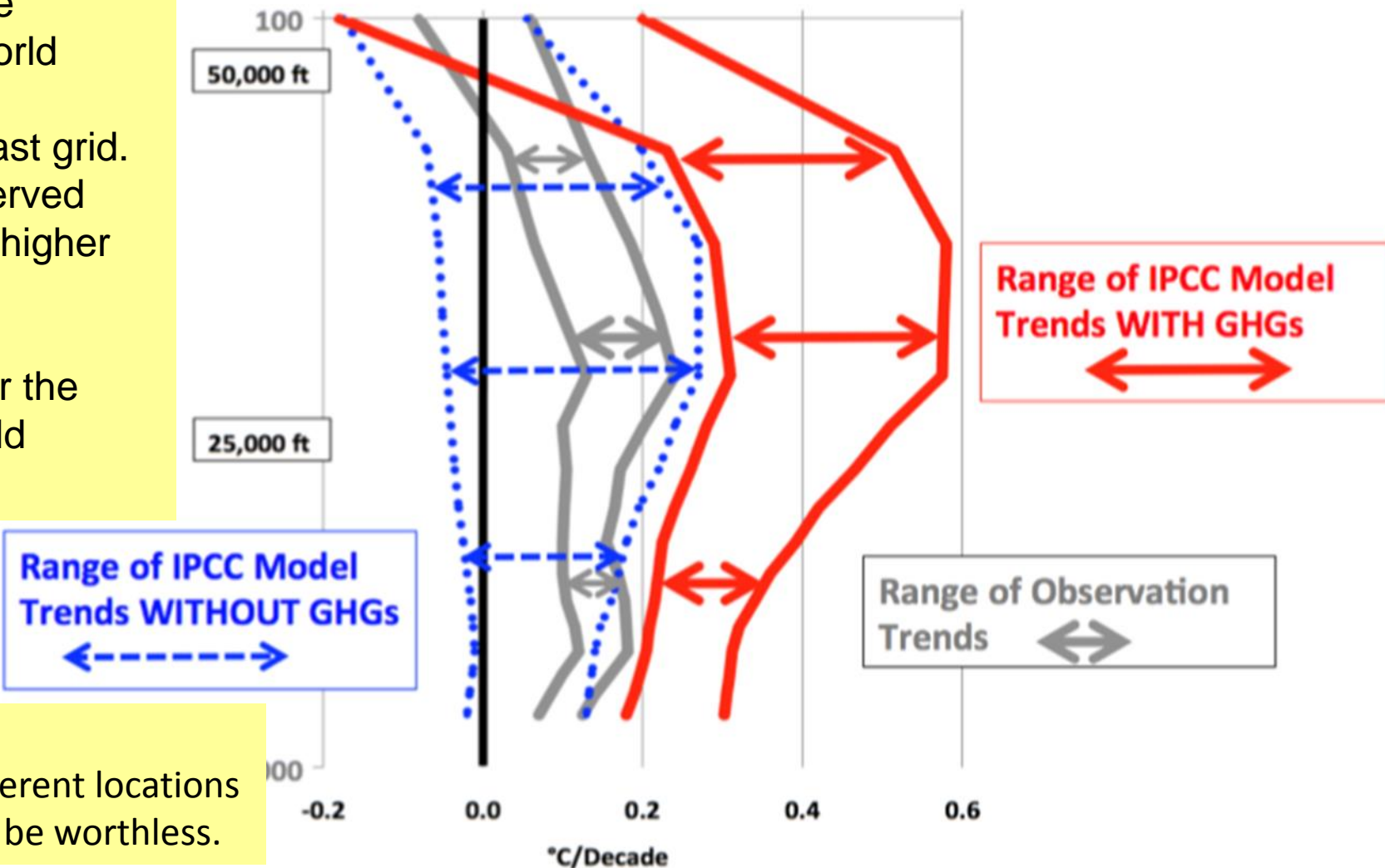
This error occurs all over the forecast grid. A bulge of heights higher than observed will effect the 300 mb, 200 mb and higher wind forecast levels.

This means that the winds will steer the storms differently from the real world case.

Features such as storm systems and high pressure areas aloft will be in different locations and different strengths.... forecast will be worthless.

But, what happens?

Vertical Tropical Temperature Trends
Models and Observations
1979-2010
IPCC Fig. 10.SM.1



There were reports from the United Kingdom that the British Met Office went overboard putting greenhouse gas warming into their operational UKMO forecasts, with poor results.

There were spectacular forecast failures, one was for a “barbecue summer,” which ended up dreary and rainy.

Another forecast for extended drought, and numerous “We Are In Drought” Public Service Announcements, below, an example:



As millions of Britons holiday at home after that promise of a 'barbecue summer', how did the Met Office get it so wrong?

By **DAILY MAIL REPORTER**
UPDATED: 05:21 EDT, 30 July 2009

“...yesterday the weathermen officially admitted that their prediction of a 'barbecue summer' had been hopelessly wrong.

And the bad news for millions of holidaymakers, many of whom had opted to stay in Britain on the strength of the optimistic forecast, is that after a soggy July, August will be no better.”



A boating holiday in the Lakes: Seven-year-old Max Preston, from Merseyside, paddles his kayak around the tents on a campsite near Keswick.

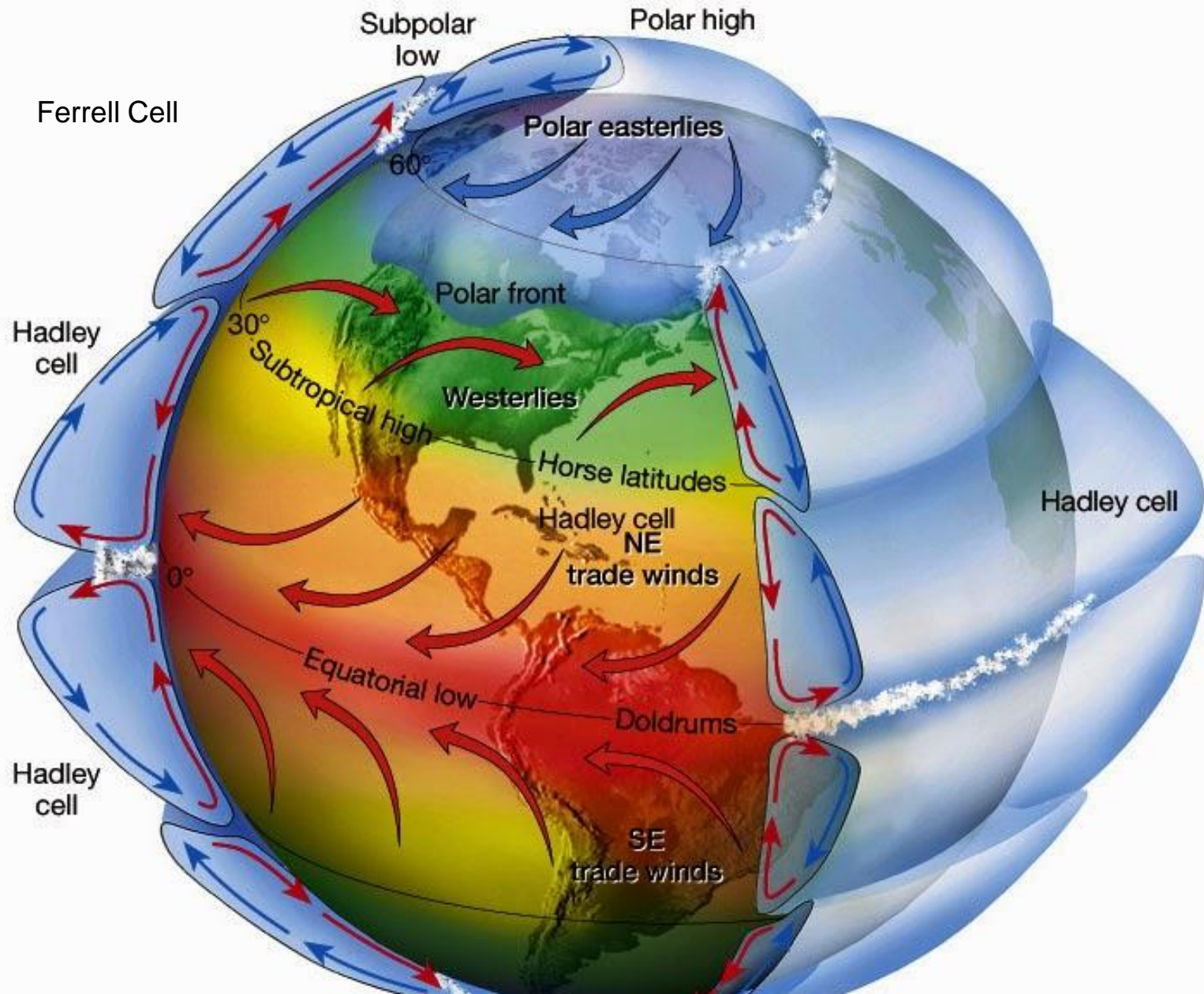
This graphic shows the semi-permanent pressure systems which control movement of important weather-making systems.

Among these: the Subtropical Ridge, Polar Front / Polar Front Jet, the subpolar lows, the Aleutian Low and the Icelandic Low.

The Hot Spot in the models will form and move them to locations different from locations in the real world.

Every day the amount of sunlight falling upon the earth changes a bit according to the annual cycle.

Because of the hot spot, this heating will be erroneous, and the solution will "steer" weather systems erroneously. The forecast will decay rapidly.

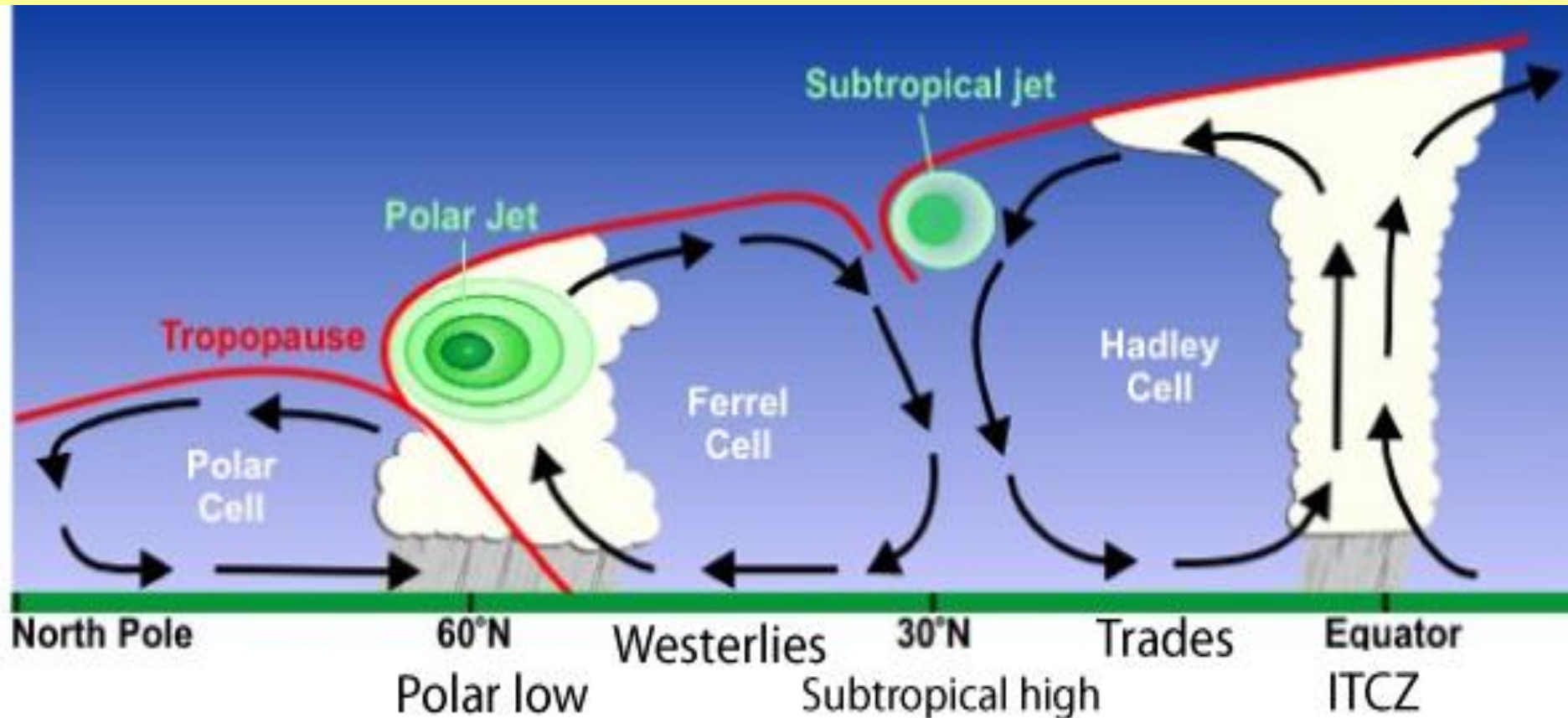


Cross-section from North Pole (left side) to Equator (right side), showing many of the features described.

The “Hot Spot” interferes with the tropical rainfall amount and location shown near the Equator and the Inter-Tropical Convergence Zone, “ITCZ,” below.

The hot spot interferes with forecasting the correct location of all features shown in this diagram.

The modeled hot spot renders these forecasts meaningless, yet this is never mentioned by Alarmists lecturing us.

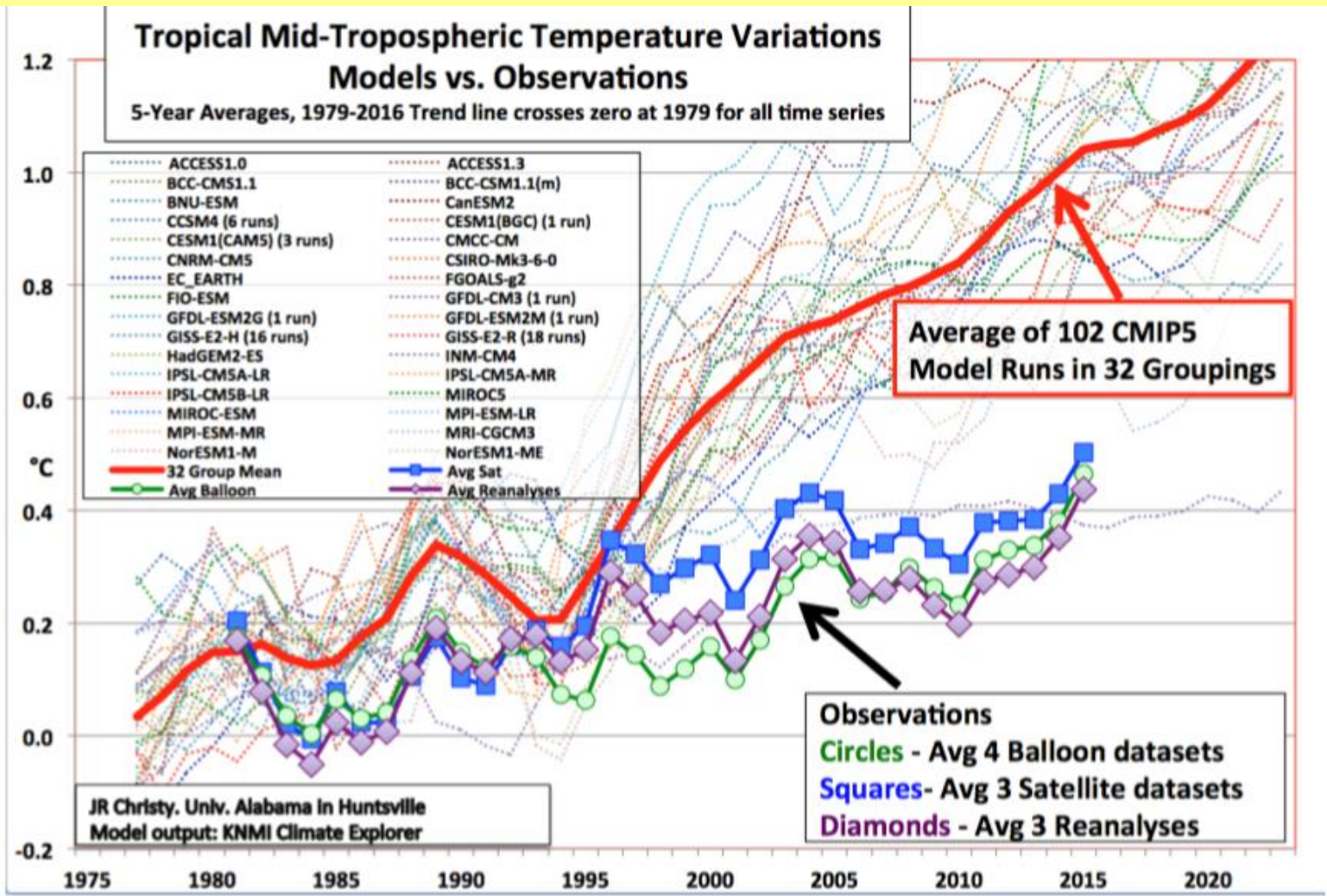


<http://globalsailingweather.com/globalpatterns.php>

Computer models of the Atmosphere are Fundamentally Flawed.

When these hotter than the real world temperatures are used to calculate the thickness aloft based on the Hypsometric Equation, ...the forecast can never be right.

In New Mexico, the hot spot forecasts ever-hotter and drier conditions. In the real world, a hot day during the Monsoon brings heavy rainfall.



Five-year averaged values of annual mean (1979-2016) tropical bulk TMT as depicted by the average of 102 IPCC CMIP5 climate models (red) in 32 institutional groups (dotted lines). The 1979-2016 linear trend of all time series intersects at zero in 1979. Observations are displayed with symbols: Green circles - average of 4 balloon datasets, blue squares - 3 satellite datasets and purple diamonds - 3 reanalyses. The last observational point at 2015 is the average of 2013-2016 only, while all other points are centered, 5-year averages.

This is for “the Science is Settled” crowd.

These are examples of the computer model forecasts for the evolution of the present April, 2019, El Niño until the end of 2019, an 8-month forecast

Many models forecast prompt return to La Niña conditions

Many forecast continued El Niño conditions.

This is the state of the art today.

Yet “experts” lecturing us never tell us of the uncertainty of the “peer reviewed” models.

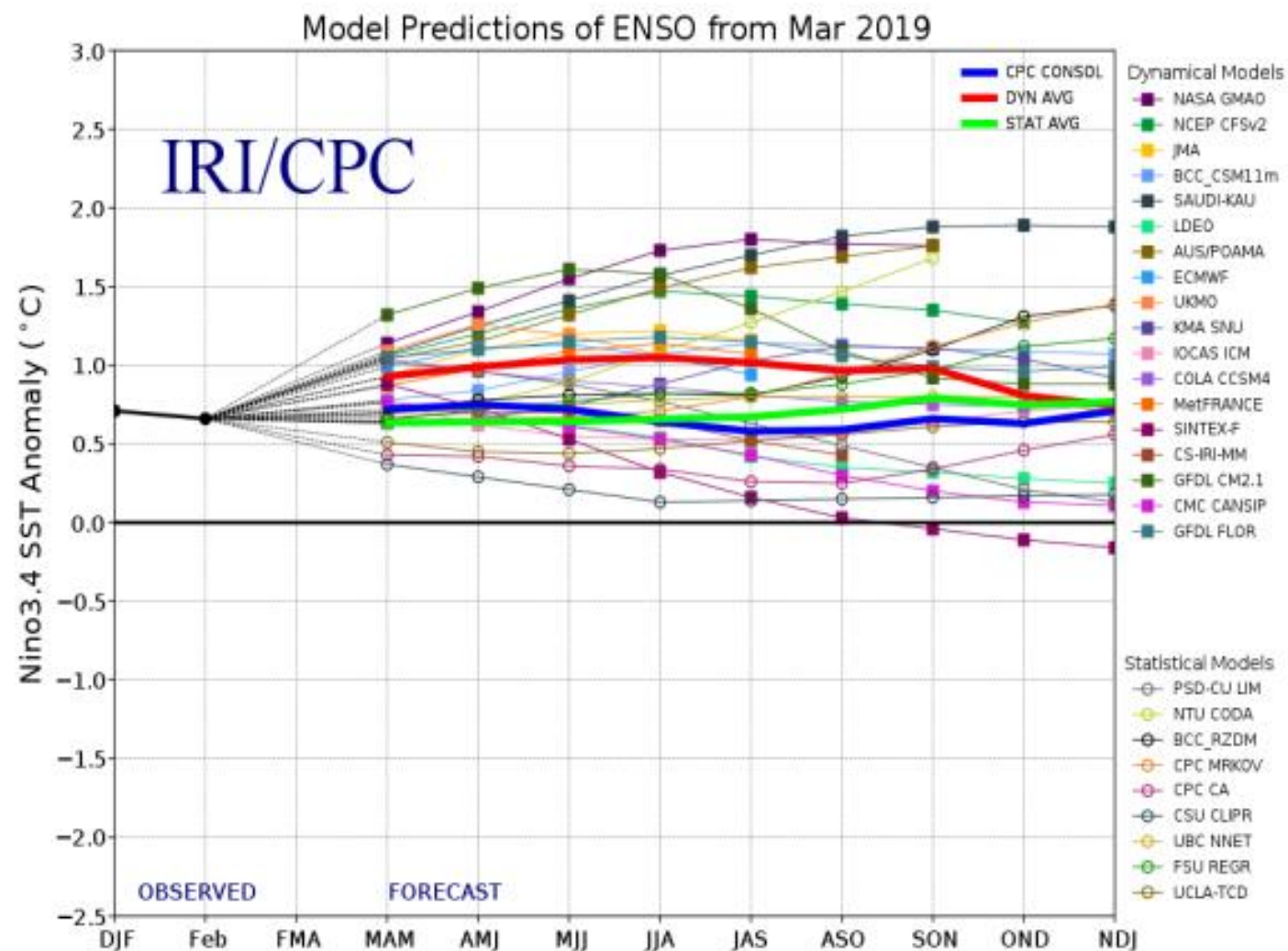


Figure provided by the International Research Institute (IRI) for Climate and Society (updated 19 March 2019).