Weekly AgroMet Update and Outlook

1 Synopsis: Thursday July 7 – Friday July 15, 2016

***Summary*:** An active tropical wave with strong outflow aloft will continue westward across northern Central America and southern Mexico tonight and on Friday, generating scattered showers and thunderstorms, especially over southern and western Belize. The seasonally, unsettled conditions will persist through the weekend and most of next week in association of a low level jet in the easterly flow over the western Caribbean and Central America and good outflow support in the upper atmosphere. A second tropical wave or perturbation in the easterlies is expected to cross Belize by Monday, generating more showery weather. Figure 1 below is the surface weather map for Thursday evening, showing the first tropical wave approaching Belize and Guatemala. A third tropical wave has entered the eastern Caribbean, and should reach Belize in the next five days.

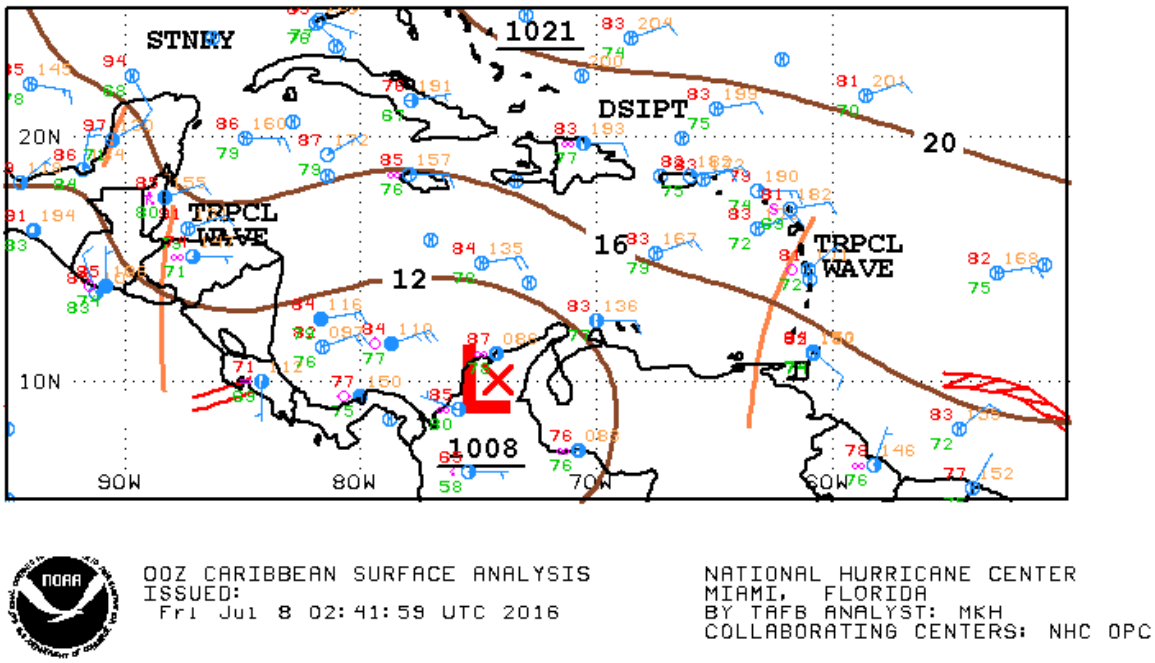

Figure 1: Surface Weather map valid for 8:42 p.m. Thursday, July 7, 2016 showing Tropical Wave moving through northern Central America tonight and Friday morning.

Figure 2 is a NOAA/NWS Marine Forecast Surface weather map valid for Friday morning. It shows widespread, deep convection (showers & thunderstorms) over southern Mexico and most of Central America, including Belize and Quintana Roo.

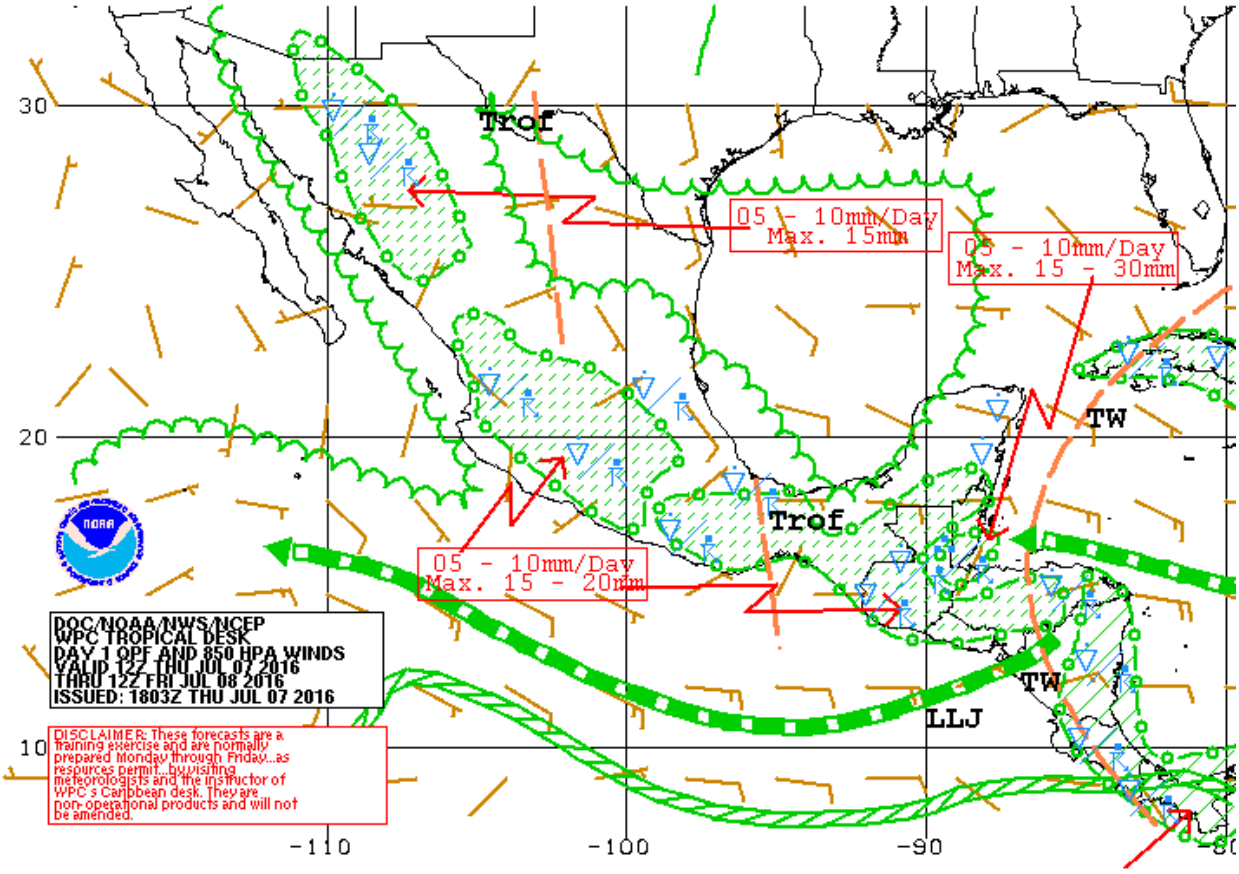

Figure 2: NOAA/NWS 24-hr Marine Forecast Surface weather map valid for 6:00 am Friday, July 8, 2016, showing widespread convection (green hatched area) over Central America and southern Mexico generated an approaching Tropical wave and anticyclonic outflow aloft.

Figure 3 below is the NOAA/NWS 48-hr Marine Forecast Surface weather map valid for 6:00 am Saturday, July 9, 2016, showing scattered convection (green hatched area) over southern Belize, Guatemala and western Honduras. A second TW can be seen approaching the coast of Nicaragua.

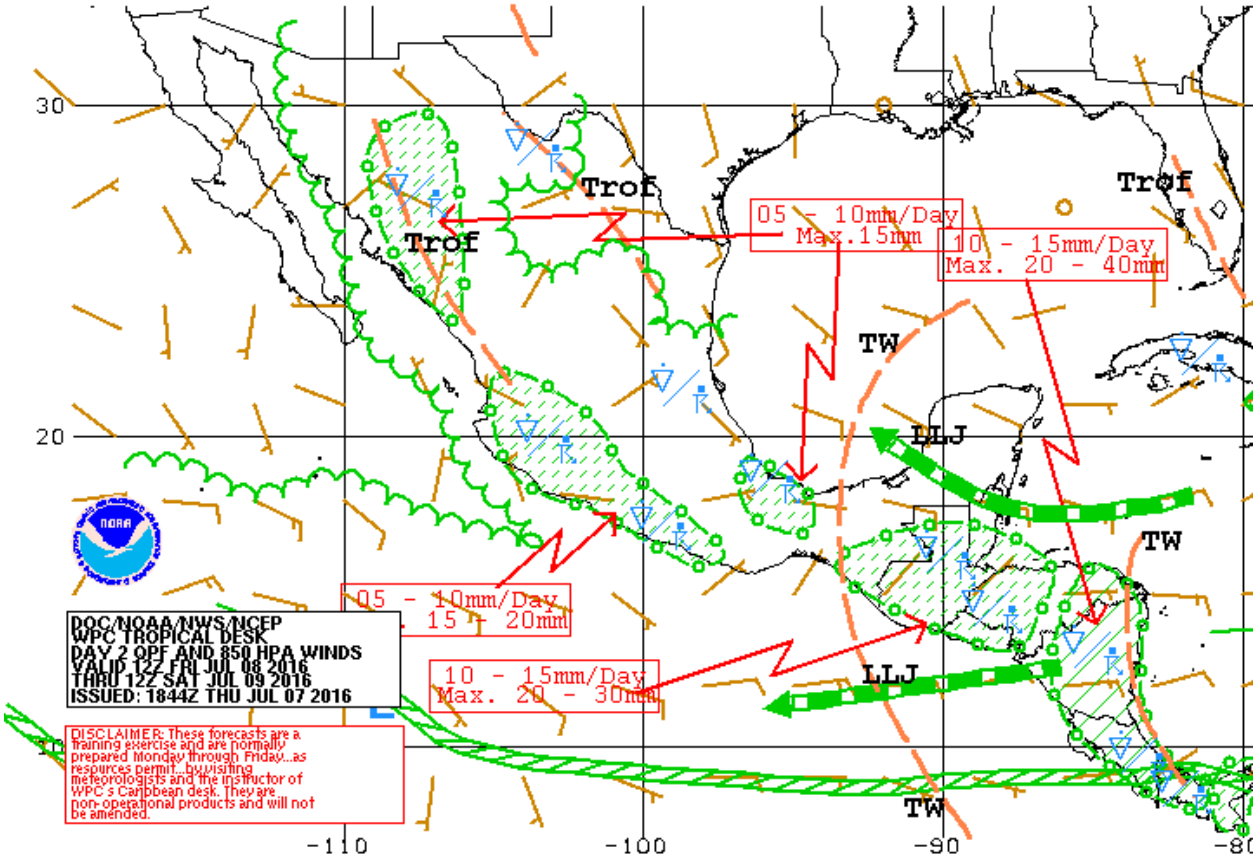

Figure 3: NOAA/NWS 48-hr Marine Forecast Surface weather map valid for 6:00 am Saturday, July 9, 2016, showing scattered convection (green hatched area) over southern Belize, Guatemala and western Honduras. A second TW can be seen approaching Nicaragua.

Figure 4 below is the NOAA/NWS 72-hr Marine Forecast Surface weather map valid for 6:00 am Sunday, July 10, 2016, showing scattered convection (green hatched area) over the southern half of Belize, western Honduras, Guatemala and the southern Pacific coast of Mexico. A second tropical wave can be seen approaching Belize.

The GFS Model projections indicate that one can expect no consecutive three-day dry spell over western Belize during the next 7-day forecast cycle. The days with least rainfall for western Belize could be this weekend (Saturday-Sunday) and Friday of next week.

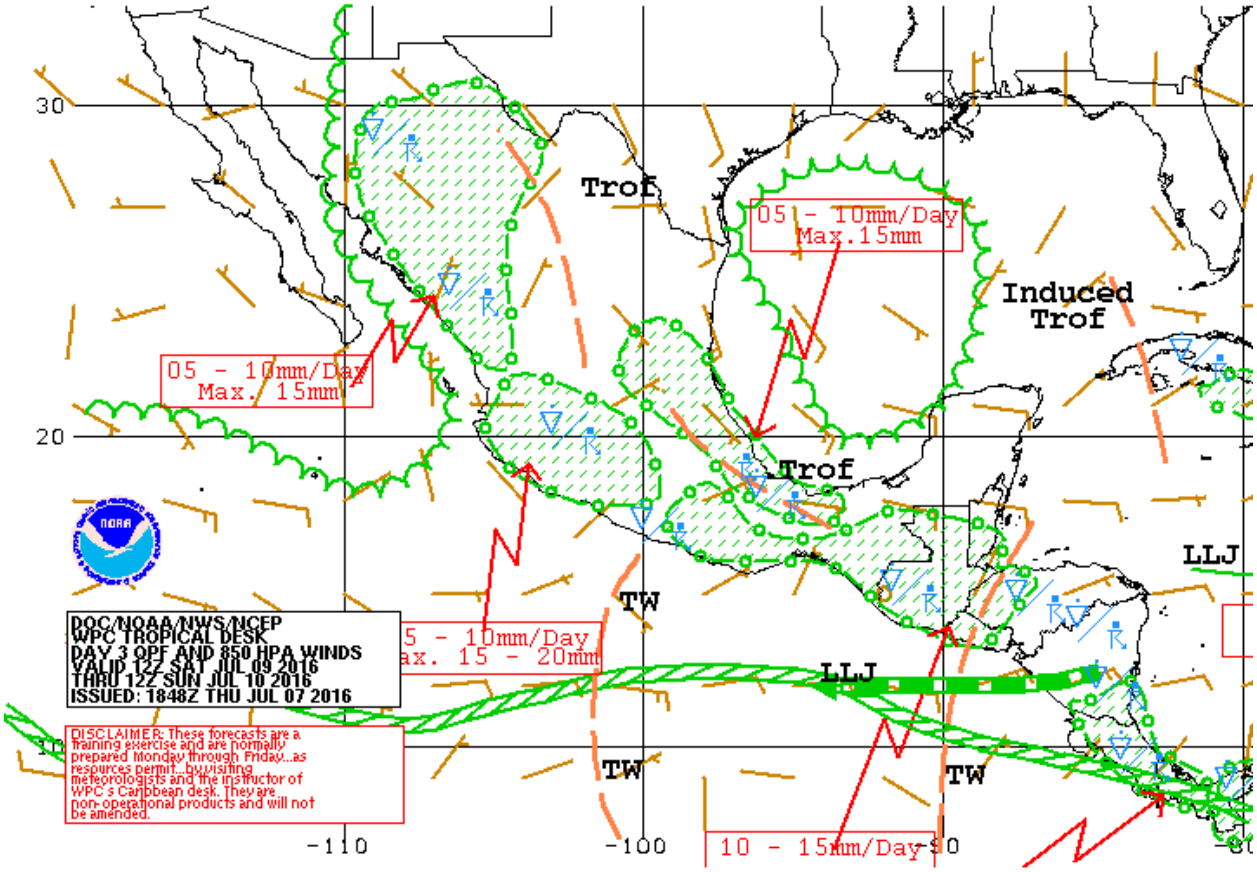

Figure 4: NOAA/NWS 72-hr Marine Forecast Surface weather map valid for 6:00 am Sunday, July 10, 2016, showing scattered convection (green hatched area) over the southern half of Belize, western Honduras, Guatemala and the southern Pacific coast of Mexico. A second tropical wave can be seen approaching Belize.

2. Weekly Outlook:

Valid for Monday May 30, 2016 through Sunday, June 6, 2016

Northern Region	Friday 7/8/16	Saturday 7/9/16	Sunday 7/10/16	Monday 7/11/16	Tuesday 7/12/16	Wednesday 7/13/16	Thursday 7/14/16
Weather Mx/Mn °F	89/77	90/77	89/77	89/77	90/78	89/78	88/77
Prob Rainfall[1]	0.80	0.70	0.75	0.65	0.60	0.70	0.80
Rainfall Rate 24hr (inches)	0.10 – 0.50	0.10– 0.25	0.10 - 0.25	0.10 – 0.25	0.01 – 0.10	0.10 – 0.25	0.25 – 0.50
Central Region							
Weather Mx/Mn °F Hills	89/78 86/75	89/77 86/74	88/77 85/74	88/77 85/75	89/77 85/74	90/78 87/76	90/78 86/76
Prob Rainfall	0.85	0.80	0.70	0.80	0.70	0.70	0.70
Rainfall Rate 24hr	0.25– 0.75	0.25 – 0.50	0.25 – 0.50	0.25 – 0.50	0.25 – 0.50	0.10 – 0.25	0.25 – 0.50
Southern Region							
Weather Mx/Mn °F	89/79	89/78	88/77	89/78	90/79	89/78	89/77
Prob Rainfall	0.95	0.95	0.95	0.80	0.70	0.90	0.90
Rainfall Rate 24hr	0.25 – 0.75	0.25 – 0.50	0.25 – 0.50	0.25 – 0.50	0.50 – 0.75	1.00 – 1.25	1.00 – 1.50

Extended Outlook for Belize through Saturday, June 11, 2016

Date/day	Hours	24-hr Total Rainfall (inches)	Region
8 July Fri	24	0.10-0.50	Mostly Toledo, SC and southern Cayo
9 July Sat	48	0.10-0.50	Mostly over SE coast. Less rain inland
10 July Sun	72	0.01-0.10	Few showers most districts
11 July Mon	96	0.10-0.50	Mostly West, locally 0.50 inch, less along coast
12 July Tue	120	0.10-0.50	Locally 0.50 inch NE coast, less inland in SW
13 July Wed	144	0.10-0.50	Mostly along coast, less rainfall inland
14 July Thu	168	0.25-0.50	Locally heavy rainfall SE coast, less rain inland
15 July Fri	192	0.01-0.10	Decrease in rainfall over most district
16 July Sat	216	0.25-1.00	Showers increasing, locally heavier along coast
17 July Sun	240	0.25-1.00	Locally heavier rainfall along costal areas.

Source: GFS Model 24-hour rainfall accumulations

Warnings: Intense convection at times in the hilly terrain during the next 7 days can result in localized flash floods.

[1] Probability of rainfall: Analysis of daily historic rainfall using Markov's Chain

3. Atlantic Basin Hurricane Season 2016

Information obtained through March 2016 indicates that the 2016 Atlantic hurricane season will have activity near the median 1981-2010 season.

Klotzbach[i] (CSU, 2016) estimate that 2016 will have an additional 5 hurricanes (median is 6.5), 12 named storms (median is 12.0), 50 named storm days (median is 60.1), 20 hurricane days (median is 21.3), 2 major (Category 3-4-5) hurricane (median is 2.0) and 4 major hurricane days (median is 3.9). The probability of U.S. major hurricane landfall is estimated to be about 90 percent of the long-period average. The CSU Hurricane Forecast team indicate that the Atlantic Basin Accumulated Cyclone Energy (ACE) and Net Tropical Cyclone (NTC) activity in 2016 to be approximately 95 percent of their long-term averages.

This forecast is based on an extended-range early April statistical prediction scheme that was developed utilizing 29 years of past data. Analog predictors are also utilized.

The Team anticipates an average Atlantic basin hurricane season. While shear-enhancing El Niño conditions are likely to dissipate in the next several months, the far North Atlantic is quite cold. These cold anomalies tend to force atmospheric conditions that are less conducive for Atlantic hurricane formation and intensification.

Coastal residents are reminded that it only takes one hurricane making landfall to make it an active season for them, and they need to prepare the same for every season, regardless of how much activity is predicted.

Analogous years to 2016 include 2008 and 2003. After an intense El Niño in 1997-98, catastrophic Hurricane Mitch threatened Belize in October 1998, and devastated Honduras. In 2003, the drought was intense and contributed to the major Southern Bark Beatle infestation that decimated almost 70 % of the pine forest in the MPR and the southern coastal pine forests.

CSU 2016 Atlantic Basin Hurricane Season Outlook			
System	**Numbers**	**Median 1981 - 2010**	**2015**
Named Storms	13	12	**11**
Hurricanes	6	6.5	**4**
Major Hurricanes	2	2	**2**
Accumulated Cyclone Energy (ACE)	93	92	**62**

NOAA 2016 Atlantic Basin Hurricane Season Outlook			
System	**Numbers**	**Normal**	**2015**
Named Storms (70% chance of)	10 - 16	10.5	**11**
Hurricanes	4 - 8	6	**4**
Major Hurricanes	1 -8	3	**2**

Accumulated Cyclone Energy (ACE)	---	92	**62**

Best analog years for 2016 with the associated hurricane activity listed for each year.

Best Year	NS	NSD	H	HD	MH	MHD	ACE	NTC
1941	6	33.75	4	11.50	3	2.00	52	69
1973	8	37.75	4	10.00	1	0.25	48	53
1983	4	14.50	3	3.50	1	0.25	17	31
1992	7	40.25	4	16.00	1	3.50	76	67
1998	14	88.00	10	48.50	3	9.50	182	169
2003	16	81.50	7	32.75	3	16.75	176	175
Avg	9.2	49.3	5.3	20.4	2.0	5.4	92	94
2016 Forecast	**12**	**50**	**5**	**20**	**2**	**4**	**90**	**95**

3.1 Tropical Weather Outlook:

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TROPICAL WEATHER OUTLOOK
NWS NATIONAL HURRICANE CENTER MIAMI FL
800 PM EDT THU JUL 7 2016

For the North Atlantic...Caribbean Sea and the Gulf of Mexico:

Tropical cyclone formation is not expected during the next 5 days.

Forecaster Avila
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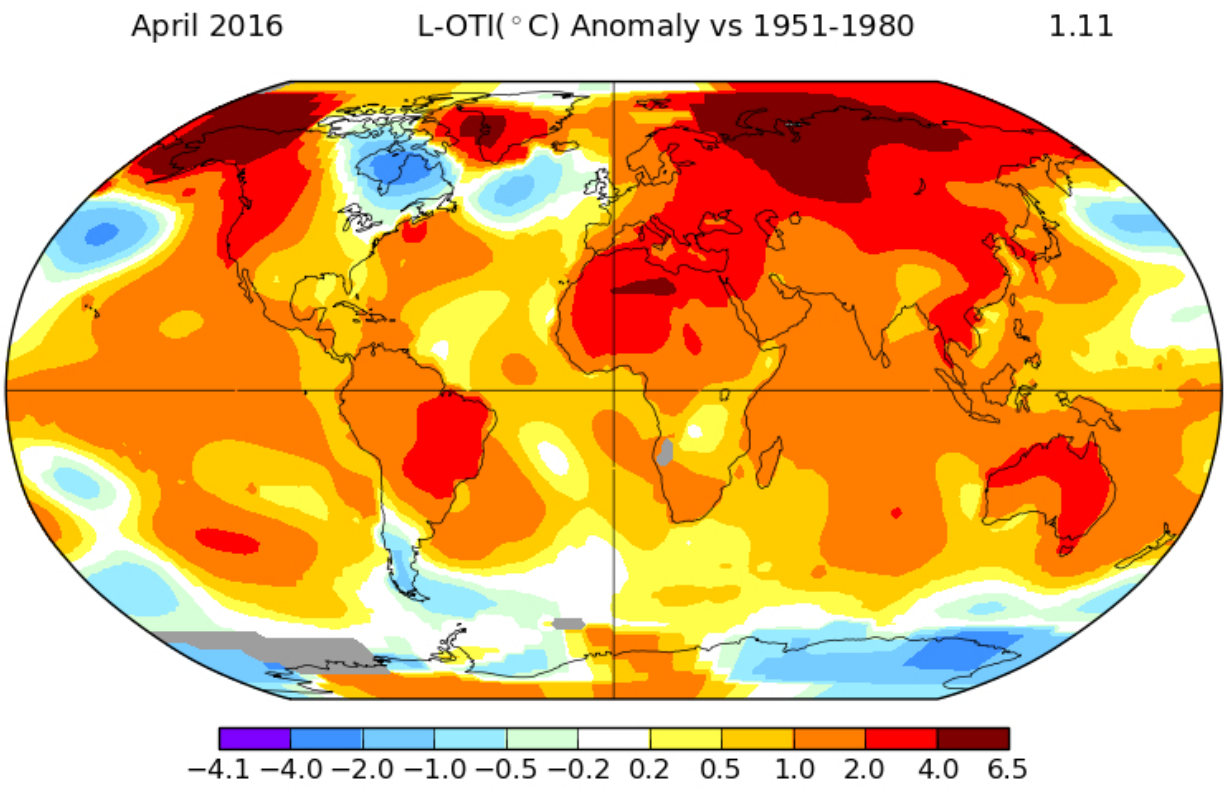
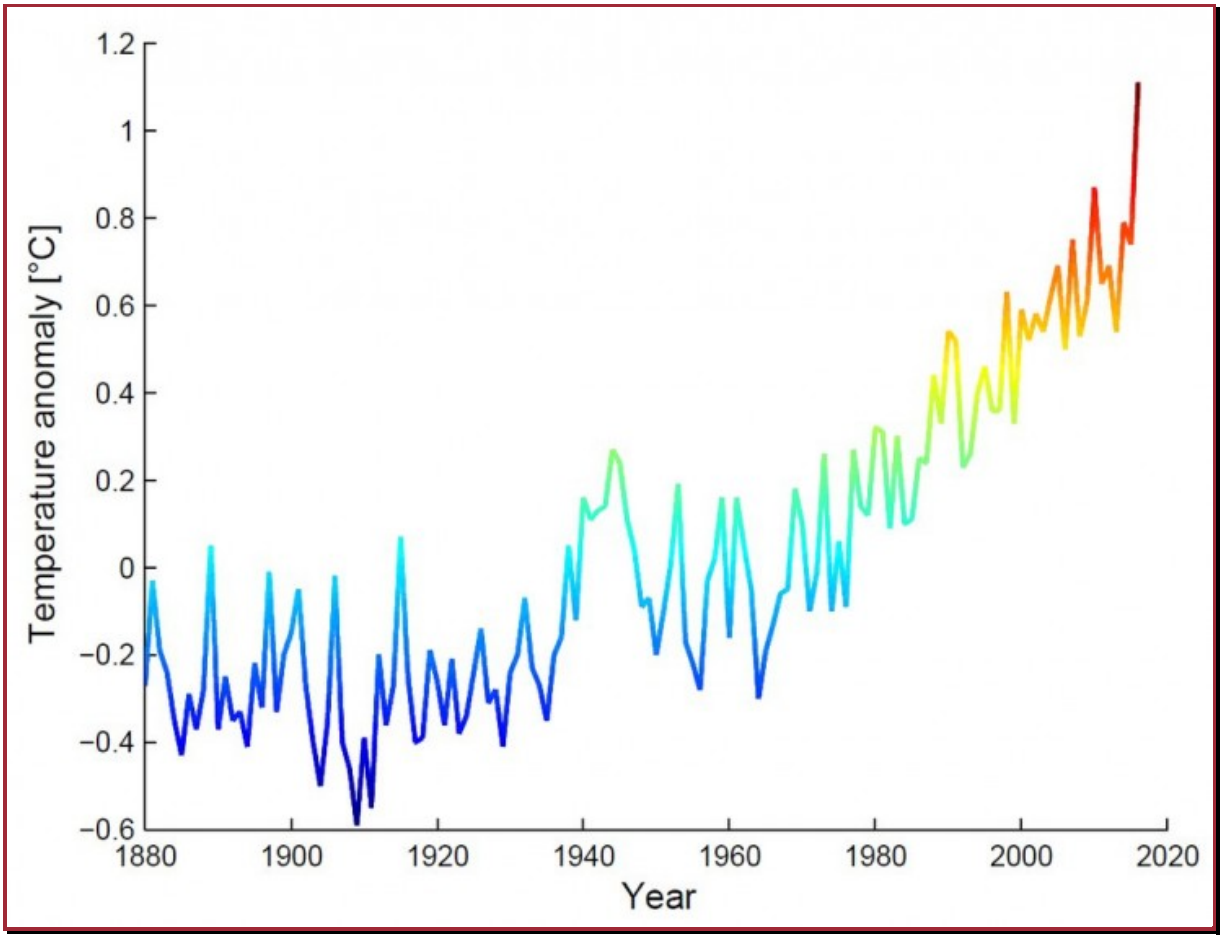
4. Climate Change:



Published on May 16, 2016

In early May, 2016, NASA released figures showing that we just had the hottest April on record. This is the 12th consecutive month to set a monthly temperature record. Until this past October, we'd never seen global average temperatures pass the 20th-century average by more than 1°C — but every single month since has exceeded that margin.



Global mean temperature anomaly (vs 1951-1980 mean), month of April only. CREDIT: NASA

How big a jump was April 2016 compared to the historical record? In an email, Stefan Rahmstorf, Head of Earth System Analysis at the Potsdam Institute for Climate Impact Research, notes that "The margin by which April beats the previous record April is three times larger (0.24 °C) than the margin of any previous record April (biggest was 0.08 °C)."

Also, this has easily been the hottest January-April on record, which isn't a surprise given that last month's record was hot on the heels of the hottest March on record by far, which followed the hottest February on record by far, and hottest January on record by far.

Dr. Gavin Schmidt, the head of NASA's Goddard Institute of Space Studies, points out on twitter that there is a pattern between how hot Jan-April is and how hot the full year is. He notes that if this pattern holds, then there is a greater than 99% chance that 2016 will be the hottest year on record. (Note: The chart below uses a different temperature scale than the previous chart: It compares recent temperatures to the preindustrial average rather than 1950 to 1981).

[i] Research Scientist Colorado State University