Early 2017 continues to build on heating trend from 2016
Land & Ocean Temperature Percentiles Dec 2016–Feb 2017
NOAA’s National Centers for Environmental Information
Data Source: GHCN–M version 3.3.0 & ERSST version 4.0.0

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Land & Ocean Temperature Departure from Average Feb 2017
(with respect to a 1981–2010 base period)
Data Source: GHCN–M version 3.3.0 & ERSST version 4.0.0

Degrees Celsius

You are here

National Centers for Environmental Information
Sun Mar 12 07:32:41 EDT 2017

Please Note: Gray areas represent missing data
Map Projection: Robinson
Land-Only Precipitation Percentiles Dec 2016–Feb 2017
NOAA’s National Centers for Environmental Information
Data Source: GHCN–M version 2
Digression #1 – The Arctic Continues to be Warm

Arctic Air Temperature Difference
October 1, 2016 to February 28, 2017

5 degrees C. above long term average for the past winter
This has led to record low sea ice formation
Arctic sea ice extent is lowest ever seen in the satellite record

3 standard deviations below long-term mean

2012 was the previous record low year
Digression #2 - Antarctic summer sea ice also set a record low

Most of the ice deficit was in West Antarctica
This has been accompanied by ice shelf loss

Iceberg the size of Manhattan Island breaks off Pine Island Glacier on 31 January 2017
Global Sea Surface Temperature Anomaly – 30 January 2017
Global Sea Surface Temperature Anomaly – 1 May 2017

NOAA/NESDIS SST Anomaly (degrees C), 5/1/2017
Sea Surface Temperature Anomaly, Hawaii Sector – 31 January 2017

NOAA Coral Reef Watch Daily 5-km Geo-Polar Blended Night-Only SST Anomalies 31 Jan 2017

[Map of sea surface temperature anomalies with a color scale ranging from -5°C to 5°C]
Digression #2 - Hard Times on the Great Barrier Reef

Sea surface temperatures in northeastern Australia have been the highest ever recorded.
This heat has produced significant impacts to the reef

The northern sector of the GBR has suffered significant mortality
Bleaching Stress Probability – April-July 2017
Prediction as of 2 May 2017

Experimental product indicates 90-100% chance of some degree of thermal stress for Monument reefs from now through August
Looking Forward

An ensemble of 25 climate models predicts either mild El Niño or ENSO neutral conditions through summer 2017.

Dynamical models favor El Niño, whereas statistical models favor ENSO-neutral.
Conclusions

2017 is continuing the trend of record hot years, both on land and in the ocean. The ocean in and near the Monument is still carrying some heat excess content coming out of winter and through spring.

ENSO neutral conditions currently prevail, but may change to mild El Niño by summer. May produce warmer ocean temperatures and increased chance of hurricanes.

There is a 90-100% chance of some degree of thermal stress to coral reefs in the Monument from now through August 2017. There is a 60% probability of some coral bleaching in the Midway-Kure sector through August 2017.

Local cyclogenesis could be a possibility if El Niño returns.

Eastern North Pacific hurricane season runs from 15 May to 30 November.

Sea level continues to rise at 3-5 mm per year. Inundation is a long-term problem that will not go away.
Questions?