NASA scientists watching, studying Arctic changes this summer

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As we near the final month of summer in the Northern Hemisphere, NASA scientists are watching the annual seasonal melting of the Arctic sea ice cover. The floating, frozen cap that stretches across the Arctic Ocean shrinks throughout summer until beginning to regrow, typically around mid-September.

As of Aug. 19, Arctic sea ice covered about 2.31 million square miles. While this is on track to be larger than the record-breaking low year in 2012, the sea ice extent is still well below average for the past 30 years, and continues a trend of sea ice loss in the Arctic. From 1981 to 2010, the average sea ice extent on Aug. 19 was 2.72 million square miles – 18 percent larger than on that same date this year.

"While this year is not heading toward a record low minimum extent in the Arctic, sea ice is well below normal and continues an overall pattern of decreasing sea ice during summer in the Arctic," said sea ice scientist Walt Meier, based at NASA's Goddard Space Flight Center in Greenbelt, Maryland.

While NASA scientists have used satellites to document sea ice changes for more than 40 years, this summer the agency is also flying three airborne research campaigns to observe different aspects of climate-driven change in the Arctic.

The ARISE (Arctic Radiation-IceBridge Sea and Ice Experiment) campaign will begin flights later this week from Greenland to measure

how changing land and sea ice conditions in the region are affecting the formation of clouds and the exchange of heat from Earth's surface to space.

For some time scientists at NASA and elsewhere have been concerned about how the retreat of sea ice in summer could affect the climate of the Arctic. This campaign is one of the first to study the interaction between sea ice loss and the Arctic atmosphere.

The CARVE (Carbon in Arctic Reservoirs Vulnerability Experiment) campaign is making its third year of flights from Fairbanks, Alaska, over vast regions of Alaska to measure the emissions of greenhouse gases being released from thawing tundra and permafrost.

And an offshoot of NASA's long-running Operation IceBridge, a plane will fly over Alaskan glaciers to measure how much the thickness of those glaciers has changed from previous years.

Provided by NASA's Goddard Space Flight Center

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