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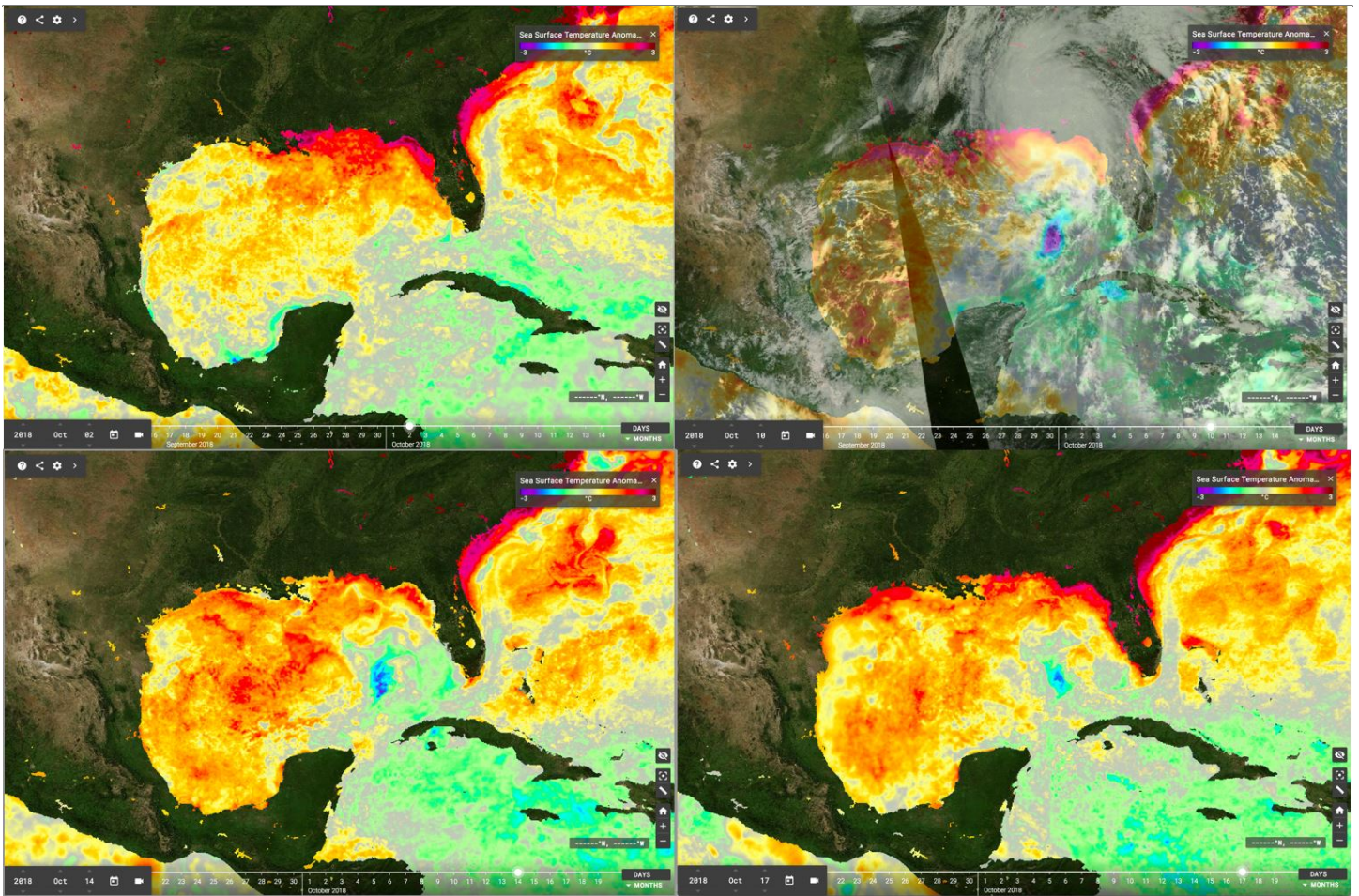
### Cold wakes associated with 2018 Hurricanes Michael and Willa

PO.DAAC Science Team

Mon, 11/26/2018 - 12:00

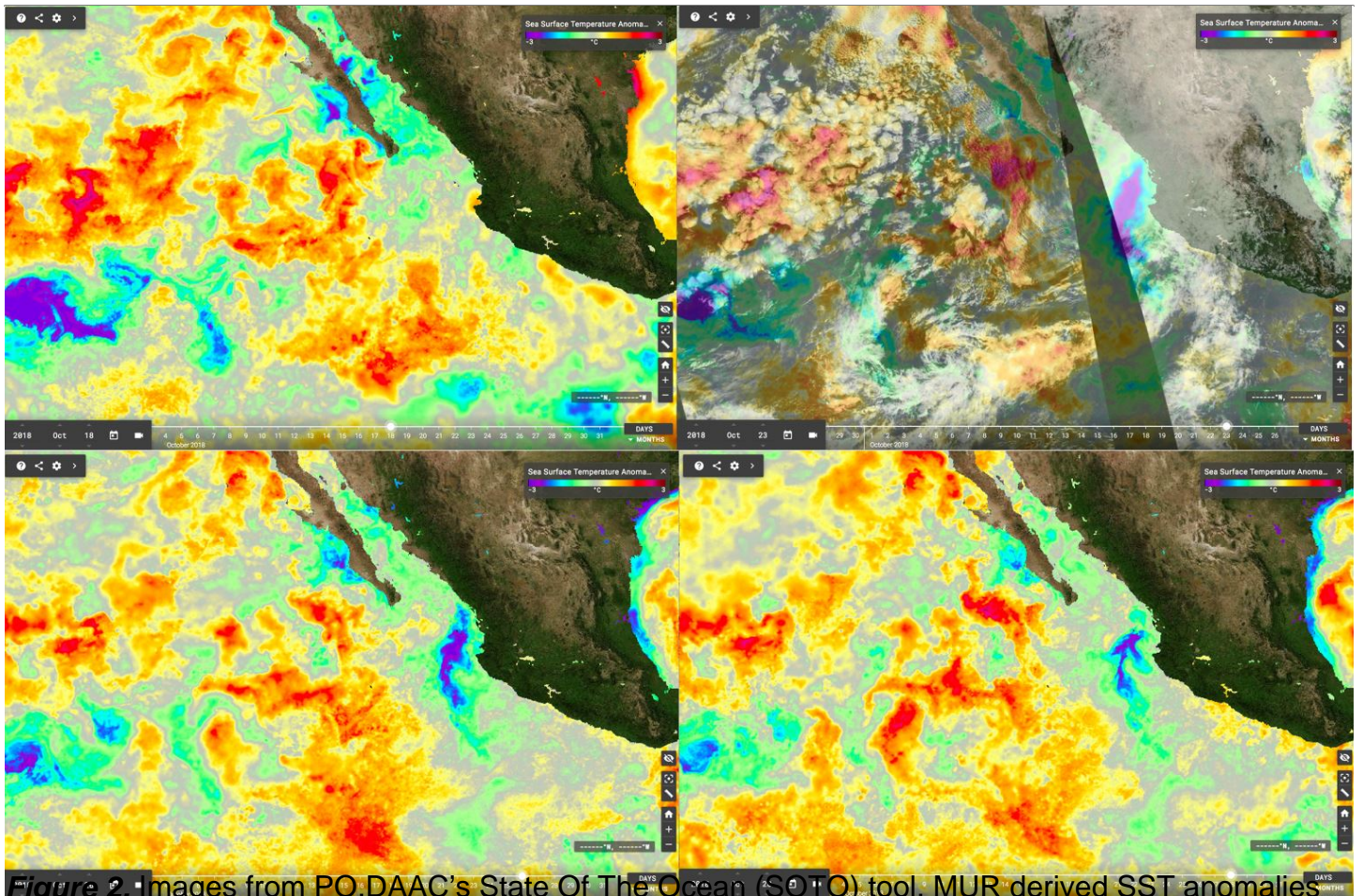
Hurricanes Michael and Willa of 2018 were both storms that intensified rapidly, one in the Gulf of Mexico and the other in the Eastern Pacific Ocean. Hurricane Michael was one of the strongest storms (peak winds of 155 mph) to make landfall in the continental United States, devastating the Florida panhandle. Here we focus on examining the sea surface temperature (SST) response associated with these hurricanes, specifically their cold wakes, using the NASA Multi-Scale Ultra-High Resolution (MUR) SST dataset (doi: 10.5067/GHGMR-4FJ04). Cold wakes are trails of cold subsurface water that have been brought to the surface as a result of wind-induced mixing and turbulence (Chen et al., 2017).

Figure 1 shows the evolution of SST anomalies in the Gulf of Mexico during Hurricane Michael. Before Michael (2 October 2018), waters were approximately 2°C warmer than normal in the Eastern Gulf of Mexico. The warm anomalies contributed to the intensification of Michael prior to landfall. On 10 October 2018 Michael made landfall as a Category 4 hurricane near Mexico Beach, Florida. The cold wake associated with Michael was clearly observed as waters approximately 3°C cooler from normal on 10 October 2018 (during landfall) along the hurricane track that persisted several days after landfall (14 and 17 October 2018).



**Figure 1.** Images from PO.DAAC's State Of The Ocean (SOTO) tool. MUR derived SST anomalies before (2 October 2018), during (10 October 2018) and after (14 October 2018 and 17 October 2018) passage of Hurricane Michael in the Gulf of Mexico. SST anomalies, or the SST difference from normal conditions for that time of year, are calculated with respect to a global 12-year (2003 to 2014) MUR SST climatology.

Hurricane Willa formed in the Eastern Pacific Ocean making landfall on 23 October 2018 as a category 4 hurricane. Like Michael, Willa intensified quickly prior to landfall due to warm ocean conditions, although the ocean state was not as warm as the Gulf of Mexico. Figure 2 show the evolution of SST anomalies in the Eastern Pacific Ocean during Hurricane Willa. The cold wake associated with Willa was clearly observed as waters cooler than 3°C from normal on 23 October 2018 (during landfall) along the hurricane track that persisted several days after landfall (26 and 28 October 2018).



**Figure 2.** Images from PO.DAAC's State Of The Ocean (SOTO) tool. MUR derived SST anomalies before (18 October 2018), during (23 October 2018) and after (26 October 2018 and 28 October 2018) passage of Hurricane Willa in the Gulf of Mexico. SST anomalies, or the SST difference from normal conditions for that time of year, are calculated with respect to a global 12-year (2003 to 2014) MUR SST climatology.

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