

#### A20 Weekly Cruise update #4:

This is the final update for the 2021 occupation of A20. The last week continued to run smoothly and we completed the final station (90) at 01:17 on April 13<sup>th</sup> UTC (photo below). On Friday (April 9<sup>th</sup>) we completed the 35 nm spaced stations and began three and half days of closely spaced stations. Knowing this was coming, everyone was prepared for stations in rapid succession. The stations first tightened to 13 nm, but depths were >4500 m. Spacing then decreased to 11 nm when we entered the French Guiana EEZ. The final six stations were only ~4.5 nm apart, with depths between 70 – 350 m. They were completed in only 9 hours. The back log of samples collected during the last couple of days will be analyzed on the transit to port. Also, during the final stations, we entered into the Amazon River outflow plume. Surface salinities dropped from ~36 to ~15, a strikingly low value for over 100 nautical miles from the coast and hundreds of miles from the mouth of the Amazon. The underway pCO<sub>2</sub> system measured an incredibly low value of 47  $\mu$ atm (compared ~300  $\mu$ atm encountered further north). Despite the weather delay at the beginning of the cruise, we were still able to complete the section with higher resolution than the 2012 occupation.

On station 69 it was noticed that the block on the winch was making metallic scraping noises. It was decided to replace the block before the next cast as a preventative measure. The process was quick and only caused a 45-minute delay before the next station. Afterwards the block was taken apart and showed severe damage to one of the bearings. Replacement parts have been ordered and will be loaded in St. Thomas for A22.

The seas have continued to be calm, and temperatures have risen into the 80s. With relative humidity of ~80% being outside has become oppressive during the day. Samplers have taken to cooling off using extra water from the Niskin bottles. With the 30<sup>th</sup> birthday of the 2<sup>nd</sup> mate, on Saturday we had another BBQ on the bow. A light sprinkle threatened to ruin the BBQ, but it passed quickly. The clouds provided beautiful colors during sunset (photo below).

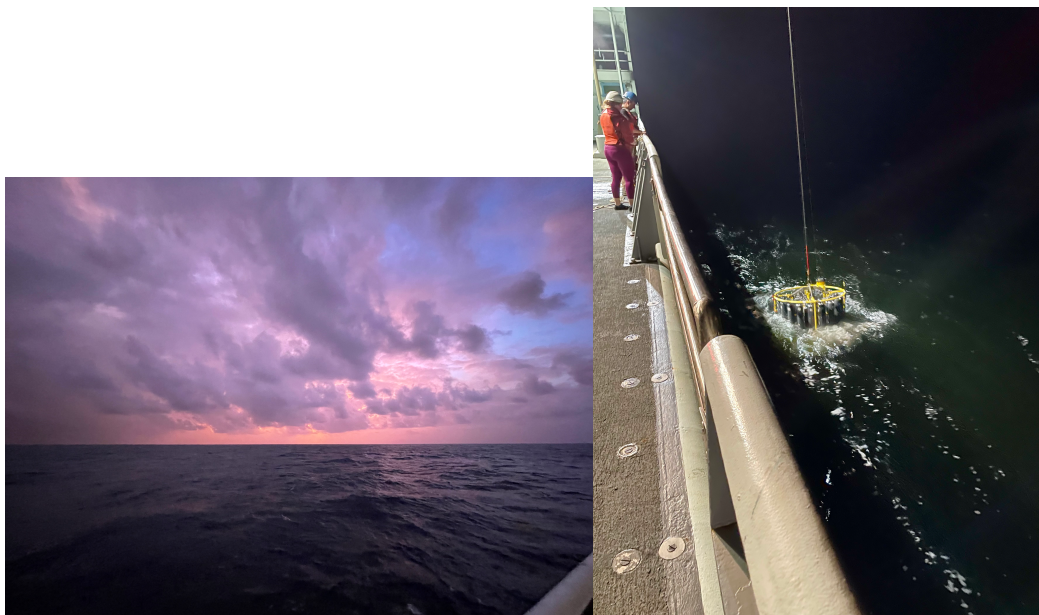


Figure 1. Sunset on April 10, 2021 (left) Deploying the CTD rosette at the final station (right)

Having completed the science goals of the cruise we are now on a 3-day steam to St. Thomas. There is discussion on if we will be able to see ash from the recent volcanic eruption of La Soufrière on St Vincent. In St. Thomas, nine of the science party and several crew members will disembark and replacements, who are currently undergoing the pre-boarding isolation, will board to take their place during the return voyage to Woods Hole on the A22 cruise.

Weekly updates from the A22 cruise led by Chief Scientist Viviane Menezes and Co-Chief Jesse Anderson should follow soon after their departure on April 20, 2021.

Final Counts:

90 stations

11 SOFAR drifters

8 BGC-Argo floats

7 Core Argo floats

Ryan Woosley – Chief Scientist

Andreas Thurnherr – Co-Chief Scientist