The Story of Float 7513

One never knows where an Argo float will go after deployment, but it is not typical for a float mission to include two visits aboard fishing vessels. Float 7513 (WMO # 4903250) was launched at [26.265N, 85.604W] in the Gulf of Mexico on September 27, 2019. For five years the float was on a normal mission. It would drift for five days at 1500m, collect profile data, surface, transmit the data, sink back to 1500m, and repeat. In July of 2024, the float was located south of the center of the Loop Current. From there it started moving south, in the opposite direction than what might be expected. By September of 2024, it was located just off the western tip of Cuba. To make its way over the sill between Cuba and the Yucatan Peninsula and get around a seamount, the float moved in a bit of a figure 8 in October 2024. By December 2024, the float started heading southwest along the 2000m isobath, picking up pace the further it went. Throughout the rest of the winter, the float stuck around ~19N. In mid-April, we noticed that the float had stopped transmitting data, and it was presumed dead. At this point, the float had been collecting data for over five and a half years, which is a good lifespan for an Argo float. We were content with the fact that the float lived a long life, provided us with valuable data, and gave us an interesting story, being the first UGOS float to exit the Gulf of Mexico by going south between Cuba and the Yucatan Peninsula. However, we soon discovered that this was not the end of float 7513's journey in the Gulf.

Figure 1. Example of a label on an Argo Float that states that the float is scientific equipment.

After a 20-day absence, float 7513 started reporting data again. We believe that a fishing vessel caught the float and then released it back in the water off the Northeast coast of the Yucatan Peninsula. The floats have labels on them which explain that they are used for ocean, weather and climate predictions. Maybe this is why the fishermen knew to put it back in the ocean (see Figure 1). The water depth is only ~300m where it was released, much shallower than the 1500m drift depth the float is programmed for. Because of this, in May, a command was sent to the float to change the park depth to 200m so the float would stop skittering along the bottom and hopefully make its way back into the Gulf. However, on May

14th, 2025, we realized that the learning algorithm which should teach the float to park at 200m was not working and we weren't sure why...

Ten days later, on May 24th we found out that while on the Mexican Shelf, the float was yet again captured by a bottom-fishing vessel. This time the float was aboard for about one and a half days and during that time the vessel transited about 400km to the north. When the float started up again and was returned to the ocean by whoever had picked it up, it was back in the deep waters of the Gulf of Mexico. It was drifting fast since it was still parked at 200m, and at risk of being quickly swept out of the Gulf through the Straits of Florida. A command was immediately uploaded to the float via Iridium on May 24, 2025, to return the float to the standard UGOS mission, with a parking depth of 1500m. As of June 13, 2025, float 7513 reported from just north of the center of the Loop Current, with a parking depth of 1500m that will keep it safely inside the Gulf—at least for now! What an amazing journey it has had.

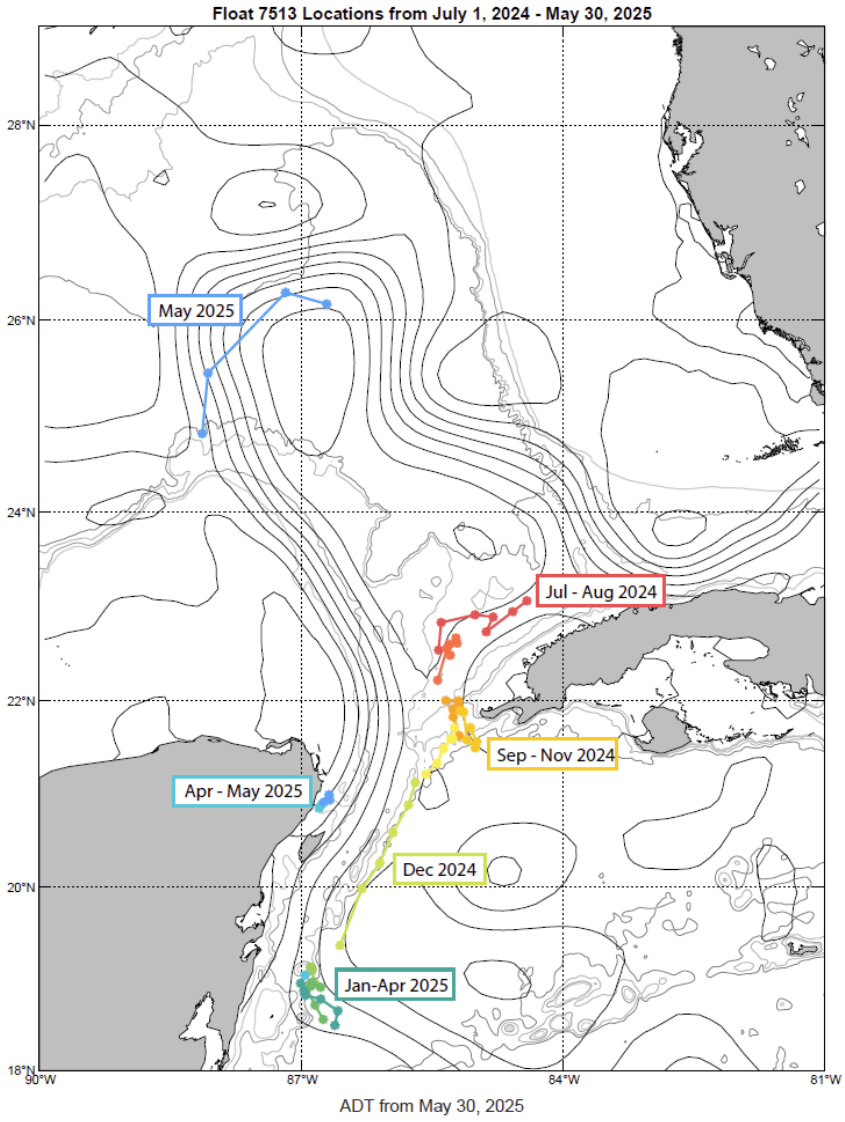

Figure 2. Map of GOM with trajectory of Float 7513 from July 2024 through May 2025, color coded by month.

This is not the first time an Argo float has been picked up by a fishing vessel. In fact, of the 53 profiling floats deployed through UGOS, at least six of the floats have experienced encounters with fishing vessels (7513, 7518, 7542, 7543, 7544, 7584). This encounter rate of about 10% is much greater than that of the global Argo fleet. The best method to avoid this is careful monitoring of the fleet and active adjustments to alter the mission when the

float is in shallow water (<1000m) and spending a portion of its drift on the seafloor. Typically, we don't want our instruments to be in the position where they could be fished up, but in the case of float 7513, the fishing vessel aided in getting the float from the Caribbean back into the deep waters of the Gulf!