

ACTS UPDATE -- The Anegada Climate Tracers Study

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ACTS-9 The ninth ACTS station occupation occurred in October 1998 as part of a research cruise for the Windward Islands Passages Monitoring Project (WIMP-15) of NOAA's Atlantic Climate Change Project. W. Douglas Wilson, a partner to ACTS was the Chief Scientist. The cruise allowed the usage of NOAA's CTD rosette and Acoustic Doppler Current Profiler aboard Harbor Branch Oceanographic Institution's research vessel, *R/ V Seward Johnson*. The calibration of the new ACTS CTD was one of the many highlights of ACTS-9. The ACTS scientific team consisted of Kevin Brown, a member of the technical staff of the UVI's MacLean Marine Science Center, UVI/ Eastern Caribbean Center Researcher Dr. Richard (Rick) Nemeth, and Ronald Olivaccé, recently graduated UVI ACTS intern. UVI students in the scientific team were Gene Brin, Jack DeVan, Brandon Eyre and Barry Volson. The cruise was divided into two legs: Leg one began in Fort Pierce, Florida, traveled through the Bahamas, the Windward and Mona passages and ended in St. Thomas. After crew and equipment changes, the second leg first occupied the ACTS serial station in the Anegada Passage and proceeded through the designated passages of the Lesser Antilles, with the last station off the north coast of Trinidad.

HURRICANE GEORGES INTERVENES The WIMP-15 cruise was supposed to have taken place from September 22nd to October 3rd 1998. However, hurricane warnings for Hurricane Georges was issued for Florida on the September 21st and delayed the cruise until a week later. The participants on the first leg -- Brin, Brown, Eyre and Olivaccé -- had to be flown back to St. Thomas to sit out the emergency. Then, on September 28th, three of the original four first leg ACTS participants returned to the hurricane-brushed Florida to commence the long delayed WIMP-15 cruise.

FIRST LEG On this segment of the cruise, 12 stations were sampled, ranging from depths of 100m to 1200m. Nine stations were sampled in the Florida Straits, one off the coast of Grand Inagua in the Bahamas, one off the northeastern coast of the Dominican Republic and one off the eastern tip of Puerto Rico.

SECOND LEG At 9:30 am on October 3rd the *R/ V Seward Johnson* steamed out of John Brewers Bay with the new ACTS scientific party that included Brown, DeVan, Eyre, Nemeth, Olivaccé and Volson.

WIMP-15 stations, sampled southbound from the Anegada Passage were in the passages near St. Kitts, Montserrat, Guadeloupe, Dominica, Martinique, St. Lucia, and St. Vincent. At that point, the scientific parties of ACTS and NOAA disembarked at Aqualiba, a small port in St. Vincent, for six hours. By nightfall, the *Seward Johnson* was back *en route*, and continued its sampling through the Grenadines, on to Grenada and the north coast of Trinidad, where the outflows of the Amazon and Orinoco Rivers color the water dark green. The ACTS scientific crew traveled through the legendary Serpent's Mouth Passage, observed the potential site for cable measurements of ocean currents and turned the *Seward Johnson* back to Barbados to disembark.

Thirty-four stations in all were sampled during WIMP-15. The ACTS scientific party was able to put their analysis and sampling techniques to an endurance test. "I am very satisfied and proud of the work performed by the ACTS scientific party, and UVI has proven that it has the full capacity of skilled technicians and equipment needed to perform first class seawater analysis" said Chief Scientist Doug Wilson.

PRIMARY PRODUCTION STUDY As part of his participation in the cruise, Rick Nemeth carried out a series of plankton tows along specific locations off the coasts of islands in the Lesser Antilles. He began towing from the Anegada passage using a bongo plankton towing net and conducted a total of twelve tows. Major fish larval sites within the Lesser Antilles were sampled for their variety and quantity of species found on the shelves between the island passages. Dr. Nemeth was aided by the ACTS and NOAA scientific party along with the crew of the *R/V Seward Johnson*. His research is concerned with identifying fish larval samples down to the species level and assessing primary production levels in these areas. His work revisits some of the research of Bhattathiri, *et al.*, 1991.

DRIFTER DEPLOYMENT NOAA's deployment of current-following drifters throughout the WIMP-15 cruise provided the ACTS scientific party opportunity to incorporate the techniques, skill and first hand experience in drifter deployment. ACTS technicians are now able to launch drifters and to monitor their movements by link to a NOAA satellite. During November, ACTS personnel, directed by satellite through NOAA in Miami, was able to locate and retrieve a drifter which had been deployed off the coast of the Dominican Republic. It was found in the Frenchtown, St. Thomas. The purpose of drifter deployment within the Caribbean is to trace non-linear circulation in the region. The recovered drifter will be deployed in a future study.

CHRISTENING OF ACTS' NEW CTD The purchase of the new ACTS' CTD (conductivity-temperature-depth) electronic instrument was made possible through the support of the US Department of Energy's Minority College and University Program. The instrument was calibrated during ACTS-9. Aboard the *Seward Johnson*, Wilson and Brown, assisted by others in the ACTS scientific party, followed step-by-step procedures for operation and analysis of the SeaBird-25 CTD. This CTD was used throughout the second leg of WIMP-15 in parallel operation with NOAA's CTD. Technical skills acquired through training by the ACTS scientific party during WIMP-15 will greatly enhance UVI's in-house capability for seawater analysis.

*ACTS is a research project of the University of the Virgin Islands hosted by the Eastern Caribbean Center (ECC). It is funded by a Global Change Award from the US Department of Energy's Minority College and University Program under the Oak Ridge Institute of Science and Education. The University is located in the United States Virgin Islands near the Anegada Passage, through which significant surface transport as well as the deepest inflow of mid-depth North Atlantic water enter the Caribbean Sea. The serial station periodically occupied for this study is within the sovereignty of the United Kingdom (specifically, the British Virgin Islands.) ACTS enjoys collaborative partnerships with Brookhaven National Laboratory, NOAA/AOML, H. Lavity Stoutt Community College, and the University of Puerto Rico. For additional information, NOAA, AOML, WIMP, UVI, the Eastern Caribbean Center and ACTS all have individual home pages on the INTERNET. Access to ECC, ACTS and all UVI homepages is available through the following URL: "<http://www.uvi.edu/organizations.html>".

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