

Preliminary Analysis of Weather Data for U.S. Department of Defense Installations with Potential for Tropical Testing on a Seasonal Basis

The goal was to identify potential sites that could serve as seasonal analogs (alternatives) for Tropical Test Centers currently outside of the US on DOD managed lands in Florida, USA. This project addressed a need to find locations within the US that meet established tropical test climatic parameters that match climate conditions at the Panamanian military test centers and quantify the length of time those matching conditions exist on US soil. Data collected from weather stations in Panama and Florida were analyzed at DRI and results were reported in 2009. Our analyses showed that there are military lands in Florida that could be used as analogs for conducting tropical tests in the USA rather than in Panama.

Summary of Project Details: We analyzed data from 13 weather stations in proximity to military managed lands in Florida, Maryland, and Panama. We collected weather data from automated weather stations at major airports from DRI's Western Regional Climate Center and the National Climatic Data Center operated by the National Oceanographic and Atmospheric Administration. We analyzed temperature, relative humidity and precipitation after conducting quality control assessments of all data. The results from temporal analyses of the weather data were compared to determine which months USA locations were comparable to Panamanian test sites. For example, all six locations in Florida were temperature and precipitation analogs for Panamanian sites for July and August, although relative humidity was 10-15% lower in Florida than Panama. We produced graphs of the data that provide easy visualization of our results.

Management Implications: Based on our analyses of limited weather data sets, tropical test site analogs for current Panamanian locations may be situated on military lands in central Florida near the major cities of Melbourne, Orlando, and Tampa. Military installations near these cities include Cape Canaveral Air Station, Patrick Air Force Base, and Avon Park Air Force Range. Aberdeen Proving Ground in Maryland and Redstone Arsenal in Alabama provide marginally suitable testing analog sites during an extremely limited time period (i.e., only one month per year). The greatest difference in climate conditions between Panama and the US sites are that temperatures and rainfall are less than that of tropical test sites in tropical regions. We recommended modifying the weather data to get better climatic parameters from airport sensors. We also recommended establishing environmental monitoring sites at the Florida and Panama test centers to document and validate the local conditions.

