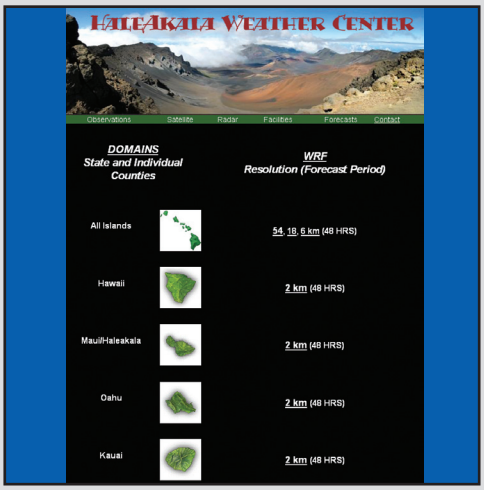
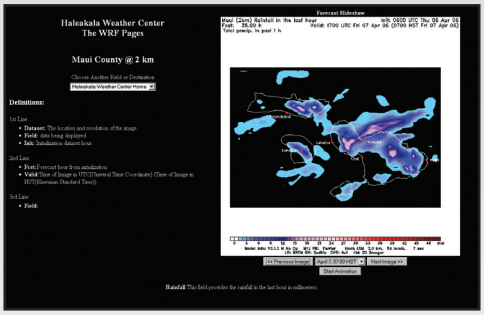
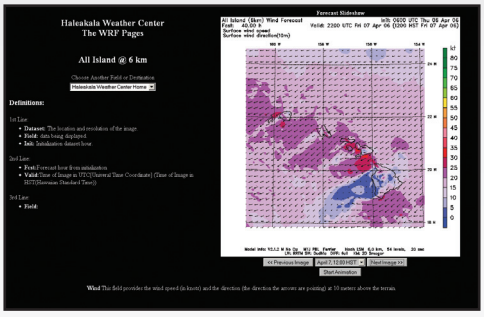
Maui Center Tailors Weather Forecast Data to Telescope Needs



Sample forecast from the Haleakala Weather Center, where forecasts are tailor to meet the needs of the Air Force Maui Optical and Supercomputing (AMOS) site. (MPHCC Image)



In this example of weather data provided by the Haleakala Weather Center to the Air Force Maui Optical and Supercomputing (AMOS) site, rain is forecast for the relevant areas. (MPHCC Image)



Wind data, provided by the Haleakala Weather Center to the Air Force Maui Optical and Supercomputing (AMOS) site, aids telescope operators in scheduling and maintenance planning. (MPHCC Image)

When you're dealing with highly sensitive telescope operations, just knowing if it's going to rain is not enough. Weather plays a critical role in determining the effective use of AFRL's Air Force Maui Optical and Supercomputing (AMOS) site. The National Weather Service provides forecasts, but the information can be insufficient to accurately predict small-scale conditions that can adversely affect AMOS operations.

To provide more accurate forecasts, the Maui High Performance Computing Center (MHPCC) runs the Weather Research and Forecasting Model nightly to provide high-resolution forecasts to AMOS. The predicted weather conditions are posted every morning to http://weather.mhpcc.edu and are available for 48 hours. These forecasts act as a decision aid in scheduling, and more specifically, planning for maintenance during conditions that would prevent operations.

The MHPCC, one of the Department of Defense supercomputing centers, has been forecasting weather since 2000 for AFRL's AMOS site. It has been based on many models, from the Regional Spectral Model, to MM5 (Mesoscale Model Version 5), to the most recent Weather and Research Forecasting Model. Over the years, the forecast has been refined to meet the needs of the AMOS operators, and many advances have occurred. This has been accomplished by posting relevant data to daily operations, improved fault tolerance to ensure high reliability, improved forecast accuracy through higher resolution runs, and use of better terrain and land use data, and improved capabilities such as examination of optical turbulence predictions through the Jackson and Dewan algorithm models.