MIST

Multi-Intelligence Simulation Technology, or MIST, is SRC's solution to **reducing risk in radar and sensor systems, architecture and algorithm development**

SRC, formerly Syracuse Research Corporation, is a leading supplier of high-performance, physics based simulation and modeling tools for the Department of Defense. SRC's MIST software is an affordable high fidelity, physics based radar simulation package that provides phase-coherent and time-domain in-phase and quadrature simulated receiver output data that is MATLAB® compatible.

Developed under the sponsorship of the U.S. government, it is available for use on other government-sponsored programs. The MIST software is used to simulate experiments and synthesize data for radio frequency systems, as well as data processing algorithms under development. The MIST technology is a cost-effective means of predicting real-world system performance without time consuming and costly hardware prototyping and data collection programs.

The simulation and modeling software can be used for:

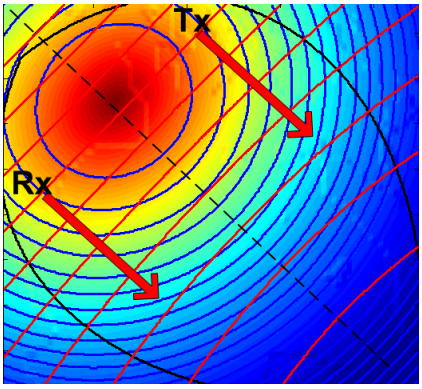
- Space and airborne radar programs
- Space and airborne sensor integration
- Multi-static and bistatic radars
- Adaptive processing techniques
- Sensor development and testing

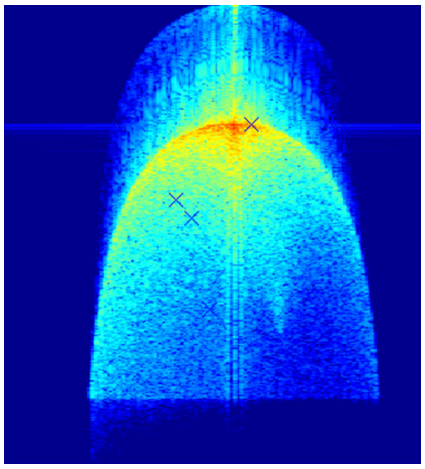
The primary MIST output is a MATLAB® compatible in-phase and quadrature sampled time-domain data stream that supports multi-phase center antennas with independent receiver channels.

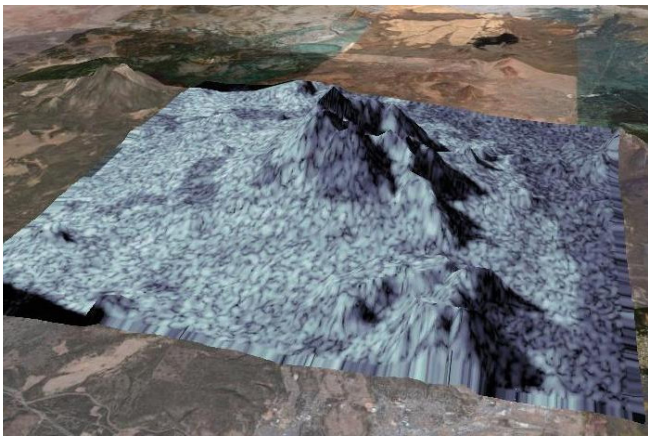
APPLICATIONS

MIST's generic object-oriented architecture allows modeling a number of different radar applications. This includes simulations to detect moving targets in airborne, ground and space situations. MIST is also powerful enough for the reproduction of high-resolution images of simulated synthetic aperture radar models. In addition, it is able to simulate the radio frequency environment for ground-based, airborne or space-based signals intelligence platform collection.

THE MIST TECHNOLOGY IS A COST-EFFECTIVE MEANS OF PREDICTING REAL-WORLD SYSTEM PERFORMANCE







SRC's MIST technology simulating real-world radar system performance.

MIST

REALISTIC, ERROR MODELS FOR

- Multi-channel receivers
- User-supplied or synthesized antenna responses

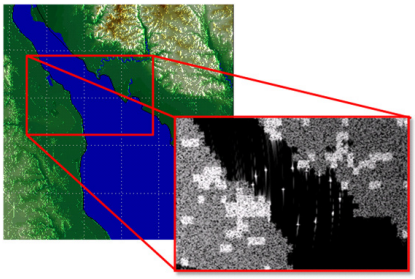
MODERN SIGNAL & DATA PROCESSING METHODS

- Range-Doppler and detection processing
- Space-time adaptive processing clutter cancellation
- SAR processing

USER INTERFACE

MIST's graphical user interface is a Java-based application that uses an object-orientated hierarchical approach for modular modeling of scene geometry, sensor platforms, sensor elements, targets, and ground clutter.

BELOW: SAR - Image of the Chesapeake Bay area from an airborne SAR produced using MATLAB® processing of a MIST time-domain data stream.

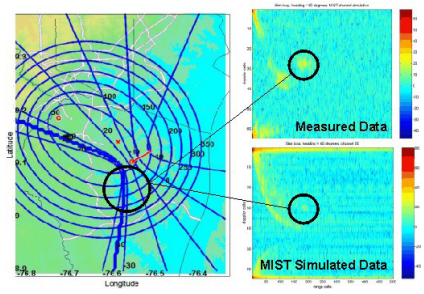


RUN TIME ENVIRONMENT

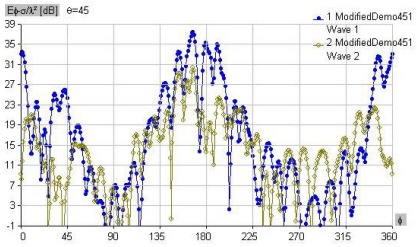
The MIST simulator runs in a networked PC environment:

- Windows XP, TCP/IP network
  - MIST is continually updated to support the latest Windows operating system, including both 32- and 64-bit architectures
- Parallel-processing across multiple PCs with workload distribution by range cell
- Distributed component object model objects provide interchangeable models of scenario components

BELOW: Moving Target Detection - Air traffic control scenario highlighting a comparison of target detection on a conventional range-Doppler surface with target detection on a space-time adaptive processing, clutter-suppressed surface.



BELOW: SIGINT Collector Modeling - MIST outputs time-domain sampled data that can be processed to produce a "spectrum analyzer" or "oscilloscope" display, and evaluate time difference of arrival, or specific emitter identification processing techniques.



FEATURES

- Multi-static sensor configuration
- Ground-to-space sensor and target dynamics
- Sensor and target dynamics defined in a Satellite Tool Kit compatible file format
- Phase, polarization sensitive processing
- Multiple ground clutter models with digital terrain elevation data and land use land cover terrain and Doppler spreading
- Bistatic target radar cross-section support
- Pack 'N' Go button packages all input files into one .mzip file

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