

The plume height capability provides an accurate estimate of the injection height of plumes that is needed by air quality and climate modelers. MISR provides global high-quality stereo height information, and this program uses that information to perform detailed height retrievals of aerosol plumes. Users can interactively digitize smoke, dust, or volcanic plumes and automatically retrieve heights and winds, and can also archive MISR albedos and aerosol properties, as well as fire power and brightness temperatures associated with smoke plumes derived from Moderate Resolution Imaging Spectroradiometer (MODIS) data.

Some of the specialized options in MINX enable the user to do other tasks. Users can display plots of top-of-atmosphere bidirectional reflectance factors (BRFs) versus camera-angle for selected pixels. Images and animations can be saved to disk in various formats. Also, users can apply a geometric registration correction to warp camera images when the standard processing correction is inadequate. It is possible to difference the images of two MISR orbits that share a path (identical ground track), as well as to construct pseudo-color images by assigning different combinations of MISR channels

(angle or spectral band) to the RGB display channels.

This software is an interactive application written in IDL and compiled into an IDL Virtual Machine (VM) ".sav" file.

This work was done by David Nelson of Columbus Technologies and Services Inc.; Michael Garay of Raytheon; David Diner, Charles Thompson, Jeffrey Hall, Brian Rheingans, and Dominic Mazzoni of Caltech for NASA's Jet Propulsion Laboratory. Further information is contained in a TSP (see page 1).

This software is available for commercial licensing. Please contact Karina Edmonds of the California Institute of Technology at (626) 395-2322. Refer to NPO-45744.

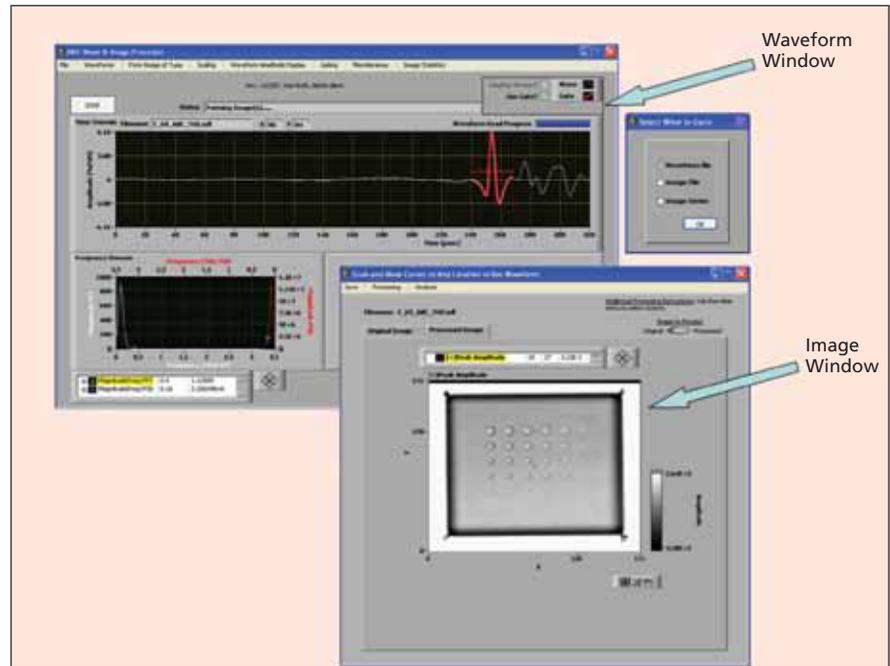
Platform for Postprocessing Waveform-Based NDE

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Taking advantage of the similarities that exist among all waveform-based non-destructive evaluation (NDE) methods, a common software platform has been developed containing multiple-signal and image-processing techniques for waveforms and images. The NASA NDE Signal and Image Processing software has been developed using the latest versions of LabVIEW, and its associated Advanced Signal Processing and Vision Toolkits. The software is useable on a PC with Windows XP and Windows Vista.

The software has been designed with a commercial grade interface in which two main windows, Waveform Window and Image Window, are displayed if the user chooses a "waveform file" to display. Within these two main windows (see figure), most actions are chosen through logically conceived run-time menus. The Waveform Window has plots for both the raw time-domain waves and their frequency-domain transformations (fast Fourier transform and power spectral density). The Image Window shows the C-scan image formed from information of the time-domain waveform (such as peak amplitude) or its frequency-domain transformation at each scan location. The user also has the ability to open an image, or series of images, or a simple set of X-Y paired data set in text format. Each of the Waveform and Image Windows contains menus from which to perform many user actions.

An option exists to use raw waves obtained directly from scan, or waves after deconvolution if system wave response is provided. Two types of deconvolution,



Graphical-User-Interface Windows are shown for NASA NDE wave and image processor.

time-based subtraction or inverse-filter, can be performed to arrive at a deconvolved wave set. Additionally, the menu on the Waveform Window allows preprocessing of waveforms prior to image formation, scaling and display of waveforms, formation of different types of images (including non-standard types such as velocity), gating of portions of waves prior to image formation, and several other miscellaneous and specialized operations.

The menu available on the Image Window allows many further image processing and analysis operations, some of which are found in commercially-avail-

able image-processing software programs (such as Adobe Photoshop), and some that are not (removing outliers, B-scan information, region-of-interest analysis, line profiles, and precision feature measurements).

This work was done by Don Roth for Glenn Research Center. Further information is contained in a TSP (see page 1). Inquiries concerning rights for the commercial use of this invention should be addressed to NASA Glenn Research Center, Innovative Partnerships Office, Attn: Steve Fedor, Mail Stop 4-8, 21000 Brookpark Road, Cleveland, Ohio 44135. Refer to LEW-18261-1.