phenomenologies. The Backgrounds Data Center (BDC), located at the Naval Research Laboratory (NRL), has been designated by the SDIO as the prime archive for data collected by SDIO programs for which substantial backgrounds measurements are planned. The BDC will be the prime archive for MSX data, which will total about 15 TB over three years. Current BDC holdings include data from the VUE, UVPI, UVLIM, FUVCAM, TCE, and CLOUDS programs. Data from IBSS, CIRRIS 1A, and MSTI, among others, will be available at the BDC in the near future. The BDC will also archive data from the Clementine mission.

The BDC maintains a Summary Catalog that contains "metadata," that is, information about data, such as when the data were obtained, what the spectral range of the data is, and what region of the Earth or sky was observed. Queries to this catalog result in a listing of all datasets (from all experiments in the Summary Catalog) that satisfy the specified criteria. Thus, the user can identify different experiments that made similar observations and order them from the BDC for analysis. On-site users can use the Science Analysis Facility (SAF) for this purpose.

For some programs, the BDC maintains a Program Catalog, which can classify data in as many ways as desired (rather than just by position, time, and spectral range as in the Summary Catalog). For example, datasets could be tagged with such diverse parameters as solar illumination angle, signal level, or the value of a particular spectral ratio, as long as these quantities can be read from the digital record or calculated from it by the ingest program. All unclassified catalogs and unclassified data will be remotely accessible.

The activities and functionality of the BDC will be described. Information is presented about the BDC facilities, user support capabilities, and hardware and software systems.

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THE ENHANCED-MODE LADAR WIND SENSOR AND ITS APPLICATION IN PLANETARY WIND VELOCITY MEASUREMENTS. D. C. Soreide, R. L. McGann, L. L. Erwin, and D. J. Morris, Boeing Defense and Space Group, Seattle WA 98124, USA.

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For several years we have been developing an optical air-speed sensor that has a clear application as a meteorological wind-speed sensor for the Mars landers. This sensor has been developed for airplane use to replace the familiar, pressure-based Pitot probe. Our approach utilizes a new concept in the laser-based optical measurement of air velocity (the Enhanced-Mode Ladar), which allows us to make velocity measurements with significantly lower laser power than conventional methods.

The application of the Enhanced-Mode Ladar to measuring wind speeds in the martian atmosphere has a number of advantages over previously fielded systems. The point at which the measurement is made is approximately 1 m from the lander. This eliminates the problem of flow distortion caused by the lander. Because the ladar uses a small, flush-mounted window in the lander instead of being mounted out in the wind, dust damage and erosion will be dramatically reduced. The calibration of the ladar system is dependent only on the laser wavelength, which is inherently fixed. Our approach does require the presence of aerosol particles, but the presence of dust in the martian atmosphere is well established. Preliminary calculations indicate that the Enhanced-Mode Ladar will only consume 0.001 Ws per velocity update, not including the power for signal processing. We have developed a brassboard version of the Enhanced-Mode Ladar for airplane applications that we will flight test in early April. This brassboard has been used to measure wind speeds (in Earth's atmosphere) with a backscatter coefficient similar to that on Mars. Results of a single set of measurements are shown in Fig. 1.

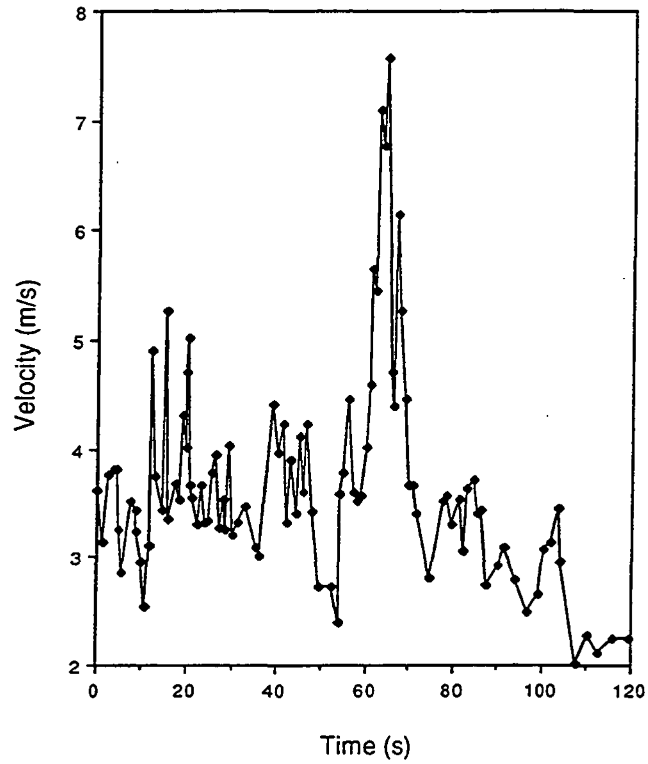

Fig. 1. Wind speed vs. time backscatter coefficient = 4.5E-6.

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THE MESUR MISSION. S. W. Squyres, Center for Radiophysics and Space Research, Cornell University, Ithaca NY 14853, USA.

The MESUR mission is the most ambitious mission to Mars planned by NASA for the coming decade. It will place a network of small, robust landers on the martian surface, making a coordinated set of observations for at least one full martian year. The mission addresses two main classes of scientific objectives. The first requires a large number of simultaneous observations from widely distributed sites. These include establishing networks of seismic and meteorological stations that will yield information on the internal structure of the planet and the global circulation of the atmosphere respectively. The second class of objectives requires sampling as much as possible the full diversity of the planet. These include a variety of geochemical measurements, imaging of surface morphology, and measurement of upper atmospheric properties at a range of latitudes, seasons, and times of day.