Real-time airborne data acquisition, archival and distribution on the NASA/Ames Research Center (ARC) C-130 has been improved over the past three years due to the implementation of the C-130 Automated Digital Data System (CADDS). CADDS is a real-time, multitasking, multiprocessing ROM-based system. The system was developed on an Intel Multibus I with an 80286 microprocessor, an 80287 math coprocessor, and five 8085 microprocessors. Application software specific to the CADDS requirements is "buried" with the iRMX86 operating system on EPROM.

CADDS acquires data from both avionics and environmental sensors inflight for all C-130 data lines. Environmental parameters include Total Air Temperature, pressure altitude, radar altitude, wind speed and direction, dew-frost point, and infrared surface temperature. Housekeeping information is distributed, in serial format and at various baud rates, to RS-232 ports at the experimenter stations. The system also displays the data on video monitors available throughout the aircraft. Raw and processed data, which includes a universal time stamp, are archived to a PC-compatible Small Computer System Interface (SCSI) format tape. At any time, the CADDS operator can create a hardcopy of displayed data, enter flight information, or add comments concerning data and/or flight conditions.

CADDS is designed to be flexible and expandable in order to meet the needs of the scientific community on the Ames C-130 platform aircraft. CADDS replaces the NERDAS system.
Inertial Navigation System

Time Code Generator

IR Surface Temperature

Total Air Temperature

Barometric Altimeter

Radar Altimeter

Hygrometer

NS-001

Photo

CADDS C-130 Automated Digital Data System
Data Flow Diagram

CADDS DATA SYSTEM CPU CHASSIS
MULTIBUS I

Exp. Station
Exp. Station

Data Distr Subsystem

Video Distr.
& Patching Subsystem

Line Printer

Data Storage
SCSI Tape

Data Operator Control Chassis

Recorder

Photo Station VCR