



DC3 DATA MANAGEMENT PLAN



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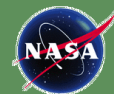
**¹NCAR Earth Observing Laboratory (EOL)
Computing, Data, and Software Facility (CDS)**

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DC3 and SEAC⁴RS Joint Science Teams Meeting

Boulder, CO

21-23 February 2012



EOL Data Management Philosophy

- **Early involvement** in project planning
- Involvement with PIs to develop **data management strategy** (e.g., plan, policy, format, special collection and processing)
- Consistent implementation of data management strategy for lifetime of project and beyond (**data Stewardship**)
- Reliable and efficient **long-term archive** and distribution system
- Easy and efficient **access** to datasets by broader community including educators and students



Project Data Management Considerations

- **Develop Data Management Plan**
- **Data Types**
- **Data Formats and Documentation**
- **Data Collection**
- **Real-time Data Requirements**
- **Data Quality Control**
- **Data Archival**
- **Data Distribution**
- **Coordination with other Programs**



Data Management Working Group (DMWG)

“Typical” Charge

(Reports to the Scientific Steering Committee)

- Coordinate with the Project Participants to define the data requirements
- Design a distributed data management system to provide access to all data sets
- Prepare a data management plan describing the data policy, strategy, and implementation
- Determine special product generation or data integration needs
- Oversee data collection to ensure a permanent archive upon completion of the program
- Coordinate and collaborate with other field projects/programs and data providers

DC3 DATA MANAGEMENT PLAN OUTLINE

1.0 Introduction/Background

- 1.1 Scientific Objectives
- 1.2 Data Management Philosophy

2.0 Data Management Policy

- 2.1 Data Protocol
- 2.2 Data Processing/Quality Control
- 2.3 Data Availability
- 2.4 Data Attribution
- 2.5 Community Access to Data

3.0 Data Management Functional Strategy/Description

- 3.1 Data Archive and Analysis Centers
- 3.2 Investigator Requirements
 - 3.2.1 Data Format Conventions
 - 3.2.2 Data Submission Requirements
- 3.3 Data Collection Schedule
 - 3.3.1 On-line Field Catalog
- 3.4 Data Processing following the Field Phase
- 3.5 Data Integration
- 3.6 Data Archival and Long-term Access

4.0 DC3 Data Sets

- 4.1 Data Collection/Processing
- 4.2 Status Update Procedures
- 4.3 In-field Data Display and Analysis Requirements
- 4.4 Coordination with other Programs
- 4.5 Advanced Water Vapor Sensor Intercomparison Data Set

APPENDICES

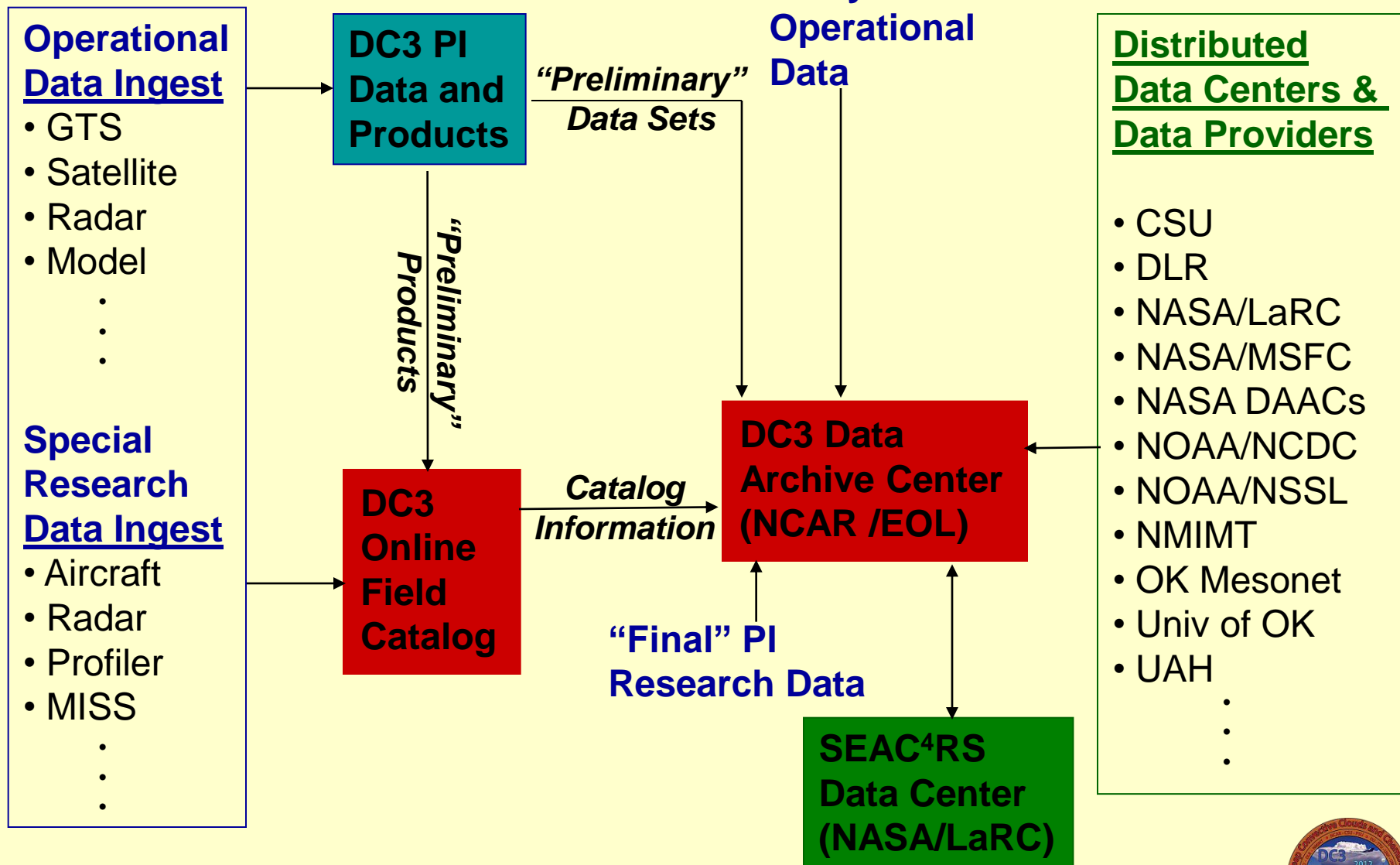
- A. Research Data Sets
- B. Operational Data Sets



DC3 DATA POLICY SUMMARY (*Proposed*)

- **All investigators must agree to promptly submit their processed “preliminary” data to the DC3 archive no later than 1 May 2013**
- **All “preliminary” data shall be provided to other DC3 Investigators upon request (restricted as appropriate)**
- **During the initial 1-year data analysis period, data may be provided to a third party only with the permission of the investigator(s) who collected the data**
- **All data will be considered public domain not more than one year following the end of the DC3/SEAC⁴RS field phase (1 November 2013)**
- **Any use of the data will, at a minimum, include acknowledgment. Co-authorship TBD with the investigator(s) who collected the data**

Expected DC3 Data Flow



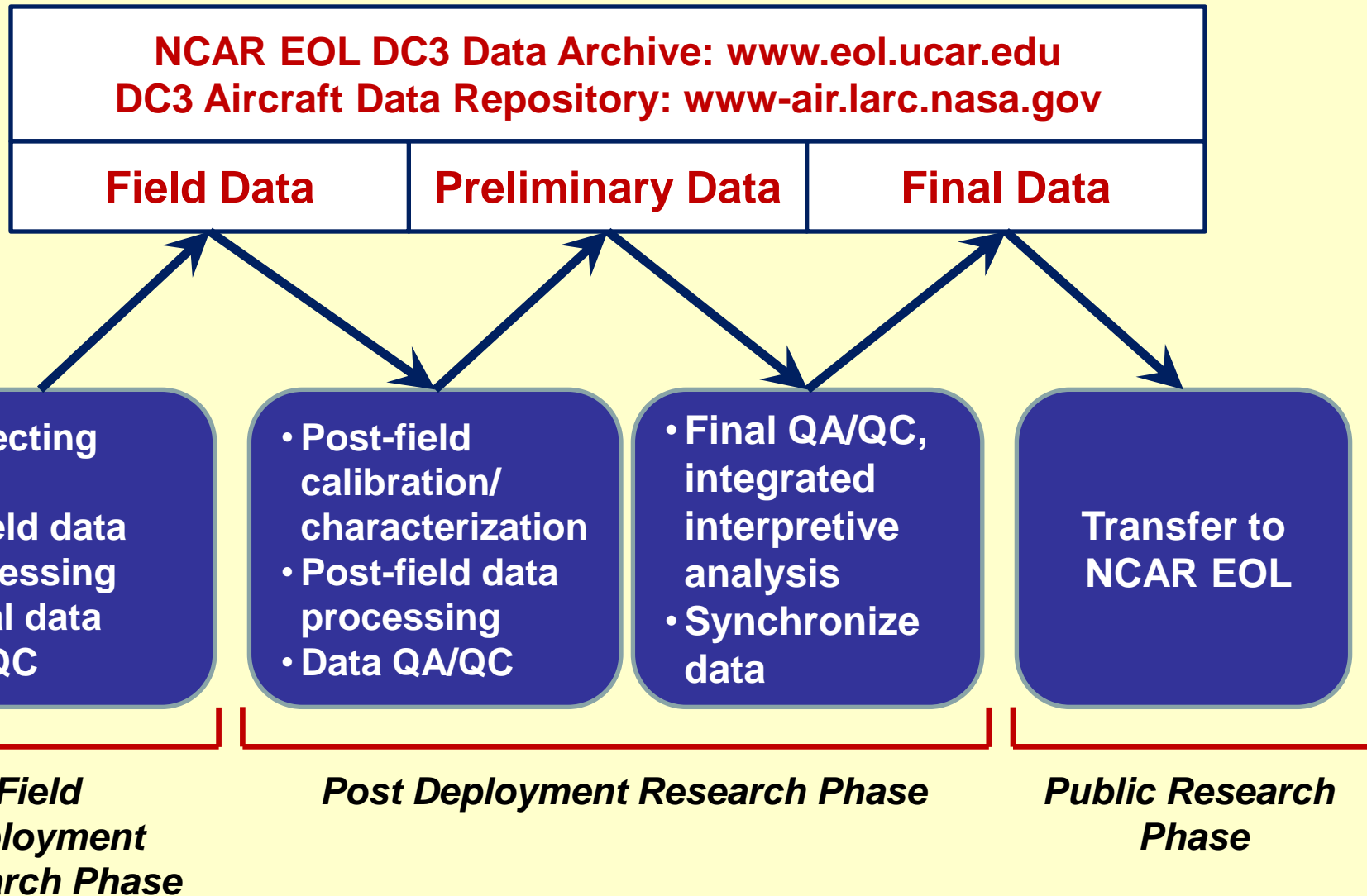
DC3 Aircraft Data Submission Timeline

Proposed data submission deadlines:

Phase	Data Type	Deadline	Access Control
Field Deployment Research	Field Data	24 hour after each flight	Science teams and partners
Post-deployment Research	Preliminary Data	April 1, 2013	Science teams and partners
Public Research	Final Data	October 1, 2013	Public

- Data submission deadlines are consistent and apply for both SEAC⁴RS data and DC3 aircraft observational data
- Exemptions may be granted on a case-by-case basis by program managers and project management

DC3 Aircraft Data Flow Overview



DC3 Aircraft Data Archive

Data Repository	Operation Period	Access Control
Field Data Archive	04/20/12 – 03/30/13	Science team and partners
Preliminary Data Archive	04/01/13 – 10/01/13	Science team and partners
Final Data Archive	04/01/13 – 10/01/13	Public

- Data will be promptly updated at NCAR EOL data archive in each phase of the study
- Access control will be implemented through a single username and password for both SEAC⁴RS and DC3 science teams and partners
- Preliminary and field data will be expunged after their operation periods, respectively
- The data archives will hold airborne observational data from NSF GV, NASA DC-8, and DLR Falcon.
- Data revisions will be tracked by revision numbers as part of the filenames and Dataset Master Lists

DC3 Aircraft Data Format Requirement

- The data from SEAC⁴RS field study and DC3 aircraft observations will conform to the International Consortium for Atmospheric Research on Transport and Transformation (ICARTT) data format standards
- ICARTT format has been widely used in airborne field studies since 2004 and is now one of the NASA Earth Science Division approved data system standards
- All incoming data files will be scanned to ensure compliance to the ICARTT format requirements.
- Assistance will be made available to the science team to trouble-shoot issues in generating ICARTT files

EOL/CDS DATA SERVICES

- Data Questionnaire
- Data Management Plans
- Real-time Data Ingest
- Field Operations Catalog and Mapserver
- Data Processing
- Interactive Data Archive and Distribution (EMDAC)
- Web Services and Mailing Lists
- Special Media Products and Services



INFORMATION COLLECTED ON:

VOCALS Data Questionnaire



The VOCALS Data Questionnaire is intended to collect information from the VOCALS PIs on their data requirements. This includes the requirements for real-time image products for the VOCALS Field Catalog and the data sets required for the Long-Term Data Archive to support your research. Please fill out the form as completely as possible.

The **Field Catalog** will be the repository for products and documentation during the field phase. All data and documentation coming from VOCALS will reside in the **Long-Term Data Archive**.

CONTACT INFORMATION

1. Name:

2. Affiliation:

3. Mailing Address:

4. E-mail:

5. Telephone:

6. Fax:

Next

- Imagery and products needed for the field catalog (real-time ingest)
- Supporting Datasets needed for research
- PI Data to be submitted to the field catalog/archive
- Product transfer to aircraft
- Special products/reports/datasets needed

DATA CATEGORIES

Aircraft

Upper Air

Satellite

Oceanographic

Land-based

Model Output

Radar/Lidar

Other

"FIELD" DATA ACCESS



[Catalog Home](#) [Daily Reports](#) [Operational Products](#) [Radar Products](#) [Model/Forecast Products](#) [Research Products](#) [Missions](#) [Tools & Links](#) [Data Access](#) [Help ?](#)

Boulder, CO: Mon, Feb 20, 10:00 PM Norman, OK: Mon, Feb 20, 11:00 PM
Huntsville, AL: Mon, Feb 20, 11:00 PM UTC: Tues, Feb 21, 4:00 AM

Current Reports:

[Operations Plan of the Day](#)
[GV Status](#)
[Weather Discussion](#)



[Catalog Earth Tool](#)



[Mission Coordinator Display](#)
[Way Point Calculator](#)

Latest Radar



Latest CHILL radar

Additional Imagery

[Latest 4 hours GOES-13 Visible](#)
[Latest 4 hours G-13 IR](#)
[Latest 2 hours G-13 Ch3 Water Vapor](#)

**DC-3 flight tests
have concluded**

General Information:

[DC3 Times Home Page](#)
[DC3 Data Management](#)

**Teleconference Access
Number:**

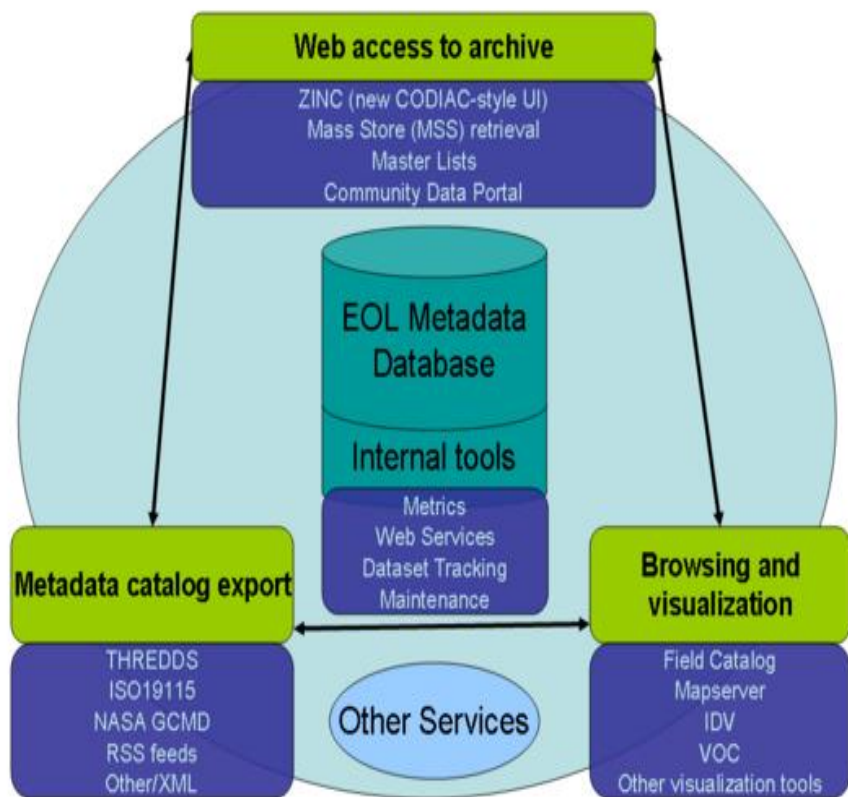
1-866-740-1260 (US toll free)
Access Code: 4978380

RAF Status Message
(303) 497-1040

Colorado Domain



EOL Metadata Database and Cyberinfrastructure (EMDAC)



EOL Data System (EMDAC)

Primary means for all project scientists and researchers to browse and retrieve data from any EOL-supported projects

Features:

- Long-term field project data archival and distribution
- Interactive data browsing, subsetting, and format translation
- Web-based access
- Value-added datasets
- Data documentation

MODEL DESCRIPTIONS AND DOCUMENTATION

CEOP Model Center Documentation

This table summarizes some basic characteristics of models providing MOLTS output for CEOP. **DRAFT** (as of 1 November 2004, to be completed by all Centre representatives. Further columns may have to be added, if required.)

Center (Linked to further documentation)	Model Name and Type (operational, re-analysis, forecast, ...)	Model Horizontal Resolution (Both spectral and long/lat or km information)	Time Resolution	Number of Vertical Levels	Vegetation Description Scheme Used (name and number of types, details in a separate table)	Soil Description Scheme Used (name and number of types, details in a separate table)	MOLTS Location Characteristics Table	MOLTS Format
BMRC	Operational Global Medium Range Prediction Model	T239L29	1 hour	29	bucket hydrology	3 layers		netCDF
CPTEC	CPTEC/COLA	T126 gaussian grid ~1.125 degrees on pressure surfaces	6 hours	28	SSIB scheme 13 vegetation types	13 types related to the vegetation		IEEE binary read from GRADS
ECMWF	ERA-40 (and continuation)	T159 Reduced gaussian grid (125 km)	1 hour	60	TESSEL BATS classification	1 soil type	Table ERA-40	ASCII
	Operations	T511 Reduced gaussian grid (39 km)	1 hour	60	TESSEL BATS classification	1 soil type	Table Operations	ASCII
	Reanalysis-II	T62L28 2.5 X 2.5 degrees on pressure surfaces	3 hours	28 sigma 17	12 vegetation	OSU2 LSM 2 soil levels fixed soil type as either	Table	NetCDF

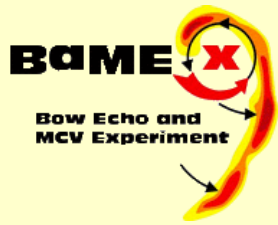
Composite Data Sets at NCAR/EOL

A **composite dataset** is a collection (over some time period and region) of similar data (e.g. surface meteorological) from a variety of sources, put into a common format, and passed through a uniform quality control.

Why does NCAR/EOL develop composites?

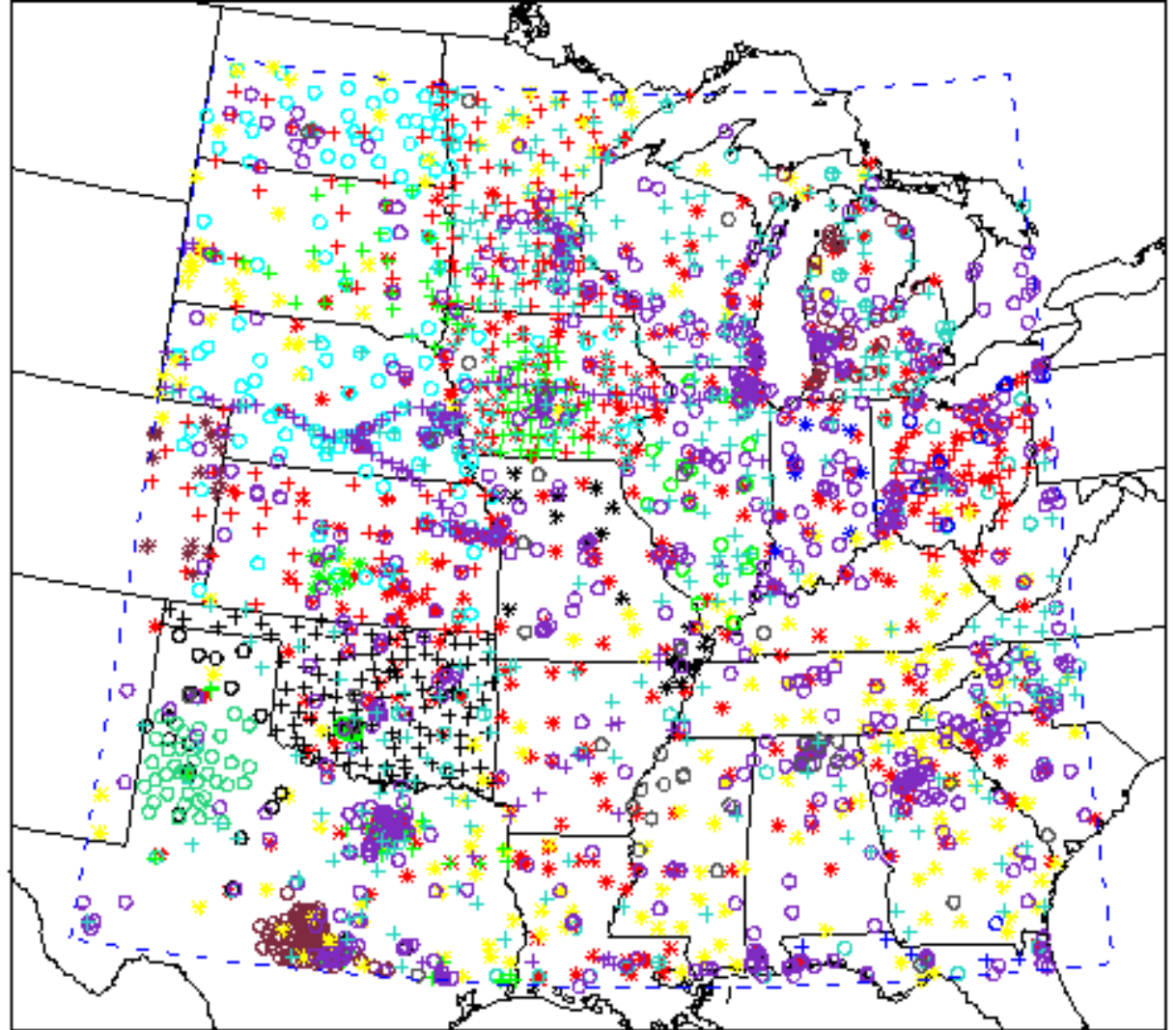
- Provides data in a uniform format with QC.
- Allows determination of network/site problems.
- Useful for model applications.
- Prevents duplication of effort.





Hourly Surface Meteorological Data Composite (2991 stations)

1-min sites (* 385)
AWOS (+ 335)
RAWS (* 220)
MesoWest (+ 94)
HPCN (o 138)
RWIS (+ 279)
GPSMET (o 153)
CO CoAgMet (* 17)
FL FAWN (+ 5)
IA IEM (+ 88)
IL ICN (o 19)
IN PAAWS (* 7)
KS GWMD5 (* 10)
MI MAWN (o 33)
MO CAWS (* 21)
OH OARDC (o 11)
OK ARS Micro (o 42)
OK Mesonet (+ 119)
TX LCRA (o 102)
TX TNRCC (+ 47)
West TX Meso (o 39)
Texas ET (o 23)
15 Other Networks (o 804)



PROJECT MASTER LISTS

T-REX Data Access - Mozilla Firefox

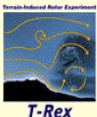
File Edit View History Bookmarks Tools Help

http://data.eol.ucar.edu/master_list/?project=T-REX

st paul island alaska articles










CNN.com UCAR/NCAR E-mail and... NOAA Staff Directory AT&T: Directory: Direc... Colorado Weather Weather and Climate F... NCAR/EOL/CDS/DM Pr... Forecast Models National Weather Imag...

T-REX Data Access Untitled Document Friday Photo



T-Rex

T-REX Data Sets

Data Set Name (Responsible Group/PIs shown in parentheses)	Date Posted	Info
Aircraft		
NCAR IDV Flight Track Imagery	2007-03-07	
Aircraft: NSF/NCAR GV		
NCAR GV (HIAPER) Dropsonde Profile Data (EOL Format) [NCAR/EOL]	2006-10-04	
NCAR GV (HIAPER) Dropsonde Profile Data (ESC Format) [NCAR/EOL]	2006-10-31	
NCAR GV (HIAPER) HRT Differential GPS Data [NCAR/EOL]	2007-04-26	
NCAR GV (HIAPER) HRT Flight-Level Data [NCAR/EOL]	2007-03-20	
NCAR GV (HIAPER) In-Situ Ozone Data [NCAR/ACD]	2006-08-24	
NCAR GV (HIAPER) Left Side Camera Video [NCAR/EOL]	Updated 2007-02-06	
NCAR GV (HIAPER) LRT (1 sps) Flight-Level Data [NCAR/EOL]	Updated 2006-12-01	
Aircraft: UK BAE-146		
UK BAE-146 Dropsonde Profile Data (ESC format) [UK Met Office]	2006-10-31	
UK BAE-146 Navigation, State Parameter, Microphysics, Aerosol, and Chemistry Data [UK Met Office]	Updated 2006-11-29	

DATA BY CATEGORY

- [Aircraft](#)
- [Ancillary](#)
- [Land Based](#)
- [Land Characterization](#)
- [Model](#)
- [Photography](#)
- [Radar](#)
- [Satellite](#)
- [Upper Air](#)

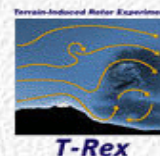
[Back to T-REX](#)

Email comments & questions to
webmaster@eol.ucar.edu

Done

PROJECT PUBLICATIONS LIBRARY

T-REX Publications



(How to Submit Publication References to this List)

[Web of Science](#) [Meteorological Abstracts](#) - (*UCAR access only*)

Peer Reviewed Publications

- Doyle, J.D., and D.R. Durran, 2007: [Rotor and sub-rotor dynamics in the lee of three-dimensional terrain](#). J. Atmos. Sci., 64, 4202-4221.
- Grubišić, V., and B. J. Billings, 2007: [The intense lee-wave rotor event of Sierra Rotors IOP 8](#). J. Atmos. Sci., 64, 4178-4201.
- Grubišić, V., and B. J. Billings, 2007: [Climatology of the Sierra Nevada mountain wave events](#). Mon. Wea. Rev. In press.
- Grubišić, V., and M. Orlić, 2007: [Early observations of rotor clouds by Andrija Mohorovičić](#). Bull. Amer. Meteor. Soc., 88, 693-700.
- Poulos, G.S., J. Wang, D. K. Lauritsen, and H. L. Cole, 2007: [Targeted dropwindsondes in complex terrain](#). J. Atmos. Oceanic Technol., 24, 1489-1494.
- Sheridan, P.F., Horlacher, V., Rooney, G.G., Hignett, P., Mobbs, S.D., and Vosper, S.B., 2007: [Influence of lee waves on the near-surface flow downwind of the Pennines](#). Q. J. R. Meteorol. Soc., 133, 1353-1369.

Conference Proceedings

- Grubišić, V., L. Armi, J. P. Kuettner, S. J. Haimov, L. Oolman, R. R. Damiani, and B. J. Billings, 2006: [Atmospheric rotors: Aircraft in situ and cloud radar measurements in T-REX](#). AMS 12th Mountain Meteorology Conference, Santa Fe, Amer. Meteor. Soc.
- Grubišić, V., and B. J. Billings, 2006: [Sierra Rotors: A comparative study of three mountain wave and rotor events](#). Poster. AMS 12th Mountain Meteorology Conference, Santa Fe, Amer. Meteor. Soc.

DC3 Project & Data Management Web Site at NCAR/EOL



DC3 – Deep Convective Clouds & Chemistry Experiment

What's New?

- **DC3 - SEAC4RS Science Team Meeting - Feb. 21-23, 2012 - Boulder, Colorado**

Project Description

The Deep Convective Clouds and Chemistry Project (DC3) field campaign investigates the impact of deep, midlatitude continental convective clouds, including their dynamical, physical, and lightning processes, on upper tropospheric (UT) composition and chemistry. The DC3 field campaign makes use of extensively instrumented aircraft platforms and ground-based observations. The NSF/NCAR Gulfstream-V (GV) aircraft is the primary platform to study the high altitude outflow of the storms, and is instrumented to measure a variety of gas-phase species, radiation, and cloud particle characteristics. The GV is also documenting the downwind chemical evolution of the convective plume.

The NASA DC-8 aircraft complements the GV via in situ observations to characterize the convective storm inflow and provides remote sensing to aid in flight planning and column characterization.



(Click Image for Full Resolution)

Ground-based radar networks are used to depict the physical and kinematic characteristics of the storm and provide input to the aircraft operations. The impact of lightning on outflow composition is constrained through detailed measurements from lightning mapping arrays. The forecasting and analysis is improved through other observations such as radiosondes and precipitation collection and its chemical analysis. Satellite data is used to place the airborne and ground-based measurements in the context of the wider geographical region and help guide sampling strategies. At the same time, DC3 measurements help satellite retrievals of atmospheric constituents such as NO₂ near storms.

The observations are conducted in three locations: 1) northeastern Colorado, 2) central Oklahoma, and 3) northern Alabama in order to gather data on different types of storms and with different boundary layer compositions as well as to ensure sampling of convection during the time period of the field campaign. The types of storms being sampled are air mass, multicell, and supercell convection.

Scientific Objectives

The DC3 project addresses the following goals: 1) Quantify and characterize the convective transport of fresh

Logistics



Salina, Kansas Municipal Airport
(Click Image for Full Resolution)

Dry Run / Instrument Test -
Aircraft logistics website (not
recently updated)
**DC3 Investigators Logistics
Survey**
Site Survey: Aerial View of SLN
DC3 Site Survey Report
Hotel Information for Salina
Kansas - **Updated 9 Jan 2012**
XChat Guidelines

DC3 Operations Twitter



Meetings



DC3 Meetings

ReadyTalk "how to" Instructions

Data Access

Master List of DC3 Data Sets

DC3 2011 Field Catalog - Dry Run

DC3 2012 Field Catalog



(Click Image for Full
Resolution)

Publications



DC3 Publications

Documents

DC3 Operations Plan - **DRAFT**



- Project Description
- Logistics
- Data Access & Field Catalog
- Documentation
- Meetings and Presentations
- Publications
- Education and Outreach
- Related Web Pages
- Participants

<http://www.eol.ucar.edu/projects/dc3/>