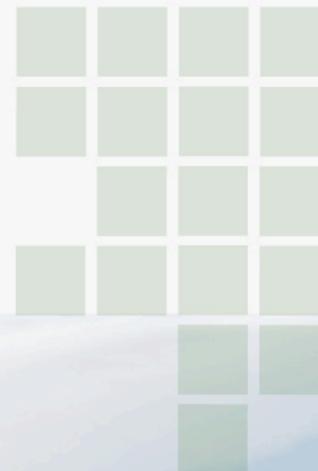# VOCALS DATA MANAGEMENT PLANNING

Steve Williams

NCAR Earth Observing Laboratory

Boulder, Colorado

VOCALS Planning Meeting

Boulder, Colorado

17-20 March 2008

EOL VAMOS work supported by NOAA Climate Projects Office

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, data integration)**
- **Consistent implementation of strategy for lifetime of project and beyond (stewardship – data access and pubs!)**
- **Reliable and efficient archive and distribution system**
- **Easy and efficient access to datasets and products by the broader community including stakeholders, educators and students**

EOL NCAR Earth Observing Laboratory
Deployment Development Data Services

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**

EOL

NCAR
Earth
Observing
Laboratory

VOCALS 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
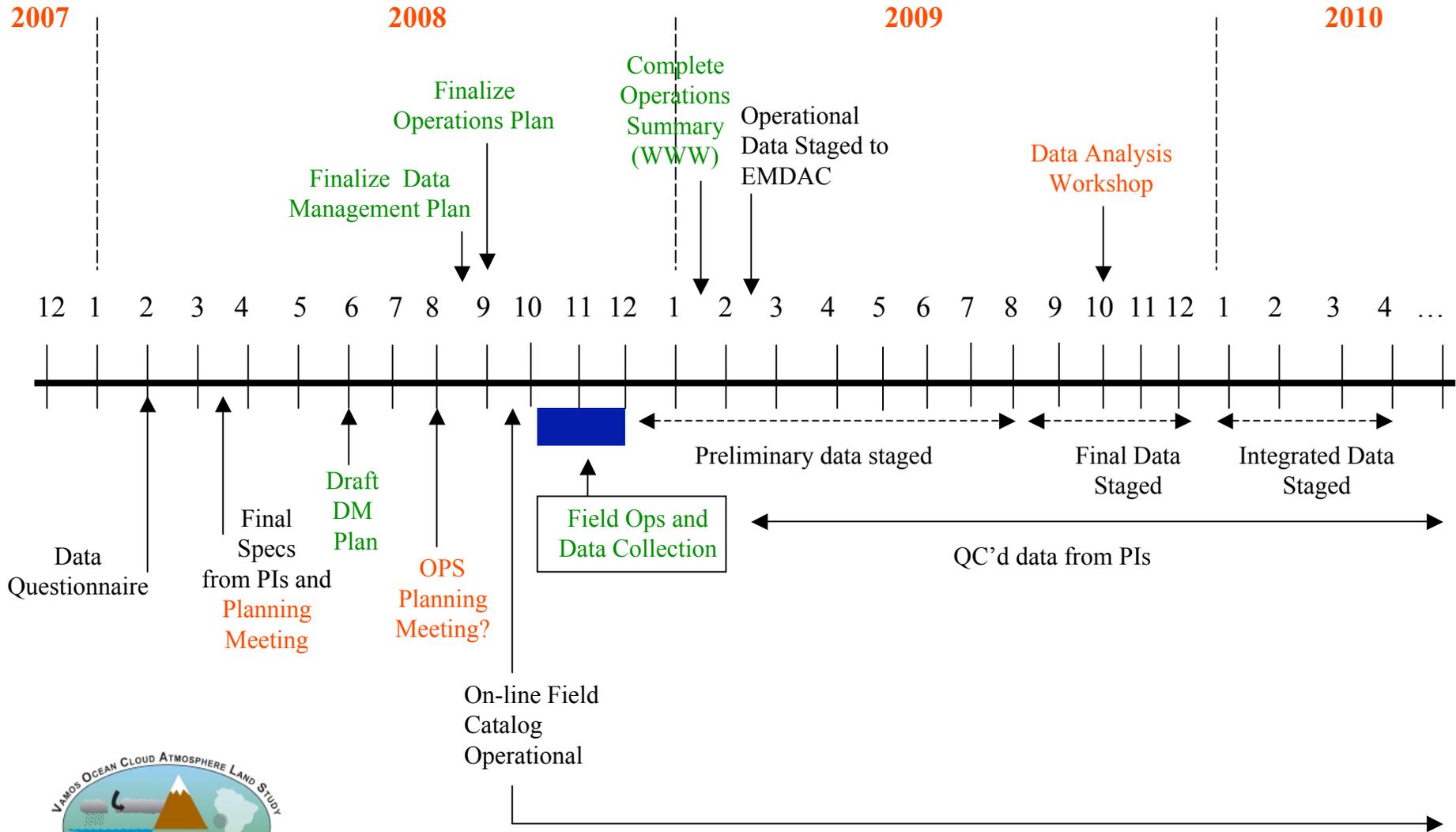   3.6 Data Archival and Long-term Access

4.0 VOCALS 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
    C. List of Acronyms (LOA)

VOCALS Data Management Timeline

2007   **2008**   **2009**   **2010**

Finalize
Operations Plan

Complete
Operations
Summary
(WWW)

Operational
Data Staged to
EMDAC

Data Analysis
Workshop

Finalize Data
Management Plan

12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 …

Preliminary data staged

Final Data
Staged

Integrated Data
Staged

Draft
DM
Plan

Field Ops and
Data Collection

QC'd data from PIs

Final
Specs
from PIs and
Planning
Meeting

OPS
Planning
Meeting?

Data
Questionnaire

On-line Field
Catalog
Operational

VOCALS

VAMOS OCEAN CLOUD ATMOSPHERE LAND STUDY

Data exchange guidelines (I) :

(1) To comply with
WMO Resolutions 40 (CG-XII) and 25 (CG-XIII)
in particular: <u>No financial implications.</u>

(2) *Data users* and VDA: <u>Commercial exploitation of
VOCALS data is prohibited.</u>

(3) *Data users*: <u>No transfer to third parties.</u>

(4) Data release to *data users*: Turn-around period.
      Category 1 data (operational, routine):   open
      Category 2 data (research, experimental): 12 months

Data exchange guidelines (II) :

(5) Acknowledgement and citation:

      (5.1) *Data users'* publications: VOCALS, VDA, *Data providers*, funding sources

      (5.2) VDA: *Data providers* and their funding sources

(6) Co-Authorship for VOCALS PIs recommended (certainly citation), collaboration required if PI requests co-authorship (in particular for *category 2* data)

(7) VOCALS Publication Library at VDA

http://survey.ucar.edu/opinio/s?s=3634

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

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INFORMATION COLLECTED ON:

• 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

VOCALS DATA QUESTIONNAIRE SUMMARY RESULTS

(15 Respondents)

AIRCRAFT

Field Catalog	Flight tracks; time series plots (thermo and cloud physics); vertical profiles; Google Earth overlays
Archive	Integrated datasets from all aircraft (NetCDF files); basic flight line and chemical parameters; cloud radar and lidar (processed data)
Supporting Data	Flight reports and QA results; raw GPS navigation data

SATELLITE

Field Catalog	GOES (Vis/WV/IR); MODIS; large/small scale sectors; annotate location of research vessels; chlorophyll; SST; sea level altimetry; TRMM
Archive	Digital versions of above (highest resolution) but include ASTER and DMSP; cloud categories
Supporting Data	Store field catalog imagery in archive; Integrated with Google Earth; GOES brightness difference and Microphysical plots (channel ratios)

VOCALS DATA QUESTIONNAIRE SUMMARY RESULTS

(15 Respondents)

SURFACE LAND-BASED

Field Catalog	SST plots, buoy time series, soundings
Archive	Surface ocean currents (CODAR) and winds, aerosol sampling
Supporting Data	Available local data (e.g. GTS)

RADAR/LIDAR

Field Catalog	C-band radar imagery (for flight planning), cloud boundary information, radar reflectivities, WCR quicklook imagery
Archive	All radar data (locations/platforms) collected in VOCALS-Rex, WCR processed data
Supporting Data	Ceilometer, cloud depth, cloud base/top, cloud fraction, microwave radiometer

VOCALS DATA QUESTIONNAIRE SUMMARY RESULTS

(15 Respondents)

UPPER AIR

Field Catalog	Skew-T soundings from VOCALS-Rex area
Archive	All available radiosonde and dropsonde data
Supporting Data	Boundary layer height, characteristics

OCEANOGRAPHIC

Field Catalog	SST imagery; ship observations, buoy time series; discuss with Bob Weller
Archive	In-situ oceanic data (including hydrographic); time series of buoy and ship data; ship SST, met parameters and navigation data; discuss with Bob Weller
Supporting Data	Discuss with Bob Weller

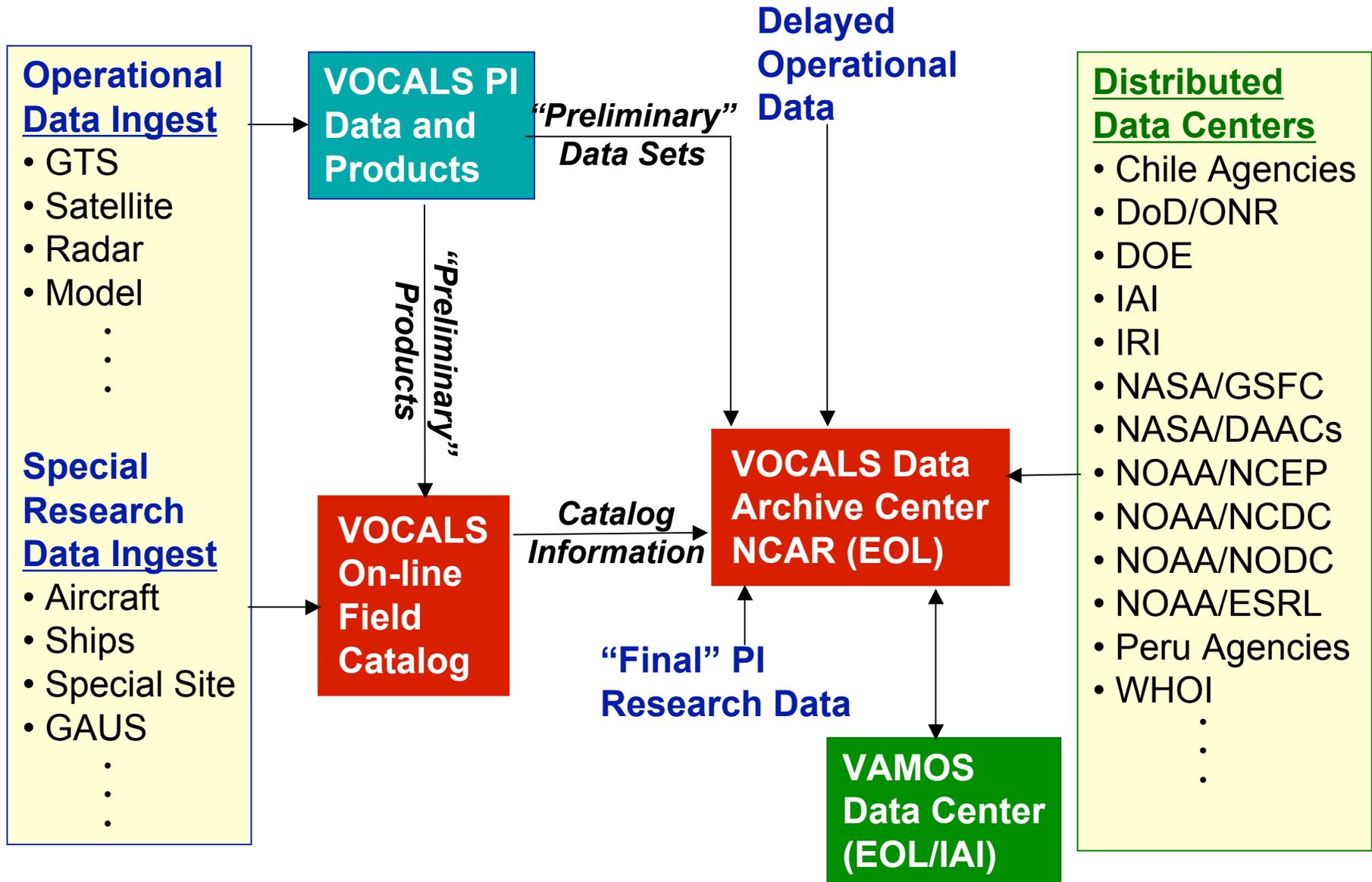# VOCALS DATA QUESTIONNAIRE SUMMARY RESULTS

(15 Respondents)

MODEL OUTPUT

Field Catalog	Analysis and forecast products (NCEP, UKMO, NRL, MM5, U of Chile); aerosol parameters **(need specifics on fields/time steps)**
Archive	Contributing models to VOCALS model assessment; ECMWF; ocean data assimilation; aerosol parameters; back trajectories; reanalysis datasets
Supporting Data	SST; Current data; sea level; air fluxes; SURFA Flux analysis

PRODUCTS TO AIRCRAFT

Field Catalog	Satellite imagery required to coordinate multi-aircraft missions; Google Earth satellite images (one/hour)
Archive	N/A
Supporting Data	none

VOCALS Data Flow

Operational Data Ingest
- GTS
- Satellite
- Radar
- Model
  - ·
  - ·

Special Research Data Ingest
- Aircraft
- Ships
- Special Site
- GAUS
  - ·
  - ·
  - ·

VOCALS PI Data and Products

"Preliminary" Data Sets

"Preliminary" Products

VOCALS On-line Field Catalog

Catalog Information

Delayed Operational Data

VOCALS Data Archive Center NCAR (EOL)

"Final" PI Research Data

VAMOS Data Center (EOL/IAI)

Distributed Data Centers
- Chile Agencies
- DoD/ONR
- DOE
- IAI
- IRI
- NASA/GSFC
- NASA/DAACs
- NOAA/NCEP
- NOAA/NCDC
- NOAA/NODC
- NOAA/ESRL
- Peru Agencies
- WHOI
  - ·
  - ·

VOCALS Data Access - Mozilla Firefox

File   Edit   View   History   Bookmarks   Tools   Help

http://data.eol.ucar.edu/master_list/?project:

Google

CNN.com   Weather and Climate F...   UCAR/NCAR E-mail and...   NOAA Locator (Public)   AT&T: Directory: Direc...   Systems Support Online

Mail :: Inbox   VOCALS Data Access

VOCALS

DATA BY CATEGORY

- **Aircraft**
- **Hydrology**
- **Land Based**
- **Model**
- **Oceanography**
- **Radar**
- **Radiation**
- **Satellite**
- **Ship Based**
- **Upper Air**

Back to VOCALS

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

Land Based: Precipitation		
GPCP Global Daily 1-Degree Combination Data [NASA]	2003-06-03	Document
GPCP Global Daily Merged Precipitation Analyses Imagery [NASA]	2003-06-03	Document
GPCP Global Monthly 1-Degree Combination Data [NASA]	2003-06-03	Document
GPCP Global Monthly Merged Precipitation Analyses Climatology Data [NASA]	2003-06-03	Document
GPCP Global Monthly Merged Precipitation Analyses Imagery [NASA]	2003-06-03	Document
GPCP Global Pentad (5-Day) Precipitation Analysis [NASA]	2003-06-03	Document
NCEP/CPC Global CMAP Precipitation Analyses	2003-06-03	Document
NCEP/CPC Global CMORPH Precipitation Analyses	2003-06-03	Document
PERSIANN 1°x1° Tropical Rainfall Data [NASA]	2003-06-03	Document
TRMM Real-time Rainfall Analyses (3-h) [NASA]	2003-06-03	

Model		
ECMWF Global Grids [NCAR/SCD]	2003-05-29	
EDC 30 Arc-Second Elevation Data [EDC]	2003-06-05	Document
NCEP AVN Regional Grids [NCAR/SCD]	2003-05-29	

Done

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

EPIC Publication References - Mozilla Firefox

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http://www.eol.ucar.edu/projects/epic/public   Google

CNN.com   Weather and Climate F...   UCAR/NCAR E-mail and...   NOAA Locator (Public)   AT&T: Directory: Direc...   Systems Support Online

Mail :: Inbox   EPIC Publication References

EPIC Publication References

- Boccippio, D.J., W.A. Petersen, R. Cifelli, and S.A. Rutledge, 2002: Diurnal cycle of convection in the east Pacific ITCZ during EPIC-2001. Preprint Volume, 25th Conference on Hurricanes and Tropical Meteorology, American Meteorological Society, 29 April - 3 May, 2002, San Diego, CA.

- Bretherton, C. S., T. Uttal, C. W. Fairall, S. Yuter, R. Weller, D. Baumgardner, K. Comstock, R. Wood, and G. Raga, 2004: The EPIC 2001 stratocumulus study. Bull. Amer. Meteor. Soc., 85, 967-977.

- Caldwell, P., C. S. Bretherton, and R. Wood, 2005: Mixed-layer budget analysis of the diurnal cycle of entrainment in SE Pacific stratocumulus. J. Atmos. Sci., 62, 3775-3791.

- Cifelli, R., D. Baumgardner, W. Petersen, S.A. Rutledge, C. Williams, P. Johnston, and K. Gage, 2002: Comparison Z-R Relationships in EPIC-2001. Abstract, 2002 AGU Fall Meeting, 6-10 December, 2002, San Francisco, CA.

- Cifelli, R., S. W. Nesbitt, and S.A. Rutledge, 2003: Convective Variability Across the East Pacific: A Comparison of Precipitation Structure in the TEPPS and EPIC Domains. EPIC 2001 Workshop, 15-16 September, 2003, Boulder, CO.

http://www.eol.ucar.edu/projects/vocals/dm/

VOCALS Regional Experiment

DISTRIBUTED VOCALS LONG-TERM DATA ARCHIVE

- Master list of all VOCALS international data sets (with links and Platform Information)
- *U.S. Data Center* - CODIAC Interactive Data Management System located at the National Center for Atmospheric Research (NCAR) Earth Observing Laboratory (NCAR/EOL), Boulder, Colorado, USA.
- VOCALS On-line Field Catalog

DATA SUBMISSION

- VOCALS Data Submission Guidelines
- VOCALS Data Submission Instructions

DOCUMENTS

- VOCALS Data Policy - DRAFT
- VOCALS Data Management Plan
- VOCALS Field Operations Plan

RELATED PROJECT'S DATA

- CPC Real-time daily precipitation analyses for Mexico and the US
- Eastern Pacific Investigations of Climate (EPIC-2001)
- NAME Model Assessment Project (NAMAP)
- North American Monsoon Experiment (NAME 2004) Data Page
- International Research Institute (IRI) for Climate Prediction Data Library