ICE-T DATA MANAGEMENT AND PLANNING ISSUES

Steve Williams

NCAR Earth Observing Laboratory (EOL)

Computing, Data, and Software Facility (CDS)

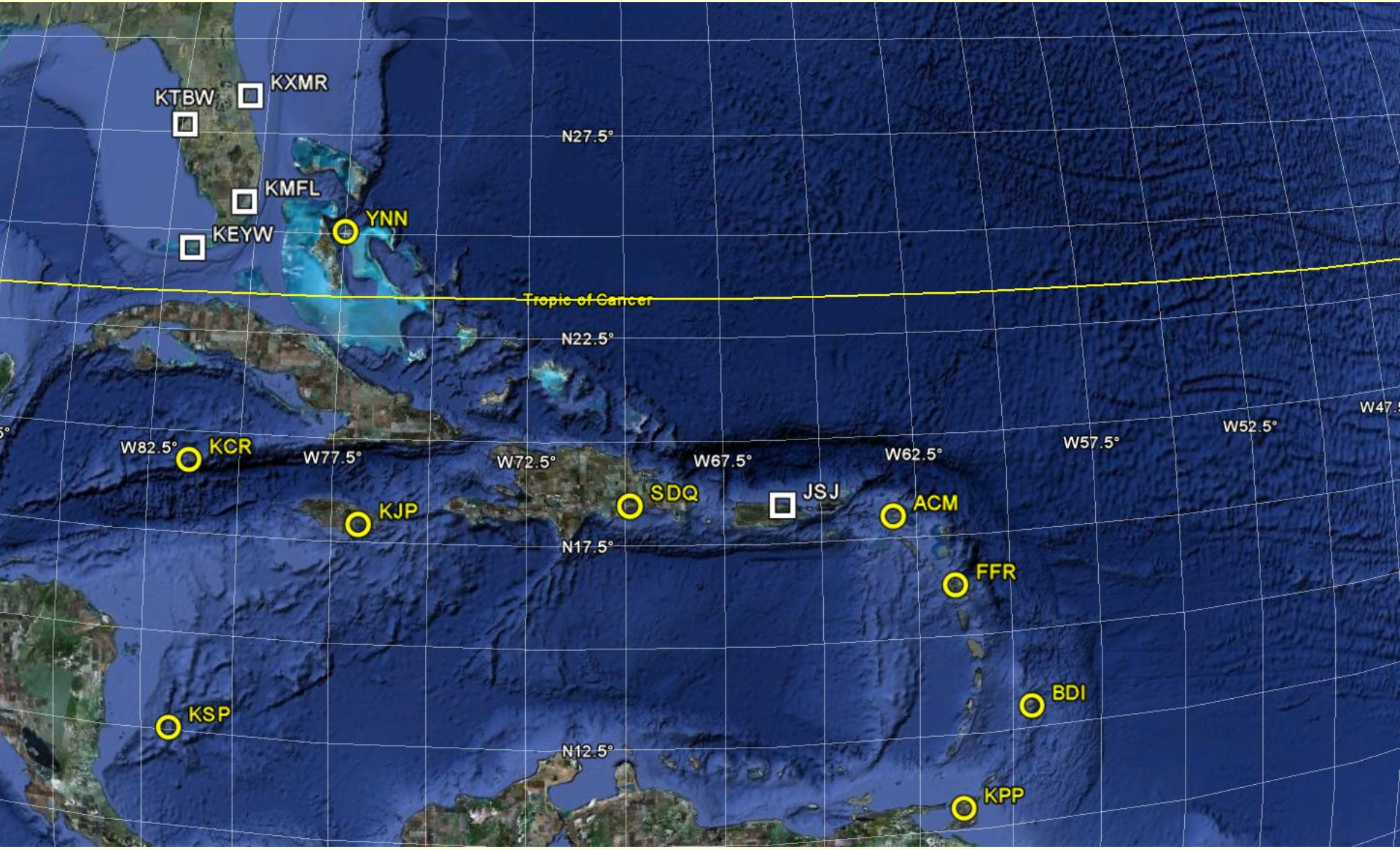
Boulder, Colorado

ICE-T Steering Committee Meeting

Boulder, CO

5-6 January 2011

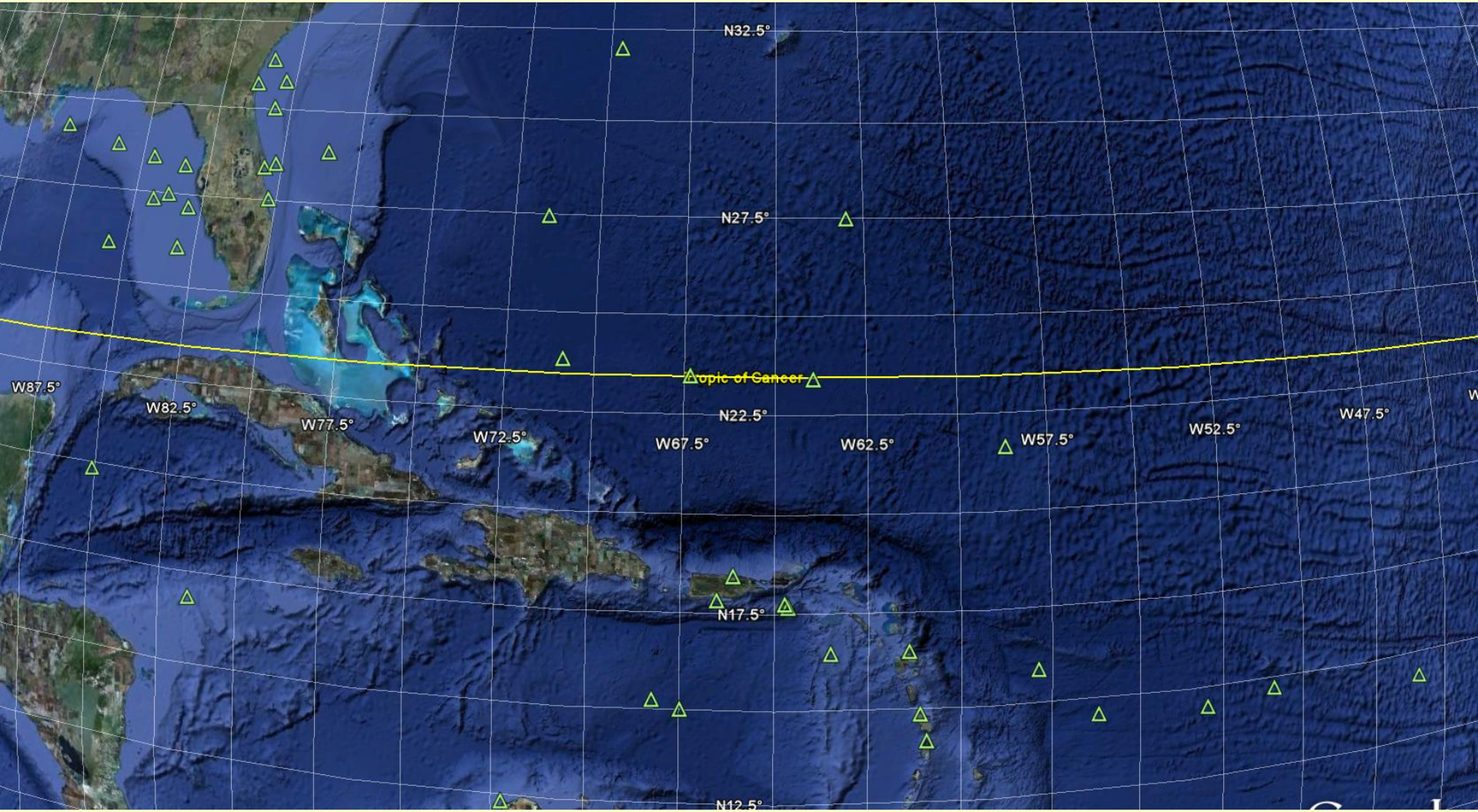
ICE-T Region Radiosonde Locations



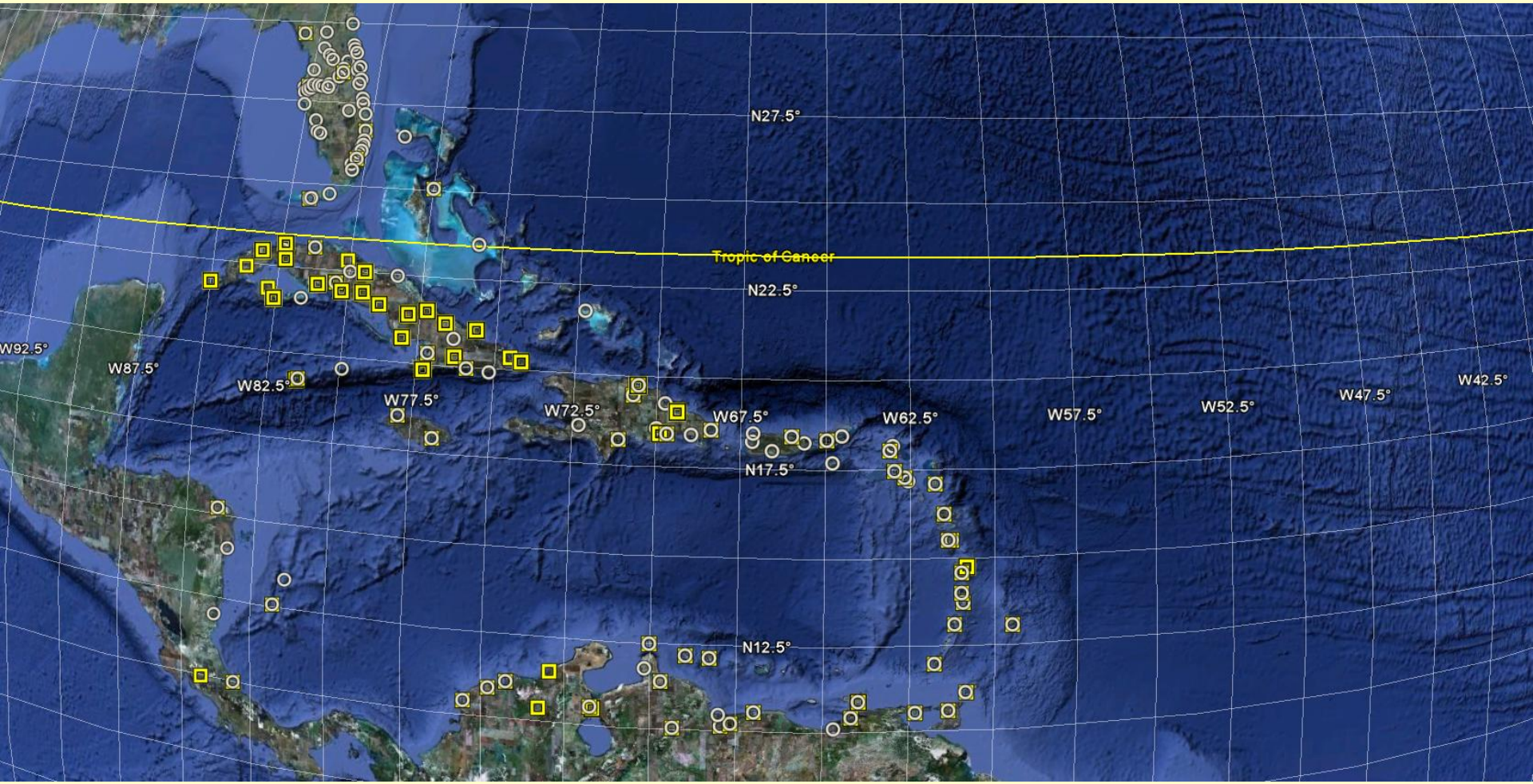
00 and 12 UTC observations

12 UTC observations (ACM spotty on GTS)

ICE-T Region Moored Buoy Locations



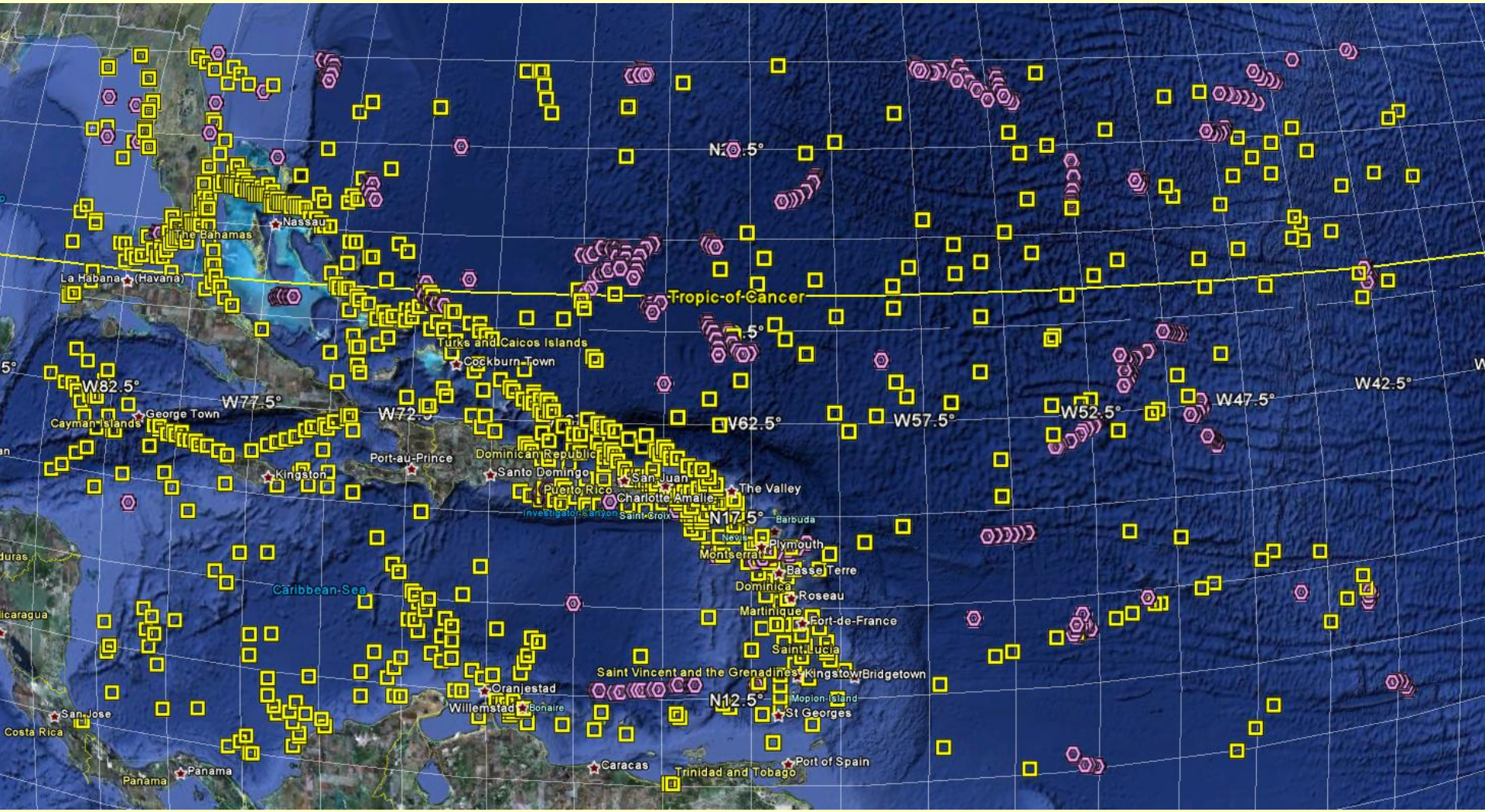
ICE-T Region METAR and SYNOP Observation Locations



SYNOP Observations

METAR Observations

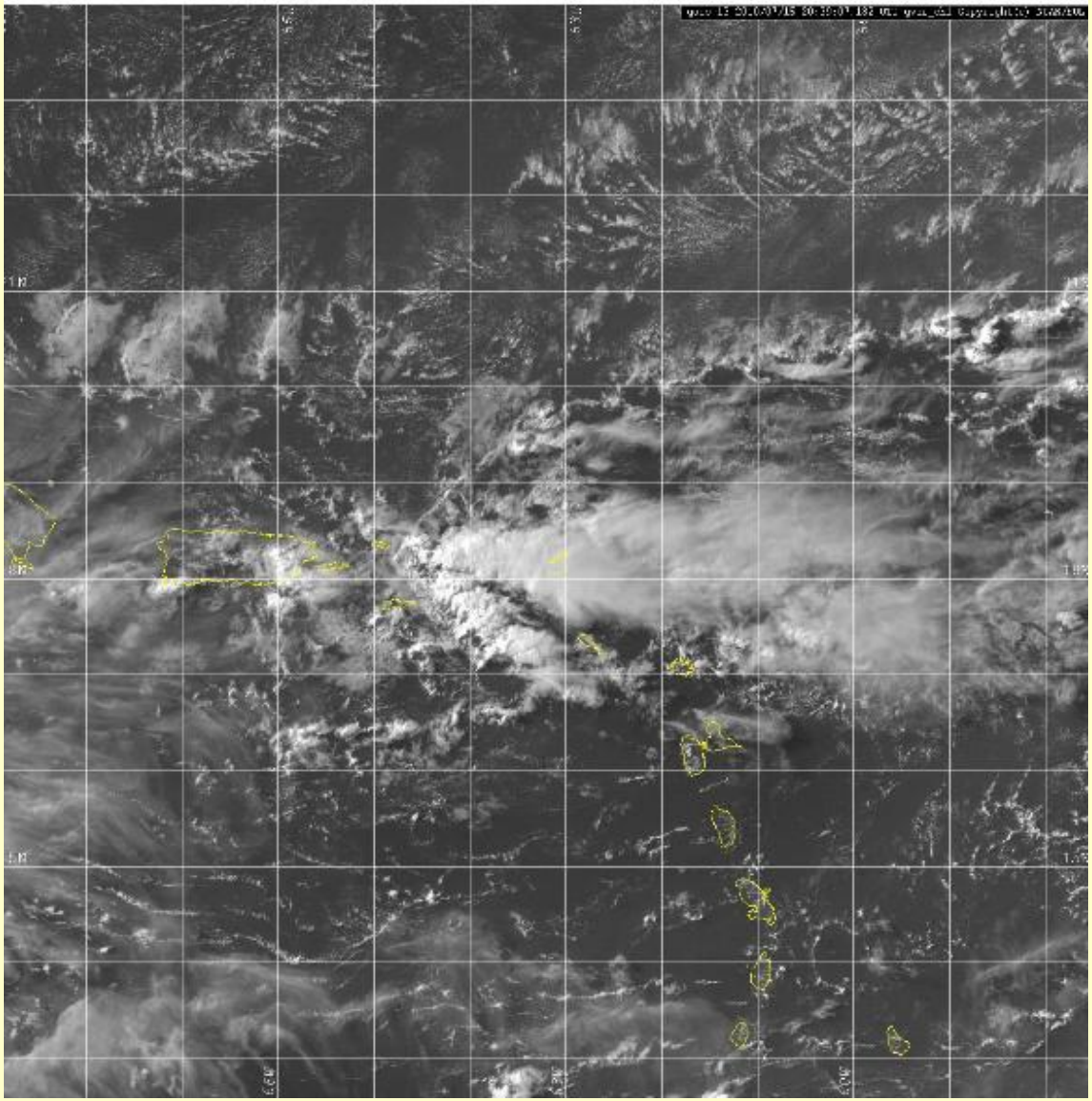
ICE-T Region Ship and Drifting Buoy Observations on GTS 1-5 Jan 2011



Ship Observations

Drifting Buoy Observations

ICE-T Satellite Climatology



SATELLITE ARCHIVE SPECIFICATIONS

- GOES 12 and 13
- Sector (lon): 69.0W – 57.5W
- Sector (lat): 24.0N – 12.5N
- Visible (Ch 1)
- 1-km Resolution
- Archive Start: 15 Dec 2009
- Archive End: Present

Caribbean Institute for Meteorology and Hydrology

http://www.cimh.edu.bb/

ICE-L Data Management Web Site at NCAR/EOL

The Ice in Clouds Experiment
— Layer Clouds —

ICE-L 2007

News

19-May-2009: DRI CCN data have been added for a number of flights.

What is ICE-L?

The Ice in Clouds Experiment: More than 50% of the earth's precipitation originates in the ice phase. Ice nucleation, therefore, is one of the most basic processes that lead to precipitation. The poorly understood processes of ice initiation and secondary ice multiplication in clouds result in large uncertainties in the ability to model precipitation production and to predict climate changes. Therefore, progress in modeling precipitation accurately requires a better understanding of ice formation processes.

Scientific Goals

Recent advances in observational tools, laboratory cloud simulation chambers, numerical models, and computer hardware are providing new capabilities to understand and model ice initiation processes. The objective of the Ice in Clouds Experiment (ICE) is to focus on the following long term scientific goal:

To show that under given conditions, direct ice nucleation measurement(s), or other specific measurable characteristics of the aerosol, can be used to predict the number of ice particles forming by nucleation mechanisms in selected clouds. We also seek improved quantitative understanding of the roles of thermodynamic pathway, location within the cloud, and temporal dependency.

Observational Thrusts

The first step in this project is to seek cases with a strong aerosol-ice nucleation signal. It will focus on observational studies with high likelihood of showing a strong connection of aerosols to effect ice formation. These cases occur in geographic areas that experience alternatively dust events and dust-free background. The targets are layer clouds: lenticular wave clouds, nimbostratus, and extensive altocumulus and altostratus decks. The thermodynamic and kinematic environments of lenticular wave clouds are relatively steady with lifetimes often longer than an hour, making these clouds an attractive target for study. Wave clouds provide a range of temperature, humidity, and vertical wind conditions in which first ice may form in a laboratory-like setting. Some of the conditions observed in wave clouds can be approximated in laboratory cloud chamber experiments for ice formation studies and for characterizing the performance of airborne ice nuclei instruments.

Field Study in 2007

Data Access

Master List of All ICE-L Data Sets
ICE-L Field Catalog
Data Policy
Dataset Documentation Guidelines
Data Submission Instructions
Nasa Ames Format Description

Meetings and Presentations

ICE-L Sep 2008 Workshop, registration and information.
Sep 2008 Workshop, Agenda (Agenda, MSWord document)

Publications

Publications

Documents

Scientific Overview Document
The NCAR Ice Initiative
RAF ICE-L Documentation Summary

ICE-L Participants

ICE-L Mailing List
Participants

ICE-L Contacts

Principal Investigators

A. Heymsfield, NCAR/MMM
heyms1 AT ucar.edu

P.R. Field, UK Met Office
paul.field AT metoffice.gov.uk

J. Stith/D. Rogers NCAR/EOL
stith / dcrogers AT ucar.edu

P. DeMott, Colorado State University
pdemott AT lamar.colostate.edu

G. Vali, University of Wyoming
vali AT uwyo.edu

Data Management

Steve Williams
NCAR/EOL
sfw AT ucar.edu

Webmaster

Bob Rilling
NCAR/EOL
rilling AT ucar.edu

- **Project Description**
- **Data Access**
- **Field Catalog**
- **Publications**
- **Documentation**
- **Meetings**
- **Mailing Lists**
- **Related Web Pages**
- **Photography**

http://www.eol.ucar.edu/projects/ice-l/

ICE-T DATA POLICY SUMMARY (proposed)

- **All investigators must agree to promptly submit their data to the ICE-T archive**
- **All data shall be provided to other ICE-T Investigators upon request**
- **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 1-year following the end of the ICE-T field phase**
- **Any use of the data will, at a minimum, include acknowledgment. Co-authorship TBD with the investigator(s) who collected the data**

NCAR Earth Observing Laboratory

EOL DATA MANAGEMENT TOOLS

EOL Field Catalog

In-field tool to ingest and display operational and preliminary research data and project documentation for making real-time decisions and evaluating project progress

Features:

- **Daily Mission Reports**
- **Operations Summary**
- **Facility Status Reports**
- **Data Analysis Products**
- **Authoring Tools**
- **Web-based access**

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**

ICE-L Field Catalog

- Daily Reports
- Operational Products
- Model Products
- Research Products
- Mission Summary Table

Satellite Products

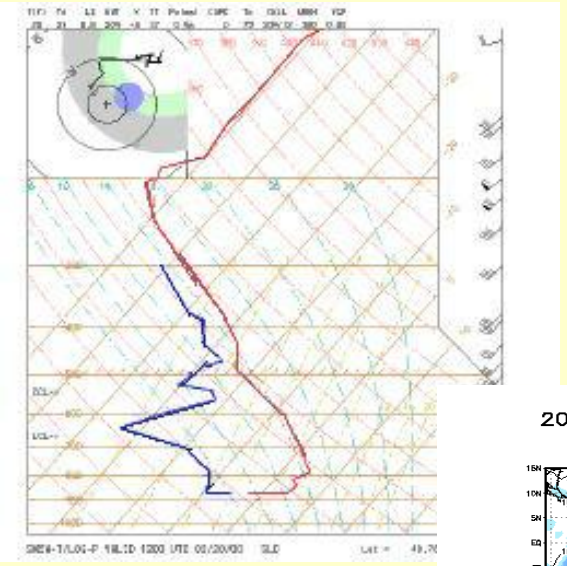
Product Times(UTC)	20 Feb 2009 00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
GOES_products (NRL Central US Satellite Products)																								
low_cloud	0015 0045	0115 0145	0215 0245	0315 0345	0415 0445	0515 0545	0615 0645	0715 0745	0815 0845	0915 0945	1015 1045	1115 1145	1215 1245	1315 1345	1415 1445	1515							2215 2245	2315 2345
goes-12 (RAMSDIS; NESDIS GOES Sounder Products)																								
1km_ch1_vis													1245	1302 1315 1332 1345	1402 1415 1432 1445	1515 1532 1545	1602 1615 1632 1645	1702 1715 1732 1745	1815 1845	1902 1915 1932 1945	2002 2015 2032 2045	2115 2132 2146	2202 2215 2232 2245	2302 2315 2332 2345
4km_ch1_vis	0015 0045	0102 0115 0132 0145	0202									1145	1215 1245	1302 1315 1332 1345	1402 1415 1432 1445	1515 1532 1545	1602 1615 1632 1645	1702 1715 1732 1745	1815 1845	1902 1915 1932 1945	2002 2015 2032 2045	2115 2132 2146	2202 2215 2232 2245	2302 2315 2332 2345
4km_ch2_near-IR	0015 0045	0102 0115 0132 0145	0202 0215 0232 0245	0315 0332 0345	0402 0415 0432 0445	0502 0515 0532 0545	0615 0632 0645	0702 0715 0732 0745	0802 0815 0832 0845	0915 0932 0945	1002 1015 1032 1045	1102 1115 1132 1145	1215 1245	1302 1315 1332 1345	1402 1415 1432 1445	1515 1532 1545	1602 1615 1632 1645	1702 1715 1732 1745	1815 1845	1902 1915 1932 1945	2002 2015 2032 2045	2115 2132 2146	2202 2215 2232 2245	2302 2315 2332 2345
4km_ch3_water_vapor	0015 0045	0102 0115 0132 0145	0202 0215 0232 0245	0315 0332 0345	0402 0415 0432 0445	0502 0515 0532 0545	0615 0632 0645	0702 0715 0732 0745	0802 0815 0832 0845	0915 0932 0945	1002 1015 1032 1045	1102 1115 1132 1145	1215 1245	1302 1315 1332 1345	1402 1415 1432 1445	1515 1532 1545	1602 1615 1632 1645	1702 1715 1732 1745	1815 1845	1902 1915 1932 1945	2002 2015 2032 2045	2115 2132 2146	2202 2215 2232 2245	2302 2315 2332 2345
4km_ch4_thermal-IR	0015 0045	0102 0115 0132 0145	0202 0215 0232 0245	0315 0332 0345	0402 0415 0432 0445	0502 0515 0532 0545	0615 0632 0645	0702 0715 0732 0745	0802 0815 0832 0845	0915 0932 0945	1002 1015 1032 1045	1102 1115 1132 1145	1215 1245	1302 1315 1332 1345	1402 1415 1432 1445	1515 1532 1545	1602 1615 1632 1645	1702 1715 1732 1745	1815 1845	1902 1915 1932 1945	2002 2015 2032 2045	2115 2132 2146	2202 2215 2232 2245	2302 2315 2332 2345
4km_ch6_12_micron-IR	0015 0045	0102 0115 0132 0145	0202 0215 0232 0245	0315 0332 0345	0402 0415 0432 0445	0502 0515 0532 0545	0615 0632 0645	0702 0715 0732 0745	0802 0815 0832 0845	0915 0932 0945	1002 1015 1032 1045	1102 1115 1132 1145	1215 1245	1302 1315 1332 1345	1402 1415 1432 1445	1515 1532 1545	1602 1615 1632 1645	1702 1715 1732 1745	1815 1845	1902 1915 1932 1945	2002 2015 2032 2045	2115 2132 2146	2202 2215 2232 2245	2302 2315 2332 2345
cloud_drift_winds	0000			0300			0600			0900			1200			1500			1800			2100		

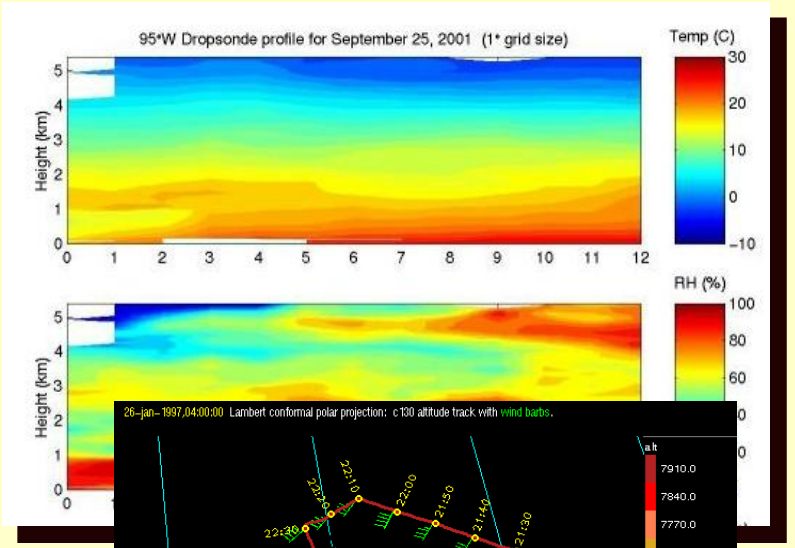
Upper Air Products

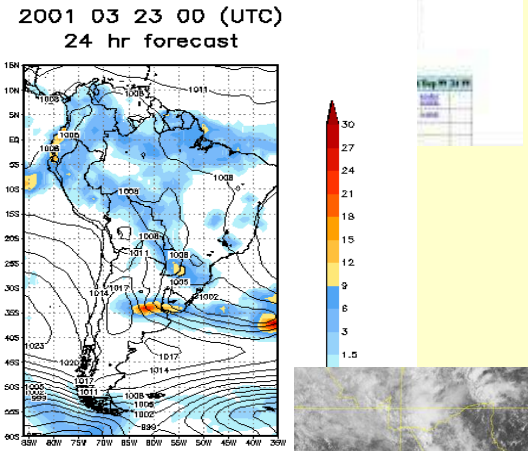
Product Times(UTC)	20 Feb 2009 00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
SkewT																								
Aberdeen_SD	0000												1200											
Chanhassen_MN	0000												1200											
Davenport_IA	0000												1200											

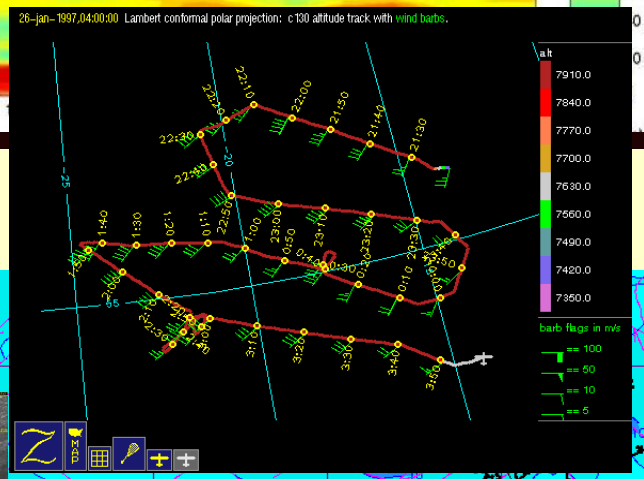
http://catalog.eol.ucar.edu/ice-l/

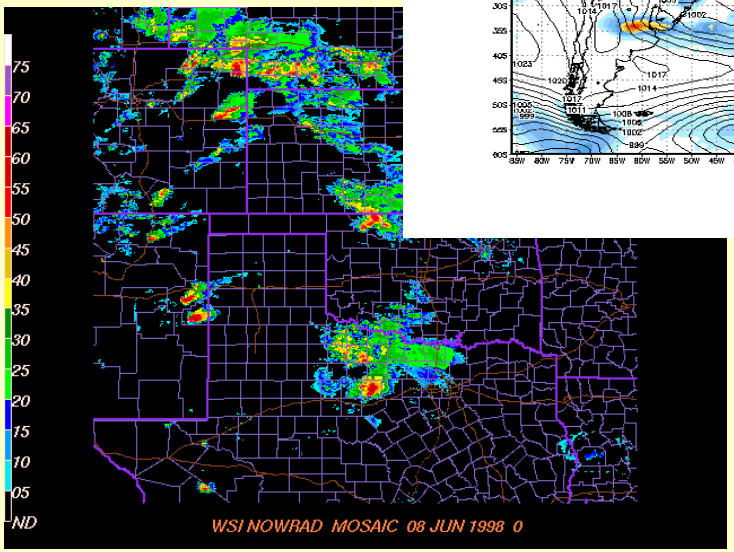
FIELD CATALOG SAMPLE PRODUCTS

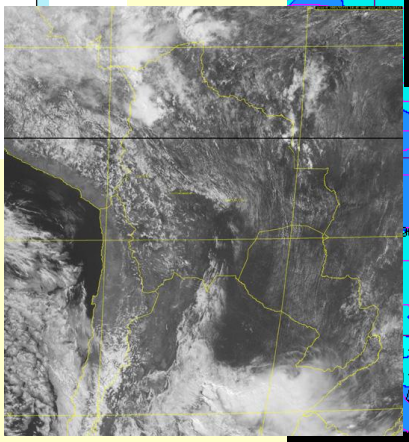


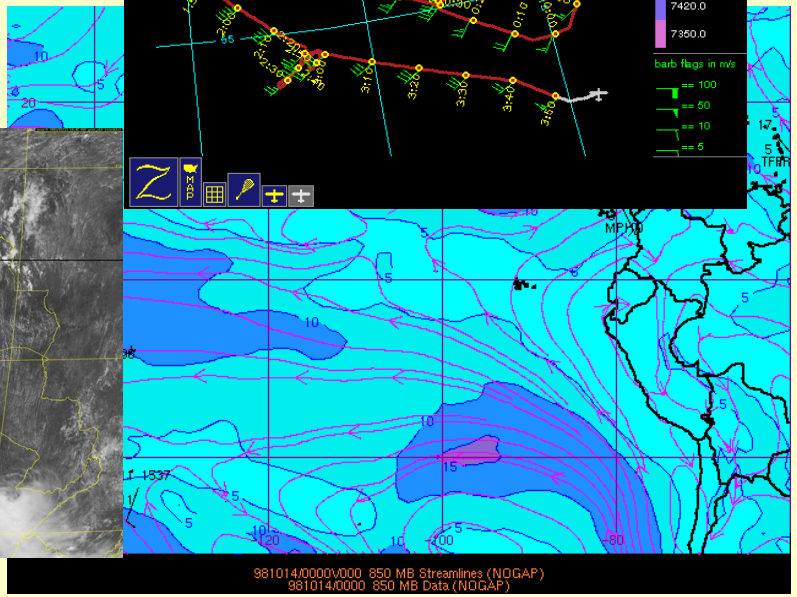












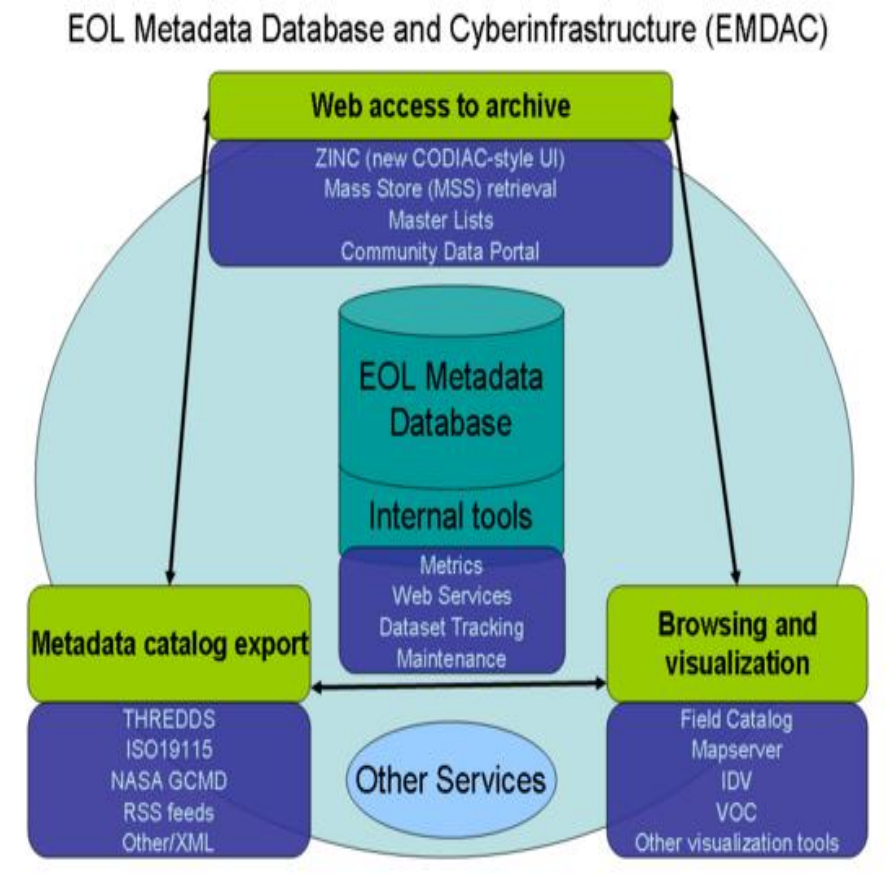
POTENTIAL ICE-T FIELD CATALOG PRODUCTS

(compiled from RICO and PREDICT)

Satellite	GOES Sectors (VIS, IR, WV) NRL POES Products DMSP (OLS hi-res) Other satellite products? (MODIS, SSMI ….)
SFC and UA	GTS Surface and Upper Air Plots SkewT Plots Cosmic Soundings (Interactive Interface) Text Products (Tropical wx discussion, Outlook, TPC analysis ….) Radar Products (San Juan, others?)
Model	NCEP Analysis and Forecast Fields (GFS, NAM ….) Navy NOGAPS Analysis and Forecast Fields GFDL Analysis and Forecast Fields (Ensembles?) ECMWF?
Research	Barbados Observations (B. Stevens) Aircraft Products (Time series, Flight tracks ….) WCR Products

NCAR Earth Observing Laboratory

EOL DATA MANAGEMENT



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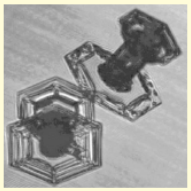
ICE-L Data Archive (Master List)



DATA BY CATEGORY

- Aircraft
- Land Based
- Radar
- Satellite

Back to ICE-L

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

ICE-L Data Sets

Data Set Name (Responsible Group/PIs shown in parentheses)	Date Posted	Info
Aircraft		
Aircraft: NSF/NCAR C-130		
Two-dimensional Cloud Probe data [NCAR/EOL]	2008-12-15	
Aerosol Data CCN [Jim Hudson / DRI]	New 2009-05-19	
ATOFMS (Aerosol Time-of-Flight Mass Spectrometry) [Kerri Pratt, Kim Prather / UCSD]		
C-ToF-AMS [Shane Murphy, John Seinfeld / Calif Inst. Technology, Env Sci]		
Carbon Dioxide (CO2) [Campos, NCAR /RAF]	Expected 2009-01-01	
Cloud Particle Imager (CPI) [NCAR/RAF]	2008-09-23	README
Collocated WCR and WCL for selected cloud penetrations [Zhien Wang / UW]	2008-12-10	
Continuous Flow Diffusion Chamber Ice Nuclei [Paul DeMott / CSU]		
Counter-flow Virtual Impactor (CVI) [Cindy Twohy / Oregon State U]	Updated 2009-04-17	README
DMT_CAPS [Darrel Baumgardner / Droplet Measurement & Univ Nacional Autonoma de Mexico]		
Downward-Looking Digital Camera Imagery [EOL/RAF]	2008-10-10	
Fast Ozone [Campos/Weinheimer, NCAR/ACD]	Expected 2009-01-01	
Flight Tracks (Google Earth .kml files) [NCAR/EOL]	Updated 2009-06-11	
Forward-Looking Digital Camera Imagery [EOL/RAF]	2008-10-09	
NCAR/NSF C-130 High Rate (HRT - 25 sps) Navigation, State Parameter, and Microphysics Flight-Level Data [NCAR/EOL]	Updated 2009-06-11	README
NCAR/NSF C-130 Low Rate (LRT - 1 sps) Navigation, State Parameter, and Microphysics Flight-Level Data [NCAR/EOL]	Updated 2009-06-11	README
Single Particle Soot Photometer (SP2) light-absorbing carbon [Kok/Baumgardner / Droplet Measurement Technology]		
Small Ice Detector Version 2 (SID-2H) [Rogers, NCAR/RAF]	2008-09-23	
SPEC 2DS Data [Brad Baker/SPEC]	2009-01-07	README

http://data.eol.ucar.edu/master_list/?project=ICE-L

PROJECT PUBLICATIONS LIBRARY

EPIC Publication References

(How to Submit Publication References to this List)

Convection Research (Cruise Leg 1): Publications, Conference Proceedings

Stratocumulus Research (Cruise Leg 2): Publications, Conference Proceedings

Other Citation Links

Convection Research - Cruise Leg 1

Publications - Convection Research A-D, E-H, I-L, M-P, Q-T, U-Z Back to Top

- Cifelli, R., S.W. Nesbitt, W.A. Petersen, S.A. Rutledge, S. Yuter (2007), Radar Characteristics of Precipitation Features in the EPIC and TEPPS Regions of the East Pacific, Monthly Weather Review, 135, 1576-1595.
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- Cronin, M. F., N. Bond, C. Fairall, J. Hare, M. J. McPhaden, R. A. Weller, 7 May 2002: Enhanced Oceanic and Atmospheric Monitoring Underway in Eastern Pacific. EOS, Transactions, AGU, 83(19), pages 205, 210-211.
- Cronin, M. F., C. W. Fairall, and M. J. McPhaden, 2006: An assessment of buoy-derived and numerical weather prediction surface heat fluxes in the tropical Pacific. J. Geophys. Res., 111, C06038, doi:10.1029/2005JC003324.
- Cronin, M. F., S.-P. Xie, and H. Hashizume, 2003: Barometric Pressure Variations Associated with Eastern Pacific Tropical Instability Waves. J. Climate, 16, 3050-3057.
- de Szoeke, S. P., C. S. Bretherton. Quasi-Lagrangian Large eddy Simulations of Cross-Equatorial Flow in the East Pacific Atmospheric Boundary Layer. J. Atmos. Sci., 61, 1837-1858.
- de Szoeke, S. P., C. S. Bretherton, 2005: Variability in the Southerly Flow into the Eastern Pacific ITCZ. J. Atmos. Sci., 62, 4400-4411.
- de Szoeke, S. P., C. S. Bretherton, N. A. Bond, M. F. Cronin, B. M. Morley, 2005: EPIC 95W Observations of the Eastern Pacific Atmospheric Boundary Layer from the Cold Tongue to the ITCZ. J.