







September 1, 2001 to October 15, 2001

Project Location: East Pacific

Project Phase: Data Stewardship

Project Description:

The U.S. Climate Variability and Predictability (CLIVAR) program sponsored the field experiment **East Pacific Investigation of Climate Processes in the Coupled Ocean-Atmosphere System 2001 (EPIC2001)**, which has the goal of providing the observational basis needed to improve the representation of certain key physical processes in models.

In addition to physical processes, EPIC2001 research is directed toward a better understanding and simulation of the effects of short-term

DATA ACCESS

Data Access
Field Catalog

DATA DOCUMENTATION

Data Policy
Data Set Documentation Guidelines
Data Submission Instructions

FACILITIES & PLATFORMS

C-130

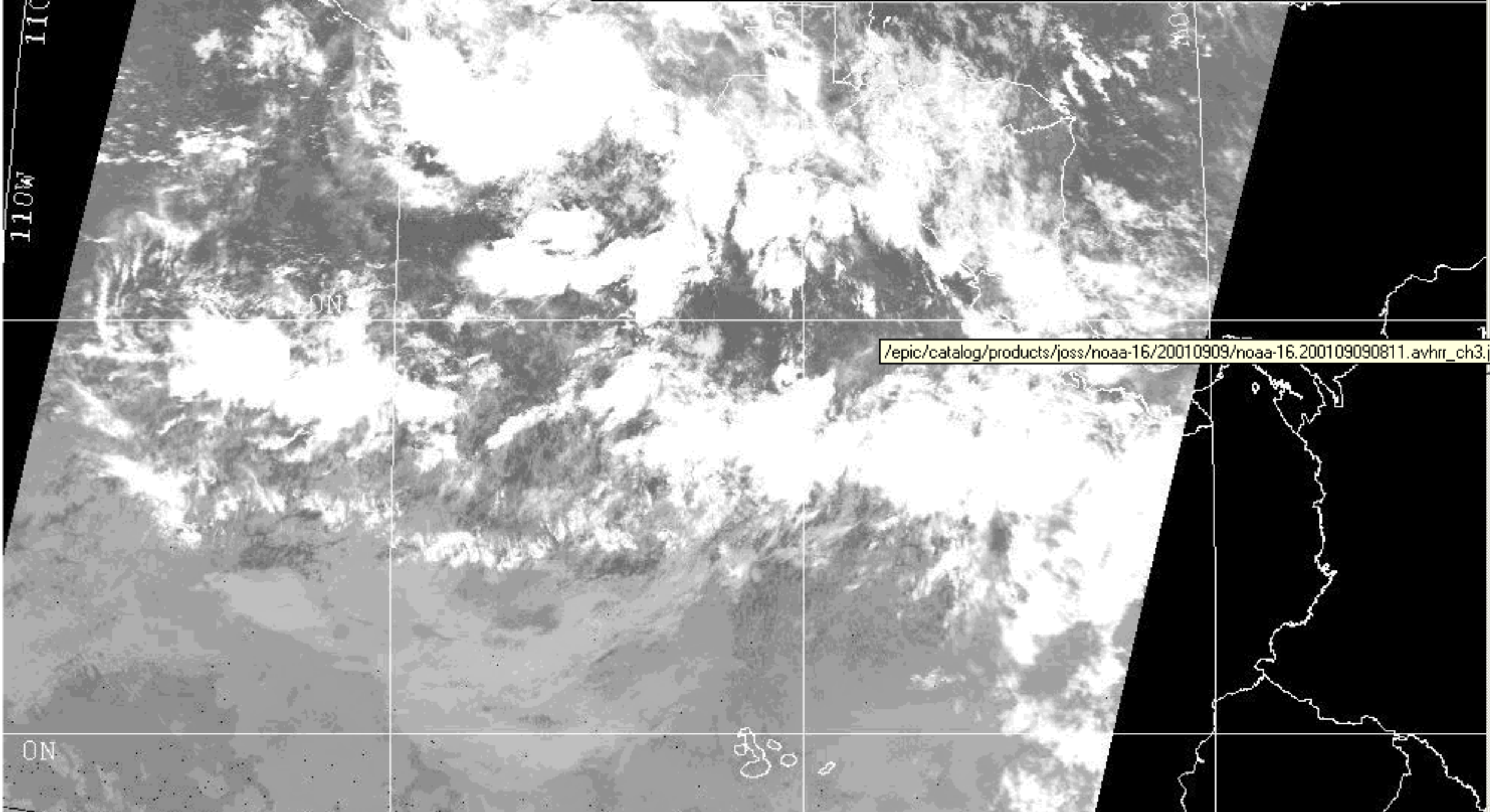
PUBLICATIONS

EPIC Publications

EPIC2001 was conceived as an intensive process study along and near 95°W during September and October 2001 used to make measurements of the atmosphere and ocean in this region.

- Two aircraft, the [National Center for Atmospheric Research's \(NCAR\) C-130](#) and [NOAA's P-3](#) aircraft (low altitudes)
- Two ships, NOAA's [R/V Ron H. Brown](#) and the National Science Foundation's (NSF's) R/V New Horizon
- Galapagos-based soundings

110W
110W



/epic/catalog/products/joss/noaa-16/20010909/noaa-16.200109090811_avhrr_ch3.jpg

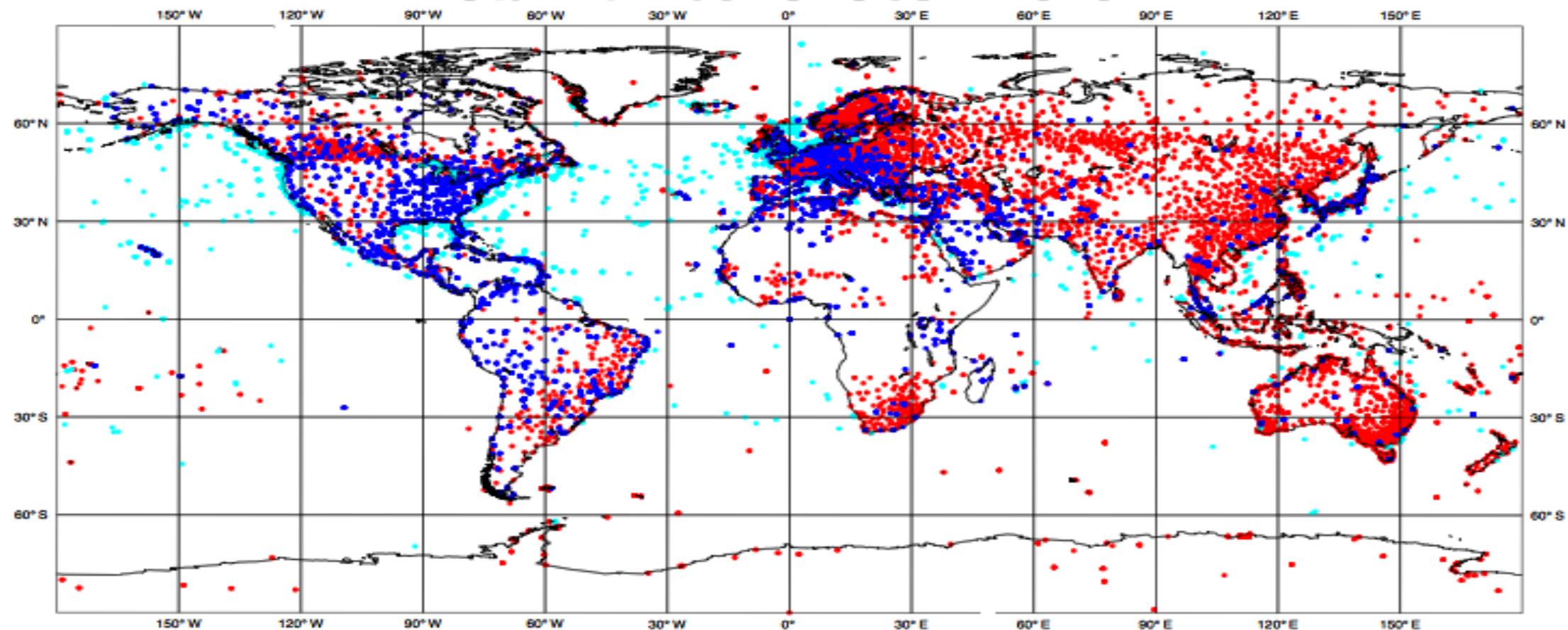
ON

500

Obs Type

● 15885 SYNOP ● 2359 SHIP ● 9937 METAR

ECMWF Data Coverage (All obs DA) - SYNOP/SHIP 12/OCT/2007; 00 UTC Total number of obs = 28181



Huatulco airport



















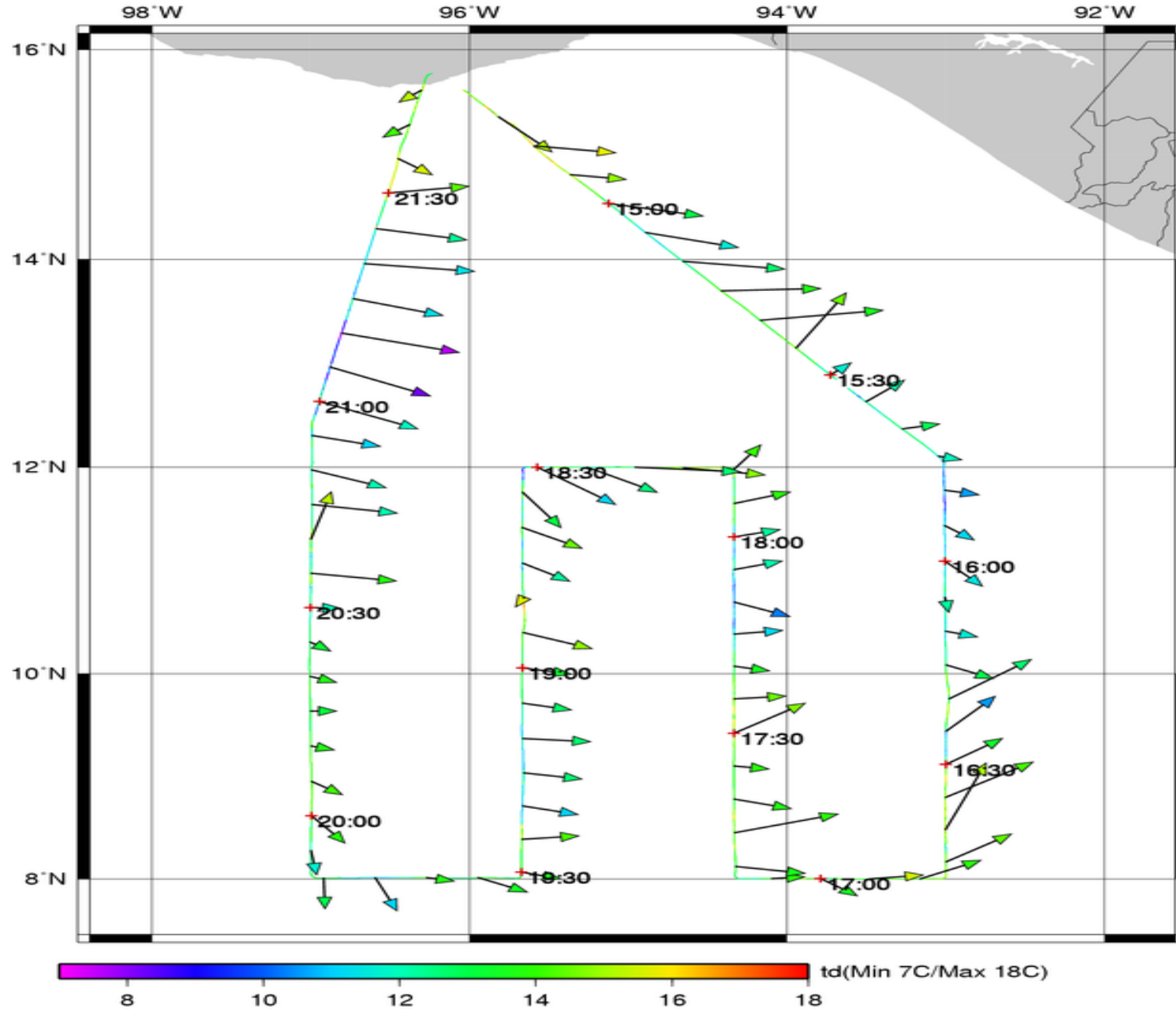




EPIC2001/HU01_N43/010909I

2001/09/09 14:40 - 2001/09/09 21:48 (UTC)

sla,slo -> td,ws,wd













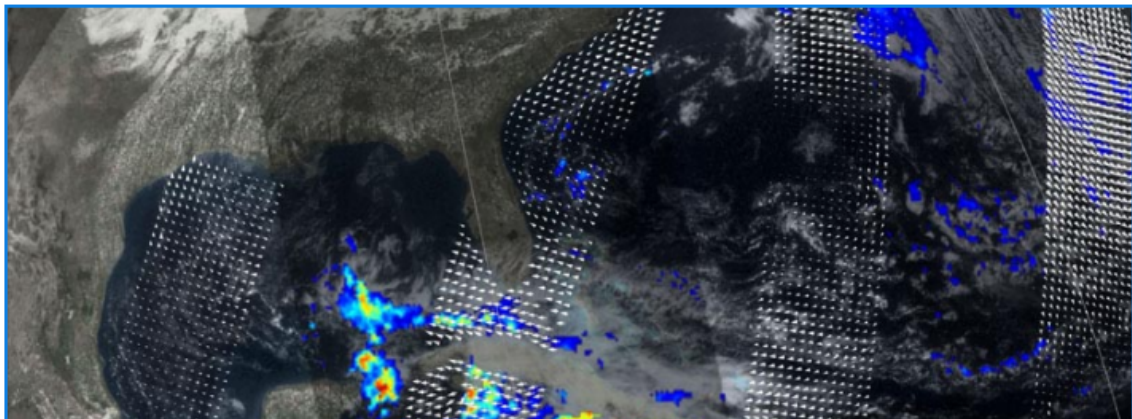




NASA Convective Processes Experiment

About the Mission

The NASA Convective Processes Experiment (CPEX) aircraft field campaign will take place in the North Atlantic-Gulf of Mexico-Caribbean Oceanic region during the early summer of 2017. This campaign hopes to collect data that can help to answer questions about convective storm initiation, organization, growth, and dissipation. For this effort, NASA's DC-8 aircraft will log 100 hours of flight time and be equipped with multiple instruments capable of taking measurements that will help scientists improve their understanding of convective processes. [more>](#)



[CPEX Event Calendar](#)

Science Objectives

1. Improve understanding of convective processes including cloud dynamics, downdrafts, cold pools and thermodynamics during initiation, growth, and dissipation. Determine what combinations of environmental structure, including moist entropy budgets, and convective properties such as vertical velocity and reflectivity profiles, result in rapid upscale growth of a convective system into a large organized mesoscale convective system (MCS), or alternatively, result in failure to grow or rapid decay.
2. Obtain a comprehensive set of simultaneous wind, temperature, and moisture profiles, using wind lidar, microwave radiometer and sounder, and GPS dropsondes, conduct a quantitative evaluation of those profiles in the vicinity of scattered and organized deep convection, especially in the lowest 4 km, in all phases of the convective life cycle.
3. Improve model representation of convective and boundary layer processes over the tropical oceans using a cloud-resolving, fully coupled atmosphere-ocean model.

Main observational tools used in CPEX:

100 Flight Hours on the NASA DC-8 aircraft, equipped with:

Doppler Wind Lidar (DAWN) for wind retrievals

Doppler Radar (APR-2) for convective precipitation structure

Dropsondes for thermodynamic and wind profiles beneath the aircraft

Microwave radiometer (HAMSR) and Microwave Atmospheric Sounder (MASC)
for retrieval of thermodynamic profiles beneath the aircraft





ARMSTRONG FLIGHT RESEARCH CENTER

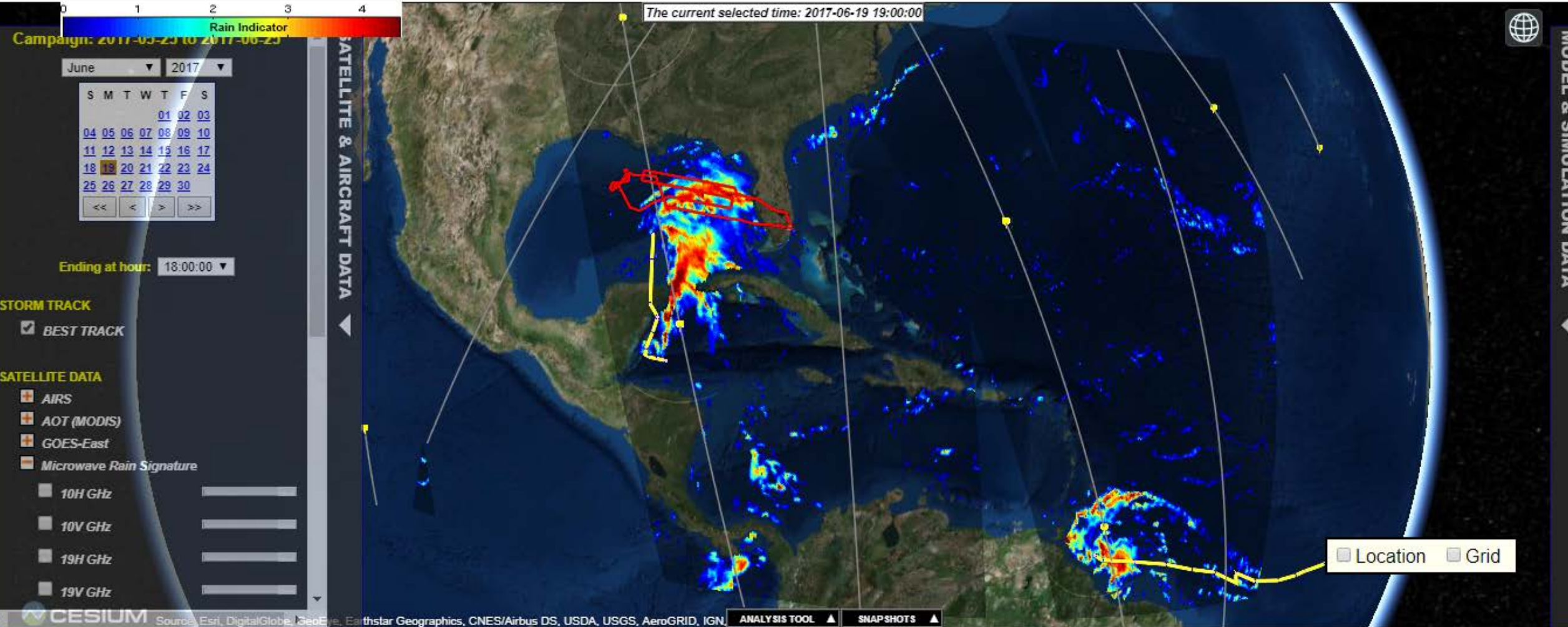
EARTH SCIENCE

ARMSTRONG FLIGHT RESEARCH CENTER





NASA CONVECTIVE PROCESS EXPERIMENT [CPEX]



0 1 2 3 4
Rain Indicator

Campaign: 2017-05-23 to 2017-06-23

June 2017

S	M	T	W	T	F	S
					01	02
04	05	06	07	08	09	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Ending at hour: 18:00:00

STORM TRACK

BEST TRACK

SATELLITE DATA

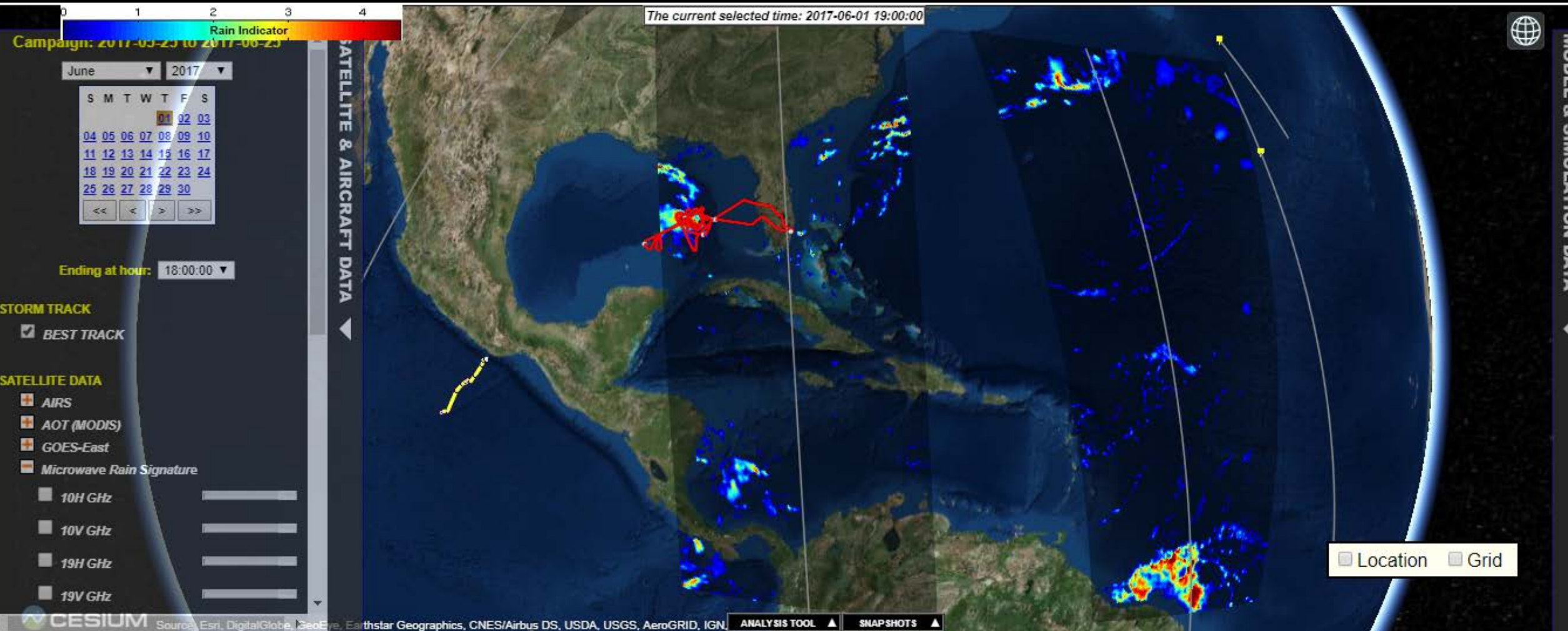
- AIRS
- AOT (MODIS)
- GOES-East
- Microwave Rain Signature
- 10H GHz
- 10V GHz
- 19H GHz
- 19V GHz

MODEL & SIMULATION DATA

Location Grid



NASA CONVECTIVE PROCESS EXPERIMENT [CPEX]



0 1 2 3 4
Rain Indicator

Campaign: 2017-05-25 to 2017-06-25

June 2017

S	M	T	W	T	F	S
				01	02	03
04	05	06	07	08	09	10
11	12	13	14	15	16	17
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STORM TRACK

BEST TRACK

SATELLITE DATA

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- 19V GHz



MODEL & SIMULATION DATA

Location Grid





Aug/30/2015 *19:09:44
WB-57 AFT HDSS



















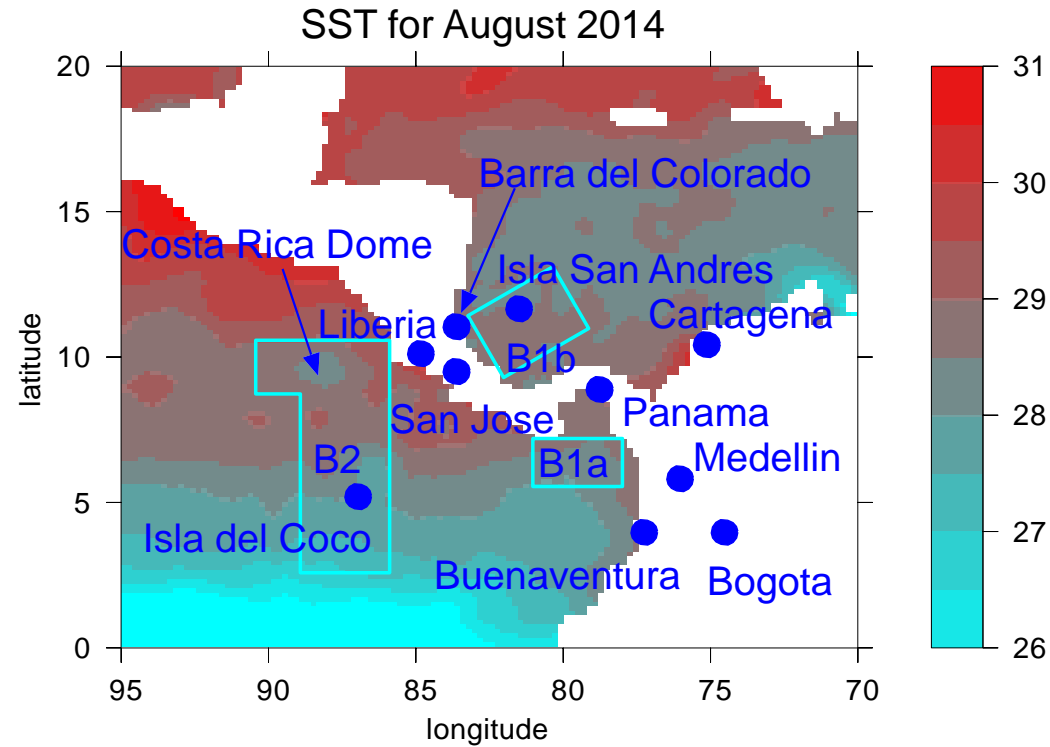




OTREC: Organization of Tropical East Pacific Convection

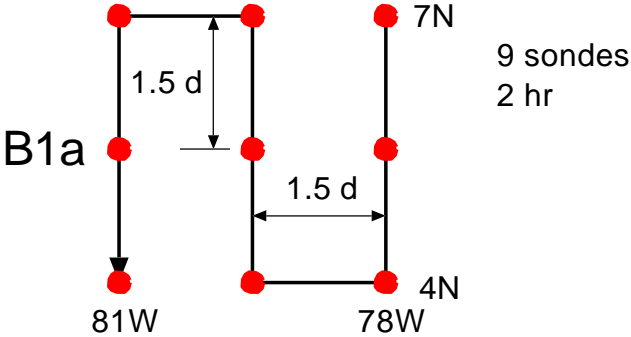
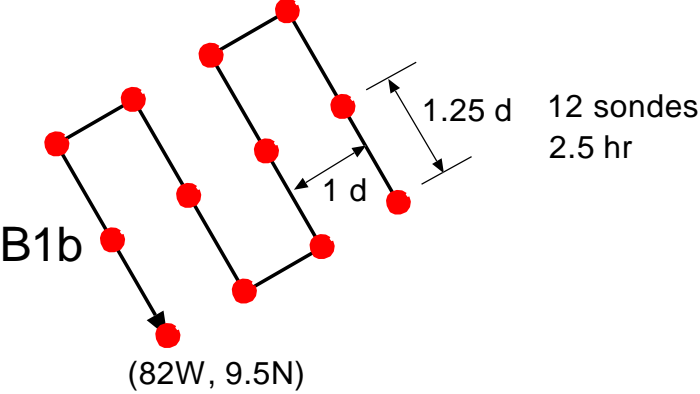
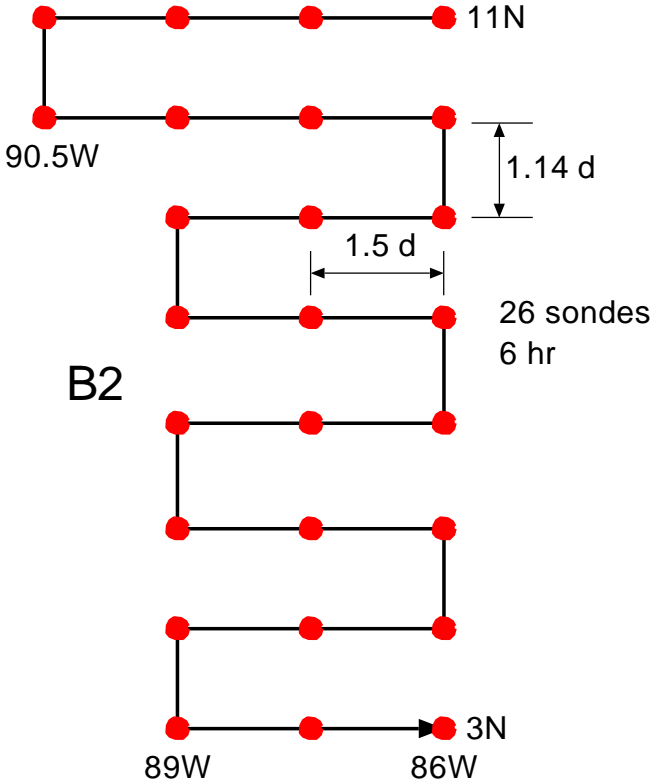


GV Operations – 8 weeks in Jun.-Sep. 2018

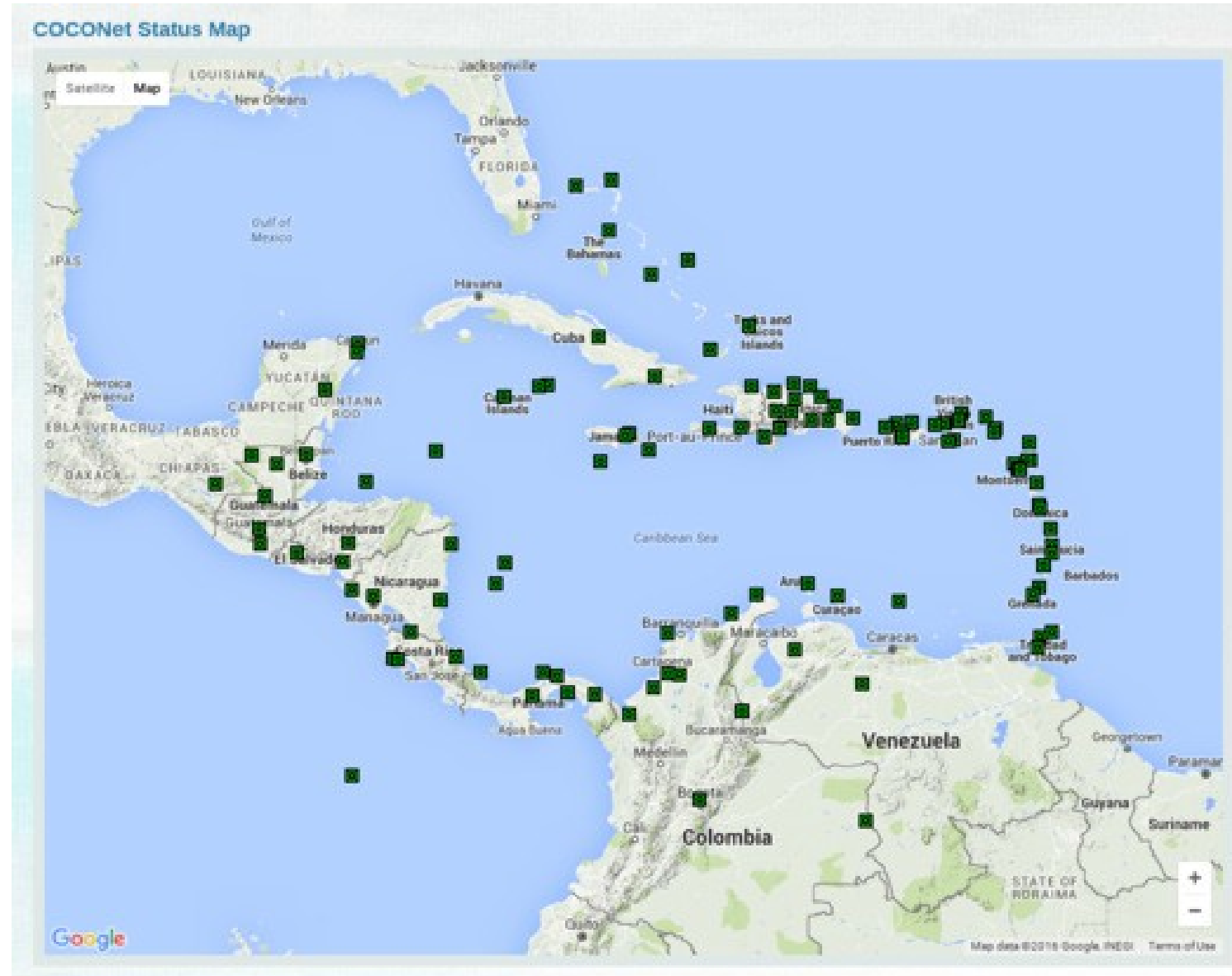


- ... 10 flights each in B1a/B1b (same flight) and B2, 8 hr each, 160 hr total
- ... 30 dropsondes per flight, 600 sondes total

Flight Patterns



COCONet Stations (GPS Precipitable Water)



Cost Estimate to Deployment Pool – NCAR/EOL

Cost element	Cost
GV Core (Gulfstream V 160 hr)	\$1,506,421
AVAPS (600 dropsondes)	\$606,024
HCR (cloud radar)	\$239,986
CDS (data services)	\$108,948
PMO/CWIG (operations center)	\$297,551
Total	\$2,758,930

Summary of OTREC Scientific Objectives

- ... Measure vertical mass flux profiles, gross moist stability, and other characteristics of East Pacific and SW Caribbean convection as a function of environmental conditions.
- ... Determine the radar signature of observed convection, especially convective initiation and broad stratiform regions.
- ... Characterize the interaction of convection with ITCZ flows, the SW Caribbean jet, East Pacific easterly waves and by extension, with other balanced tropical disturbances.

OTREC Broader Impacts

- .. Provide ground truth for global analyses and satellite observations of convection in the East Pacific and SW Caribbean.
- .. Establish a scientific basis for better treatments of convection in global weather and climate models.
- .. Introduce early career investigators to airborne observational science.
- .. Nurture scientific relations with Latin America, in particular, with Costa Rica and Colombia.