



NCAR

# The NCAR Driftsonde Sounding System

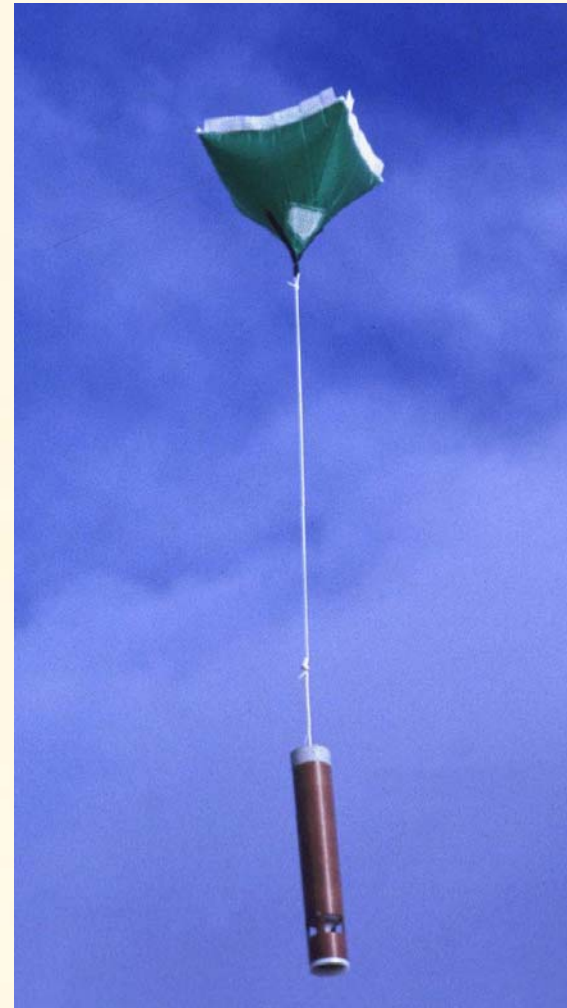
Charlie Martin  
Terry Hock  
National Center for Atmospheric Research  
Boulder, CO

# Sounding Types

Dropsonde



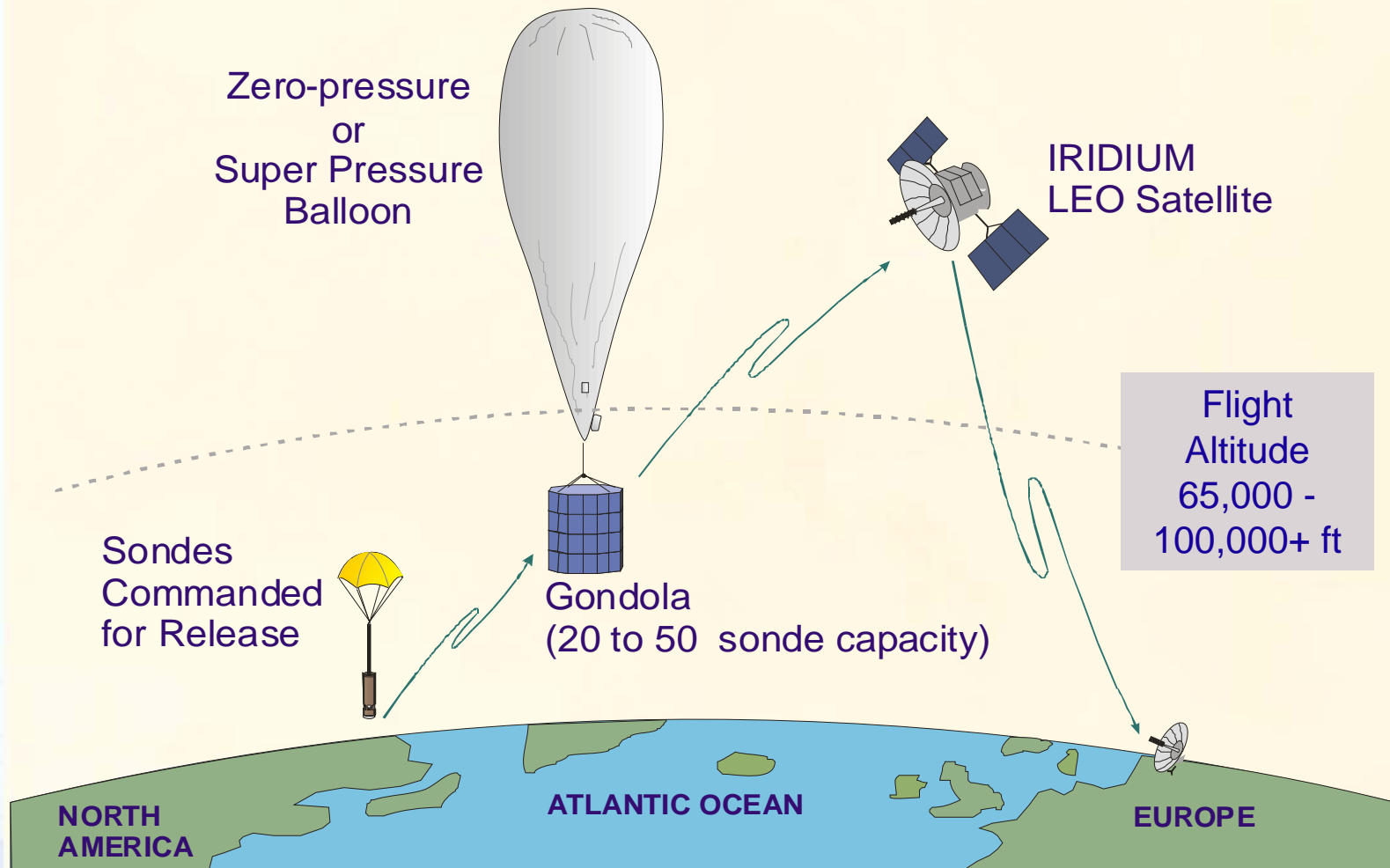
Radiosonde



# Driftsonde Concept



NCAR



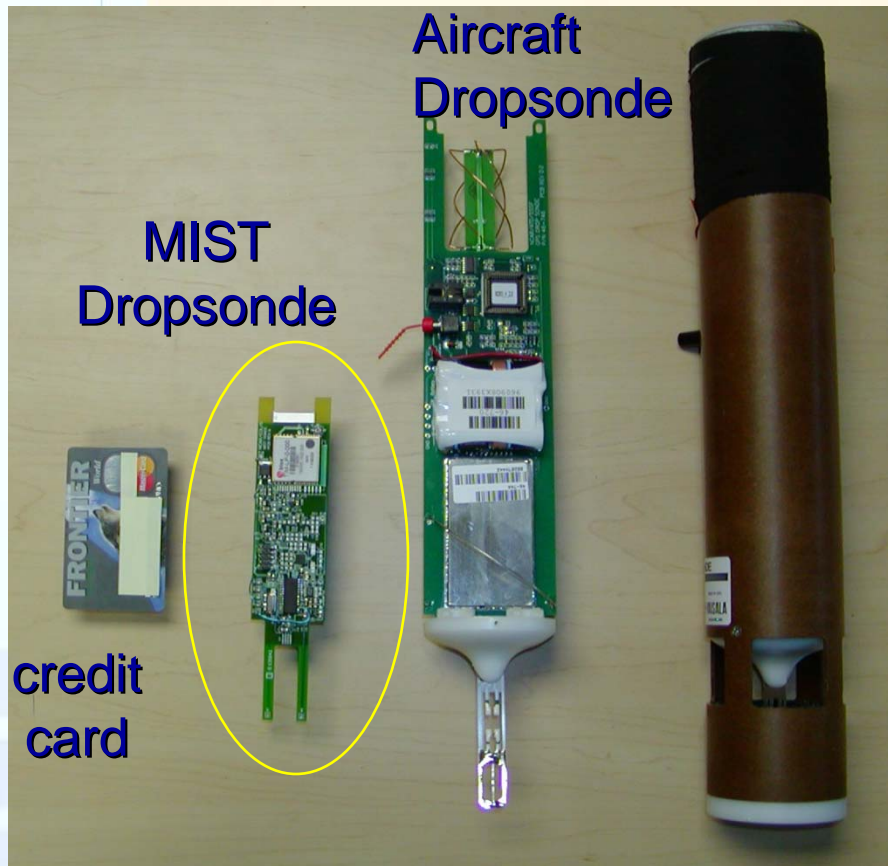
# Driftsonde Deployments



<i>Project</i>	<i>Year</i>	<i>Location</i>	<i>Balloon Operator</i>
Development	< 2006	Oregon	NSC
AMMA	2006	Niger	CNES
T-PARC	2009	Hawaii	CNES
NASA	2009	McMurdo	NASA
Pre-Concordiasi	2010	Seychelles	CNES
Concordiasi	2010	McMurdo	CNES

# The MIST Dropsonde

(Miniature In-situ Sounding Technology)



## Sensors:

GPS Winds & Altitude  
Vaisala RS-92 Sensor:  
Temperature  
Pressure  
Humidity

## Sample rates:

2 Hz PTH data  
4 Hz Wind data

**Fall time:** ~ 20 minutes from 65kft

**Fall velocity:** ~50 m/s @ 65kft  
~10 m/s @ surface

**Size:** 4.4 cm diameter  
30.5 cm length

**Mass:** 175 grams

# Driftsonde Flight Train

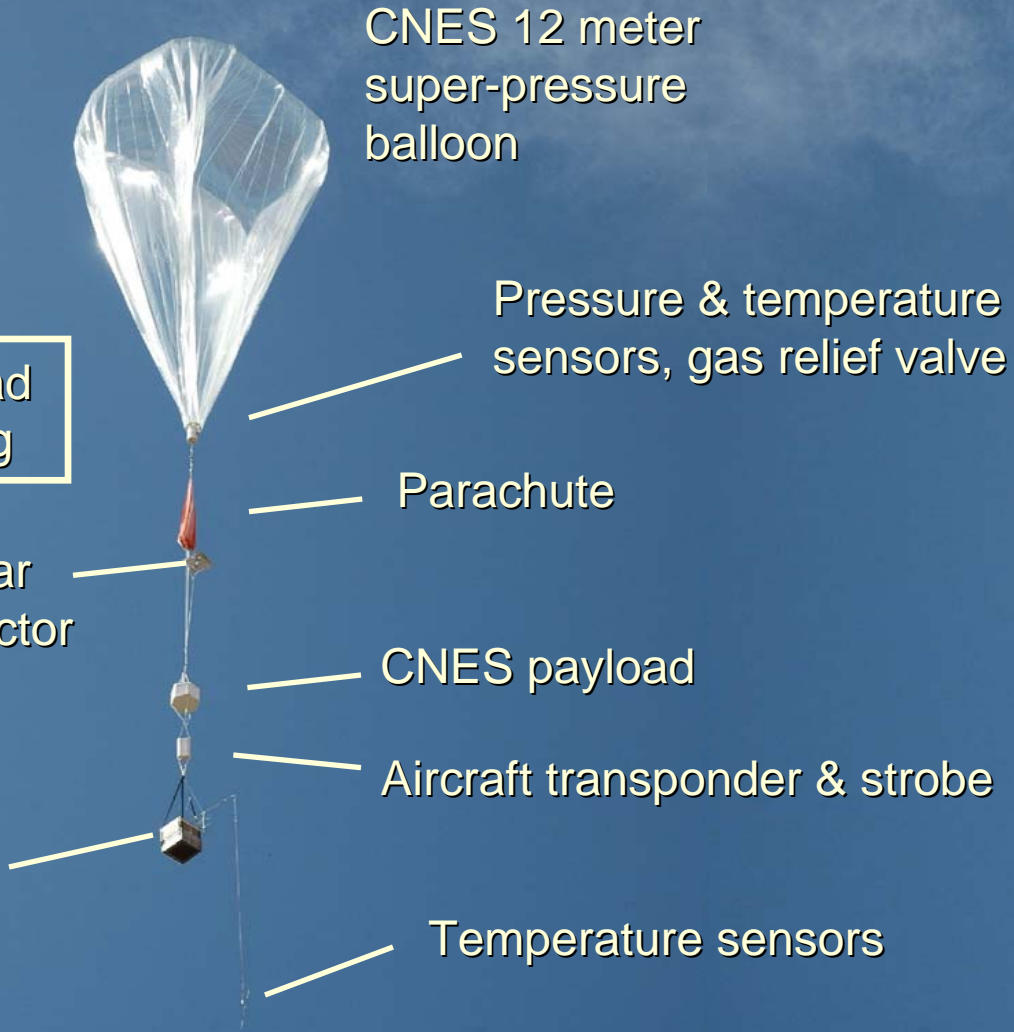


~ 12 meters

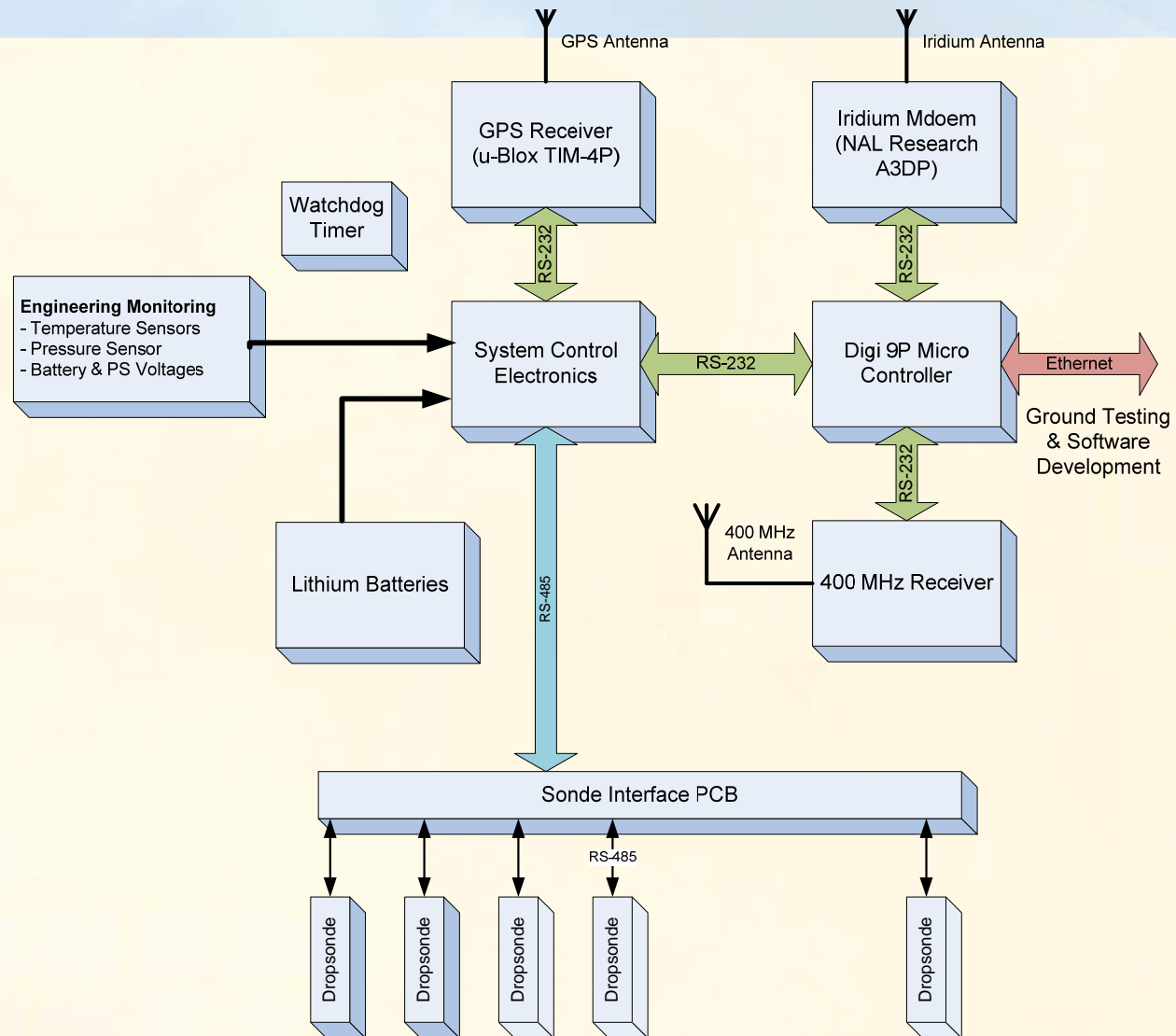
~ 20 meters

Total payload weight 42 kg

Driftsonde gondola (24kg)



# Gondola System Overview



# Gondola



NCAR





# Electronics



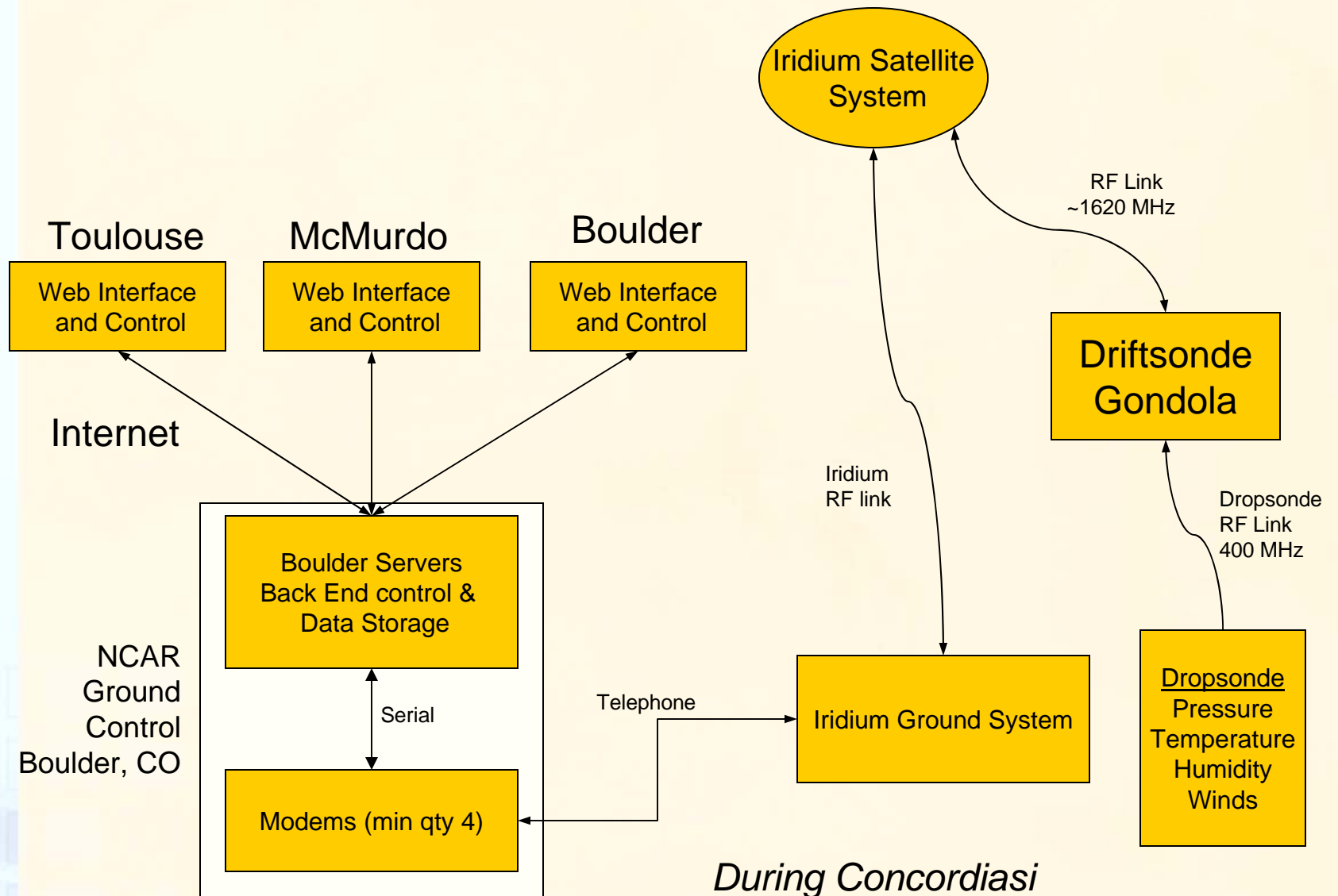
*First generation*

# System Software



<i>Location</i>	<i>Technology</i>	<i>Functions</i>
Gondola	Linux	Electronics Control
		Soundings
	C++	Telemetry
	Python	System Status
Ground		Communications
	Ruby/Rails	Data Ingest
	Python	Web Interface
	Postgress	Data Serving

# System Control & Data Flow



# Driftsonde Web Interface



T-PARC Driftsonde: TF16d27 - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.eol.ucar.edu/apps/driftcontrol/apps/driftcontrol/sounding

Google

Earth Observing Laboratory  
The National Center for Atmospheric Research

Gondola: T-PARC Driftsonde: TF16d27 Record count limit: 20 Units: Engineering Flight track Change Password | Log Out

User	Gondola	Current time	Reset time	Lat	Lon	Alt	Latest contact
Terry Hock	T-PARC Driftsonde: TF16d27	12/10/08 08:15:11 UTC		17.399921	152.604684	2,466 m	09/29/08 11:45:54 GMT ( 2 months )

Soundings | Gondolas | Engineering Data | Command History | Logbook | Users

### Sounding control

Gondola	Lat	Lon	Alt	Up for	Gondola local solar time	Sondes avail	Reset in	Sonde status
T-PARC Driftsonde: TF16d27	17.399921	152.604684	2,466 m	2 months	12/10/08 18:25	0	Unknown	Inactive

Request sonde inventory Current drop limit: 8 Set drop limit 8

### Sondes for T-PARC Driftsonde: TF16d27

Sonde Id	AVAIL	DROPPED	FAILED	Drop Time	Location	Files					Comment	
						CSV	D-file	ESF	Skew-T	GTS		Map
04E0AFEA		X		09/23/08 18:04:59	19.2868 -156.142	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Upload</a>	<a href="#">View</a> <a href="#">Upload</a>		<a href="#">View</a> <a href="#">Upload</a>	Sounding good. Sent to GTS. [smalvig] <a href="#">Edit</a>
04E08000		X		09/23/08 23:55:21	19.9645 -161.137	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Upload</a>	<a href="#">View</a> <a href="#">Upload</a>		<a href="#">View</a> <a href="#">Upload</a>	Sounding good. Sent to GTS. [jenni] <a href="#">Edit</a>
04E1E50A		X		09/24/08 06:11:18	20.3265 -164.129	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Upload</a>	<a href="#">View</a> <a href="#">Upload</a>		<a href="#">View</a> <a href="#">Upload</a>	Sounding good. Sent to GTS. [smalvig] <a href="#">Edit</a>
04E1E702		X		09/24/08 12:06:16	20.4634 -168.052	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Upload</a>	<a href="#">View</a> <a href="#">Upload</a>		<a href="#">View</a> <a href="#">Upload</a>	Sounding good. Sent to GTS. [smalvig] <a href="#">Edit</a>
04E0AFFE		X		09/24/08 15:08:22	20.7549 -170.065	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Upload</a>	<a href="#">View</a> <a href="#">Upload</a>		<a href="#">View</a> <a href="#">Upload</a>	Sounding good. Sent to GTS. [smalvig] <a href="#">Edit</a>
04E1E6F2		X		09/24/08 19:59:48	20.7802 -172.138	<a href="#">View</a> <a href="#">Download</a>		<a href="#">Upload</a>	<a href="#">Upload</a>		<a href="#">Upload</a>	Error creating D-file - please check if CSV file is valid. Stuck Sonde did not release. [thock] <a href="#">Edit</a>
04E1E792		X		09/24/08 21:54:57	20.8849 -173.037	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Upload</a>	<a href="#">View</a> <a href="#">Upload</a>		<a href="#">View</a> <a href="#">Upload</a>	Sounding good. Sent to GTS. [julia] <a href="#">Edit</a>
04E1E74F		X		09/24/08 23:57:02	20.9642 -175.098	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Upload</a>	<a href="#">View</a> <a href="#">Upload</a>		<a href="#">View</a> <a href="#">Upload</a>	Sounding good. Sent to GTS. [julia] <a href="#">Edit</a>
04E1E7E8		X		09/25/08 02:59:28	21.065 -177.004	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Upload</a>	<a href="#">View</a> <a href="#">Upload</a>		<a href="#">View</a> <a href="#">Upload</a>	Sounding good. Sent to GTS. [julia] <a href="#">Edit</a>
04E1E704		X		09/25/08 05:59:23	21.3566 -179.092	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Download</a>	<a href="#">View</a> <a href="#">Upload</a>	<a href="#">View</a> <a href="#">Upload</a>		<a href="#">View</a> <a href="#">Upload</a>	Sounding good. Sent to GTS. [jenni] <a href="#">Edit</a>

Done

start Avaps SPAD(v1.8) Sounding Plots And Di... Convert Lexar (E:) T-PARC Driftsonde: T... 1:15 AM



NCAR



# Pre-Concordiasi

January-April 2010

- **Test:** Concordiasi - McMurdo
- **Site:** Republic of the Seychelles
- **Balloons:** CNES 12m super-pressure
- **Two flights:**
  - MSD1: launch 08 Feb 2010 (45 days)
  - MSD2: launch 21 Feb 2010 (32 days)
- **Soundings:** 63 to date

# Pre-Launch



# Launch



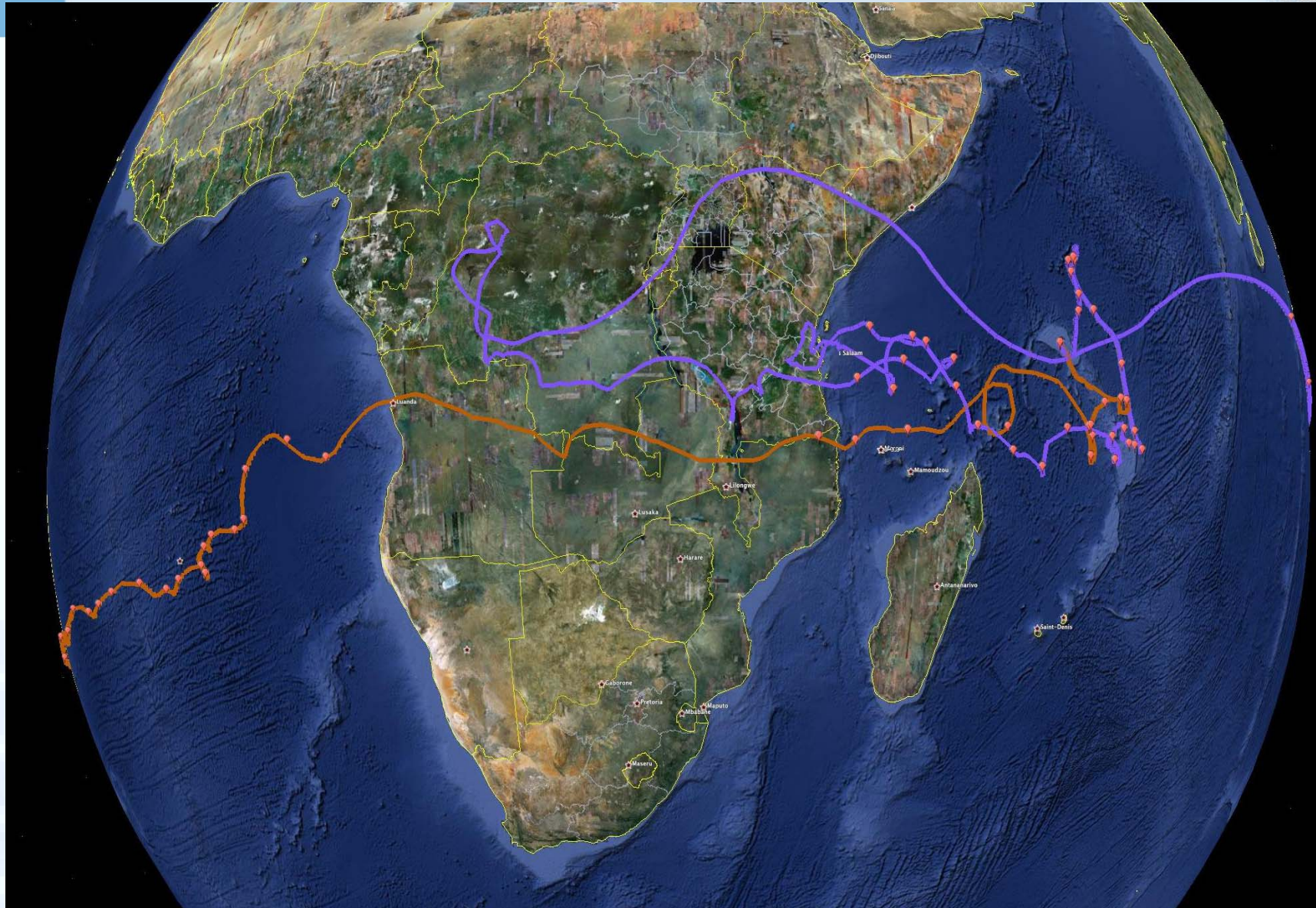
NCAR



# Flight Tracks



NCAR



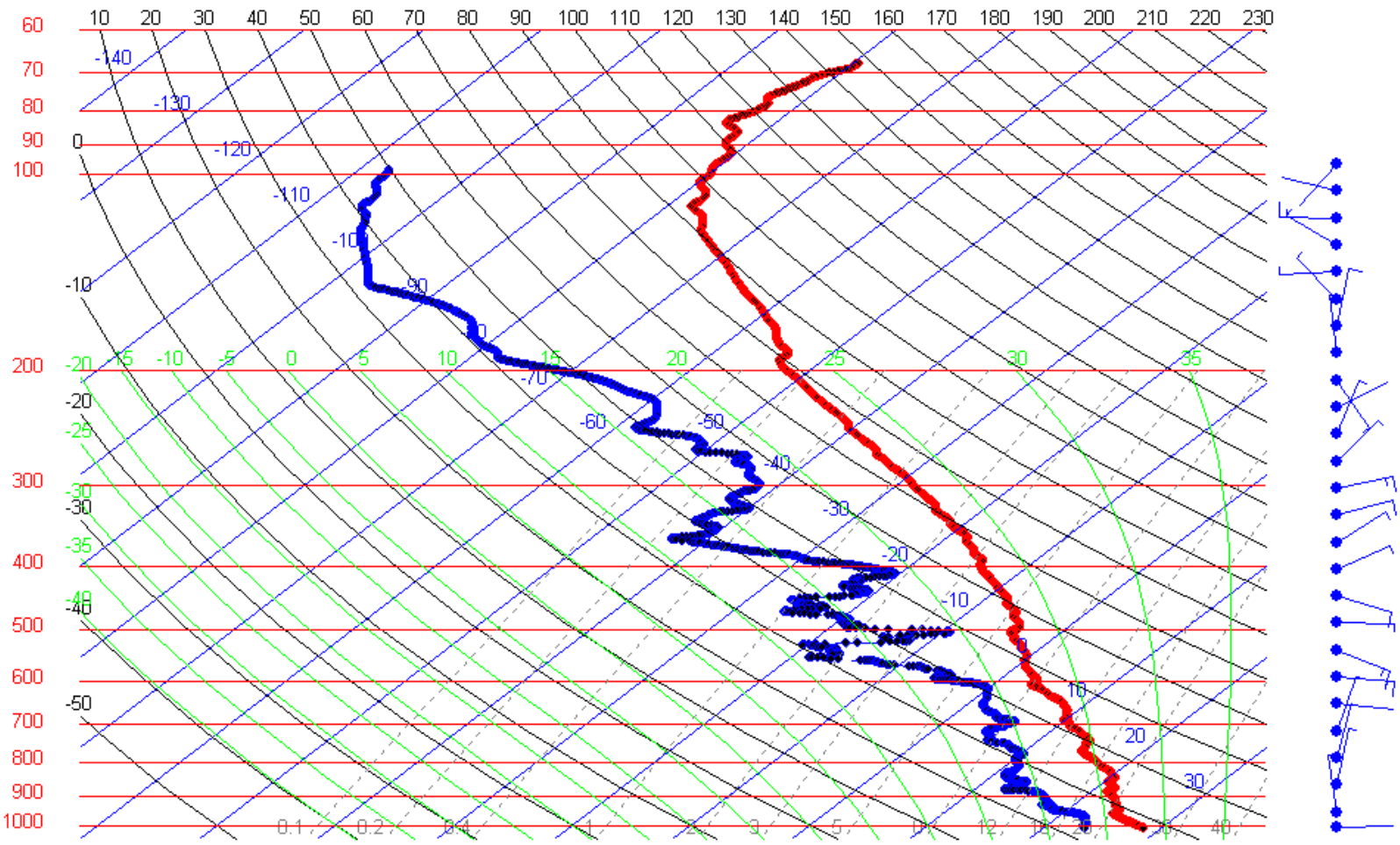


# Soundings



NCAR

D20100225\_034150\_MSD2\_04E1E4F3.1 081913075 Pre-Concordiasi [Seychelles 2010], MSD2 DRIFTSONDE, drift29



# Concordiasi McMurdo



Primary mission	Satellite validation
Flight duration	> 6 weeks
Number of flights	14
First launch	Early September 2010
Sounding schedule	1 - 4 per day

# Acknowledgments



- Terry Hock
- Jack Fox
- Joe VanAndel
- Nick Potts
- Mark Bradford
- Dean Lauritsen
- Hal Cole

# Questions?

