

National Climatic Data Center

DATA DOCUMENTATION

FOR

DATA SET 1168 (DSI-1168)

National Data Buoy Center (NDBC) Drifting Buoys

March 20, 2003

National Climatic Data Center
151 Patton Ave.
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1. **Abstract:** According to the U.S. Toga Drifting Buoy Logistics Plan, August 1986, the Southern Hemisphere Drifting Buoy System (SHDBS) consists of three basic components. They are the buoy platforms with their sensors and electronics, the TIROS-N/ARGOS Data Collection Platform Location System (DCPLS) and the Data Processing Center. As the NOAA/TIROS-N polar orbiting satellite pass within line-of-sight of a buoy, the ARGOS DCPLS aboard the satellites receive telemetry from the buoy. This telemetry contains an identification number, the sensor data (atmospheric pressure, air and sea surface temperatures), and information necessary for deriving buoy position. Upon receipt of this information by the ground processing system, the data are processed and then transmitted on the Global Telecommunications System (GTS) for operational analysis and incorporated into the (INTERNATIONAL) TROPICAL OCEANS GLOBAL ATMOSPHERIC (PROGRAM) TOGA research data sets.

The physical characteristics of the TOGA drifting buoys are:

Deployment weight:

Undrogued	320 lbs/144.5 kg
Drogued	420 lbs/190.8 kg
TZ	600 lbs/273 kg
Overall length	10 ft/3.1 m
Buoyancy chamber outer/diameter	27 inches/69 cm
Spar length	5 ft/1.5 m
Spar diameter	8 inches/20 cm
Center of gravity above buoy bottom	36.25 inches/92 cm

The atmospheric pressure is measured by a Paroscientific Digiquartz 215A/002 pressure transducer, vented through a port in the top of the buoy. The sea surface temperature (SST) is measured by a thermistor mounted 1 meter below the waterline on the buoy and the air temperature is measured by a thermistor mounted on the buoy antenna.

Operationally, the buoy transmits for 360 milliseconds every 40, 50 or 60 seconds, depending on the repetition rate selected. The transmission consists of a brief unmodulated carrier to allow the satellite to lock onto the buoy; followed by 32 bits of data. These 32 bits of data consist of 10 bits representing barometric pressure, 6 bits representing the drogue on/off switch (optional), 8 bits representing sea surface temperature, and 8 bits representing the air temperature.

THE DATA PROCESSING SYSTEM: The nominal time interval between readouts is 101 minutes for each satellite at the Command and Data Acquisition (CDA) station at Wallops Island, Virginia; Gilmore Creek, Alaska; and Lanion, France. The data received by the CDAs are relayed to NESDIS at Suitland, Maryland where the ARGOS data are separated from other components of the telemetry and relayed to the ARGOS Data Processing Center (CNES) in Toulouse, France. Processing is performed at CNES to compute platform position using differential Doppler techniques and to recover sensor data.

All Southern Hemisphere Drifting Buoy System data by the ARGOS Data Processing Center and distributed over the GTS undergo special processing in a delayed mode (off-line) and are sent to the National Climatic Data Center (NCDC) and the National Oceanographic Data Center (NODC) monthly for archival. More information is available from the [National Data Buoy Center](#) (NDBC).

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2. Element Names and Definitions:

Record 1 - Descriptive Header Record

Element Name	Tape Record Position	Element Description
File Name	1-3	"156" constant for Lagrangian current measurements
	4-9	Blanks
Record Identifier	10	Always "A"
Drogue Number	11-15	Identification number of Drogue
Drogue Type	16-20	Type of Drogue (determined by Investigator)
Principal Investigator	21-35	Name of Principal Investigator
Institution or Agency	36-50	Name of Institution or Agency
Platform Name	51-62	Name of platform acquiring data or deploying buoys
Buoy Number	63-67	Identification number of buoy associated with drogue
	68-80	Blanks

Record 2 - Launch Summary Record

Element Name	Tape Record Position	Element Description
File Name	1-3	"156" constant for Lagrangian current measurements
	4-9	Blanks
Record-Identifier	10	Always "B"
Drogue Number	11-15	Identification number of Drogue
Launch Position:		
Latitude	16-22	DDMMSS plus Hemisphere "N" or "S"
Longitude	23-30	DDMMSS plus Hemisphere "E" or "W"
End Position:		Position at pickup or termination of observations
Latitude	31-37	DDMMSS plus Hemisphere "N" or "S"
Longitude	38-45	DDMMSS plus Hemisphere "E" or "W"
Launch Date (GMT/UTC)	46-51	YYMMDD
Launch Time (GMT/UTC)	52-55	xxxx-Hours and Minutes
End Date (GMT/UTC)	56-61	YYMMDD
End Time (GMT/UTC)	62-65	xxxx-Hours and Minutes
Drogue Depth	66-69	xxxx-Depth in meters
Observation Frequency	70-73	xxxx-Hours and minutes-used when buoy positions are reported at specific time intervals
	74-80	Blanks

Record 3 - Data Record

Element Name	Tape Record Position	Element Description
File Name	1-3	"156" constant for Lagrangian current measurements
	4-9	Blanks
Record Identifier	10	Always "C". Each record contains individual drogue position and associated sea surface

		conditions
Drogue Number	11-15	Identification number of Drogue
Observed Position:		
Latitude	16-22	DDMMSS plus Hemisphere "N" or "S"
Longitude	23-30	DDDMMSS plus Hemisphere "E" or "W"
Observed Data (UTC)	31-36	YYMMDD
Observed Time (UTC)	37-40	xxxx-Hours and Minutes
Surface Temperature	41-43	xxx-Degrees C (to tenths)
Surface Salinity	44-47	xxxx-Parts Per Thousand (to hundredths)
Atmospheric Pressure	48-53	xxxxxx-millibars (to hundredths)
Wind Speed	54-55	xx-meters per second
Wind Direction	56-57	xx-Tens of Degrees
Wind Force	58	One-character Code-Use Code 0052
Wave Height	59	One-character Code-Use Code 0104
Wave Period	60	One-character Code-Use Code 0378
Sea State	61	One-character Code-Use Code 0109
Bottom Depth	62-65	xxxx-Bottom Depth at reported buoy position (depth in meters)
Air Temperature	66-69	xxxx-Degrees C to tenths negative values preceded by minus sign
	70-76	Blanks
Sequence Number	77-80	xxxx-Use to sort records for each drogue/buoy- sequence numbers should be in ascending order

Record 4 - Subsurface Record

Element Name	Tape Record Position	Element Description
File Name	1-3	"156" constant for Lagrangian current measurements
Record Identifier	4-9 10	Blanks Always "D". Each record contains subsurface data associated with the drogue
Drogue Number	11-15	Identification number of drogue
Depth	16-20	xxxxx-meters to hundredths
Pressure	21-25	xxxxx-Decibars to hundredths
Temperature	26-28	xxx-Degrees C to tenths negative values preceded by minus sign
Depth	29-33	xxxxx-meters to hundredths
Pressure	34-38	xxxxx-Decibars to hundredths
Temperature	39-41	xxx-Degrees C to tenths
Depth	42-46	xxxxx-meters to hundredths
Pressure	47-51	xxxxx-Decibars to hundredths
Temperature	52-54	xxx-Degrees C to tenths
Depths	55-59	xxxxx-meters to hundredths
Pressure	60-64	xxxxx-Decibars to hundredths
Temperature	65-67	xxx-Degrees C to tenths
	68-76	Blanks
Sequence Number	77-80	xxxx-Use to sort records for each drogue/buoy- should be in ascending order

Record 5 - Text Record

Element Name	Tape Record Position	Element Description
File Name	1-3	"156" constant for Lagrangian Current

		measurements
	4-9	Blanks
Record Identifier	10	Always "T"- for comments and other information
Drogue Number	11-15	Identification number of Drogue
Text	16-76	Character field for comments-multiple text records maybe used to describe individual drogue observations or for general comments. Text records may be inserted between or follow data records depending on the nature of the comments.
Sequence Number	77-80	The order of sequence numbers should reflect the proper sorting of combined data and track records for each drogue/buoy.

3. **Start Date:** 1984XXXX

4. **Stop Date:** 19981001

5. **Coverage:** Southern Hemisphere Oceans

6. **How to Order Data:**

Ask NCDC's Climate services about the cost of obtaining this data set.

Phone: 828-271-4800

FAX: 828-271-4876

e-mail: NCDC.Orders@noaa.gov

7. **Archiving Data Center:**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, NC 28801-5001

8. **Technical Contact:**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, NC 28801-5001
Phone 828-271-4800

9. **Known Uncorrected Problems:** None

10. **Quality Statement:** None provided with original documentation.

11. **Essential Companion Data Sets:** None.

12. **References:** U.S. Toga Drifting Buoy Logistics Plan, August 1986