Long-Term Rainfall Monitoring Database (RAINDAZE)			
Year Released to Public	2003		
Distribution URL for file	http://links.baruch.sc.edu/data/accessfiles/Rain_RAINDAZE_12_April_1978__31_December_2001.zip		
DATASET TITLE:	**Long-Term Rainfall Monitoring Database (RAINDAZE) for Hobcaw Barony and the North Inlet Estuary, Georgetown, South Carolina: 1978 – 2001**		
INVESTIGATOR INFORMATION :	**Investigator 1**	**Investigator 2**	**Data Manager**
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DATA FILE INFORMATION:	***This condensed metadata is from the original, more extensive metadata*** created on 3/16/2004 by Ginger Ogburn-Matthews. If needed, the original may be accessed at: **http://links.baruch.sc.edu/Data/RAINDAZE/metadata/RAINDAZE.1978-2001.FGDC.METADATA.pdf** Links and email addresses in the original have not been updated as those locations and people may no longer be available. The data manager identified on this page should be contacted for any questions about the data.		
Data File Name	Rain_RAINDAZE_12_April_1978__31_December_2001.zip		
Beginning Date	01-Apr-1978		
End Date	31-Dec-2001		
Number of Data Records	2460		
RESEARCH LOCATION:	Hobcaw Barony		
Geographic Description	The Hobcaw Barony property is bordered to the north by the Debordieu Colony property, to the west by Highway 17, and is located in Georgetown County, South Carolina, USA. The North Inlet Estuary lies east of the uplands of Hobcaw Barony and contains Crab Haul Creek, where the Oyster Landing pier and research site are located. The rain gauges used and/or documented in this database are located at the following coordinates, listed in utm zone 17 North and in decimal degrees: LTER Gauge R1: 3689857.10 N, 670346.08 E -79.170 W, 33.334 N LTER Gauge R2: 3692530.20 N, 665227.23 E -79.224 W, 33.359 N LTER Gauge R3: 3689788.33 N, 668175.91 E -79.193 W, 33.334 N LTER Gauge R5: 3689857.10 N, 666423.28 E -79.212 W, 33.335 N LTER Gauge R6: 3687650.29 N, 664390.40 E -79.234 W, 33.315 N LTER Gauge R7: 3686610.88 N, 666188.53 E -79.215 W, 33.306 N LTER Gauge R8: 3691595.60 N, 668314.63 E -79.191 W, 33.350 N USC NWS: 3691621.92 N, 668308.05 E -79.191 W, 33.350 N NIW NERR: 3691484.13 N, 668527.94 E -79.189 W, 33.349 N Clemson/Hobcaw NWS: 3690832.51 N, 663698.27 E -79.241 W, 33.344 N (at the Hanger location, 1981-1989) Clemson/Hobcaw NWS: 3692833.17 N, 665101.29 E -79.225 W, 33.362 N (at the Clemson field lab location, 1989-2001)		
Location Bounding Box			
West Bounding Coordinate	-79.27		
East Bounding Coordinate	-79.153		
North Bounding Coordinate	33.366		
South Bounding Coordinate	33.296		
OR if single point location			
Latitude			
Longitude			
Elevation			
TAXONOMIC COVERAGE:			
Taxonomic Protocols			
Organisms studied			

KEYWORD INFORMATION

KEYWORDS: Weather, Meteorological, climate, coastal, estuary, ecosystem, marsh, salt marsh, tidal creek, NERR, SWMP, Rain, precipitation, long-term, long-term ecological Research, Atmosphere, North Inlet, North Inlet Estuary, Hobcaw Barony, South Carolina, Atlantic Coast, Oyster Landing, Crab Haul Creek, East Coast, southeast coast, coastal, Georgetown County, USA, Half hour, Hour, Day, Event, Week, Month, Year

ABSTRACT:

Abstract

The RAINDAZE database is a compilation of rain data from multiple rain gauges on Hobcaw Barony for the period of April 1, 1978 through December 31, 2001. Data collection protocols and procedures vary throughout the database because multiple rain gauges were used. However, the primary rain gauges utilized in this database were both located at Oyster Landing on Crab Haul Creek, near the University of South Carolina's Baruch Marine Field Lab. Prior to July of 1997, the primary gauge was LTER gauge R8 and other gauges on the property were simply used to supplement the R8 data when the gauge was inoperative (See Supplemental Information Section). In July of 1997 the North Inlet – Winyah Bay NERR Weather Station's rain gauge became the primary rain gauge for the database. RAINDAZE data are reported by "day-event" (24-hour period including a rain event) or by "event" (whatever length of time the rain event lasted, may be fewer or more than 24-hours) in both inches and millimeters. Start and end dates and times for the rainfall events or 24-hour day-event periods are provided. Data collection continues into the year 2003 as part of the North Inlet Weather Monitoring Program.

Purpose

The principal objective of this dataset is to monitor and archive rain data for Hobcaw Barony and the North Inlet Estuary in order to observe environmental variability, changes, or trends over time, and for use in short and longterm studies at North Inlet and other nearby estuaries. The National Oceanographic and Atmospheric Administrations' (NOAA) National Estuarine Research Reserve System (NERRS) implemented the NERR System-wide Monitoring Program (SWMP) in order "to identify and track short-term variability and long-term changes in the integrity and biodiversity of representative estuarine ecosystems and coastal watersheds for the purpose of contributing to effectivenational, regional, and site specific coastal zone management." As part of the NERR System-wide monitoring program, the rain data collected by the NERR weather station (and included in the RAINDAZE database) will contribute to that goal, in addition to providing a valuable comparison to other NERR sites.

METHODS:

Feild Collection Procedures and Protocol

Schedule for data sources:

4/1/1978 – 7/31/1982 LTER Gauge R8 located at Oyster Landing
8/1/1982 – 12/31/1982 Clemson/Hobcaw NWS Gauge located at the hanger.
1/1/1983 – 2/18/1985 LTER Gauge R5 located at the Floating Bridge*
2/19/1985 – 4/22/1985 LTER Gauge R5 located at the Floating Bridge
4/23/1985 – 5/19/1985 MISSING DATA
5/20/1985 - 1/21/1986 LTER Gauge R2 located Hobcaw/Crabhaul Road
1/21/1986 – 7/31/1988 LTER Gauge R8 located at Oyster Landing
8/1/1988 – 8/8/1988 USC NWS Gauge located at Oyster Landing
8/9/1988 – 9/5/1988 LTER Gauge R8 located at Oyster Landing
9/6/1988 – 9/12/1988 USC NWS Gauge located at Oyster Landing
9/13/1988 – 6/25/1989 LTER Gauge R8 located at Oyster Landing
6/26/1989 – 7/3/1989 USC NWS Gauge located at Oyster Landing
7/4/1989 – 9/18/1989 LTER Gauge R8 located at Oyster Landing
9/19/1989 – 9/31/1989 LTER Gauge R5 located at the Floating Bridge
10/1/1989 – 10/2/1989 LTER Gauge R1 located at Third & North Boundary Roads
10/3/1989 – 7/1/1990 LTER Gauge R8 located at Oyster Landing
7/1/1990 – 7/16/1990 USC NWS Gauge located at Oyster Landing
7/17/1990 – 8/31/1996 LTER Gauge R8 located at Oyster Landing
9/1/1996 – 11/30/1996 Clemson/Hobcaw NWS Gauge located at the Clemson Field Lab
11/30/1996 - 12/1/1996 USC NWS Gauge located at Oyster Landing
12/1/1996 – 12/2/1996 Clemson/Hobcaw NWS Gauge located at the Clemson Field Lab
12/3/1996 – 12/31/1996 USC NWS Gauge located at Oyster Landing
1/1/1997 – 1/31/1997 MISSING DATA
2/1/1997 – 4/30/1997 USC NWS Gauge located at Oyster Landing
5/1/1997 – 6/30/1997 Clemson/Hobcaw Gauge located at the Clemson Field Lab
7/1/1997 – 12/31/2001 NIW NERR Weather Station located at Oyster Landing

*There is no documentation specifying that the LTER R5 gauge was the source for this data. However, after talking to former USC Baruch employees, examining the data, and investigating the history behind each rain gauge, the Data Manager determined that this was the most likely source

LTER Gauges R1-R8

Sensors: Belfort Universal Recording Rain Gauges, Series: 5-780

In 1978, eight Belfort recording rain gauges were installed in various locations throughout the Hobcaw Barony property as part of Clemson and USC's joint LTER project (See digital aerial photograph for gauge locations: "RAINDAZE.GAUGES.jpg). The rain gauges began collecting data on April 1, 1978. Rain data were automatically recorded, by an ink pen plotting system, on charts that spanned approximate weeklong time periods. A Weather Technician visited each rain gauge on a weekly basis to collect the chart for the previous week and ensure that the gauge was working properly for the next week. The charts were brought back to the field lab and interpreted by the weather technician (See Process Section for more details). Of these eight rain gauges, one was the primary rain gauge for this database. Gauge R8 was located at Oyster Landing on Crab Haul Creek, near USC's Baruch Marine Field Lab. The USC Weather Technician maintained this gauge after most of the other gauges were discontinued; it remained in service until 6/10/1997. Occasionally data from one of the other seven LTER gauges or one of the National Weather Service gauges were used to fill in periods of missing data, but the R8 gauge readings make up the bulk of the RAINDAZE database for this time frame.

Clemson/Hobcaw NWS
Sensor: Dip-stick (non-recording) Standard US Weather Bureau type precipitation gauge (NWS approved). Hobcaw Barony's Baruch Foundation employees maintained this rain gauge from 1981 – 1989. It was moved to the Clemson Field Lab in 1989. The Foundation employees and the Clemson Weather Technician read the rain gauge at approximately 4:00 pm every day. Data were recorded on a form and apply to the previous 24-hour period. Readings were not always taken on weekends, so Monday afternoon readings sometimes include any rainfall events that may
have occurred over the weekend. In general, if a rain event occurred every effort was made to check the rain gauge on weekends as well. Data from the Clemson/Hobcaw NWS rain gauge were inserted into the RAINDAZE database when it was necessary to fill in periods of missing data resulting from problems with the LTER R8 gauge.

USC NWS
Sensor: Qualimetrics 6310 Dip-stick (non-recording) precipitation gauge, Standard U.S. Weather Bureau type (NWS approved)

This rain gauge was part of a weather station supported by the National Weather Service and installed near the USC Baruch Marine Field Lab and Oyster Landing. In addition to the rain gauge, the weather station was composed of an instrument shelter, maximum and minimum thermometers (Qualimetrics 4421), Hygrothermograph (Qualimetrics 5020), and Barometer (Qualimetrics 7010-A), all of which were purchased from Qualimetrics Corporation of Sacramento, CA and NWS approved. The instrument shelter was located near the Oyster Landing Research site on Crab Haul Creek and the rain gauge was located approximately 25 feet from the instrument shelter in a grass clearing. The USC Weather Technician visited the NWS weather station every day at approximately 10:00 am and recorded the high and low temperatures for the previous 24-hours onto a form. To the best of our knowledge, rain data were only collected from this rain gauge and used in the RAINDAZE database when the LTER R8 chart-recording rain gauge was malfunctioning. The NWS forms include rain data taken from the R8 gauge when it was available, and from the USC NWS rain gauge only when necessary.

NIW NERR
Sensor: Sierra-Misco Envrionment Ltd. Tipping Bucket Rain Gauge, Model 2500, (7/2/1997 – 5/17/2001)
Sensor: Campbell Scientific Tipping Bucket Rain Gauge, Model TE 252WS, (5/17/2001 – 12/31/2001)

On 7/2/1997 the NIW NERR weather station began collecting weather data (the NERRMET database). The weather station is located at the end of an 800-foot boardwalk (Oyster Landing Pier) ending in Crab Haul Creek. The majority of the weather station sensors are located on an aluminum tower, which is mounted to the pier head. The rain gauge is located on a small eastern-extending platform off of the boardwalk, just before the pier head. NERR's Centralized Data Managmenet Office (CDMO) Operations Manual and operation manuals supplied by Campbell Scientific were
used as guidelines for assembling the weather station and meteorological data collection protocols. The CDMO Operations Manual Version 4.0 can be found on the CDMO web site (http://cdmo.baruch.sc.edu) under General Information.

The sensors and data collection schedule on the NIW NERR weather station are controlled by the CDMO Data Logger Program (nerr30.csi), loaded onto a Campbell Scientific CR10X datalogger. As of 8/11/1999, the sensors were wired to the CR10X following the protocol outlined in the CDMO Operations Manual (Version 4.0). The CR10X uses the five-second data (data were based on a 10-second interval from 7/2/97 to 8/22/97) collected from the rain gauge sensor to produce 15-minute totals, which are then downloaded to a personal computer in the Baruch Marine Field Lab using
PC208W software. The 5-second data are then discarded. Rain data were collected on a 15-minute basis and readings were taken 24 hours a day, every day of the year, except when the rain gauge or the entire meteorological station was down.

For complete documentation of all NERRMET data from 1997-1999 please see the Methodology Description in the NERRMET Metadata document. The Metadata and complete database can be found at http://links.baruch.sc.edu/data/, under the Data, Maps, and Research Resources link. For complete documentation of all NERR Meteorological data for 2000 (in progress) and 2001, please see the complete datasets at http://cdmo.baruch.sc.edu. Data from these periods were taken directly from the final NERR data and formatted for the RAINDAZE database.

VARIABLE DESCRIPTIONS:

Variable Name	Variable Description	Units	Measurement Scale	Code Information	Number Type
Start Date	The date on which the rain event started. If recording by event, this may or may not be the same as the end date, if recording by "day-event" (24-hour period that included rainfall), this will be the same as the end date.	4/1/1978 – 12/31/2001	datetime		
Start Time	The time that the rain event started. If measuring by event, this will be an actual time, if measuring by "day-event" this will be a standard time depending on the gauge used for the database (0000, 1000, or 1600).	0000 – 2400, 30-minute increments	datetime		
End Date	The date on which the rain event ended. It may or may not be the same as the start date. If recording by event, this may or may not be the same as the start date, if recording by "day-event," this will be the same as the start date.	4/1/1978 – 12/31/2001	datetime		

End Time	The time that the rain event ended. If measuring by event, this will be an actual time, if measuring by "day-event" this will be a standard time depending on the gauge used for the database (2400, 1000, or 1600).	0000 – 2400, 30-minute increments	datetime		
Rain (mm)	The amount of rain that fell during either a 24-hour period or a rainfall event, measured in millimeters.	0.0 – 300.0 millimeters	ratio		real
Rain (inches	The amount of rain that fell during either a 24-hour period or a rainfall event, measured in inches.	0.00 – 12.00 inches	ratio		real