DATE: August 19, 2025
TO: Venice Port Complex
FROM: Coastal Engineering Solutions
RE: Draft River Gauge Data and Storm Surge Data Venice Port Complex

The following represents a summary of data collected for the Venice Port Complex showing river gauge data and storm surge data for the area. The purpose of this memo is to provide additional information on tidal ranges for the Venice Port Complex for future developments such as a Ro-Ro Terminal, Motor Oil Recycling Facility, Solar Farms, and other developments in the region. This analysis relies solely on existing surge models, publicly available gage data, and interviews with Venice Port Complex employees. We are confident that this information will provide a tidal range that can be relied upon for preliminary designs and calculations; however, we recommend including a more detailed analysis for final design.

River Gauge Data [1]

The Mississippi River at Venice (01480) gauge is located adjacent to Venice Port Complex property (approximately 300 Ft.) on the right descending bank at river mile 10.7 at Venice, LA in Plaquemines Parish. It is owned and operated by the U.S. Army Corps of Engineers New Orleans District in cooperation with the U.S. Geological Survey (referenced by the USGS as 07374510).

Mississippi River at Venice (01480)
Gage Zero: 0 Ft. GAGE
Longitude: -89.35277778
Latitude: 29.27583333
River Mile: 10.7
Record High Stage: 9.11 Ft.
Record High Stage Date: 08/17/1969
Record Low Stage: 0.77 Ft.
Record High Stage Date: 12/25/1989
Bankfull Stage: 1.0 Ft.

[1]https://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=01480&fid=RCKI2&dt=S&pcode=HG

Record High Stages For Mississippi River at Venice (01480)

Stage	Date
9.11	08/17/1969
9.05	09/27/1998
8.79	09/09/1965
7.28	11/09/2009
6.95	09/01/2008

Recent High Stages For Mississippi River at Venice (01480)[2]

Stage	Date
3.59	01/20/2019
3.62	06/07/2017
3.26	03/19/2016
7.28	11/09/2009
5.46	05/23/2009

The Stage Hydrograph is shown at the end of this memo yearly from January 1954 to July 2025 with the notes shown below regarding the vertical datum:

Vertical Datum Notes

- Gage zero reset to vertical datum NAVD88 (2009.55) on 28Jun2015. All prior historic stage data is relative to NGVD29. To adjust the prior historic data (from 03Jun1987 to 28Jun2015 only) to NAVD88 (2009.55), add -1.84 feet.

-To adjust NAVD88 (2009.55) values to 2007 Low Water Reference Plane (LWRP) datum relative to NAVD88, add -0.1 ft.

When reviewing the Stage Hydrograph, it should be noted that Bonnet Carré Spillway opens when the Mississippi River flow exceeds 1.25 million cubic feet per second (cfs), a benchmark set by the U.S. Army Corps of Engineers (USACE) to relieve pressure on the river's levee system, especially near New Orleans.

[2] https://water.noaa.gov/gauges/vncl1

Storm Surge Data

Storm surge is an abnormal rise of water generated by a storm, over and above the predicted astronomical tides. It's primarily caused by the strong winds of a hurricane pushing water towards the coast. The extent of storm surge depends on several factors, including hurricane intensity, forward speed, size, angle of approach to the coast, and the shape of the coastline and seafloor. The precise measurement of the storm surge produced by these strong hurricanes along the northern Gulf coast is complicated by many factors, including the widespread failures of tide gauges and in many locations, most of the buildings along the coast were completely destroyed, leaving relatively few structures within which to identify still-water marks. To determine potential storm surge for the Venice Port Complex we will identify storm surge from hurricanes that impacted the area near the Venice Port Complex.

The Venice Port Complex and southeast Louisiana in general have experienced numerous hurricanes and tropical storms. According to the National Centers for Environmental Information Storm Events Database, Plaquemines Parish has experienced 20 hurricanes and 32 tropical storms between 1998 and 2025[3]. The most well-known, and likely the most destructive, was Hurricane Katrina. In 2005, Katrina produced 10- to 20-foot storm surge levels in southeast Louisiana[4], causing catastrophic damage. One of the most Hurricane Katrina became a large and extremely powerful hurricane that caused enormous destruction and significant loss of life. It is the costliest hurricane to ever hit the United States making landfall near Buras, Louisiana on August 29, 2005. In addition, Katrina is one of the five deadliest hurricanes to ever strike the United States with 125 mile per hour winds and 15 to 19 feet of storm surge in Plaquemines Parish [5]. The Mississippi River gauge at New Orleans was reported at 15 feet on August 29, 2005[6]; however, local reports from the Venice Port Complex personnel confirmed that the surge from Katrina only reached to approximately EL 10 feet based on watermarks on port facilities.

Storm surge from Hurricane Isaac in 2012 inundated parts of Plaquemines and St. Bernard Parishes outside of the HSDRRS with 8 to 17 feet of water above ground level. More recent hurricanes to make landfall near the Project Area in southeast Louisiana include Hurricane Zeta (2020), Hurricane Ida (2021), and Hurricane Francine (2024). Storm surge levels for the Venice Port Complex should be analyzed further to confirm actual storm risk for the Port Complex.

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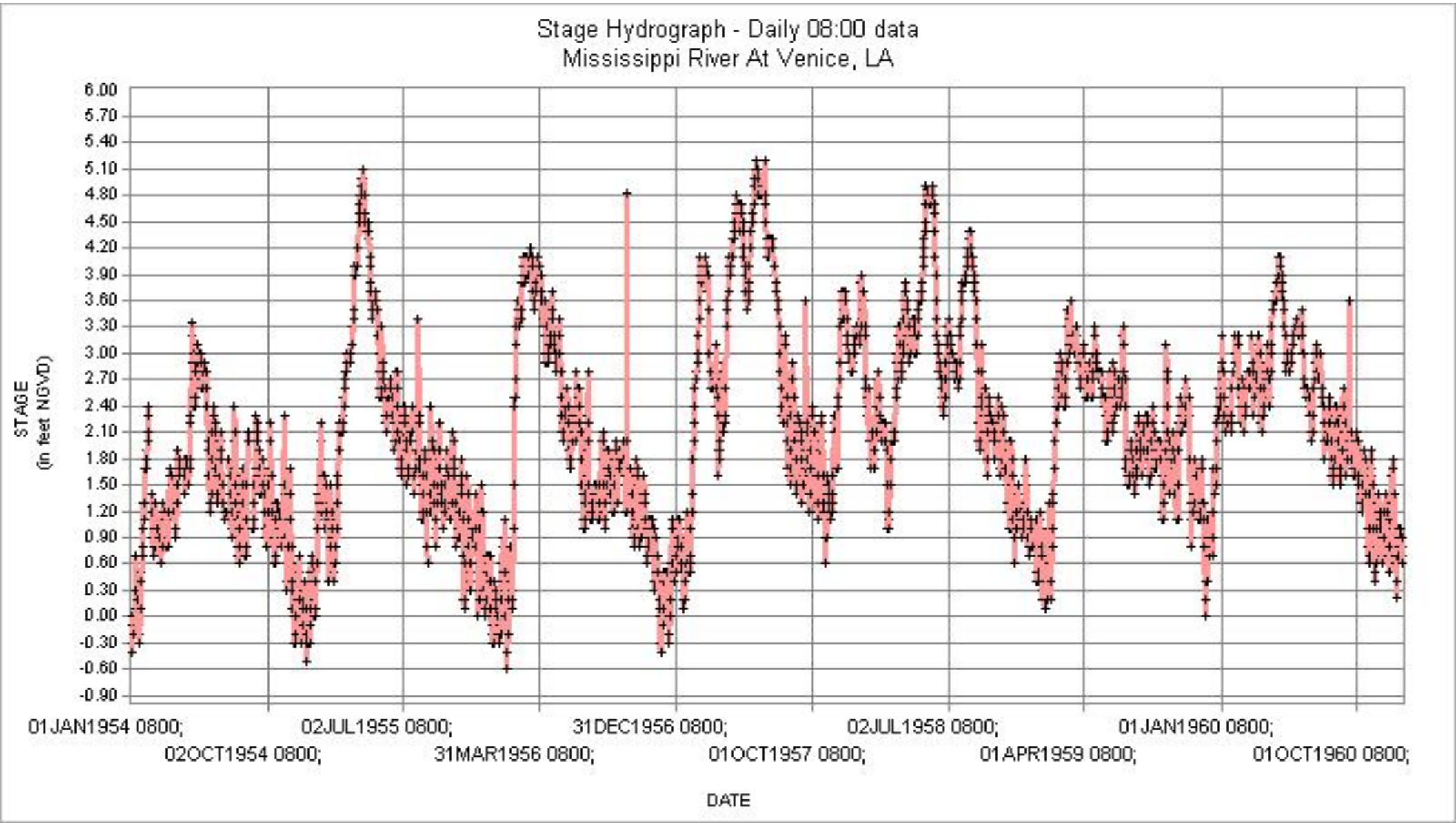
[3] NOAA National Center for Environmental Information, Storm Events Database https://www.ncdc.noaa.gov/stormevents/

[4] NOAA Sea Level Trends https://oceanservice.noaa.gov/news/aug15/sea-level.html#:~:text=Data%20helps%20Gulf%20Coast%20communities,help%20protect%20life%20and%20property.

[5] Tropical Cyclone Report Hurricane Katrina 23-30 August 2005, Richard D. Knabb, Jamie R. Rhome, and Daniel P. Brown, National Hurricane Center 4 January2023 https://www.nhc.noaa.gov/data/tcr/AL122005_Katrina.pdf

[6] Miller, A. & Jonkman, S.N. & Ledden, Mathijs. (2015). Risk to life due to flooding in post-Katrina New Orleans. Natural Hazards and Earth System Sciences. 15. 10.5194/nhess-15-59-2015.

HISTORIC GAGE DATA
VENICE, LOUSIANA


Stage Hydrograph - Daily 08:00 data
Mississippi River At Venice, LA
STAGE
(in feet NGVD)
6.00
5.70
5.40
5.10
4.80
4.50
4.20
3.90
3.60
3.30
3.00
2.70
2.40
2.10
1.80
1.50
1.20
0.90
0.60
0.30
0.00
-0.30
-0.60
-0.90
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02OCT1954 0800;
02JUL1955 0800;
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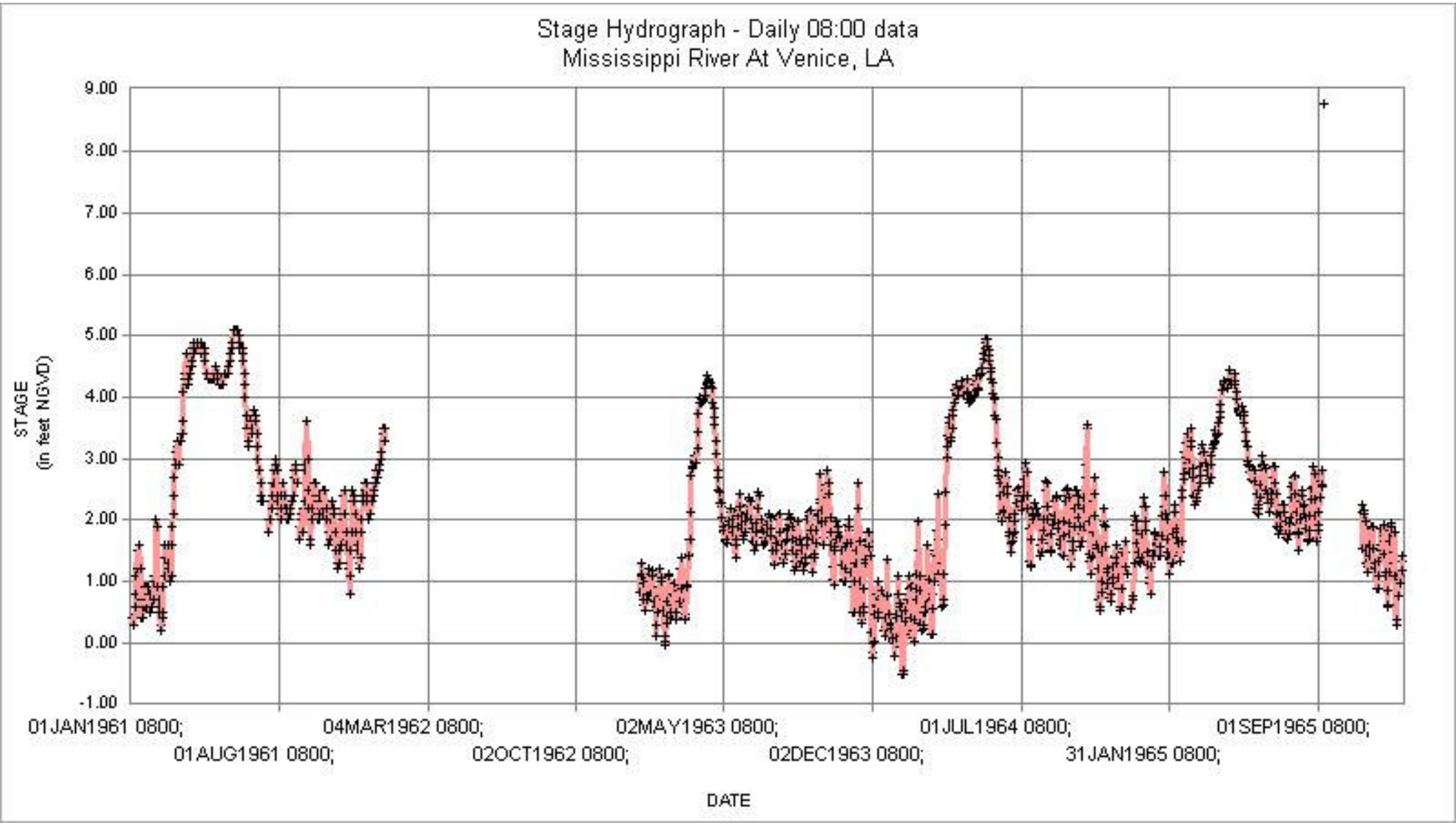
Stage Hydrograph - Daily 08:00 data
Mississippi River At Venice, LA
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-1.00
STAGE
(in feet NGVD)
01JAN1961 0800;
01AUG1961 0800;
04MAR1962 0800;
02OCT1962 0800;
02MAY1963 0800;
02DEC1963 0800;
01JUL1964 0800;
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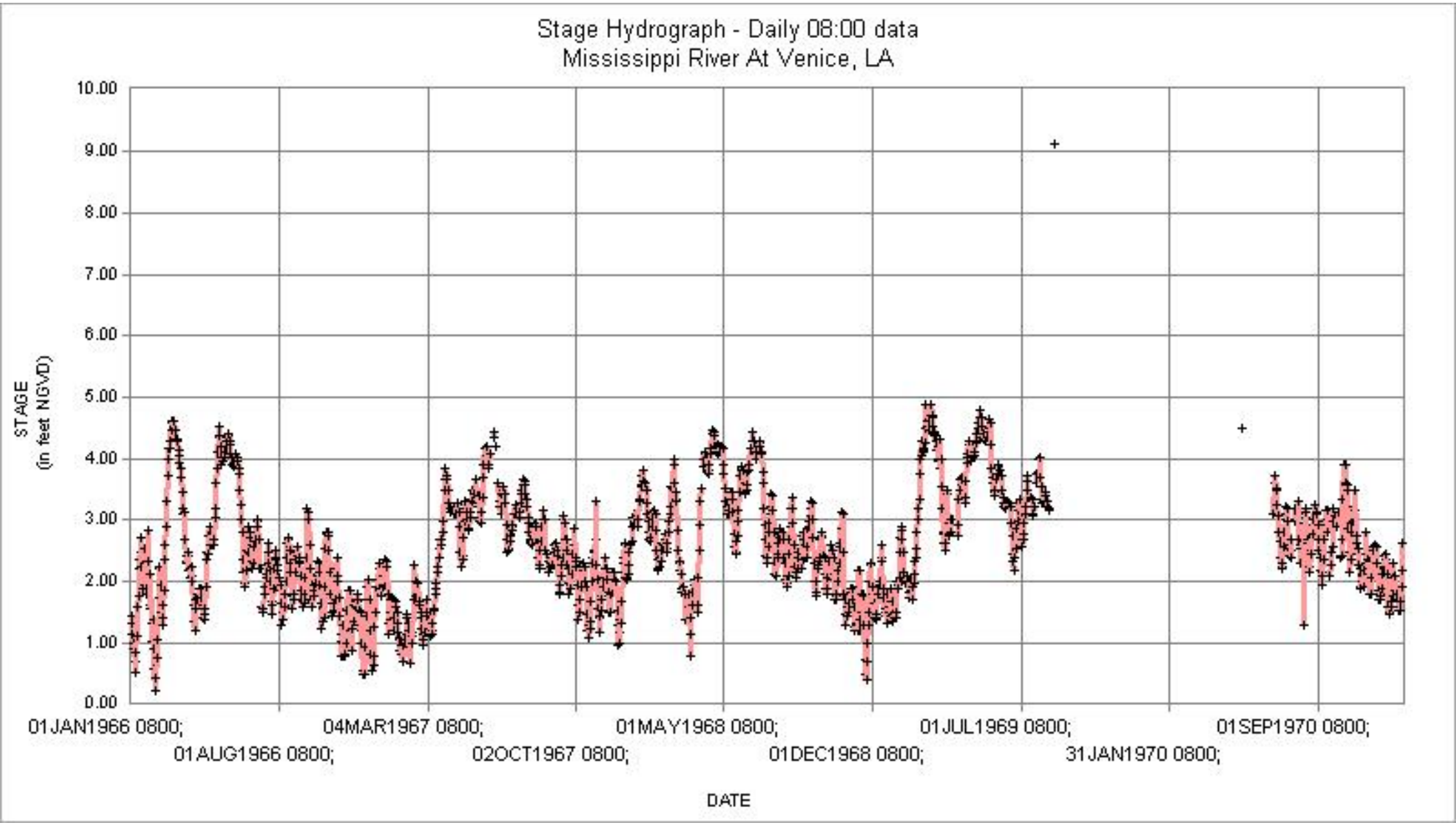
01SEP1965 0800;
DATE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Mississippi River At Venice, LA
STAGE
(in feet NGVD)
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9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
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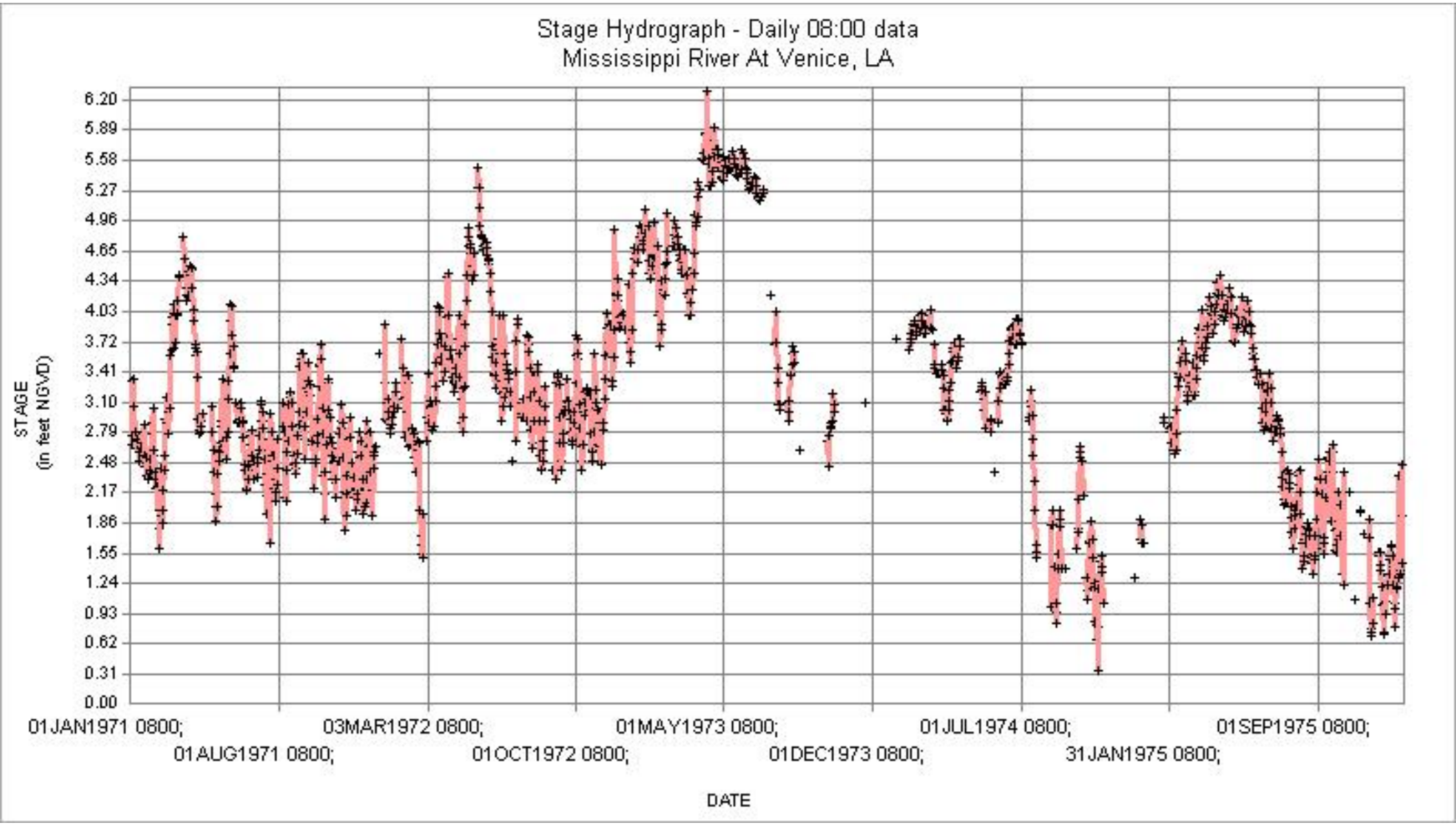
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Mississippi River At Venice, LA
STAGE
(in feet NGVD)
6.20
5.89
5.58
5.27
4.96
4.65
4.34
4.03
3.72
3.41
3.10
2.79
2.48
2.17
1.86
1.55
1.24
0.93
0.62
0.31
0.00
01JAN1971 0800;
01AUG1971 0800;
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01OCT1972 0800;
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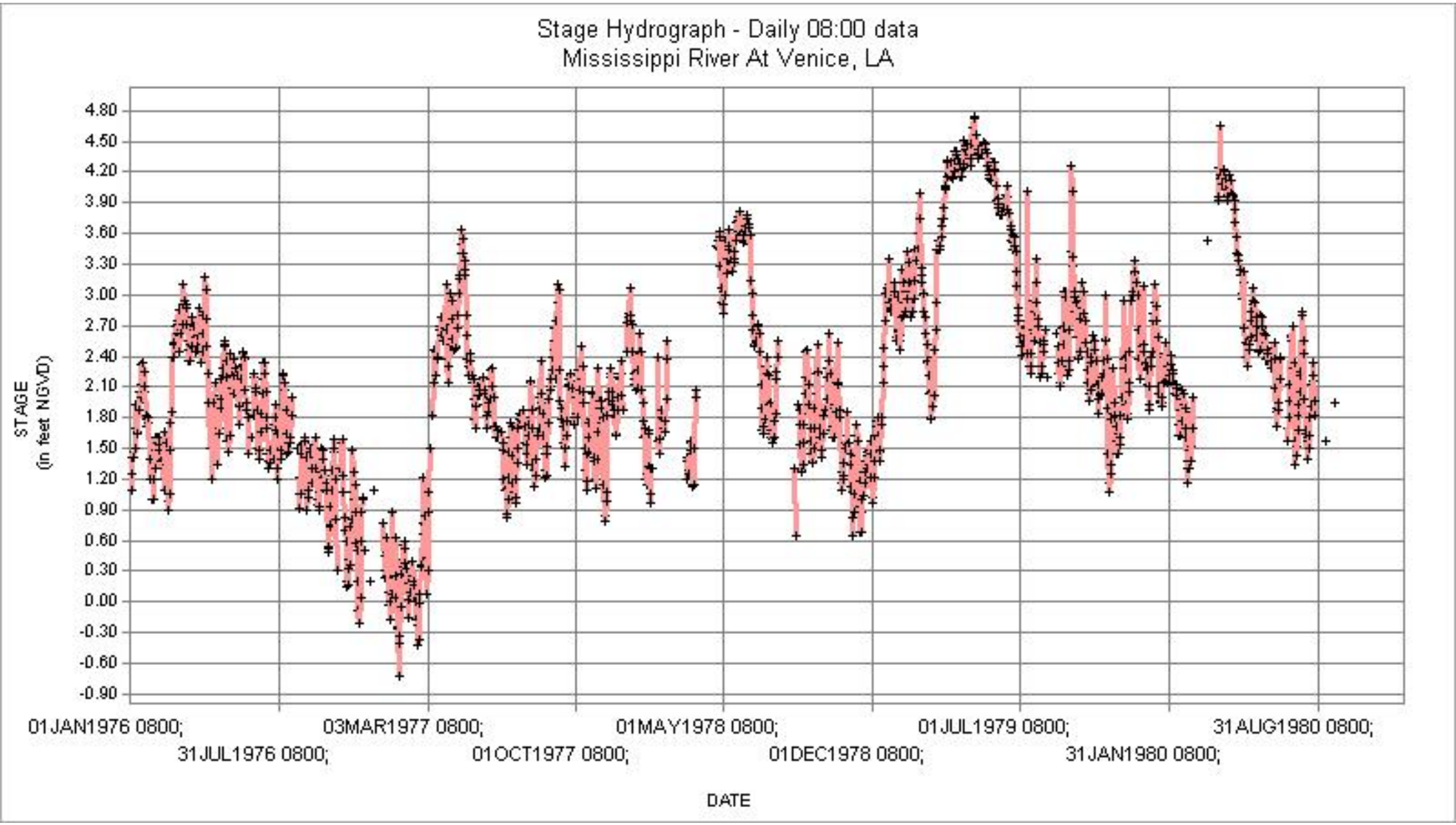
Stage Hydrograph - Daily 08:00 data
Mississippi River At Venice, LA
STAGE
(in feet NGVD)
4.80
4.50
4.20
3.90
3.60
3.30
3.00
2.70
2.40
2.10
1.80
1.50
1.20
0.90
0.60
0.30
0.00
-0.30
-0.60
-0.90
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31JUL1976 0800;
03MAR1977 0800;
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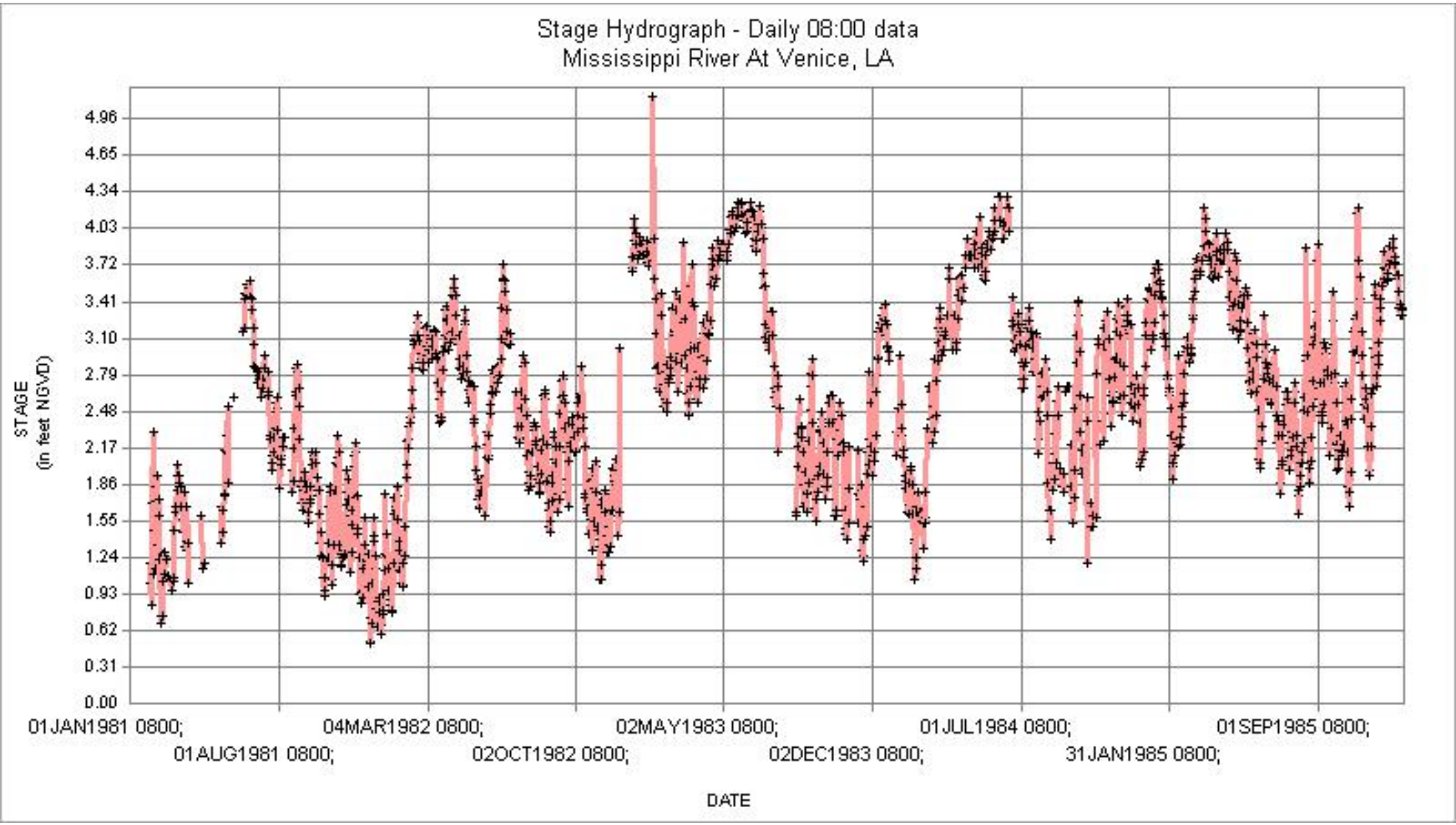
Stage Hydrograph - Daily 08:00 data
Mississippi River At Venice, LA
STAGE
(in feet NGVD)
4.96
4.65
4.34
4.03
3.72
3.41
3.10
2.79
2.48
2.17
1.86
1.55
1.24
0.93
0.62
0.31
0.00
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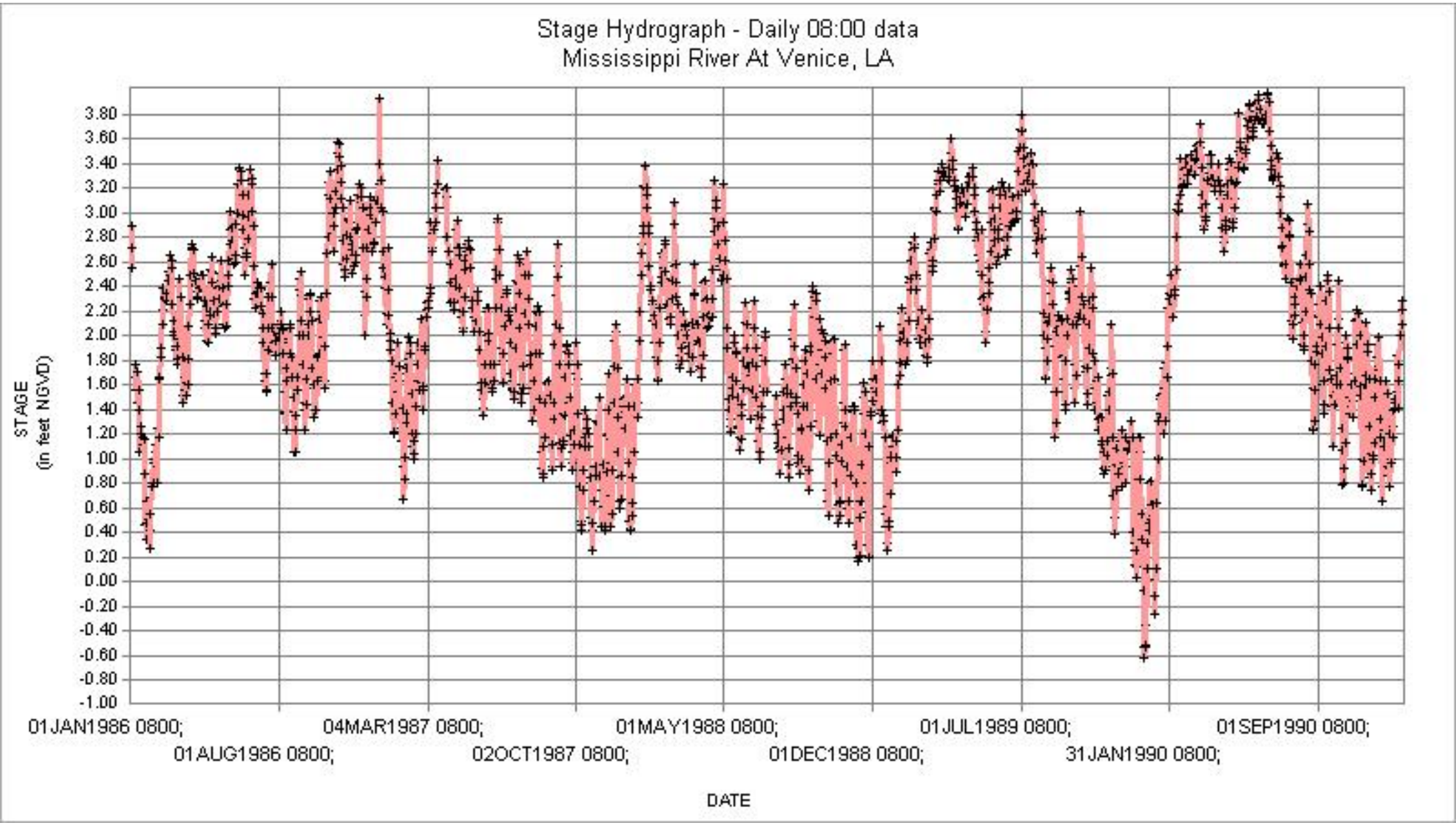
Stage Hydrograph - Daily 08:00 data
Mississippi River At Venice, LA
STAGE
(in feet NGVD)
3.80
3.60
3.40
3.20
3.00
2.80
2.60
2.40
2.20
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
-0.20
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-0.60
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-1.00
01JAN1986 0800;
01AUG1986 0800;
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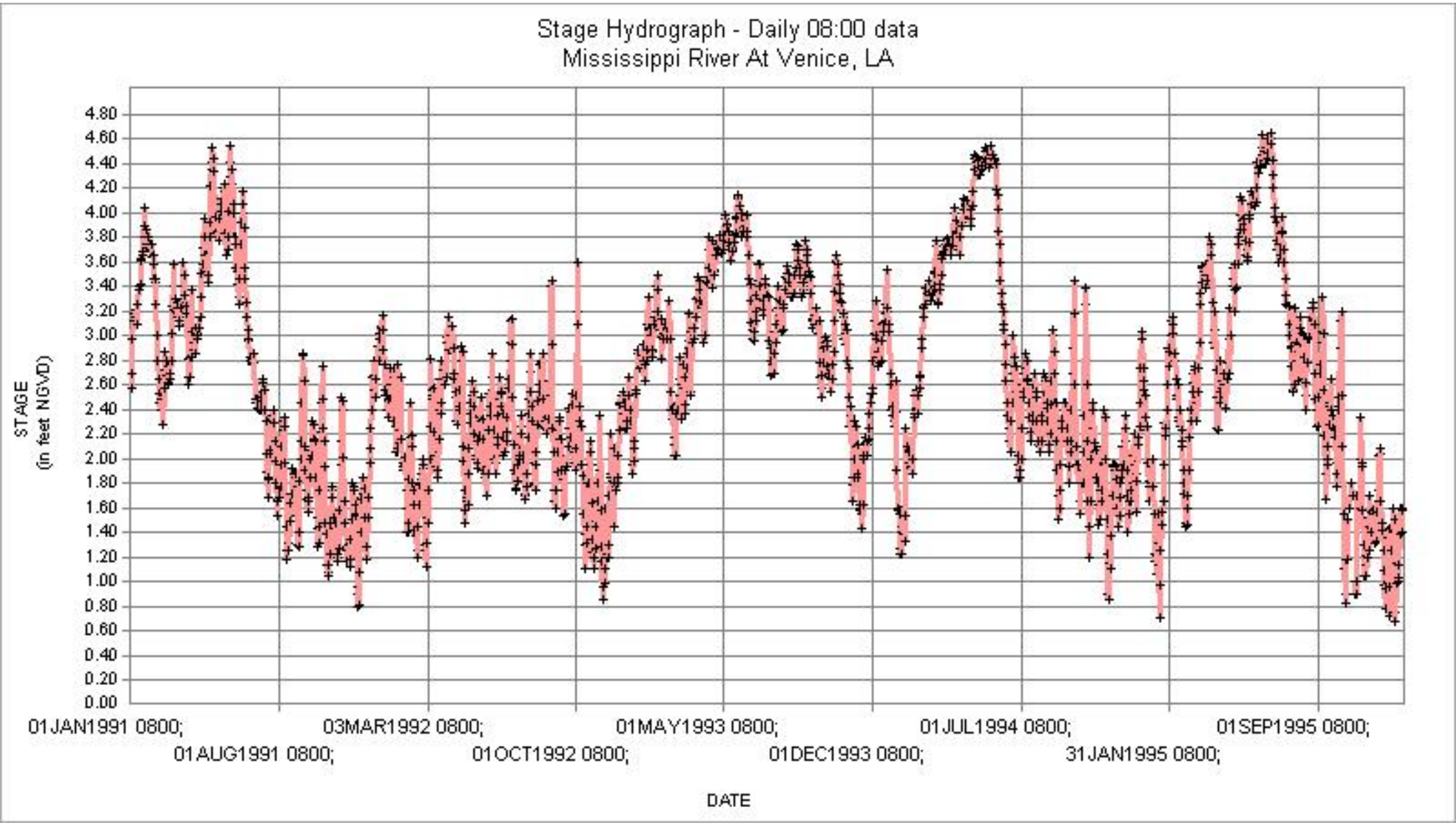
Stage Hydrograph - Daily 08:00 data
Mississippi River At Venice, LA
STAGE
(in feet NGVD)
4.80
4.60
4.40
4.20
4.00
3.80
3.60
3.40
3.20
3.00
2.80
2.60
2.40
2.20
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
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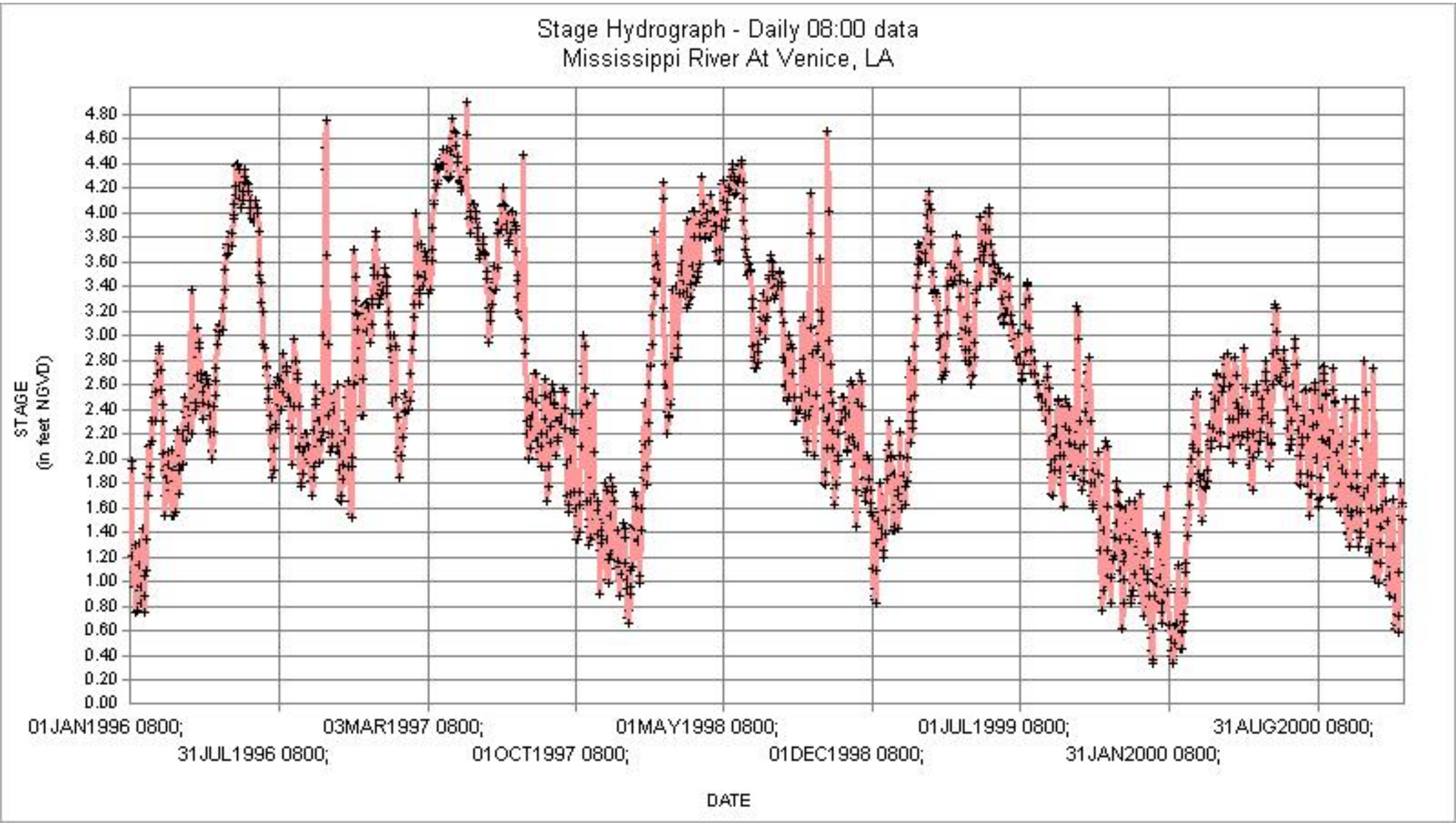
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4.80
4.60
4.40
4.20
4.00
3.80
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2.00
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1.60
1.40
1.20
1.00
0.80
0.60
0.40
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0.00
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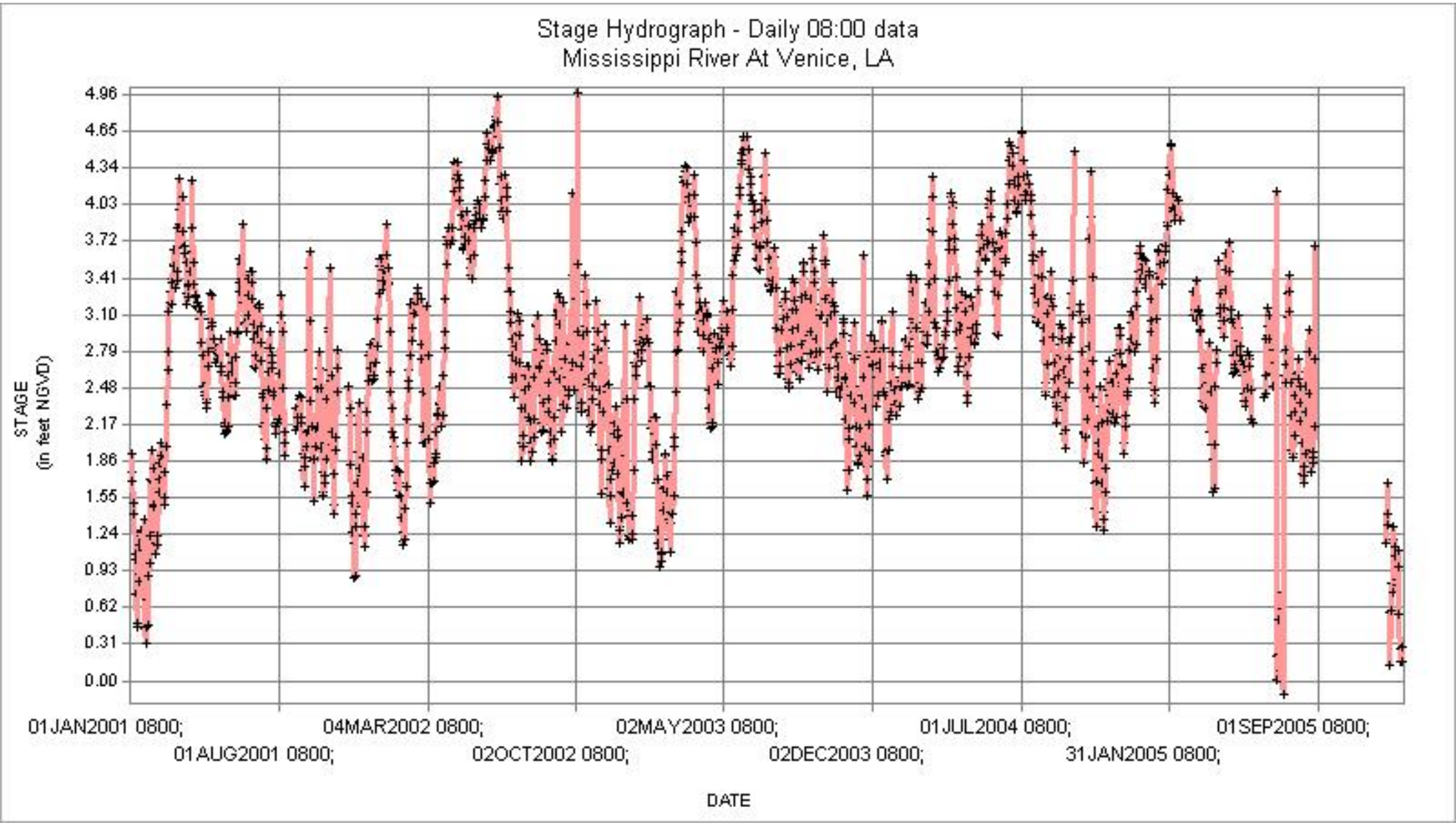
Stage Hydrograph - Daily 08:00 data
Mississippi River At Venice, LA
STAGE
(in feet NGVD)
4.96
4.65
4.34
4.03
3.72
3.41
3.10
2.79
2.48
2.17
1.86
1.55
1.24
0.93
0.62
0.31
0.00
01JAN2001 0800;
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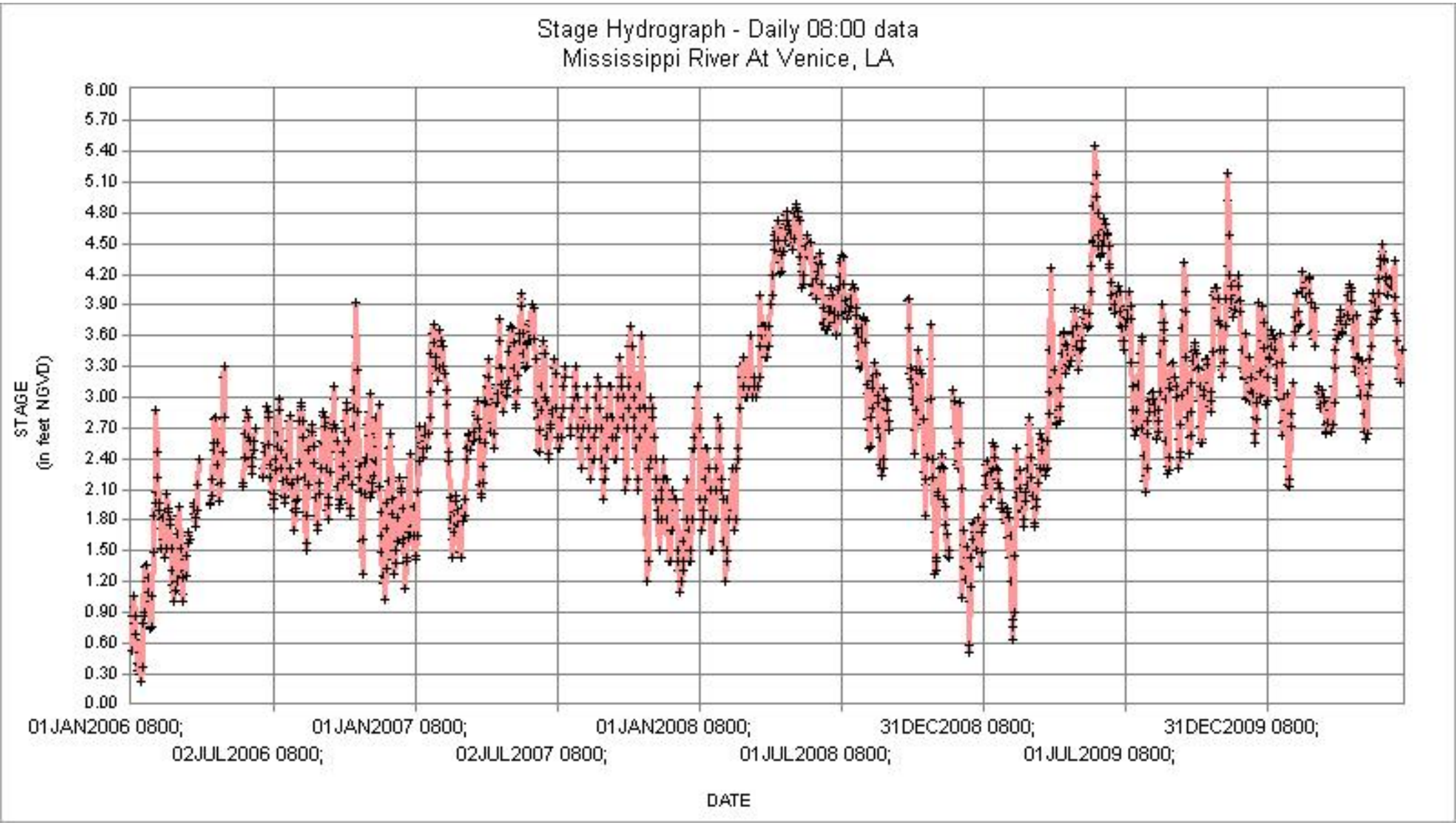
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STAGE
(in feet NGVD)
6.00
5.70
5.40
5.10
4.80
4.50
4.20
3.90
3.60
3.30
3.00
2.70
2.40
2.10
1.80
1.50
1.20
0.90
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0.30
0.00
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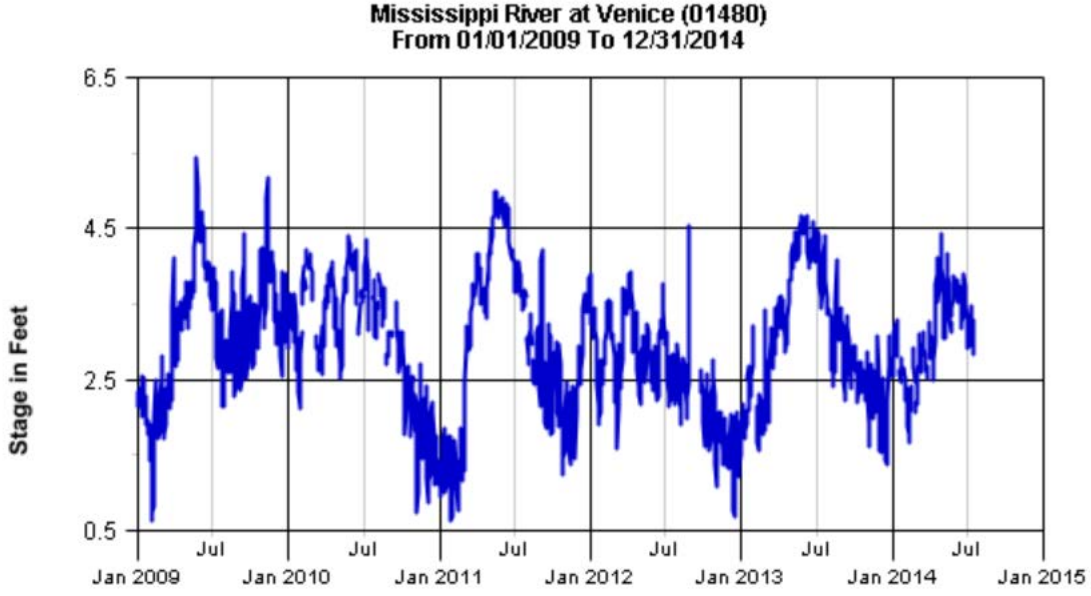
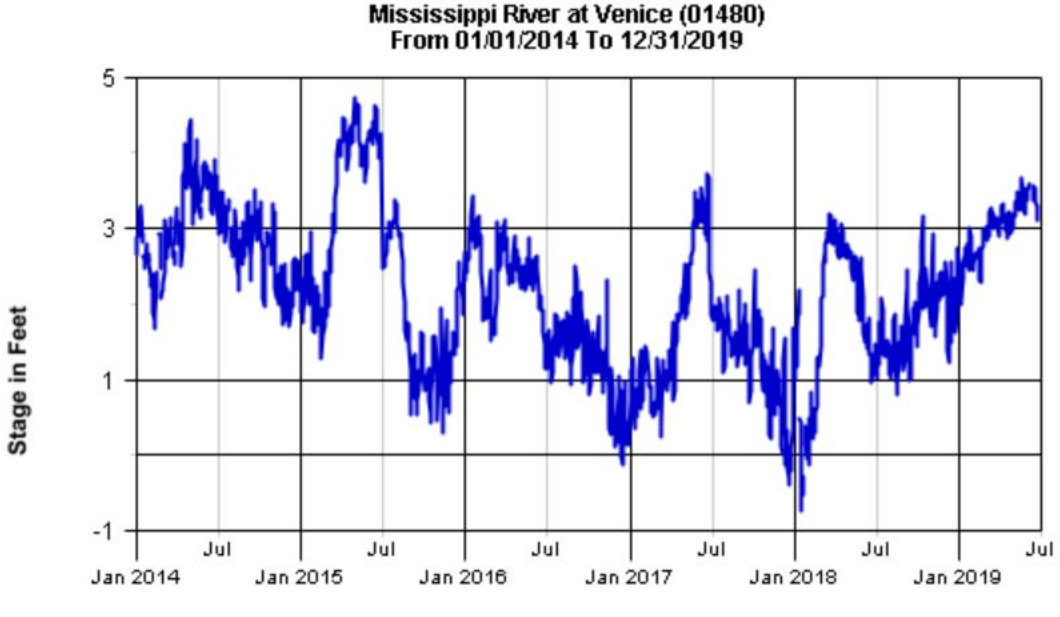
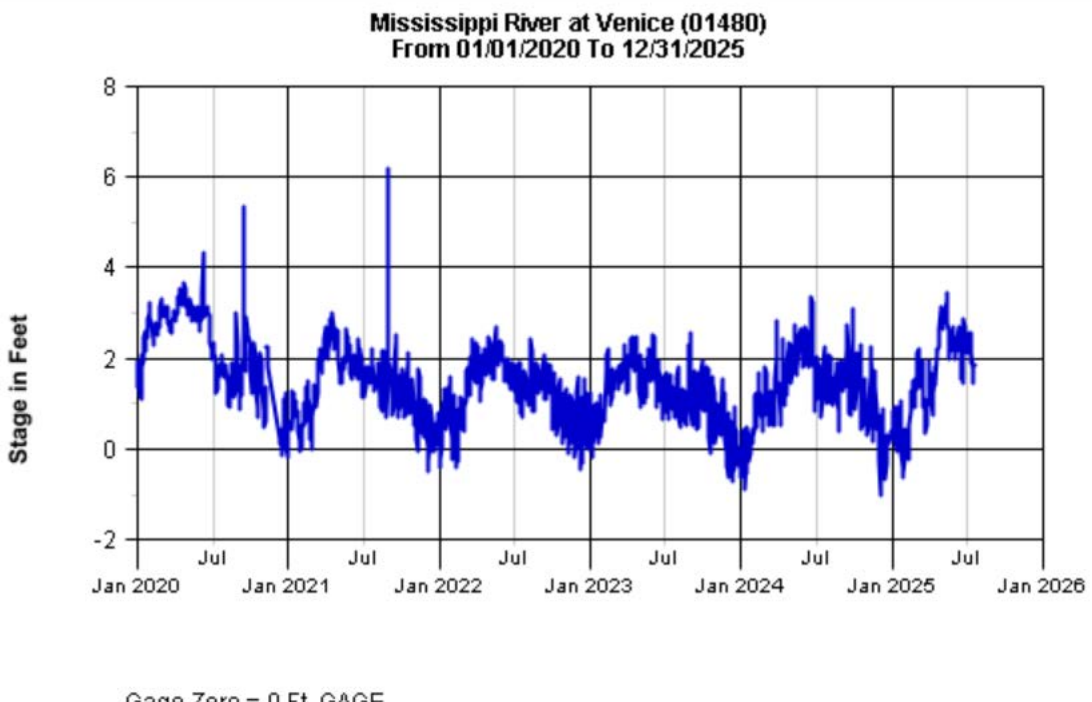


Gage Zero = 0 Ft. GAGE


Mississippi River at Venice (01480)
From 01/01/2014 To 12/31/2019
Stage in Feet
5
3
1
-1
Jul
Jan 2014
Jan 2015
Jan 2016
Jan 2017
Jan 2018
Jan 2019
Gage Zero = 0 Ft. GAGE


Mississippi River at Venice (01480)
From 01/01/2020 To 12/31/2025
Stage in Feet
8
6
4
2
0
-2
Jul
Jul
Jul
Jul
Jul
Jul
Jan 2020
Jan 2021
Jan 2022
Jan 2023
Jan 2024
Jan 2025
Jan 2026
Gage Zero = 0 Ft. GAGE