

Measurements of lateral flow from the Mississippi River at Mardi Gras
Pass in the Bohemia Spillway using synoptic ADCP

A field report

Submitted to

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By

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Introduction

The Coastal Hydrodynamics and Sediment Transport Laboratory, at the Pontchartrain Institute for Environmental Sciences conducted synoptic ADCP surveys of Mardi Gras Pass connected to the Mississippi River at the Bohemia Spillway. The survey was conducted on June 31, 2013.

Objective

The objective of the survey was to measure the flow in the pass, named Mardi Gras Pass (MGP), to help create a new stage-discharge data point to further constrain a developing rating curve (Figure 1).

Methods

To measure flow, we used a vessel-mounted Acoustic Doppler Current Profiler (ADCP), used in tandem with a differential global positioning system (DGPS, Trimble GS232). The surveys followed a pre-determined schedule of transects, targeted mainly to establish a flow balance within reach 4 of MGP.

Results

The flow in Mardi Gras Pass on July 31, 2013 was approximately $61.4 \text{ m}^3/\text{s}$, or 2,167 cfs, which is the average of four transects conducted over a two-hour window. Using a standard deviation derived from the field measurements, the average flow at the time of measurement was $61.4 \pm 0.9 \text{ m}^3/\text{s}$, or $2,167 \pm 31$ cfs. Figure 2 shows the updated rating curve for MG Pass using only ADCP flow data, and Table 1 provides a summary of all flows measured in MGP from each survey conducted throughout the monitoring period.



Figure 1. Trimaran transversing the cut

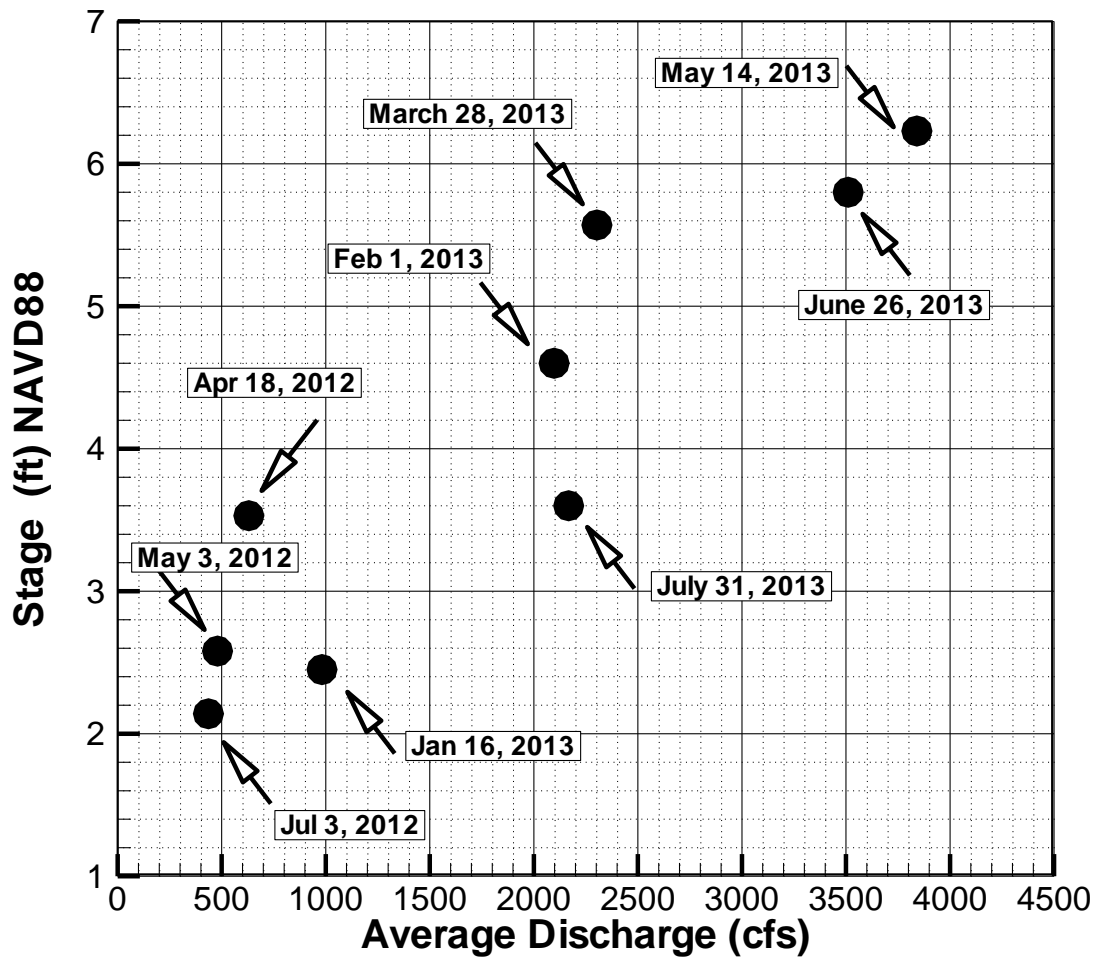


Figure 2. Stage Discharge curve for Margi Gras Pass showing all flow measurements.

Table 1. Discharge details from each survey (1-9) with statistics and Stage (ft NAVD88) at West point a la Hache.

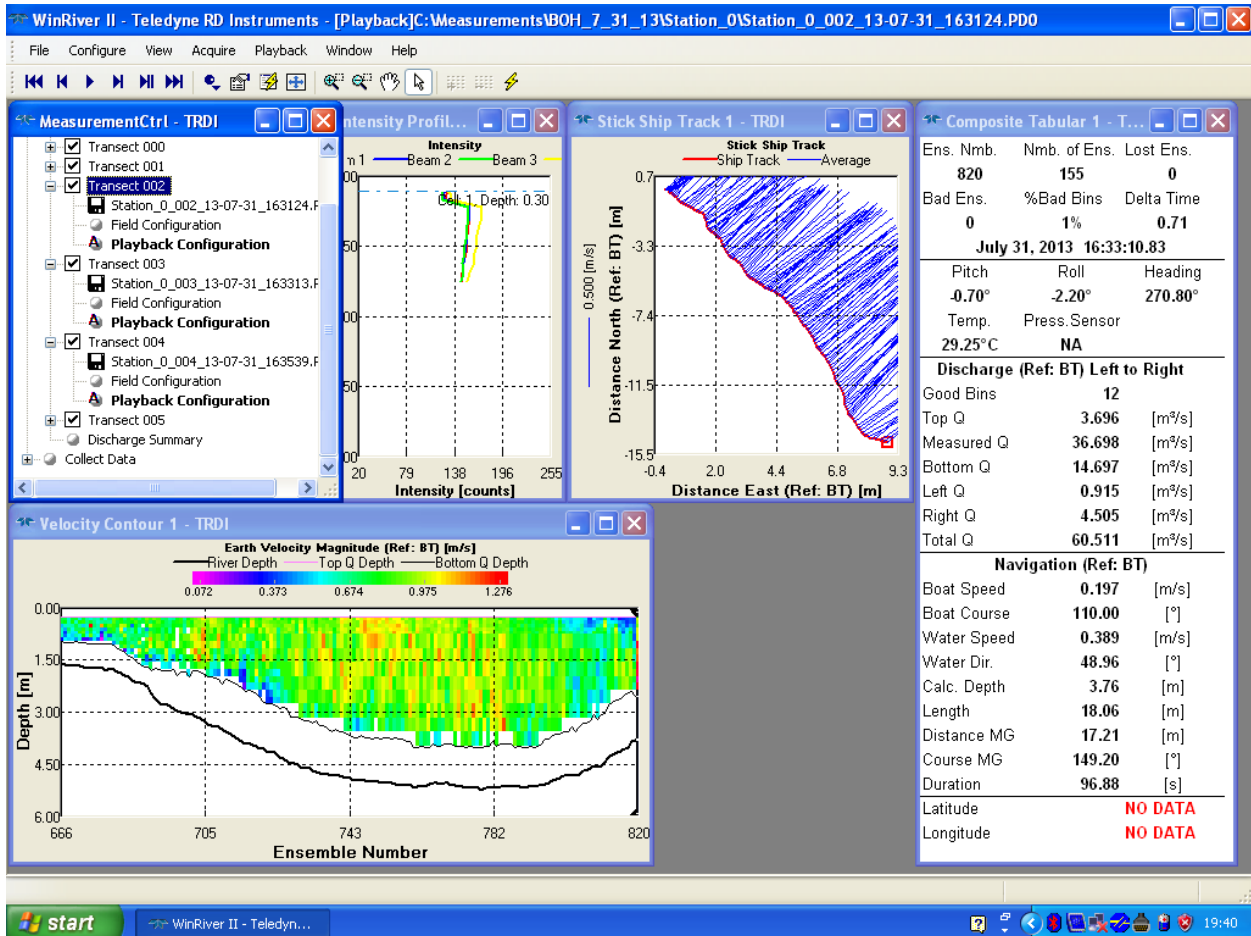
Survey number	Date	Average Discharge (cfs)	Standard Deviation (cfs)	Standard Error (cfs)	Average Discharge (cms)	Standard Deviation (cms)	Standard Error (cms)	Stage (ft) NAVD88
MGP01	3/28/2012	2303	59.4	24.3	65.2	1.7	0.7	5.57
MGP02	4/18/2012	630.3	10.8	5.4	17.8	0.3	0.2	3.53
MGP03	5/3/2012	479.9	23.3	10.4	13.6	0.7	0.3	2.58
MGP04	7/3/2012	436.1	13.5	6	12.3	0.4	0.2	2.14
MGP05	1/16/2013	981.9	24.7	12.4	27.8	0.7	0.3	2.45
MGP06	2/3/2013	2097.2	16.6	6.8	59.4	0.5	0.2	4.6
MGP07	5/14/2013	3840.5	194.2	97.1	108.8	5.5	2.8	6.23
MGP08	6/26/2013	3510.3	40	28.2	99.4	1.1	0.8	5.8
MGP09	7/31/2013	2167.2	31	17.8	61.4	0.9	0.5	3.6

Appendix A. Mardi Gras Pass Survey July 31, 2013

Note: Gauge at MGP and canal was about 12'. (Not highly readable due to mud stains.)

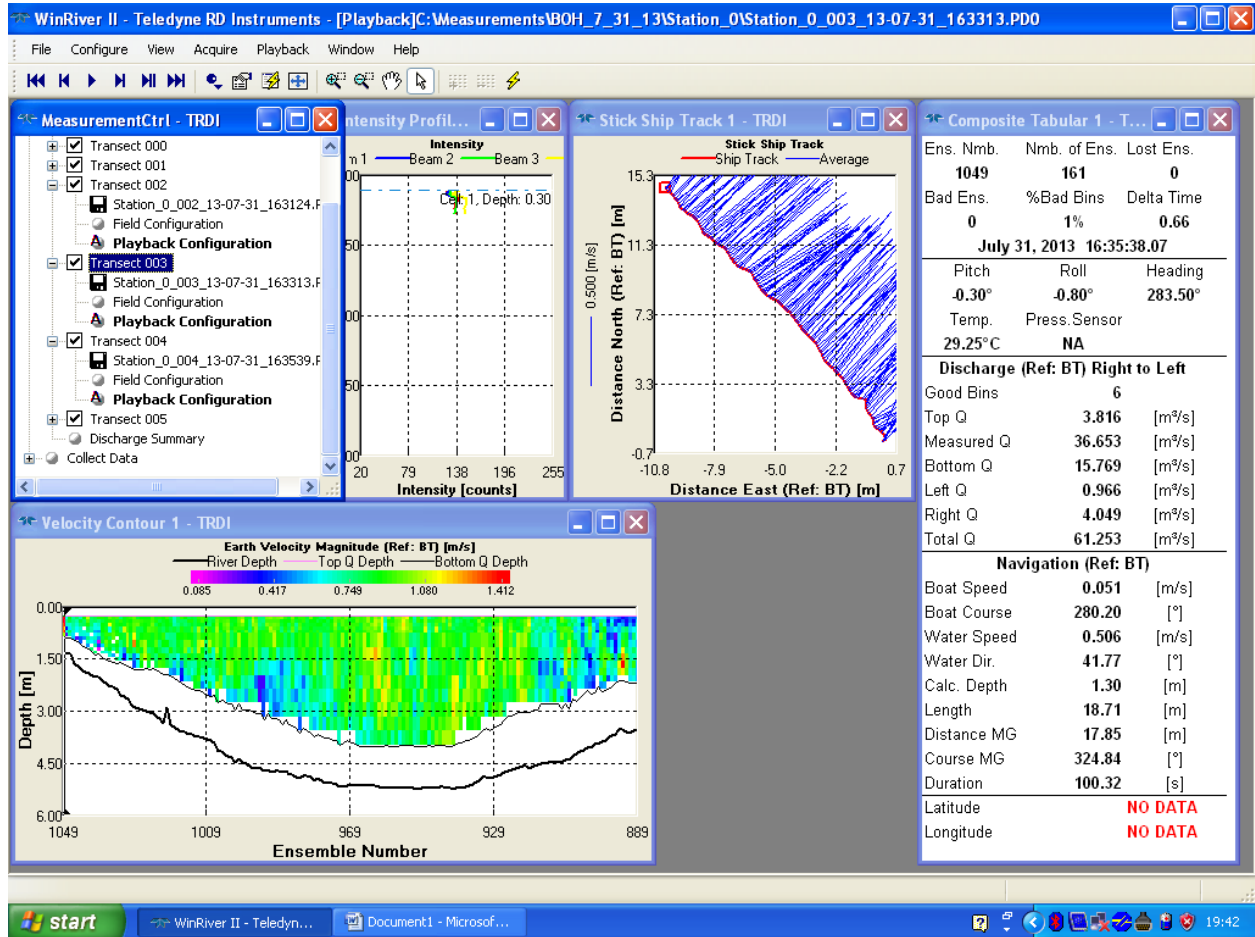
Station_0_002

Q=60.5 m³/s



Station_0_003

Q=61.3 m³/s



Station_0_004

$$Q = 61.3 \text{ m}^3/\text{s}$$

