Coastal Protection and Restoration Authority
450 Laurel Street, Baton Rouge, LA 70804 | coastal@la.gov | www.coastal.la.gov

2017 Coastal Master Plan

Appendix C – Modeling

Attachment C3-26.3

Water Level Data

DRAFT

Report: Version I

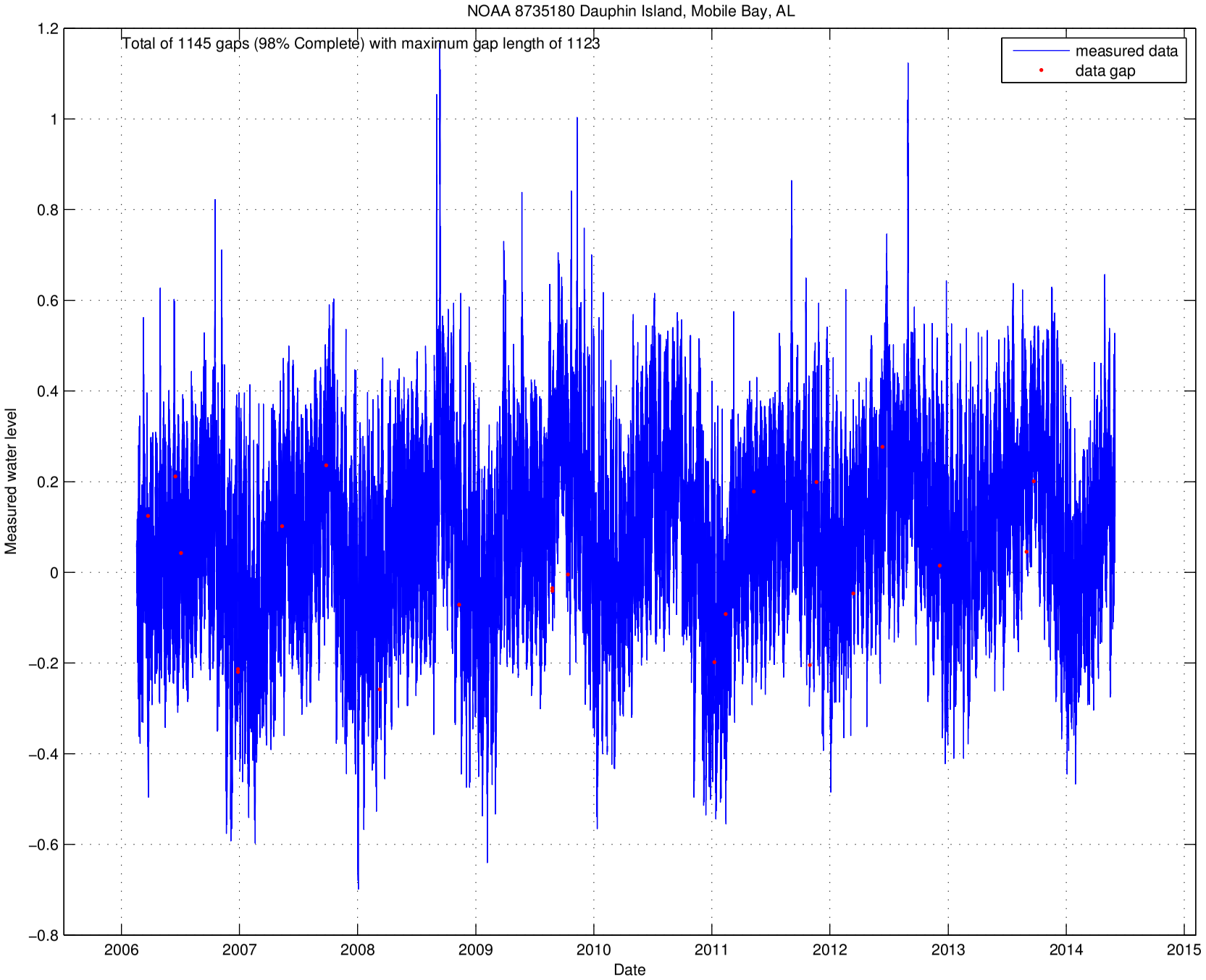
Date: July 2015

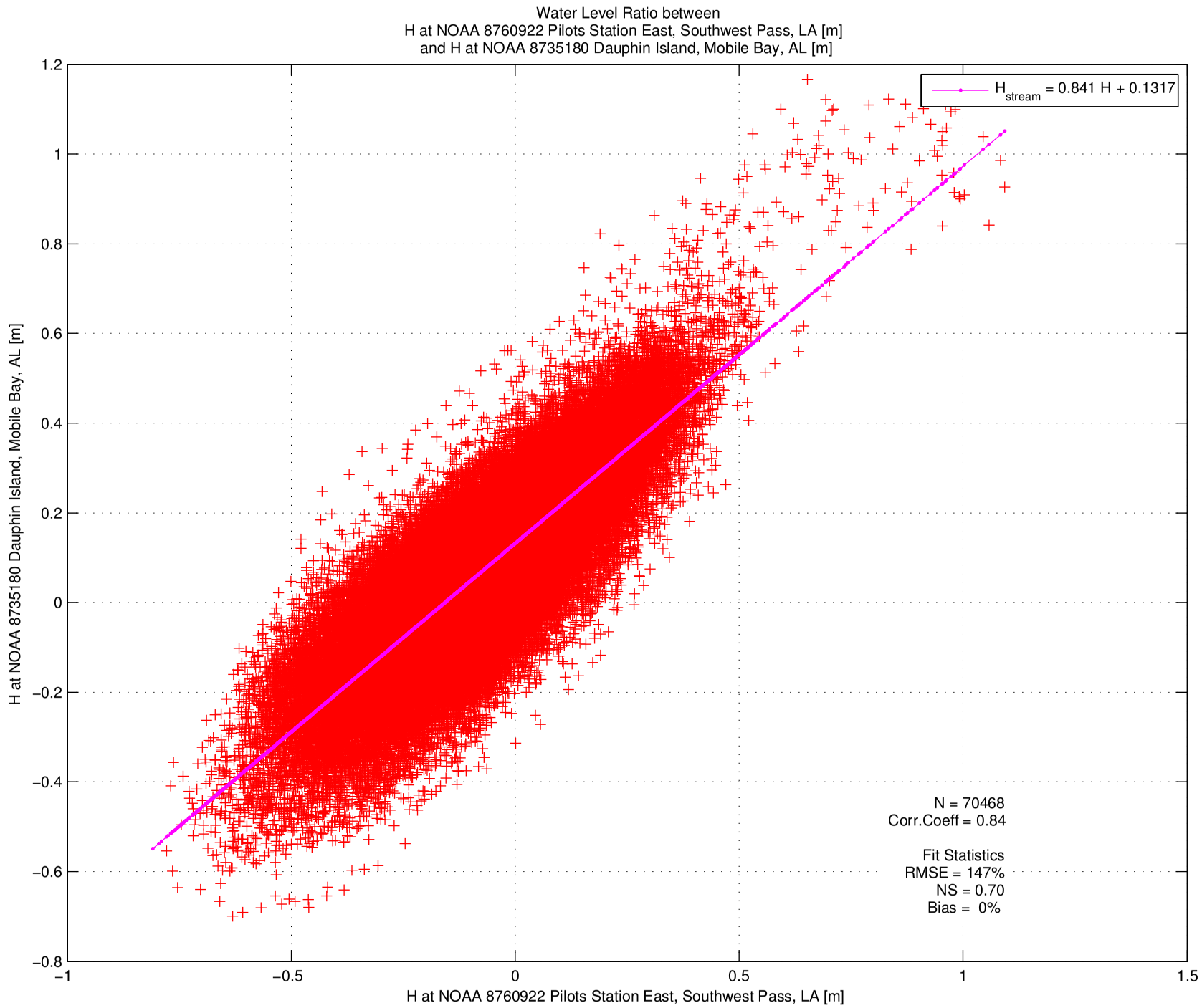
Prepared By: Stokka Brown, Moffatt & Nichol

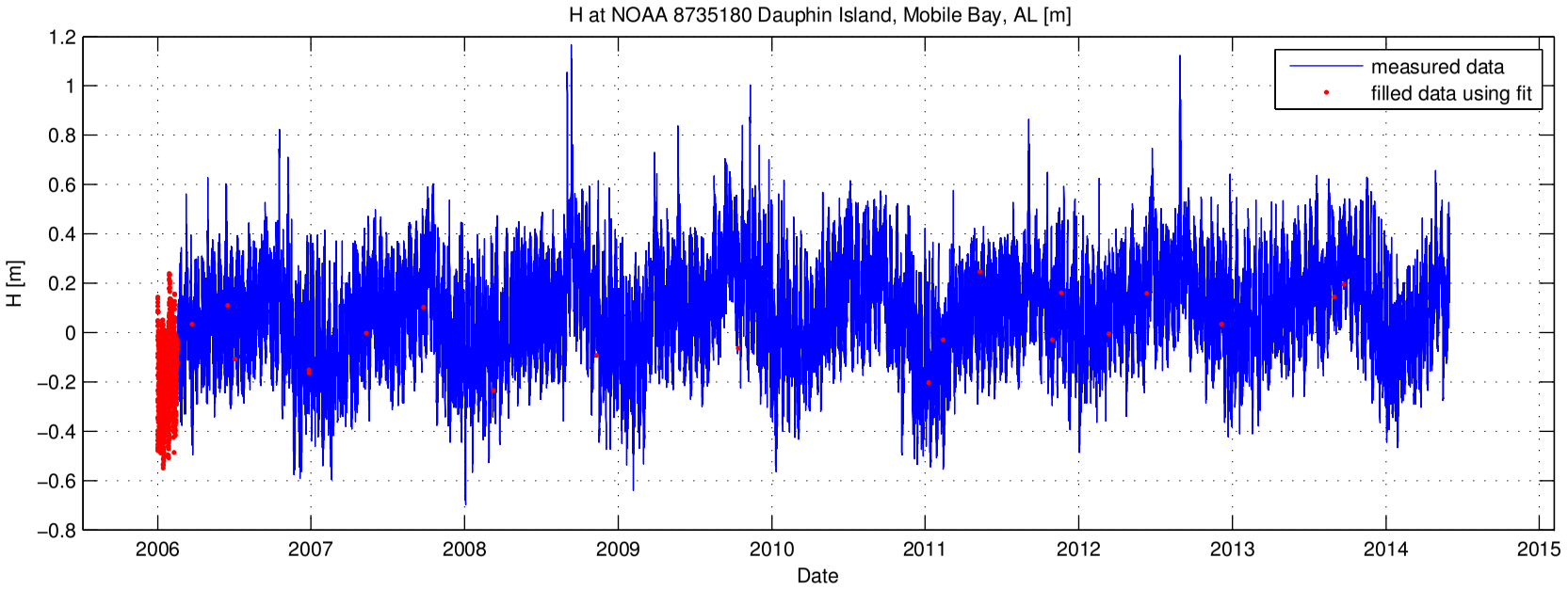
Coastal Protection and Restoration Authority

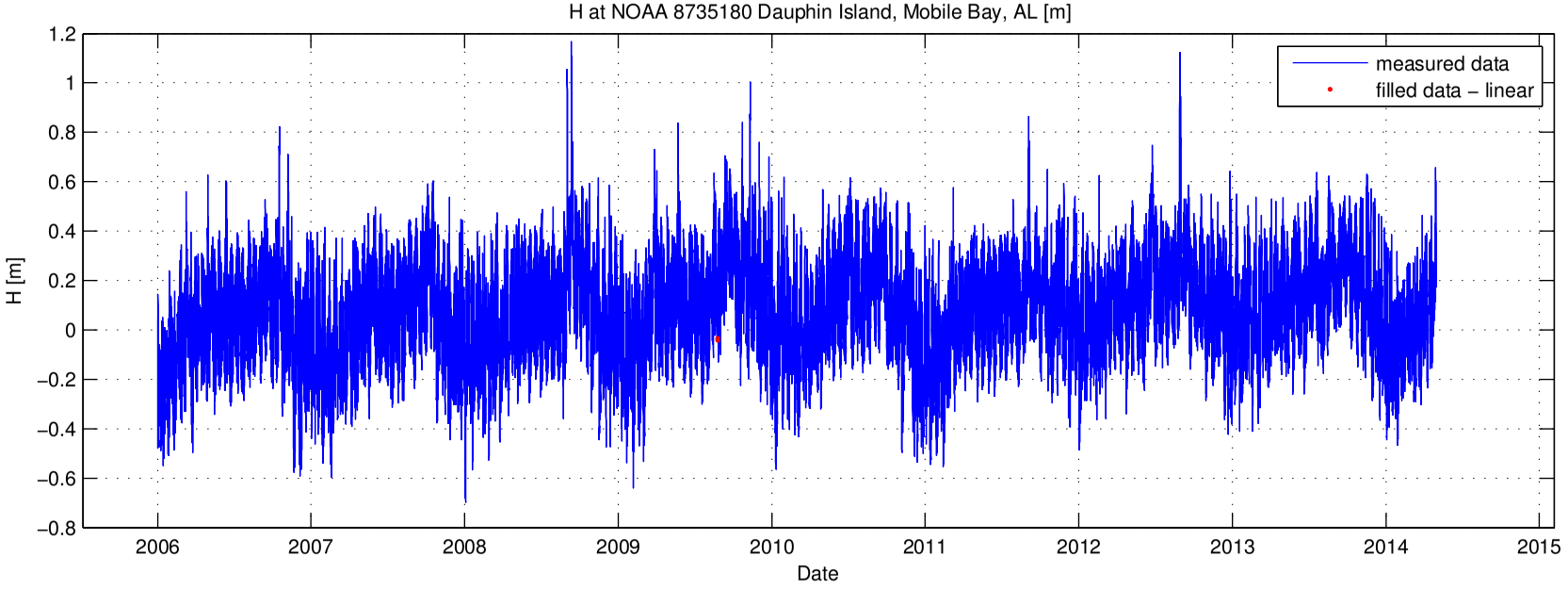
This document was prepared in support of the 2017 Coastal Master Plan being prepared by the Coastal Protection and Restoration Authority (CPRA). CPRA was established by the Louisiana Legislature in response to Hurricanes Katrina and Rita through Act 8 of the First Extraordinary Session of 2005. Act 8 of the First Extraordinary Session of 2005 expanded the membership, duties and responsibilities of CPRA and charged the new Authority to develop and implement a comprehensive coastal protection plan, consisting of a Master Plan (revised every five years) and annual plans. CPRA's mandate is to develop, implement and enforce a comprehensive coastal protection and restoration Master Plan.

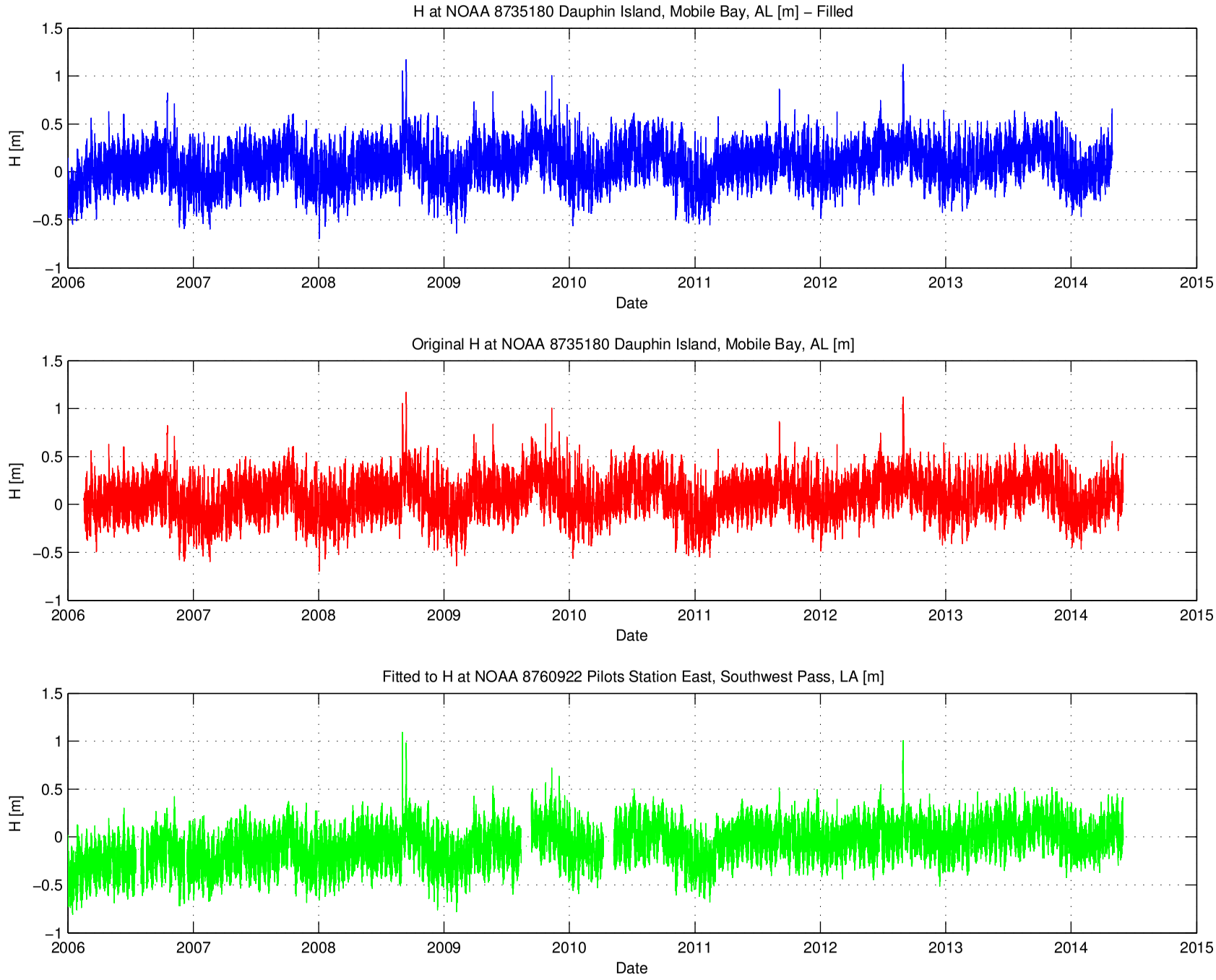
DRAFT

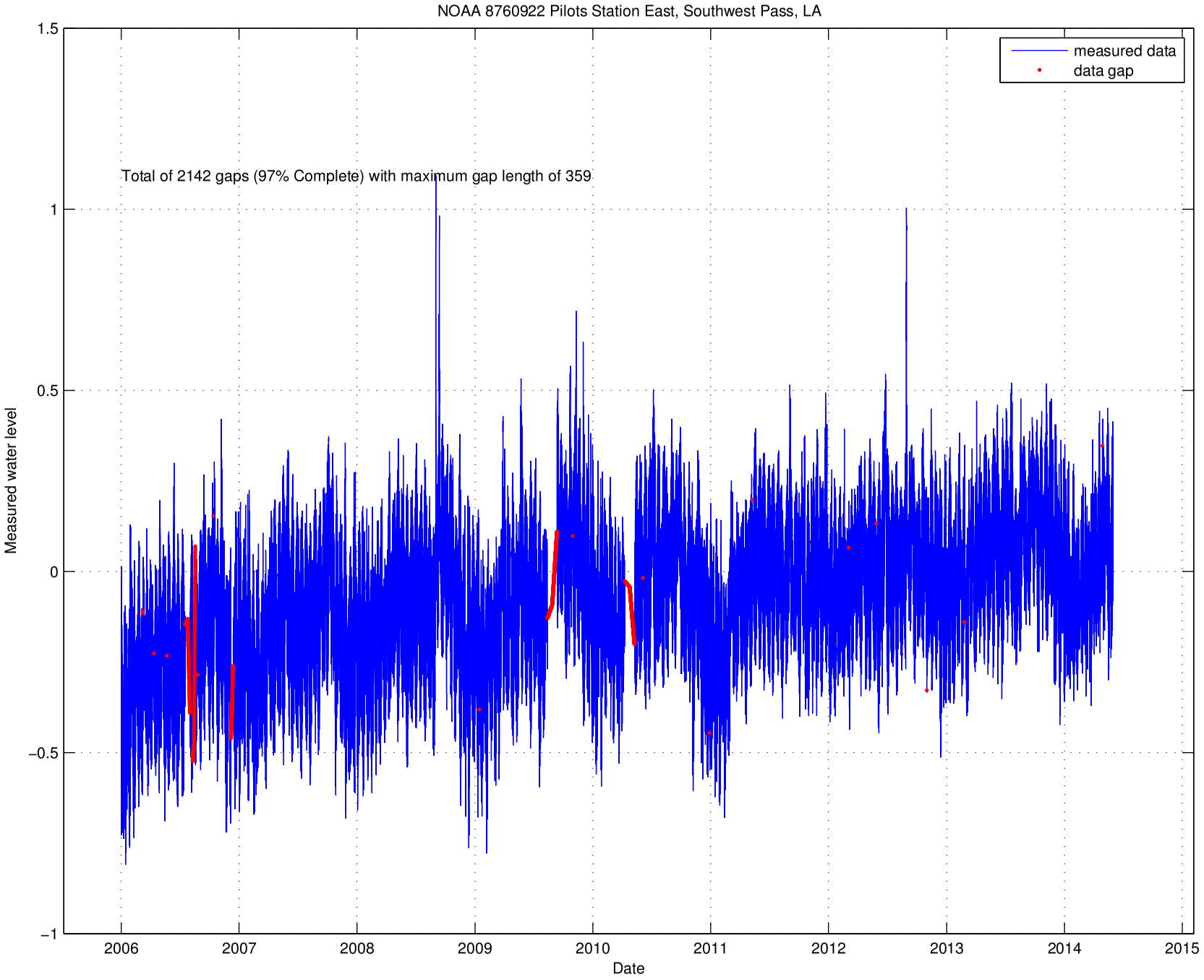

NOAA 8735180 Dauphin Island, Mobile Bay, AL
Total of 1145 gaps (98% Complete) with maximum gap length of 1123
measured data
data gap
Measured water level
Date
1.2
1
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

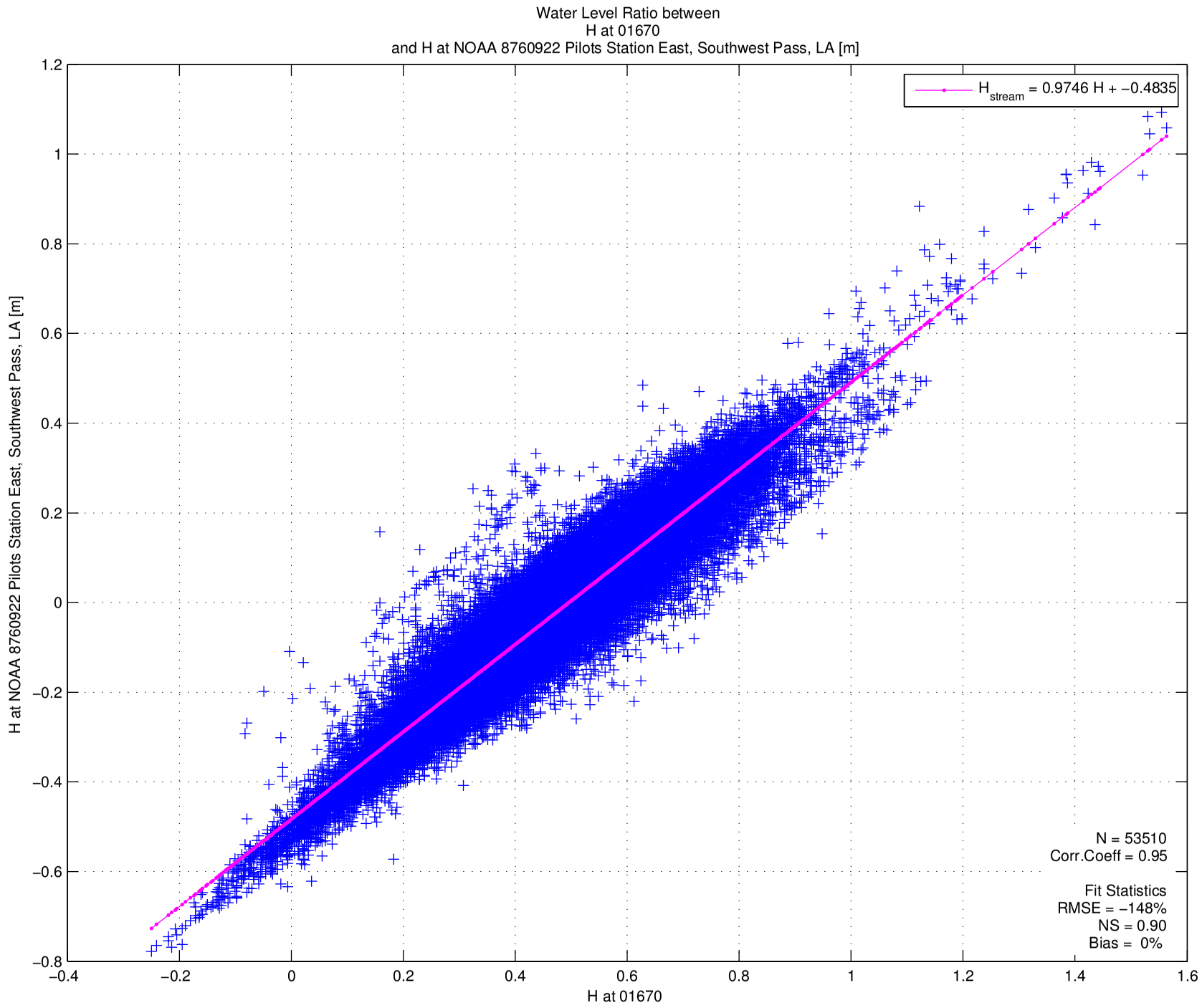

Water Level Ratio between
H at NOAA 8760922 Pilots Station East, Southwest Pass, LA [m]
and H at NOAA 8735180 Dauphin Island, Mobile Bay, AL [m]
H_stream = 0.841 H + 0.1317
N = 70468
Corr.Coeff = 0.84
Fit Statistics
RMSE = 147%
NS = 0.70
Bias = 0%
H at NOAA 8735180 Dauphin Island, Mobile Bay, AL [m]
H at NOAA 8760922 Pilots Station East, Southwest Pass, LA [m]
1.2
1
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8
−1
−0.5
0
0.5
1
1.5

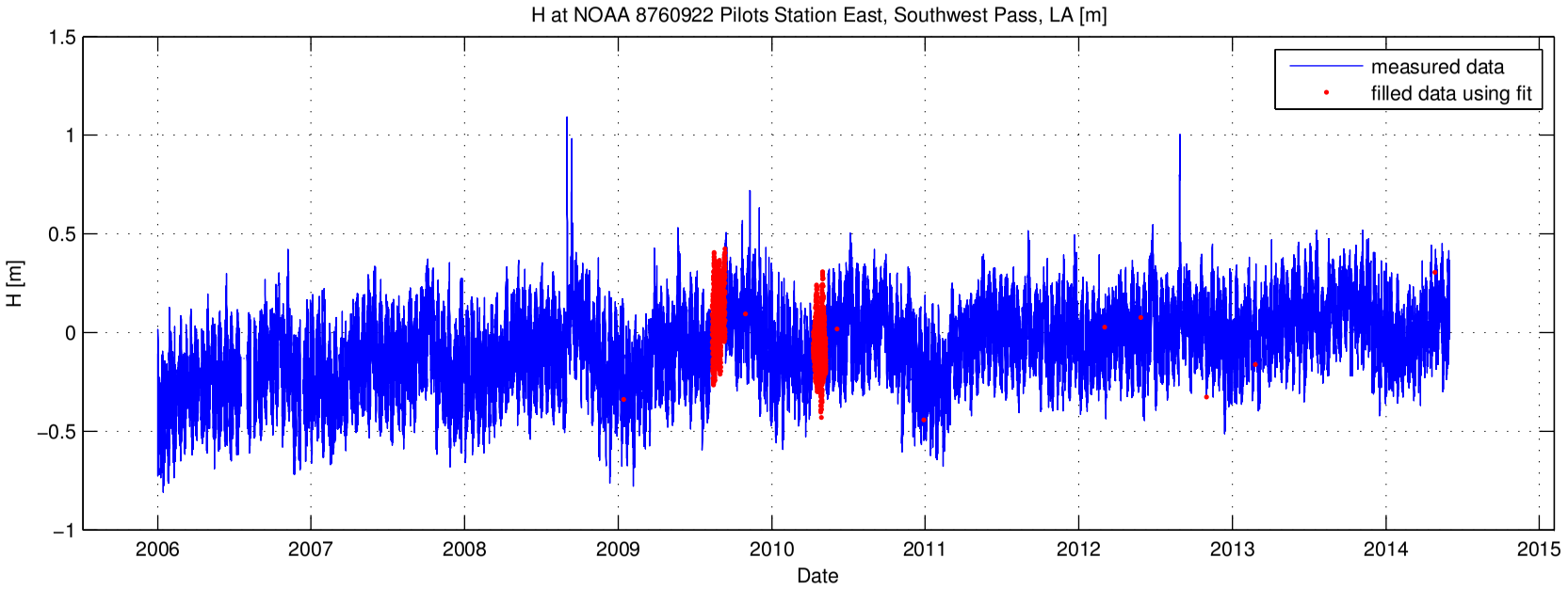

H at NOAA 8735180 Dauphin Island, Mobile Bay, AL [m]
measured data
filled data using fit
H [m]
Date
1.2
1
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

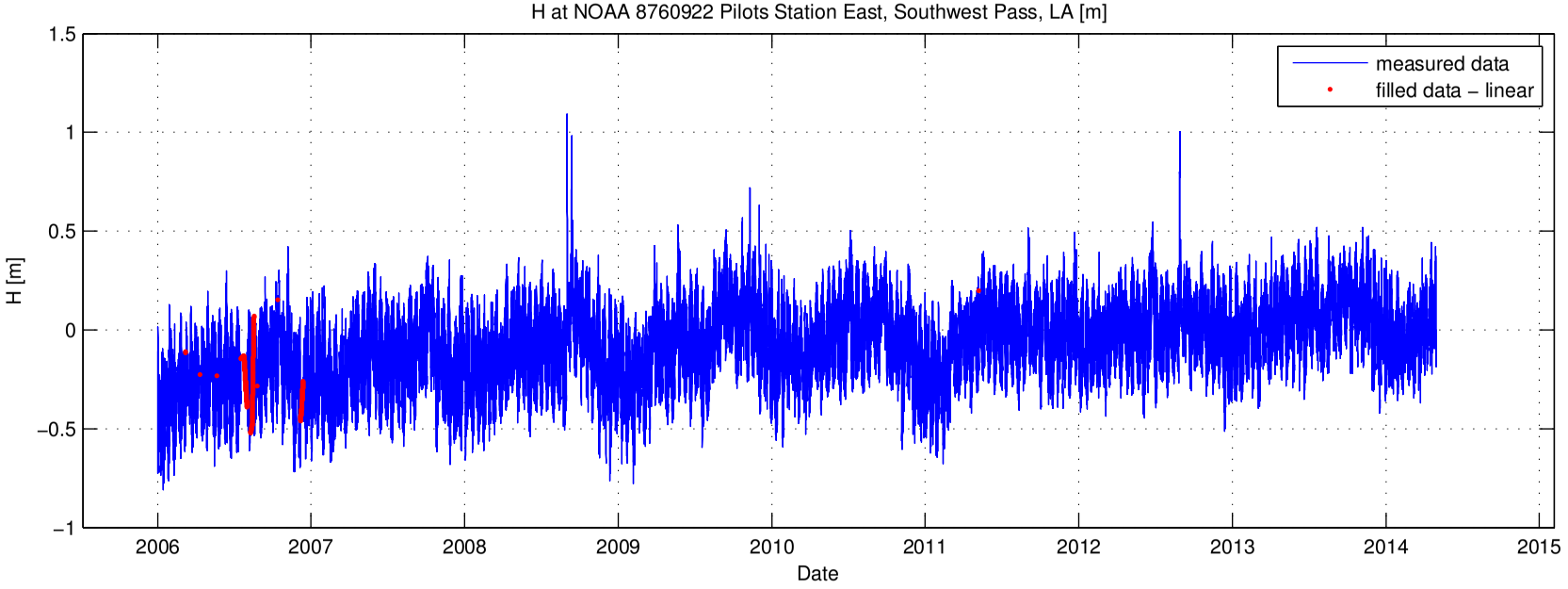

H at NOAA 8735180 Dauphin Island, Mobile Bay, AL [m]
measured data
filled data – linear
H [m]
Date
1.2
1
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

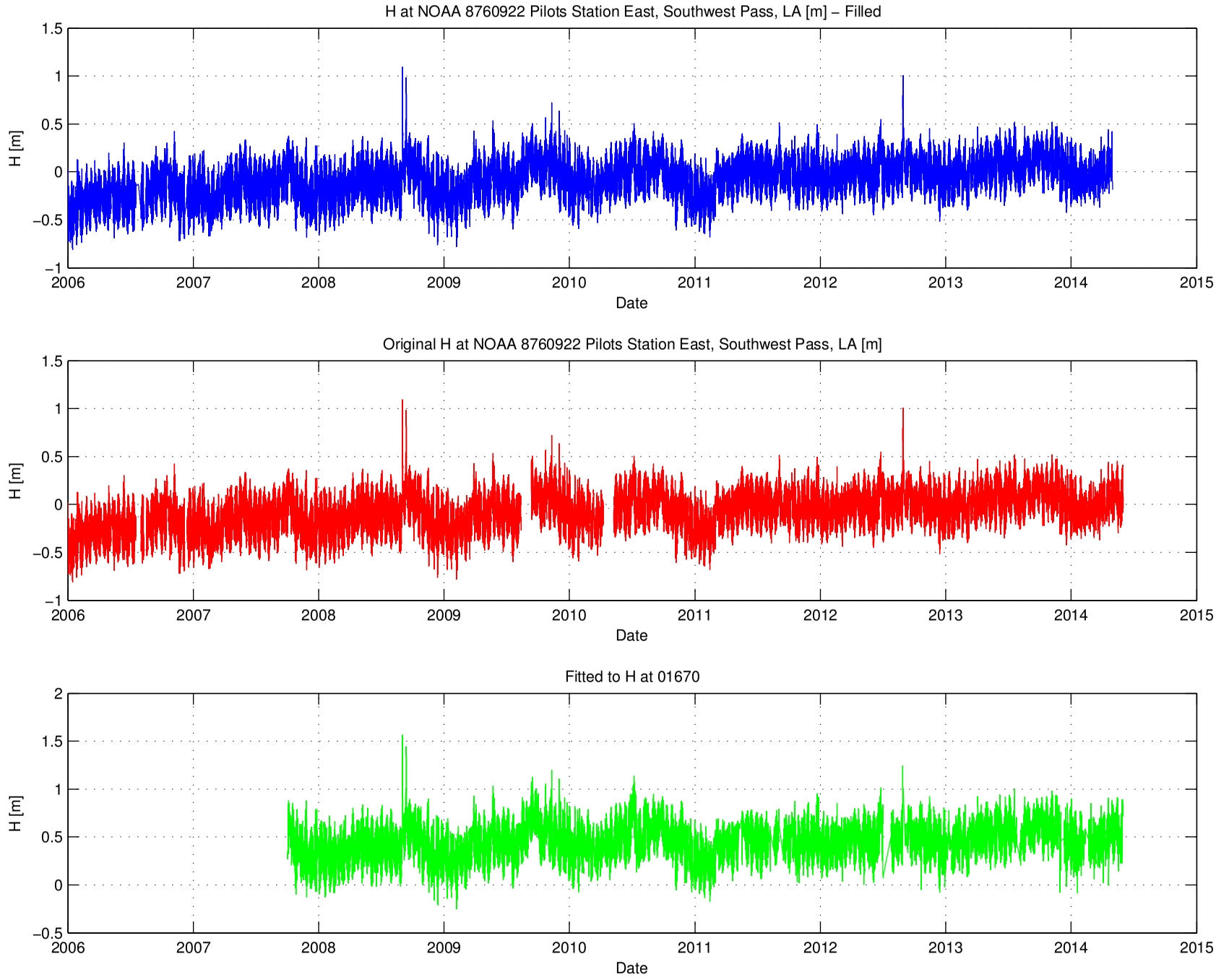

H at NOAA 8735180 Dauphin Island, Mobile Bay, AL [m] – Filled
H [m]
1.5
1
0.5
0
−0.5
−1
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Original H at NOAA 8735180 Dauphin Island, Mobile Bay, AL [m]
H [m]
Date
Fitted to H at NOAA 8760922 Pilots Station East, Southwest Pass, LA [m]
H [m]
Date

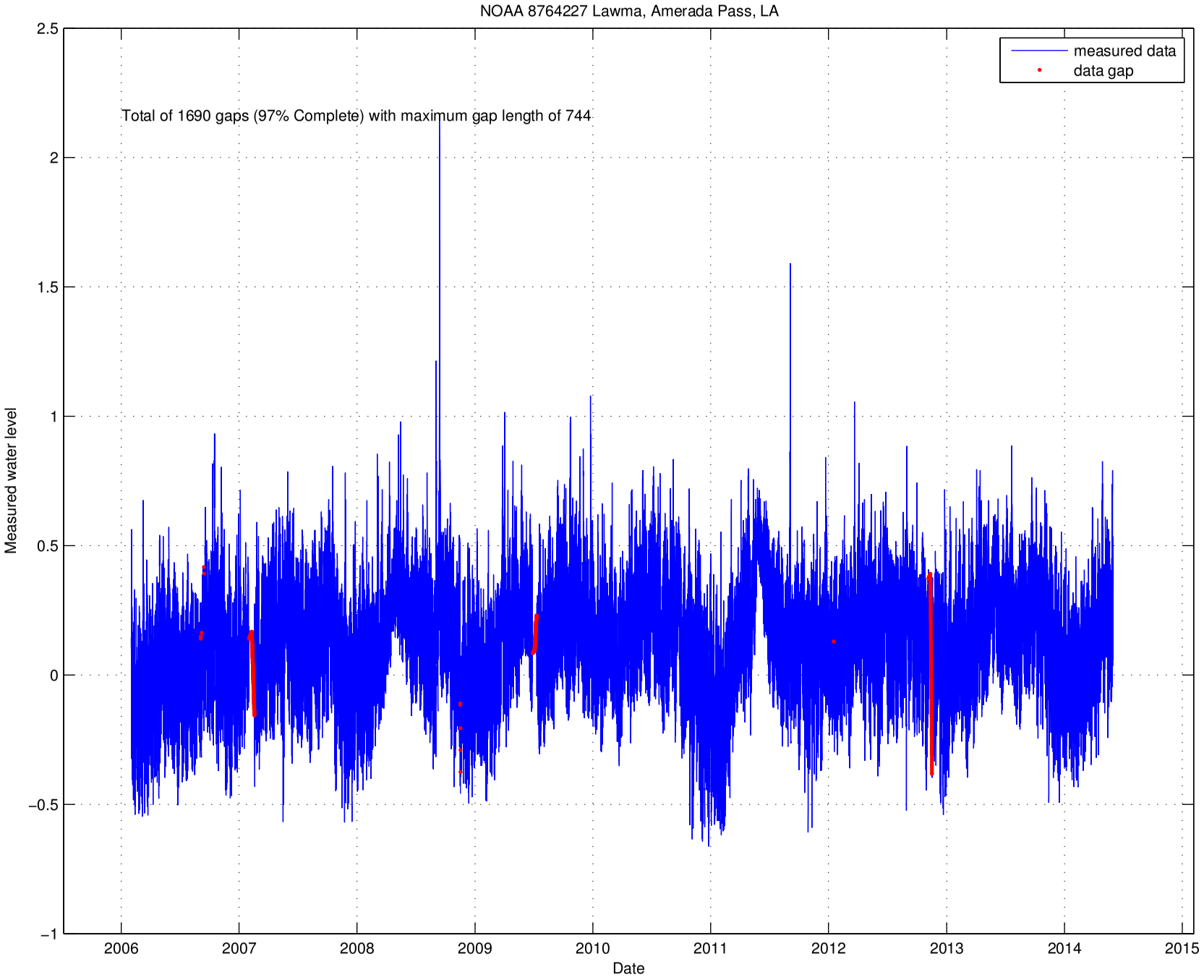

NOAA 8760922 Pilots Station East, Southwest Pass, LA
measured data
data gap
Total of 2142 gaps (97% Complete) with maximum gap length of 359
Measured water level
Date
1.5
1
0.5
0
−0.5
−1
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

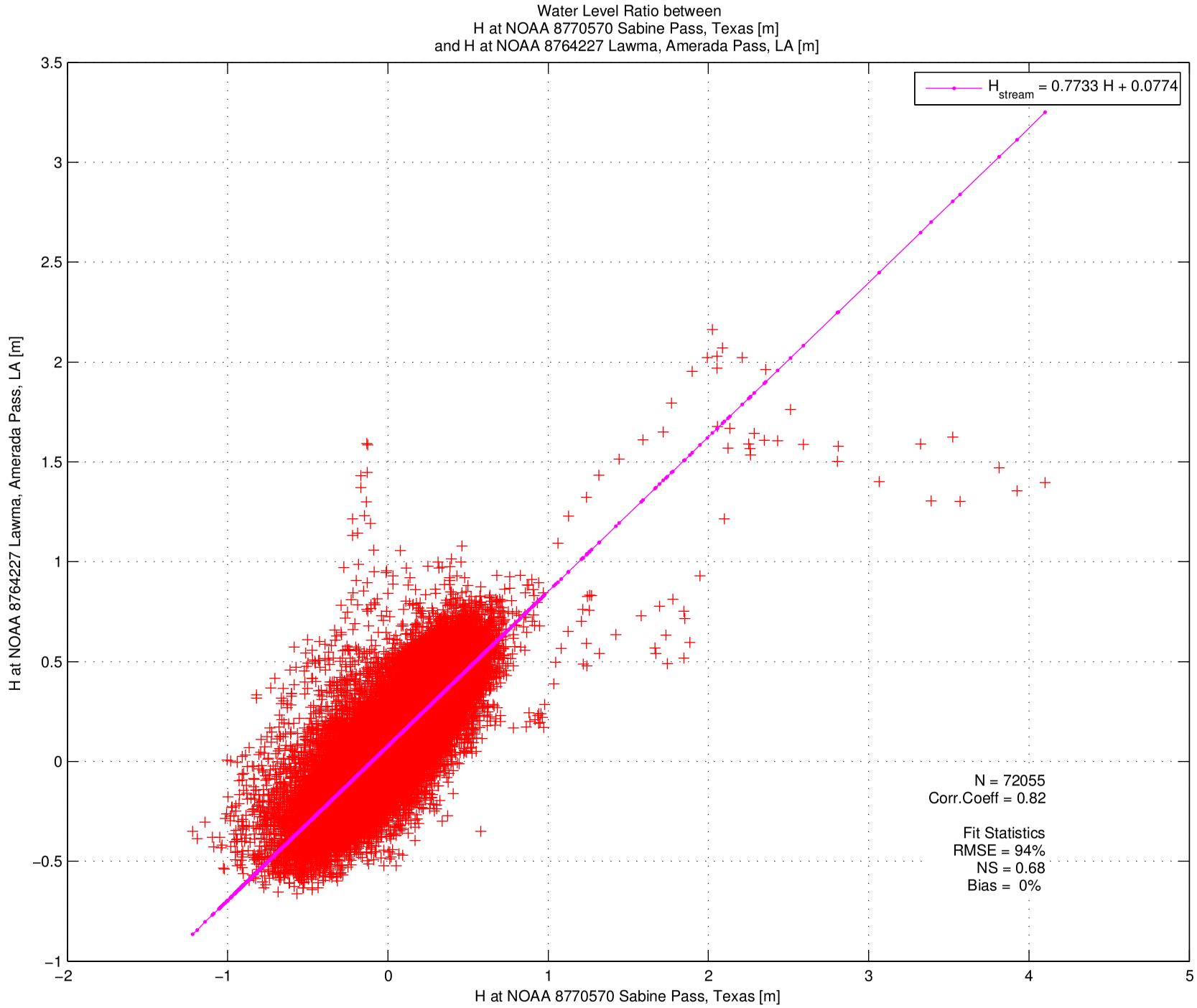

Water Level Ratio between
H at 01670
and H at NOAA 8760922 Pilots Station East, Southwest Pass, LA [m]
H_stream = 0.9746 H + −0.4835
H at NOAA 8760922 Pilots Station East, Southwest Pass, LA [m]
H at 01670
N = 53510
Corr.Coeff = 0.95
Fit Statistics
RMSE = −148%
NS = 0.90
Bias = 0%

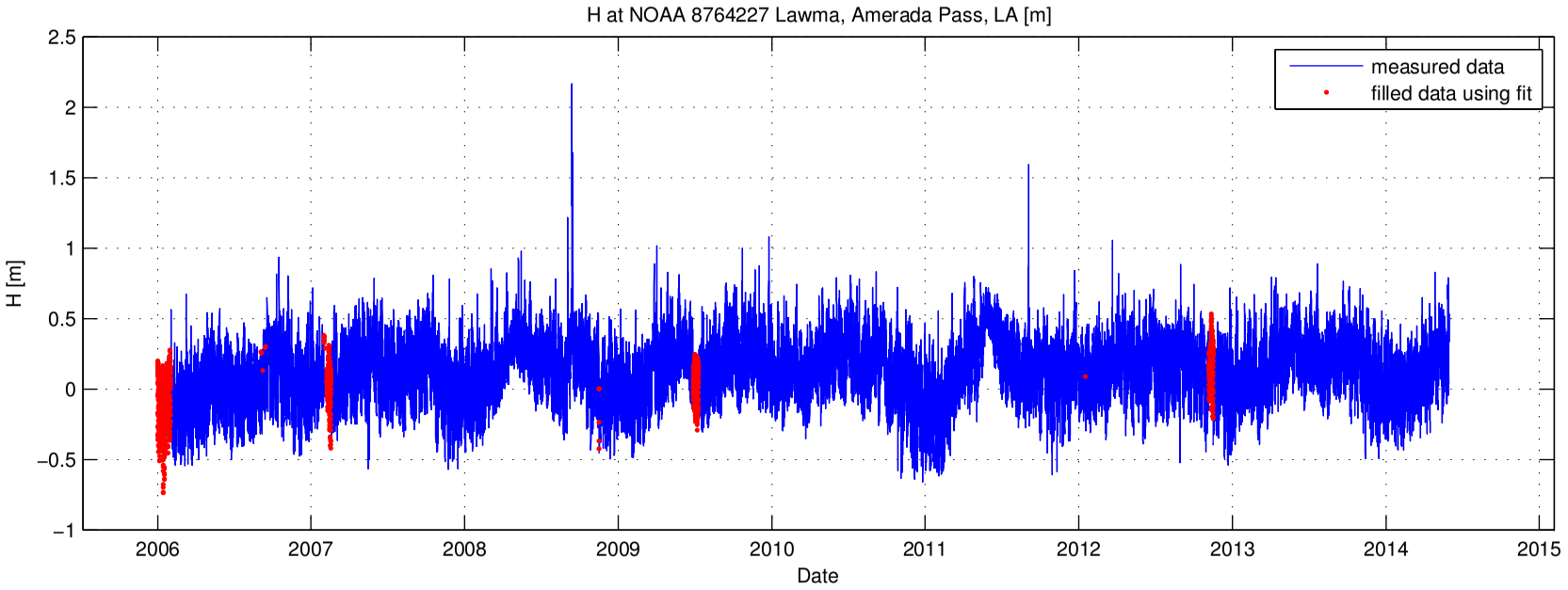

H at NOAA 8760922 Pilots Station East, Southwest Pass, LA [m]
measured data
filled data using fit
H [m]
Date
1.5
1
0.5
0
−0.5
−1
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

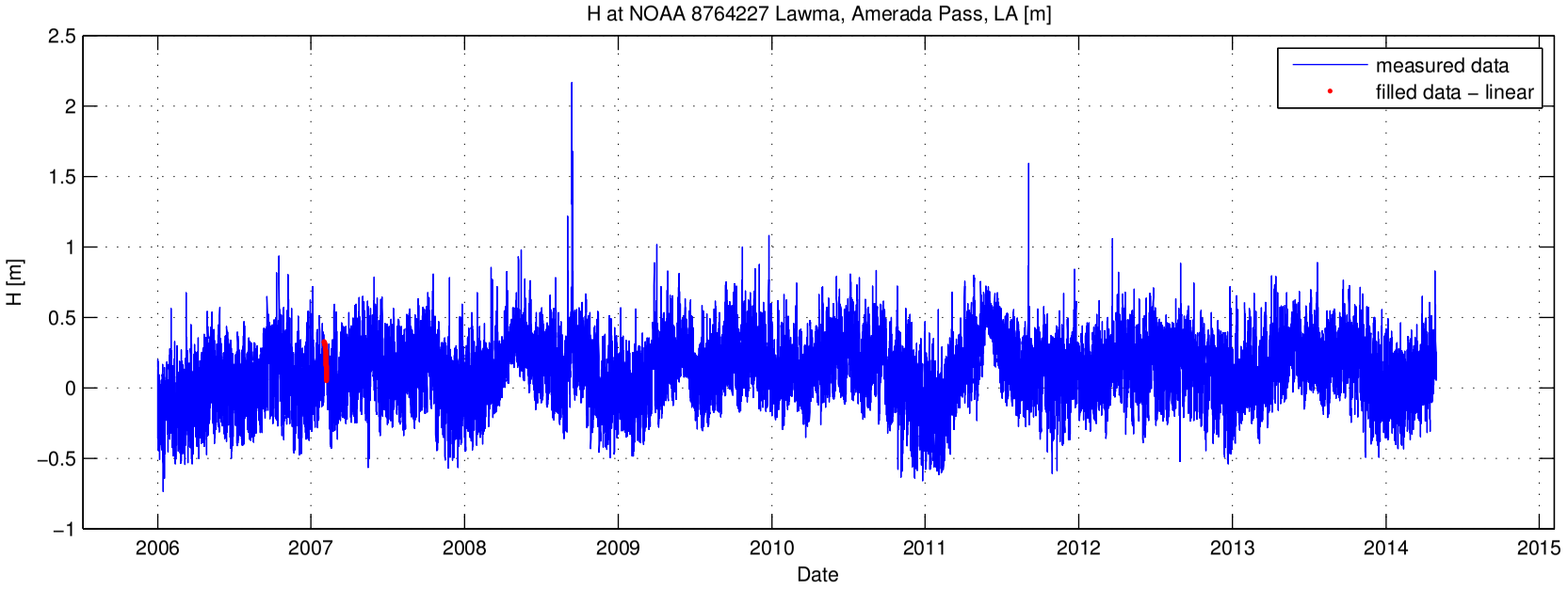

H at NOAA 8760922 Pilots Station East, Southwest Pass, LA [m]
measured data
filled data – linear
H [m]
Date
1.5
1
0.5
0
−0.5
−1
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

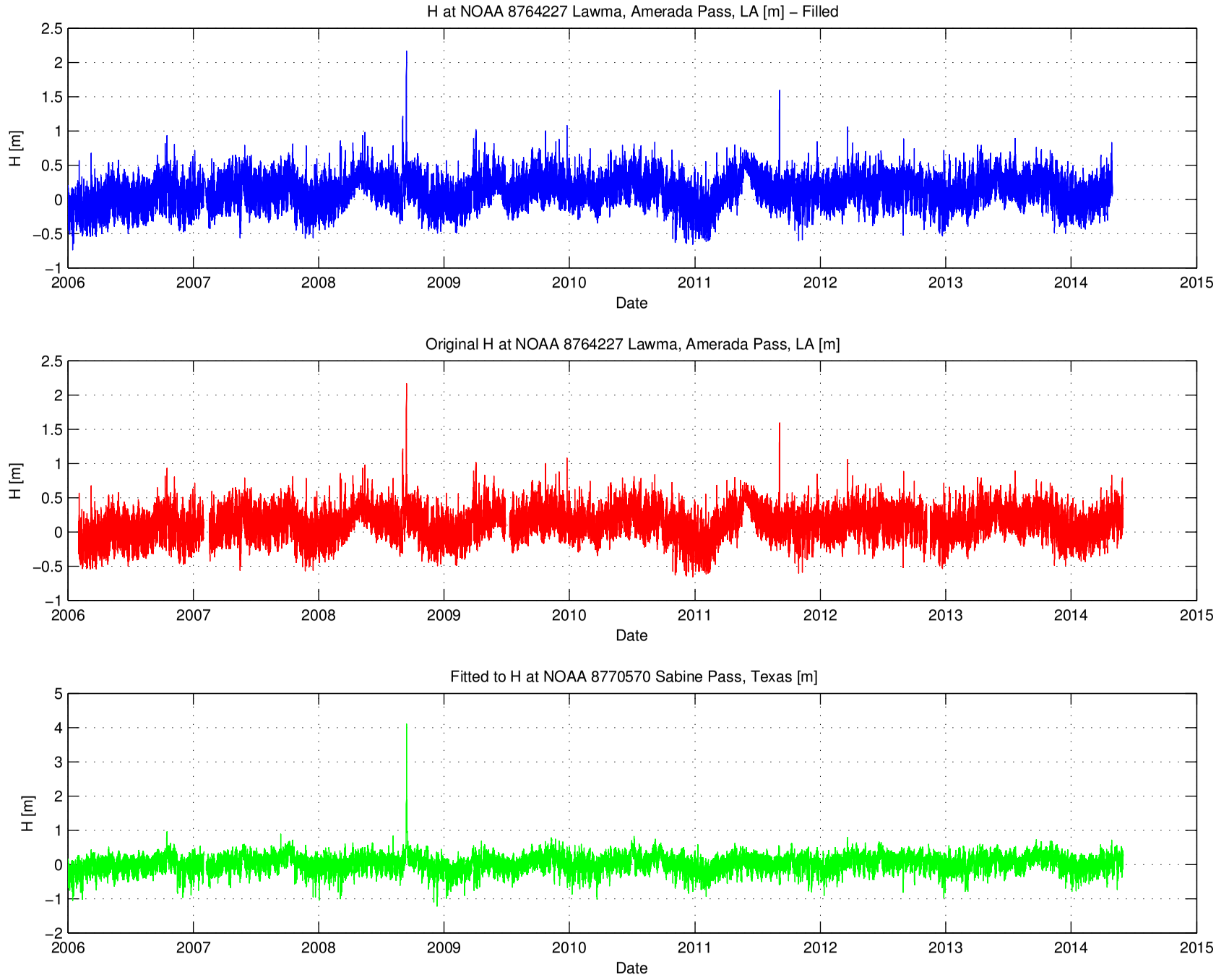

H at NOAA 8760922 Pilots Station East, Southwest Pass, LA [m] – Filled
H [m]
1.5
1
0.5
0
−0.5
−1
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Original H at NOAA 8760922 Pilots Station East, Southwest Pass, LA [m]
H [m]
1.5
1
0.5
0
−0.5
−1
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date
Fitted to H at 01670
H [m]
2
1.5
1
0.5
0
−0.5
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Date

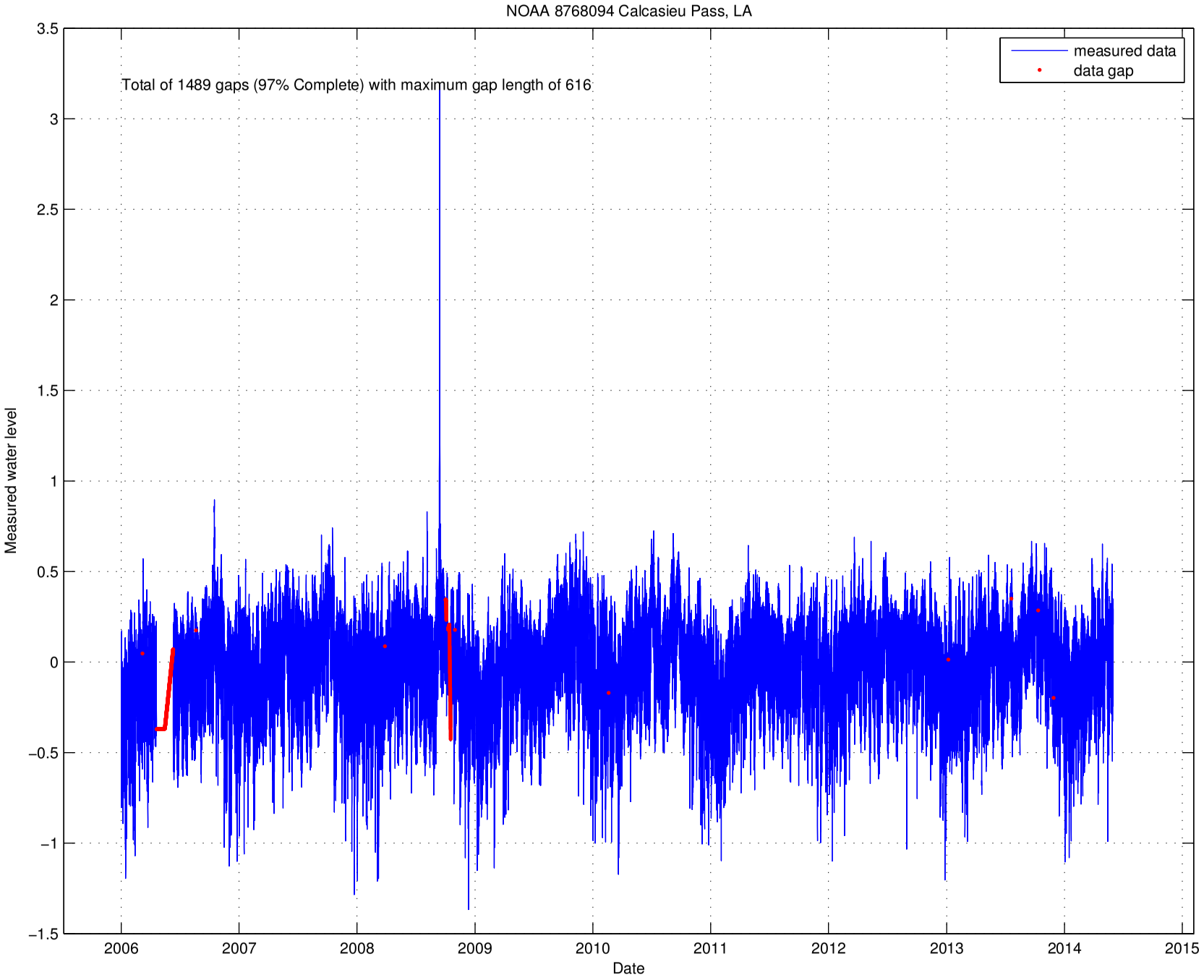

NOAA 8764227 Lawma, Amerada Pass, LA
Total of 1690 gaps (97% Complete) with maximum gap length of 744
measured data
data gap
Measured water level
Date
2.5
2
1.5
1
0.5
0
−0.5
−1
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

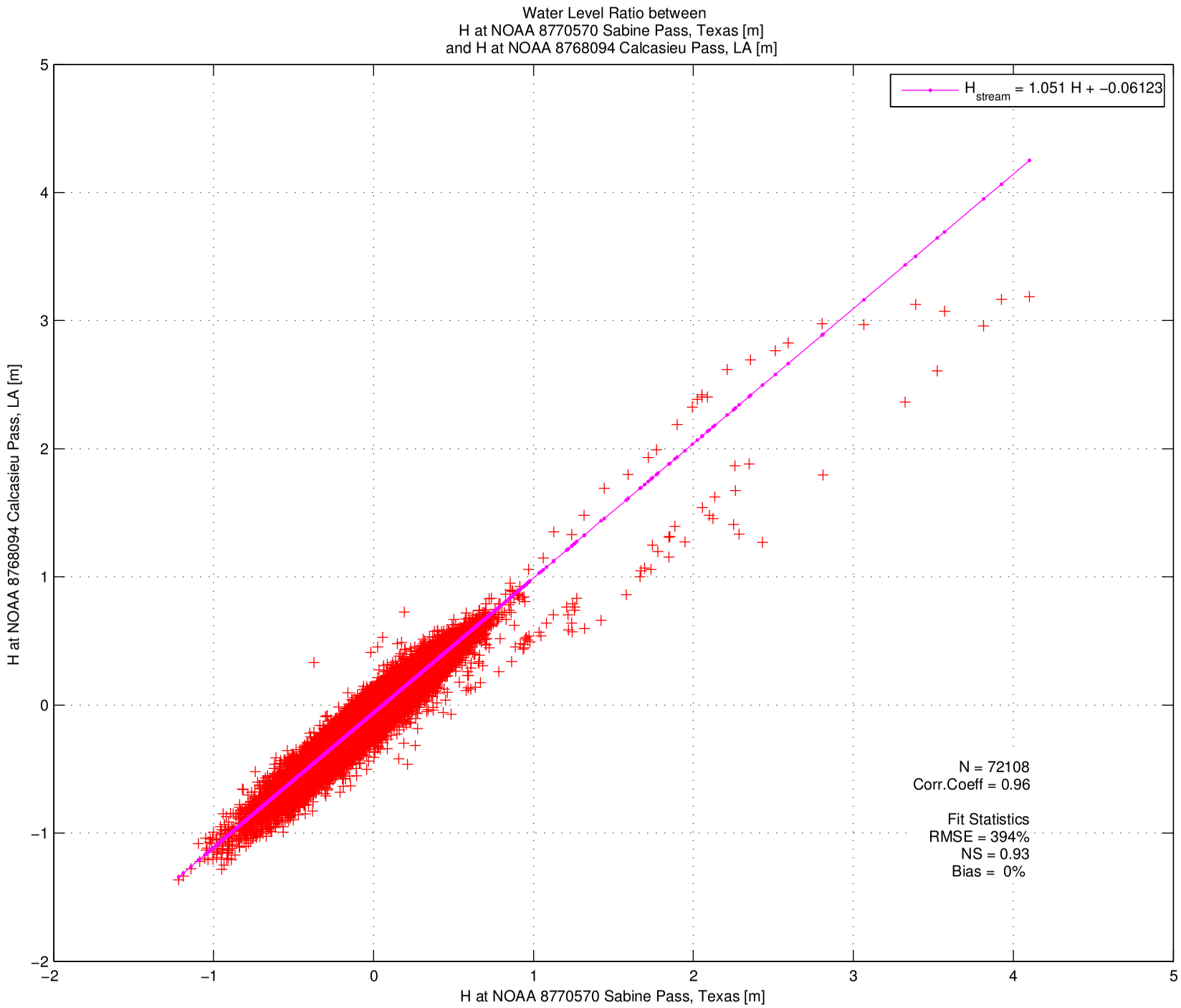

Water Level Ratio between
H at NOAA 8770570 Sabine Pass, Texas [m]
and H at NOAA 8764227 Lawma, Amerada Pass, LA [m]
H_stream = 0.7733 H + 0.0774
N = 72055
Corr.Coeff = 0.82
Fit Statistics
RMSE = 94%
NS = 0.68
Bias = 0%
H at NOAA 8764227 Lawma, Amerada Pass, LA [m]
H at NOAA 8770570 Sabine Pass, Texas [m]
3.5
3
2.5
2
1.5
1
0.5
0
−0.5
−1
−2
−1
0
1
2
3
4
5

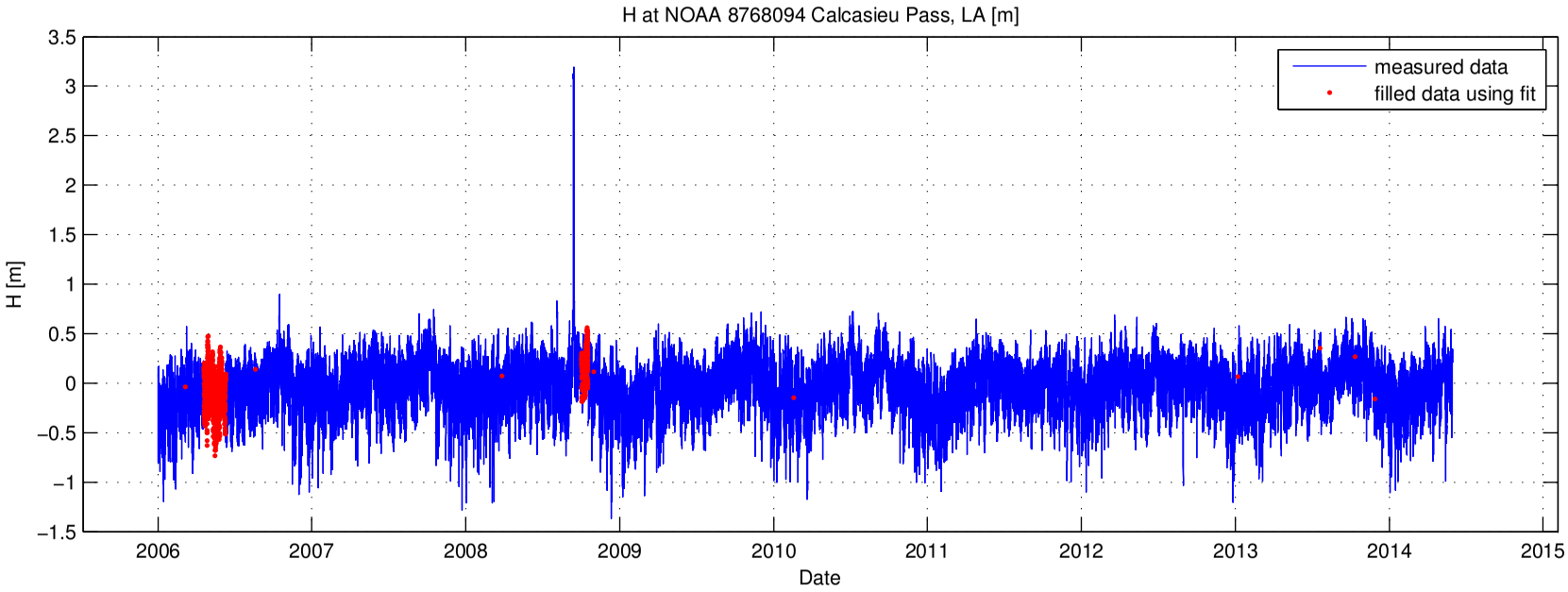

H at NOAA 8764227 Lawma, Amerada Pass, LA [m]
measured data
filled data using fit
H [m]
Date
2.5
2
1.5
1
0.5
0
−0.5
−1
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015


H at NOAA 8764227 Lawma, Amerada Pass, LA [m]
measured data
filled data – linear
H [m]
Date
2.5
2
1.5
1
0.5
0
−0.5
−1
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

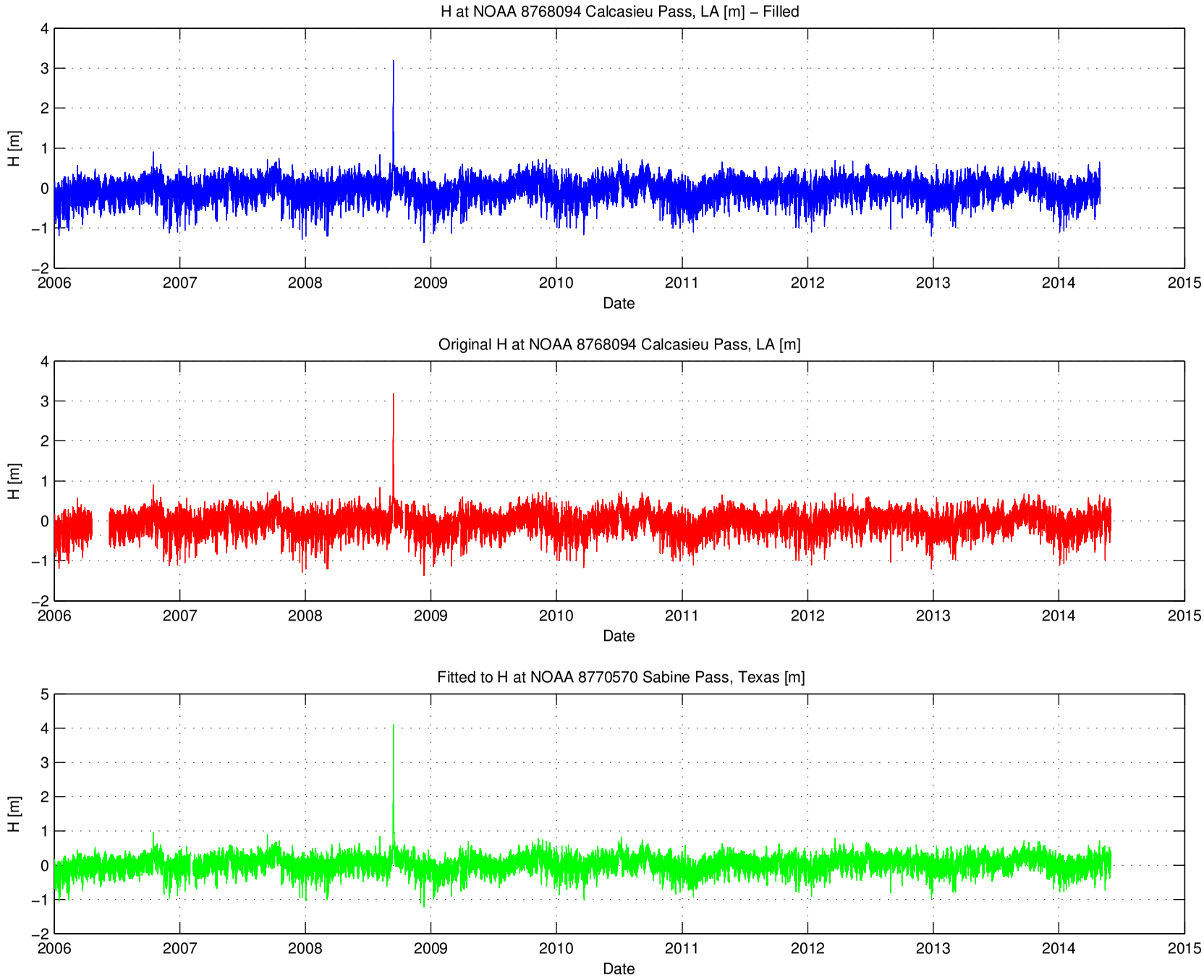

H at NOAA 8764227 Lawma, Amerada Pass, LA [m] – Filled
H [m]
Date
Original H at NOAA 8764227 Lawma, Amerada Pass, LA [m]
H [m]
Date
Fitted to H at NOAA 8770570 Sabine Pass, Texas [m]
H [m]
Date
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

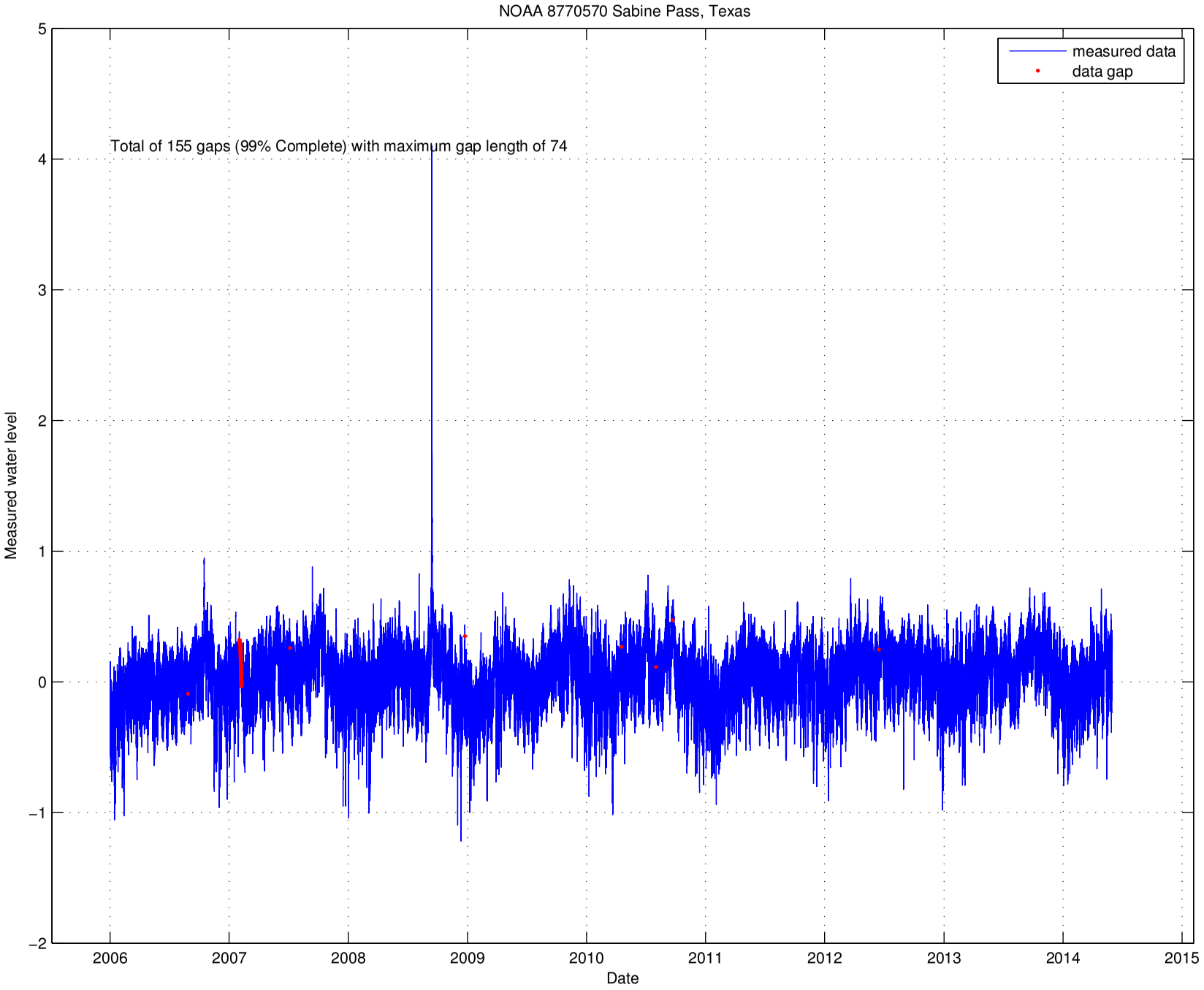

NOAA 8768094 Calcasieu Pass, LA
Total of 1489 gaps (97% Complete) with maximum gap length of 616
measured data
data gap
Measured water level
Date
3.5
3
2.5
2
1.5
1
0.5
0
−0.5
−1
−1.5
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

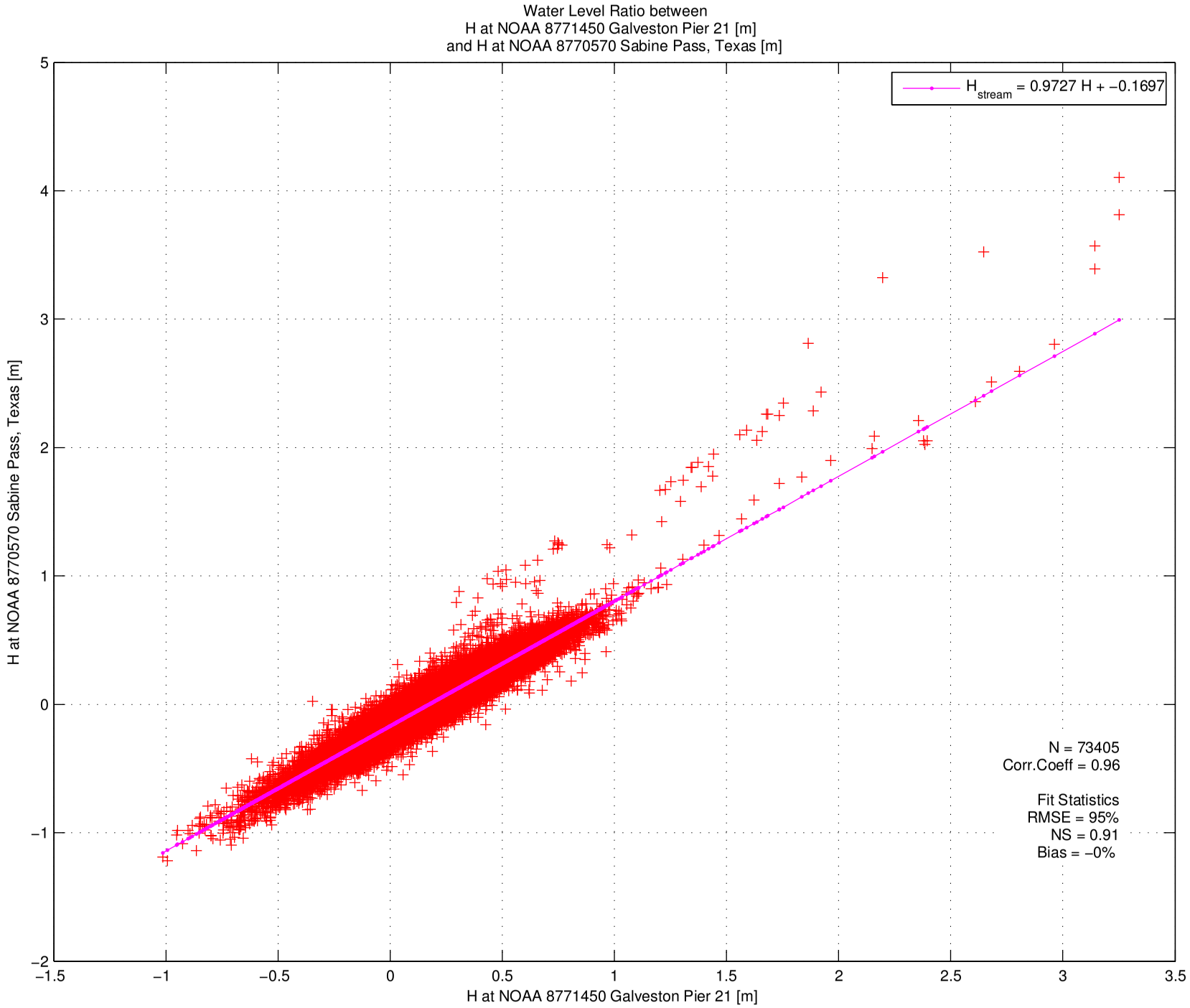

Water Level Ratio between
H at NOAA 8770570 Sabine Pass, Texas [m]
and H at NOAA 8768094 Calcasieu Pass, LA [m]
H_stream = 1.051 H + −0.06123
N = 72108
Corr.Coeff = 0.96
Fit Statistics
RMSE = 394%
NS = 0.93
Bias = 0%
H at NOAA 8768094 Calcasieu Pass, LA [m]
H at NOAA 8770570 Sabine Pass, Texas [m]
5
4
3
2
1
0
−1
−2
−2
−1
0
1
2
3
4
5

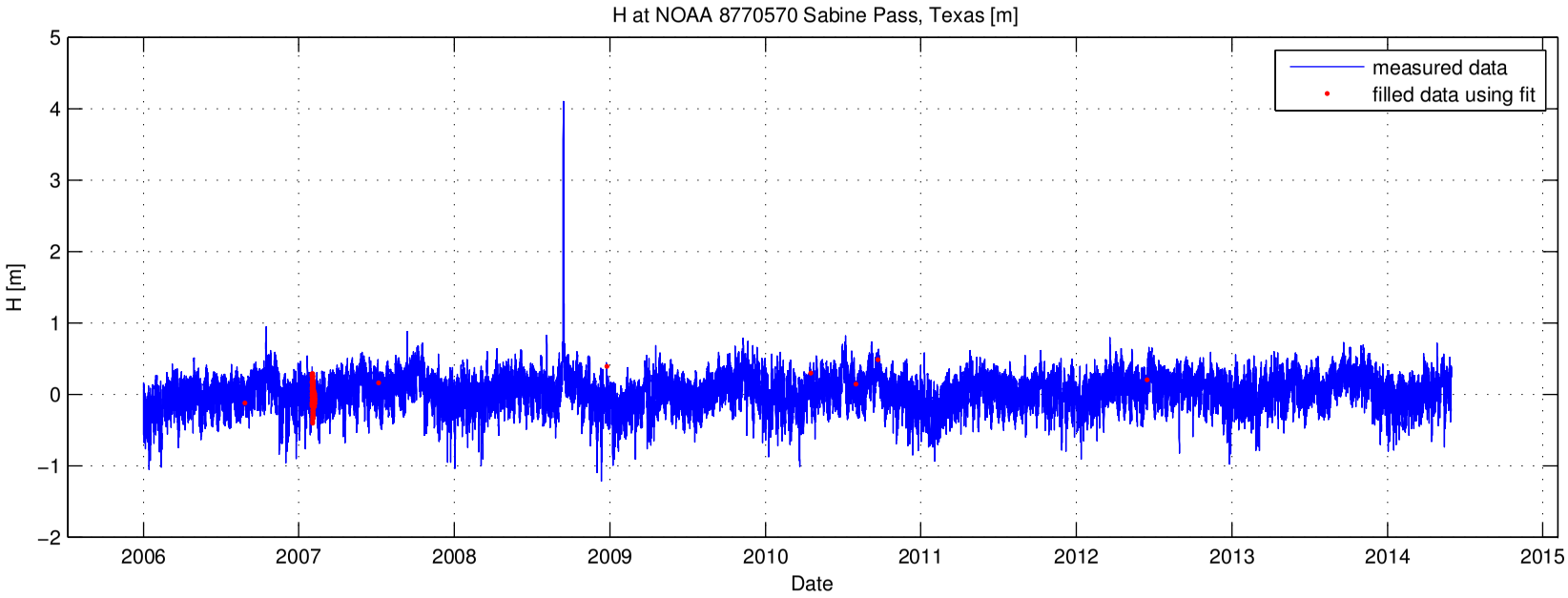


No data filled using linear interpolation

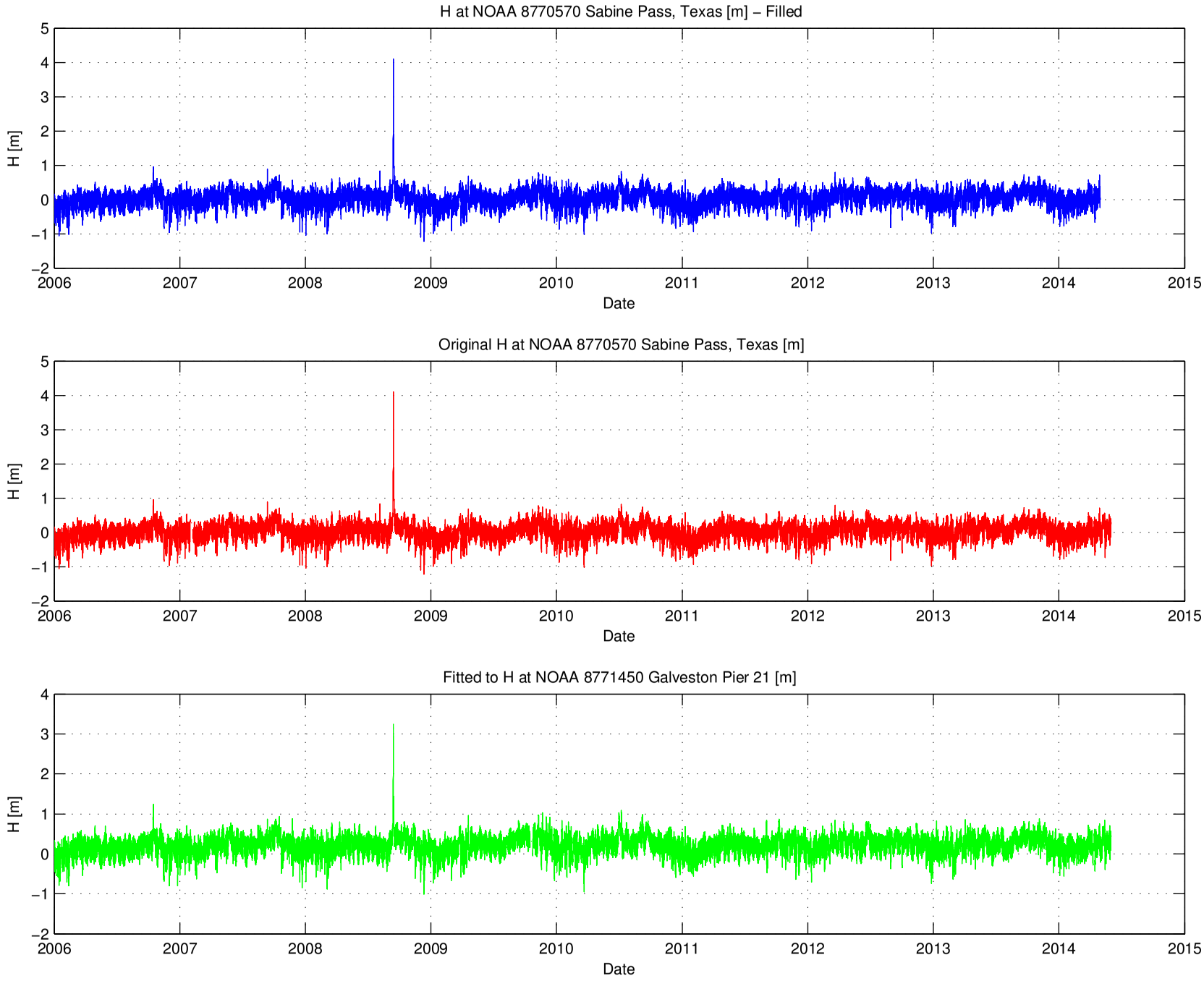

H at NOAA 8768094 Calcasieu Pass, LA [m] – Filled
H [m]
Date
Original H at NOAA 8768094 Calcasieu Pass, LA [m]
H [m]
Date
Fitted to H at NOAA 8770570 Sabine Pass, Texas [m]
H [m]
Date
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

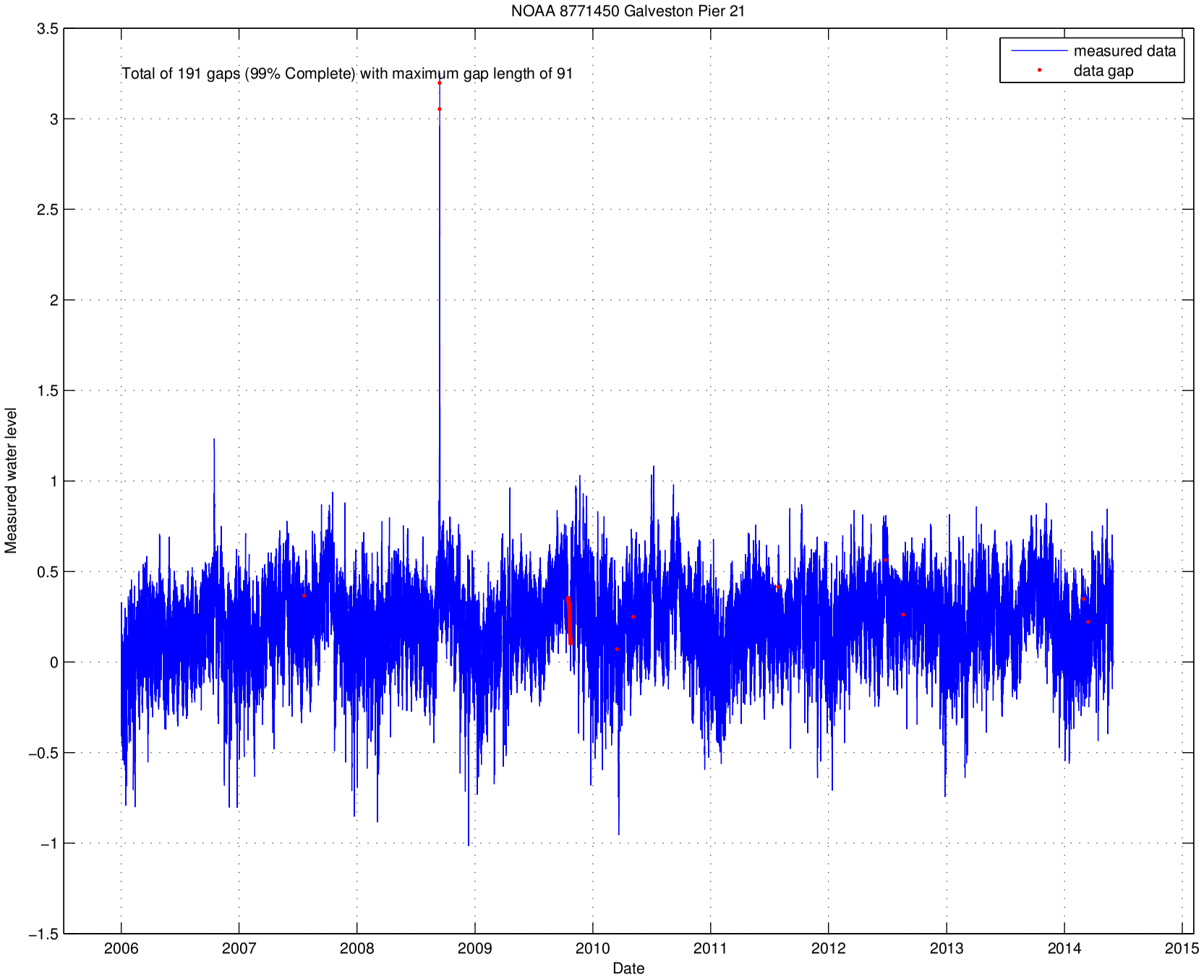

NOAA 8770570 Sabine Pass, Texas
measured data
data gap
Total of 155 gaps (99% Complete) with maximum gap length of 74
Measured water level
Date
5
4
3
2
1
0
−1
−2
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

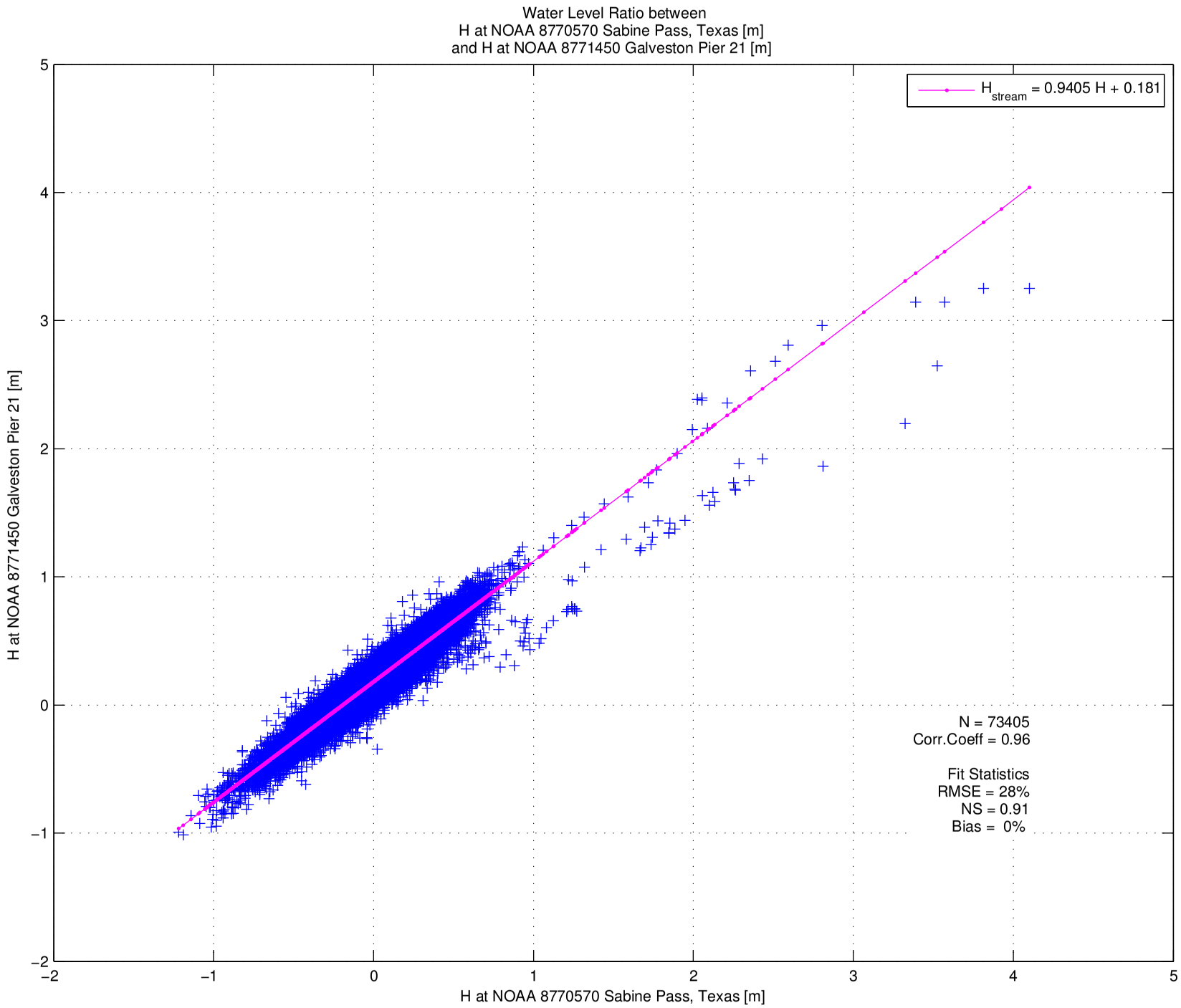

Water Level Ratio between
H at NOAA 8771450 Galveston Pier 21 [m]
and H at NOAA 8770570 Sabine Pass, Texas [m]
H_stream = 0.9727 H + −0.1697
N = 73405
Corr.Coeff = 0.96
Fit Statistics
RMSE = 95%
NS = 0.91
Bias = −0%
H at NOAA 8770570 Sabine Pass, Texas [m]
H at NOAA 8771450 Galveston Pier 21 [m]
5
4
3
2
1
0
−1
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
3
3.5

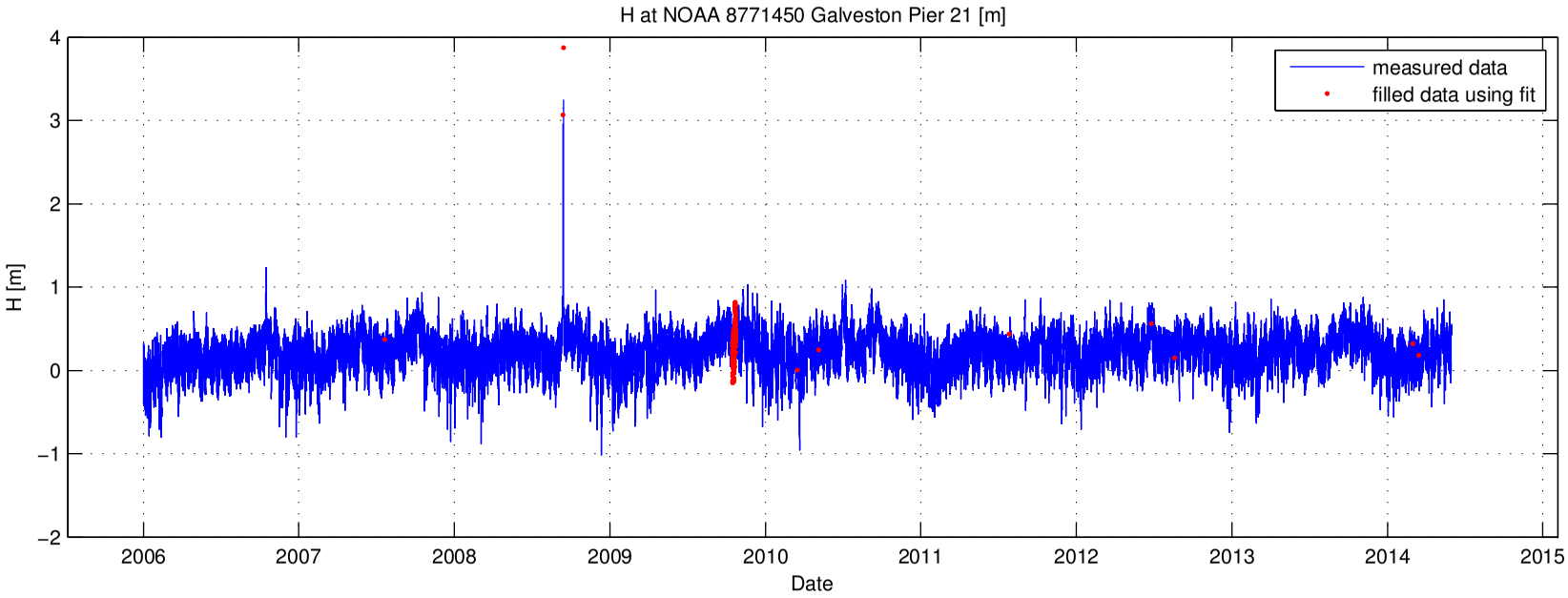


No data filled using linear interpolation

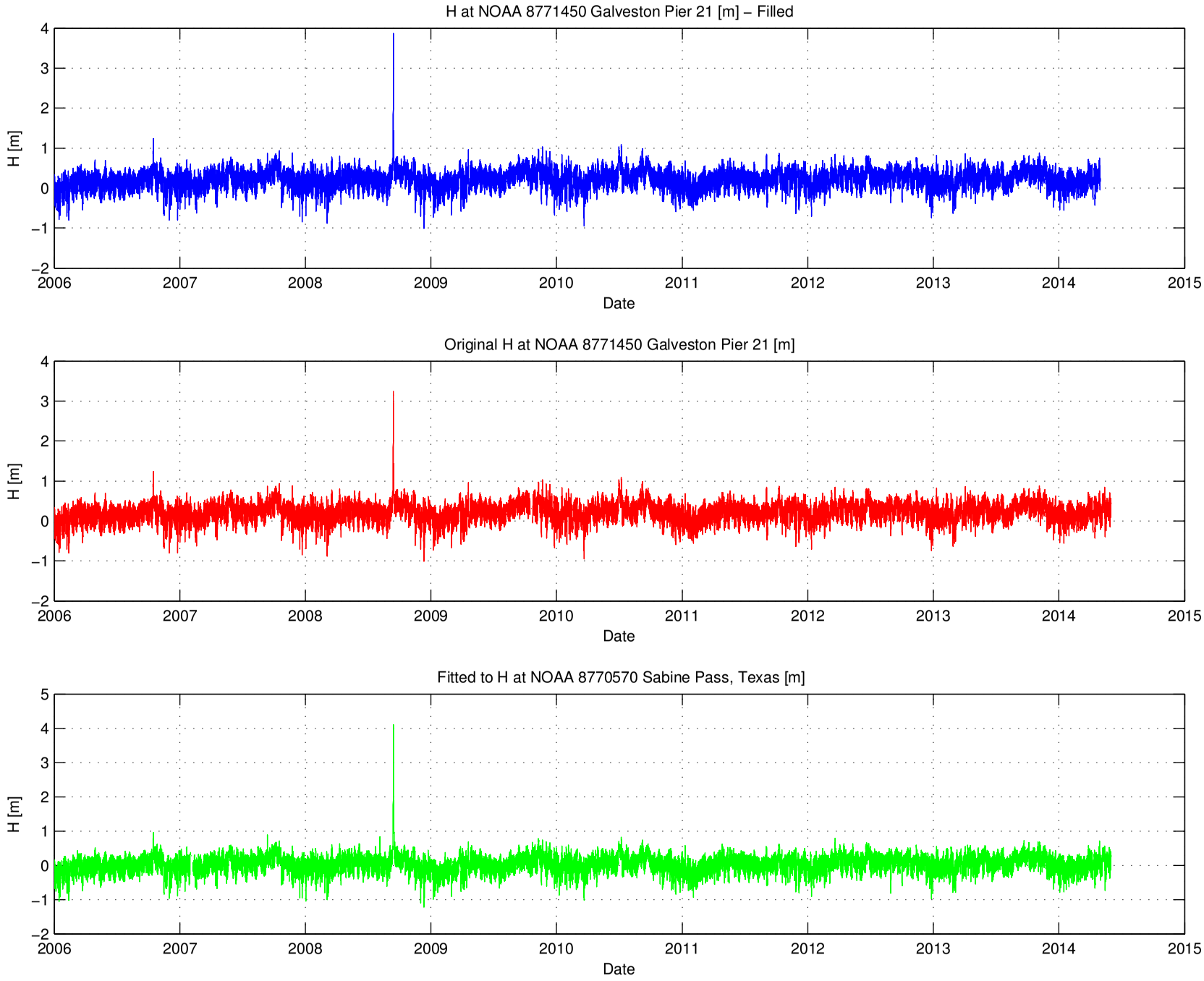

H at NOAA 8770570 Sabine Pass, Texas [m] – Filled
H [m]
Date
Original H at NOAA 8770570 Sabine Pass, Texas [m]
H [m]
Date
Fitted to H at NOAA 8771450 Galveston Pier 21 [m]
H [m]
Date
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015


NOAA 8771450 Galveston Pier 21
Total of 191 gaps (99% Complete) with maximum gap length of 91
measured data
data gap
Measured water level
Date
3.5
3
2.5
2
1.5
1
0.5
0
−0.5
−1
−1.5
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015


Water Level Ratio between
H at NOAA 8770570 Sabine Pass, Texas [m]
and H at NOAA 8771450 Galveston Pier 21 [m]
H_stream = 0.9405 H + 0.181
N = 73405
Corr.Coeff = 0.96
Fit Statistics
RMSE = 28%
NS = 0.91
Bias = 0%
H at NOAA 8771450 Galveston Pier 21 [m]
H at NOAA 8770570 Sabine Pass, Texas [m]
5
4
3
2
1
0
−1
−2
−2
−1
0
1
2
3
4
5



No data filled using linear interpolation


H at NOAA 8771450 Galveston Pier 21 [m] – Filled
H [m]
Date
Original H at NOAA 8771450 Galveston Pier 21 [m]
H [m]
Date
Fitted to H at NOAA 8770570 Sabine Pass, Texas [m]
H [m]
Date
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015