## 0.1 1988-01

1. Problems
   (a) No issues running
2. Results
   (a) Level 1
      i. - Map
         A. - Max = 14.66-m, Mean = 6.08-m, U10 = 31.16-m/s
      ii. - Validation
         A. - Under-estimation in wave height of all peaks during the month, and negative bias in mean period.
   (b) Level 2
      i. - Map
         A. - Max = 8.36-m, Mean = 3.42-m, U10 = 22.72-m/s
      ii. - Validation
         A. - Similar to level 1
   (c) Level 3N
      i. - Map
         A. - Max = 5.83-m, Mean = 2.29-m, U10 = 22.88-m/s
      ii. - Validation
         A. - 44005 - Big under-estimation of the peak wave heights. Negative bias throughout month for mean period.
         B. - 44007 - Wave heights look good compared to buoy, but mean periods are low all month.
         C. - 44011 - Better fit than 44005 for wave height, but still under-estimating the peak wave heights. Peaks occur during offshore winds
         D. - 44013 - 2 wave height events during the month and both were missed by the model.
   (d) Level 3C
      i. - Map
         A. - Max = 4.39-m, Mean = 2.32-m, U10 = 18.00-m/s

ii. - Validation

A. - 44009 - buoy only available for first have of month but under-estimation of only peak in wave height. Offshore event.

B. - 44012 - same under-estimation of evetn as 44009 but rest of the month looks good.

(e) Level 3S1

i. - Map

A. - Max = 4.16-m, Mean = 2.40-m, U10 = 17.01-m/s

ii. - Validation

A. - 41002 - Under-estimation of peak wave height but mean period looks good.

(f) Level 3S2

i. - Map

A. - Max = 5.76-m, Mean = 2.73-m, U10 = 16.50-m/s

ii. - Validation

A. - None

## 0.2 1988-02

1. Problems

   (a) No issues running

2. Results

   (a) Level 1

   i. - Map

   A. - Max = 19.91-m, Mean = 5.04-m, U10 = 34.52-m/s

   B. - Maximum wave height in Northeast corner

   ii. - Validation

   A. - No consitancy in the model to buoy wave height results. The largest peak on the 13th is under-estimated at some buoys and over-estimated at others.

   (b) Level 2

i. - Map
   A. - Max = 8.24-m, Mean = 3.39-m, U10 = 24.41-m/s
ii. - Validation
   A. - Similar to level 1

(c) Level 3N
i. - Map
   A. - Max = 7.92-m, Mean = 2.52-m, U10 = 24.91-m/s
ii. - Validation
   A. - 44005 - negative bias in both wave height and mean period.
   B. - 44007 - under-estimated peak on the 13th by 2-m. Mean period has negative bias
   C. - 44011 - good fit for peak wave height on the 13th, but negative bias for rest of the month.
   D. - 44013 - Under-estimated peak on the 13th by 2-m.

(d) Level 3C
i. - Map
   A. - Max = 4.59-m, Mean = 2.18-m, U10 = 18.73-m/s
ii. - Validation
   A. - 44009 - not enough data
   B. - Over-estimated event on the 12th-13th. Rest of the month looks good, mean period is negative bias.

(e) Level 3S1
i. - Map
   A. - Max = 4.15-m, Mean = 2.19-m, U10 = 17.11-m
ii. - Validation
   A. - 41002 - Under-estimated peak wave heights, mean period looks good.

(f) Level 3S2
i. - Map
   A. - Max = 4.72-m, Mean = 2.25-m, U10 = 15.67-m/s
ii. - Validation
   A. - None

## 0.3 1988-03

1. Problems
   (a) No issues running
2. Results
   (a) Level 1
      i. - Map
         A. - Max = 12.24-m, Mean = 4.04-m, U10 = 30.28-m/s
      ii. - Validation
         A. - The trend for the month is under-estimation of peak wave height events, but at some buoys the model over-estimates the buoy measurements.
   (b) Level 2
      i. - Map
         A. - Max = 11.75-m, Mean = 3.93-m, U10 = 29.83-m/s
      ii. - Validation
         A. - Similar to level 1
   (c) Level 3N
      i. - Map
         A. - Max = 4.80-m, Mean = 2.36-m, U10 = 19.67-m/s
      ii. - Validation
         A. - 44005 - Negative bias in both wave height and mean period.
         B. - 44007 - Not a bad fit for wave height, but mean period is negatively bias.
         C. - 44011 - Not a lot of data for the month.
         D. - 44013 - Model does not really follow trend in wave height or mean period for the month.
   (d) Level 3C
      i. - Map
         A. - Max = 4.47-m, Mean = 2.08-m, U10 = 20.38-m/s
      ii. - Validation

A. - 44009 - Good fit for wave height. Slight over-estimation of event on the 27th.

B. - 44012 - Similar to 44009.

(e) Level 3S1

i. - Map

A. - Max = 3.88-m, Mean = 2.13-m, U10 = 17.87-m/s

ii. - Validation

A. - 41002 - Under-estimation of all peak wave heights. Mean period is negatively bias.

B. - 41008 - wave height results come online late in month. not trusted.

(f) Level 3S2

i. - Map

A. - Max = 4.60-m, Mean = 2.26-m, U10 = 14.40-m/s

ii. - Validation

A. - None

## 0.4 1988-04

1. Problems

   (a) No issues running

2. Results

   (a) Level 1

   i. - Map

   A. - Max = 10.66-m, Mean = 4.06-m, U10 = 24.17-m/s

   ii. - Validation

   A. - Not a bad fit with wave height for the month. Both over-estimation and under-estimations during the month, but all values seem to be within reason.

   (b) Level 2

   i. - Map

   A. - Max = 7.45-m, Mean = 3.18-m, U10 = 21.64-m/s

ii. - Validation

A. - Similar to level 1

(c) Level 3N

i. - Map

A. - Max = 5.91-m, Mean = 2.41-m, U10 = 21.12-m/s

ii. - Validation

A. - 44007 - Lots of local oscillations. Under-estimated peak wave height on the 30th by ¡ 1-m. Mean period is negatively bias

B. - 44013 - Wave height wave low most of the month.

(d) Level 3C

i. - Map

A. - Max = 6.88-m, Mean = 2.03-m, U10 = 19.91-m/s

ii. - Validation

A. - 44009 - good fit in wave height for the month. Mean period is negatively bias.

B. - 44012 - wave height is high during peak on the 13th and low for peak wave height on the 8th.

(e) Level 3S1

i. - Map

A. - Max = 5.74-m, Mean = 1.96-m, U10 = 20.22-m/s

ii. - Validation

A. - 41002 - Under-estimation of both peak wave height events during month. Mean period low

B. - 41008 - Model doesn't follow a lot of the local trends measured at buoy.

(f) Level 3S2

i. - Map

A. - Max = 4.43-m, Mean = 1.75-m, U10 = 16.30-m/s

ii. - Validation

A. - None

## 0.5 1988-05

1. Problems
   (a) No issues running
2. Results
   (a) Level 1
      i. - Map
         A. - Max = 9.31-m, Mean = 2.76-m, U10 = 24.08-m/s
      ii. - Validation
         A. - Low wave energy month, but overall fit is pretty good for wave height.
   (b) Level 2
      i. - Map
         A. - Max = 7.90-m, Mean = 1.86-m, U10 = 24.22-m/s
      ii. - Validation
         A. - Similar to level 1
   (c) Level 3N
      i. - Map
         A. - Max = 3.93-m, Mean = 1.50-m, U10 = 16.53-m/s
      ii. - Validation
         A. - 44007 - All wave heights below 3-m. Missed only peak but rest of the month looked good.
         B. - 44011 - Buoy came online at end of the month. Missed only peak.
         C. - 44013 - Under-estimated only peak events.
   (d) Level 3C
      i. - Map
         A. - Max = 3.76-m, Mean = 1.61-m, U10 = 16.42-m/s
      ii. - Validation
         A. - 44009 - good fit overall for wave height. Mean period is negatively bias.

B. - 44012 - similar to 44009.

(e) Level 3S1

i. - Map

A. - Max = 3.72-m, Mean = 1.61-m, U10 = 16.42-m/s

ii. - Validation

A. - 41002 - one peak wave height event on the 8th was underestimated by ¿ 2-m.

B. - 41008 - good fit overall for wave height, but some phase issues are apparent during peaks.

(f) Level 3S2

i. - Map

A. - Max = 3.16-m, Mean = 1.51-m, U10 = 12.24-m/s

ii. - Validation

A. - None

## 0.6 1988-06

1. Problems

   (a) No issues running

2. Results

   (a) Level 1

   i. - Map

   A. - Max = 6.81-m, Mean = 2.87-m, U10 = 20.45-m/s

   ii. - Validation

   A. - Good fit overall for the month, but 44011 missed biggest peak on the 4th. Mean period was negatively bias for the month.

   (b) Level 2

   i. - Map

   A. - Max = 5.47-m, Mean = 1.94-m, U10 = 20.90-m/s

   ii. - Validation

A. - Similar to level 1

(c) Level 3N

i. - Map

A. - Max = 3.86-m, Mean = 1.48-m, U10 = 18.48-m/s

ii. - Validation

A. - 44005 - good fit in wave height and mean period for the month.

B. - 44007 - good fit for wave height during the month.

C. - 44011 - under-estimated largest peak during the month on the 5th.

D. - 44013 - not a lot of wave energy for the month.

(d) Level 3C

i. - Map

A. - Max = 3.55-m, Mean = 1.29-m, U10 = 15.16-m/s

ii. - Validation

A. - 44009 - Great fit for wave height. Mean period is negatively bias.

B. - 44012 - similar to 44009

(e) Level 3S1

i. - Map

A. - Max = 2.59-m, Mean = 1.29-m, U10 = 13.94-m/s

ii. - Validation

A. - 41002 - not enought data

B. - 41008 - Good fit for wave height and period. Very good fit for wave direction.

(f) Level 3S2

i. - Map

A. - Max = 2.30-m, Mean = 1.25-m, U10 = 11.77-m/s

ii. - Validation

A. - None

## 0.7 1988-07

1. Problems
   (a) Found out that run did not complete so re-running all runs after this point with corrected locations and grid described in 1988-11.
2. Results
   (a) Level 1
      i. - Map
         A. - Max = 6.21-m, Mean = 2.61-m, U10 = 20.30-m/s
      ii. - Validation
         A. - Low wave energy for the month, but most of the wave height results were very good.
   (b) Level 2
      i. - Map
         A. - Max = 3.77-m, Mean = 2.22-m, U10 = 15.76-m/s
      ii. - Validation
         A. - Simlar to level 1
   (c) Level 3N
      i. - Map
         A. - Max = 2.36-m, Mean = 1.22-m, U10 = 14.17-m/s
      ii. - Validation
         A. - 44005 - No wave heights over 2-m, but model results look good.
         B. - 44007 - One peak on the 14th was under-estimated by 1-m. Mean period was low.
         C. - 44011 - Some slight phase issues with wave height. Mean period was low.
         D. - 44013 - No wave energy.
   (d) Level 3C
      i. - Map
         A. - Max = 3.10-m, Mean = 1.25-m, U10 = 14.43-m/s
      ii. - Validation

A. - 44009 - Wave height results look good. Mean period low.

(e) Level 3S1

i. - Map

A. - Max = 3.77-m, Mean = 1.34-m, U10 = 15.53-m/s

ii. - Validation

A. - 41002 - Low wave energy. Results look good.

B. - 41008 - Model wave height high during peak on the 6th but rest of the month looks good. Wave direciton looks good.

(f) Level 3S2

i. - Map

A. - Max = 3.61-m, Mean = 1.64-m, U10 = 15.53-m/s

ii. - Validation

A. - None

## 0.8 1988-08

1. Problems

(a) Re-ran after fix to 1988-07

2. Results

(a) Level 1

i. - Map

A. - Max = 8.96-m, Mean = 2.71-m, U10 = 24.05-m/s

B. - 2 storm tracks with one making landfall on US Coastline.

ii. - Validation

A. - One major peak event on the 7th. Model results were a mixed bag with some bouys being over-estimated and others under-estimated. Mean period was consistantly low for the month.

(b) Level 2

i. - Map

A. - Max = 5.01-m, Mean = 1.89-m, U10 = 24.74-m/s

B. - 2 storm tracks. One makes landfall in Georgia and the other runs offshore of the entire East coast.

ii. - Validation

A. - Simlar to level 1

(c) Level 3N

i. - Map

A. - Max = 4.82–m, Mean = 1.07-m, U10 = 23.53-m/s

B. - 2 storm tracks with one running offshore and the other coming off the coast.

ii. - Validation

A. - 44005 - wave height and mean period were bias low for the month

B. - 44007 - One peak on the 25th was under-estimated by 1.5-m.

C. - 44011 - Negative bias for both wave height and mean period.

D. - 44013 - Similar to 44007.

(d) Level 3C

i. - Map

A. - Max = 4.78-m, Mean = 1.31-m, U10 = 22.47-m/s

B. - 2 storm tracks. One on land and the other offshore of NC.

ii. - Validation

A. - 44009 - Good fit for wave height. Mean period low.

(e) Level 3S1

i. - Map

A. - Max = 5.13-m, Mean = 1.41-m, U10 = 24.80-m/s

B. - One storm track making landfall in Georgia.

ii. - Validation

A. - 41002 - Not much going on in data while available.

B. - 41008 - One peak on the 28th was under-estimated by 1-m. Direction looks good.

C. - 41009 - Over-estimated one peak event on 28th by 2-m.

(f) Level 3S2

i. - Map

A. - Max = 4.62-m, Mean = 1.74-m, U10 = 19.86-m/s

B. - One track through Bahamas.

ii. - Validation

A. - 41009 - Over-estimated one peak on 28th.

## 0.9 1988-09

1. Problems

(a) Re-ran after fix of 1988-07

2. Results

(a) Level 1

i. - Map

A. - Max = 16.65-m, Mean = 2.82-m, U10 = 37.45-m/s

B. - 5 storm tracks with none making landfall.

ii. - Validation

A. - 2 wave height peaks during the month with one on the 6th under-estimated by the model and one on the 30th was matched well.

(b) Level 2

i. - Map

A. - Max = 5.34-m, Mean = 1.85-m, U10 = 22.10-m/s

B. - One track leaving domain.

ii. - Validation

A. - Similar to level 1

(c) Level 3N

i. - Map

A. - Max = 3.20-m, Mean = 1.16-m, U10 = 16.12-m/s

ii. - Validation

A. - 44005 - Negative bias in wave heights and mean period

B. - 44007 - Under-estimated peak wave height event on the 5th.

C. - 44011 - Model is low on the peak on the 6th for wave height. Mean period looks good.

D. - 44013 - Low on only wave height peak on the 5th.

(d) Level 3C

i. - Map

A. - Max = 3.18-m, Mean = 1.33-m, U10 = 18.32-m/s

ii. - Validation

A. - 44009 - Wave height results look good, mean period is negatively bias.

B. - 44012 - similar to 44009.

(e) Level 3S1

i. - Map

A. - Max = 3.49-m, Mean = 1.33-m, U10 = 18.32-m/s

ii. - Validation

A. - 41008 - Low in wave height on the 7th and high on the 13th. No consistancy. Direction looks good.

B. - 41009 - Results look good.

(f) Level 3S2

i. - Map

A. - Max = 5.03-m, Mean = 1.45-m, U10 = 22.00-m/s

ii. - Validation

A. - 41009 - looks good.

## 0.10 1988-10

1. Problems

   (a) Re-ran

2. Results

   (a) Level 1

i. - Map

A. - Max = 13.21-m, Mean = 3.81-m, U10 = 29.74-m/s

B. - 2 storm tracks going into the Gulf of Mexico.

ii. - Validation

A. - Some big under-estimations of the peak wave height event on the 9th and 23rd, but also some very good fits to the data for the rest of the month. Mean period still has a tendancy to be low.

(b) Level 2

i. - Map

A. - Max = 6.93-m, Mean = 2.17-m, U10 = 21.30-m/s

ii. - Validation

A. - Simlar to level 1

(c) Level 3N

i. - Map

A. - Max = 5.58-m, Mean = 1.73-m, U10 = 20.17-m/s

ii. - Validation

A. - 44005 - Under-estimated all peak wave height evetns by 2-m.

B. - 44007 - Under-estimated biggest peak on the 22nd by ¿ 2-m.

C. - 44011 - Under-estimated peak event on the 9th by ¿ 3-m.

D. - 44013 - 3 wave height peaks, all under-estimated.

(d) Level 3C

i. - Map

A. - Max = 3.90-m, Mean = 1.84-m, U10 = 17.90-m/s

ii. - Validation

A. - 44009 - Good wave height results, negative bias on mean period.

B. - 44012 - similar to 44009

(e) Level 3S1

i. - Map

A. - Max = 3.78-m, Mean = 1.94-m, U10 = 15.93-m/s

ii. - Validation

A. - 41002 - Good results overall

B. - 41008 - Good results, including direction.

C. - 41009 - Good results, some under-estimation of mean periods.

(f) Level 3S2

i. - Map

A. - Max = 4.20-m, Mean = 1.95-m, U10 = 14.54-m/s

ii. - Validation

A. - 41009 - Good results overall. Similar to level 3S1.

## 0.11 1988-11

1. Problems

   (a) Changed location of 44056 and 70010 in Level 3C

2. Results

   (a) Level 1

   i. - Map

   A. - Max = 12.92-m, Mean = 4.33-m, U10 = 28.84-m/s

   B. - 3 storm tracks with one coming off of Florida.

   ii. - Validation

   A. - Under-estimation of peak wave heights at most buoys. Mean period tends to still be low.

   (b) Level 2

   i. - Map

   A. - Max = 9.04-m, Mean = 3.46-m, U10 = 33.36-m/s

   B. - One storm track coming off Florida.

   ii. - Validation

   A. - Similar to level 1

   (c) Level 3N

i. - Map
   A. - Max = 5.77-m, Mean = 2.31-m, U10 = 20.11-m/s
ii. - Validation
   A. - 44005 - Under-estimation of all peaks. Negative bias of mean period.
   B. - 44007 - similar to 44005.
   C. - 44011 - Simlar to 44005.
   D. - 44013 - Under-estimate single peak on the 2nd.

(d) Level 3C
   i. - Map
      A. - Max = 4.61-m, Mean = 1.93-m, U10 = 18.70-m/s
   ii. - Validation
      A. - 44009 - Decent fit of wave height, negative bias for mean period.
      B. - 44012 - same as 44009.

(e) Level 3S1
   i. - Map
      A. - Max = 6.41-m, Mean = 1.90-m, U10 = 27.18-m/s
      B. - One track coming off Florida.
   ii. - Validation
      A. - 41002 - Under-estimates wave height peaks.
      B. - 41008 - Good results but some slight over-estimation of wave heights. wave direction looks good.
      C. - 41009 - Wave height results look good. Mean period negatively bias.
      D. - 41010 - Not a lot of data but results look good.

(f) Level 3S2
   i. - Map
      A. - Max = 5.19-m, Mean = 1.94-m, U10 = 24.34-m/s
   ii. - Validation
      A. - 41009 - similar to level 3S1

## 0.12 1988-12

1. Problems
   (a) re-ran
2. Results
   (a) Level 1
      i. - Map
         A. - Max = 13.80-m, Mean = 5.14-m, U10 = 29.29-m/s
      ii. - Validation
         A. - Overall a very good fit between model and measured for the month. Some under-estimation at the peaks in the Northern buoys. Mean period looked good too.
   (b) Level 2
      i. - Map
         A. - Max = 12.69-m, Mean = 3.35-m, U10 = 28.82-m/s
      ii. - Validation
         A. - Similar to level 1
   (c) Level 3N
      i. - Map
         A. - Max = 10.96-m, Mean = 2.49-m, U10 = 26.58-m/s
      ii. - Validation
         A. - 44005 - Negative bias in both wave height and mean period for the month.
         B. - 44007 - Under-estimated peak wave height on the 15th. Negative bias in mean period.
         C. - 44011 - Good fit in wave height. Negative bias in mean period.
         D. - 44013 - Slightly low on event on the 15th. Negative bias in mean period.
   (d) Level 3C
      i. - Map
         A. - Max = 4.83-m, Mean = 1.97-m, U10 = 19.45-m/s

ii. - Validation

A. - 44012 - Good fit in wave height. Negative bias in mean period.

(e) Level 3S1

i. - Map

A. - Max = 4.27-m, Mean = 1.97-m, U10 = 15.85-m/s

ii. - Validation

A. - 41002 - Phase issues in wave height. Mean period looks good

B. - 41008 - Wave heights from model are high at the end of the month. Everything else looks good including direction.

C. - 41009 - similar to 41008 without direciton.

D. - 41010 - Simlar to 41009.

(f) Level 3S2

i. - Map

A. - Max = 4.09-m, Mean = 2.27-m, U10 = 16.30-m/s

ii. - Validation

A. - 41009 - Similar to level 3S1.

## 0.13 1988-stats

### 0.13.1 Level 1

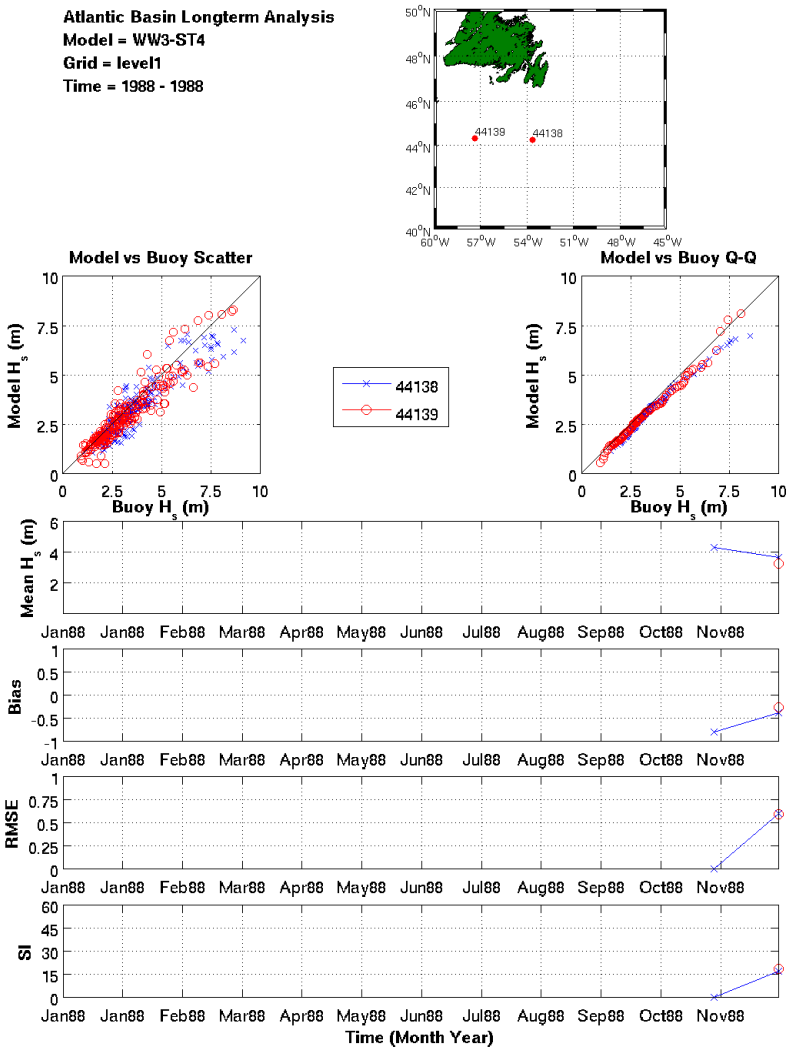


Figure 1: Comp 1 for Level 1

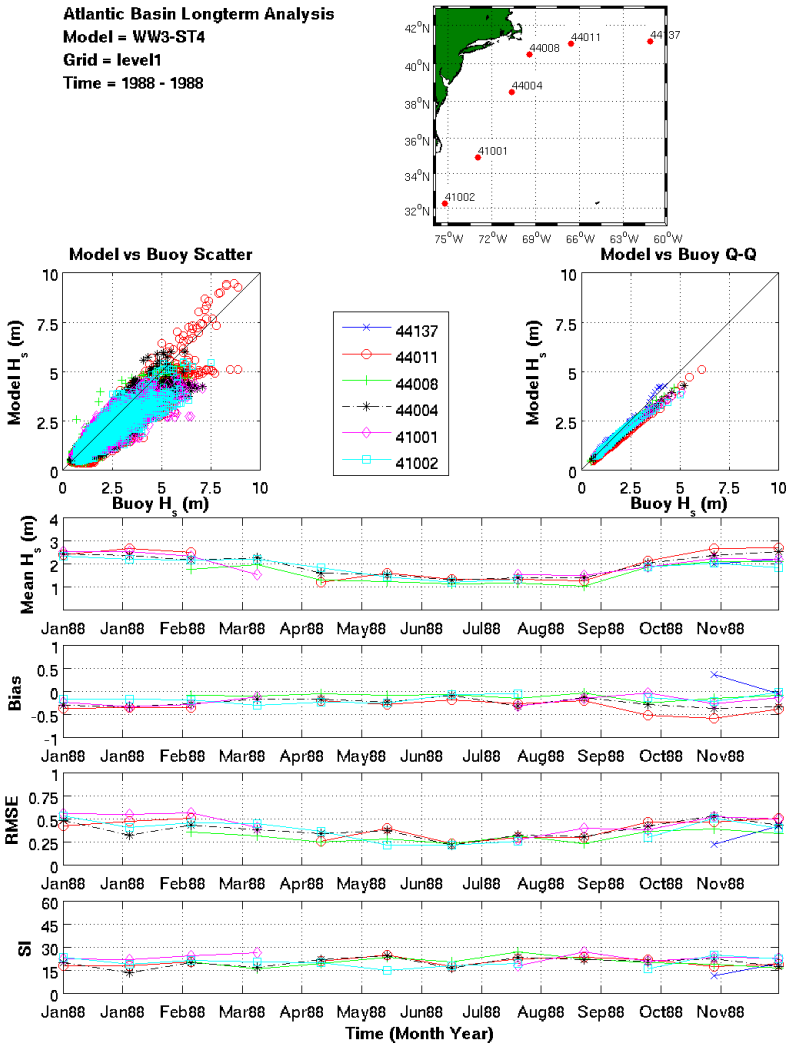


Figure 2: Comp 2 for Level 1

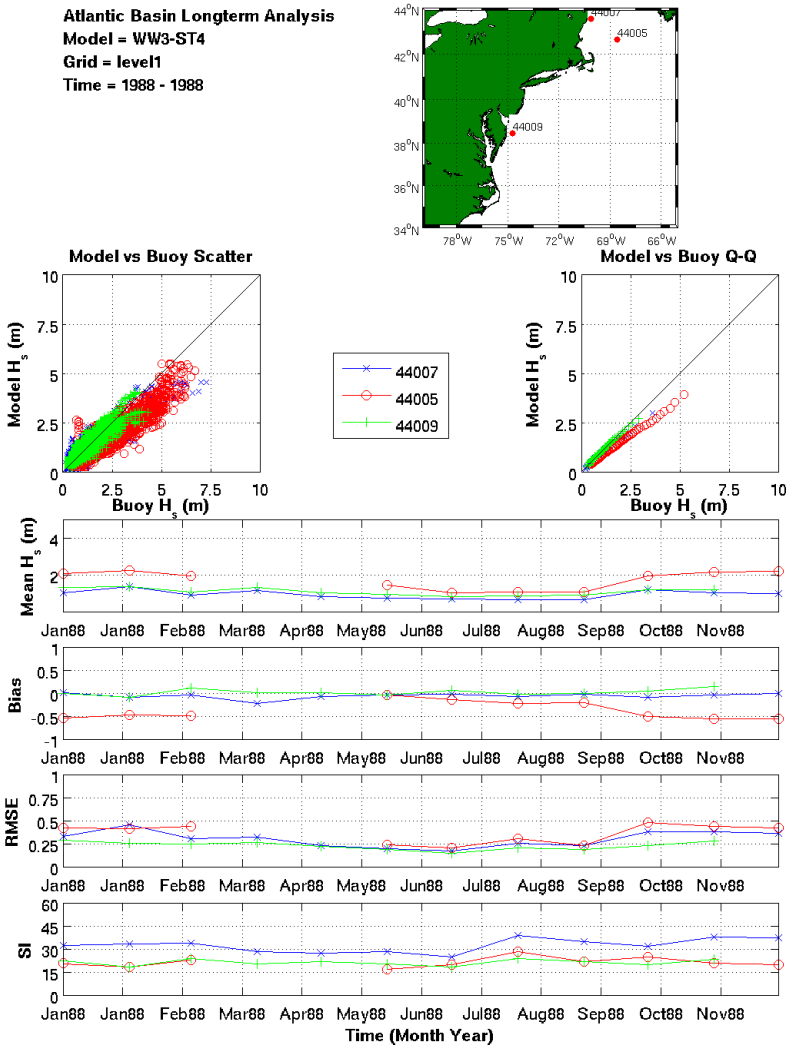


Figure 3: Comp 3 for Level 1

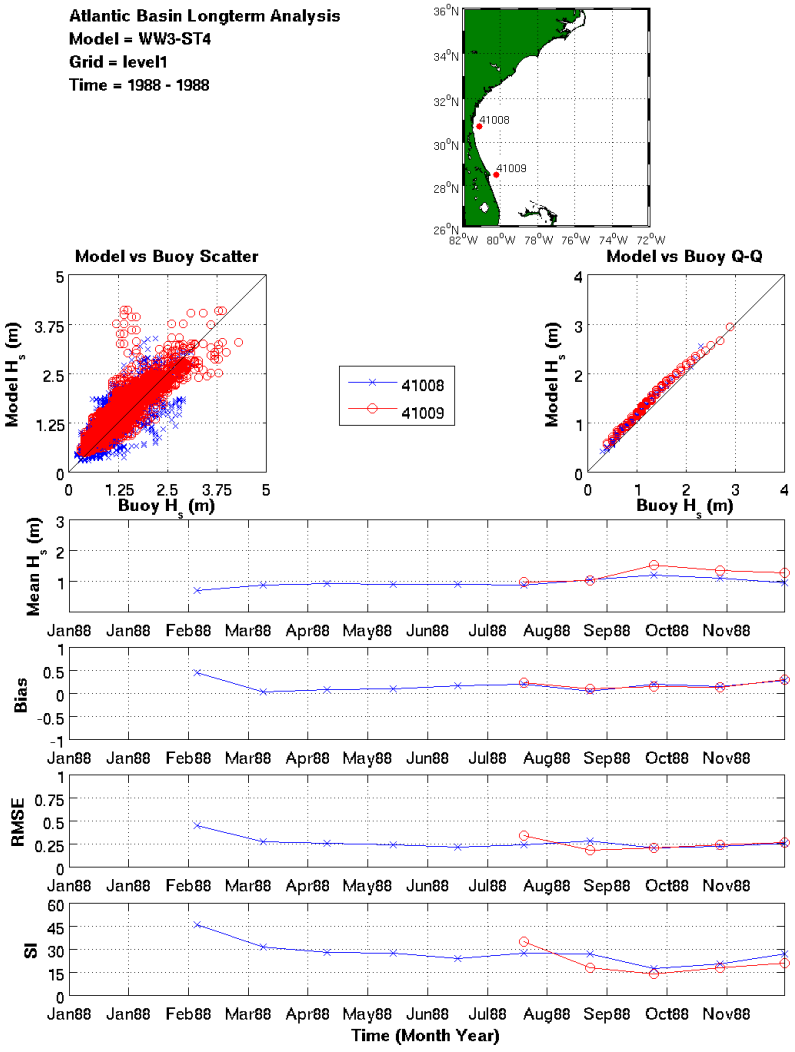


Figure 4: Comp 4 for Level 1

### 0.13.2 Level 2

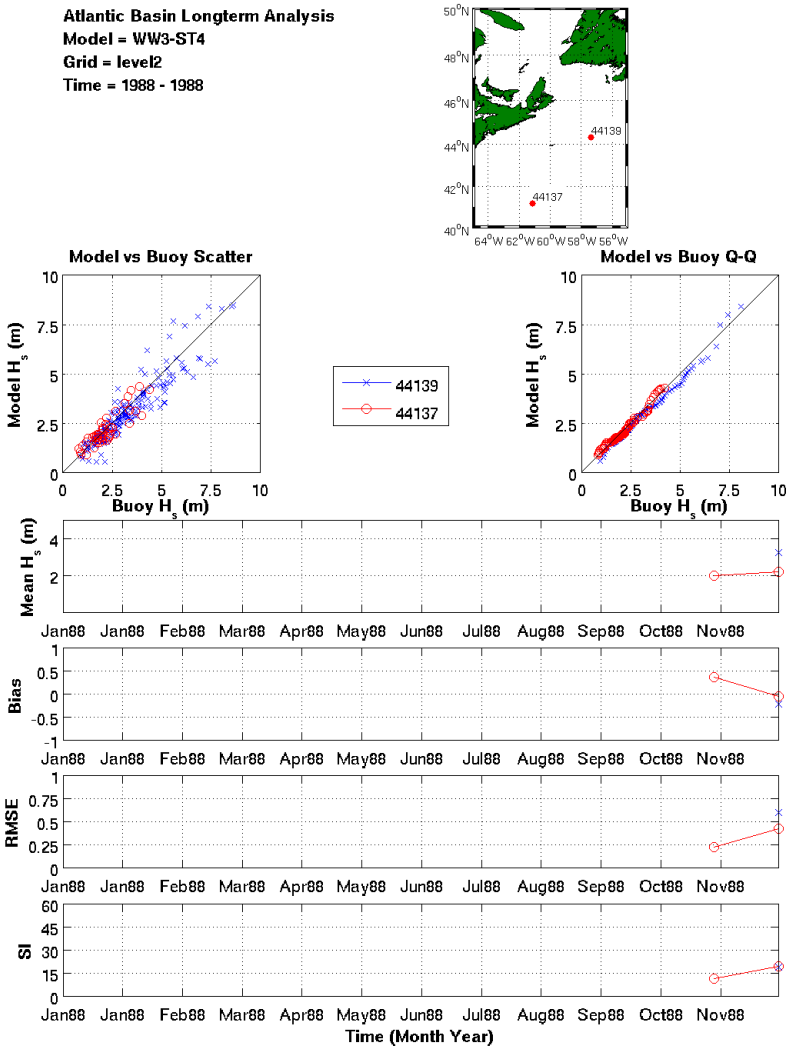


Figure 5: Comp 1 for Level 2

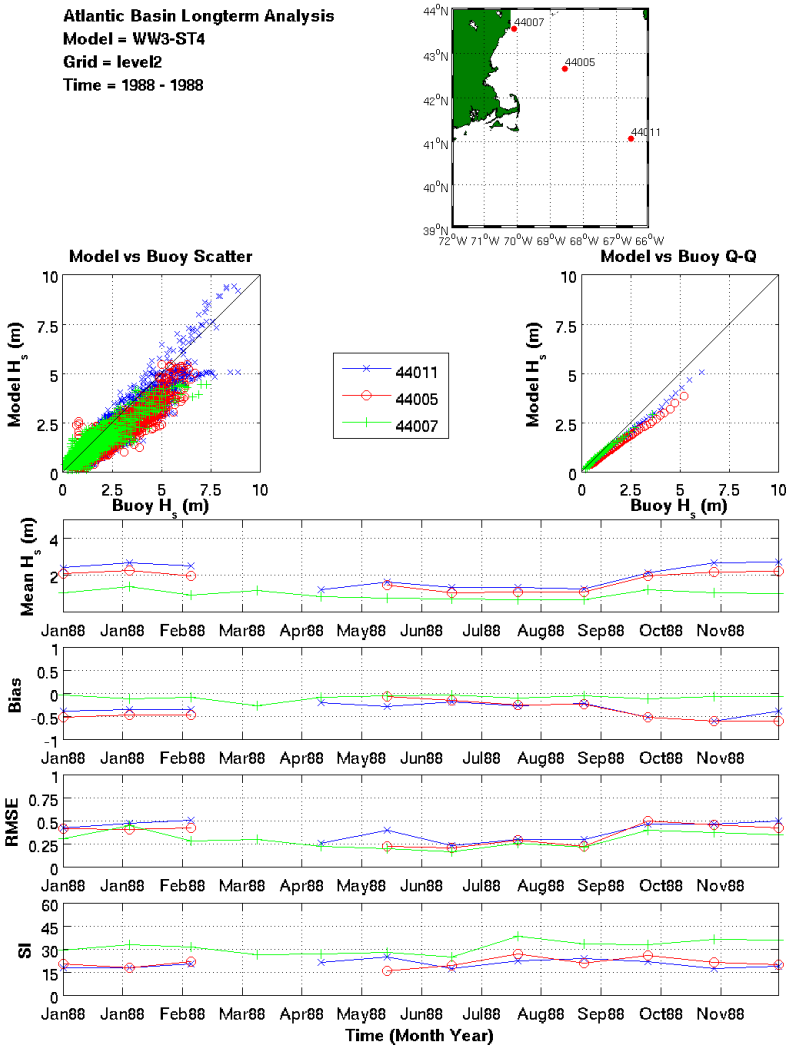


Figure 6: Comp 2 for Level 2

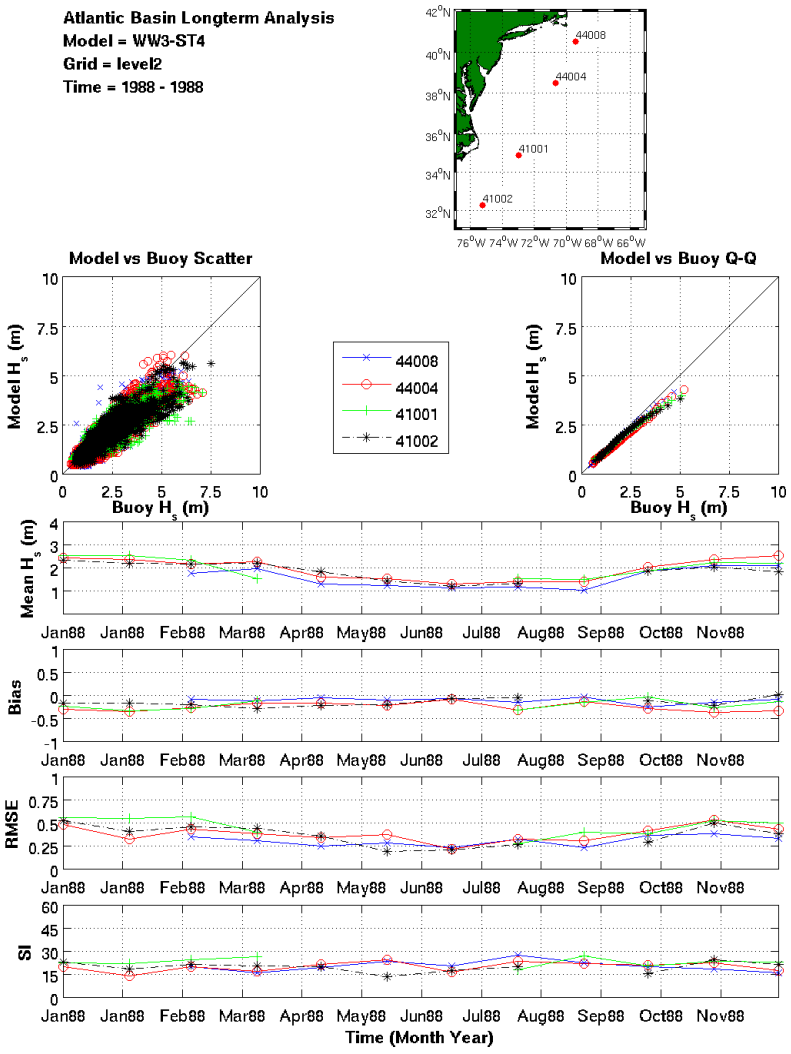


Figure 7: Comp 3 for Level 2

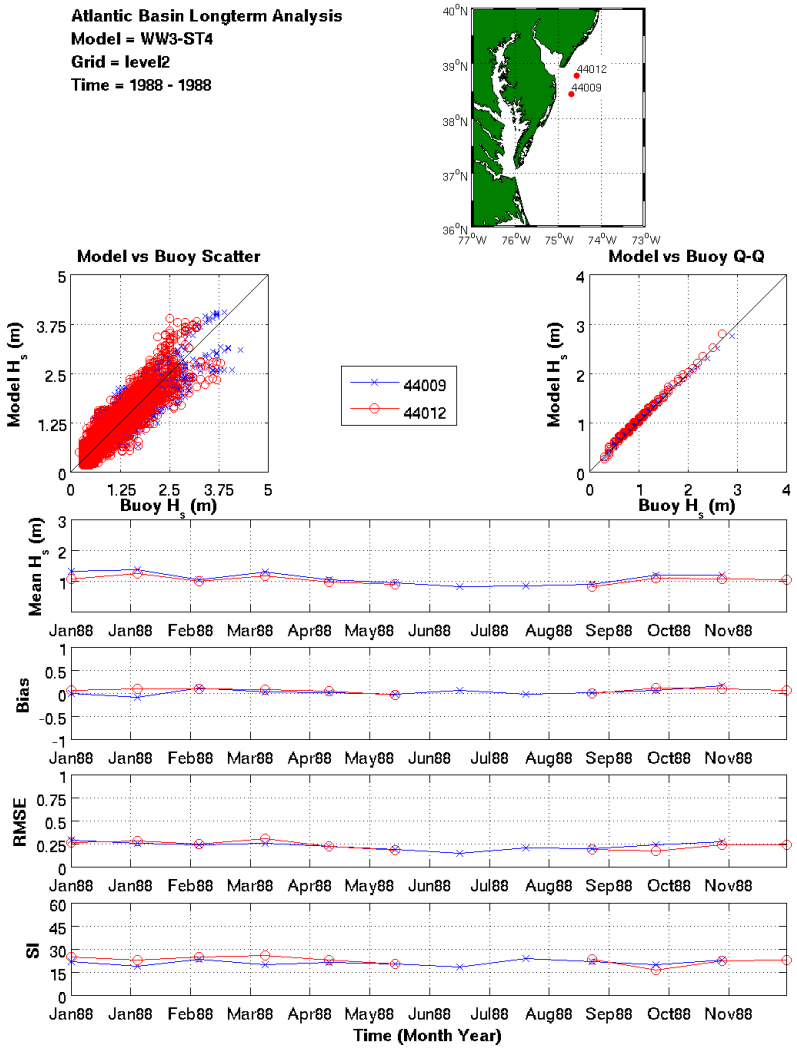


Figure 8: Comp 4 for Level 2

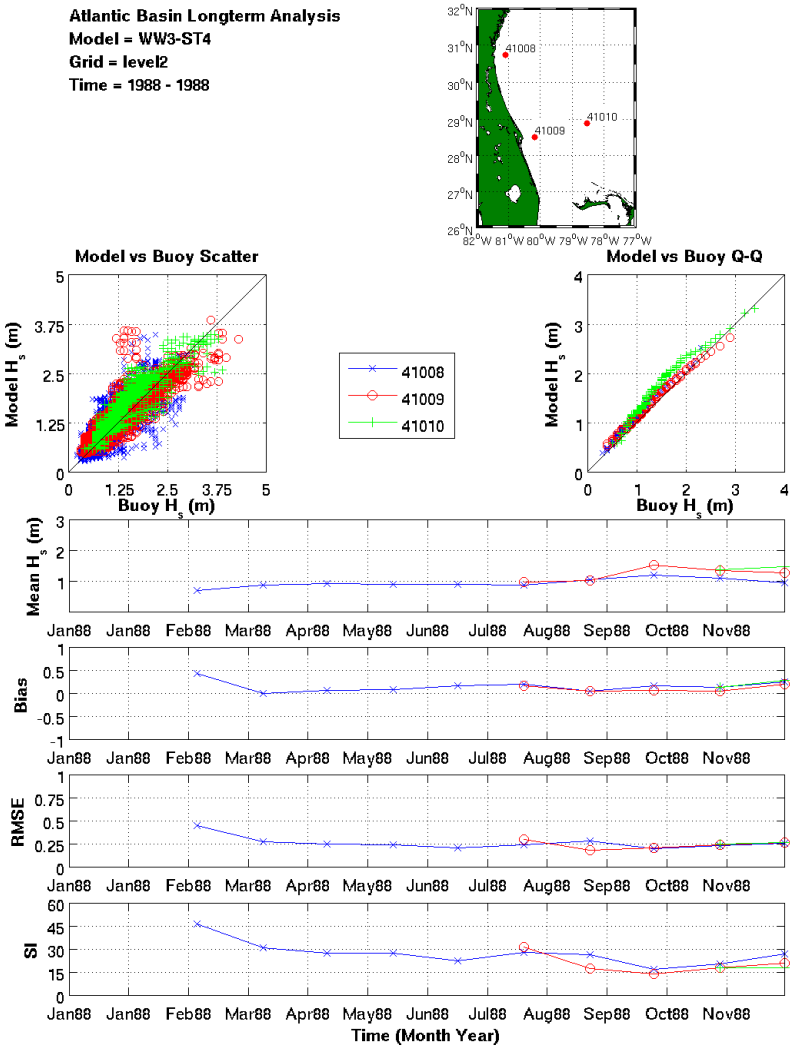


Figure 9: Comp 5 for Level 2

### 0.13.3 Level 3N

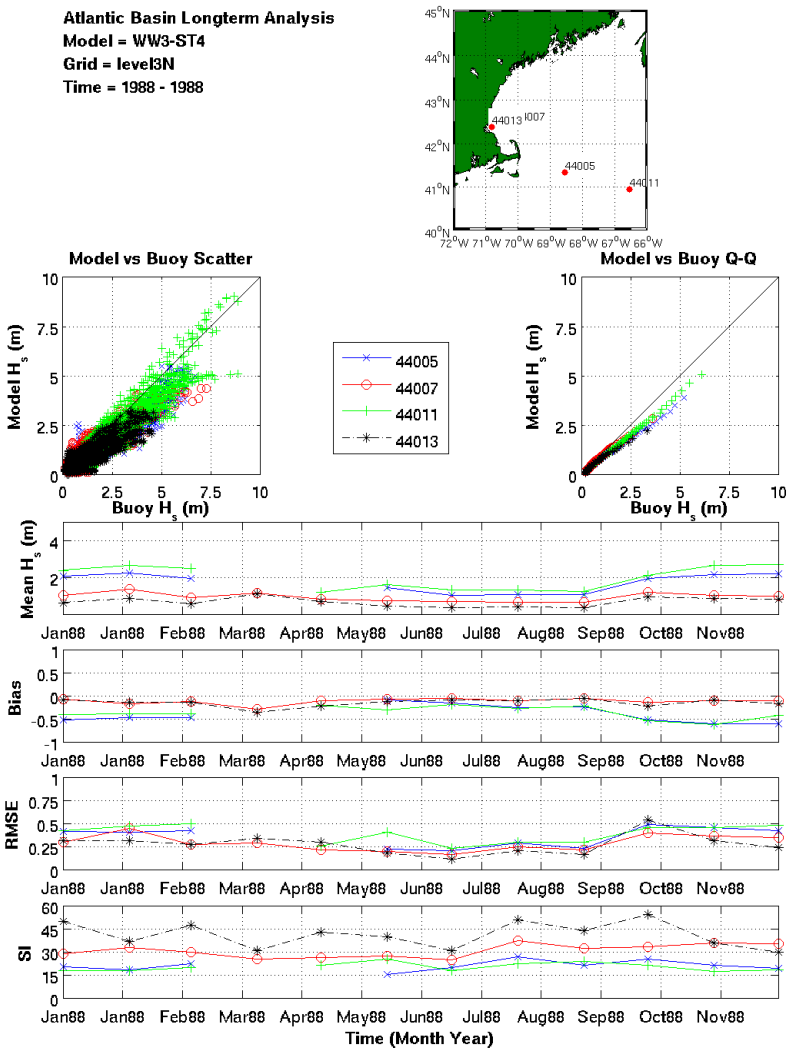


Figure 10: Comp 1 for Level 3N

### 0.13.4 Level 3C

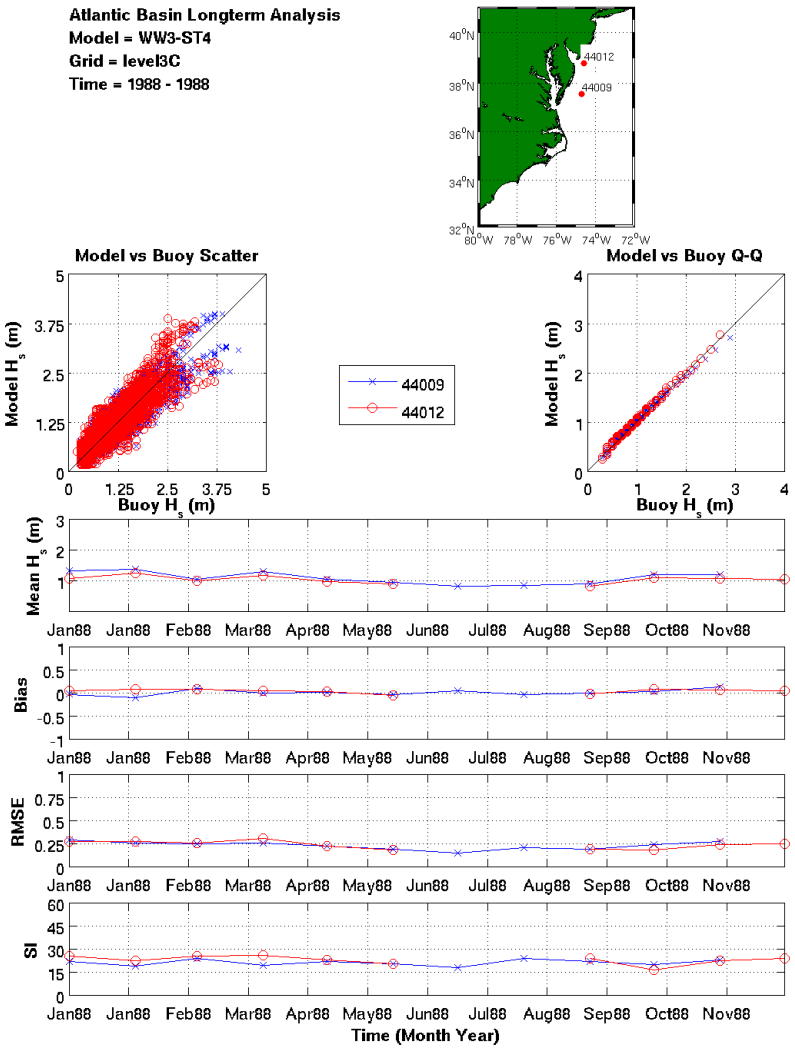


Figure 11: Comp 1 for Level 3C

### 0.13.5 Level 3S1

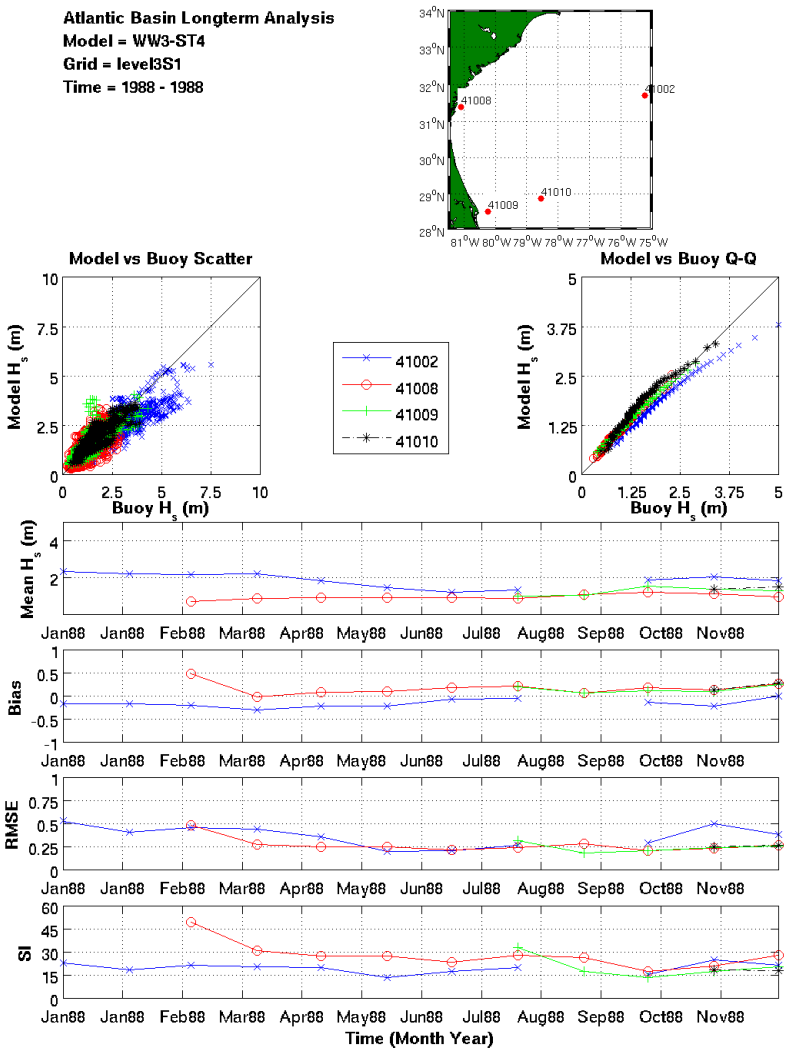


Figure 12: Comp 1 for Level 3S1

### 0.13.6 Level 3S2

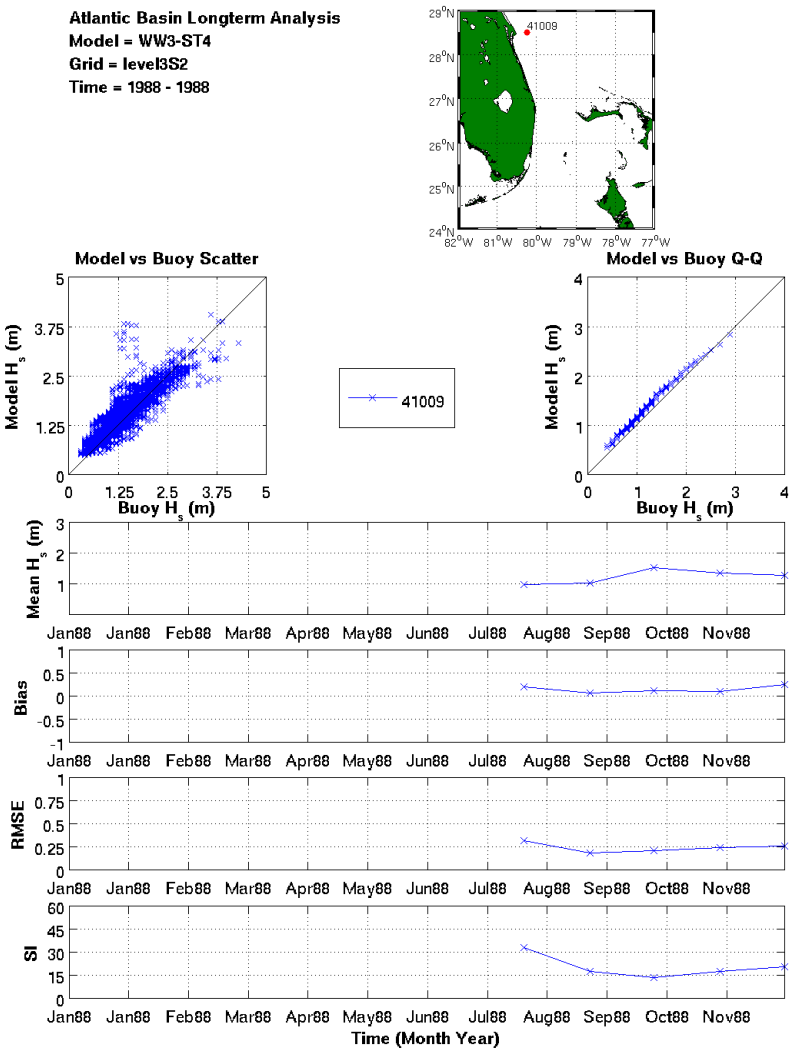


Figure 13: Comp 1 for Level 3S2