0.1 1987-01

1. Problems

   (a) Some issues with runs not finishing in the alloted time so I had to bump the walltime to 4 hours

2. Results

   (a) Level 1

      i. - Map
         A. - Max = 14.78-m, Mean = 4.64-m, U10 = 28.24-m/s
         B. - Maximum wave heights are in Northeast corner of the grid.
      ii. - Validation
         A. - Under-estimated wave height at all peaks at all buoys. Mean period was low for most of the buoys.

   (b) Level 2

      i. - Map
         A. - Max = 10.15-m, Mean = 4.10-m, U10 = 26.19-m/s
      ii. - Validation
         A. - Same thing as level 1

   (c) Level 3N

      i. - Map
         A. - Max = 8.22-m, Mean = 3.13-m, U10 = 22.17-m/s
      ii. - Validation
         A. - 44005 - model has negative bias in both wave height and mean period throughout month.
         B. - 44007 - Three wave height peaks were underestimated by 2-m each time.
         C. - 44011 - Similar to 44005 with a negative bias in both wave height and mean period
         D. - 44013 - Under-estimated all peak wave heights.

   (d) Level 3C

      i. - Map

A. - Max = 6.53-m, Mean = 2.69-m, U10 = 21.63-m/s
  ii. - Validation
    A. - 44009 - Under-estimated peak wave height events at 3 peaks by 1.5-m. Mean period was low.
    B. - 44012 - Only have data for the first wave height event, but model under-estimated it by 2-m. Offshore event.

(e) Level 3S1

  i. - Map
    A. - Max = 6.93-m, Mean = 2.66-m, U10 = 22.14-m/s
  ii. - Validation
    A. - 41002 - Negative bias in both wave height and mean period for the entire month.

(f) Level 3S2

  i. - Map
    A. - Max = 6.00-m, Mean = 2.31-m, U10 = 16.89-m/s
  ii. - Validation
    A. - None

0.2   1987-02

1. Problems

  (a) No problems running

2. Results

  (a) Level 1

    i. - Map
      A. - Max = 17.89-m, Mean = 4.91-m, U10 = 29.88-m/s
      B. - Maximum wave height in Northeast corner again with no wind to generate it.
    ii. - Validation
      A. - Model has negative bias in wave height and mean period for most buoys. The under-estimation in wave height increases with every peak.

(b) Level 2

    i. - Map

        A. - Max = 12.55-m, Mean = 4.62-m, U10 = 29.86-m/s

    ii. - Validation

        A. - Similar to level 1

(c) Level 3N

    i. - Map

        A. - Max = 6.22-m, Mean = 2.66-m, U10 = 23.21-m/s

    ii. - Validation

        A. - 44005 - Bad miss of peak wave height on the 10th. Under-estimated by ¿ 3-m with a measured wave height of 8-m. Negative bias throughout.

        B. - 44007 - Not a bad fit in wave height

        C. - 44011 - Negative bias in wave height and mean period throughout.

        D. - 44013 - Big under-estimation of only peak wave height event during the month on the 10th. Missed by 2-m with peak at 4-m.

(d) Level 3C

    i. - Map

        A. - Max = 6.01-m, Mean = 2.56-m, U10 = 22.78-m/s

    ii. - Validation

        A. - 44009 - Good fit except for under-estimating the peak wave heights on the 10th and 24th.

        B. - 44012 - Under-estimated peak wave height on the 24th by 1-m. Offshore event.

(e) Level 3S1

    i. - Map

        A. - Max = 5.03-m, Mean = 2.54-m, U10 = 19.11-m/s

    ii. - Validation

        A. - 41002 - Under-estimated all peak wave heights and negative bias in mean period.

(f) Level 3S2

   i. - Map

      A. - Max = 4.52-m, Mean = 2.12-m, U10 = 14.93-m/s

   ii. - Validation

      A. - None

0.3 1987-03

1. Problems

   (a) No issues running

2. Results

   (a) Level 1

   i. - Map

      A. - Max = 14.20-m, Mean = 4.14-m, U10 = 25.38-m/s

      B. - Maximum wave height in Northeast corner. Attempting to fix issue with new mask for 1988-11.

   ii. - Validation

      A. - Under-estimating a few of the peak wave heights, and some phase issues are apparent. Mean period was low for most of the time.

   (b) Level 2

   i. - Map

      A. - Max = 7.88-m, Mean = 3.24-m, U10 = 22.13-m/s

   ii. - Validation

      A. - Similar to level 1

   (c) Level 3N

   i. - Map

      A. - Max = 5.58-m, Mean = 2.45-m, U10 = 18.69-m/s

   ii. - Validation

      A. - 44005 - Negative bias for both wave height and mean period

      B. - 44007 - Negative bias for both wave height and mean period

C. - 44011 - wave height has some under-estimation of peaks but mean period is negatively bias. item - 44013 - negative bias for both wave height and mean period.

(d) Level 3C

    i. - Map

        A. - Max = 7.48-m, Mean = 2.65-m, U10 = 19.76-m/s

    ii. - Validation

        A. - 44009 - Good fit for wave height but some slight phase issues.

        B. - 44012 - buoy went out during largest waves in the middle of the month.

(e) Level 3S1

    i. - Map

        A. - Max = 6.57-m, Mean = 2.56-m, U10 = 16.84-m/s

    ii. - Validation

        A. - 41002 - Slight under-estimation of peak wave height but rest of the month looks pretty good.

(f) Level 3S2

    i. - Map

        A. - Max = 4.49-m, Mean = 2.20-m, U10 = 16.26-m/s

    ii. - Validation

        A. - None

0.4 1987-04

1. Problems

(a) No issues running

2. Results

(a) Level 1

    i. - Map

        A. - Max = 8.44-m, Mean = 3.37-m, U10 = 23.95-m/s

    ii. - Validation

        A. - Not a bad fit in wave height, but peak wave heights are still a little low.

(b) Level 2

    i. - Map

        A. - Max = 7.58-m, Mean = 2.53-m, U10 = 21.61-m/s

    ii. - Validation

        A. - Similar to level 1

(c) Level 3N

    i. - Map

        A. - Max = 6.35-m, Mean = 2.37-m, U10 = 21.59-m/s

    ii. - Validation

        A. - 44005 - biggest wave height peak on the 14th was under-estimated by 2-m

        B. - 44007 - not enough data to compare

        C. - 44011 - Pretty good fit for both wave height and mean period

        D. - 44013 - Under-estimated both wave height peaks on the 6th and the 14th.

(d) Level 3C

    i. - Map

        A. - Max = 5.48-m, Mean = 2.17-m, U10 = 17.77-m/s

    ii. - Validation

        A. - 44009 - wave height was a pretty good fit but mean period was negatively bias.

        B. - 44012 - Phase issue in wave height during end of the month. Negative bias in mean period.

(e) Level 3S1

    i. - Map

        A. - Max = 4.23-m, Mean = 1.85-m, U10 = 15.22-m/s

    ii. - Validation

        A. - 41002 - under-estimation in both wave height and mean period. A lot of local flutuation in the model wind field.

(f) Level 3S2

    i. - Map

        A. - Max = 3.75-m, Mean = 1.61-m, U10 = 14.07-m/s

    ii. - Validation

        A. - None

0.5   1987-05

1. Problems

  (a) No issue running

2. Results

  (a) Level 1

    i. - Map

        A. - Max = 7.82-m, Mean = 2.68-m, U10 = 21.08-m/s

        B. - One storm track going south of Florida

    ii. - Validation

        A. - Overall a pretty good fit for wave height between model and measured. Mean period still has a tendancy to be low.

  (b) Level 2

    i. - Map

        A. - Max = 5.19-m, Mean = 2.10-m, U10 = 21.10-m/s

        B. - One storm track hanging out southeast of Florida

    ii. - Validation

        A. - Similar to level 1

  (c) Level 3N

    i. - Map

        A. - Max = 4.24-m, Mean = 1.44-m, U10 = 16.73-m/s

    ii. - Validation

        A. - 44005 - good fit for wave height, mean period was low. A lot of local oscillations in the data.

B. - 44007 - Similar to 44005

C. - 44011 - same as 44005. a little low on wave height during 16th event.

D. - 44013 - Under-estimated wave height peak on the 5th.

(d) Level 3C

i. - Map

A. - Max = 4.17-m, Mean = 1.45-m, U10 = 14.82-m/s

ii. - Validation

A. - 44009 - some phase issues in wave height. Mean period look ok.

B. - 44012 - Similar to 44009

(e) Level 3S1

i. - Map

A. - Max = 3.96-m, Mean = 1.90-m, U10 = 13.86-m/s

ii. - Validation

A. - 41002 - good fit overall but a slight phase issue.

(f) Level 3S2

i. - Map

A. - Max = 4.96-m, Mean = 2.07-m, U10 = 13.93-m/s

B. - One track going through Bahamas

ii. - Validation

A. - None

0.6   1987-06

1. Problems

(a) No issues running

2. Results

(a) Level 1

i. - Map

A. - Max = 7.83-m, Mean = 2.47-m, U10 = 21.48-m/s

    ii. - Validation

        A. - All wave heights under 4.0-m and some slight misses on peaks.

(b) Level 2

    i. - Map

        A. - Max = 3.46-m, Mean = 1.91-m, U10 = 15.99-m/s

    ii. - Validation

        A. - Similar to level 1

(c) Level 3N

    i. - Map

        A. - Max = 2.90-m, Mean = 1.33-m, U10 = 13.14-m/s

    ii. - Validation

        A. - 44005 - Lots of local fluctuation in wave height that were missed in the model. Under-estimation of mean period.

        B. - 44007 - All wave heights below 2-m with some under-estimation near end of month

        C. - 44011 - Good fit on peak wave hieght event on the 9th, but under-estimation for the rest of the month.

        D. - 44013 - Only wave heights at the end of the month were large and all were under-estimated.

(d) Level 3C

    i. - Map

        A. - Max = 1.94-m, Mean = 1.11-m, U10 = 12.33-m/s

    ii. - Validation

        A. - 44009 - Decent fit in wave height most of the month except for peak on the 24th.

        B. - 44012 - Same as 44009.

(e) Level 3S1

    i. - Map

        A. - Max = 1.98-m, Mean = 1.14-m, U10 = 11.31-m/s

    ii. - Validation

        A. - 41002 - Under-estimation in wave height for most of the month.

(f) Level 3S2

    i. - Map

        A. - Max = 2.41-m, Mean = 1.41-m, U10 = 10.61-m/s

    ii. - Validation

        A. - None

0.7   1987-07

1. Problems

   (a) No issues running

2. Results

   (a) Level 1

      i. - Map

         A. - Max = 5.31-m, Mean = 2.89-m, U10 = 18.00-m/s

      ii. - Validation

         A. - Good fit for wave height during most of the month. Not much wave energy during the month.

   (b) Level 2

      i. - Map

         A. - Max = 3.04-m, Mean = 1.63-m, U10 = 15.02-m/s

      ii. - Validation

         A. - Similar to level 1

   (c) Level 3N

      i. - Map

         A. - Max = 1.98-m, Mean = 0.88-m, U10 = 12.38-m/s

      ii. - Validation

         A. - 44005 - Wave heights under 2-m with a lot of local fluctuations in all parameters. Model was low during largest peaks.

         B. - 44007 - Not much going on during the month

         C. - 44011 - Good fit early and some under-estimation of wave heights later in the month.

D. - 44013 - Boring month.

(d) Level 3C

    i. - Map

      A. - Max = 2.23-m, Mean = 1.02-m, U10 = 12.64-m/s

    ii. - Validation

      A. - 44009 - Boring but good fit in wave height.

      B. - 44012 - similar to 44009

(e) Level 3S1

    i. - Map

      A. - Max = 2.34-m, Mean = 1.11-m, U10 = 11.35-m/s

    ii. - Validation

      A. - 41002 - good fit for wave height for the month.

(f) Level 3S2

    i. - Map

      A. - Max = 2.39-m, Mean = 1.37-m, U10 = 10.30-m/s

    ii. - Validation

      A. - None

0.8   1987-08

1. Problems

(a) No issues running

2. Results

(a) Level 1

    i. - Map

      A. - Max = 6.62-m, Mean = 2.50-m, U10 = 21.88-m/s

      B. - 4 storm tracks including one going from US coastline across to Spain.

    ii. - Validation

      A. - Not a bad fit overall for wave height, but still some slight under-estimation during the peaks.

(b) Level 2

    i. - Map

        A. - Max = 6.10-m, Mean = 1.61-m, U10 = 22.80-m/s

        B. - One track doing a loop offshore.

    ii. - Validation

        A. - Similar to level 1

(c) Level 3N

    i. - Map

        A. - Max = 2.34-m, Mean = 1.01-m, U10 = 14.41-m/s

    ii. - Validation

        A. - 44005 - Under-estimation in wave height during the entire month.

        B. - 44007 - Under-estimated peaks in wave height on the 3rd, and 23rd.

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

        D. - 44013 - Low wave heights for the month but still some under-estimation on the peak on the 14th.

(d) Level 3C

    i. - Map

        A. - Max = 3.35-m, Mean = 1.25-m, U10 = 13.86-m/s

        B. - One track coming offshore

    ii. - Validation

        A. - 44009 - Decent fit in wave height for the month but under-estimation of mean period during the event in the middle of the month.

        B. - 44012 - Same as 44009

(e) Level 3S1

    i. - Map

        A. - Max = 2.90-m, Mean = 1.15-m, U10 = 17.20-m/s

        B. - One storm doing a loop in the grid

    ii. - Validation

A. - 41002 - Good fit of wave height and mean period during the month. Slight under-estimation of wave height early in the month.

(f) Level 3S2

    i. - Map

      A. - Max = 1.95-m, Mean = 1.30-m, U10 = 10.22-m/s

      B. - One track making loop over Bahamas.

    ii. - Validation

      A. - None

0.9   1987-09

1. Problems

  (a) No issues running

2. Results

  (a) Level 1

    i. - Map

      A. - Max = 10.78-m, Mean = 3.45-m, U10 = 27.48-m/s

      B. - 5 storm tracks in domain with 1 making landfall

    ii. - Validation

      A. - Wave height results look good for most of the month but mean period is low at most buoys.

  (b) Level 2

    i. - Map

      A. - Max = 5.57-m, Mean = 2.01-m, U10 = 33.01-m/s

      B. - 3 storm tracks in domain with on making landfall off South Carolina

    ii. - Validation

      A. - Similar to level 1

  (c) Level 3N

    i. - Map

A. - Max = 3.56-m, Mean = 1.28-m, U10 = 17.55-m/s

ii. - Validation

A. - 44005 - good fit for wave height overall. Under-estimated som peaks and also under-estimated the mean period for most of the month.

B. - 44007 - similar result to 44005.

C. - 44011 - Similar to 44005 but wind speeds were high all month compared with the buoy.

(d) Level 3C

i. - Map

A. - Max = 3.69-m, Mean = 1.28-m, U10 = 15.54-m/s

B. - One storm track making landfall in South Carolina

ii. - Validation

A. - 44009 - really good fit for wave height, but mean period is low all month

B. - 44012 - same as 44009.

(e) Level 3S1

i. - Map

A. - Max = 3.07-m, Mean = 1.21-m, U10 = 12.50-m/s

B. - One storm track starting offshore.

ii. - Validation

A. - 41002 - Good fit all month

(f) Level 3S2

i. - Map

A. - Max = 3.07-m, Mean = 1.16-m, U10 = 10.94-m/s

ii. - Validation

A. - None

0.10   1987-10

1. Problems

(a) No issues running

2. Results

   (a) Level 1

      i. - Map

        A. - Max = 10.65-m, Mean = 3.70-m, U10 = 25.78-m/s

        B. - One storm track cutting across Florida.

      ii. - Validation

        A. - Overall the wave height results look really good compared to the buoy, but mean period is low

   (b) Level 2

      i. - Map

        A. - Max = 7.07-m, Mean = 2.38-m, U10 = 26.38-m/s

        B. - One track passing across the keys and heading into the Atlantic.

      ii. - Validation

        A. - similar to level 1

   (c) Level 3N

      i. - Map

        A. - Max = 4.97-m, Mean = 1.98-m, U10 = 18.52-m/s

      ii. - Validation

        A. - 44005 - good fit in wave height, a little under-estimation of the peak on the 5th.

        B. - 44007 - under-estimated wave height peaks on the 5th and 28th.

        C. - 44011 - similar to 44005.

   (d) Level 3C

      i. - Map

        A. - Max = 6.25-m, Mean = 2.15-m, U10 = 21.11-m/s

      ii. - Validation

        A. - 44009 - model wave heights are slightly high at times and mean period is consitantly low.

        B. - 44012 - similar to 44009

   (e) Level 3S1

i. - Map

        A. - Max = 6.41-m, Mean = 2.21-m, U10 = 19.58-m/s

        B. - one storm track ending in grid

    ii. - Validation

        A. - 41002 - Good fit for wave heights, but mean period is low all month.

(f) Level 3S2

    i. - Map

        A. - Max = 5.88-m, Mean = 2.17-m, U10 = 26.38-m/s

        B. - One storm track coming across the keys, past the Bahamas.

    ii. - Validation

        A. - None

0.11 1987-11

1. Problems

    (a) No issues running

2. Results

    (a) Level 1

        i. - Map

            A. - Max = 9.68-m, Mean = 3.78-m, U10 = 26.61-m/s

            B. - 1 storm track going into the Gulf of Mexico.

        ii. - Validation

            A. - Model wave heights are negatively bias throughout the month, increasing at the peaks. Mean periods are low all month.

    (b) Level 2

        i. - Map

            A. - Max = 8.92-m, Mean = 3.14-m, U10 = 24.71-m/s

        ii. - Validation

            A. - Similar to level 1

(c) Level 3N

   i. - Map

     A. - Max = 6.58-m, Mean = 2.11-m, U10 = 23.20-m/s

   ii. - Validation

     A. - 44005 - Negatively bias on both wave height and mean period. Missed peak on the 12th by ¿ 2-m.

     B. - 44007 - Wave heights are better than 44005 but still low on both wave heights and mean period.

     C. - 44011 - wave heights are low on every peak and mean period is low all month.

     D. - 44013 - Two peaks in the month and wave heights were off by 2-m at times. Mean period looks terrible.

(d) Level 3C

   i. - Map

     A. - Max = 4.66-m, Mean = 2.36-m, U10 = 20.39-m/s

   ii. - Validation

     A. - 44009 - Under-estimated the peak on the 11th but rest of the month looks good with respect to wave heights. Mean period was low all month.

     B. - 44012 - Similar to 44009.

(e) Level 3S1

   i. - Map

     A. - Max = 5.04-m, Mean = 2.93-m, U10 = 17.90-m/s

   ii. - Validation

     A. - Wave heights are low on both peaks during the month, the 12th and 21st.

(f) Level 3S2

   i. - Map

     A. - Max = 5.18-m, Mean = 3.02-m, U10 = 16.18-m/s

   ii. - Validation

     A. - None

0.12   1987-12

1. Problems

   (a) No issues running

2. Results

   (a) Level 1

       i. - Map
          A. - Max = 25.83-m, Mean = 4.97-m, U10 = 29.79-m/s
          B. - Maximum wave height in Northeast corner.
       ii. - Validation
          A. - Model wave heights and mean periods under-estimate the measured values at most buoys for the entire month.

   (b) Level 2

       i. - Map
          A. - Max = 8.14-m, Mean = 4.18-m, U10 = 26.32-m/s
       ii. - Validation
          A. - Similar to level 1

   (c) Level 3N

       i. - Map
          A. - Max = 6.43-m, Mean = 2.58-m, U10 = 23.66-m/s
       ii. - Validation
          A. - 44005 - Wave heights and mean periods are low all month.
          B. - 44007 - Wave heights are good except for one peak on the 16th. Mean period is way low all month.
          C. - 44011 - Same as 44005
          D. - 44013 - Missed all peaks and mean period is all over the place.

   (d) Level 3C

       i. - Map
          A. - Max = 5.84-m, Mean = 2.30-m, U10 = 20.22-m/s

ii. - Validation

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

    B. - 44012 - Same as 44009.

(e) Level 3S1

    i. - Map

        A. - Max = 5.52-m, Mean = 2.28-m, U10 = 19.09-m/s

    ii. - Validation

        A. - 41002 - wave heights are low for all peaks and mean periods are the most of the measured values at these peaks.

(f) Level 3S2

    i. - Map

        A. - Max = 5.10-m, Mean = 2.13-m, U10 = 17.49-m/s

    ii. - Validation

        A. - None

0.13   1987-stats

0.13.1   Level 1
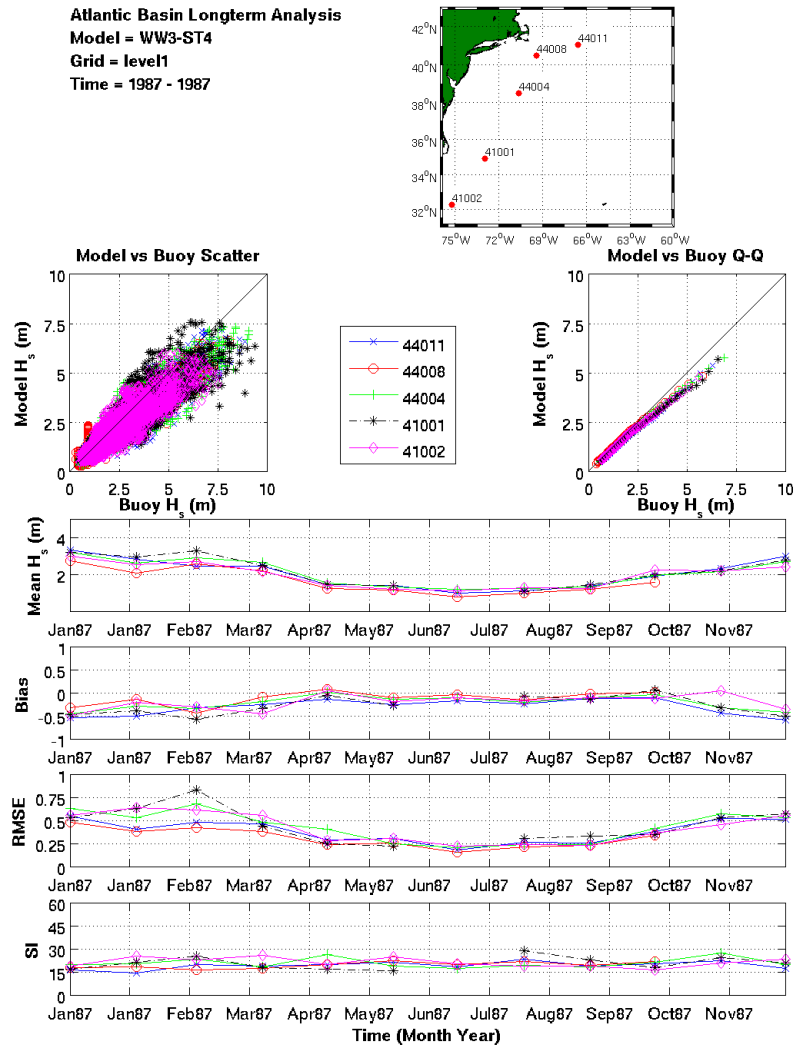
Figure 1: Comp 2 for Level 1
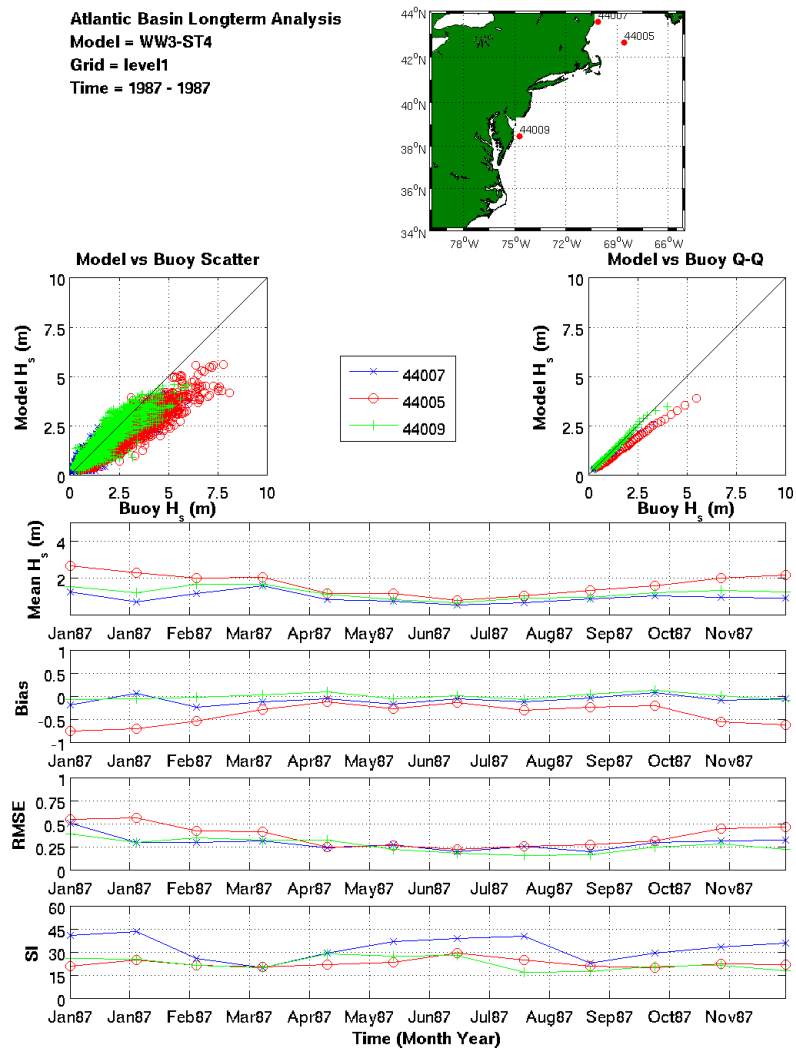
Figure 2: Comp 3 for Level 1

0.13.2 Level 2
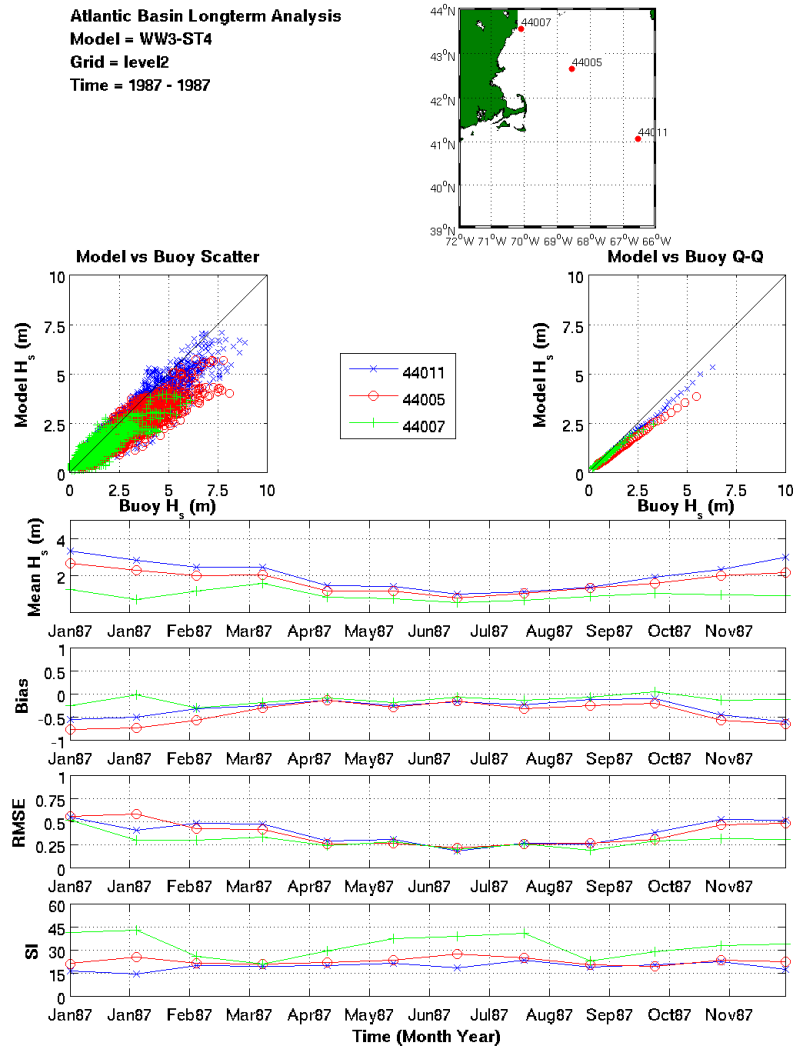
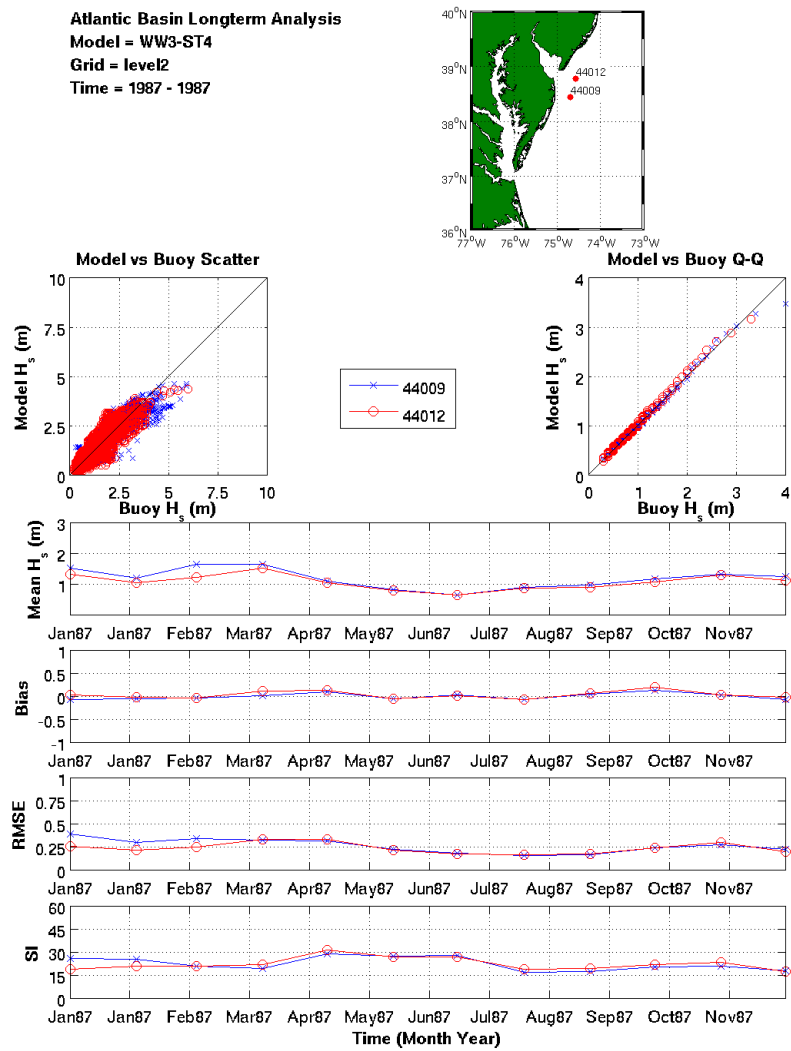
Figure 3: Comp 2 for Level 2
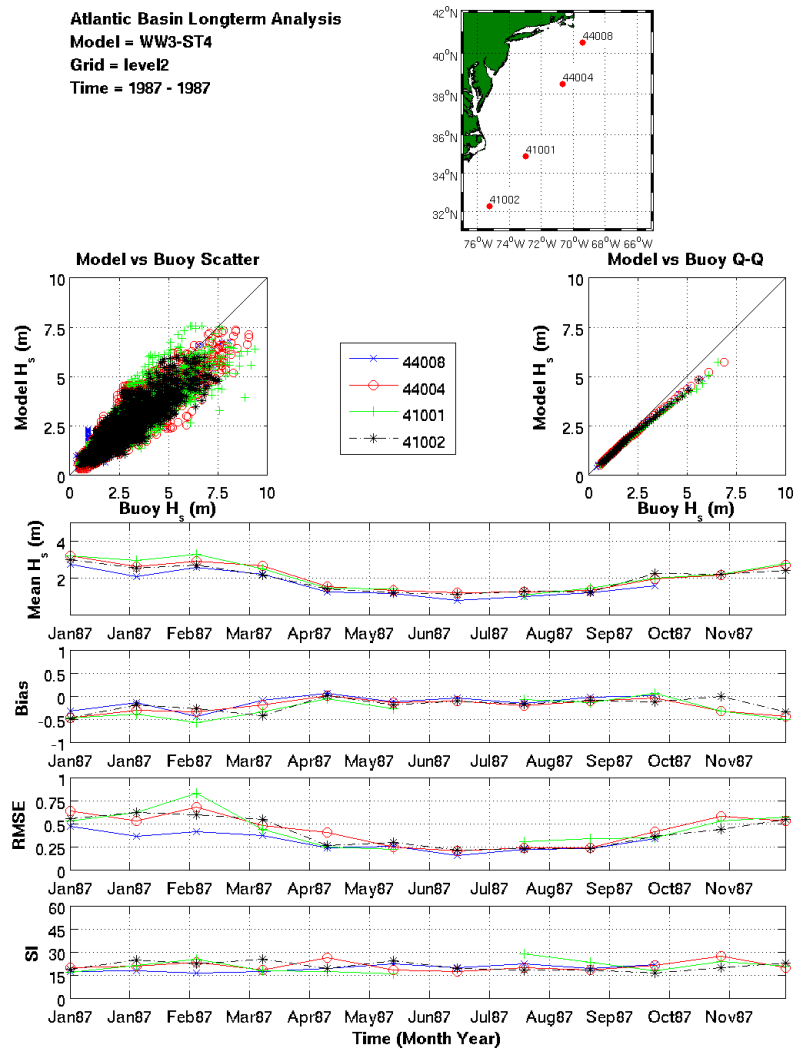
Figure 4: Comp 3 for Level 2

Figure 5: Comp 4 for Level 2

0.13.3   Level 3N

Figure 6: Comp 1 for Level 3N

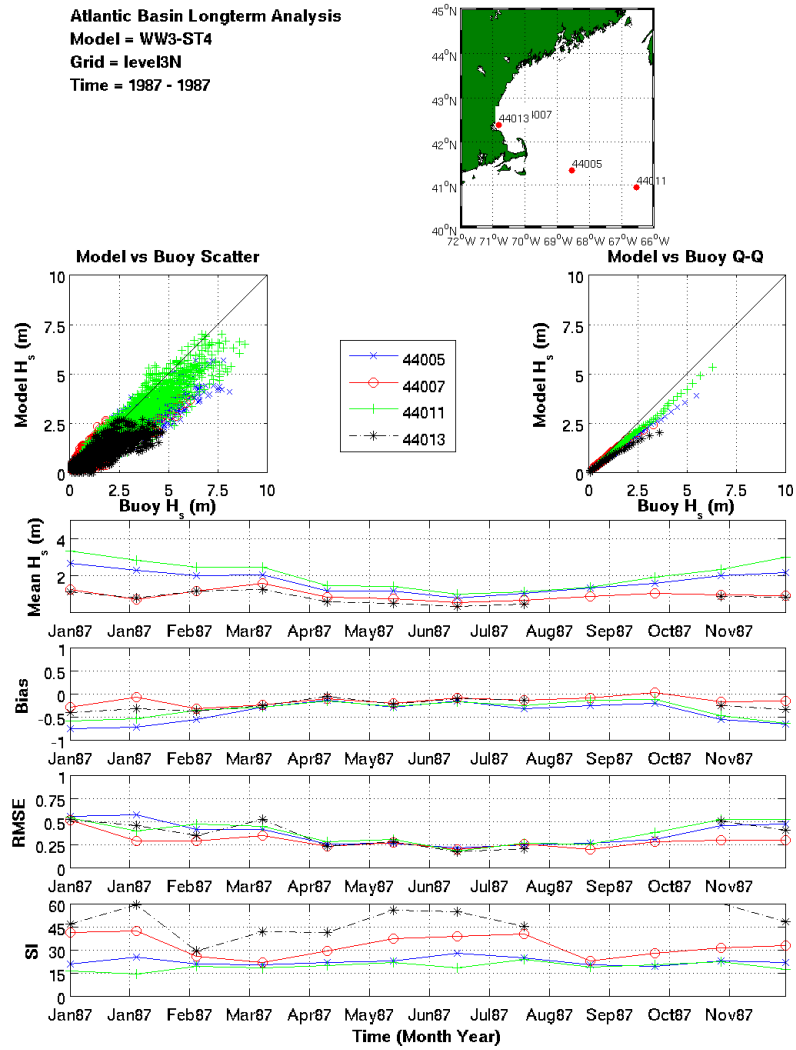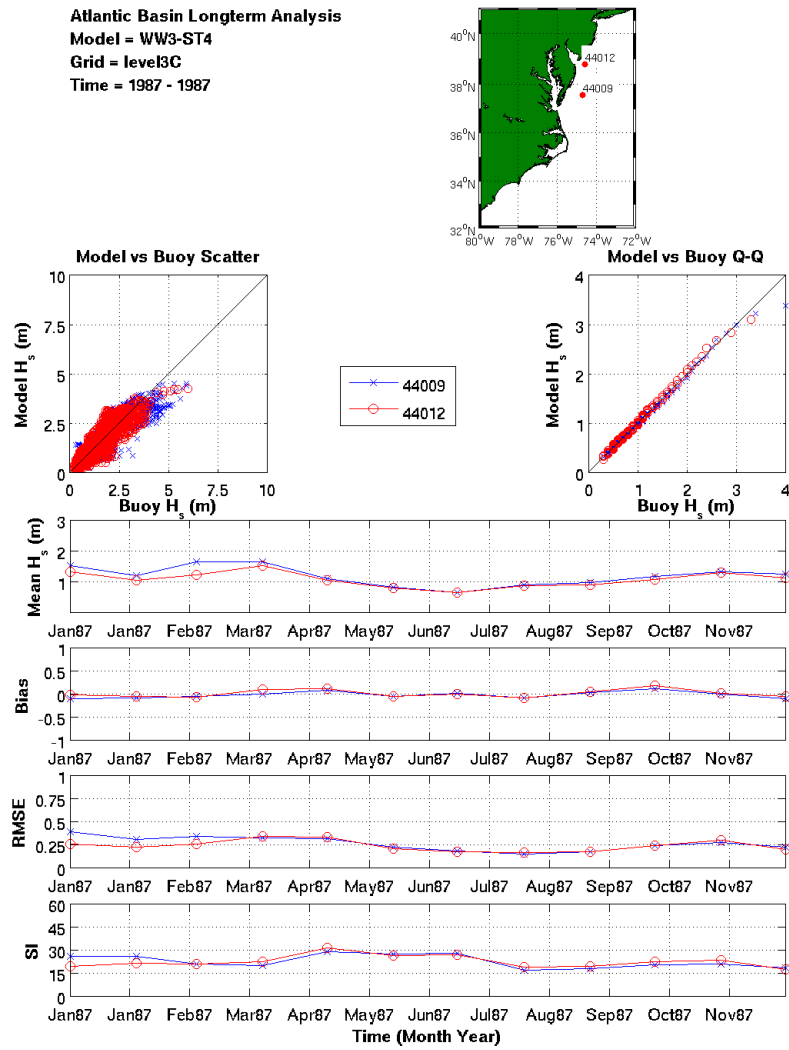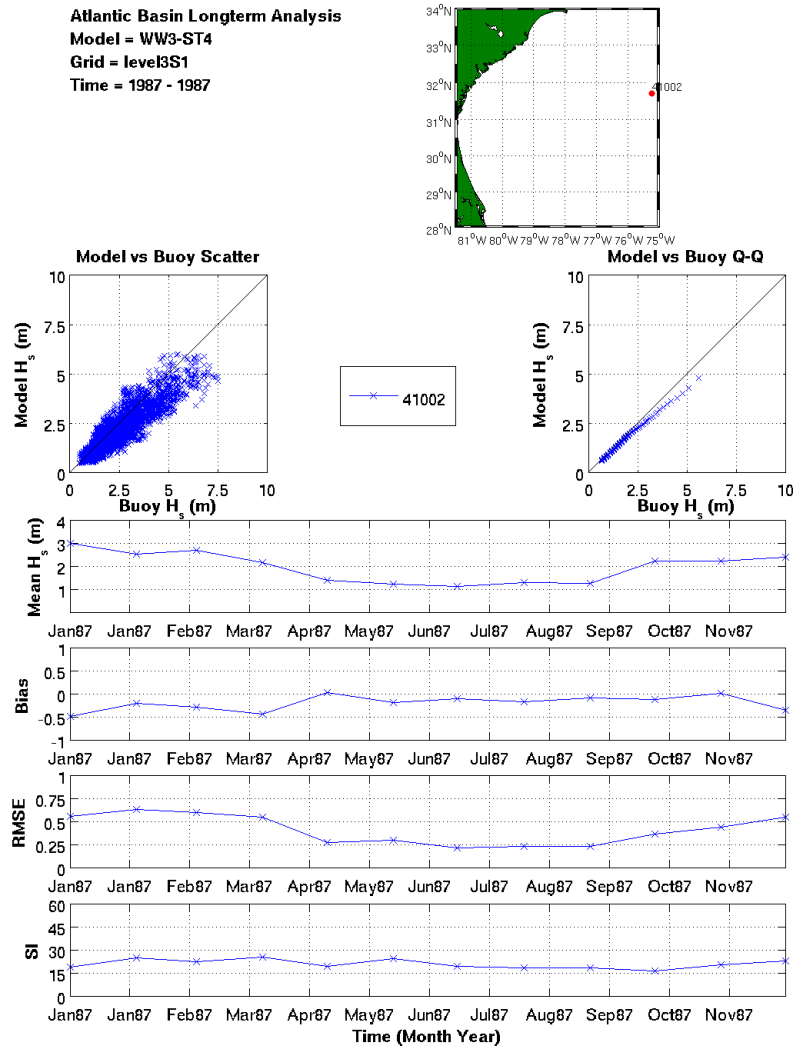## 0.13.4 Level 3C

Figure 7: Comp 1 for Level 3C

0.13.5   Level 3S1

Figure 8: Comp 1 for Level 3S1