Appendix 1:

HF Radar Operations

High Frequency Radar Final Report

PROJECT TITLE: "An Advanced Atmospheric/Ocean Assessment Program Designed to Reduce the Risk Associated with the Offshore Wind Energy Development Defined by the NJ Energy Master Plan"

PROGRAM SPONSOR: State of New Jersey, NJ Board of Public Utilities (NJBPU) Bureau of Conservation & Renewable Energy & Office of Clean Energy

RUTGERS
Coastal Ocean Observation Lab

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Introduction

High Frequency Radar Network

Site Installation

Four SeaSonde High Frequency (HF) radars were purchased and installed as part of the Rutgers BPU project. Table 1 lists the spacing between the SeaSonde stations. This will be useful when configuring the bistatic operations between the sites.

Table 1: Spacing between SeaSonde HF Radar sites in kilometers

	BRNT	BRMR	RATH	WOOD
BRNT	0	27	61	87
BRMR		0	34	60
RATH			0	26
WOOD				0

The radial current data is collected from each of the sites once an hour and transferred back to the file server at Rutgers. The data is combined into total vector files using the HFRProgs MATLAB toolbox. The total vector files are plotted and made available on the Rutgers website (http://marine.rutgers.edu/cool/maracoos/imagery/) for viewing. The data is then made available to the National Oceanic and Atmospheric Administration (NOAA) High Frequency Radar Network.

Brant Beach Site BRNT

The site at Brant Beach, NJ was installed on December 5, 2011. The climate controlled enclosure that houses the system electronics is shown in Figure 1. The antenna on the beach is shown in Figure 2. Table 2 provides information on the installation and the hardware installed to increase the reliability of the system. The antenna was lost at Brant Beach during Hurricane Sandy. A spare antenna had been purchased as part of the project and was used to replace the lost antenna. That antenna is shown in

Figure 1: Picture of the electronics enclosure at the Brant Beach radar site.

Figure 2: Picture of the antenna on the beach in Brant Beach, NJ after installation December 2011.

Table 2: Brant Beach Site Information

Antenna Coordinates:	39.615383, -74.198300
Transmit Frequency:	13.45 MHz
Power Output:	40 W
Bandwidth:	50kHz
AC Installed:	Yes
UPS Installed:	Yes
Data Transfers via:	Cable Internet
Power Control:	Remote
Backup Drive:	Yes
Lightning Protection:	Yes
Property Owner:	The Township of Long Beach Township, New Jersey
Local Contact:	Andrew Baran, Deputy Municipal Department Head

Figure 3: Picture of the antenna on the beach in Brant Beach, NJ after Hurricane Sandy April 2013.

Brigantine Site BRMR

The site at Briagantine, NJ was installed on January 5, 2012. The climate controlled enclosure that houses the system electronics is shown in Figure 4. The antenna on the beach is shown in Figure 5. Table 3 provides information on the installation and the hardware installed to increase the reliability of the system. The antenna at BRMR was knocked down and was damaged slightly after Hurricane Sandy. The antenna was repaired and made operational again on December 20, 2012.

Figure 4: Picture of the electronics enclosure at the Brigantine radar site.

Figure 5: Picture of the antenna on the beach in Brigantine, NJ.

Table 3: Brigantine Site Information

Antenna Coordinates:	39.408183, -74.361217
Transmit Frequency:	13.45 MHz
Power Output:	40 W
Bandwidth:	50kHz
AC Installed:	Yes
UPS Installed:	Yes
Data Transfers via:	Cable Internet
Power Control:	Remote
Backup Drive:	Yes
Lightning Protection:	Yes
Property Owner:	The City of Brigantine Beach, New Jersey
Local Contact:	Ernie Purdy, Superintendent of Public Works

Strathmere Site RATH

The site at Strathmere, NJ was installed on January 5, 2012. The climate controlled enclosure that houses the system electronics is shown in Figure 6. The antenna on the beach is shown in Figure 7. Table 4 provides information on the installation and the hardware installed to increase the reliability of the system. The site at Strathmere experienced no damage during Hurricane Sandy.

Figure 6: Picture of the electronics enclosure at the Strathmere radar site.

Figure 7: Picture of the antenna on the beach in Strathmere, NJ.

Table 4: Strathmere Site Information

Antenna Coordinates:	39.198683, -74.652517
Transmit Frequency:	13.45 MHz
Power Output:	40 W
Bandwidth:	50kHz
AC Installed:	Yes
UPS Installed:	Yes
Data Transfers via:	Cable Internet
Power Control:	Remote
Backup Drive:	Yes
Lightning Protection:	Yes
Property Owner:	The Township of Upper, New Jersey
Local Contact:	Paul Dietrich, Township Engineer

North Wildwood Site WOOD

The site at North Wildwood, NJ was installed on January 27, 2012. The climate controlled enclosure that houses the system electronics is shown in Figure 8. The antenna on the beach is shown in Figure 9. Table 5 provides information on the installation and the hardware installed to increase the reliability of the system. The site at North Wildwood experienced no damage during Hurricane Sandy.

Figure 8: Picture of the electronics enclosure at the North Wildwood radar site.

Figure 9: Picture of the antenna on the beach in North Wildwood, NJ.

Table 5: North Wildwood Site Information

Antenna Coordinates:	38.990633, -74.799767
Transmit Frequency:	13.45 MHz
Power Output:	40 W
Bandwidth:	50kHz
AC Installed:	Yes
UPS Installed:	Yes
Data Transfers via:	Cellular Internet
Power Control:	Remote
Backup Drive:	Yes
Lightning Protection:	Yes
Property Owner:	The City of North Wildwood, New Jersey
Local Contact:	Christine Smyth, City Administrator
Radial Dat	

Antenna Pattern Measurements

The antenna pattern can be considered the calibration of the equipment. The SeaSonde is a compact direction finding radar that receives radar echos from all directions. The receive antenna consists of two directionally dependent cross loops and an omni directional monopole. The SeaSonde determines the bearing of these radar echos based on the ratio of the signal in each of the three channels of the receive antenna. If there is any metal longer than a quarter of the transmitted wavelength, which is 6 meters for the 13 Mhz system, within a few wavelengths then the possibility of antenna distortion exists. This will affect the bearing measurements of the radial velocity estimates.

This distortion can be measured and corrected by conducting an antenna pattern measurement (APM). This should be conducted when the equipment is first installed, if there is a major change in the environment of the system, if new hardware (receivers, cables, antennas) are introduced to the system. Table 1 provides the dates and reason an antenna pattern measurement was performed at each of the four BPU sites.

Radial files generated using the antenna pattern measurement are called ideal radials. Radial files generated using a theoretical sine function for the antenna response are referred to as ideal radial files.

Table 6: Dates for antenna pattern measurements at each radar station.

BRNT		
Number	**APM Date**	**Reason**
1	12/2/2011	New Antenna
2	1/30/2012	measured radials poor coverage
3	2/2/2012	swapped antenna board
4	2/6/2012	moved antenna
5	4/10/2012	before bottom half of antenna swap
6	4/11/2012	bottom half antenna swapped
7	5/2/2012	repaired dome mast
8	5/29/2012	360* APM
9	6/5/2012	new antenna
10	6/5/2012	rotated antenna
11	6/8/2012	360* APM with new antenna
12	6/8/2012	180 APM
13	6/8/2012	360 w SPRK antenna
14	6/13/2012	360* APM w/SPRK antenna
15	6/13/2012	360* APM w/SPRK antenna take 2
16	8/8/2012	replaced cables
17	2/5/2013	measured radials poor coverage

BRMR		
Number	**APM Date**	**Reason**
1	12/12/2011	New Antenna
2	3/13/2012	measured radials poor coverage
3	8/21/2012	measured radials poor coverage
4	1/3/2013	replaced cables
5	2/6/2013	measured radials poor coverage
6	2/12/2013	measured radials poor coverage

RATH		
Number	**APM Date**	**Reason**
1	1/31/2012	New Antenna
2	2/22/2012	measured radials poor coverage

WOOD		
Number	**APM Date**	**Reason**
1	1/26/2012	New Antenna
2	2/14/2012	measured radials poor coverage
3	8/9/2012	measured radials poor coverage

The antenna bearing is a critical measurement and setting of the radar system. The antenna is positioned so that it is pointing normal to the coast line and the two directional loops are evenly spaced over the ocean. Then a technician measures the magnetic bearing of this shore normal vector. The bearing is entered into the SeaSonde software. The software then corrects for the local magnetic declination to determine the true bearing of the receive antenna. Any error in this process will result in a bearing bias of the measurements, so great care was taken to make sure this measurement at each site was accurate. Table 7 lists the antenna bearing and the start date and time. For instance the SEAB site had an antenna bearing of 122 degrees true on January 1, 2012 at 00:00 GMT. The antenna remained at this bearing for the duration of the experiment. The antenna bearing of BRMR was set to 173 degrees true during its installation and changed to 170 on November 15, 2012 after the antenna was repaired due to Hurricane Sandy.

Table 7: Dates that the bearing of the receive antenna changed and the value.

Station	Date	Bearing
SEAB	1/1/12 0:00	122
BELM	1/1/12 0:00	139
SPRK	1/5/12 19:00	122
SPRK	6/14/12 21:00	157
SPRK	6/20/12 17:00	132
SPRK	9/26/12 16:00	142
BRNT	1/1/12 0:00	172
BRNT	1/30/12 20:00	144
BRNT	2/2/12 22:00	127
BRNT	2/6/12 17:00	147
BRNT	6/5/12 15:00	162
BRNT	6/8/12 15:00	144
BRNT	6/11/12 22:00	142
BRNT	11/14/12 18:00	137
BRMR	1/1/12 0:00	173
BRMR	11/15/12 16:00	170
RATH	1/5/12 19:00	198
WOOD	1/27/12	150

Data Collection

There are several layers of data within the surface current measurements of the HF radar. Table 8 shows the different layers with their description. The spectra data was collected and archived on an external hard disk drive. The real-time radial data (Level 1a) was transferred back to Rutgers once an hour and combined into totals (Level 2a). The real time radial and total data was analyzed in the report and appendix. After seeing some anomalies in the data, the radial data was reprocessed with refined processing parameters to improve data quality. This reprocessed radial data (Level 1b) was used to produce reprocessed totals (Level 2b). Two sets of reprocessed totals were generated, one using the ideal radial files and the other using the measured radial files. The Level 1a, 1b, 2a and 2b data were stored on the IMCS file server that has tape redundancy. The analysis shown in this report and appendix is with the real-time data (Level 1a and 2a). The analysis in the "HF Radar Surface Current Summary" was performed using the reprocessed Level 2b data.

The inventory of spectra data from each site is given in Table 9. The missing data from RATH and WOOD was due to a failed hard drive that contained the data.

Table 8: Levels of data associated with HF radar surface current measurements

Data Level	Description
Level 0	Spectra Files
Level 1a	Real-time Radials
Level 1b	Reprocessed Radials
Level 2a	Real-time Totals
Level 2b	Reprocessed Totals
Level 3	Gap Filled Globally Gridded Products

Table 9: Table showing the existence (X) of archived spectra files from each of the BPU radar stations.

Cross Spectra Short (CSS) Data Files

	BRMR	BRNT	RATH	WOOD
Jan	X	X		
Feb	X	X		
Mar	X	X	X	X
Apr	X	X	X	X
May	X	X	X	X
June	X	X	X	X
July	X	X	X	X
Aug	X	X	X	X
Sep	X	X	X	X
Oct	X	X	X	X
Nov	X	X	X	X
Dec	X	X	X	X

The monthly radial data availability is given in Table 10. The radial availability for all sites for 2012 was 78%. Some issues that prevented 100% data availability were hardware failures, software errors and Hurricane Sandy. Rutgers worked with the manufacturer CODAR Ocean Sensors to repair the failed hardware and fix software errors. Hurricane Sandy was the largest impact on the network destroying three of the sites (SEAB, BELM and SPRK) and causing outages a the other sites.

Table 10: Monthly radial data availability percentages. The boxes in yellow indicate sites and months impacted by Hurricane Sandy.

	SEAB	BELM	SPRK	BRNT	BRMR	RATH	WOOD
Jan-12	100%	100%	100%	100%	100%	58%	13%
Feb-12	100%	97%	100%	100%	100%	83%	85%
Mar-12	97%	87%	100%	100%	100%	92%	68%
Apr-12	98%	97%	100%	57%	99%	91%	86%
May-12	92%	100%	100%	100%	100%	98%	99%
Jun-12	100%	71%	58%	99%	98%	100%	100%
Jul-12	100%	92%	0%	100%	91%	100%	100%
Aug-12	100%	100%	0%	100%	100%	100%	100%
Sep-12	100%	65%	12%	100%	100%	100%	100%
Oct-12	91%	0%	93%	93%	93%	100%	100%
Nov-12	0%	0%	0%	0%	20%	100%	54%
Dec-12	0%	0%	0%	36%	14%	99%	100%

Results

The annual mean of the surface currents off New Jersey for 2012 is shown in Figure 10. The mean current is on the order of 6-9 cm/s to the southeast. The currents near the NY Bight Apex shift direction towards the northeast. Only the grid points where there was at least 50% data coverage were plotted. This follows similar procedures from other researchers in the field.

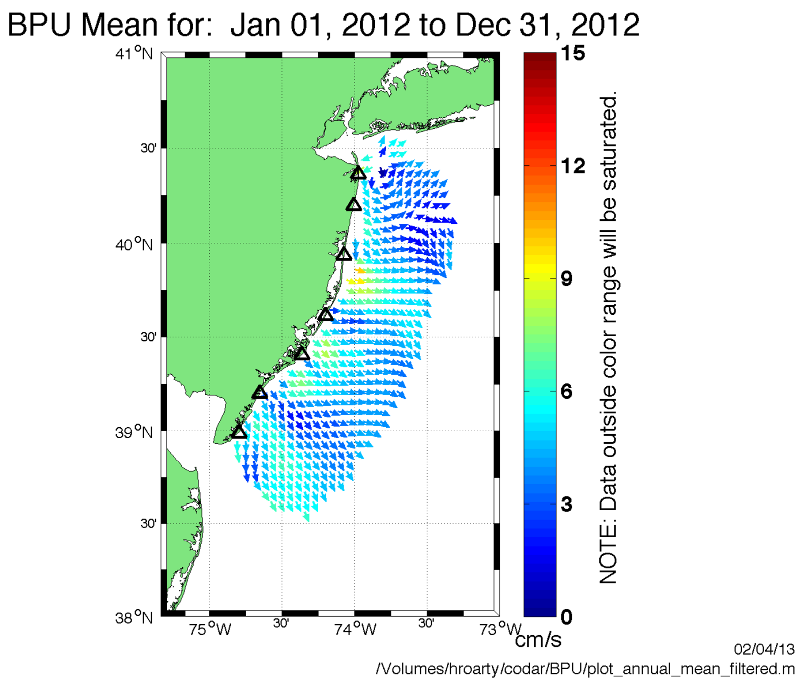


Figure 10: Annual mean of the surface currents from January 1,2012 to December 31, 2012 as measured by the HF radar system. The colorbar on the right shows the current scale in cm/s.

The temporal and spatial coverage for the network is shown in Figure 11. The temporal coverage over most of the New Jersey shelf reaches 70%. The coverage over the wind area development reached 80%. Figure 12 is also a plot of temporal and spatial coverage for the year. This figure delineates the 10% contour lines while Figure 11 uses the colormap to display coverage.

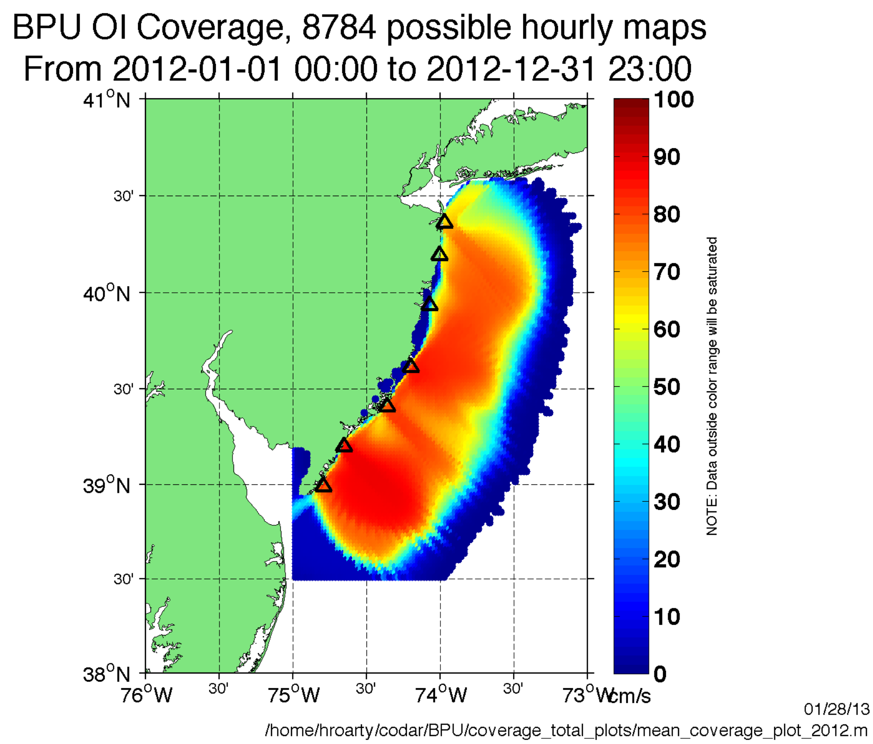


Figure 11: HF radar coverage for 2012. The colorbar on the right shows the temporal coverage red 100% and blue 0%.

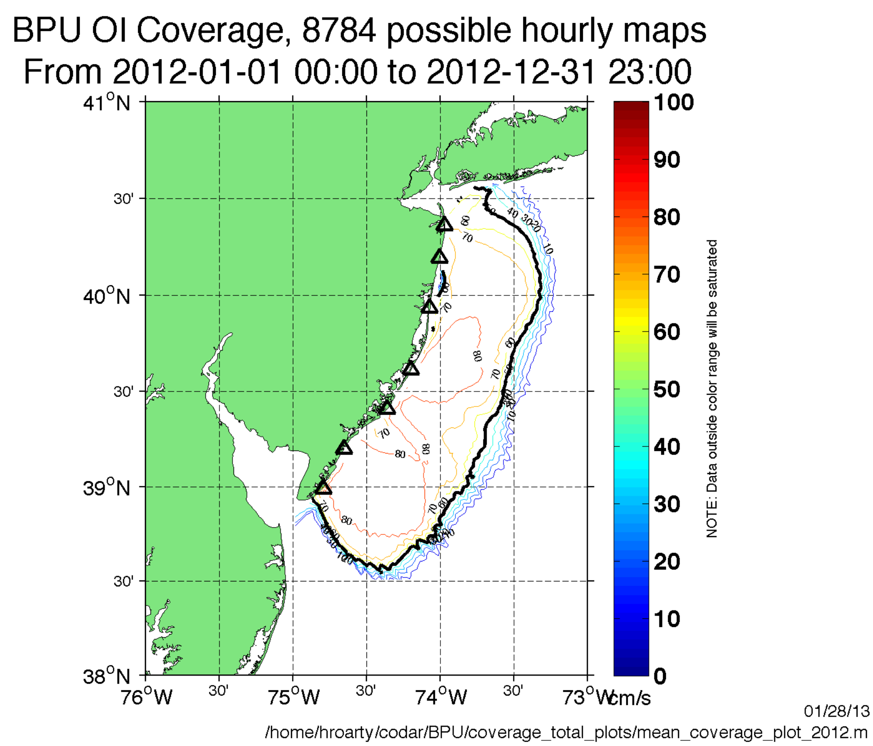


Figure 12: Contours of HF radar temporal coverage for 2012. Every 10 percent is shown with the 50% coverage area shown as the thick black line.

Appendix

The appendix assembles all plots and analysis related to the quality control and assurance of the radial and total vector files. All figures use the Level 1a real-time radial data and Level 2a real-time total data.

Section	Name
01	HF Radar Antenna Pattern Measurements
02	HF Radar Hardware Diagnostic Data
03	Ideal Radial Inventory
04	Measured Radial Inventory
05	Radial Contribution to Totals
06	Monthly Radial Coverage Maps
07	Average Radial Velocity
08	Ideal and Measured Radial Correlation Plots Time Series Plots
09	Ideal Radials Filtered by Land Mask
10	Site Locations with Bathymetry Maps
11	13 MHz First Order Line Setting Inspection
12	HF Radar Vector Coverage
13	13 MHz Monthly Average Surface Current Maps
14	M2 Tidal Ellipses

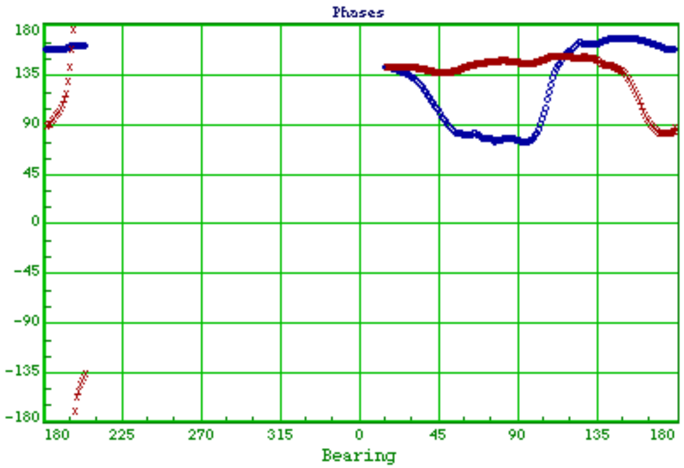
Section 01:

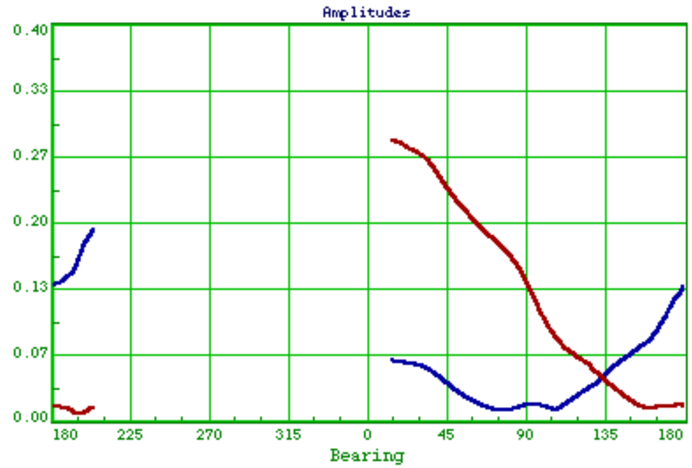
BPU
HF Radar Antenna Pattern Measurements

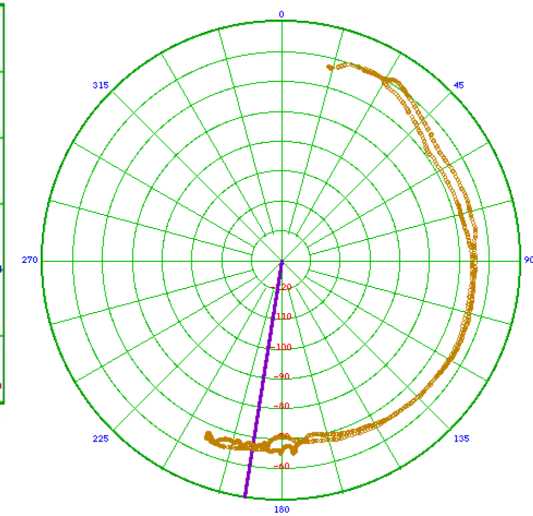
January 1, 2012 – February 22, 2013

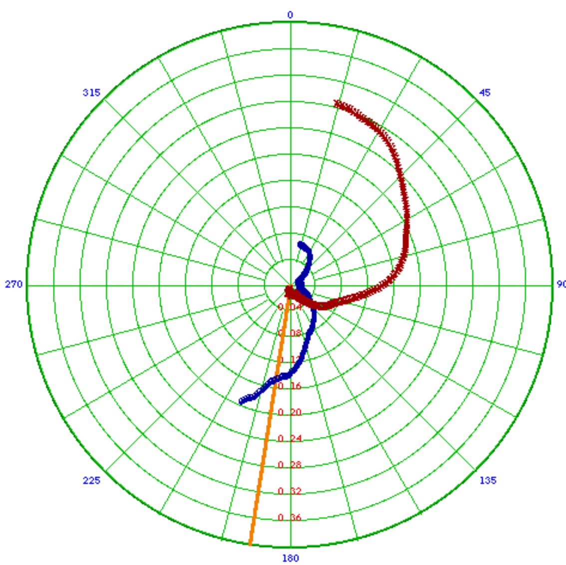
BRANT BEACH

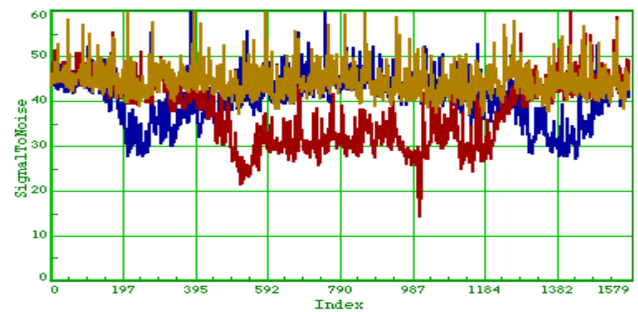
BRNT 2011 12 02

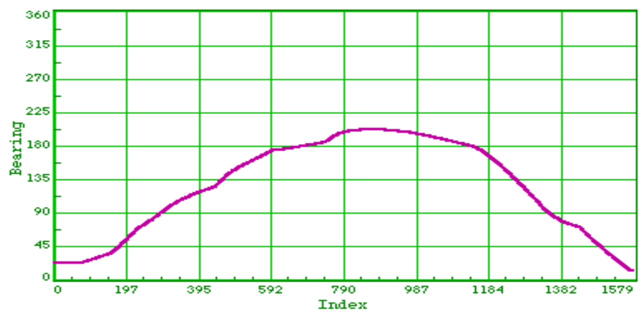


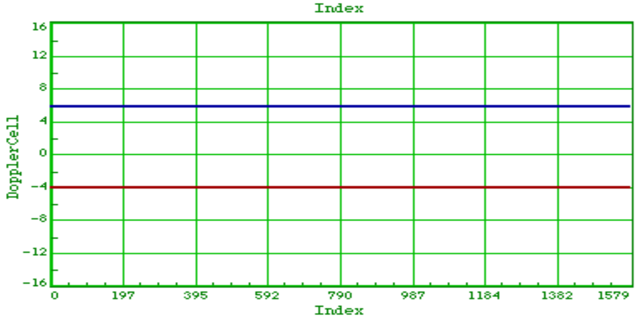


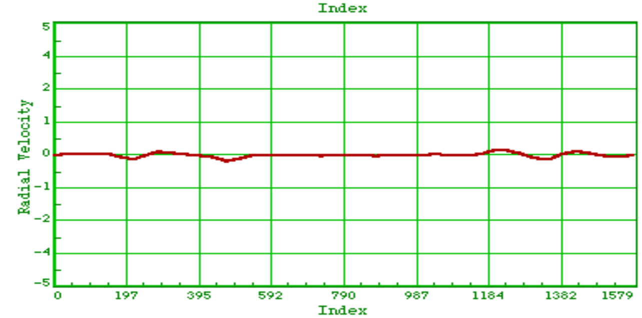












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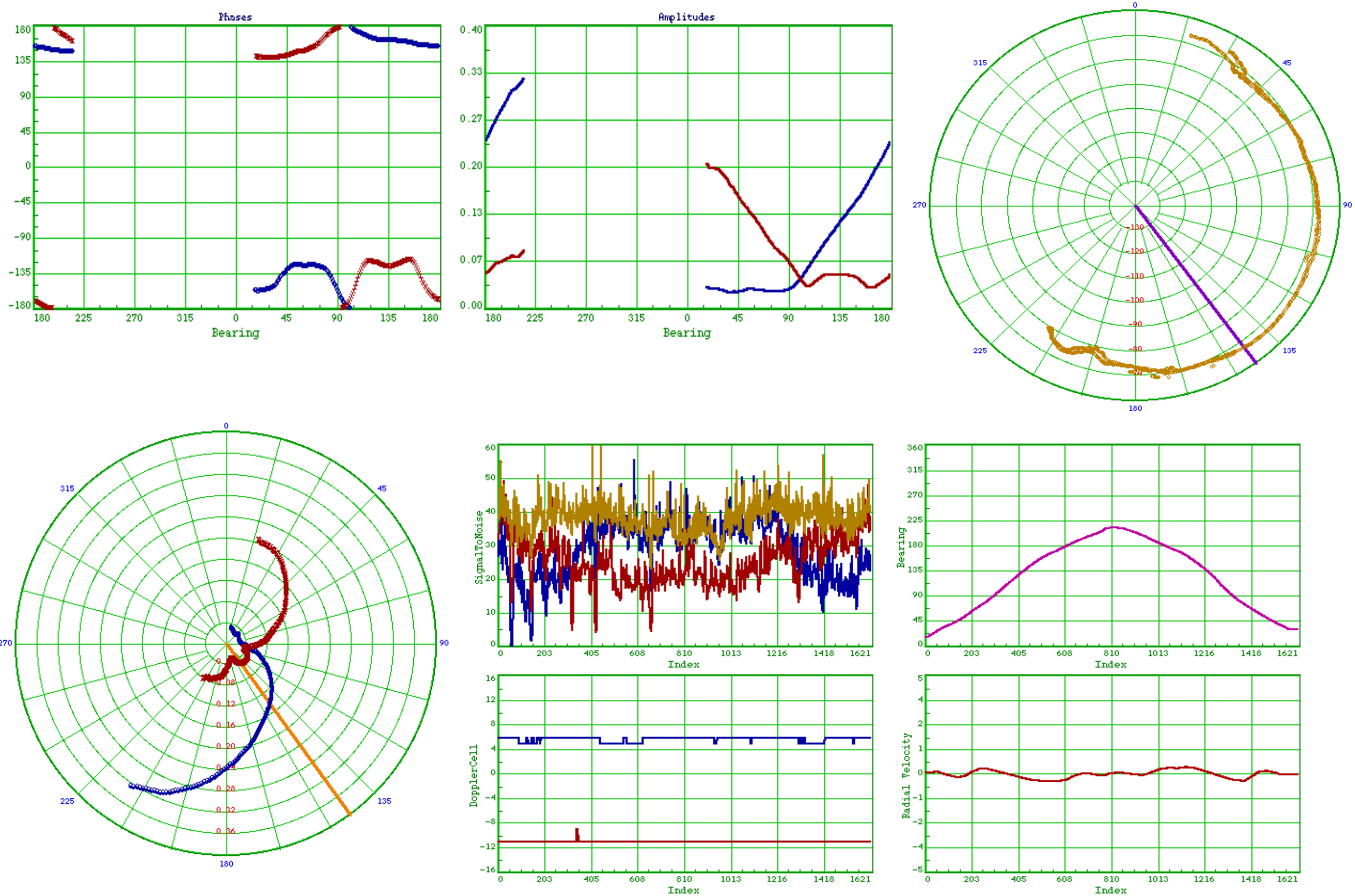
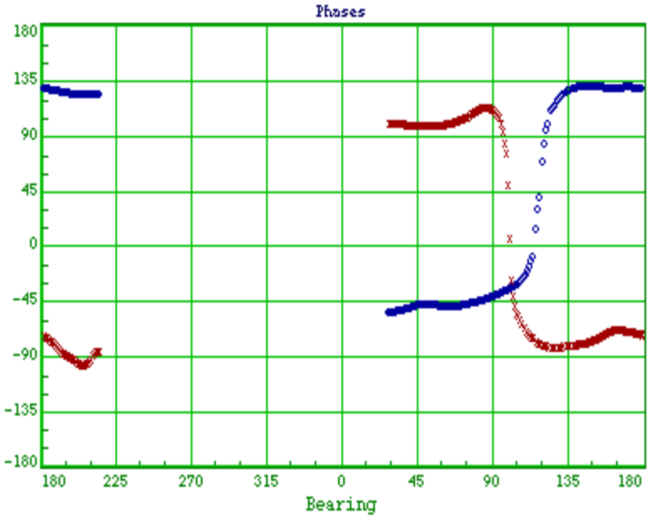


2012 02 02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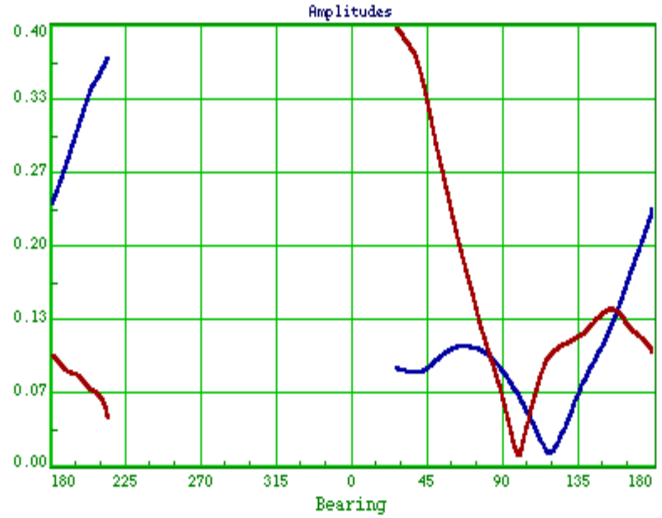
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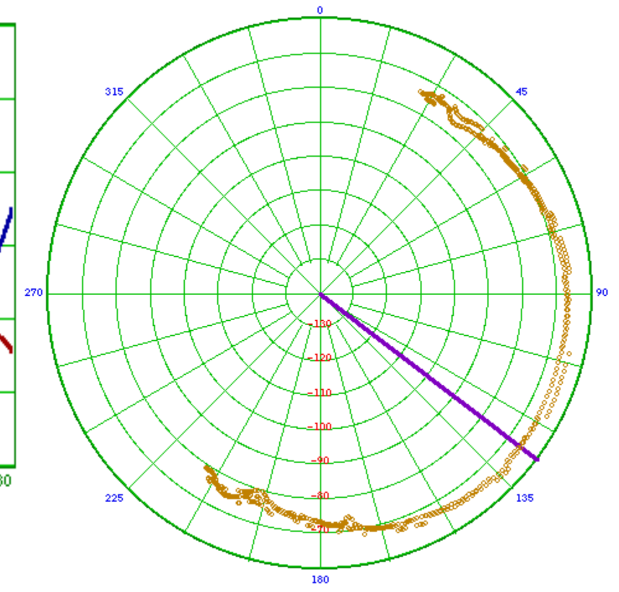

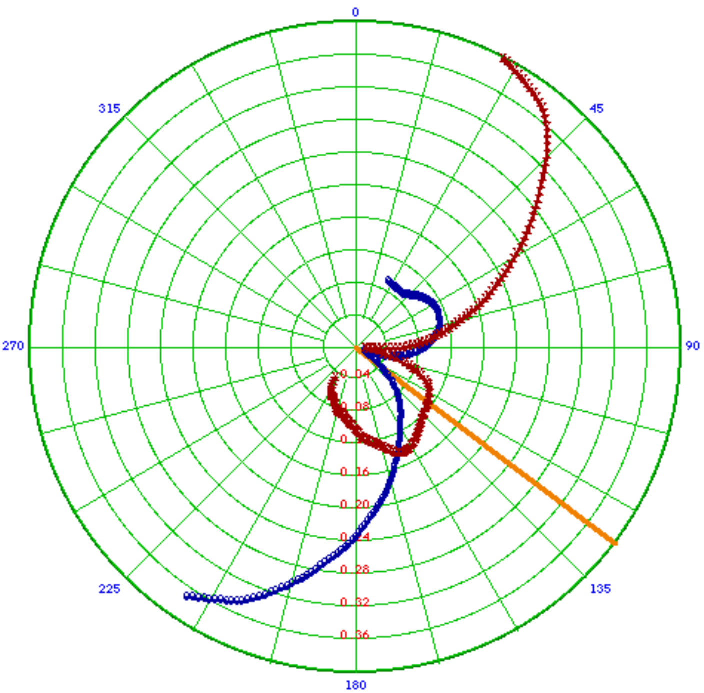

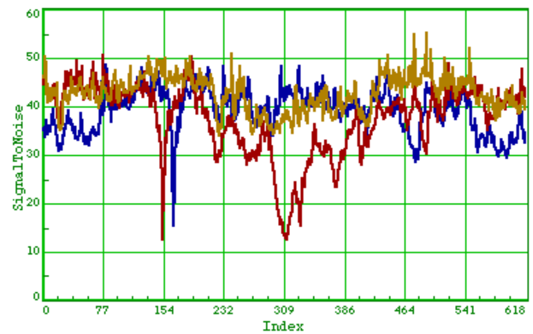
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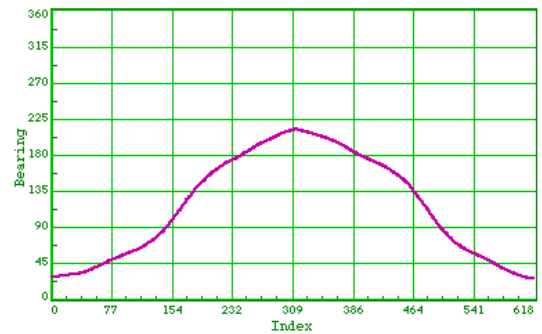
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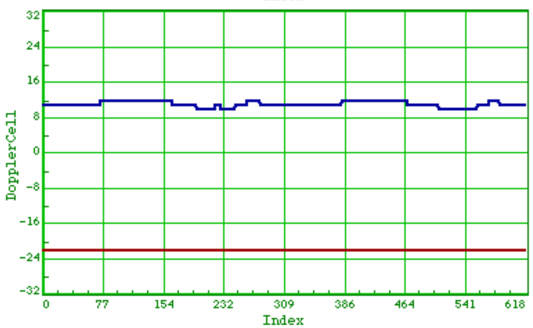
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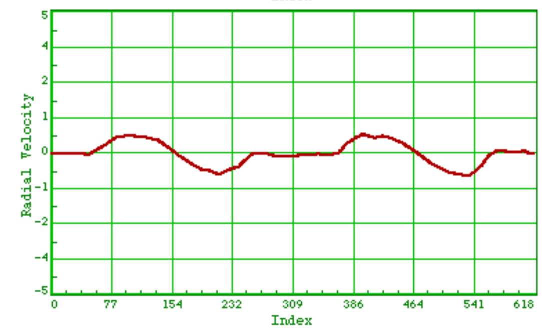
Radial Velocity
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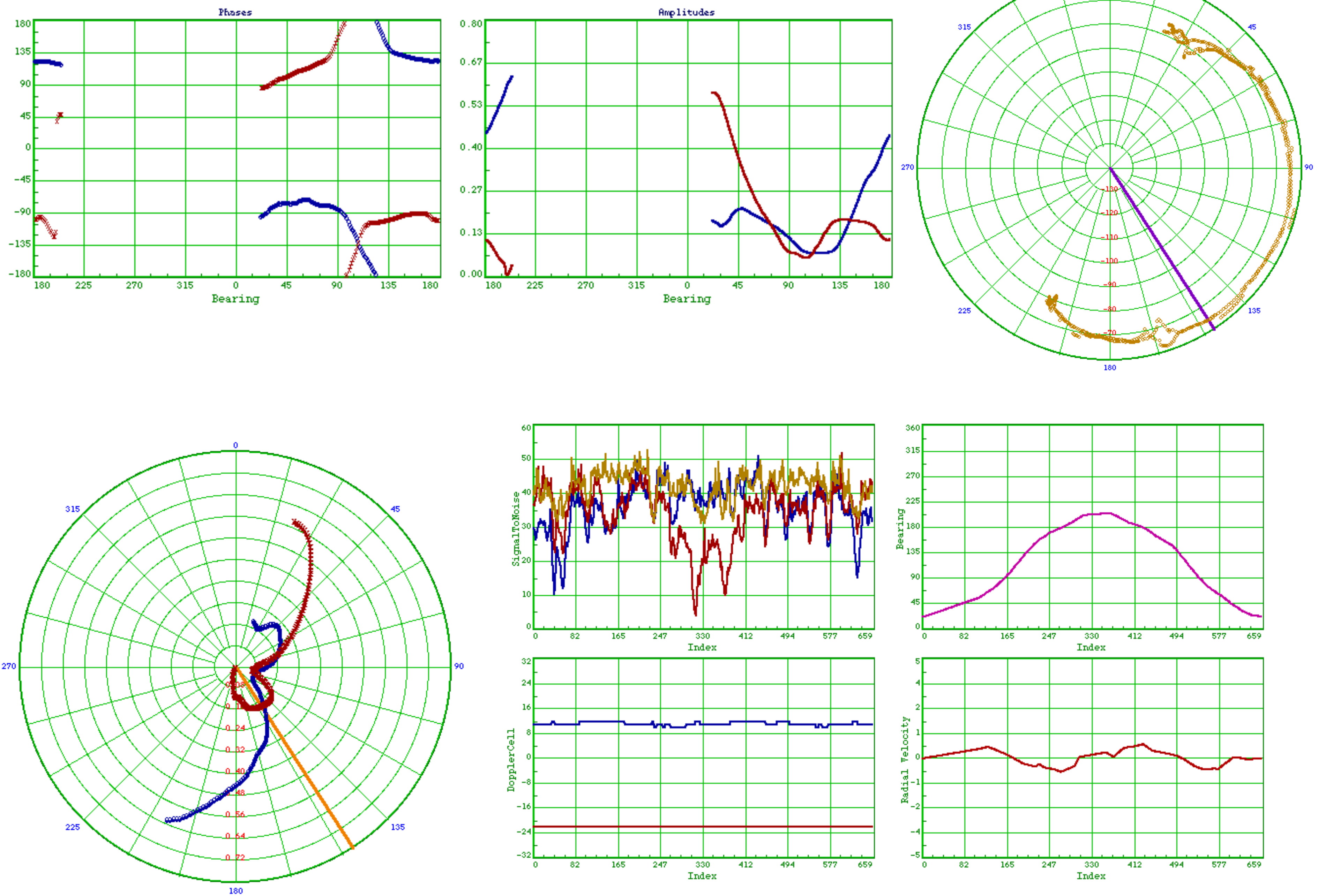
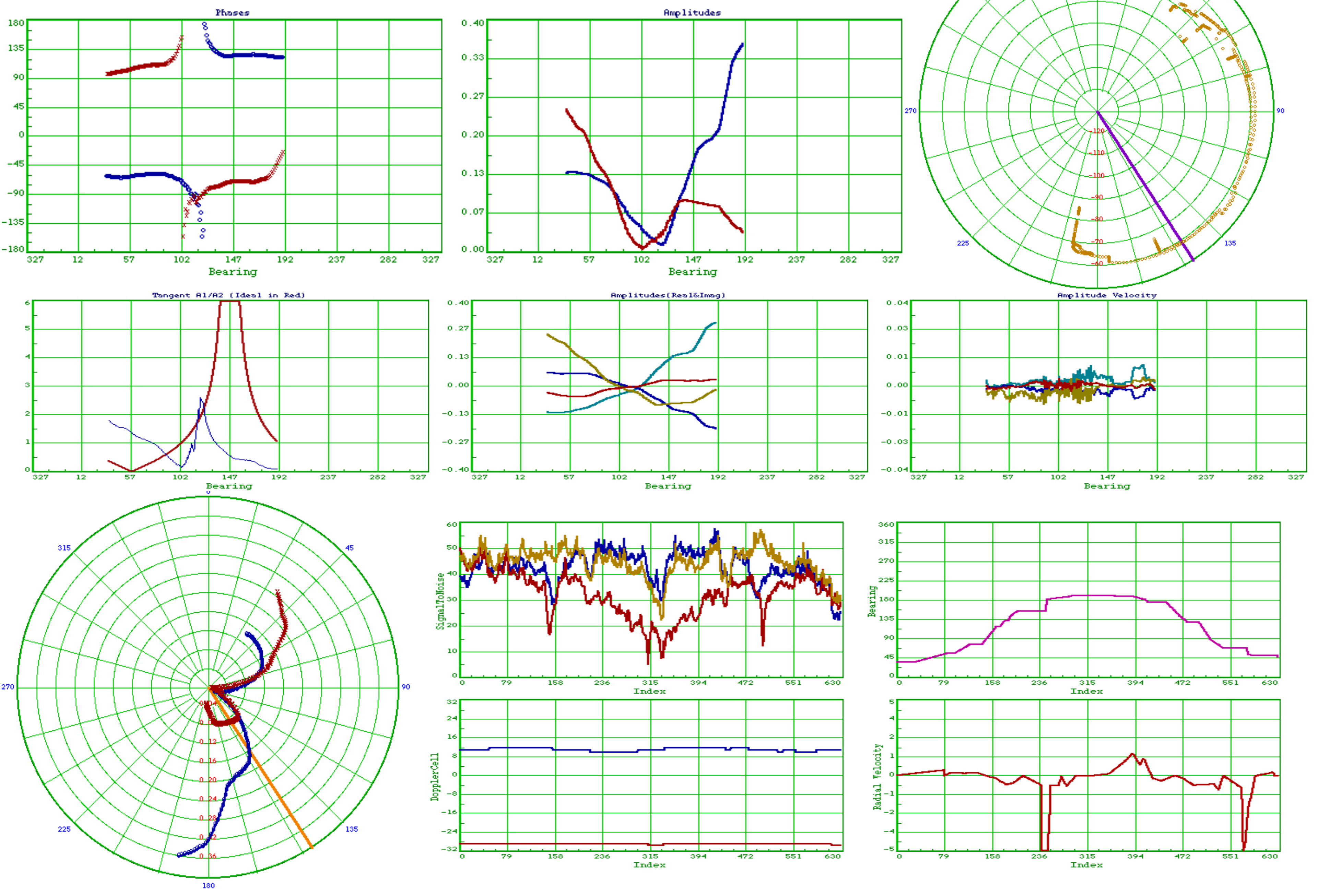
2012 02 06

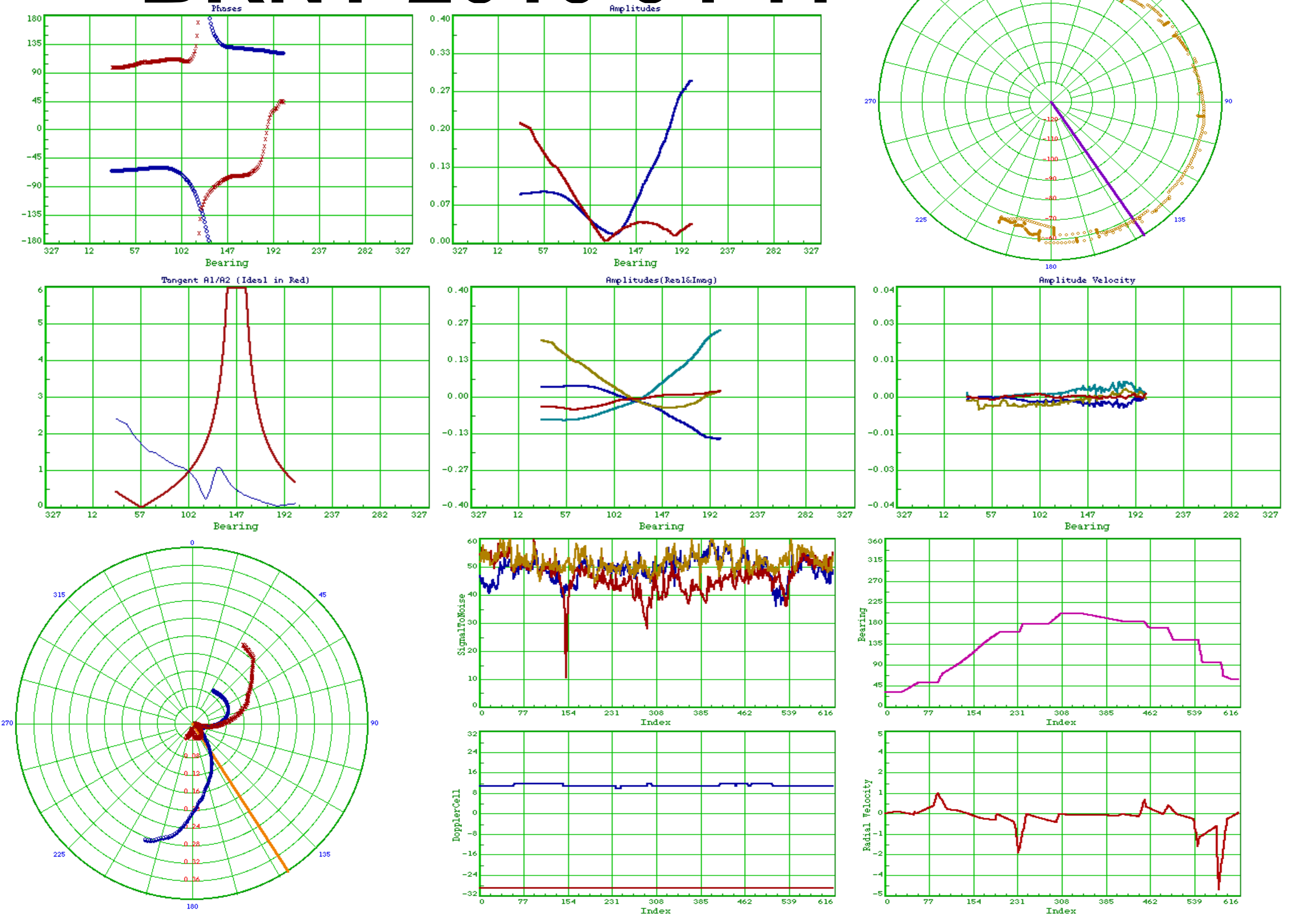


Phases
Bearing
Amplitudes
Bearing
SignalToNoise
Index
Bearing
Index
DopplerCell
Index
Radial Velocity
Index

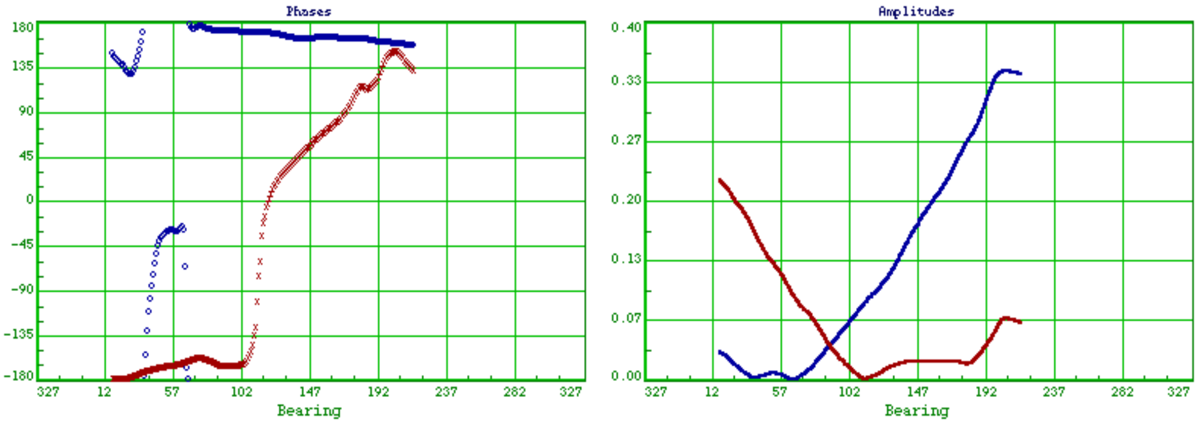
BRNT 2012 04 10



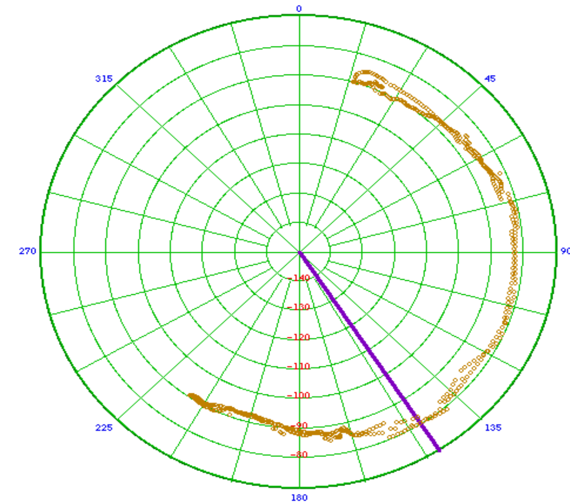
BRNT 2010 04 11



2012 05 02



Phases
Bearing
Amplitudes
Bearing



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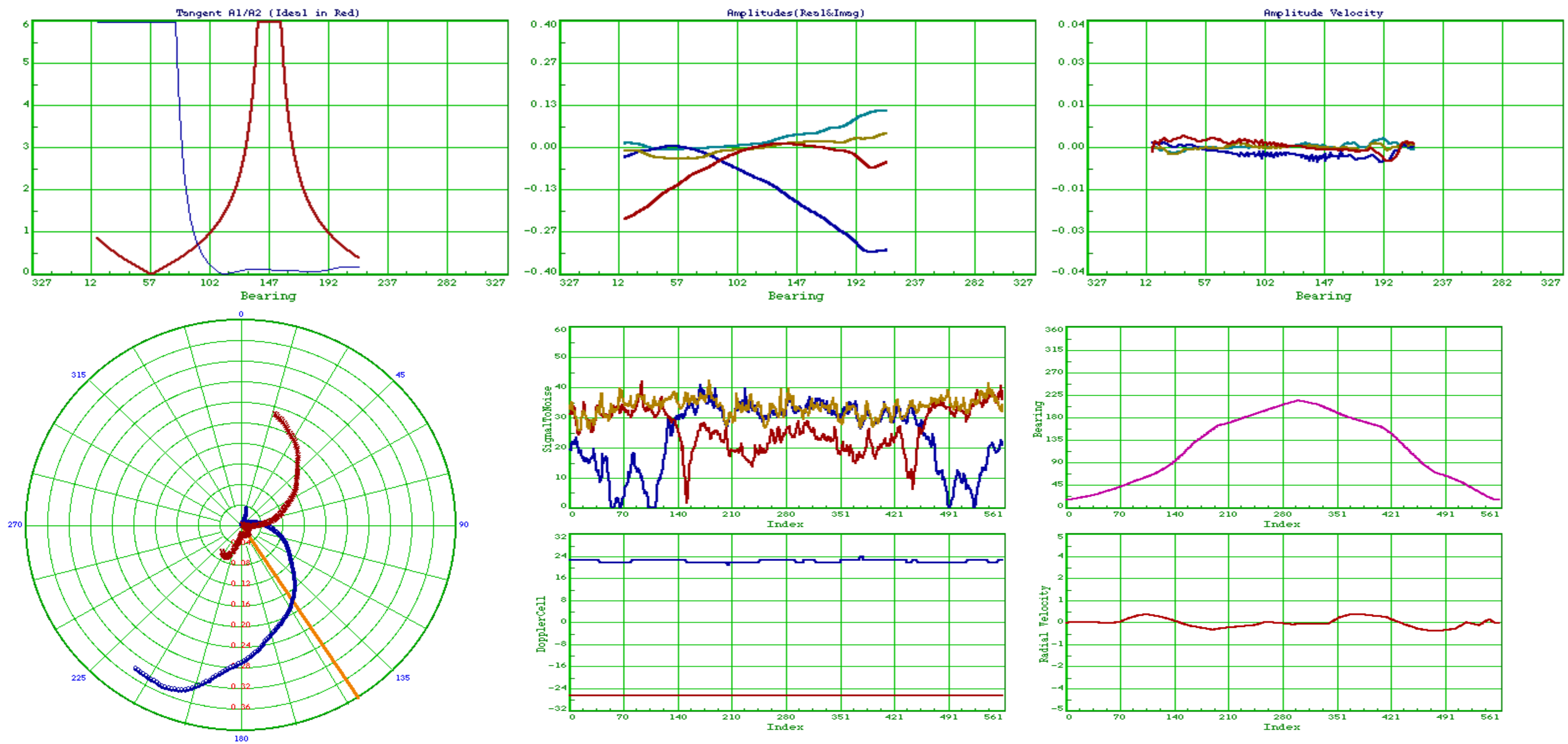
225
270
315



Tangent A1/A2 (Ideal in Red)
Bearing
Amplitudes(Real&Imag)
Bearing
Amplitude Velocity
Bearing
SignalToNoise
Index
Bearing
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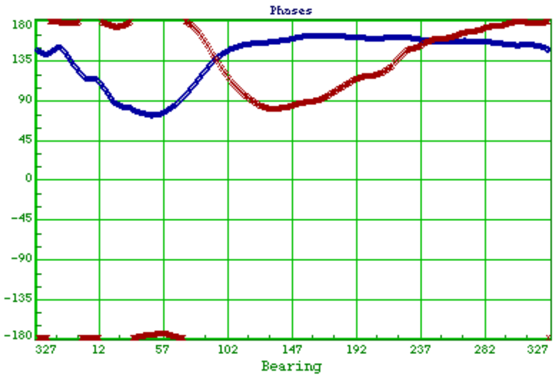
DopplerCell
Index
Radial Velocity
Index

2012 05 29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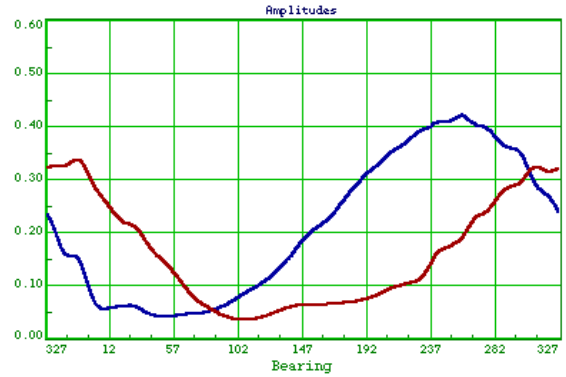
Bearing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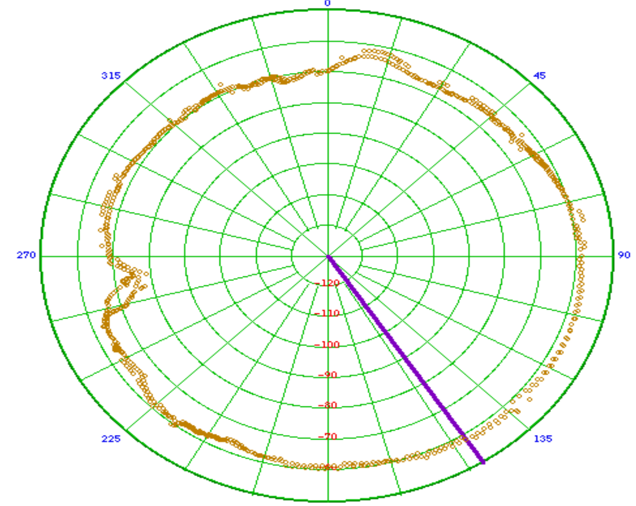
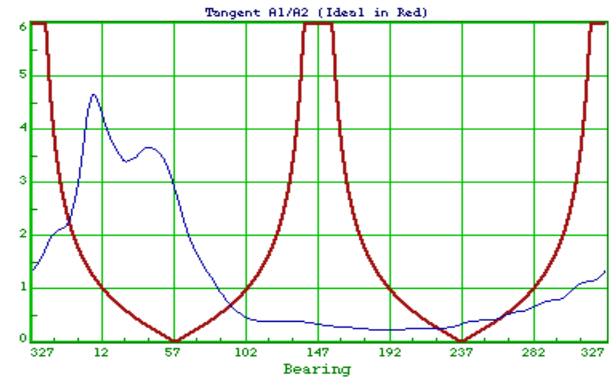
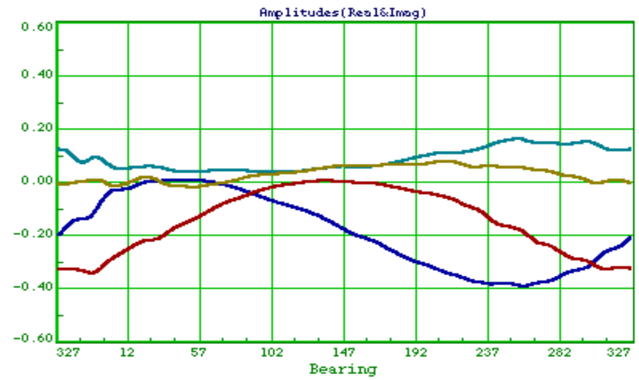
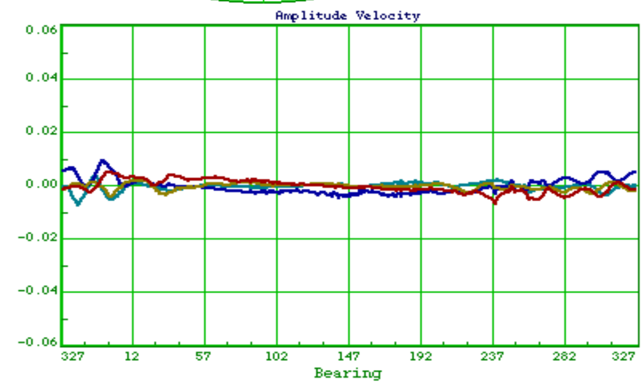
Bearing




Tangent A1/A2 (Ideal in Red)
Bearing


Amplitudes(Real&Imag)
Bearing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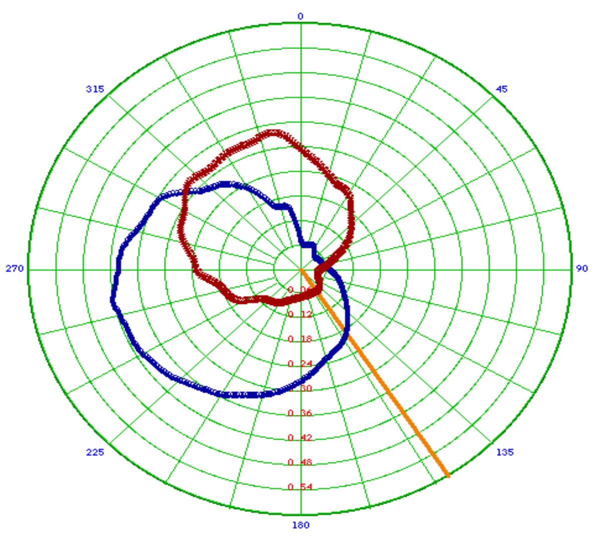

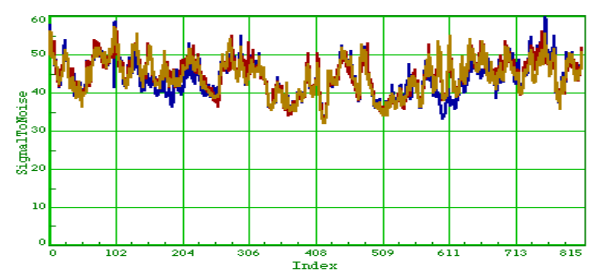
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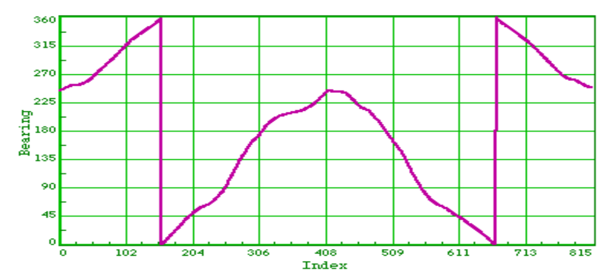
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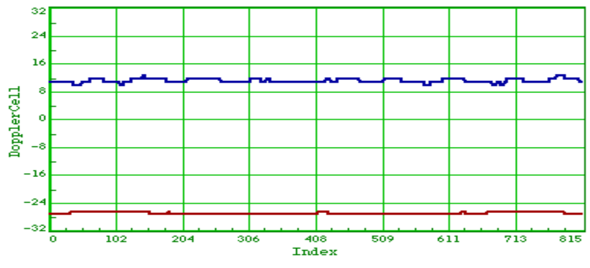
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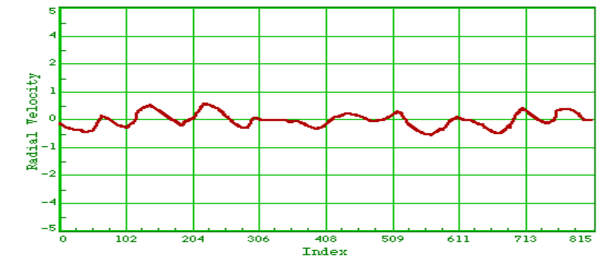
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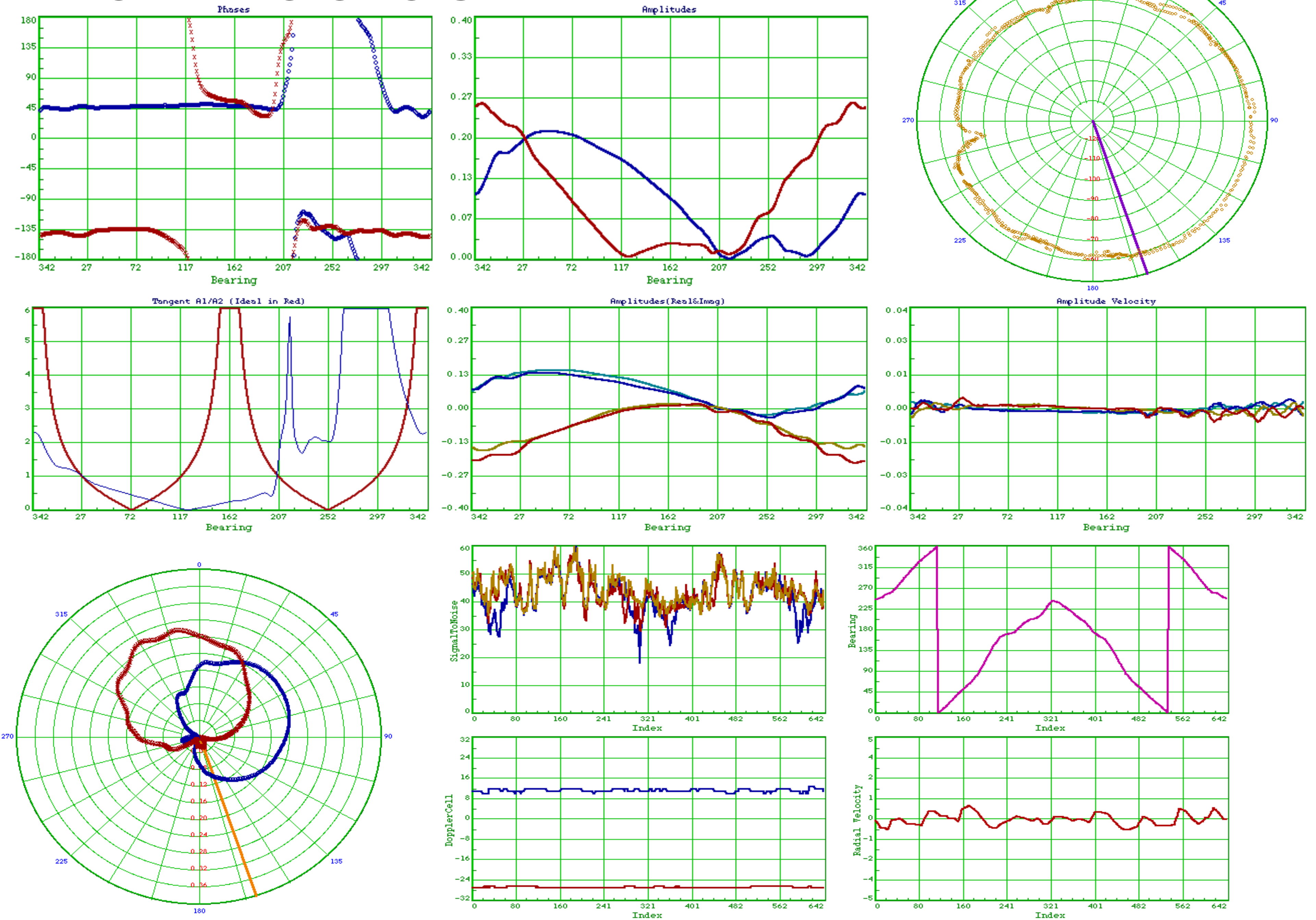
2012 06 05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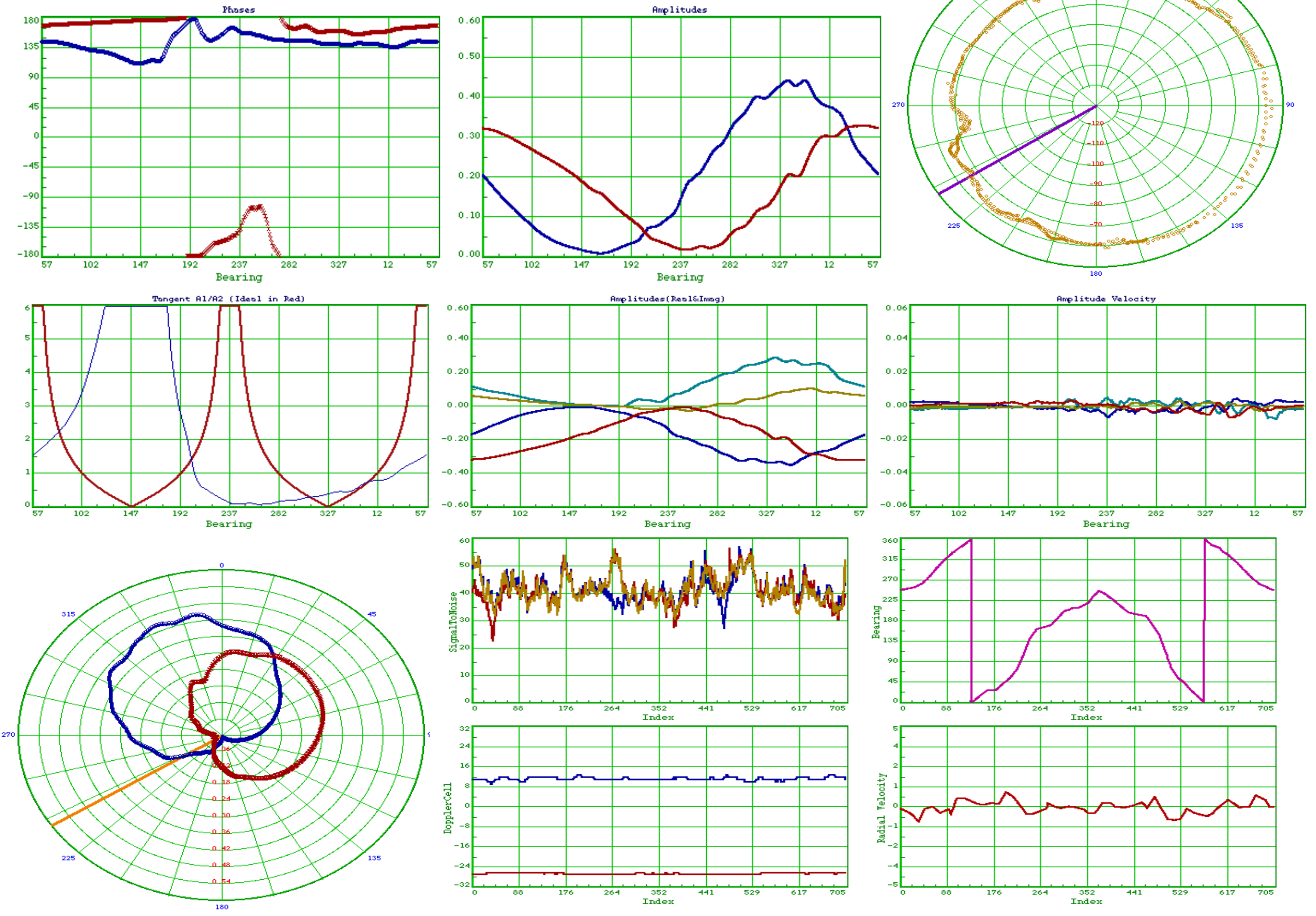
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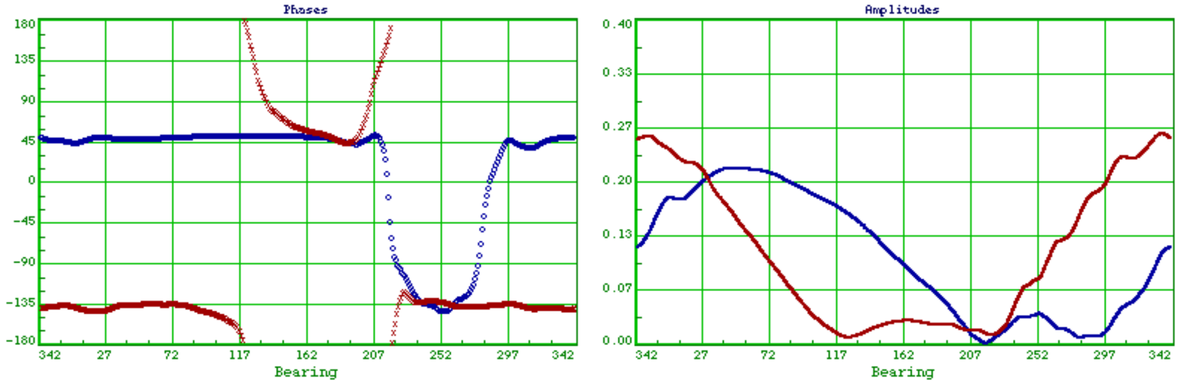

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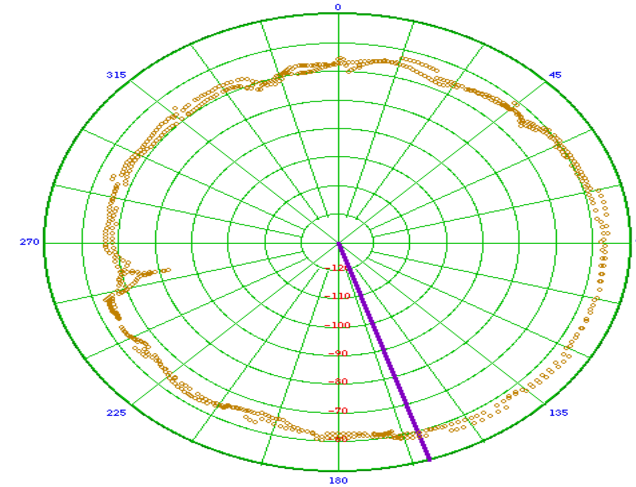
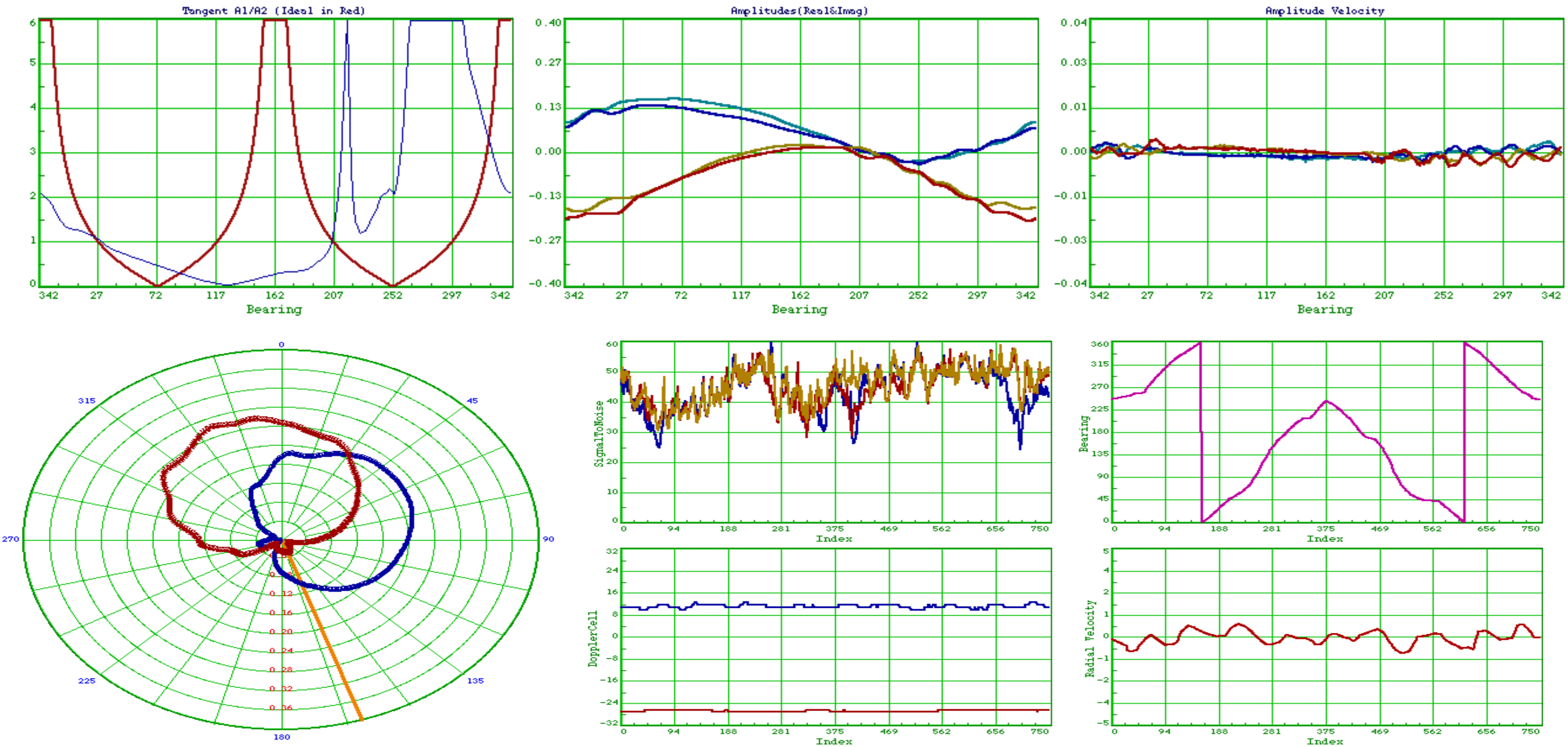
Bearing





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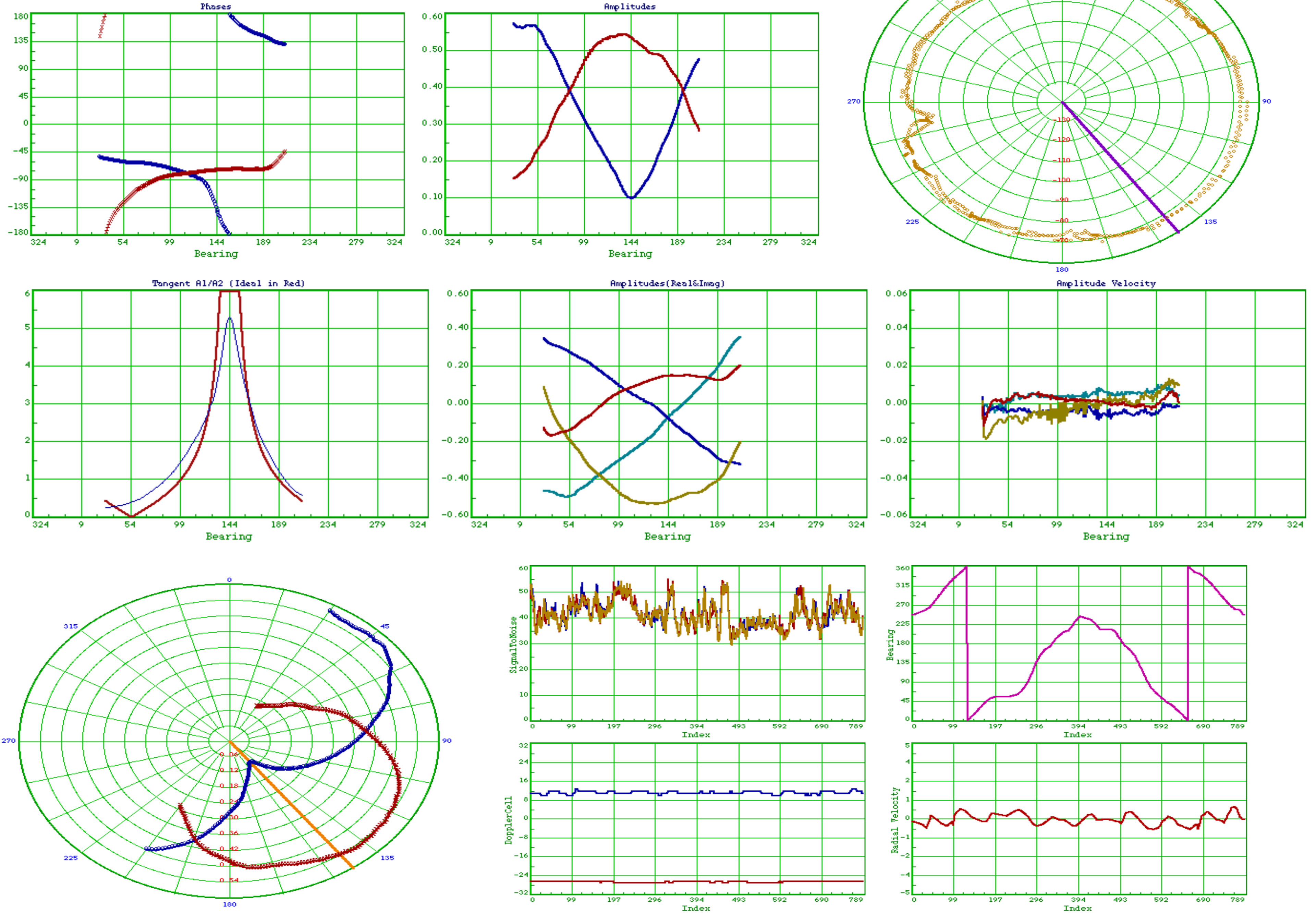
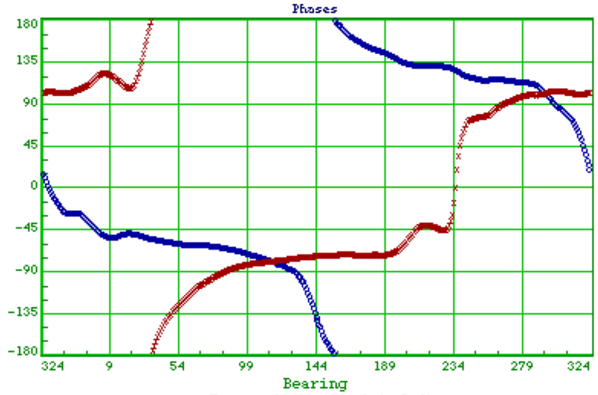
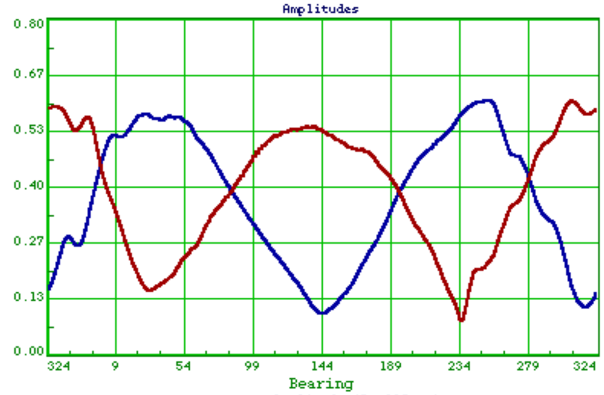
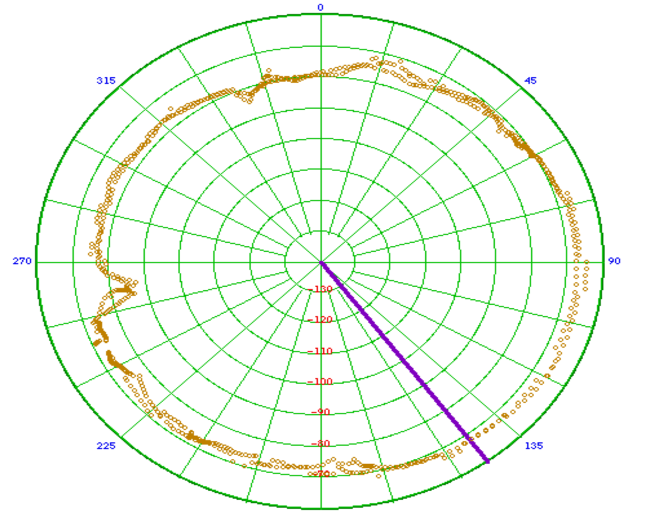
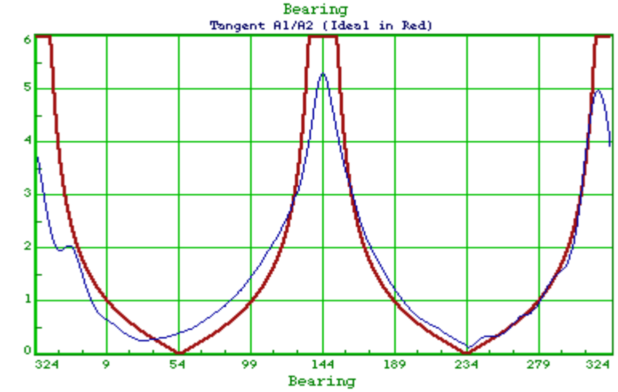


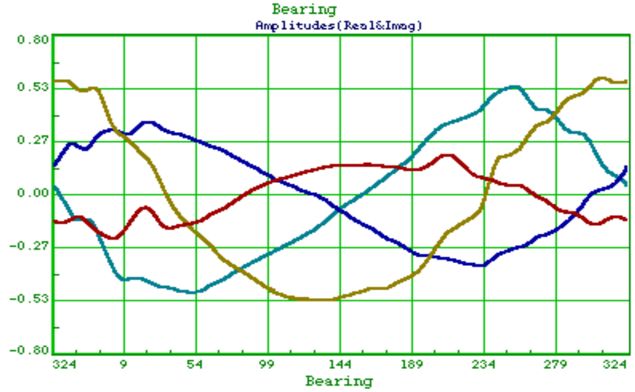
2012 06 08 360

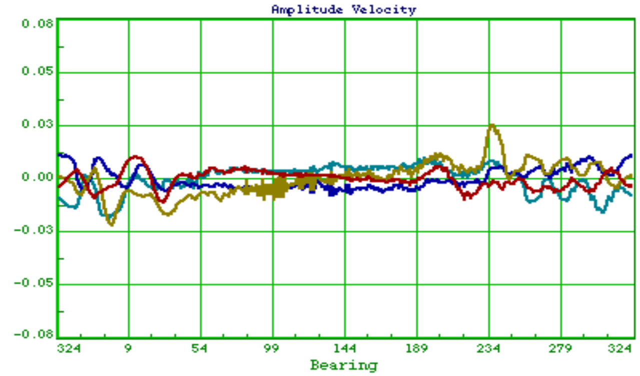


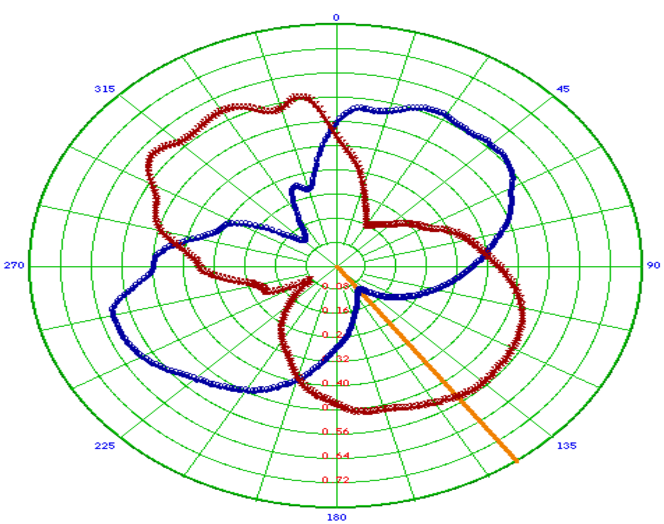


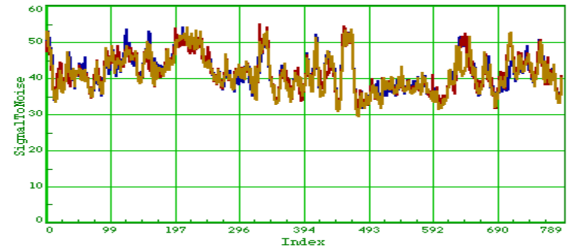


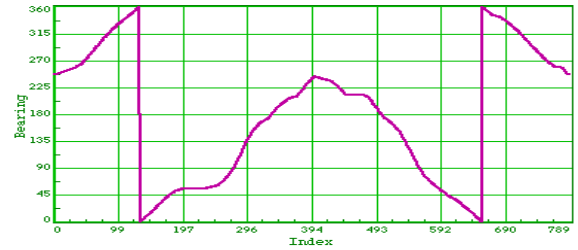


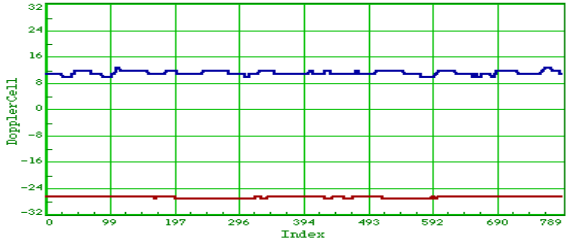


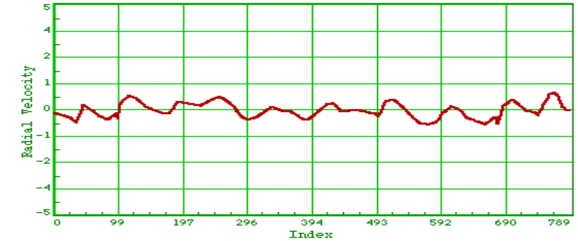












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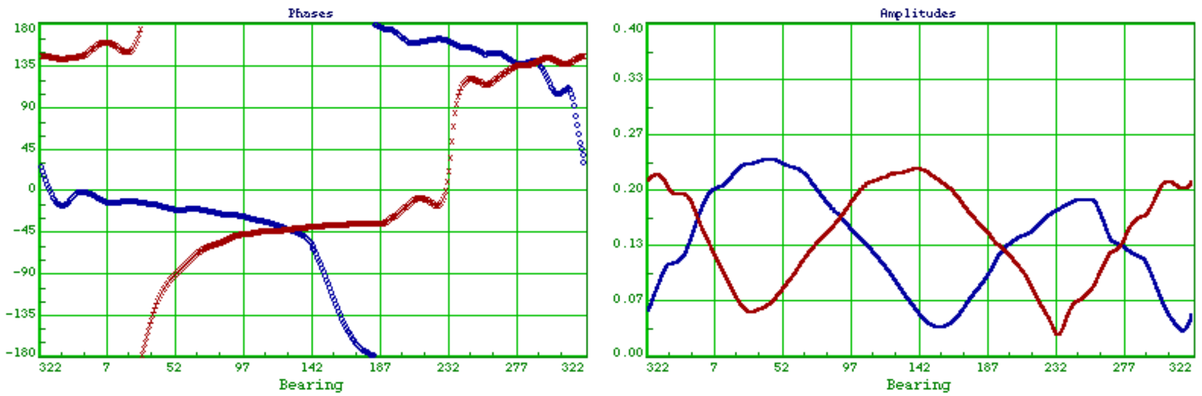
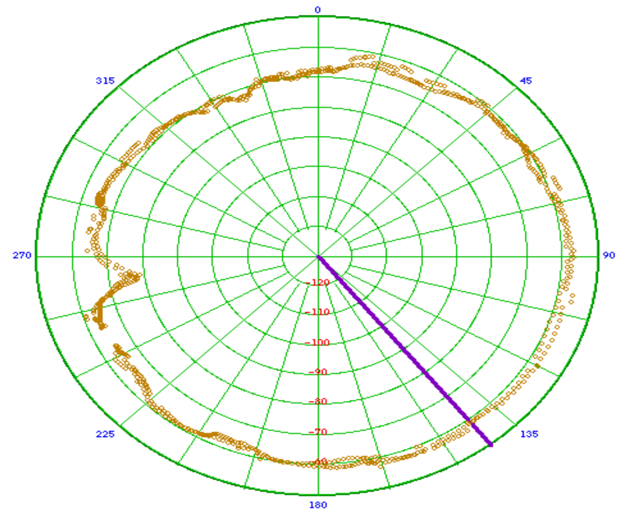

Phases
Bearing
Amplitudes
Bearing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90
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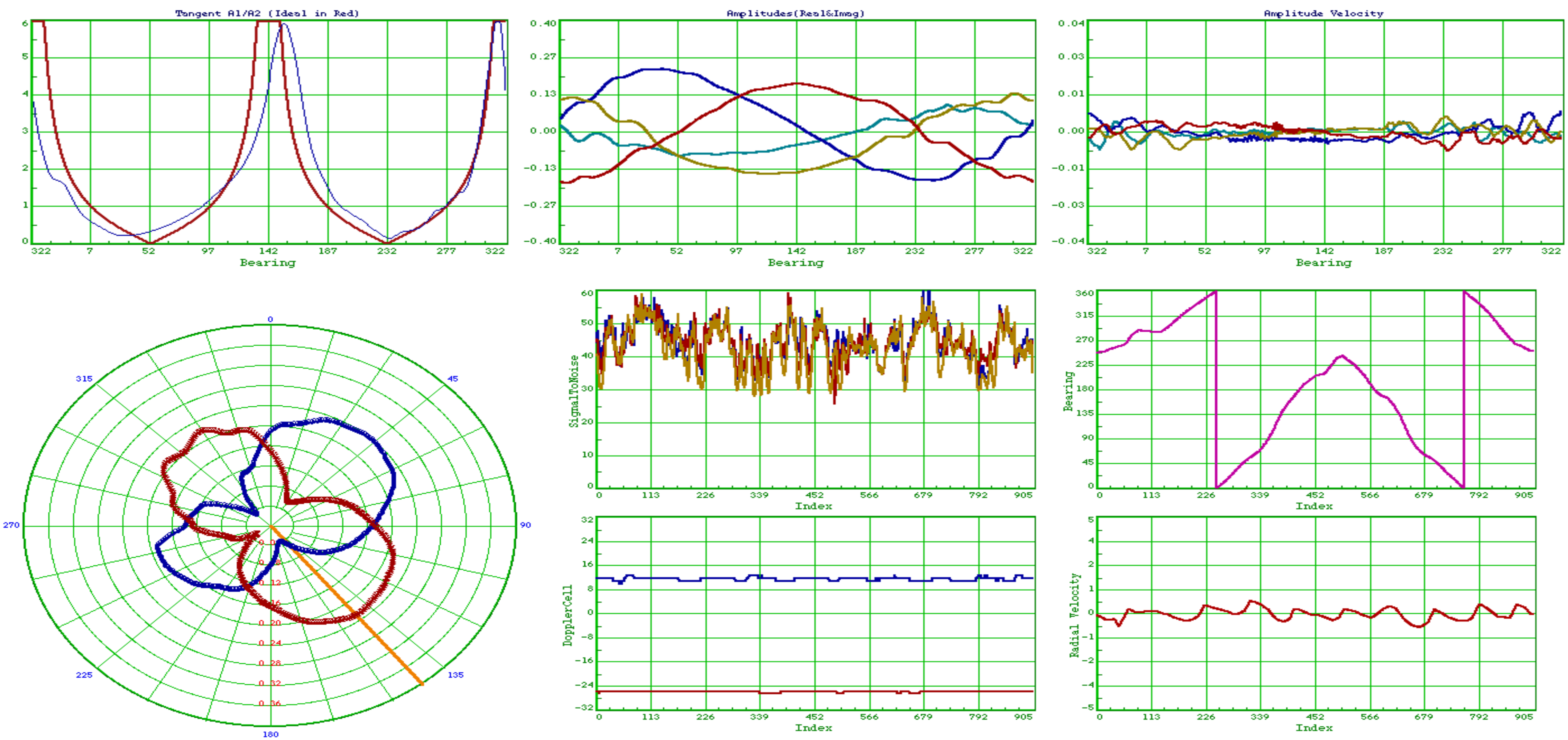
180
225
270
315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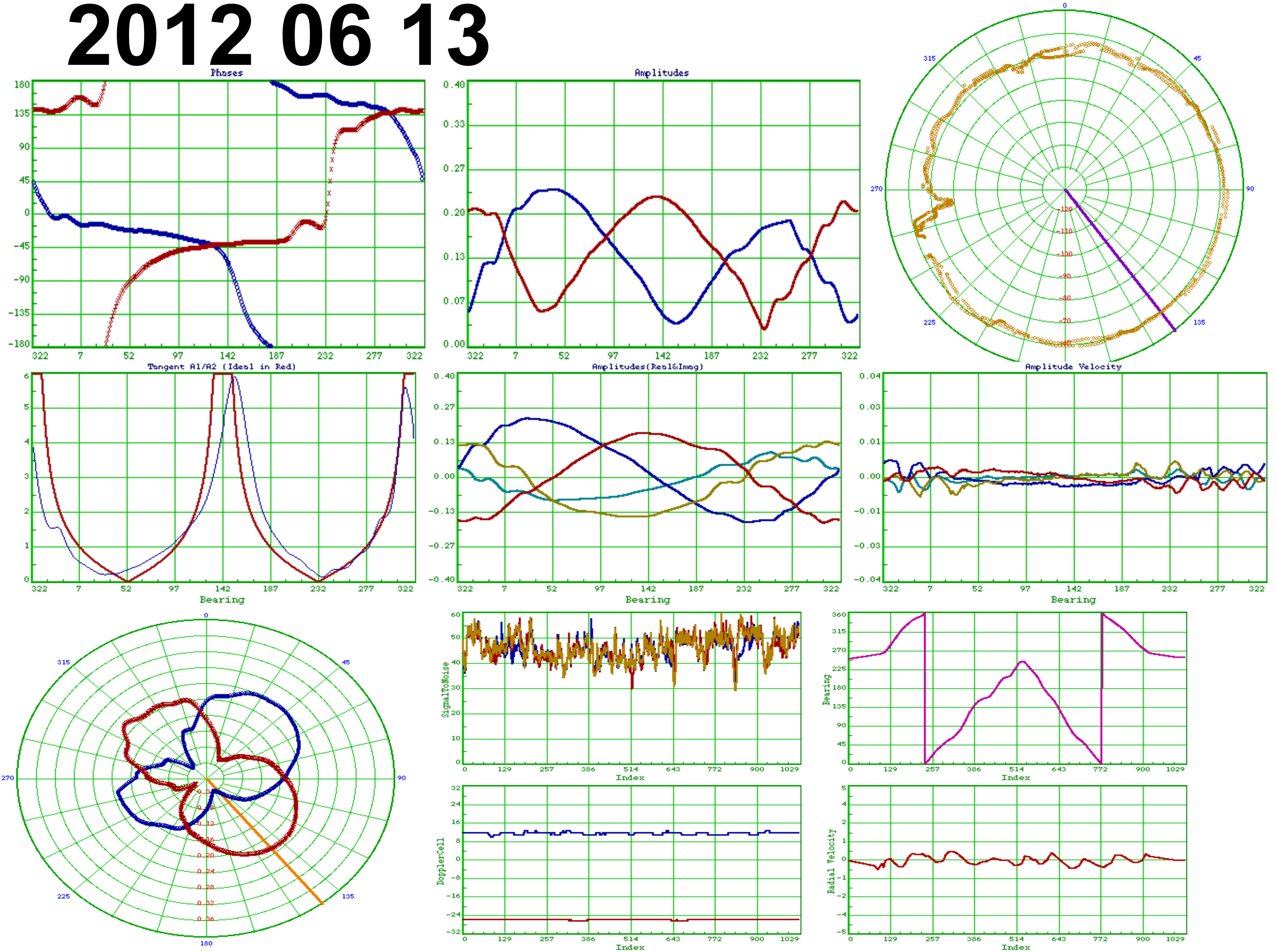

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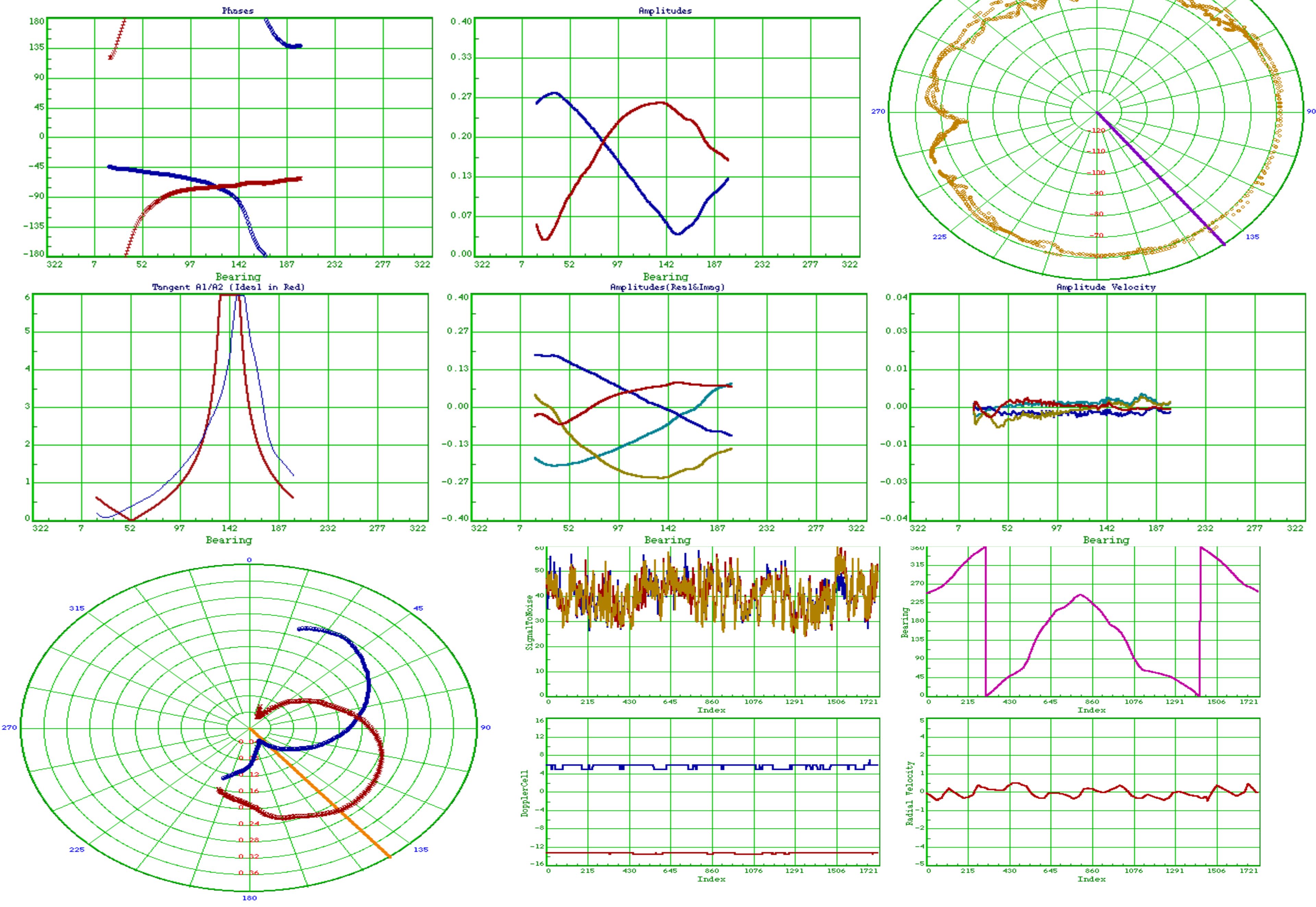

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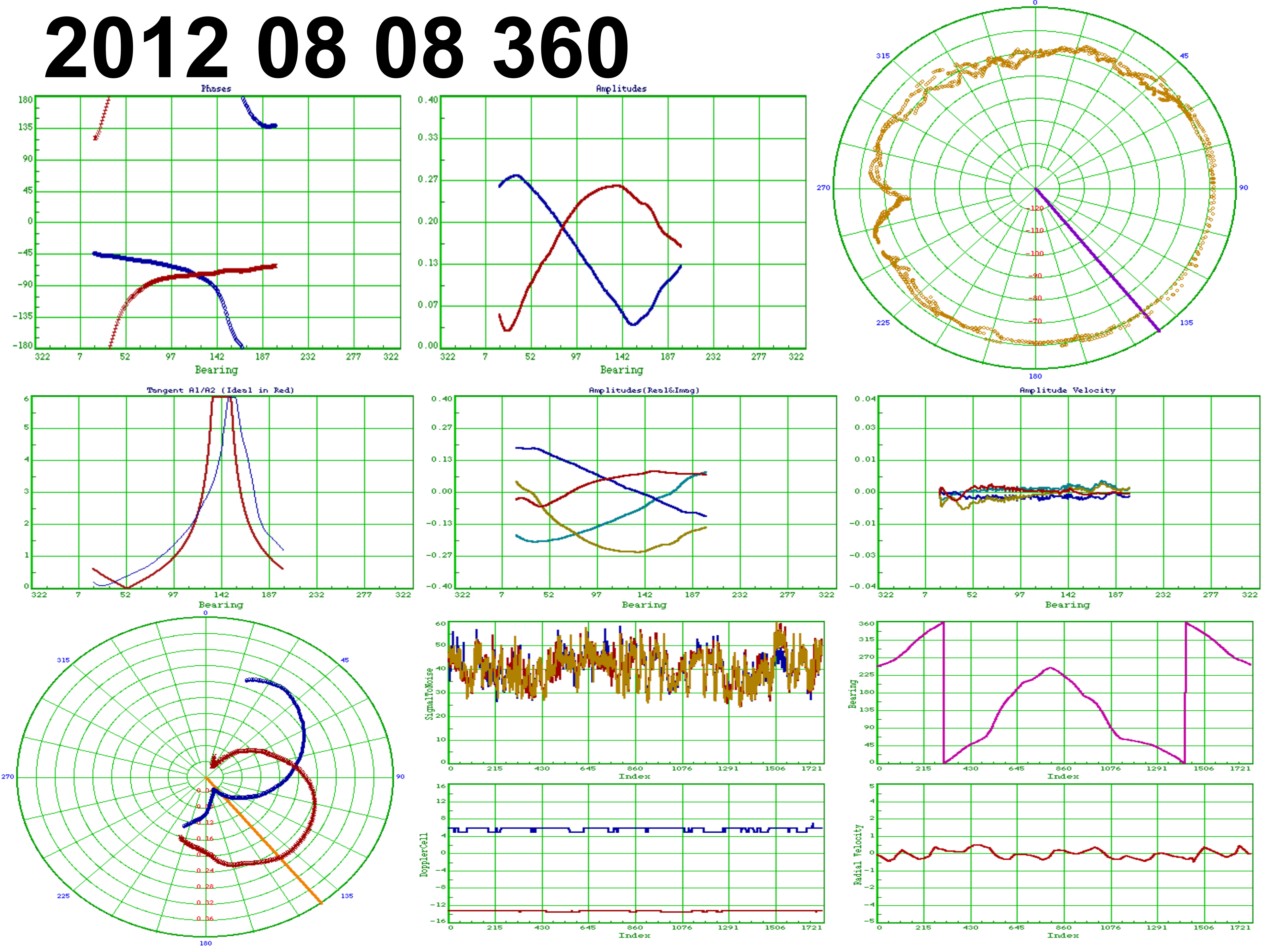
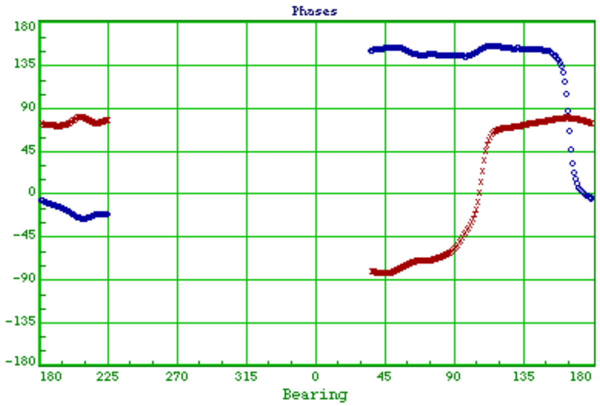
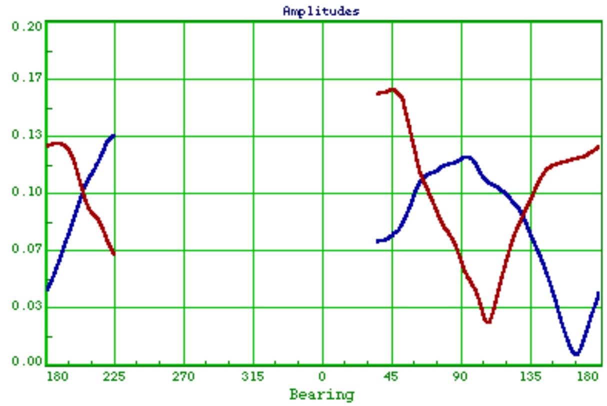
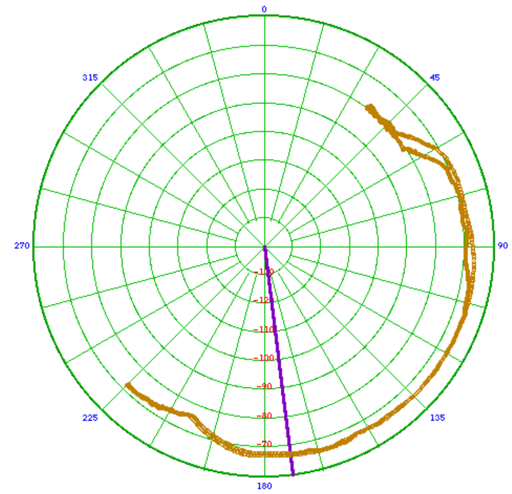


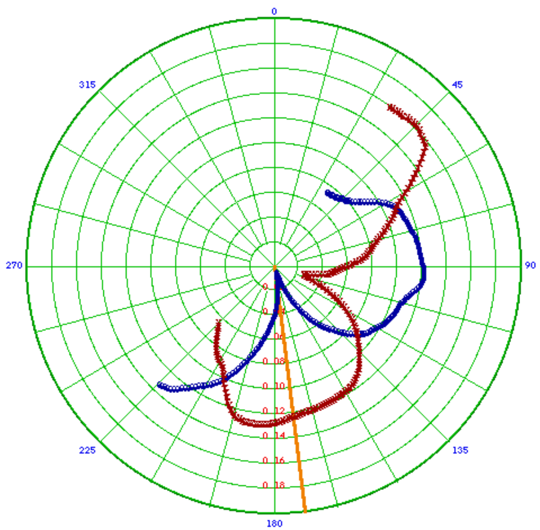
BRIGANTINE

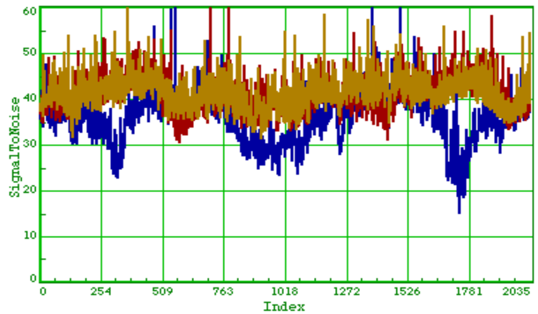
BRMR 2011 12 12

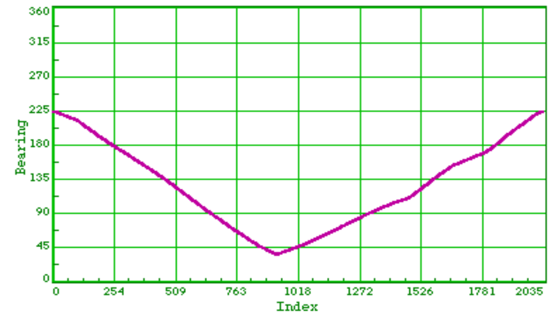


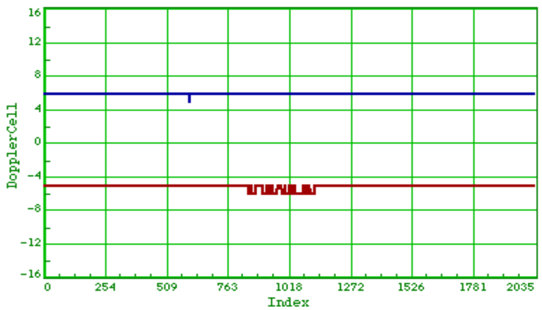


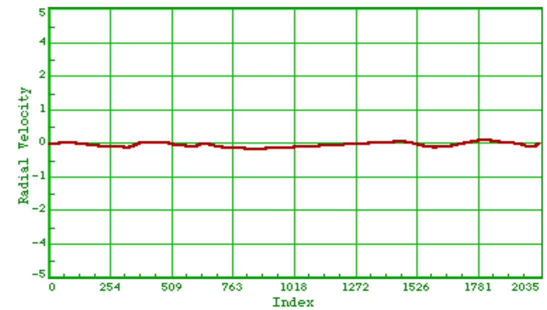




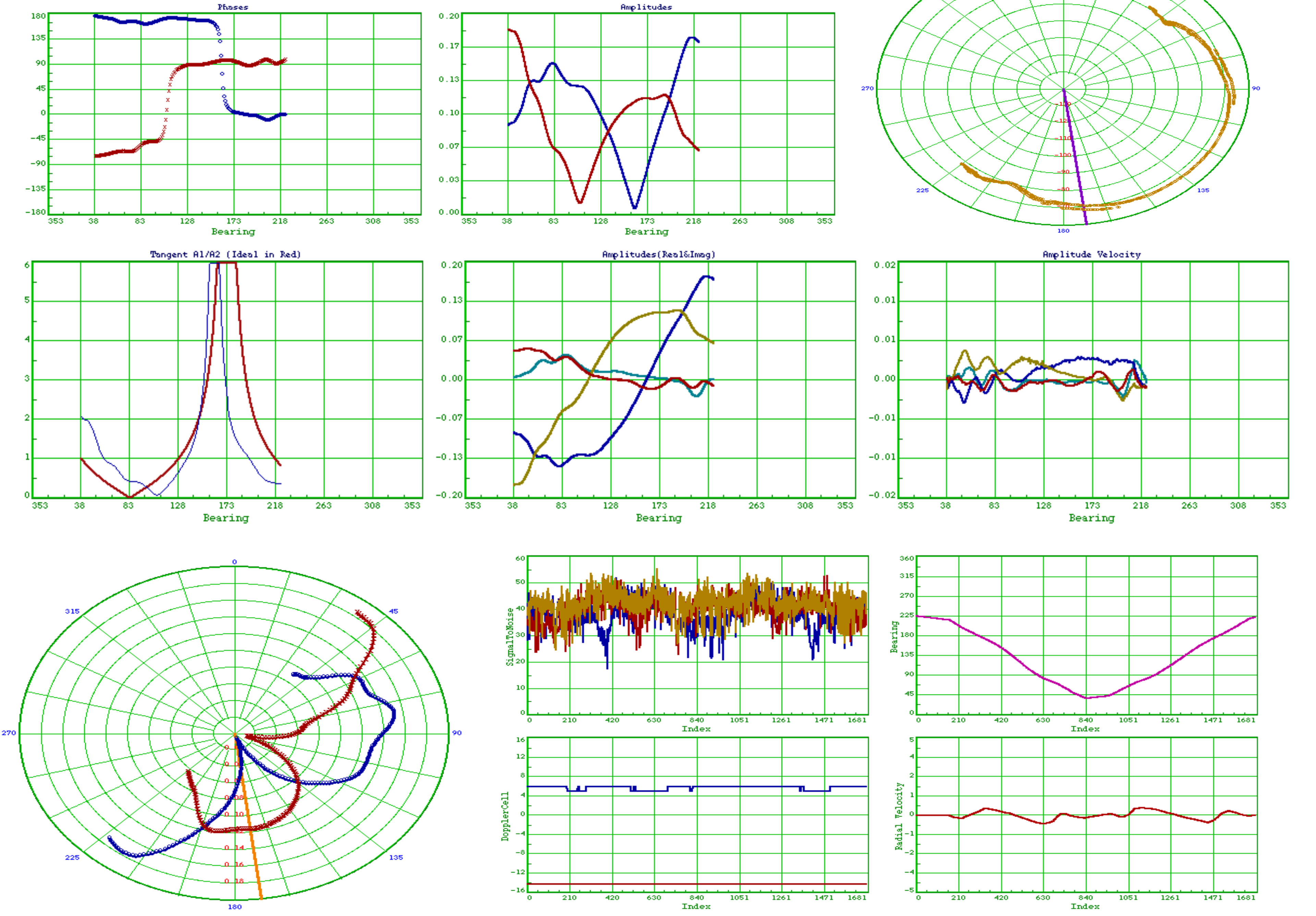








2012 03 13



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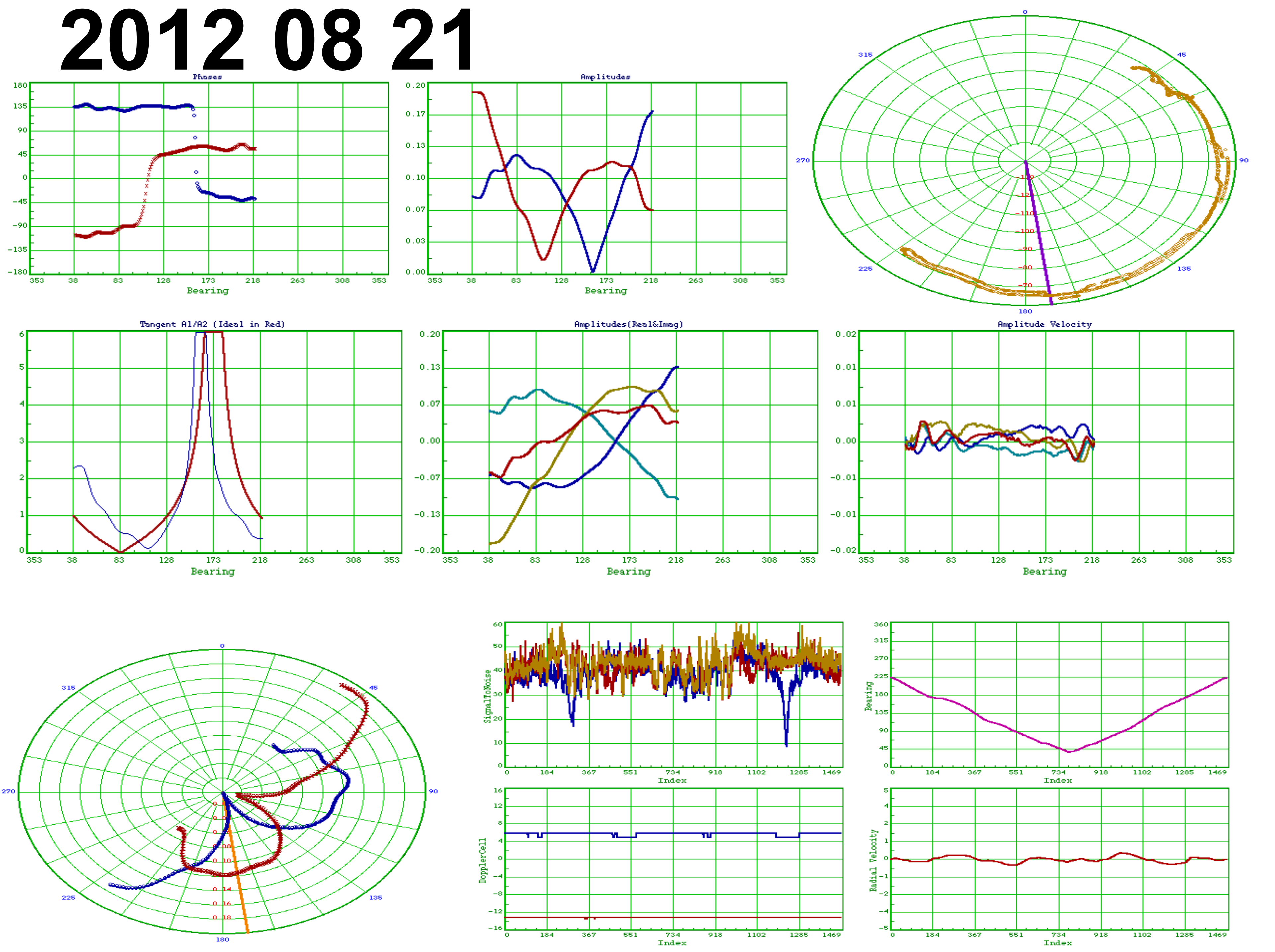
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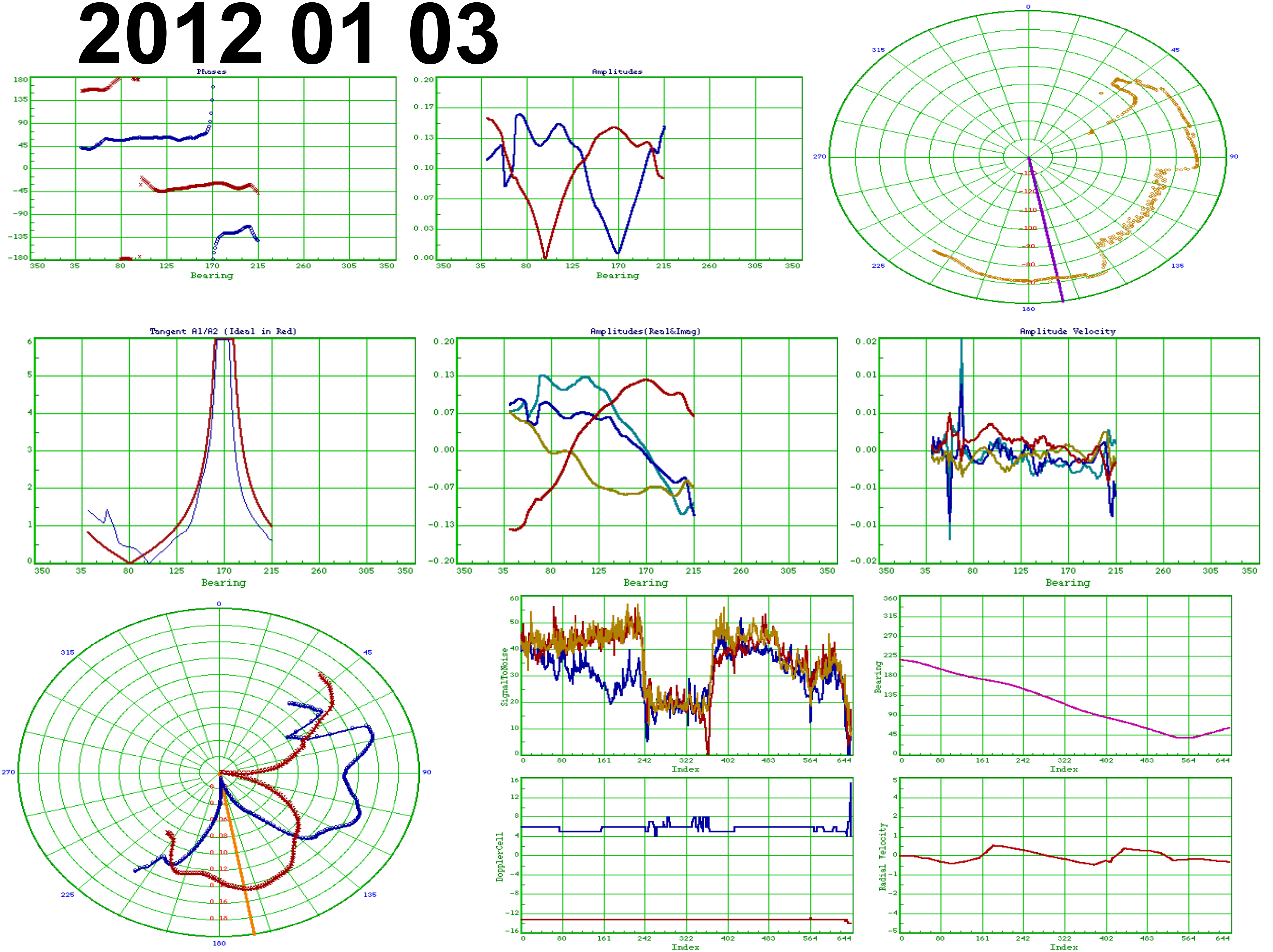

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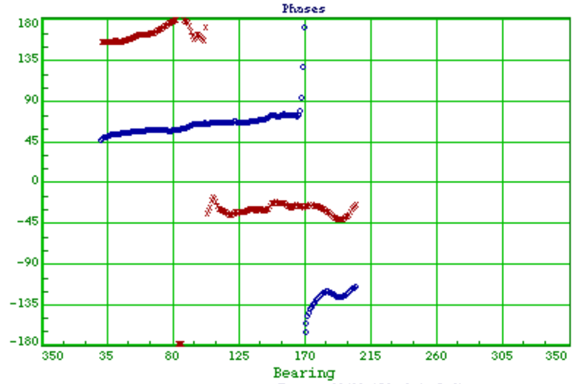
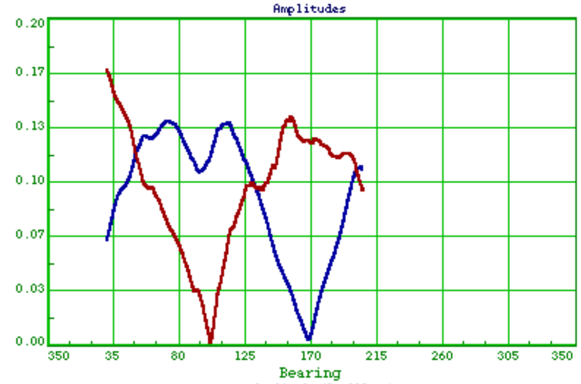
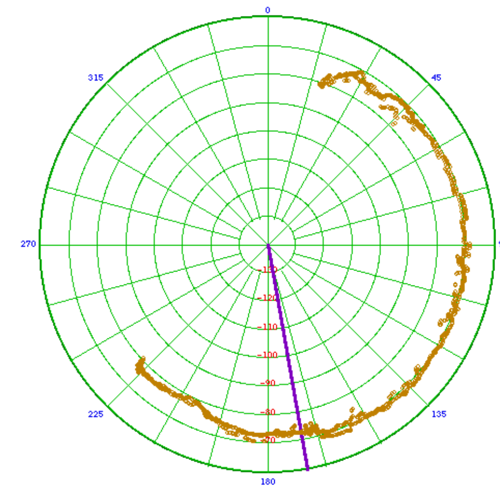
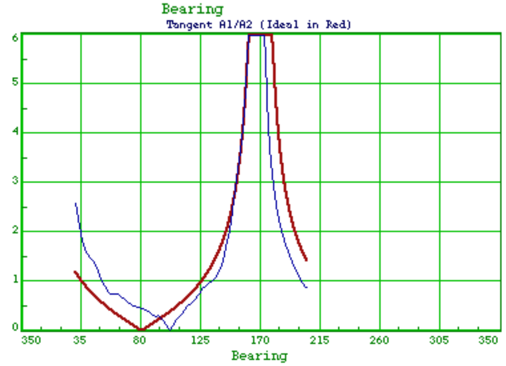


Phases
Bearing

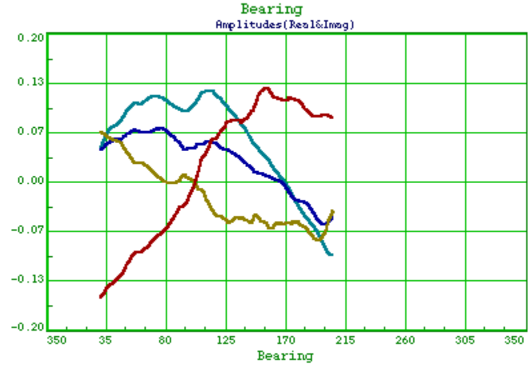


Amplitudes
Bearing





Tangent A1/A2 (Ideal in Red)
Bearing



Amplitudes(Real&Imag)
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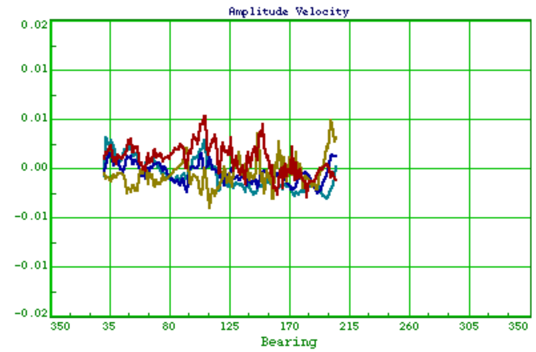
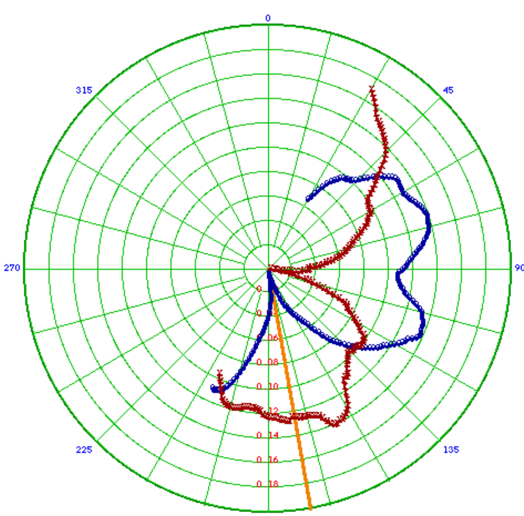
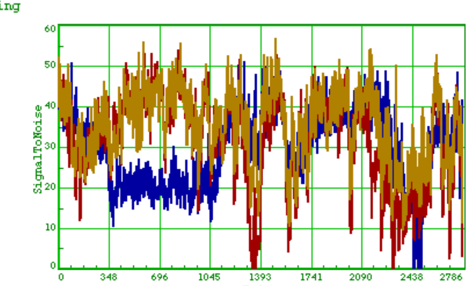


Amplitude Velocity
Bearing





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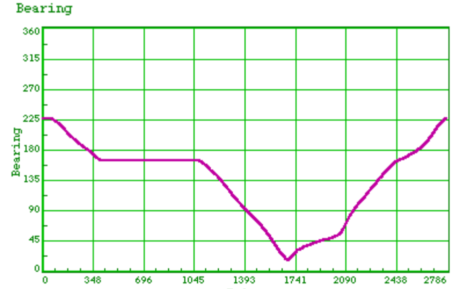

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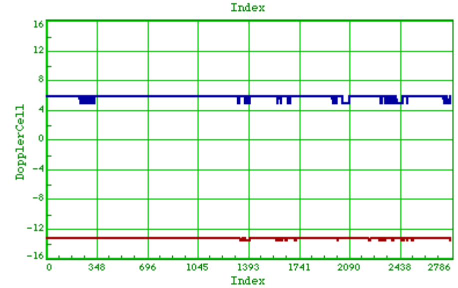

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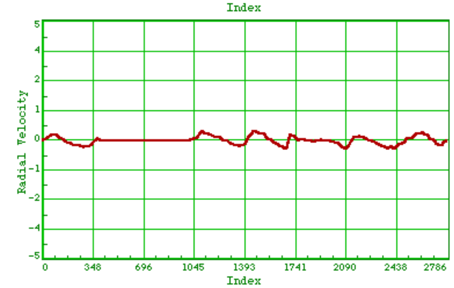

Radial Velocity
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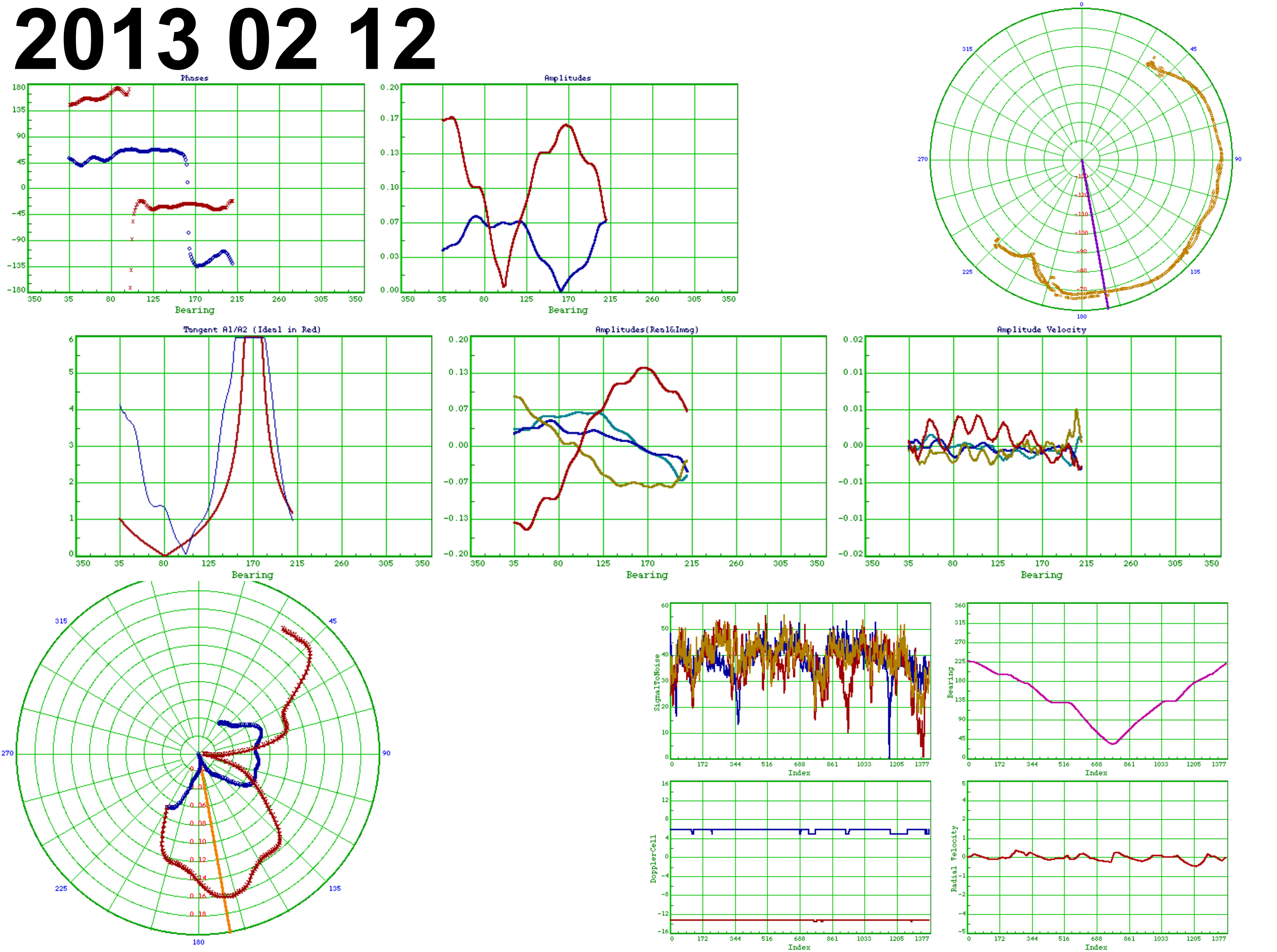
2013 02 12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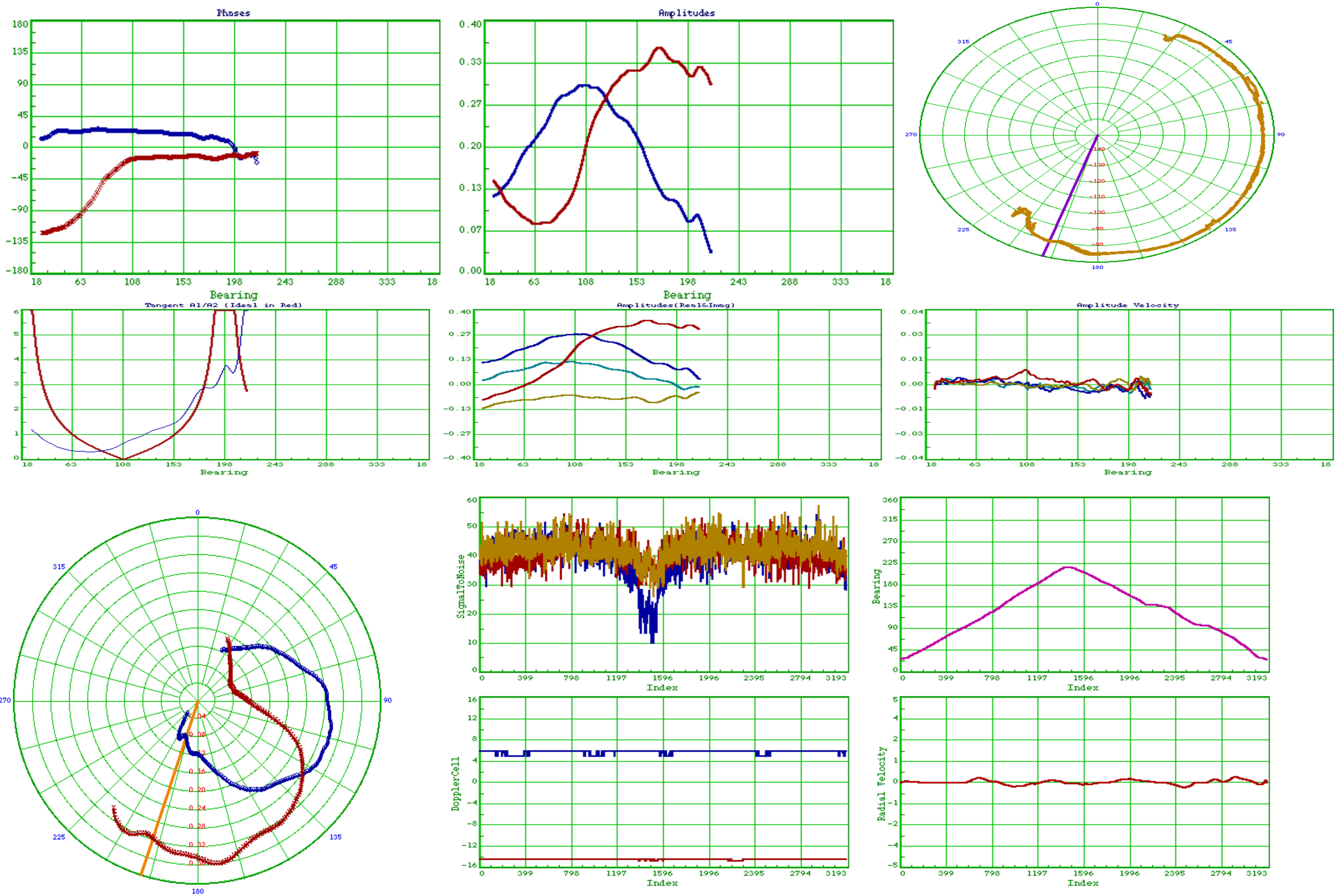
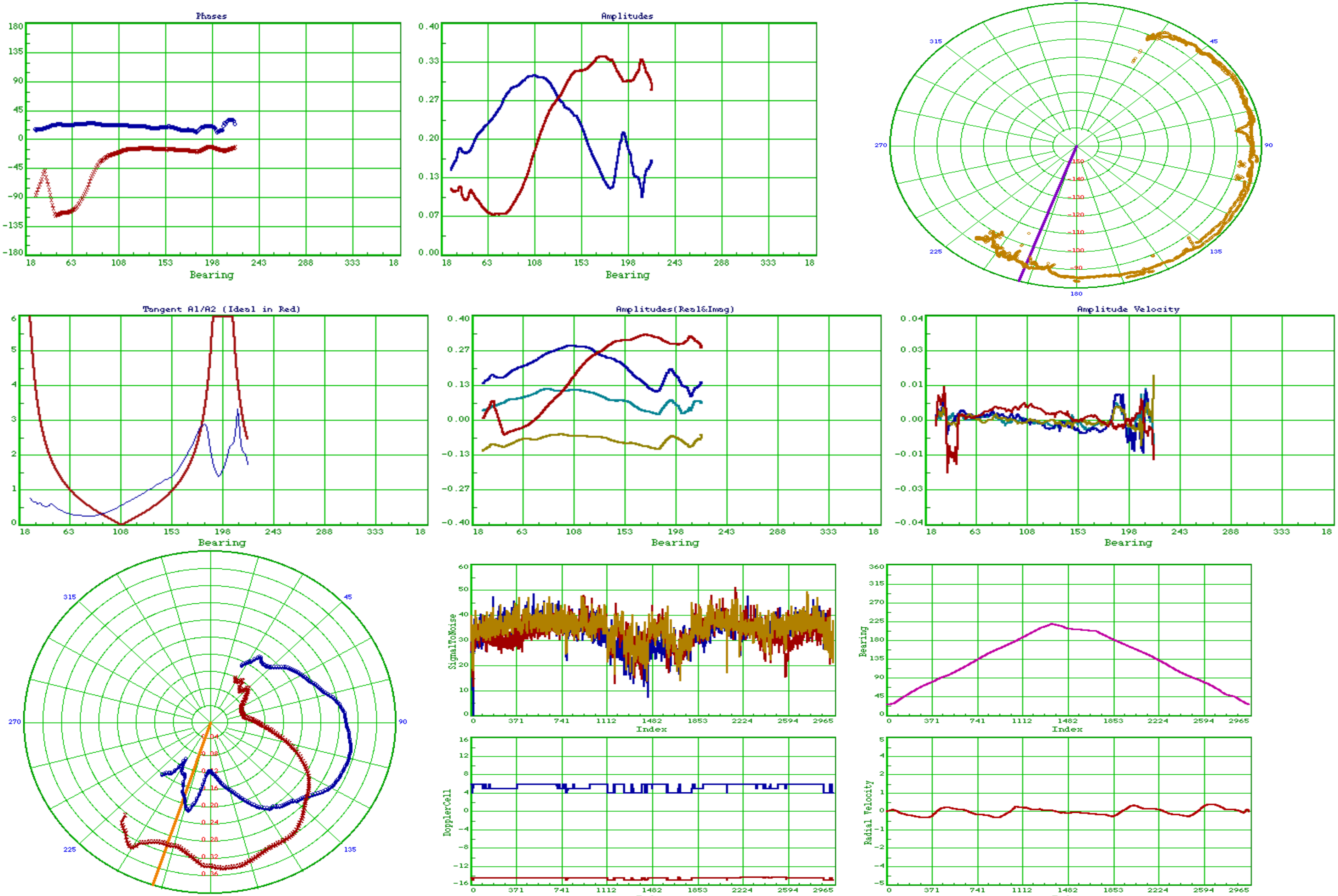
RATH 2012 01 31

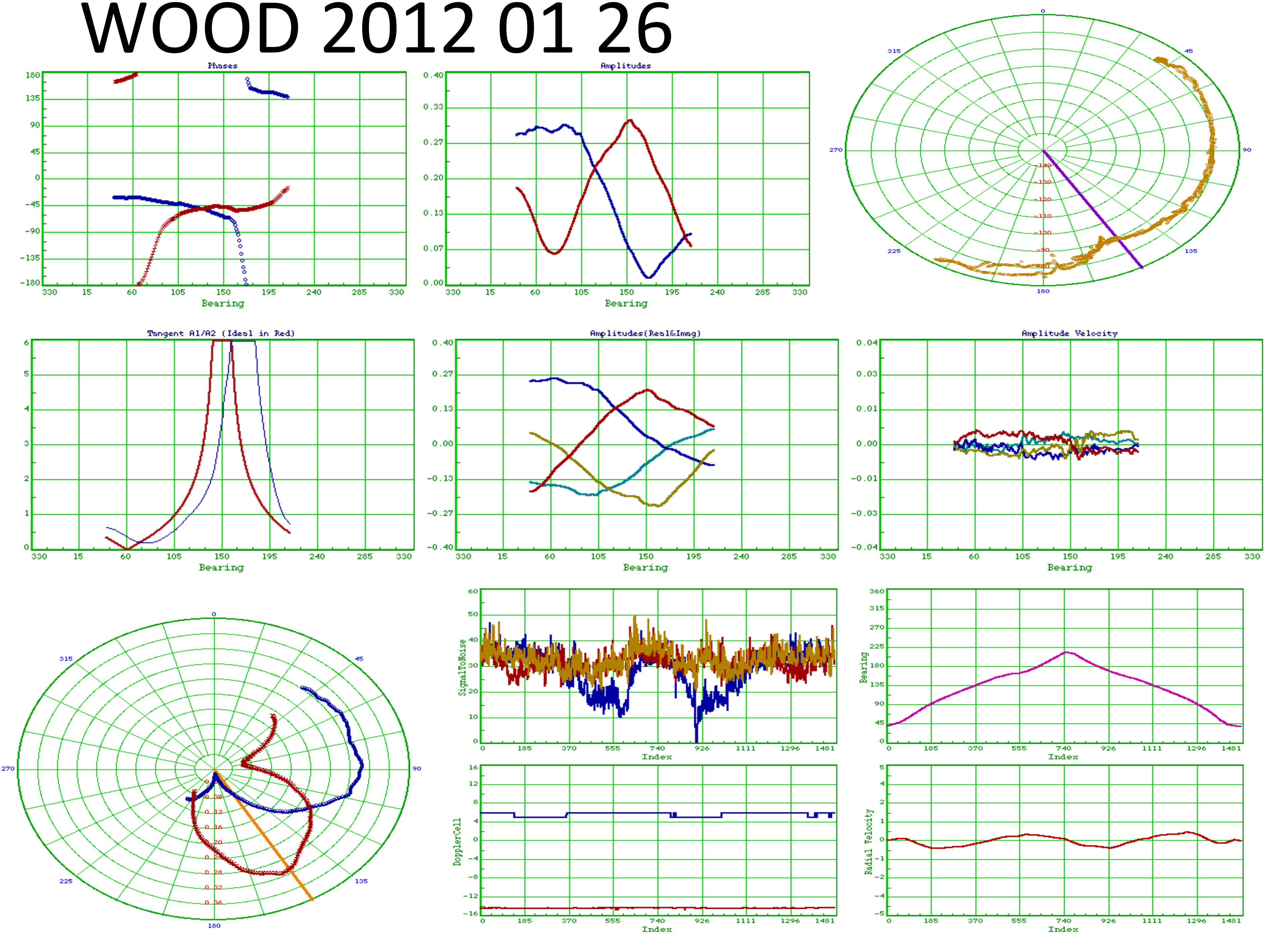


RATH 2012 02 22

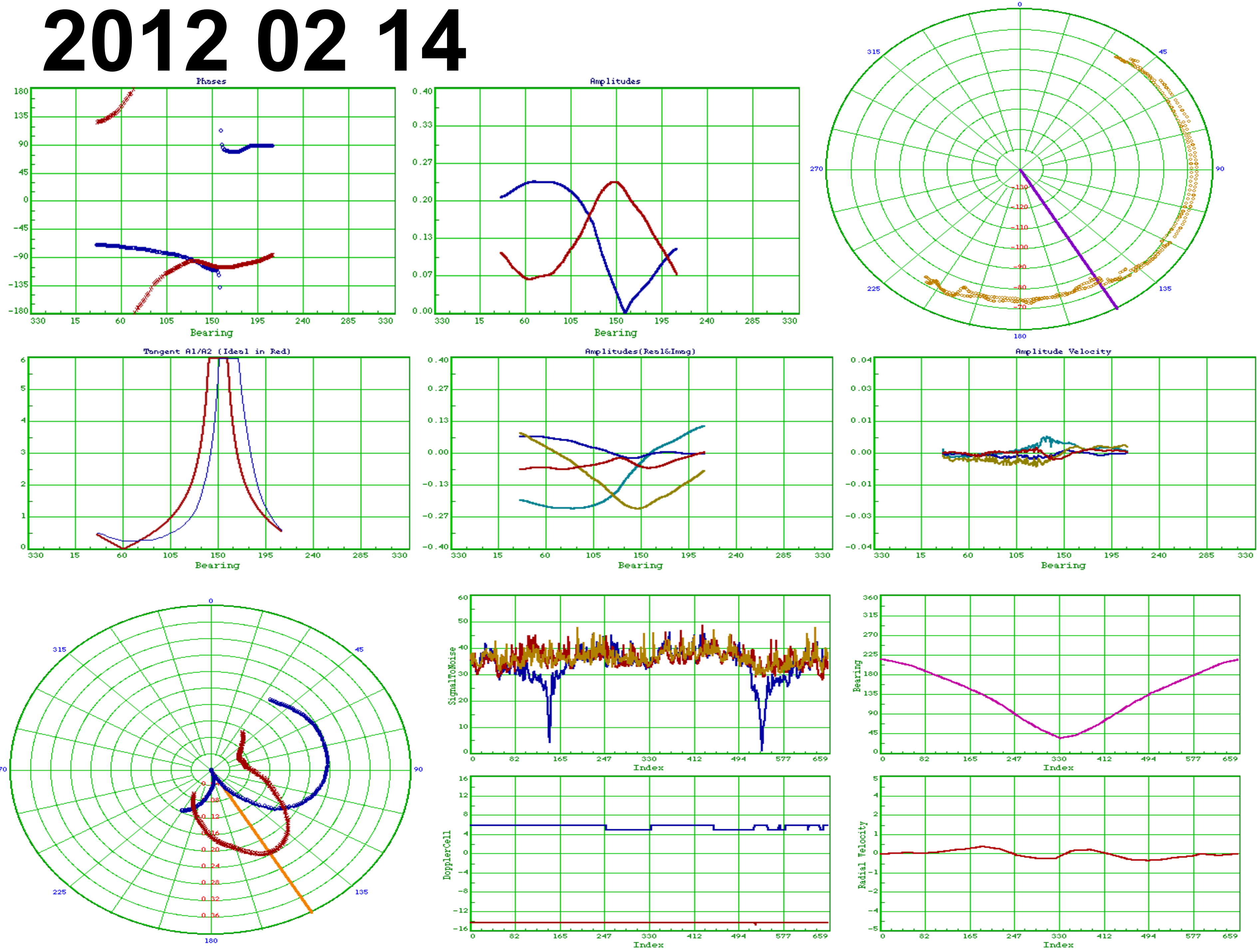


NORTH WILDWOOD

WOOD 2012 01 26



2012 02 14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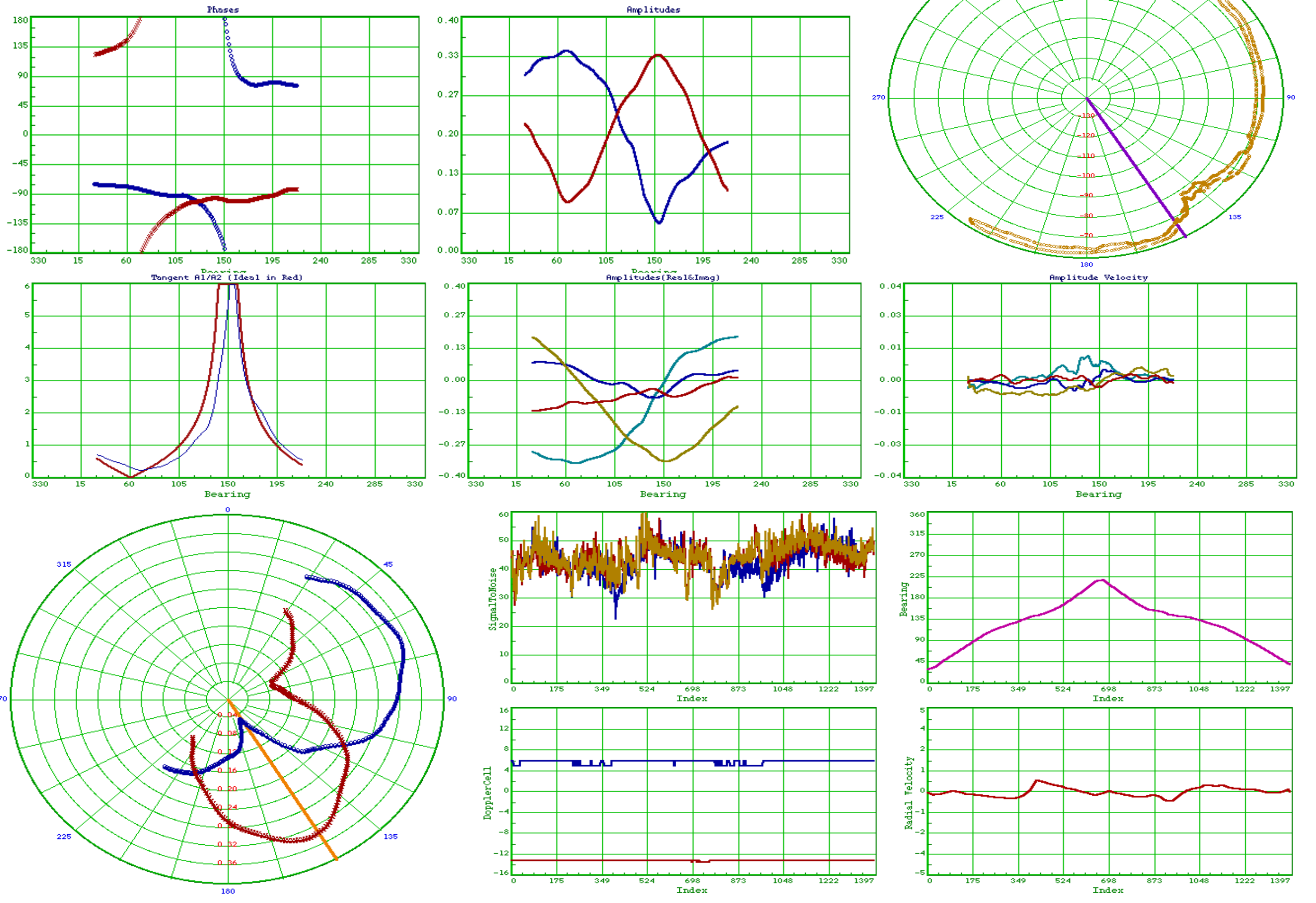

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Radial Velocity

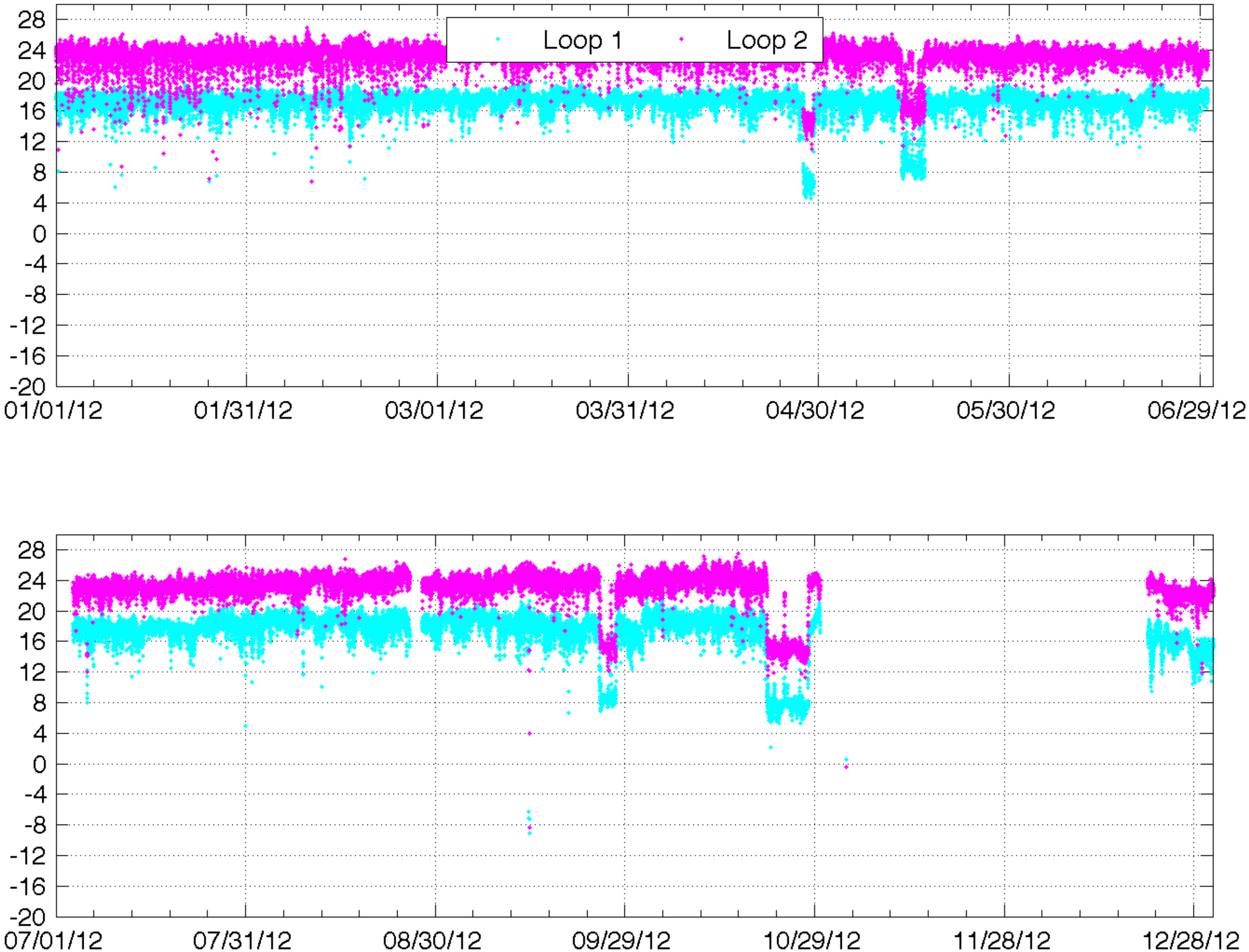
Section 02:

BPU
HF Radar Hardware Diagnostic Data

January 1, 2012 – December 31, 2012

AMPLITUDES

Amplitude Measurements (dB) for 13 MHz Codar System at BRMR



01/22/13
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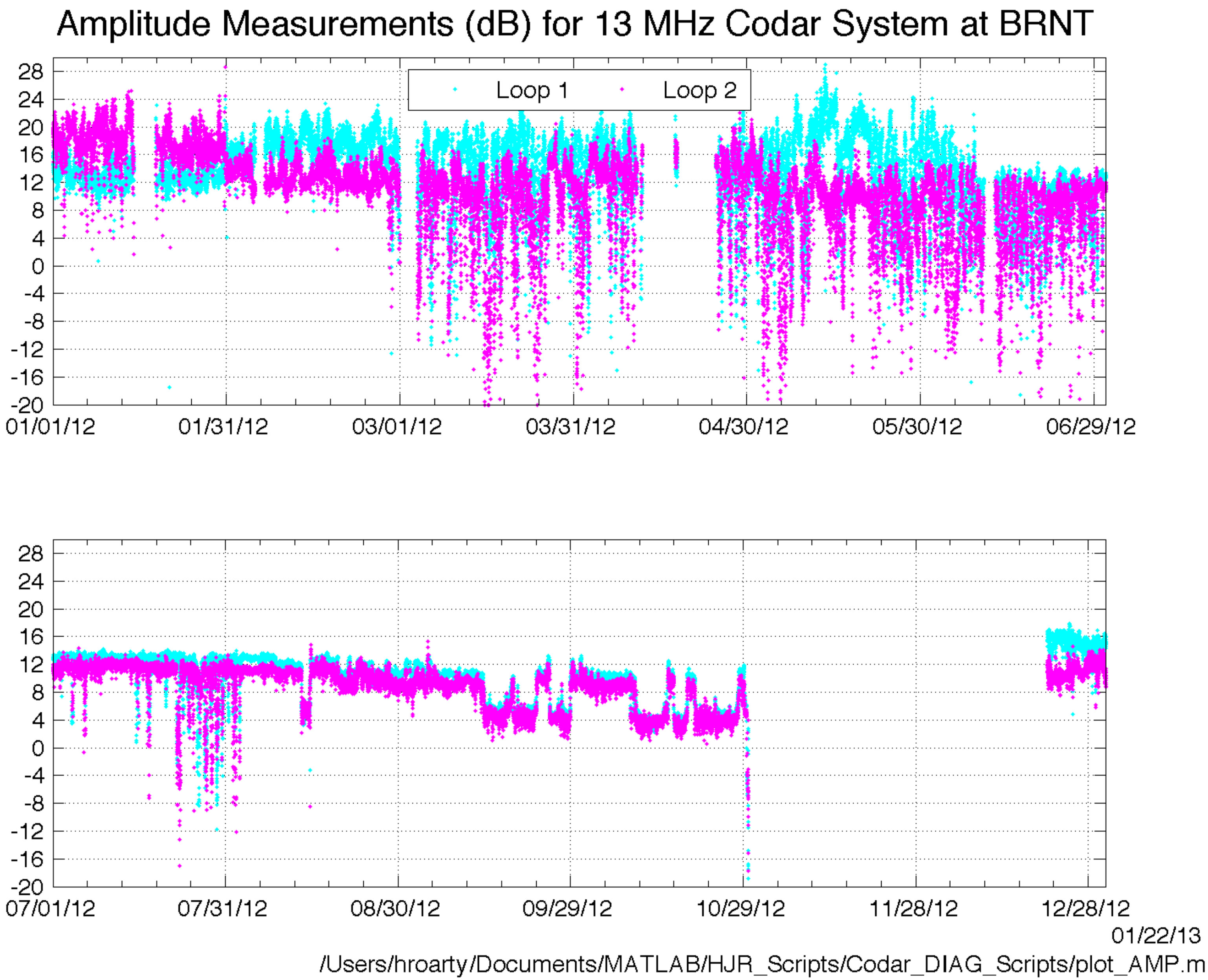
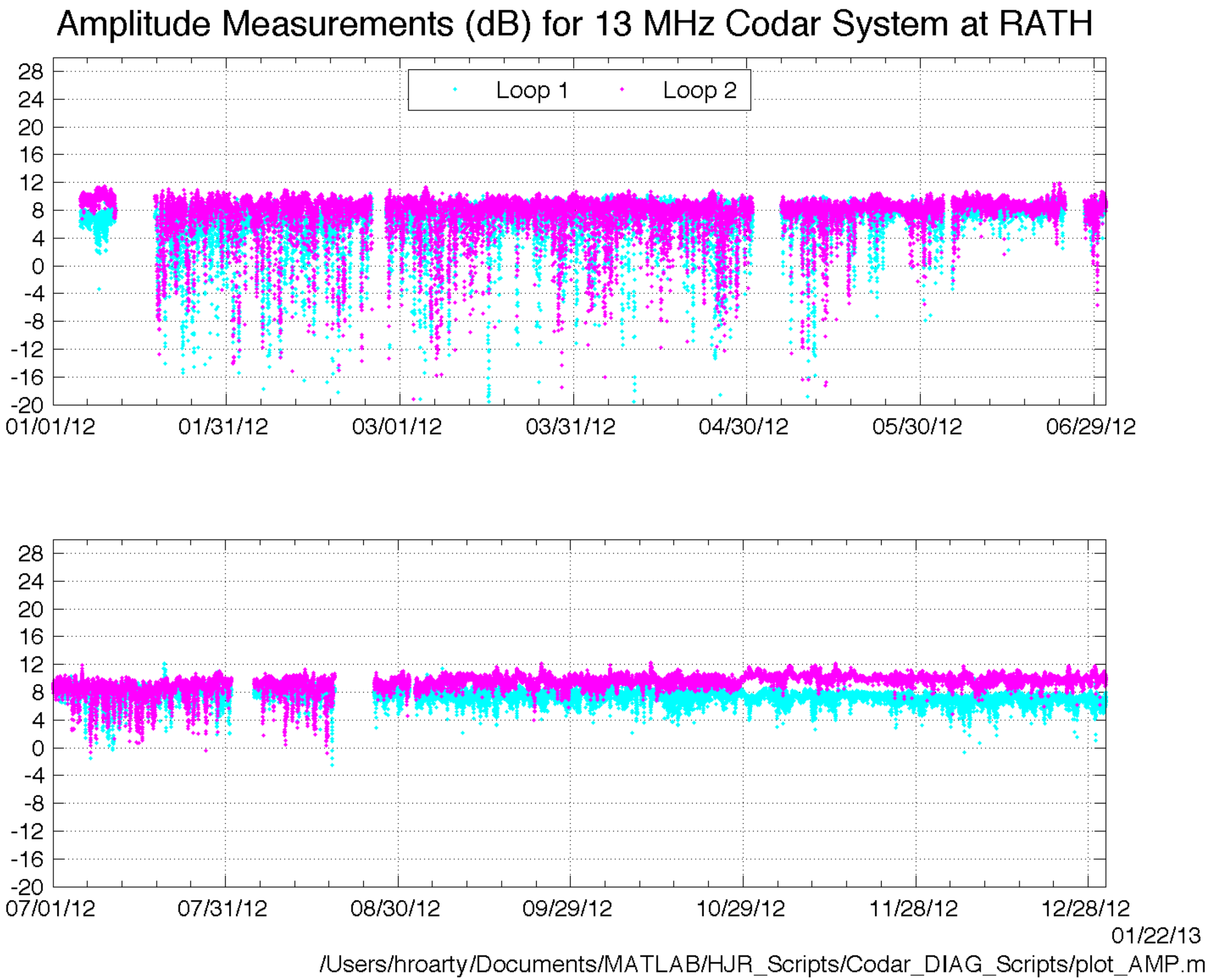


Amplitude Measurements (dB) for 13 MHz Codar System at BRNT
Loop 1
Loop 2
28
24
20
16
12
8
4
0
-4
-8
-12
-16
-20
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/22/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_AMP.m



Amplitude Measurements (dB) for 13 MHz Codar System at RATH
Loop 1
Loop 2
28
24
20
16
12
8
4
0
-4
-8
-12
-16
-20
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/22/13
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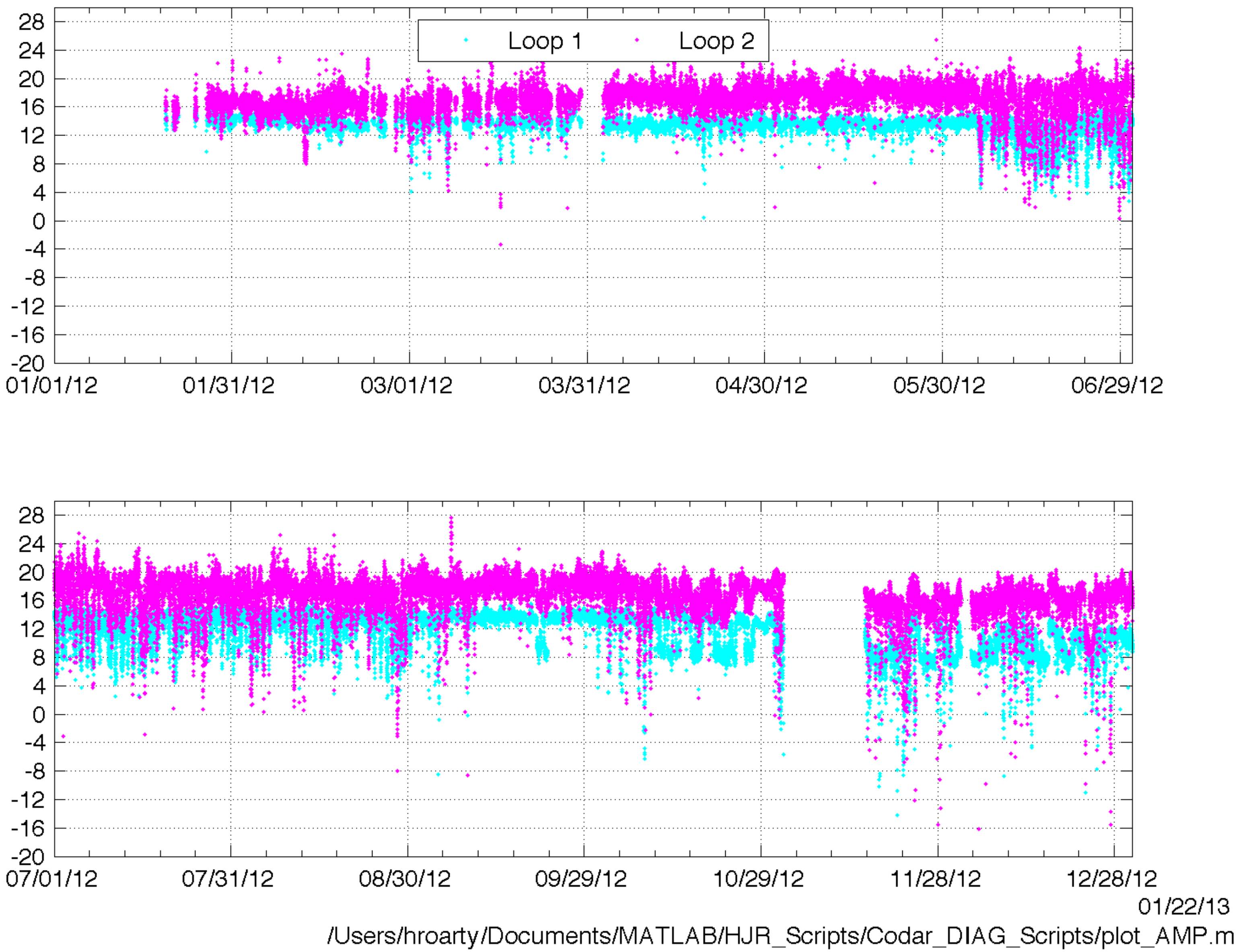
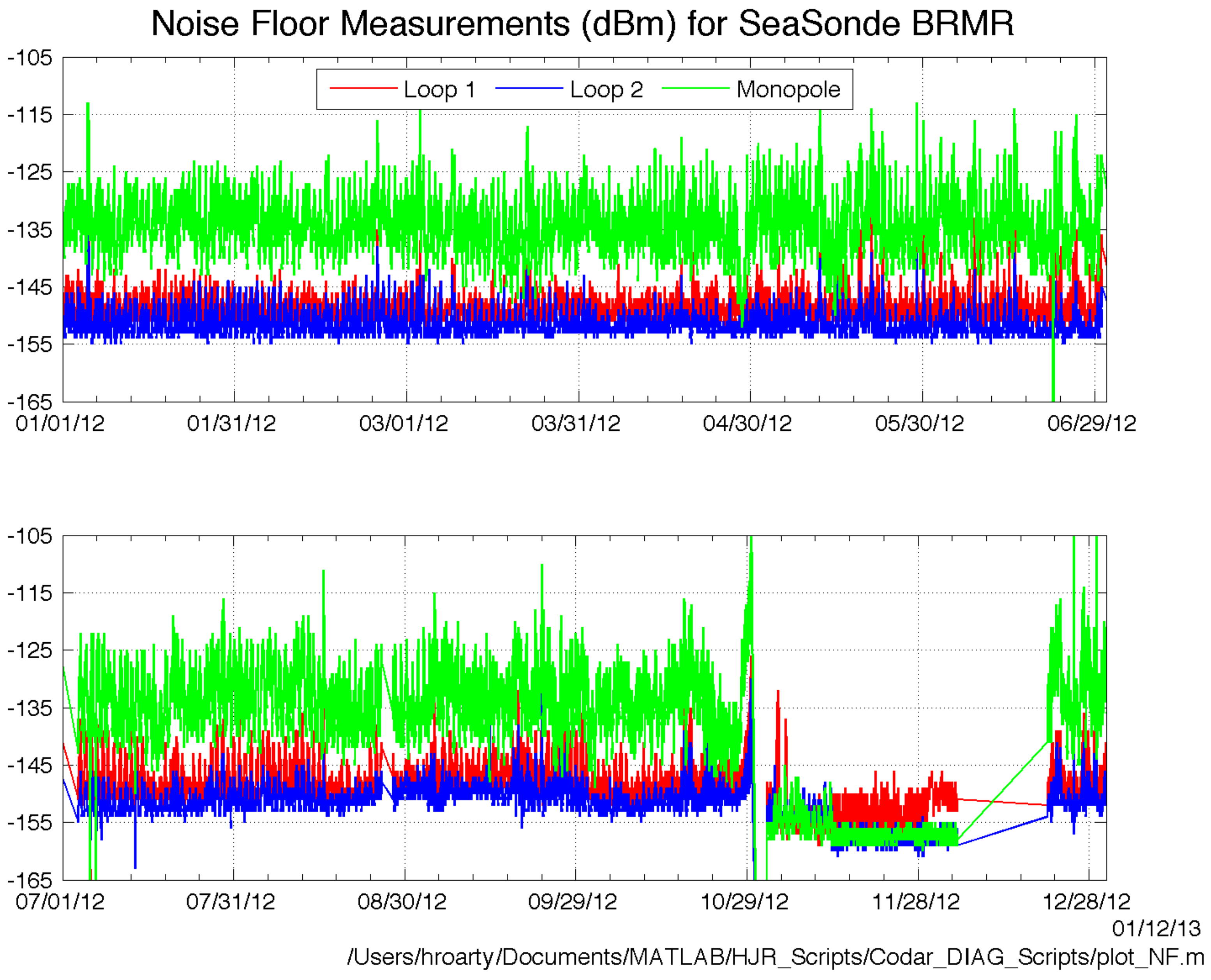
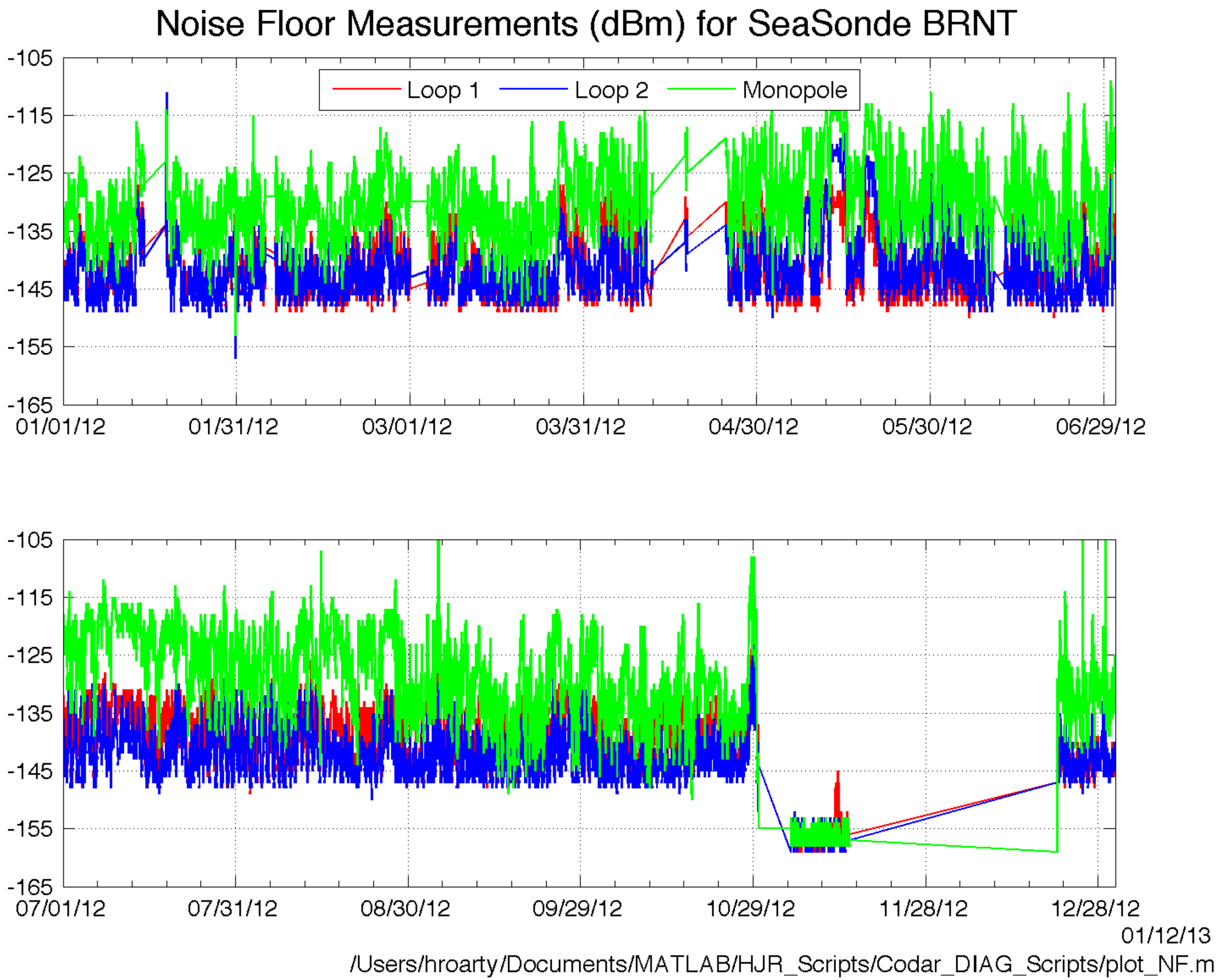
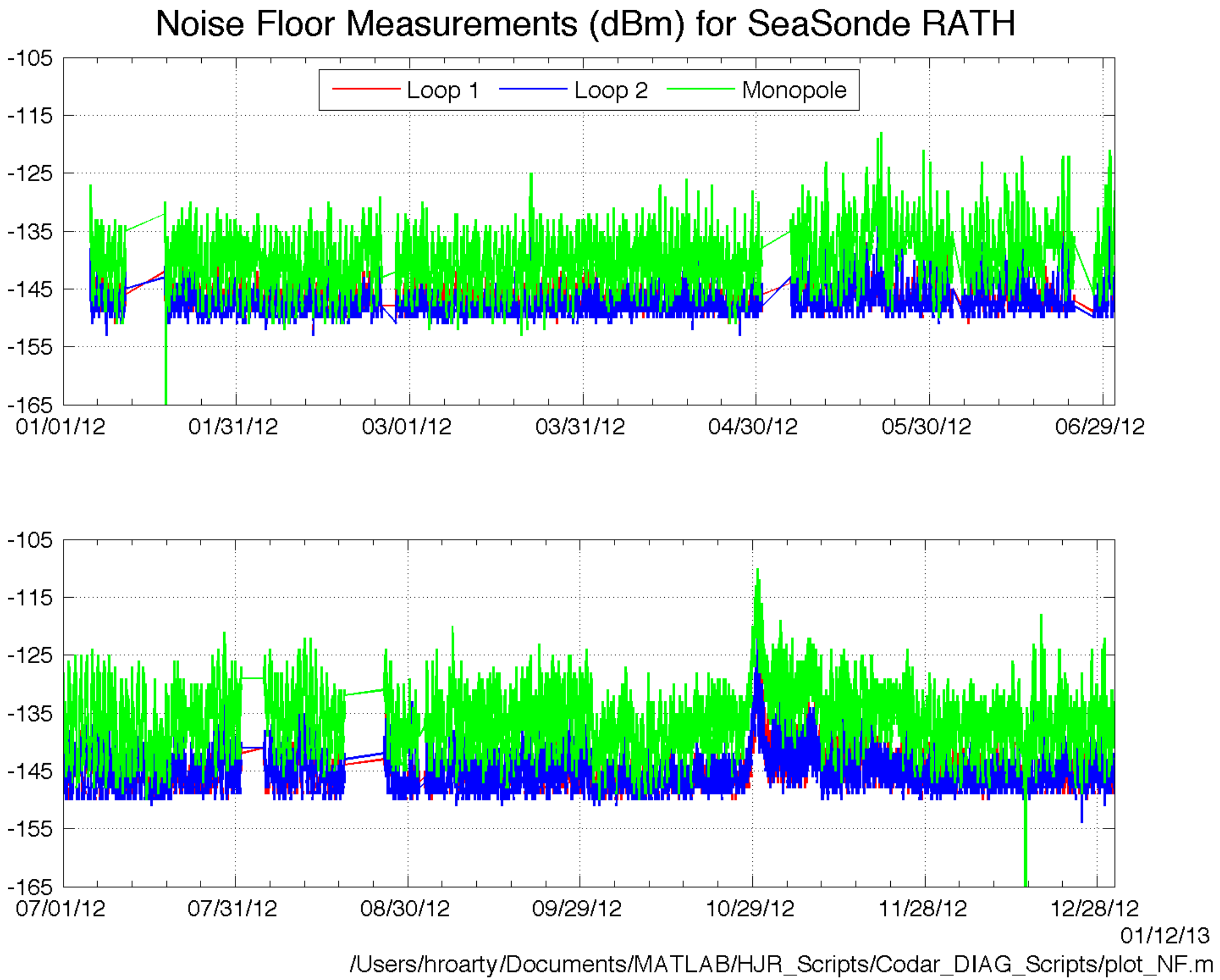
Amplitude Measurements (dB) for 13 MHz Codar System at WOOD

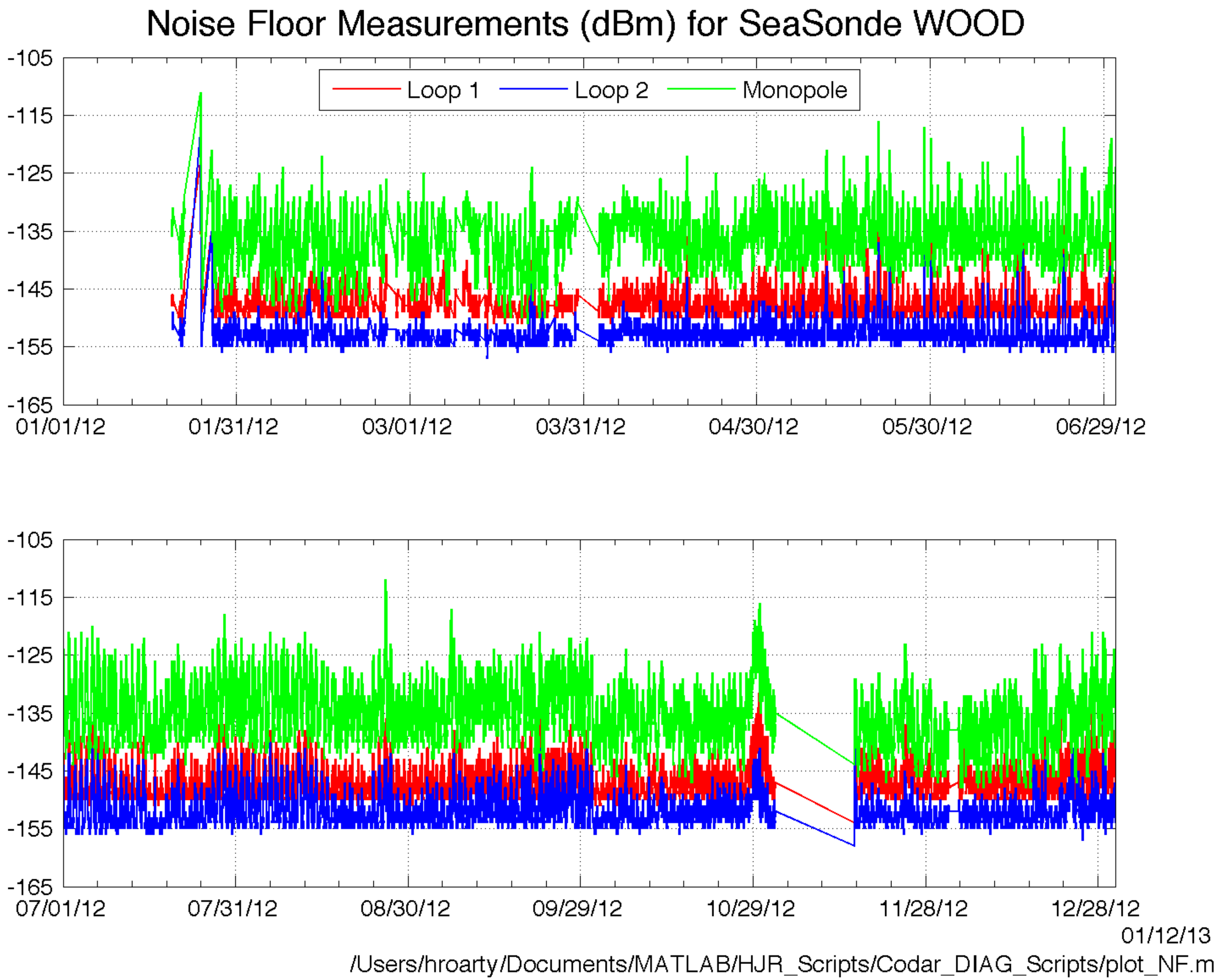


NOISE FLOOR

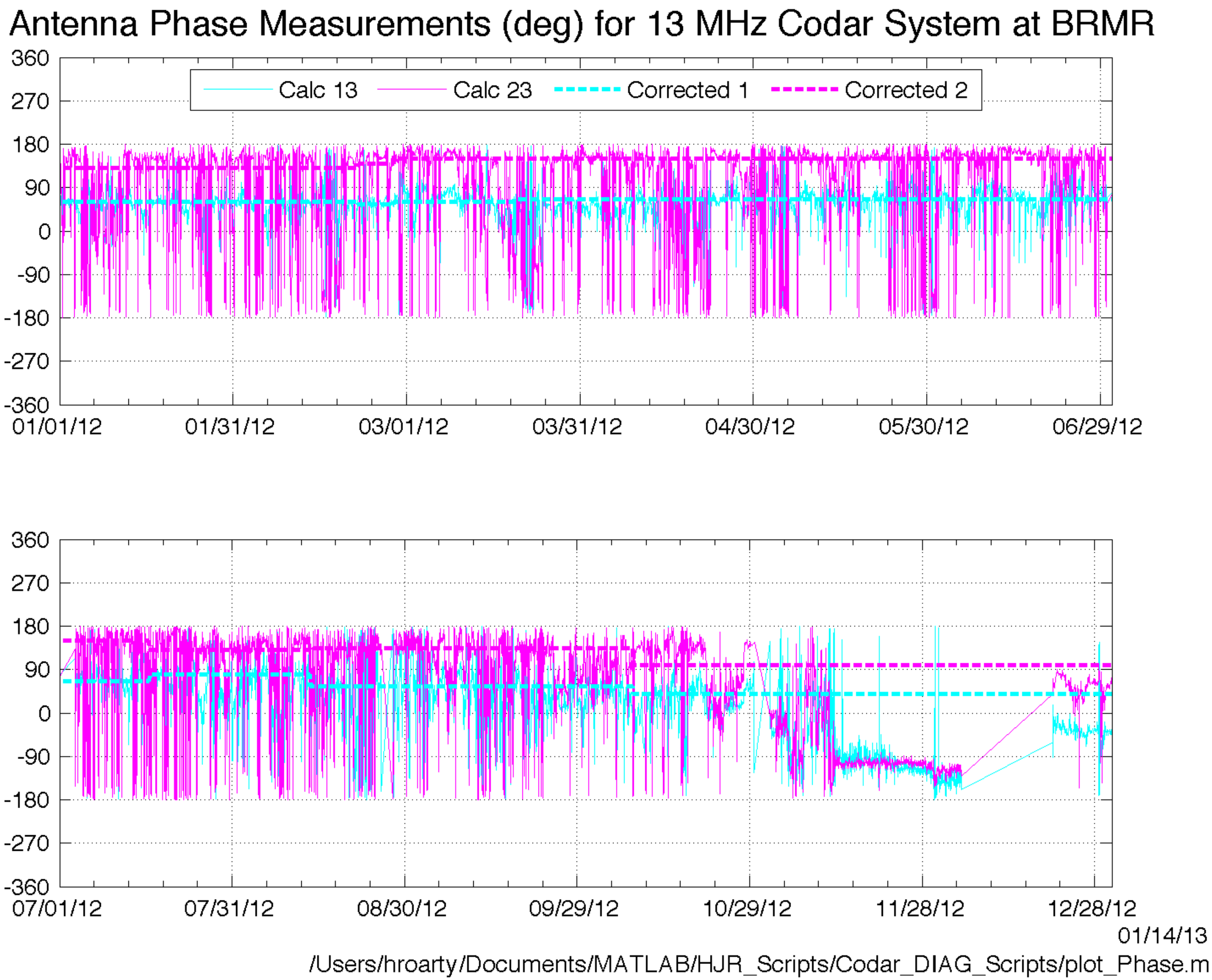

Noise Floor Measurements (dBm) for SeaSonde BRMR
Loop 1
Loop 2
Monopole
-105
-115
-125
-135
-145
-155
-165
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/12/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_NF.m


Noise Floor Measurements (dBm) for SeaSonde BRNT
Loop 1
Loop 2
Monopole
-105
-115
-125
-135
-145
-155
-165
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/12/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_NF.m

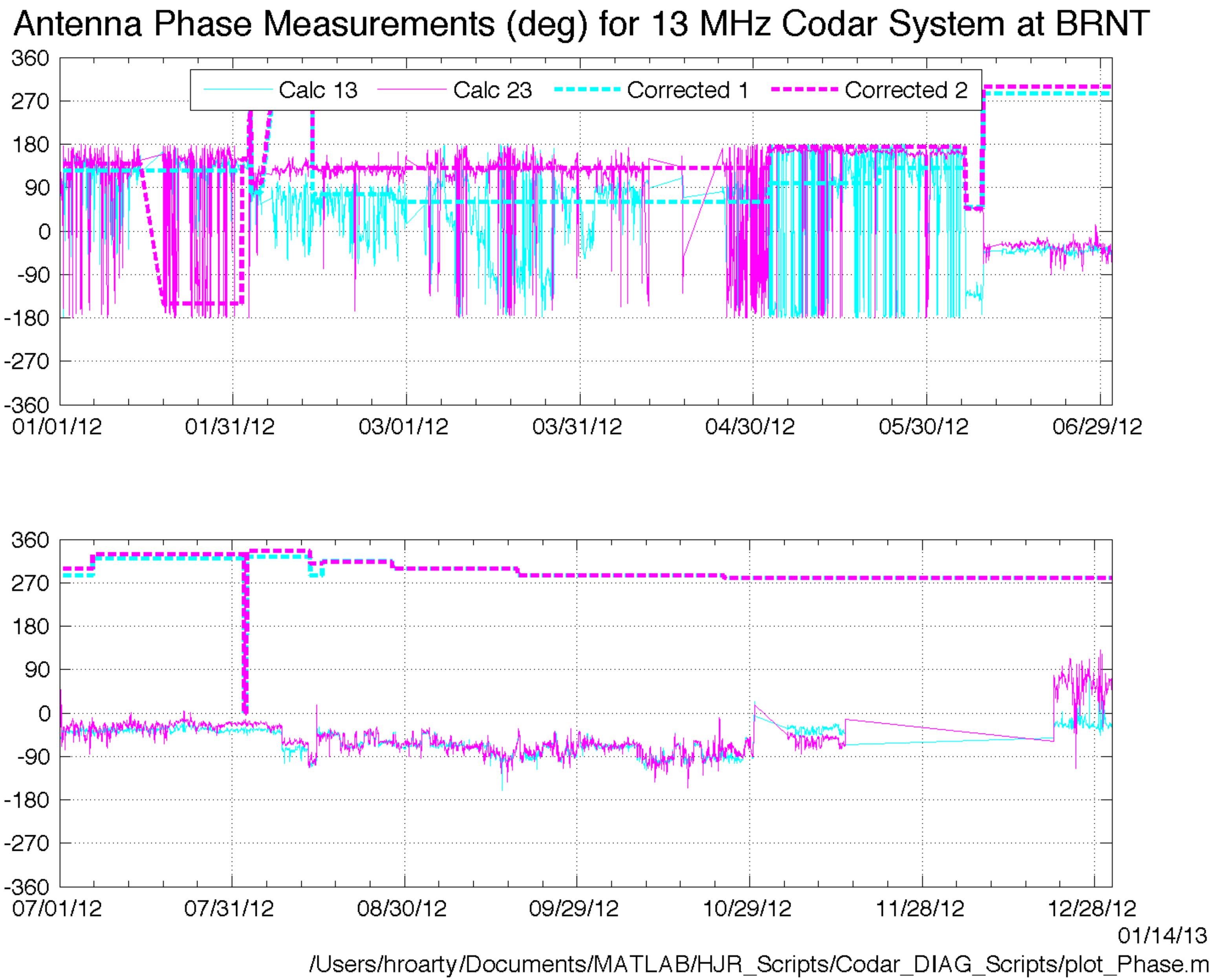

Noise Floor Measurements (dBm) for SeaSonde RATH
Loop 1
Loop 2
Monopole
-105
-115
-125
-135
-145
-155
-165
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/12/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_NF.m

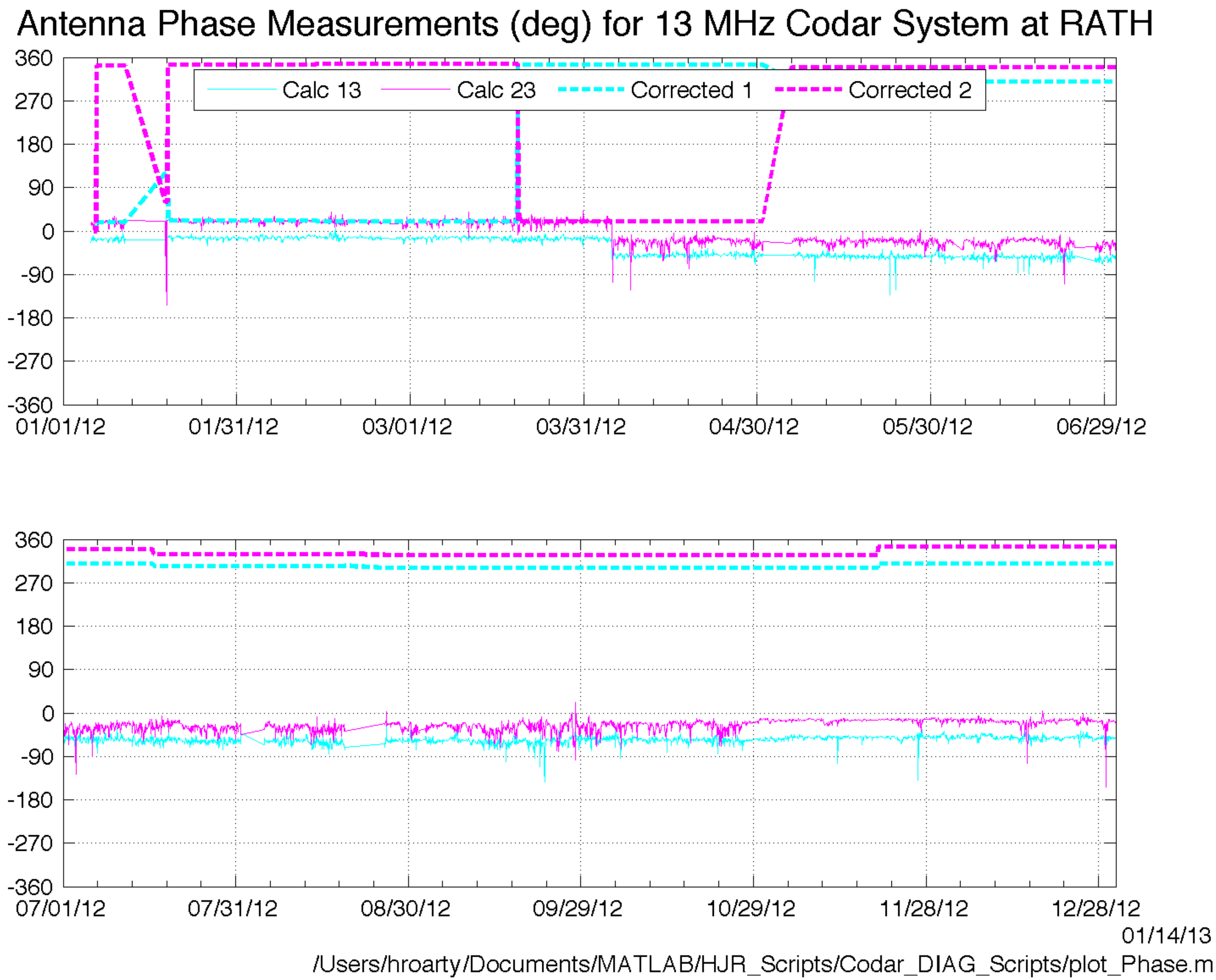

Noise Floor Measurements (dBm) for SeaSonde WOOD
Loop 1
Loop 2
Monopole
-105
-115
-125
-135
-145
-155
-165
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/12/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_NF.m

PHASES



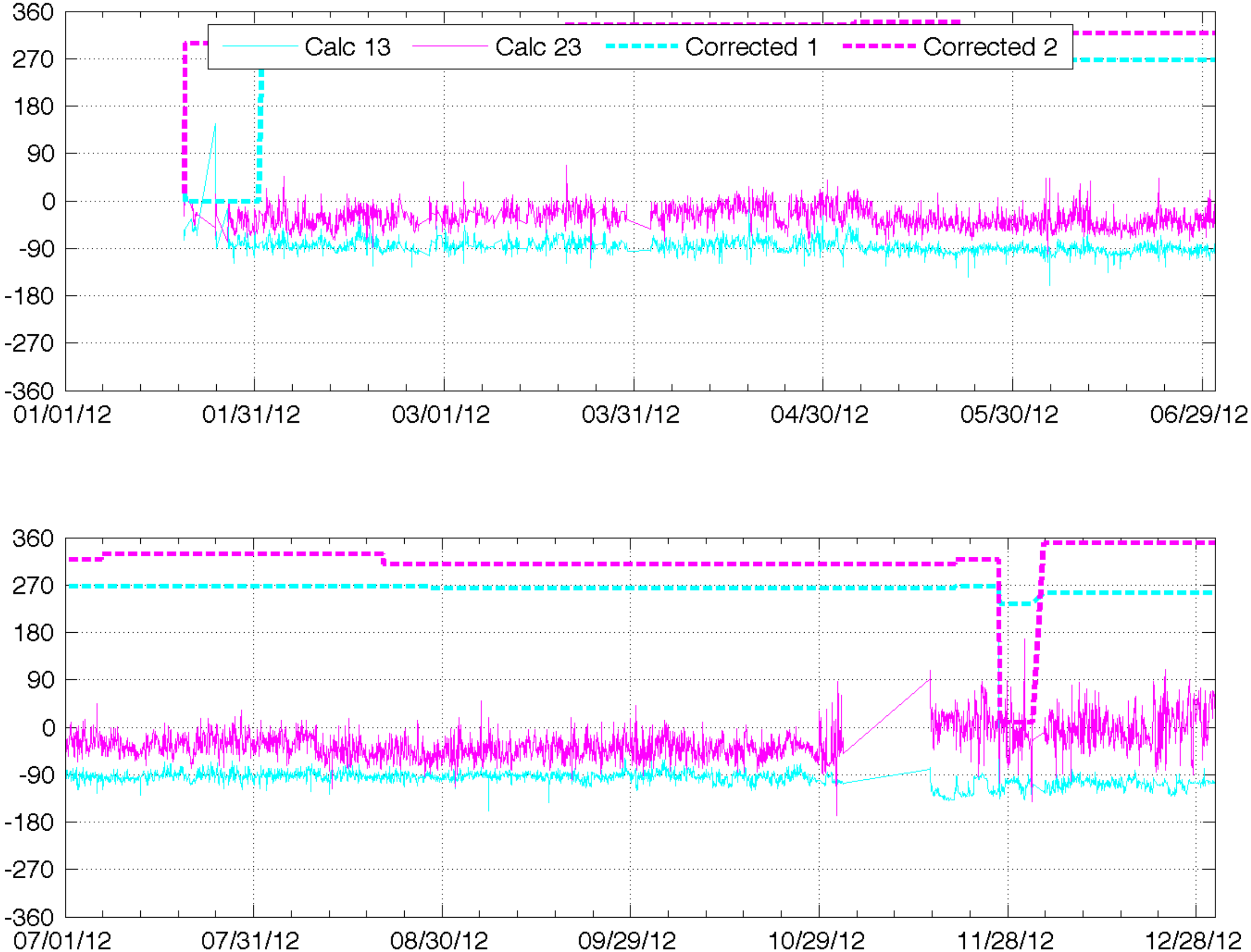
Antenna Phase Measurements (deg) for 13 MHz Codar System at BRMR
Calc 13
Calc 23
Corrected 1
Corrected 2
360
270
180
90
0
-90
-180
-270
-360
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/14/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_Phase.m


Antenna Phase Measurements (deg) for 13 MHz Codar System at BRNT
Calc 13
Calc 23
Corrected 1
Corrected 2
360
270
180
90
0
-90
-180
-270
-360
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/14/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_Phase.m



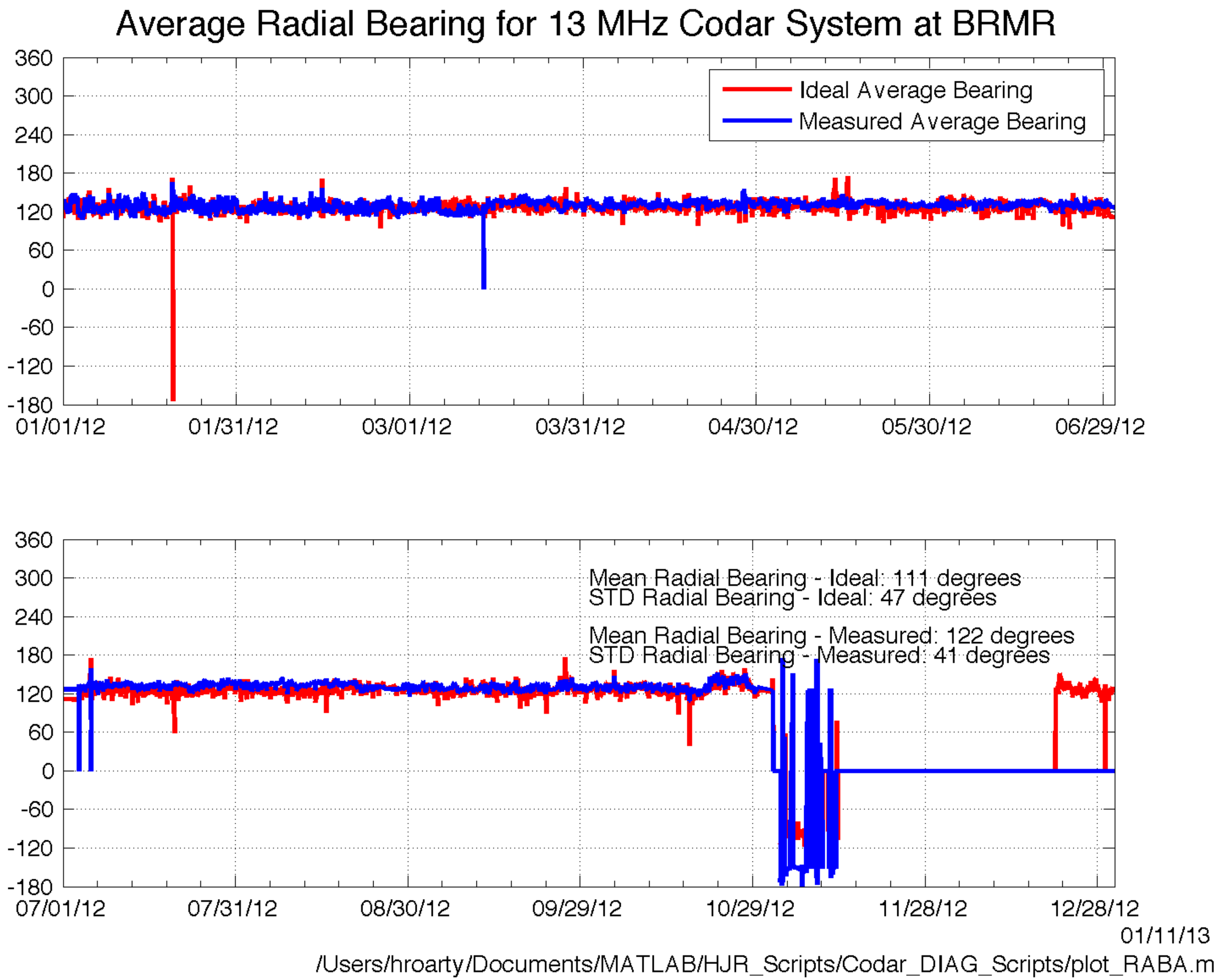
Antenna Phase Measurements (deg) for 13 MHz Codar System at RATH
Calc 13
Calc 23
Corrected 1
Corrected 2
360
270
180
90
0
-90
-180
-270
-360
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/14/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_Phase.m

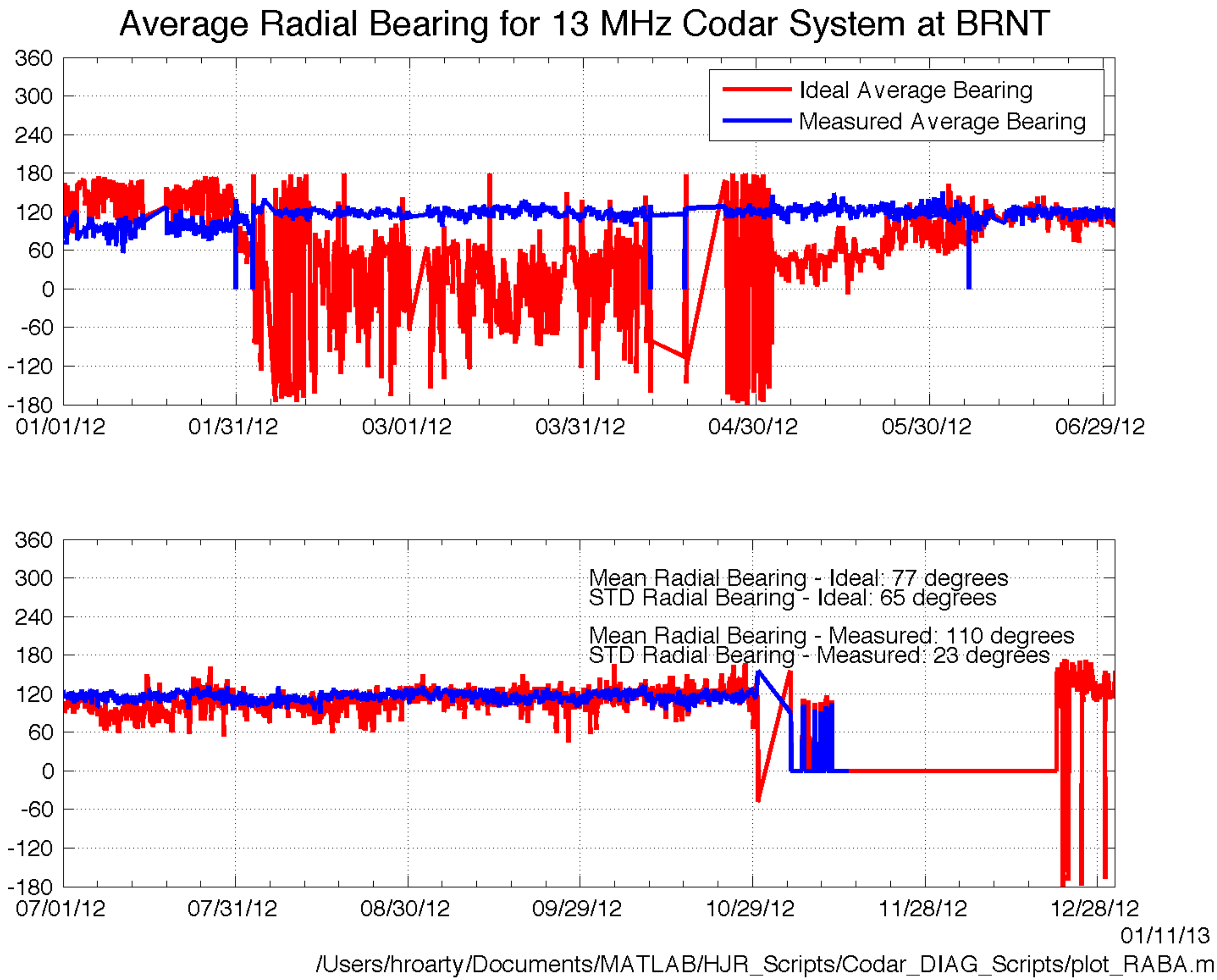
Antenna Phase Measurements (deg) for 13 MHz Codar System at WOOD

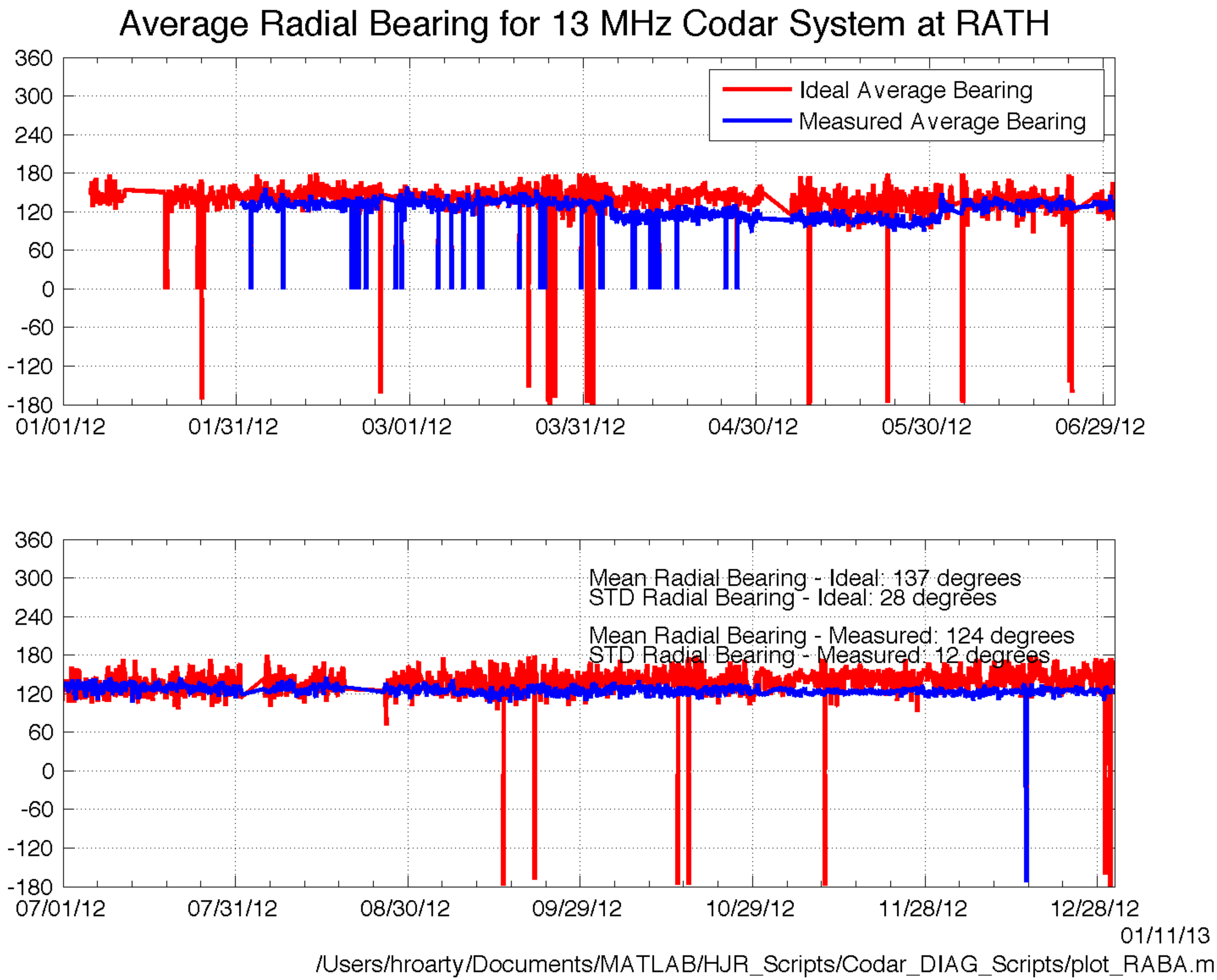


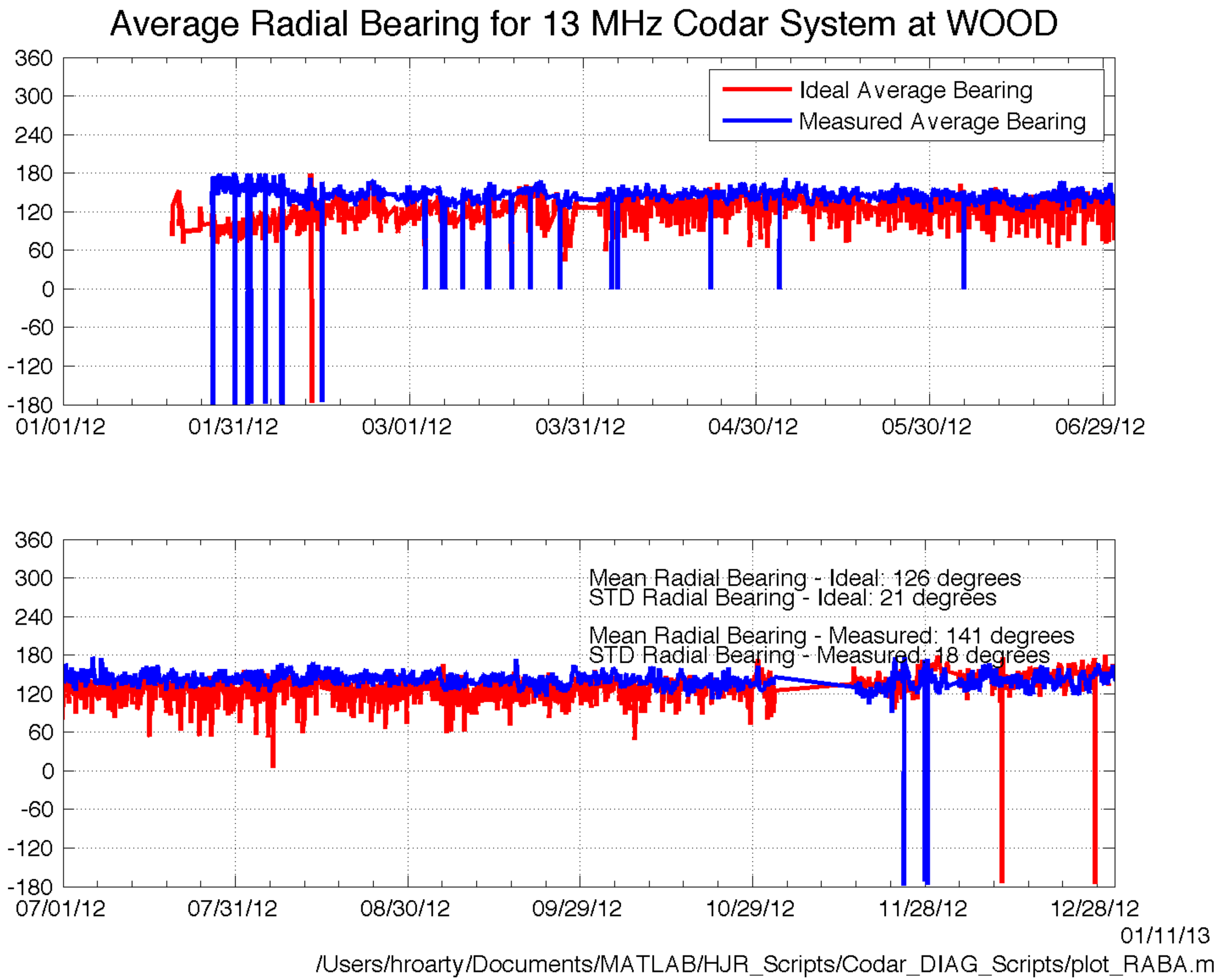
01/14/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_Phase.m

AVERAGE RADIAL BEARING


Average Radial Bearing for 13 MHz Codar System at BRMR
Ideal Average Bearing
Measured Average Bearing
360
300
240
180
120
60
0
-60
-120
-180
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
Mean Radial Bearing - Ideal: 111 degrees
STD Radial Bearing - Ideal: 47 degrees
Mean Radial Bearing - Measured: 122 degrees
STD Radial Bearing - Measured: 41 degrees
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/11/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_RABA.m

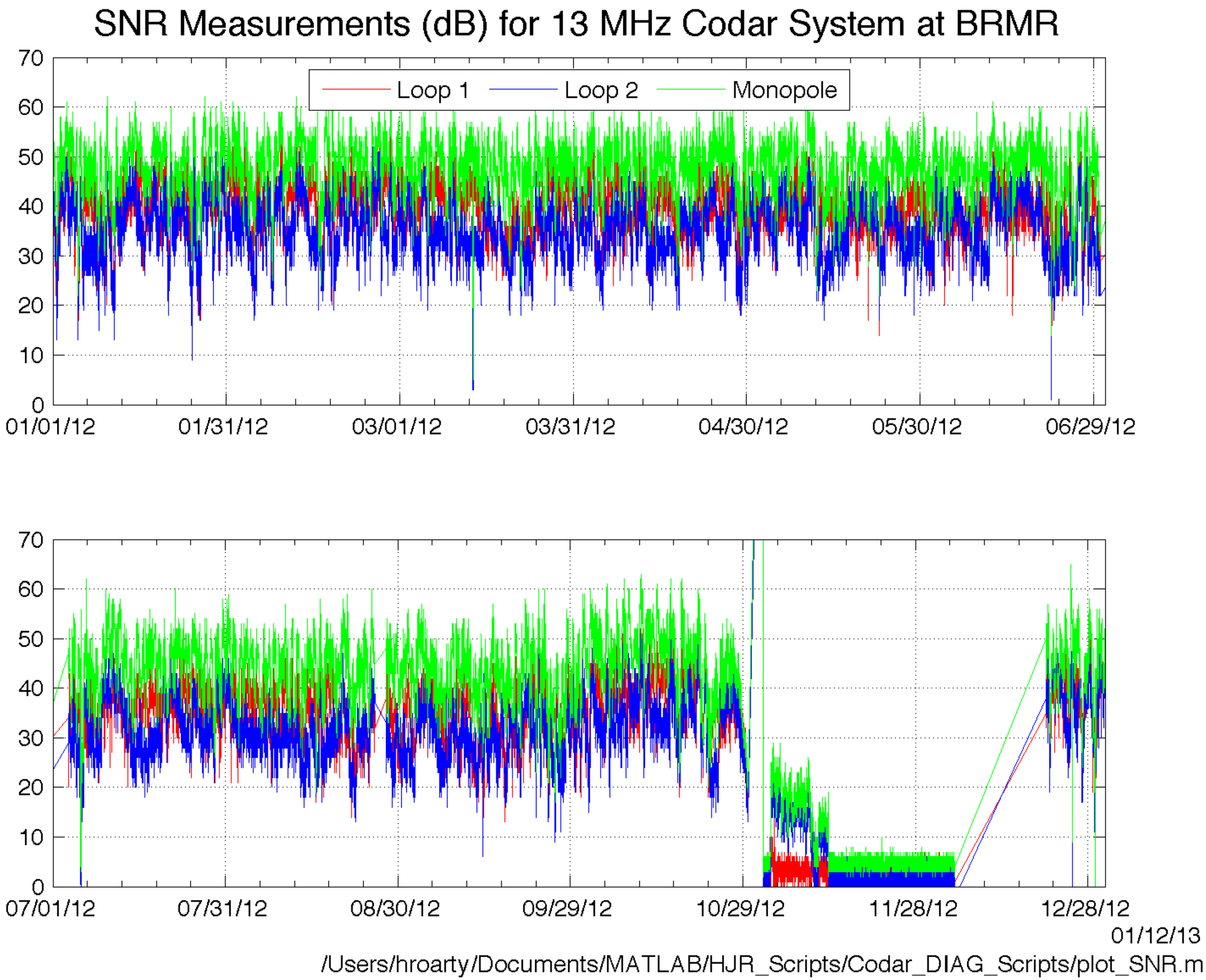

Average Radial Bearing for 13 MHz Codar System at BRNT
Ideal Average Bearing
Measured Average Bearing
360
300
240
180
120
60
0
-60
-120
-180
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
Mean Radial Bearing - Ideal: 77 degrees
STD Radial Bearing - Ideal: 65 degrees
Mean Radial Bearing - Measured: 110 degrees
STD Radial Bearing - Measured: 23 degrees
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/11/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_RABA.m


Average Radial Bearing for 13 MHz Codar System at RATH
Ideal Average Bearing
Measured Average Bearing
360
300
240
180
120
60
0
-60
-120
-180
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
Mean Radial Bearing - Ideal: 137 degrees
STD Radial Bearing - Ideal: 28 degrees
Mean Radial Bearing - Measured: 124 degrees
STD Radial Bearing - Measured: 12 degrees
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/11/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_RABA.m

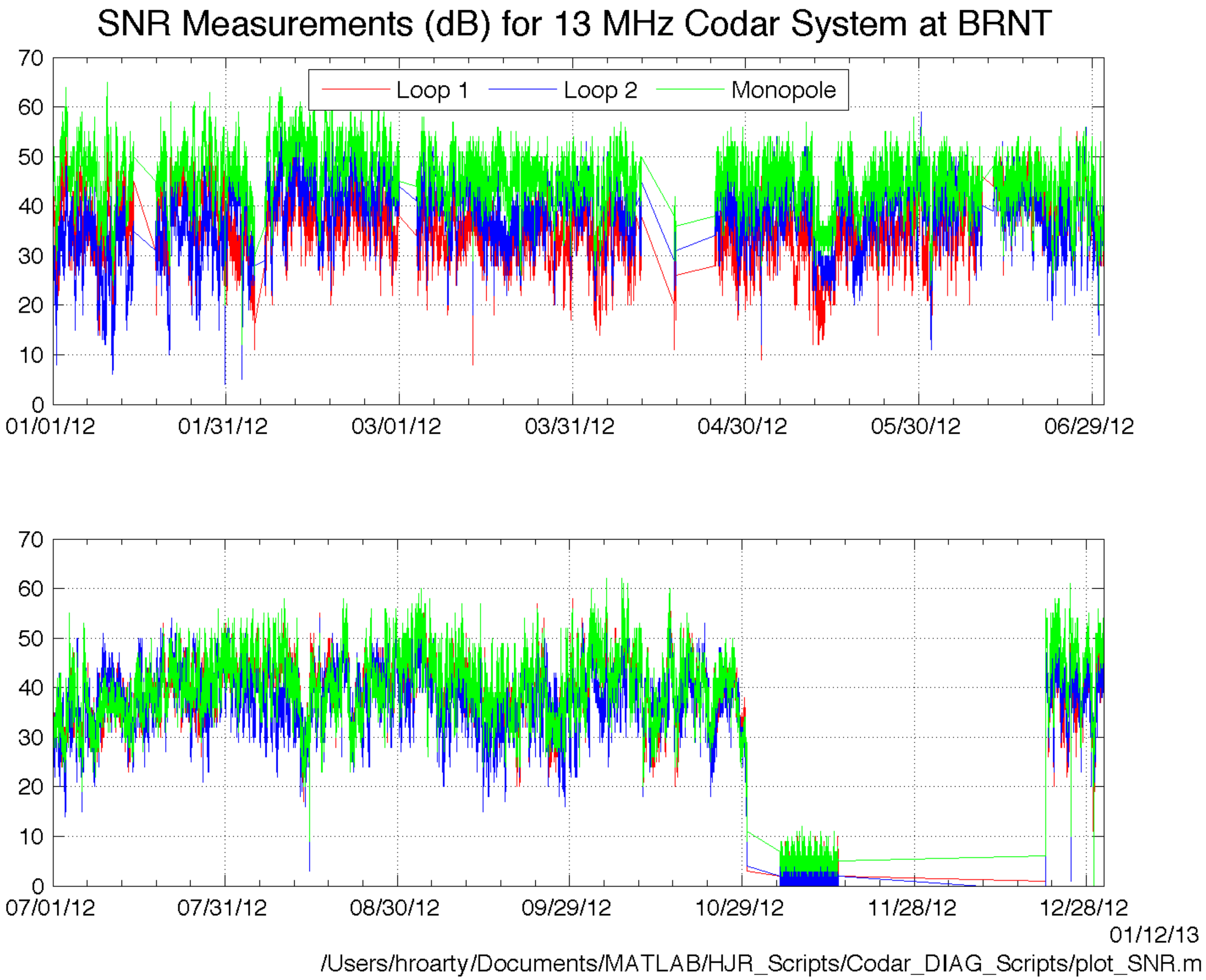


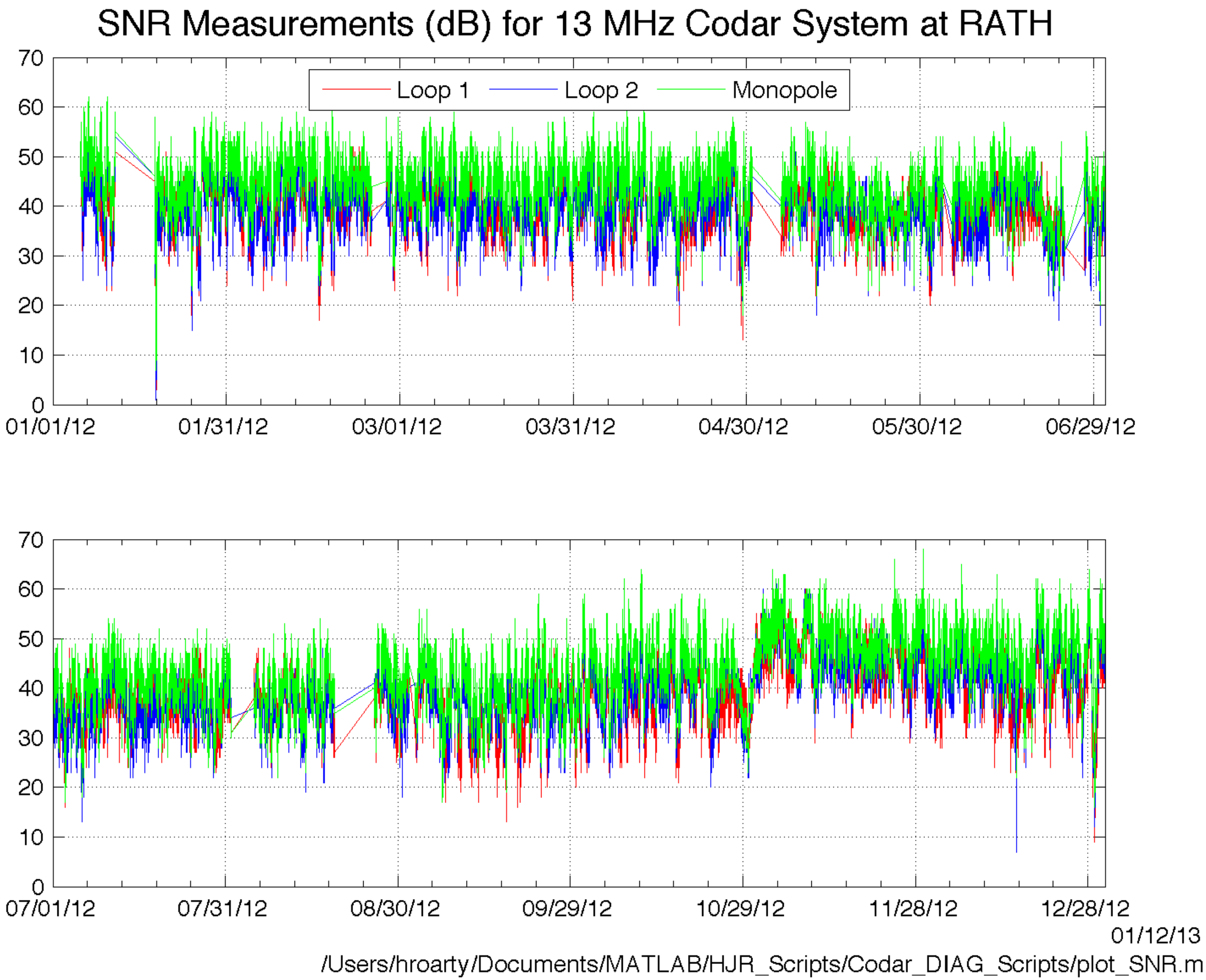
Average Radial Bearing for 13 MHz Codar System at WOOD
Ideal Average Bearing
Measured Average Bearing
360
300
240
180
120
60
0
-60
-120
-180
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
Mean Radial Bearing - Ideal: 126 degrees
STD Radial Bearing - Ideal: 21 degrees
Mean Radial Bearing - Measured: 141 degrees
STD Radial Bearing - Measured: 18 degrees
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/11/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_RABA.m

SIGNAL TO NOISE

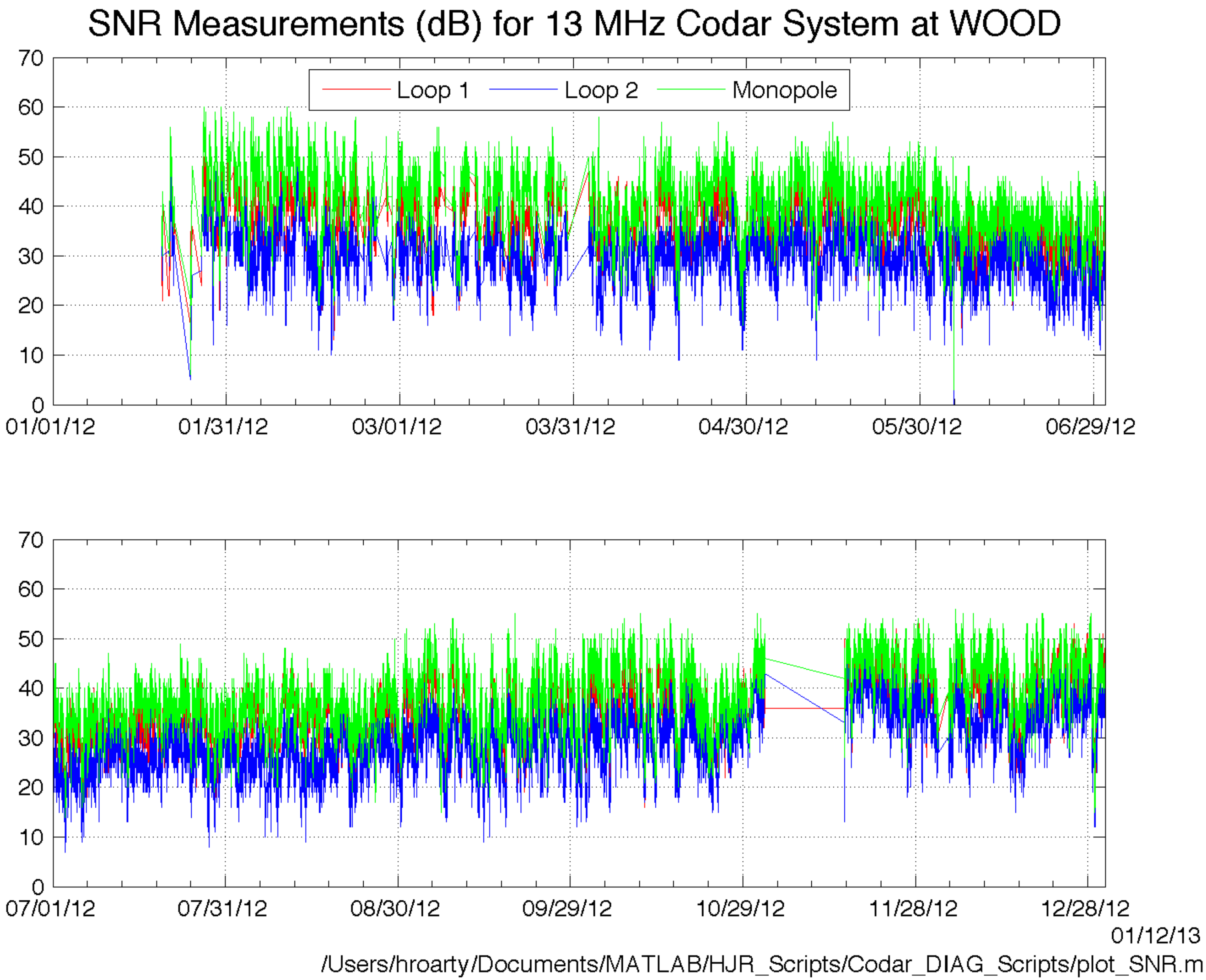


SNR Measurements (dB) for 13 MHz Codar System at BRMR
Loop 1
Loop 2
Monopole
70
60
50
40
30
20
10
0
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/12/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_SNR.m

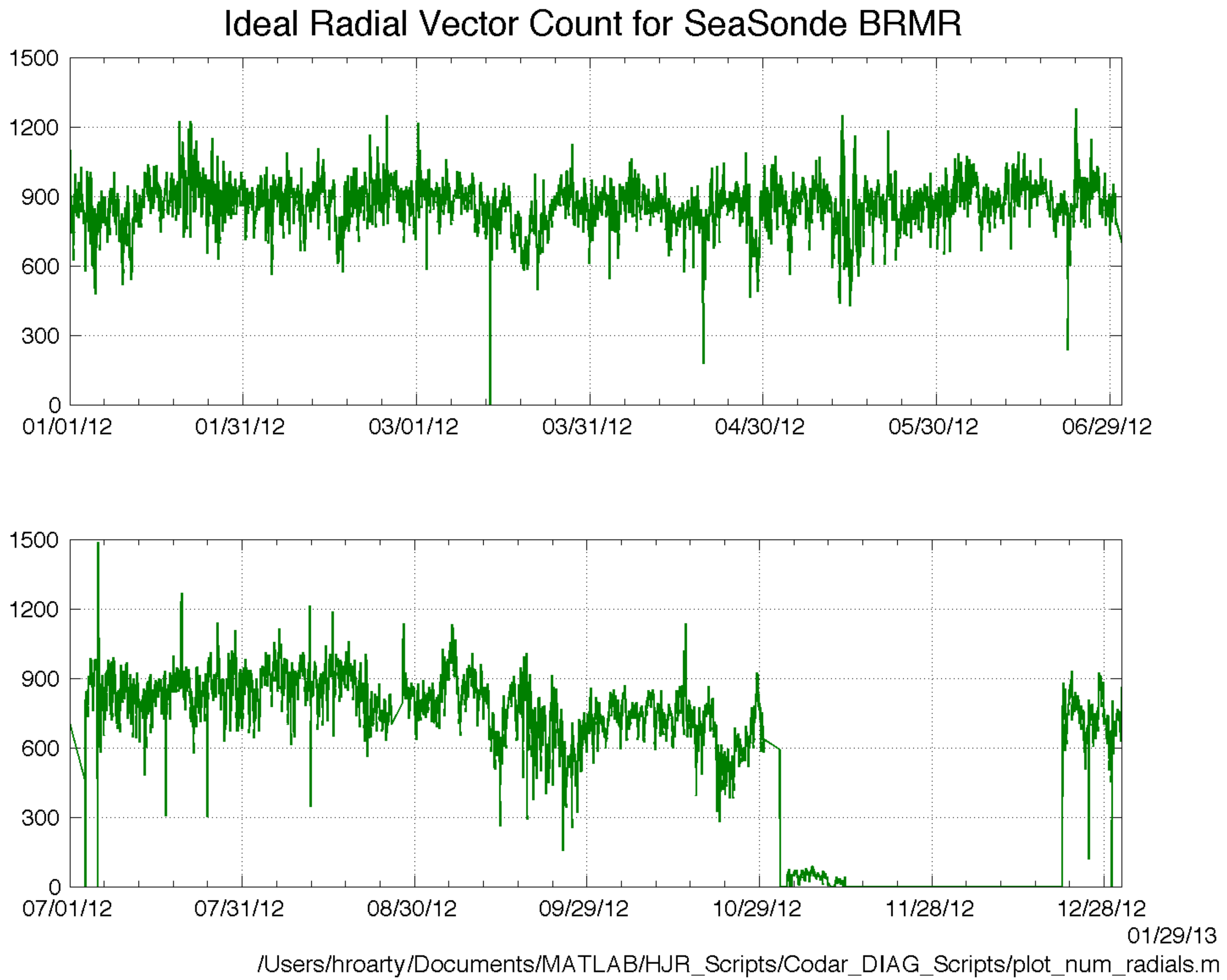

SNR Measurements (dB) for 13 MHz Codar System at BRNT
Loop 1
Loop 2
Monopole
70
60
50
40
30
20
10
0
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/12/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_SNR.m



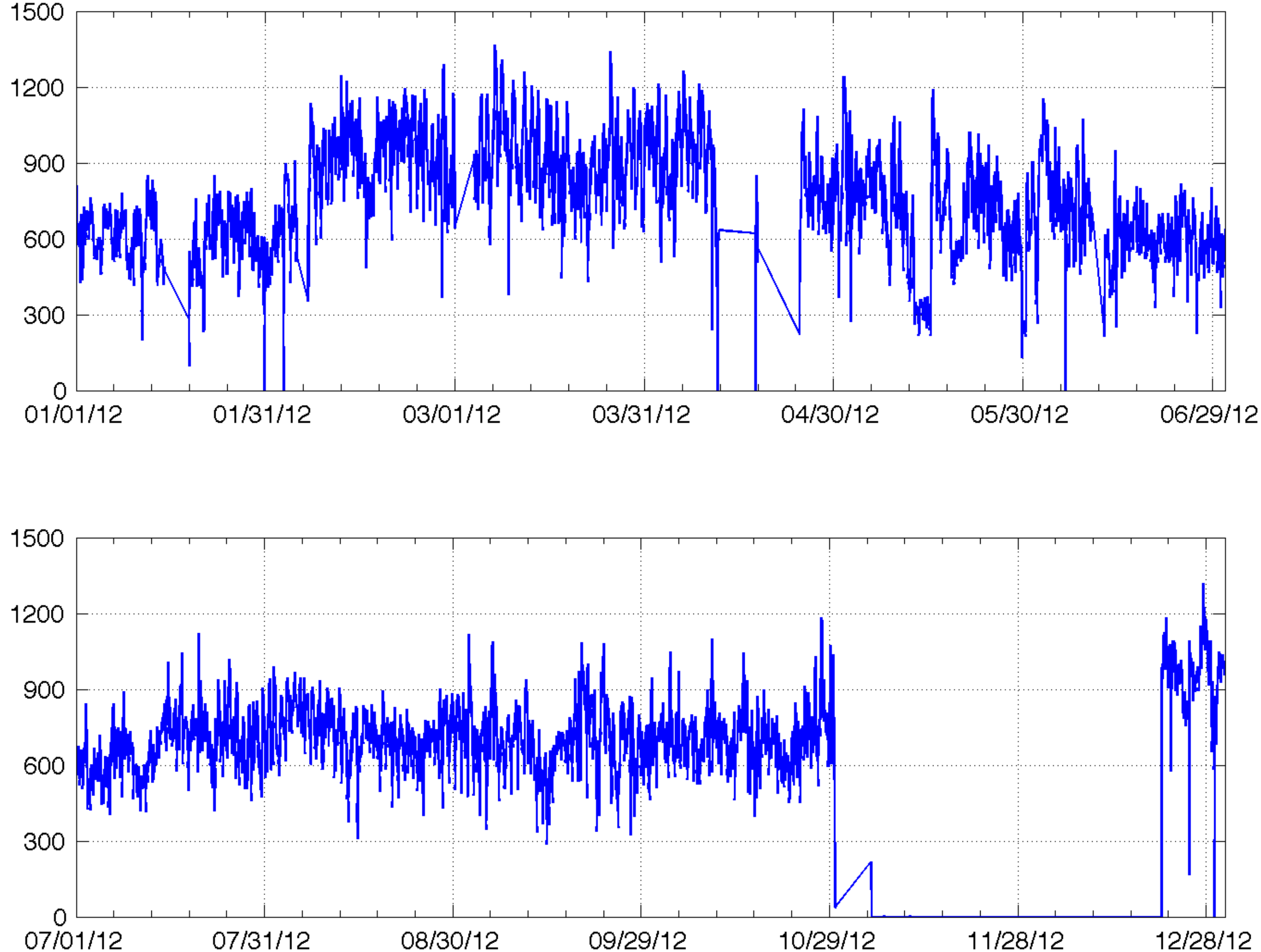
SNR Measurements (dB) for 13 MHz Codar System at RATH
Loop 1
Loop 2
Monopole
70
60
50
40
30
20
10
0
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/12/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_SNR.m


SNR Measurements (dB) for 13 MHz Codar System at WOOD
Loop 1
Loop 2
Monopole
70
60
50
40
30
20
10
0
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/12/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_SNR.m

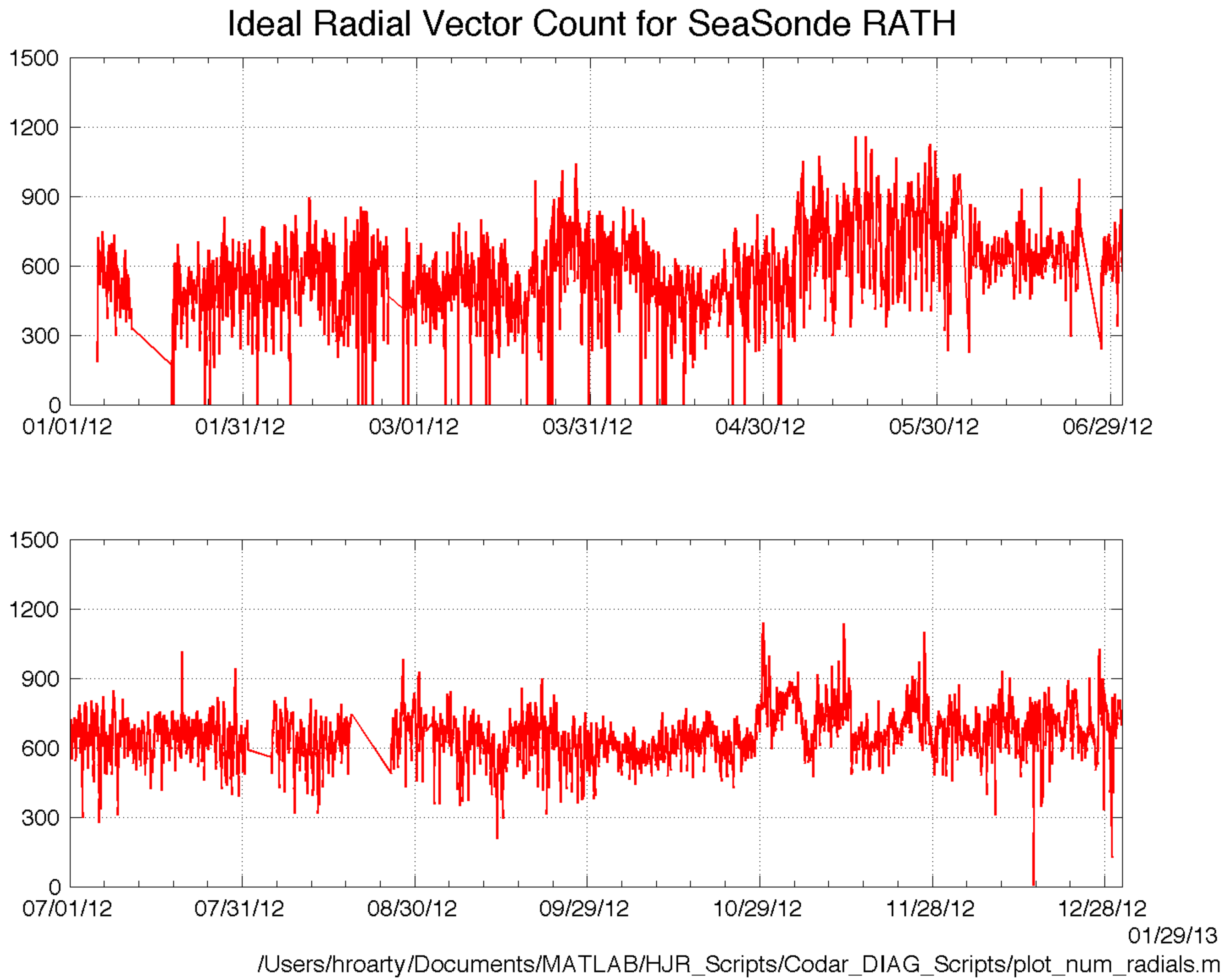
NUMBER OF RADIALS PER FILE
IDEAL RADIALS


Ideal Radial Vector Count for SeaSonde BRMR
1500
1200
900
600
300
0
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
1500
1200
900
600
300
0
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/29/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_num_radials.m

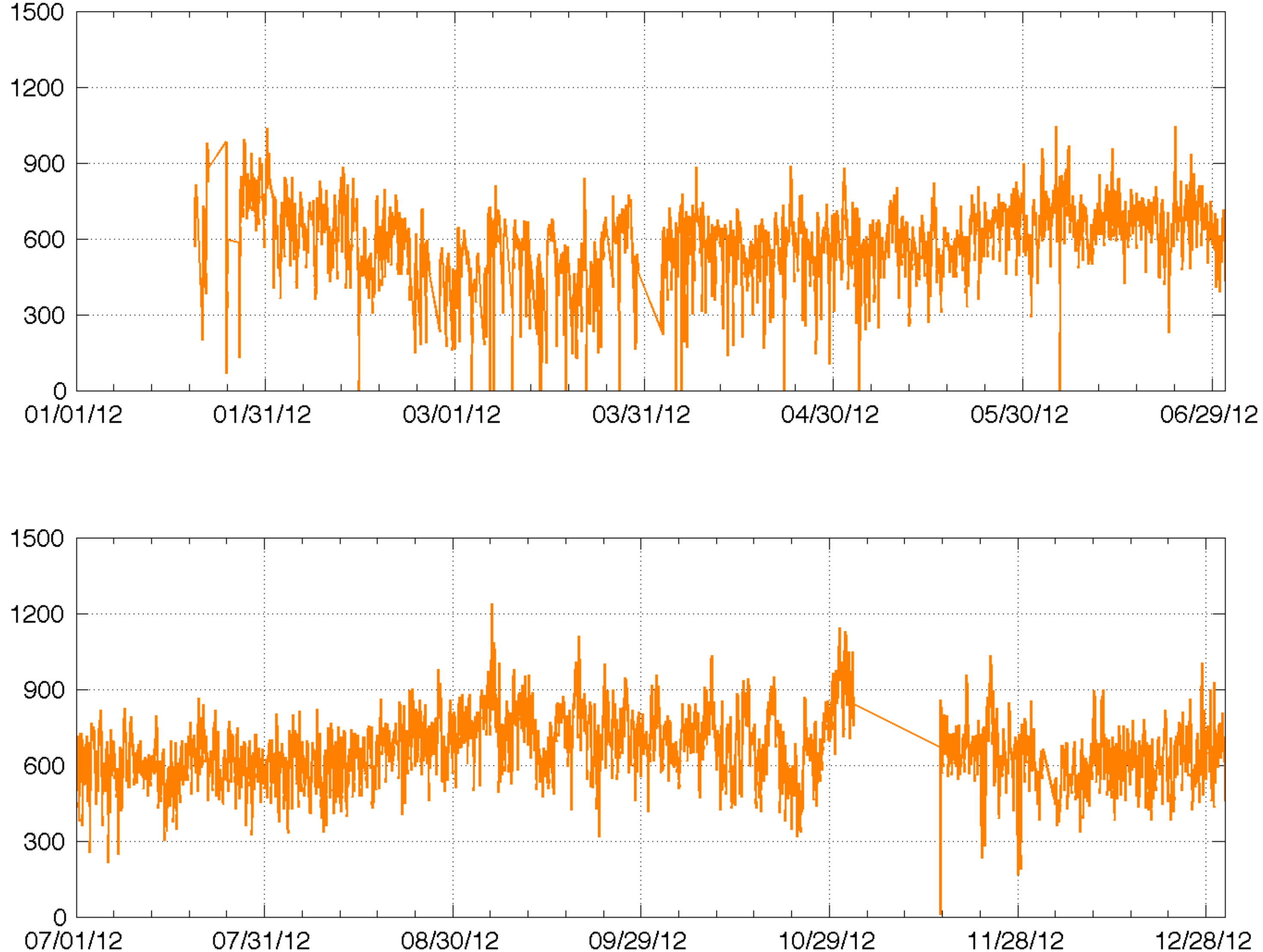
Ideal Radial Vector Count for SeaSonde BRNT



01/29/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_num_radials.m

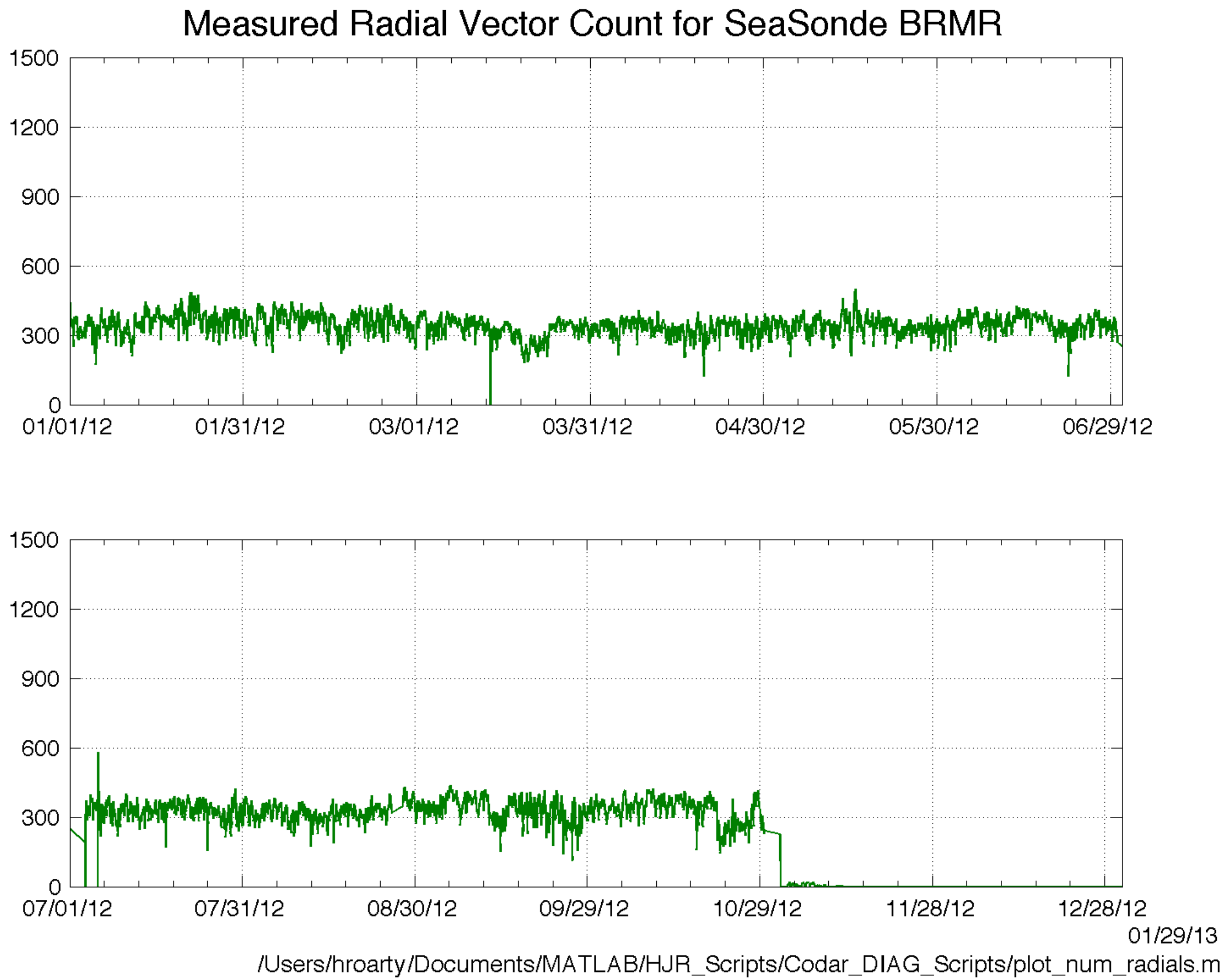

Ideal Radial Vector Count for SeaSonde RATH
1500
1200
900
600
300
0
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/29/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_num_radials.m

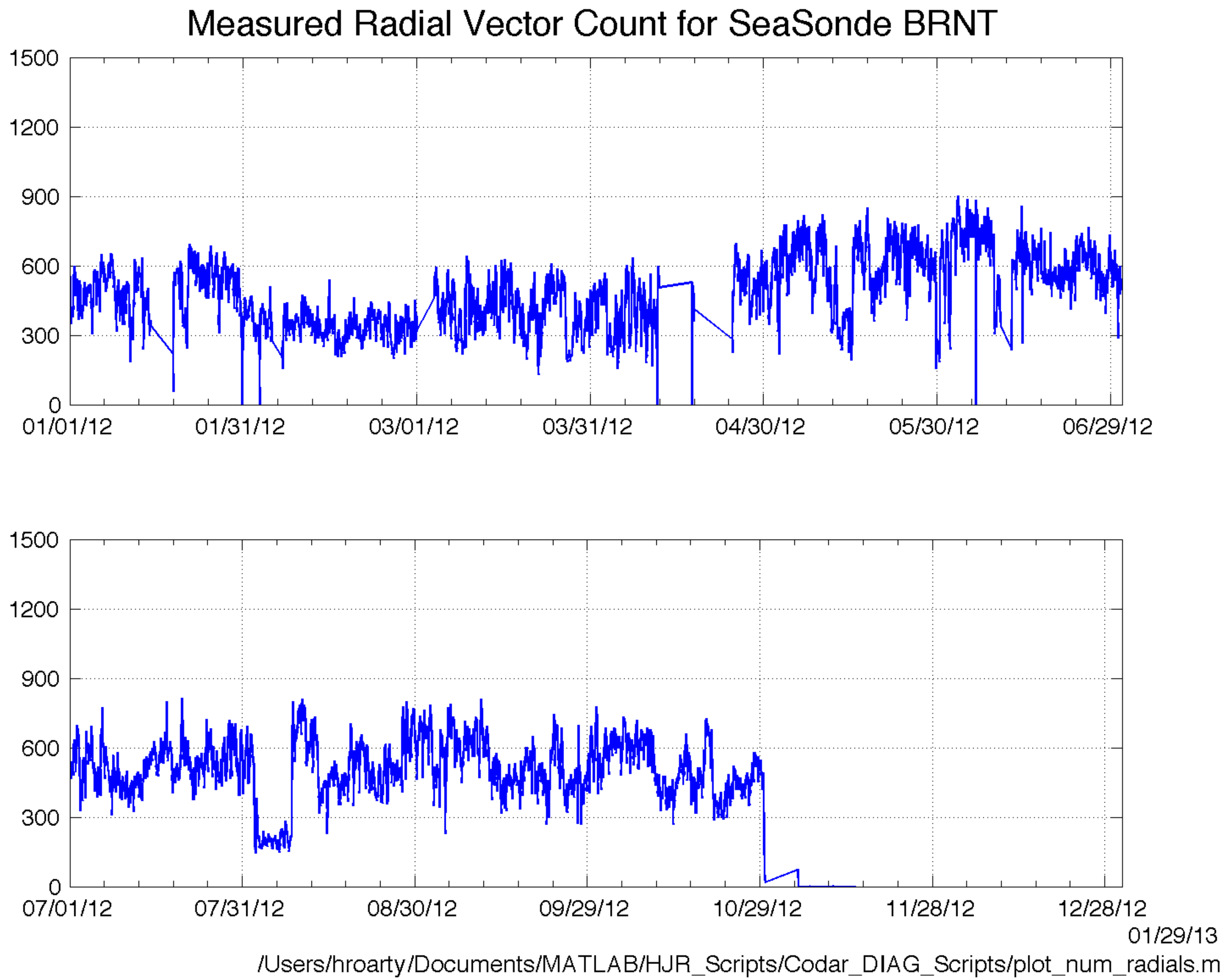
Ideal Radial Vector Count for SeaSonde WOOD

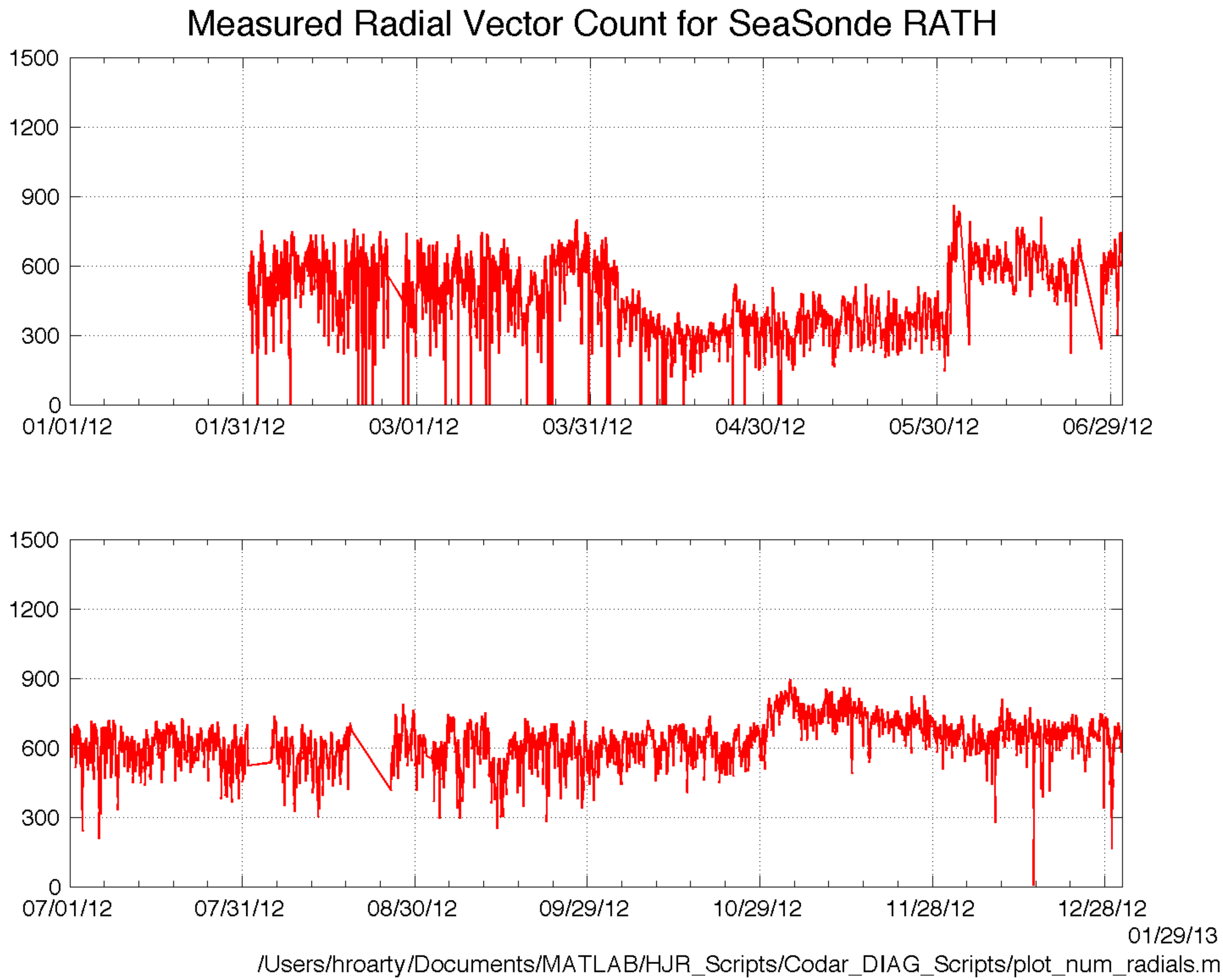


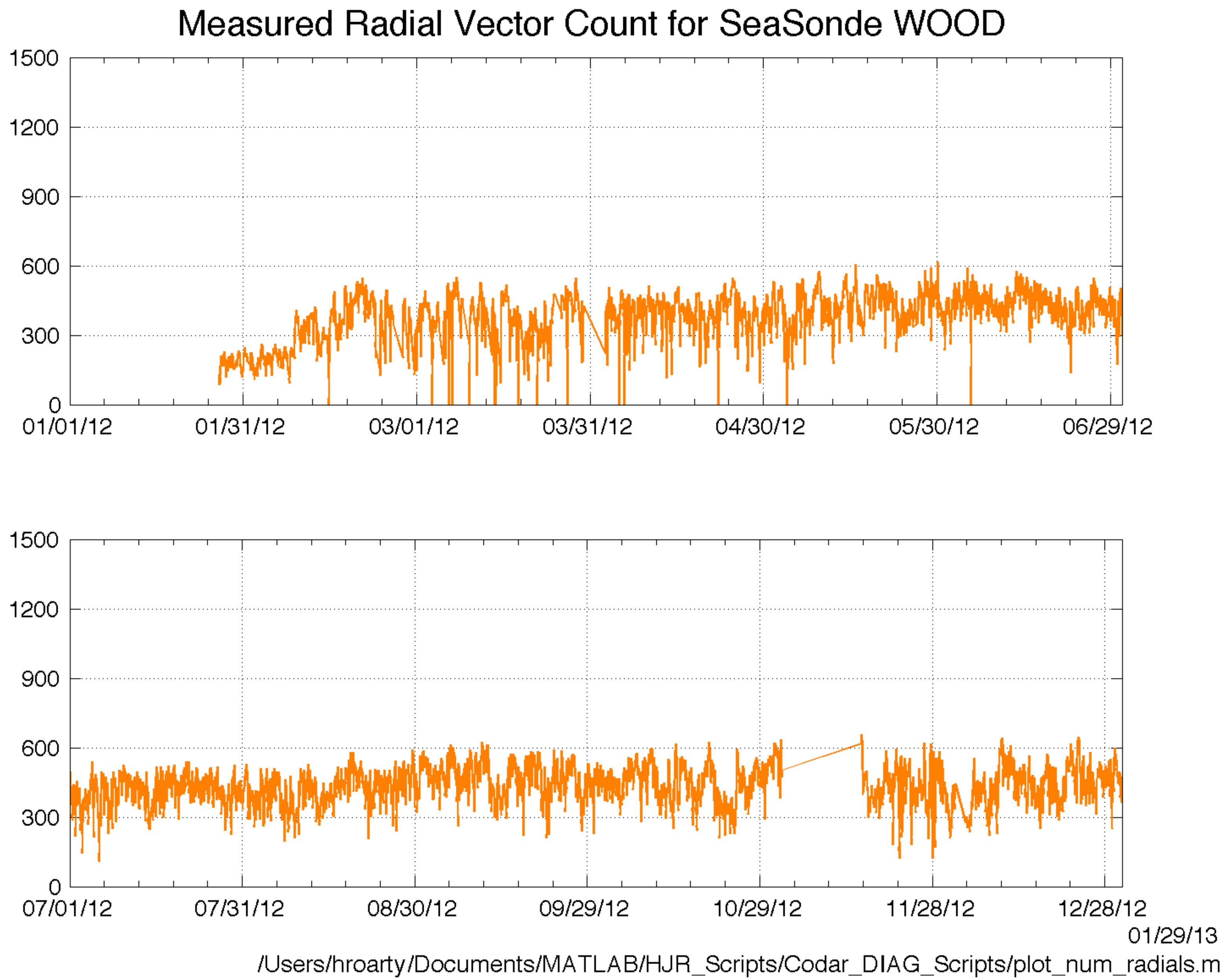
01/29/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_num_radials.m

NUMBER OF RADIALS PER FILE MEASURED RADIALS


Measured Radial Vector Count for SeaSonde BRMR
1500
1200
900
600
300
0
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/29/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_num_radials.m


Measured Radial Vector Count for SeaSonde BRNT
1500
1200
900
600
300
0
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/29/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_num_radials.m


Measured Radial Vector Count for SeaSonde RATH
1500
1200
900
600
300
0
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
1500
1200
900
600
300
0
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/29/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_num_radials.m

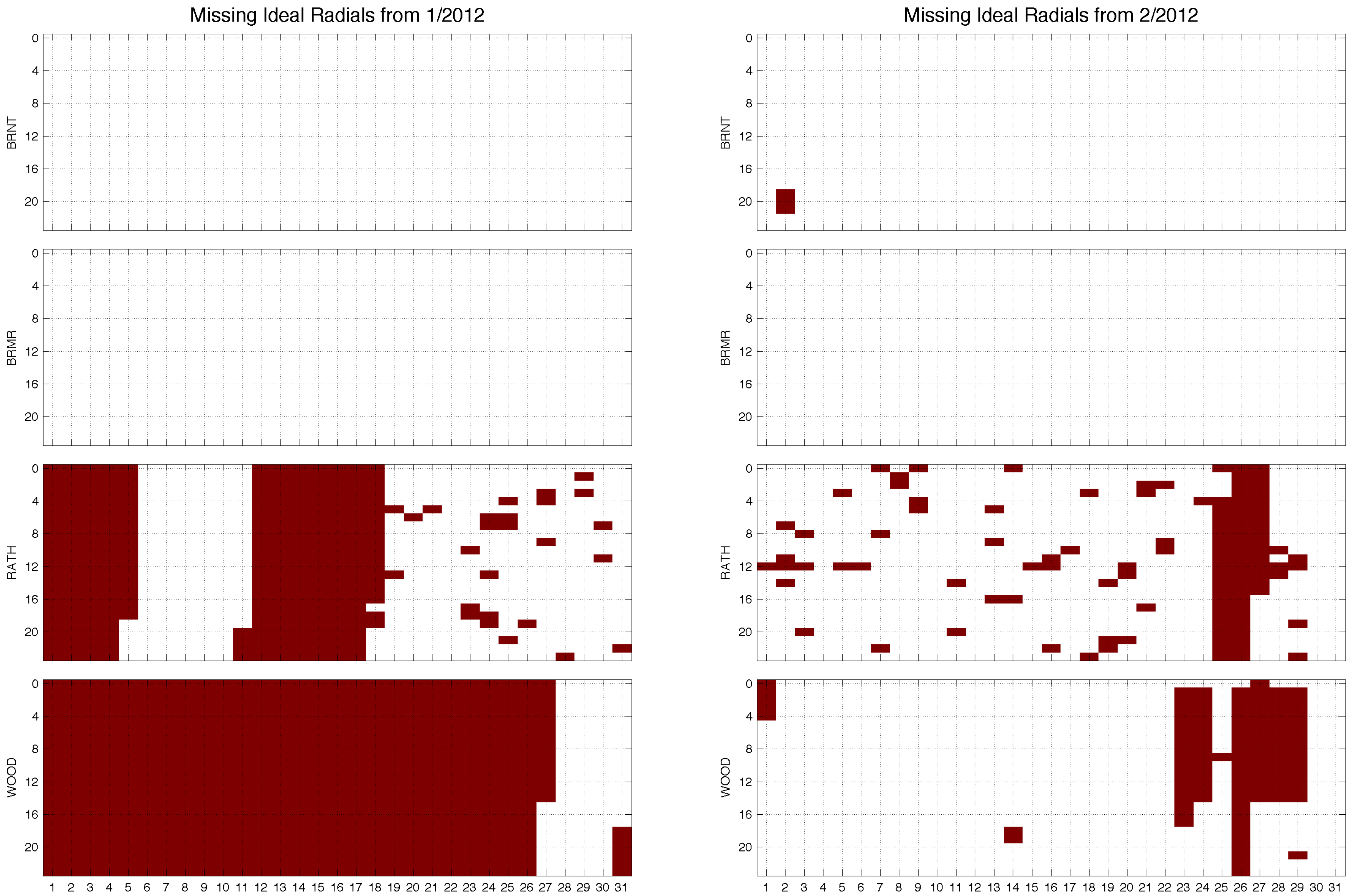

Measured Radial Vector Count for SeaSonde WOOD
1500
1200
900
600
300
0
01/01/12
01/31/12
03/01/12
03/31/12
04/30/12
05/30/12
06/29/12
1500
1200
900
600
300
0
07/01/12
07/31/12
08/30/12
09/29/12
10/29/12
11/28/12
12/28/12
01/29/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/Codar_DIAG_Scripts/plot_num_radials.m

Section 03:

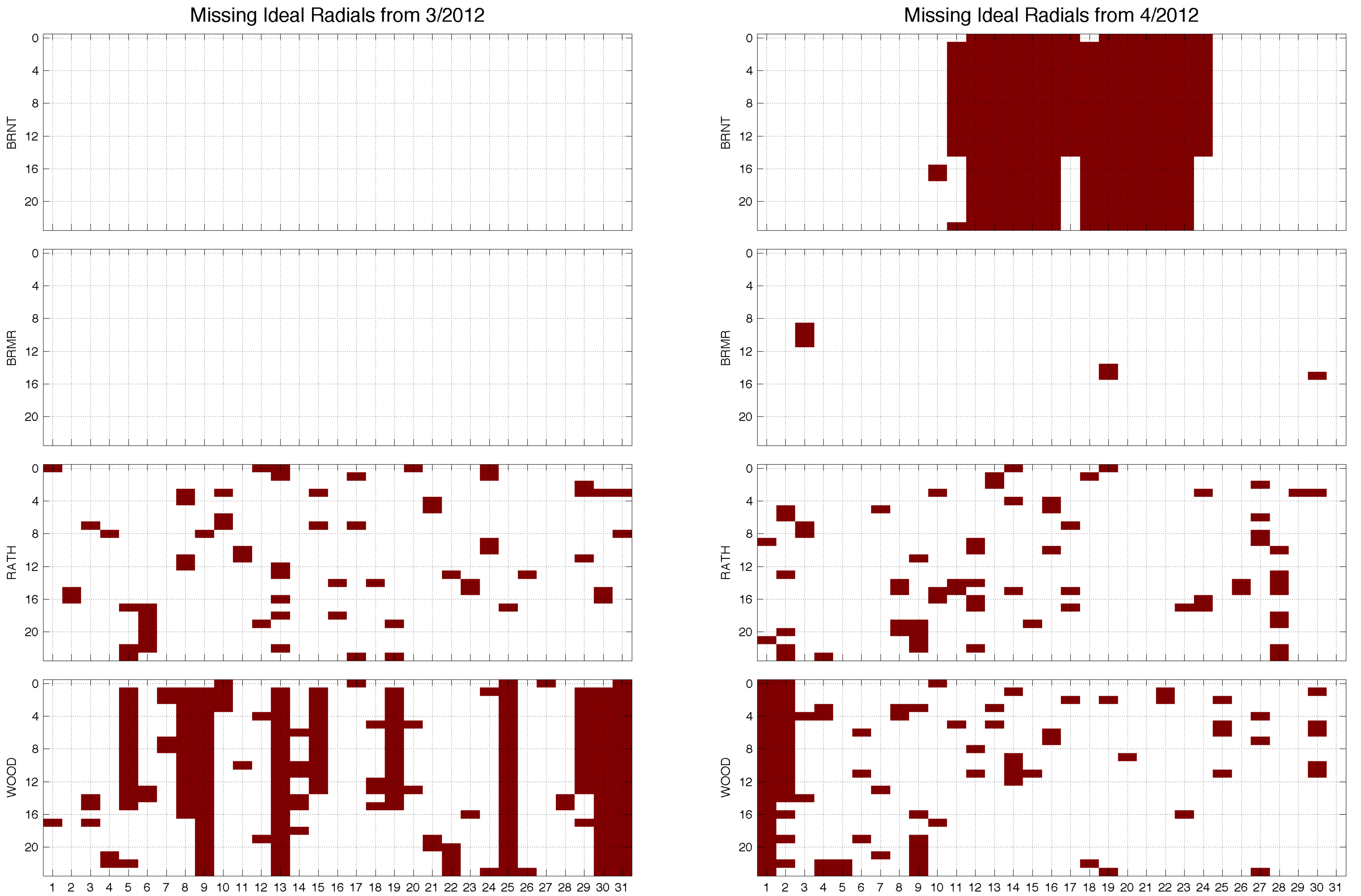
BPU
Ideal Radial Inventory

Red Indicates Missing Data

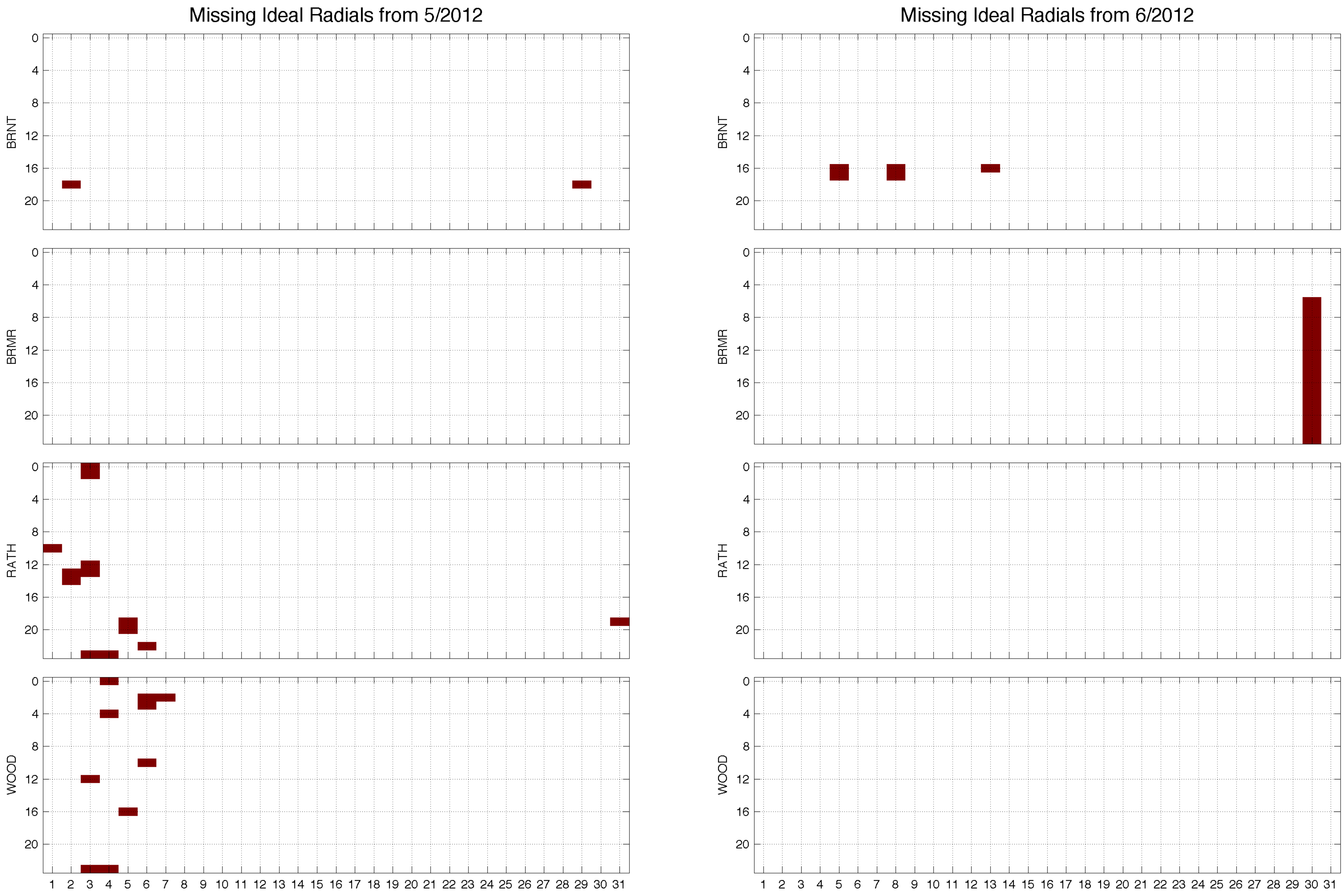
January 1, 2012 to December 31, 2012


Missing Ideal Radials from 1/2012
Missing Ideal Radials from 2/2012
BRNT
BRMR
RATH
WOOD
0
4
8
12
16
20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

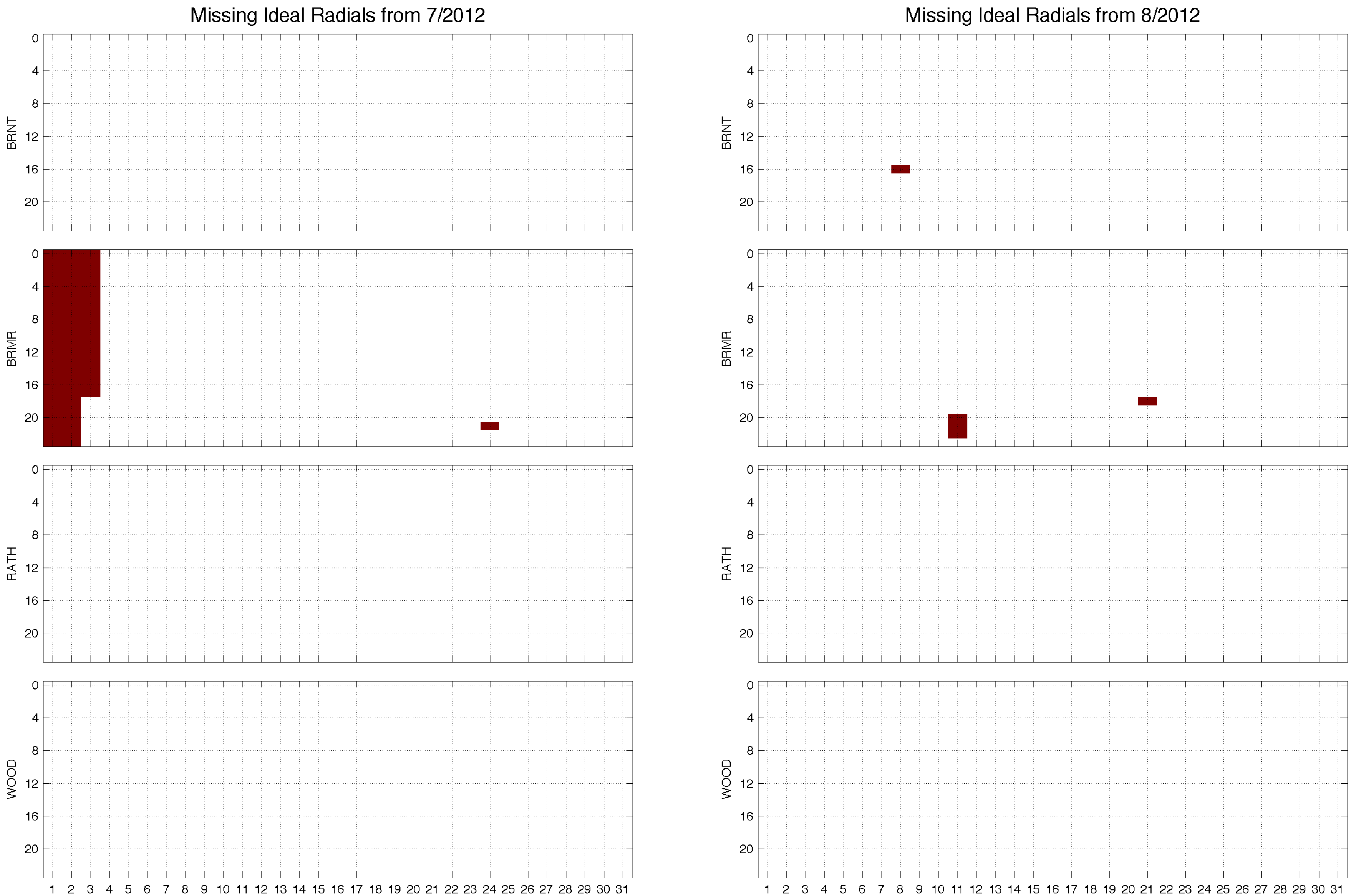
Ideal


Missing Ideal Radials from 3/2012
Missing Ideal Radials from 4/2012
BRNT
BRMR
RATH
WOOD
0
4
8
12
16
20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Ideal

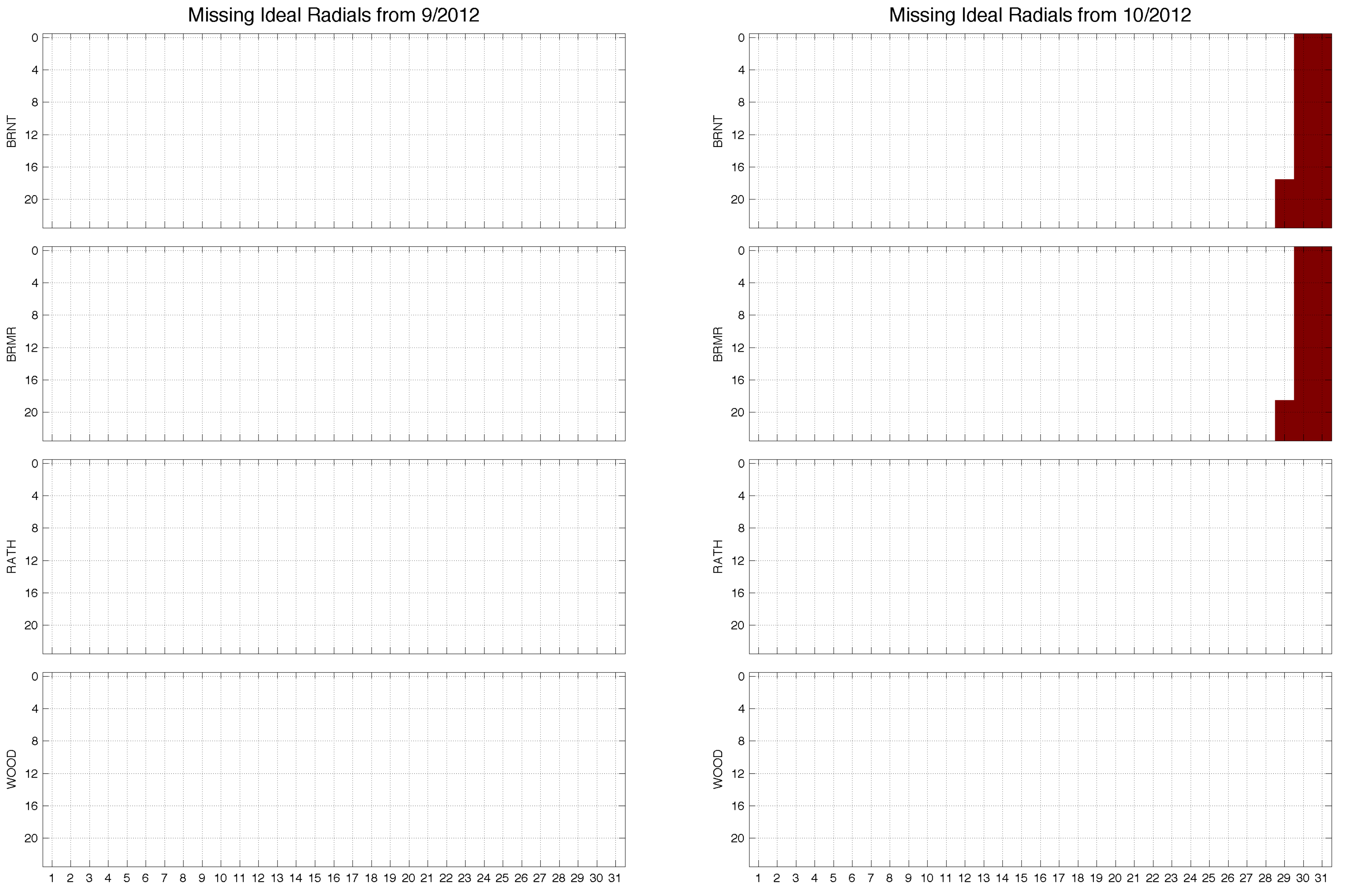

Missing Ideal Radials from 5/2012
Missing Ideal Radials from 6/2012
BRNT
BRMR
RATH
WOOD
0
4
8
12
16
20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Ideal

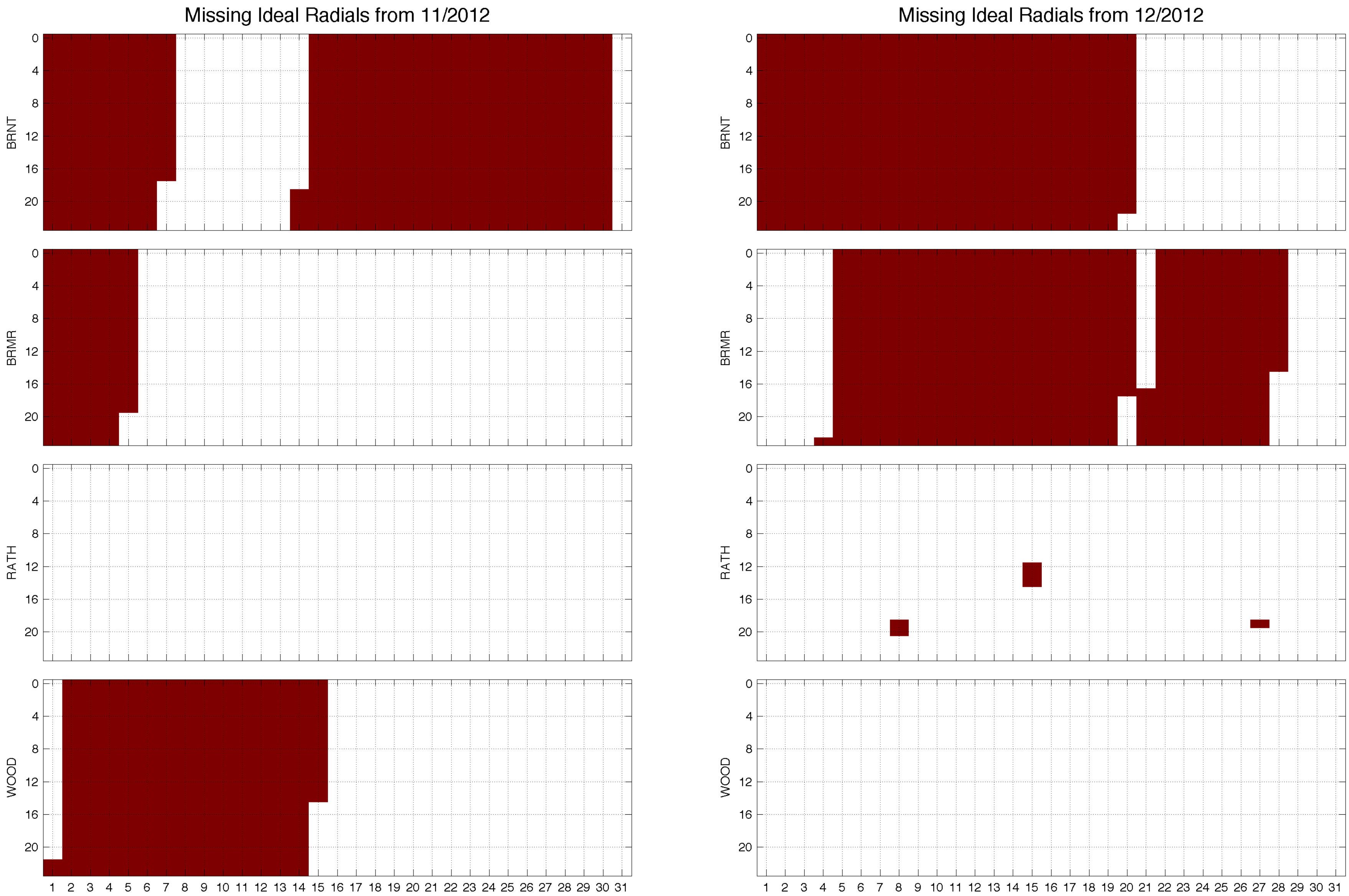


Missing Ideal Radials from 7/2012
Missing Ideal Radials from 8/2012
BRNT
BRMR
RATH
WOOD
0
4
8
12
16
20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Ideal


Missing Ideal Radials from 9/2012
Missing Ideal Radials from 10/2012
BRNT
BRMR
RATH
WOOD
0
4
8
12
16
20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Ideal



Missing Ideal Radials from 11/2012
Missing Ideal Radials from 12/2012
BRNT
BRMR
RATH
WOOD
0 4 8 12 16 20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

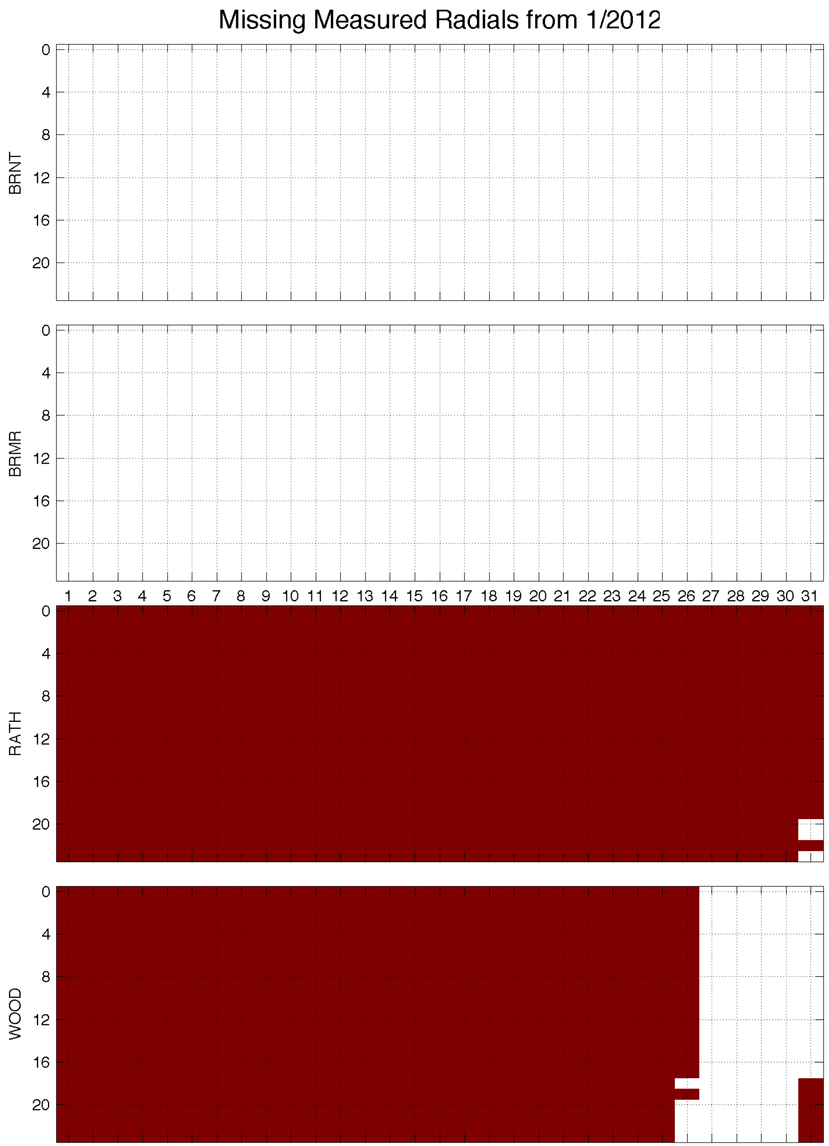
Ideal

Section 04:

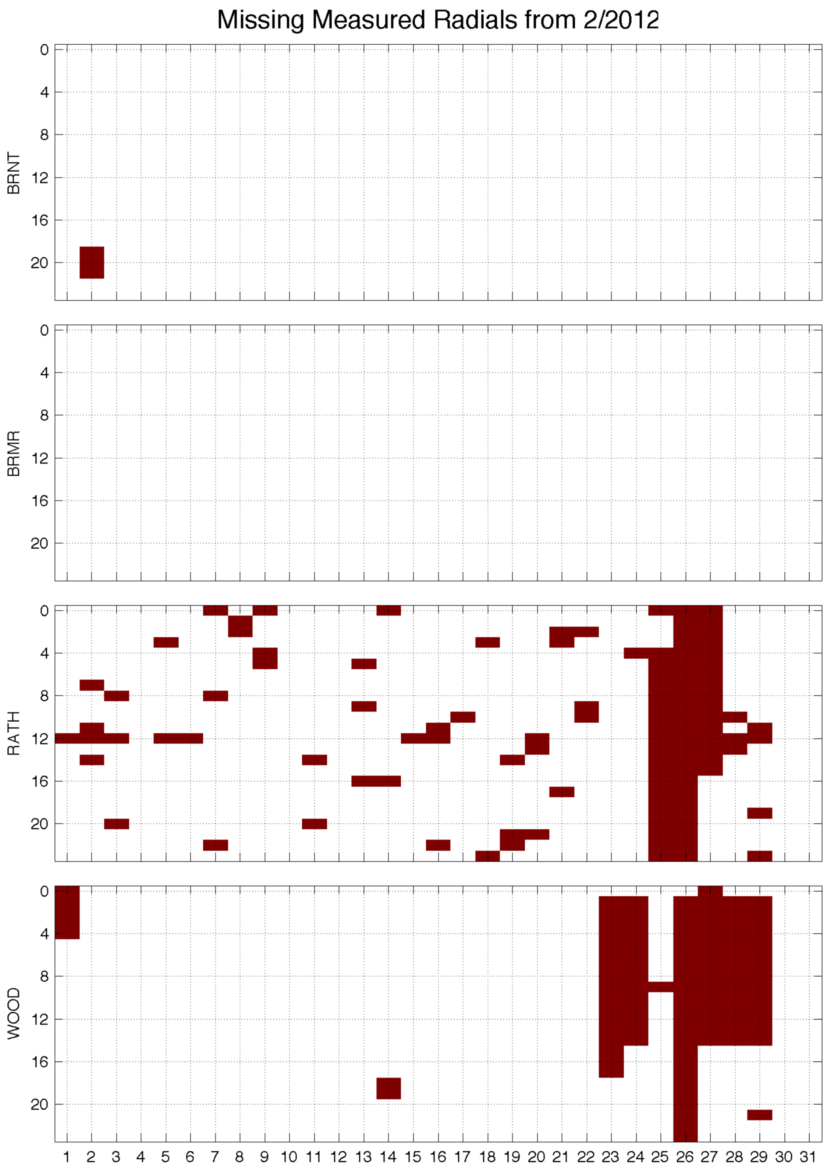
BPU
Measured Radial Inventory

Red Indicates Missing Data

January 1, 2012 to December 31, 2012

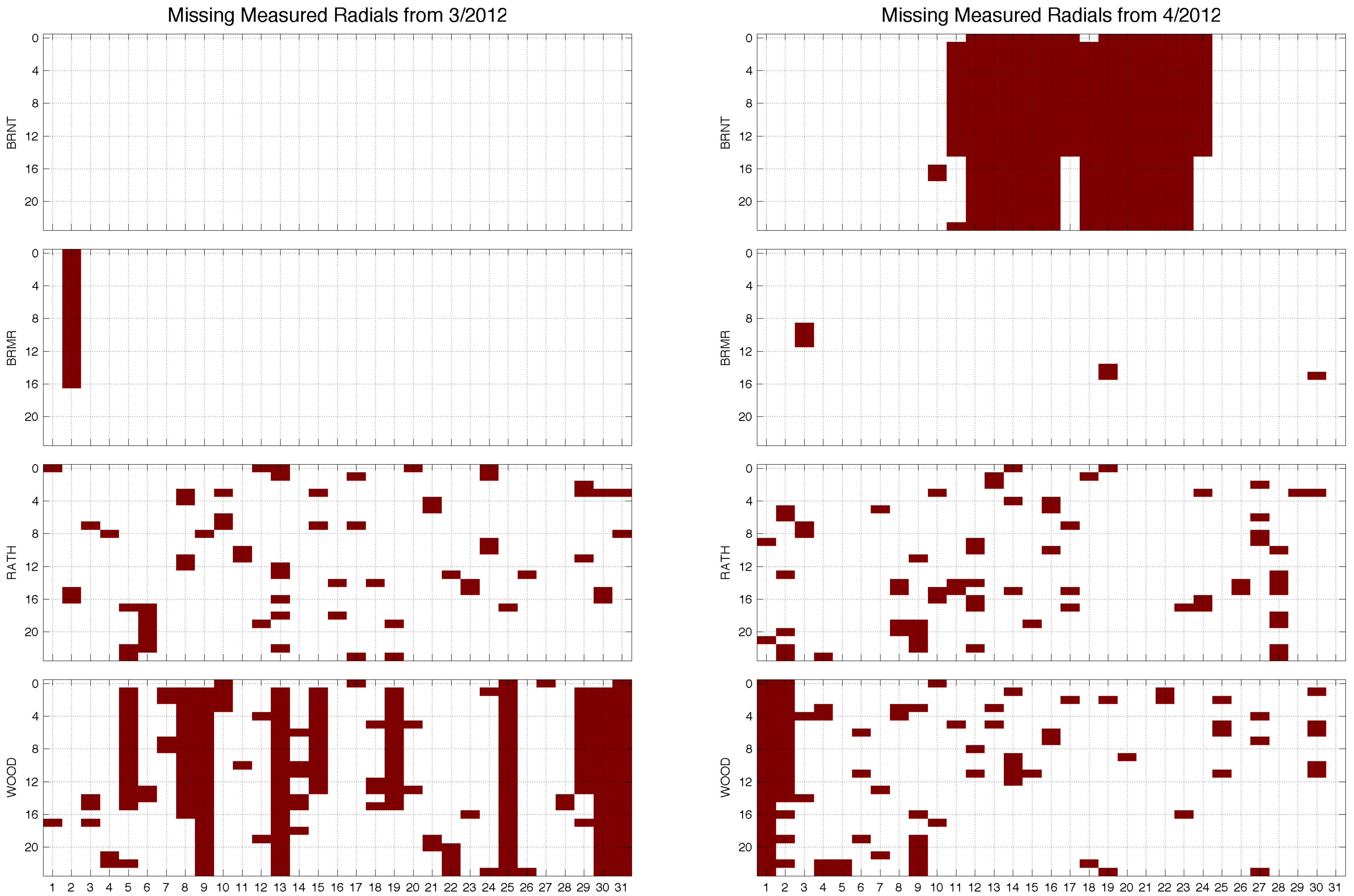


Missing Measured Radials from 1/2012
BRNT
BRMR
RATH
WOOD
0
4
8
12
16
20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31



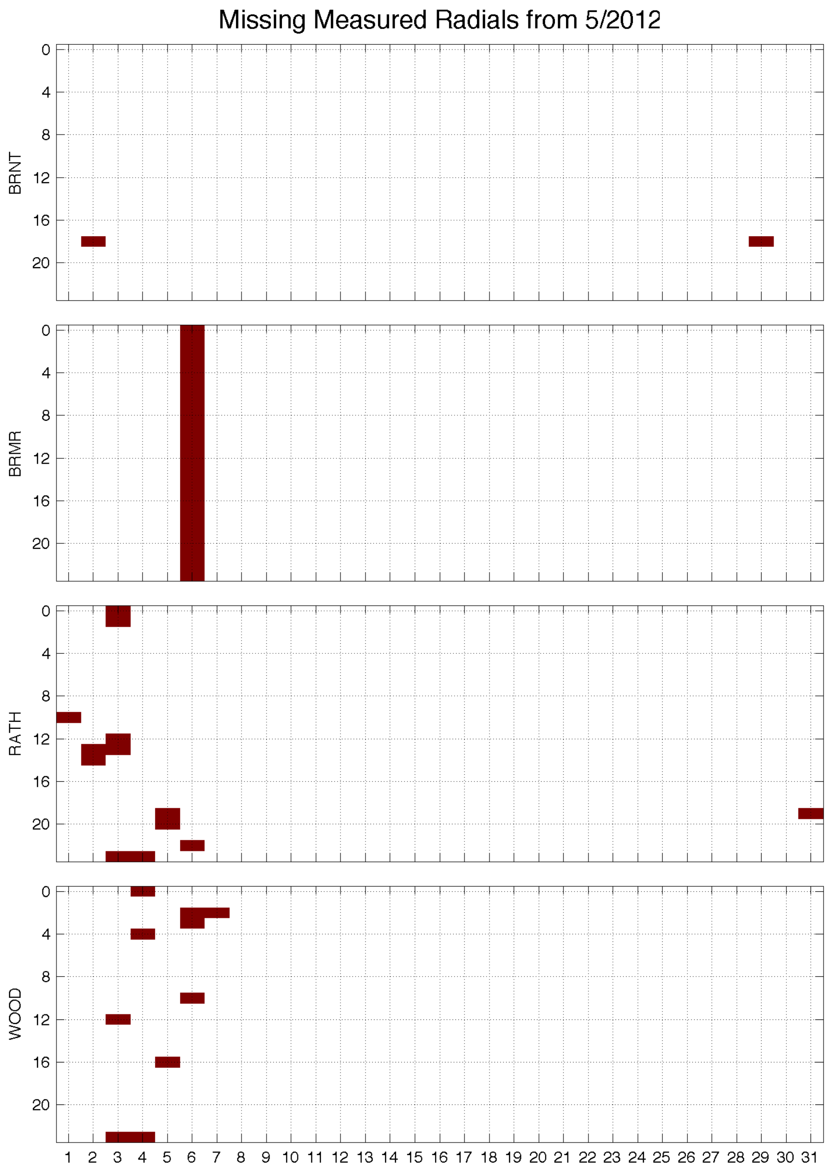
Missing Measured Radials from 2/2012
BRNT
BRMR
RATH
WOOD
0
4
8
12
16
20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

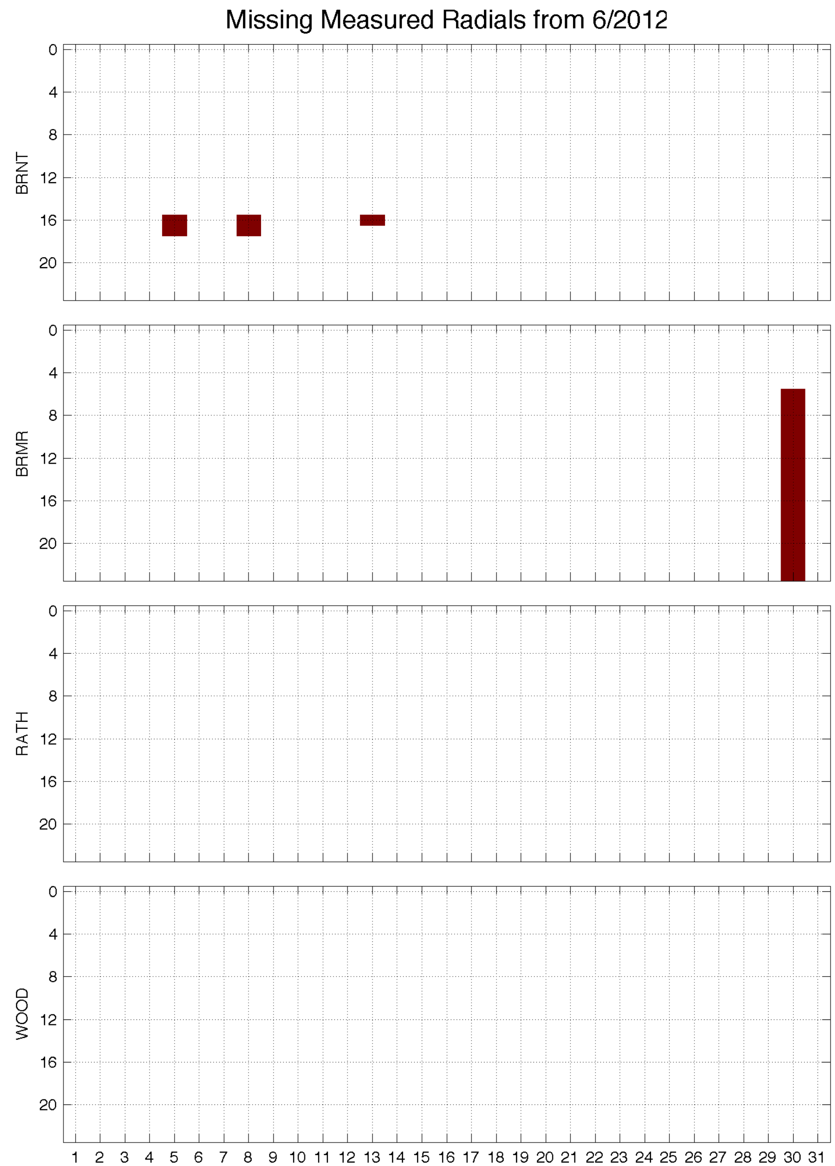
Measured



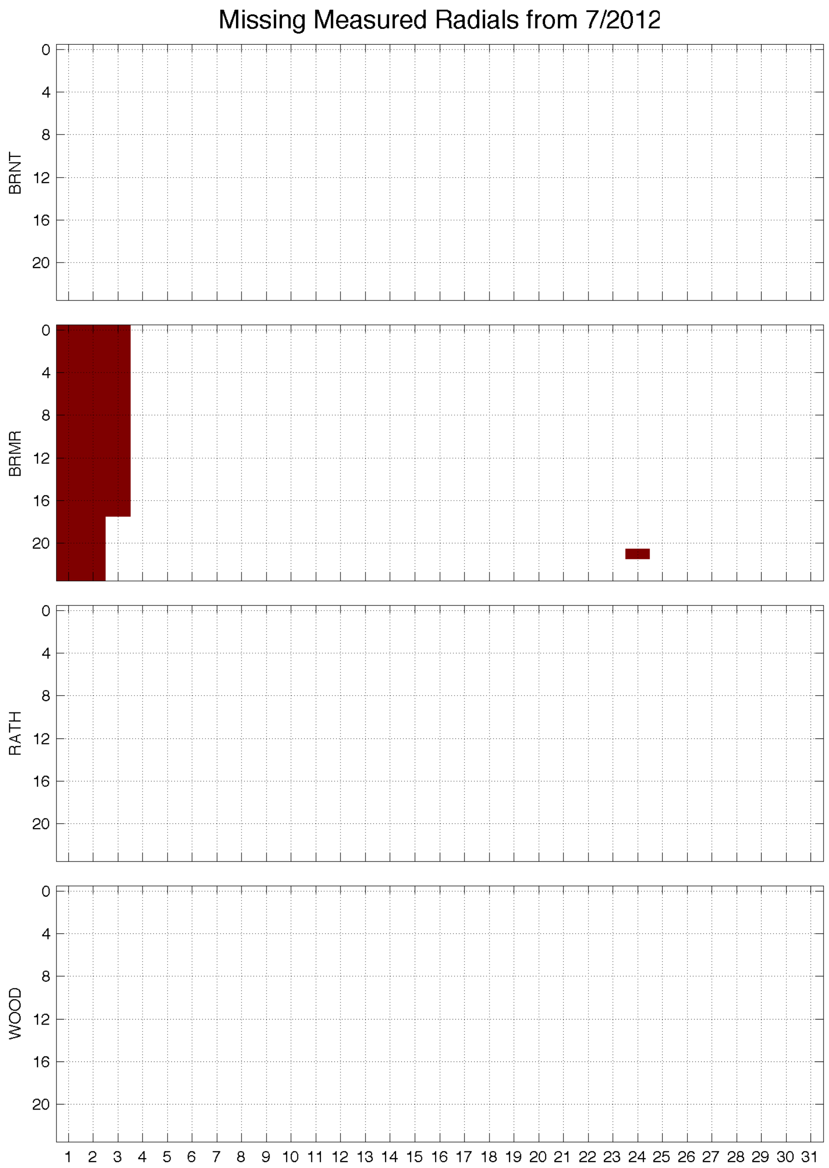
Missing Measured Radials from 3/2012
Missing Measured Radials from 4/2012
BRNT
BRMR
RATH
WOOD
0
4
8
12
16
20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Measured

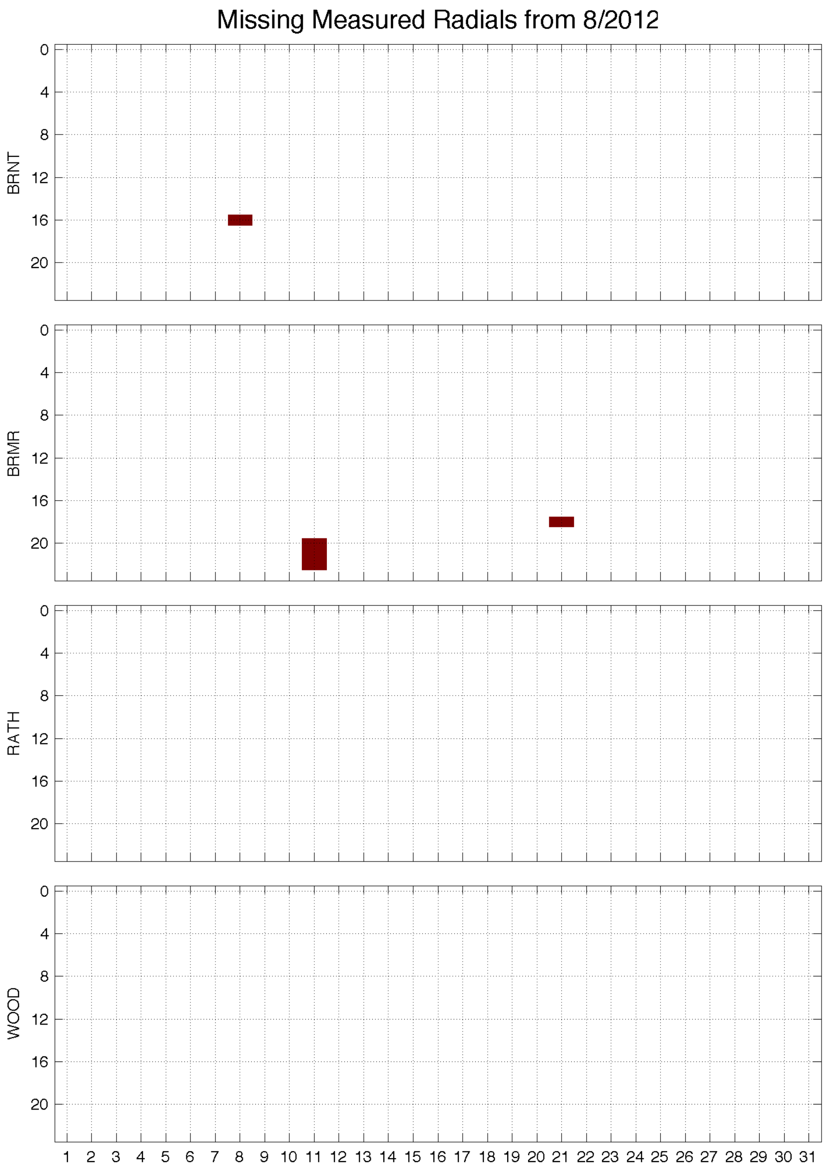

Missing Measured Radials from 5/2012
BRNT
BRMR
RATH
WOOD
0
4
8
12
16
20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31


Missing Measured Radials from 6/2012
BRNT
BRMR
RATH
WOOD
0
4
8
12
16
20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Measured

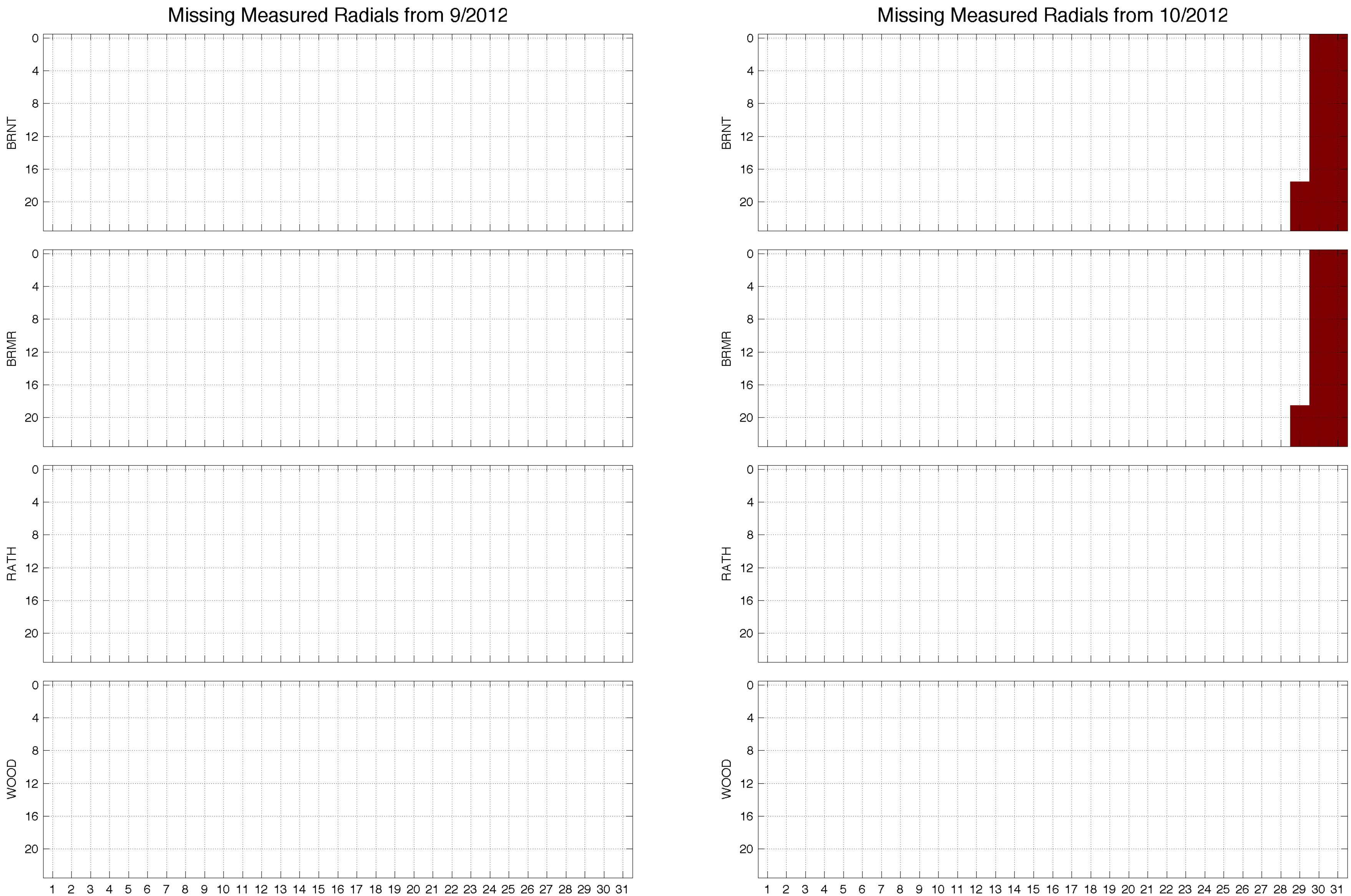


Missing Measured Radials from 7/2012
BRNT
BRMR
RATH
WOOD
0
4
8
12
16
20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

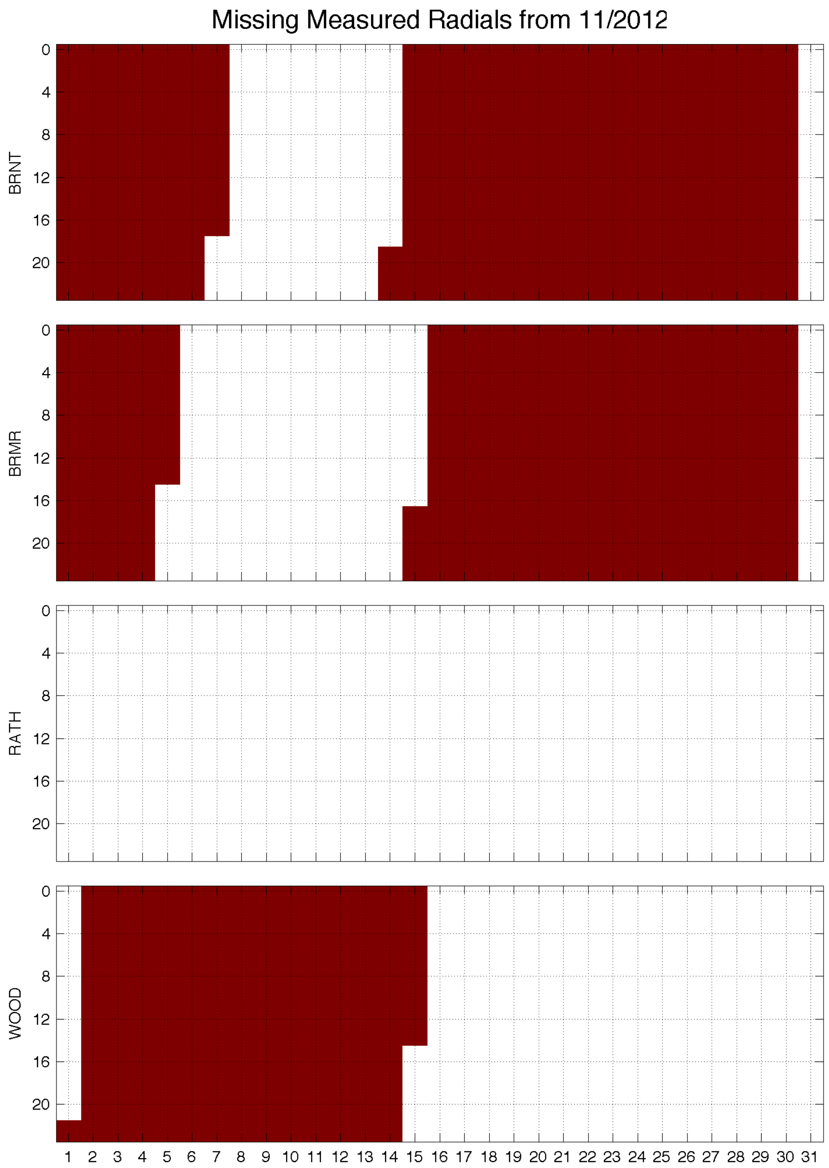


Missing Measured Radials from 8/2012
BRNT
BRMR
RATH
WOOD
0
4
8
12
16
20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

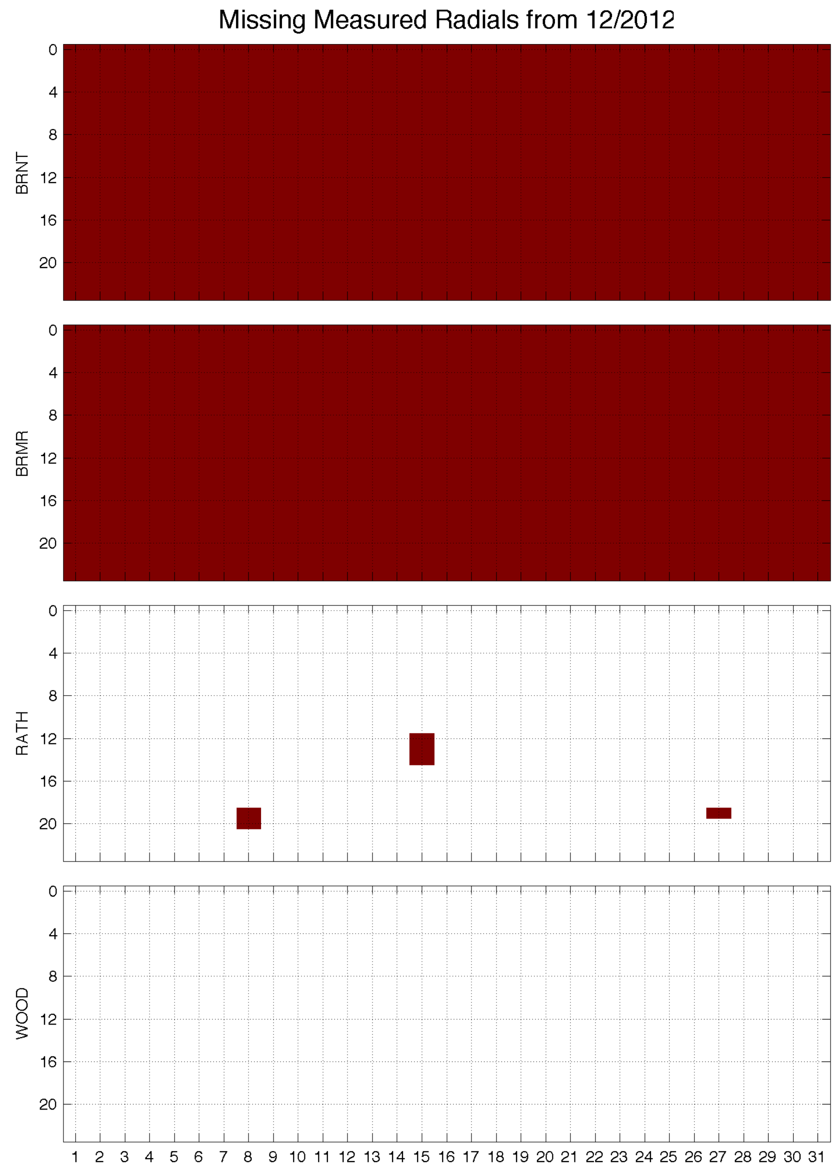
Measured


Missing Measured Radials from 9/2012
Missing Measured Radials from 10/2012
BRNT
BRMR
RATH
WOOD
0
4
8
12
16
20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Measured



Missing Measured Radials from 11/2012
BRNT
BRMR
RATH
WOOD
0 4 8 12 16 20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31



Missing Measured Radials from 12/2012
BRNT
BRMR
RATH
WOOD
0 4 8 12 16 20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

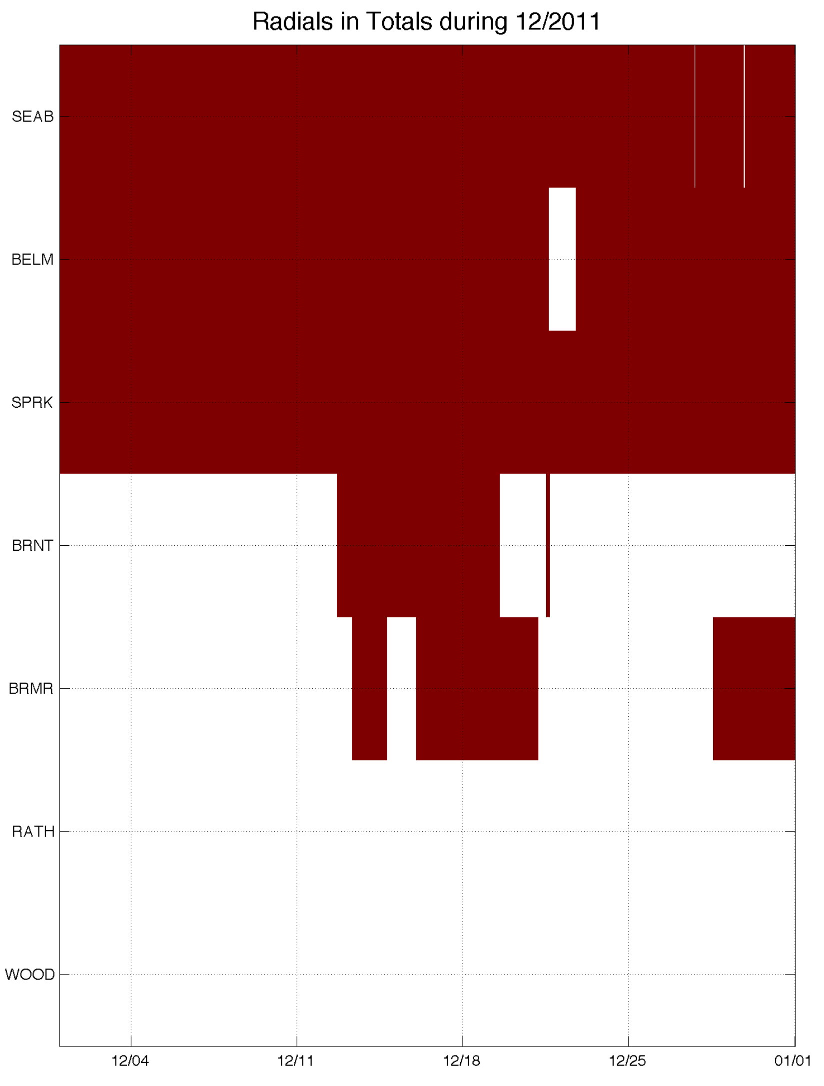
Measured

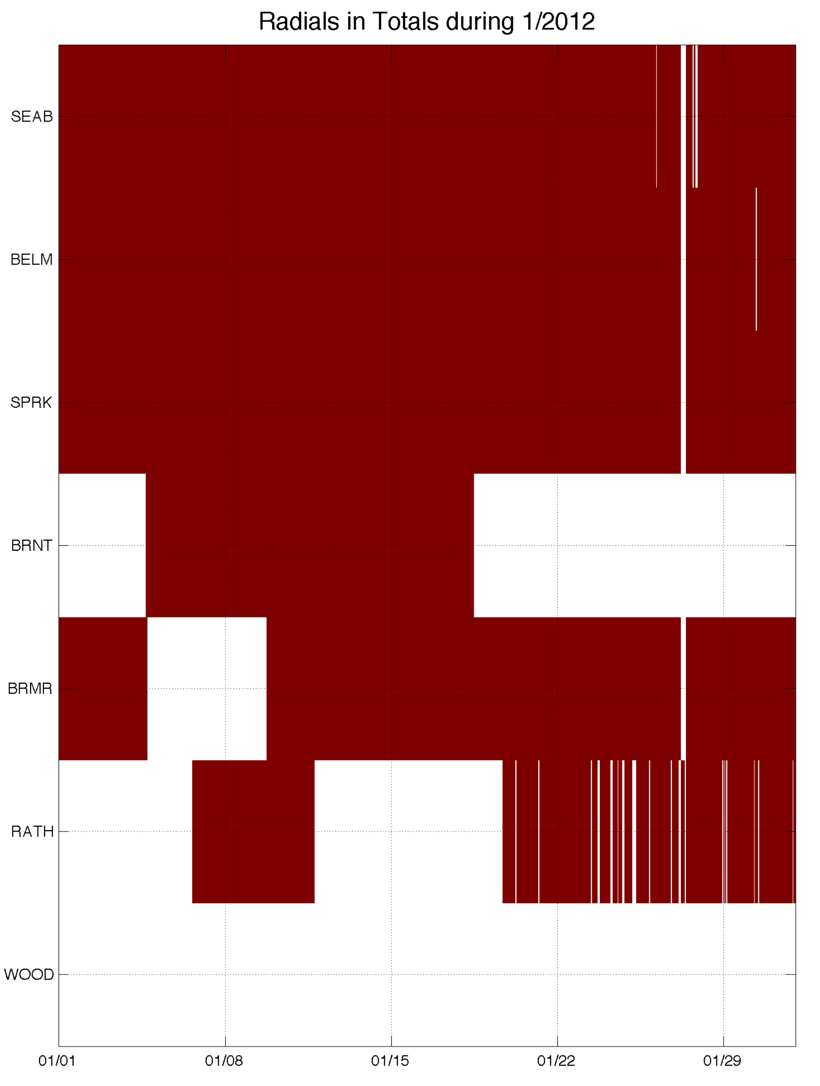
Section 05:

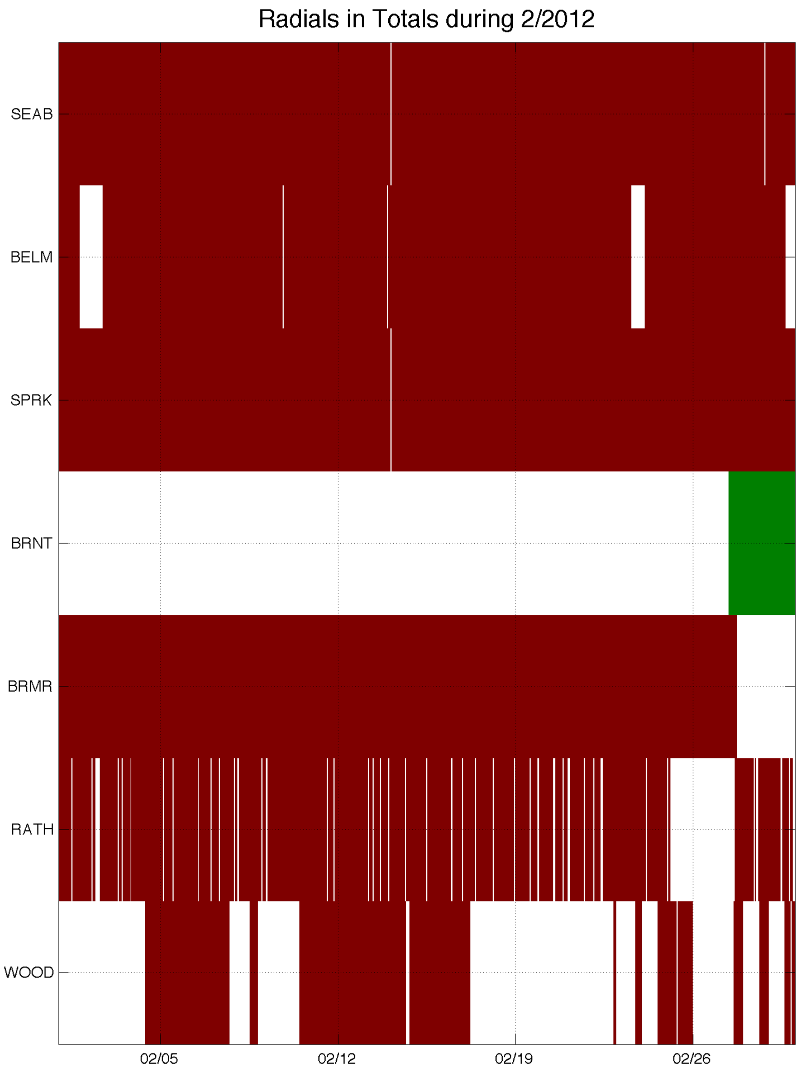
BPU Radial Contribution to Totals

White – No radial data from that site contributed to the totals
Red – Ideal radials were used in totals
Green - Measured radials were used in totals

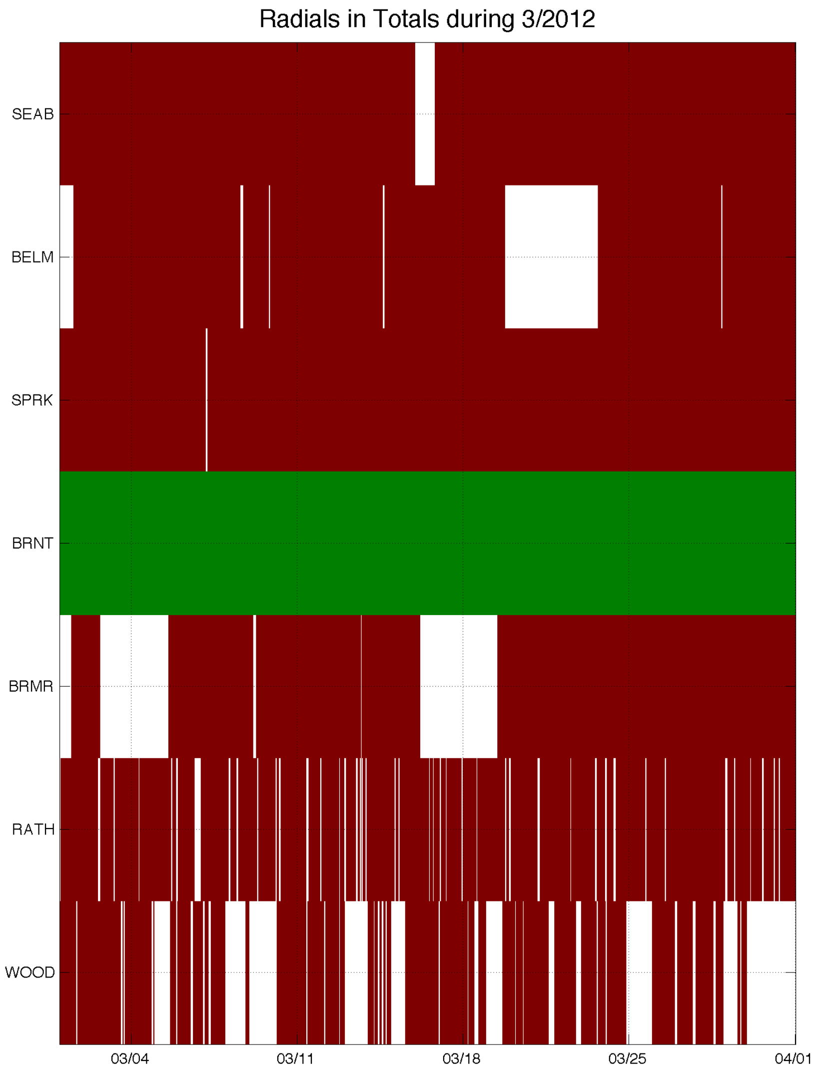
December 1, 2011 to December 31, 2012


Radials in Totals during 12/2011
SEAB
BELM
SPRK
BRNT
BRMR
RATH
WOOD
12/04
12/11
12/18
12/25
01/01

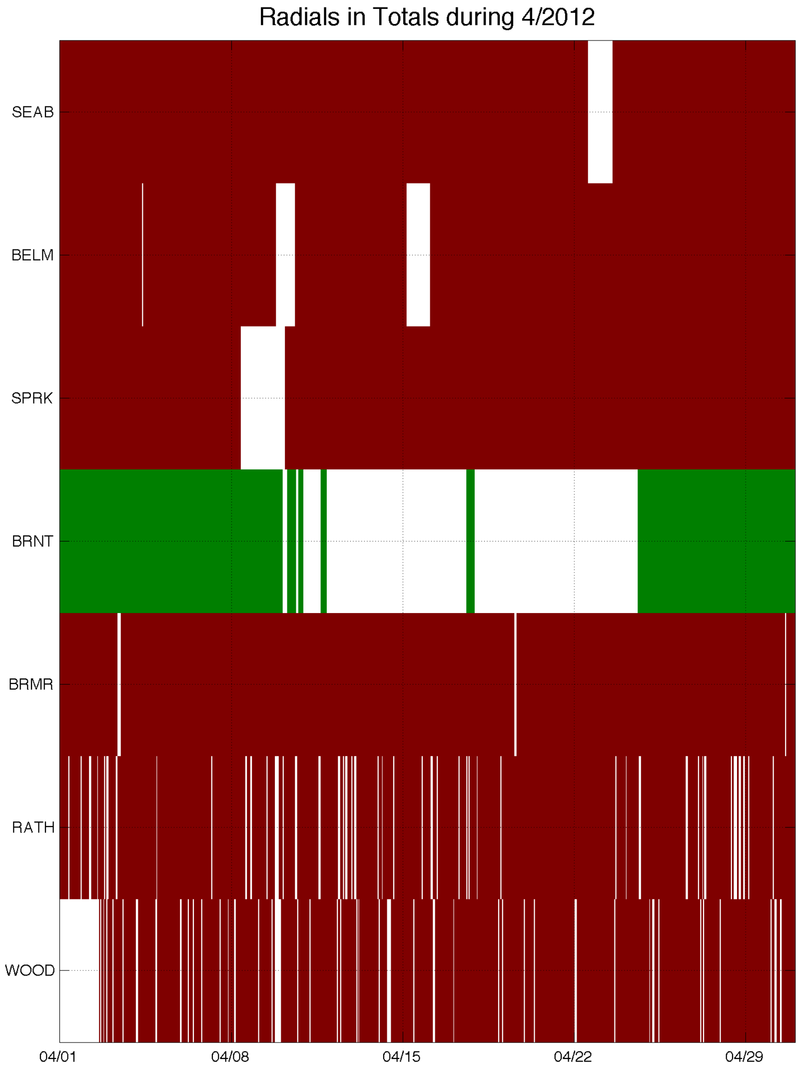

Radials in Totals during 1/2012
SEAB
BELM
SPRK
BRNT
BRMR
RATH
WOOD
01/01
01/08
01/15
01/22
01/29

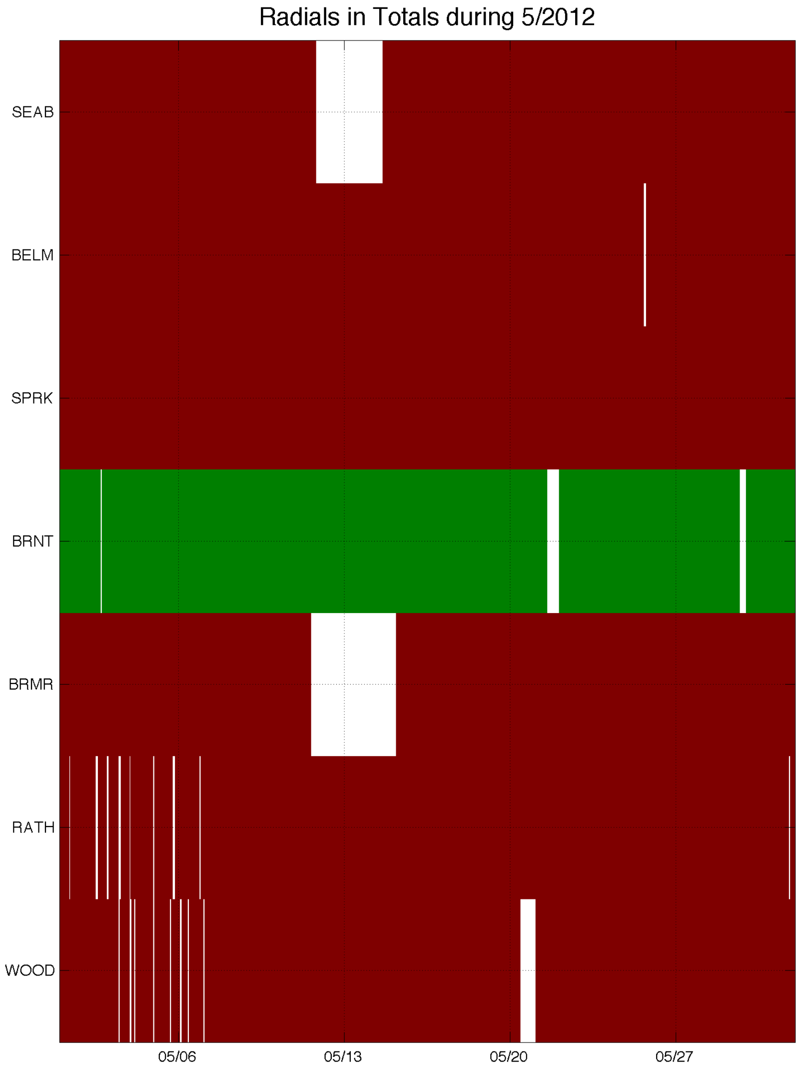


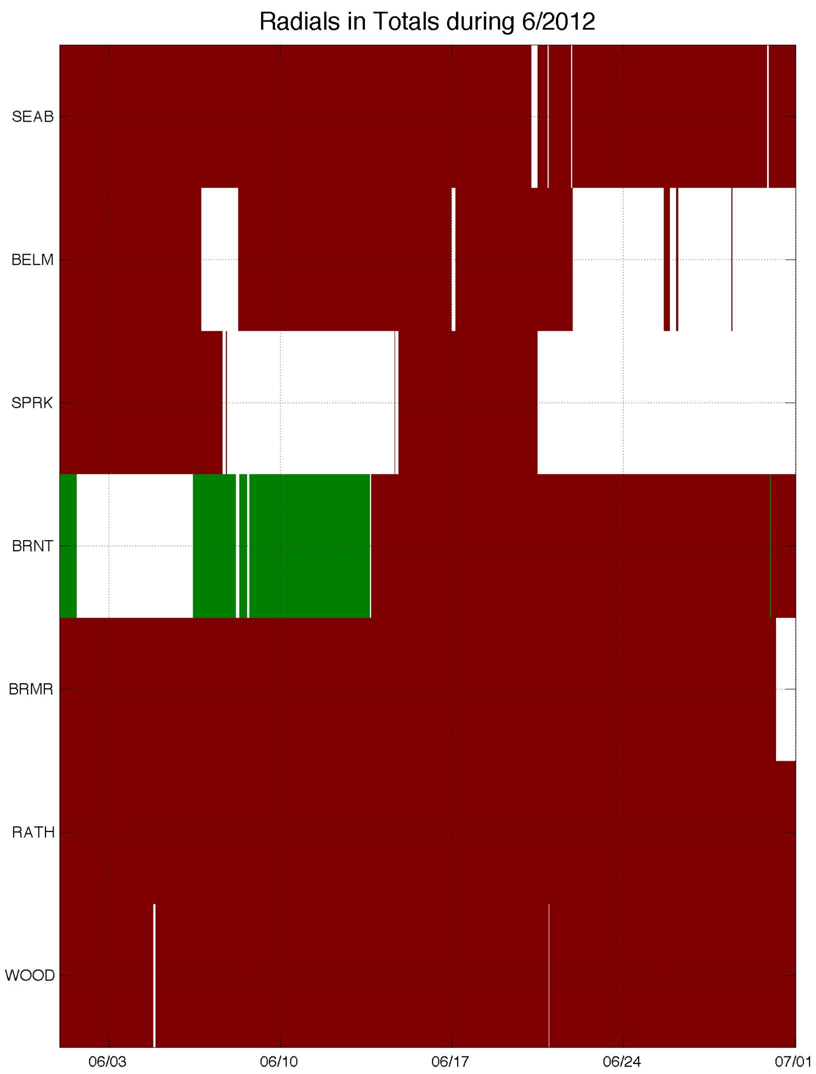
Radials in Totals during 2/2012
SEAB
BELM
SPRK
BRNT
BRMR
RATH
WOOD
02/05
02/12
02/19
02/26

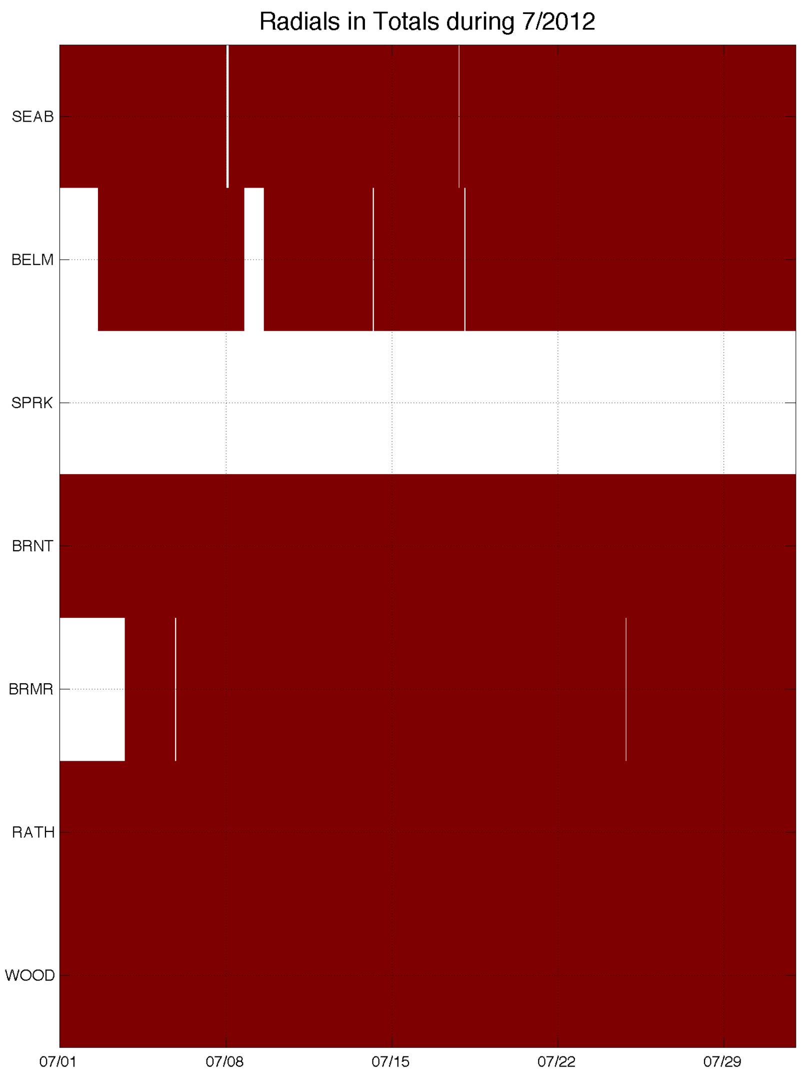


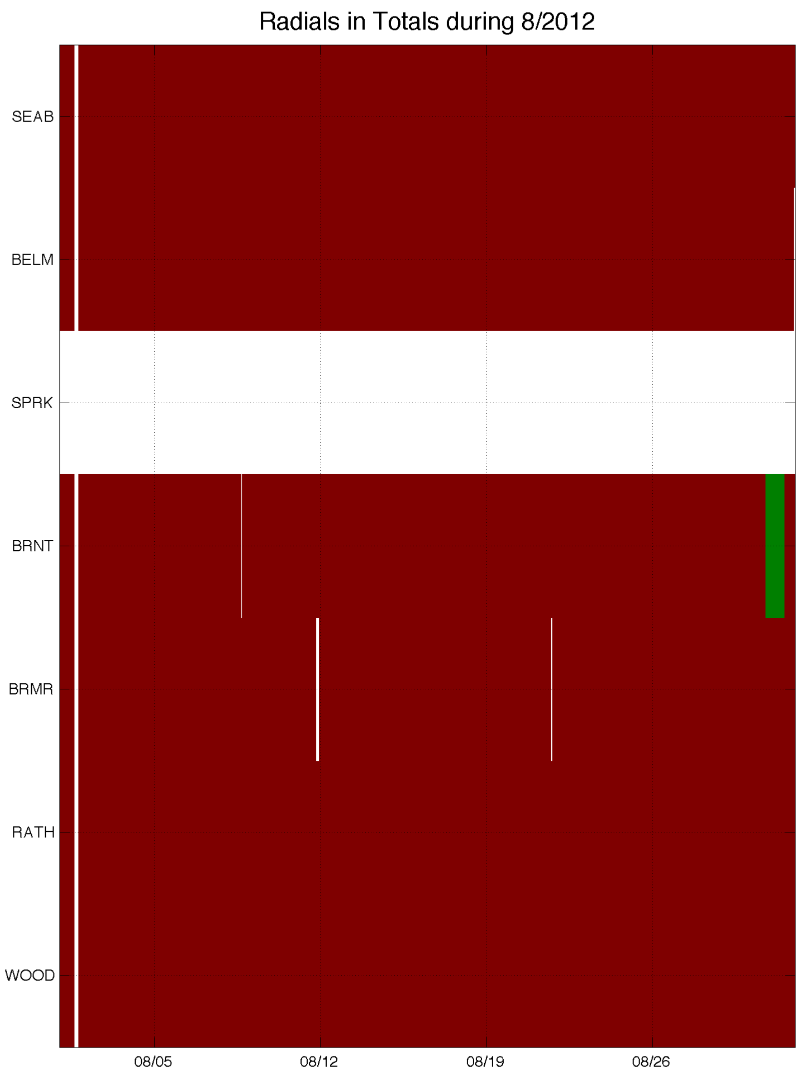
Radials in Totals during 3/2012
SEAB
BELM
SPRK
BRNT
BRMR
RATH
WOOD
03/04
03/11
03/18
03/25
04/01

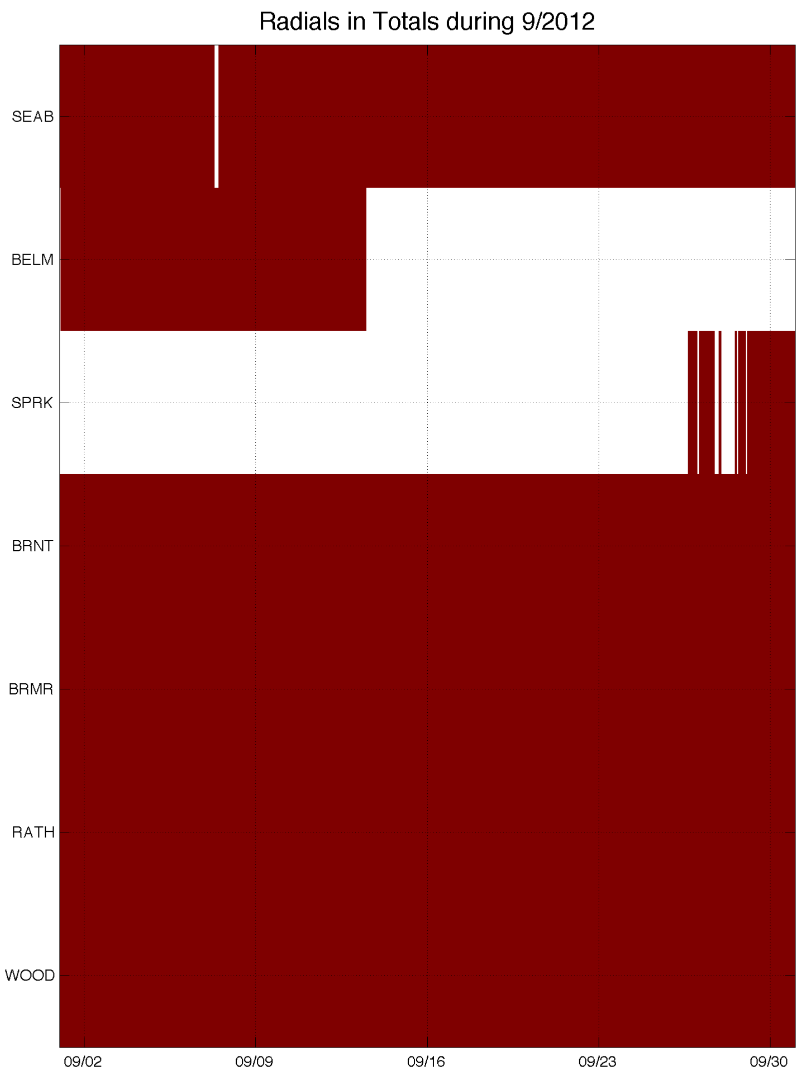

Radials in Totals during 4/2012
SEAB
BELM
SPRK
BRNT
BRMR
RATH
WOOD
04/01
04/08
04/15
04/22
04/29

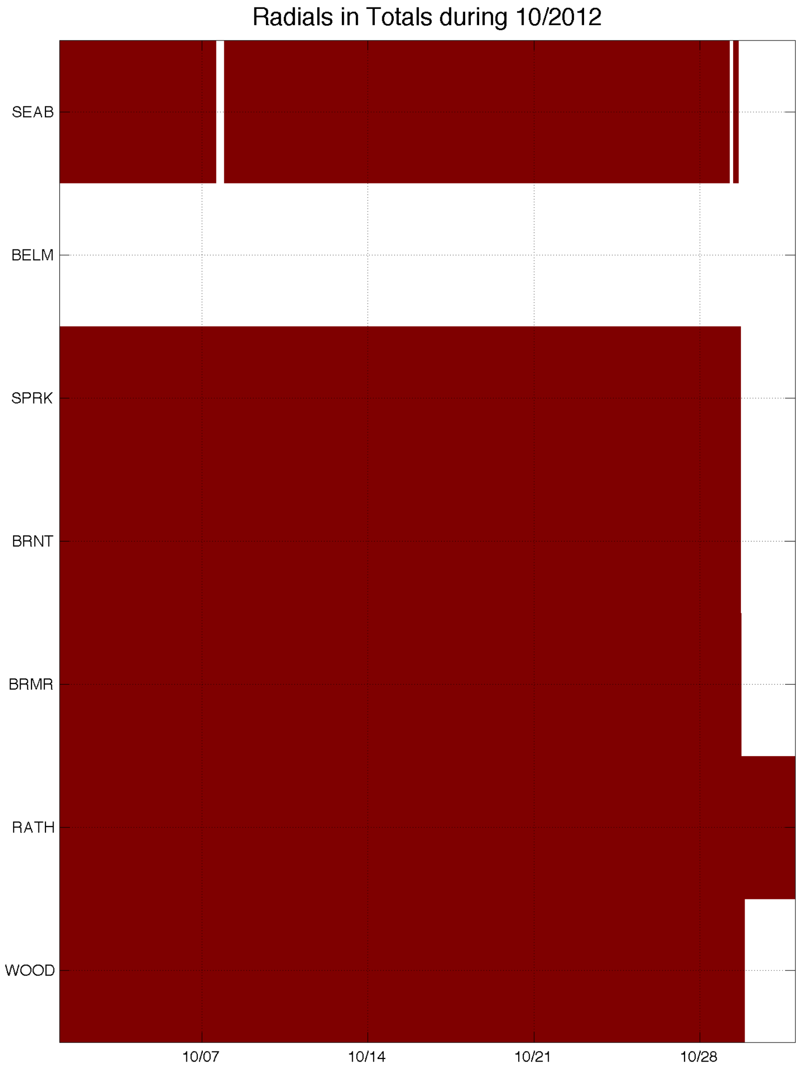

Radials in Totals during 5/2012
SEAB
BELM
SPRK
BRNT
BRMR
RATH
WOOD
05/06
05/13
05/20
05/27

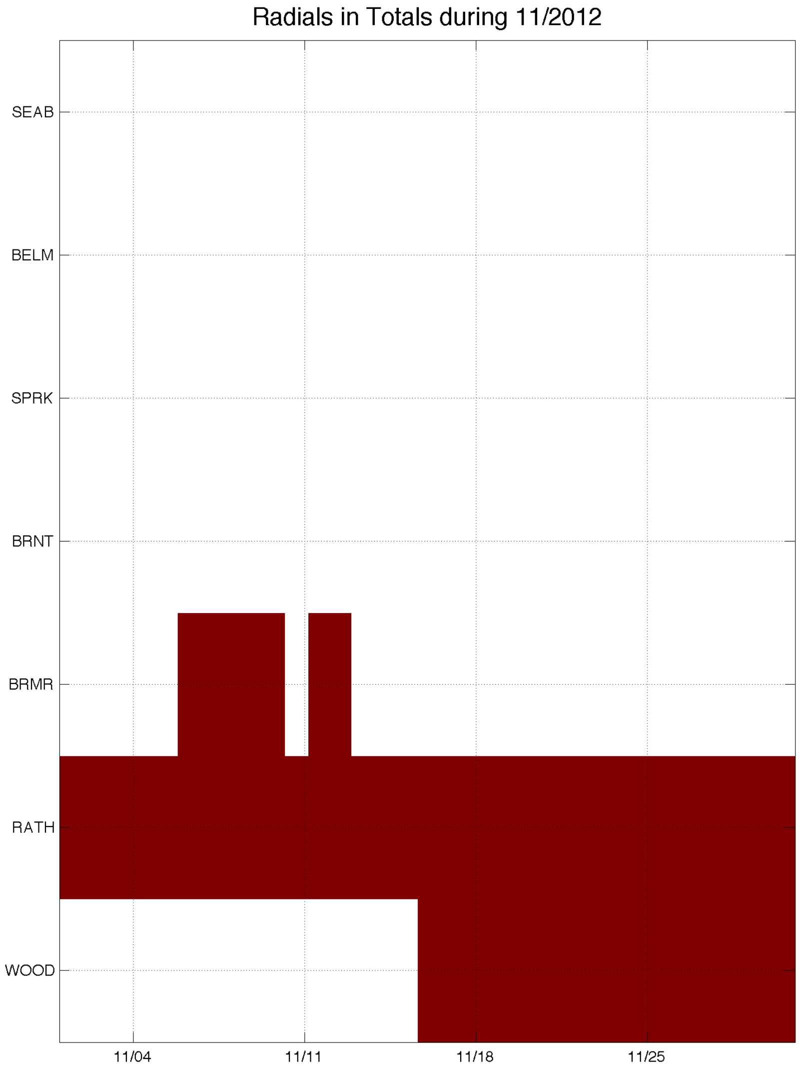

Radials in Totals during 6/2012
SEAB
BELM
SPRK
BRNT
BRMR
RATH
WOOD
06/03
06/10
06/17
06/24
07/01

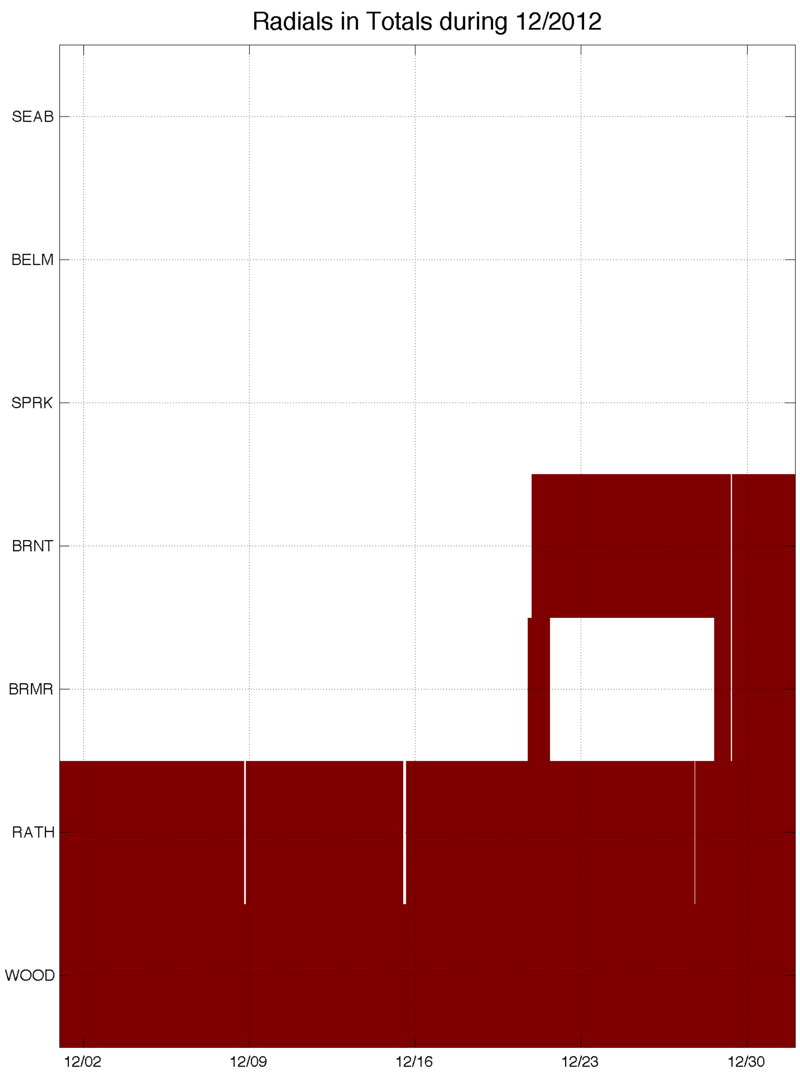

Radials in Totals during 7/2012
SEAB
BELM
SPRK
BRNT
BRMR
RATH
WOOD
07/01
07/08
07/15
07/22
07/29


Radials in Totals during 8/2012
SEAB
BELM
SPRK
BRNT
BRMR
RATH
WOOD
08/05
08/12
08/19
08/26


Radials in Totals during 9/2012
SEAB
BELM
SPRK
BRNT
BRMR
RATH
WOOD
09/02
09/09
09/16
09/23
09/30


Radials in Totals during 10/2012
SEAB
BELM
SPRK
BRNT
BRMR
RATH
WOOD
10/07
10/14
10/21
10/28


Radials in Totals during 11/2012
SEAB
BELM
SPRK
BRNT
BRMR
RATH
WOOD
11/04
11/11
11/18
11/25

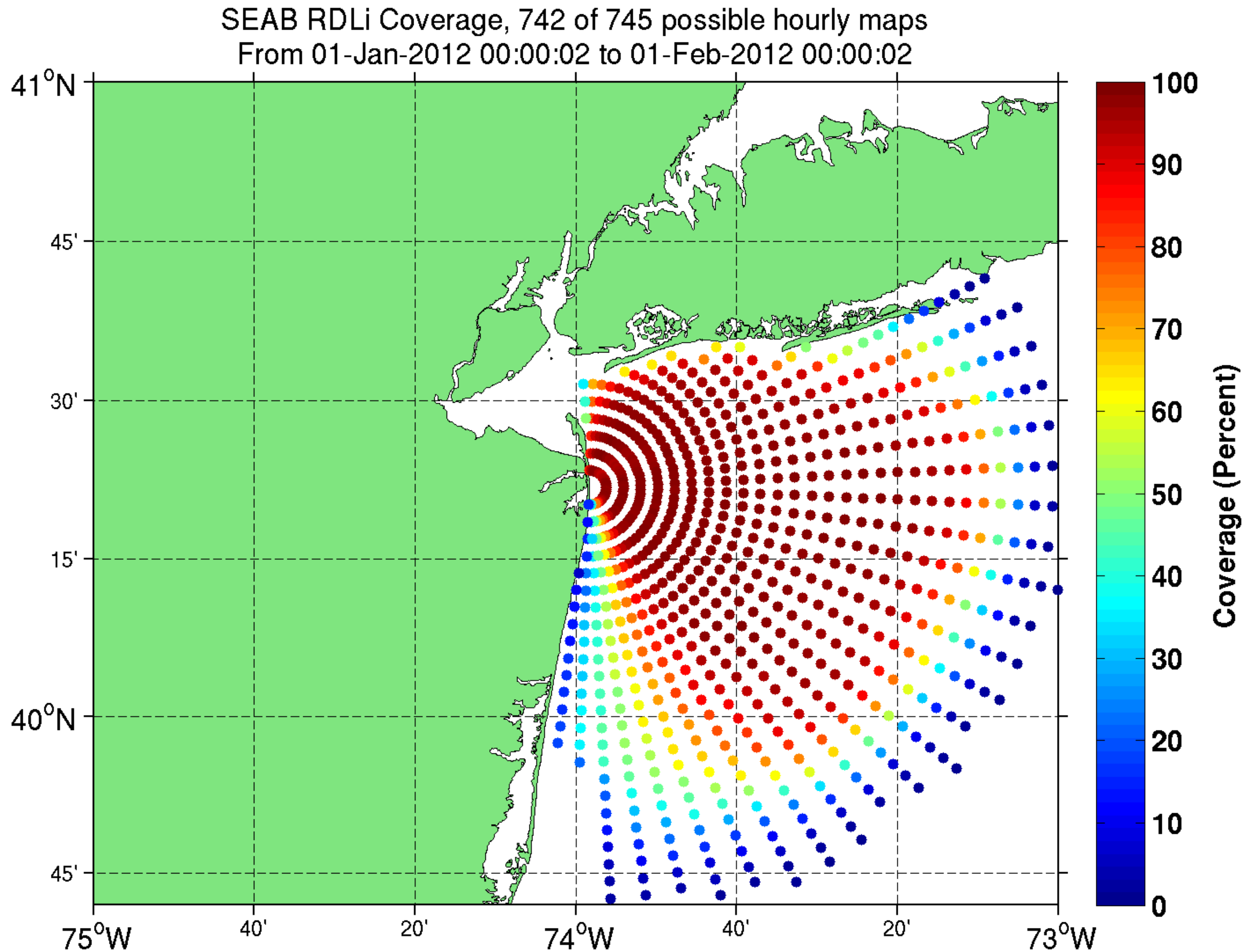

Radials in Totals during 12/2012
SEAB
BELM
SPRK
BRNT
BRMR
RATH
WOOD
12/02
12/09
12/16
12/23
12/30

Section 06:

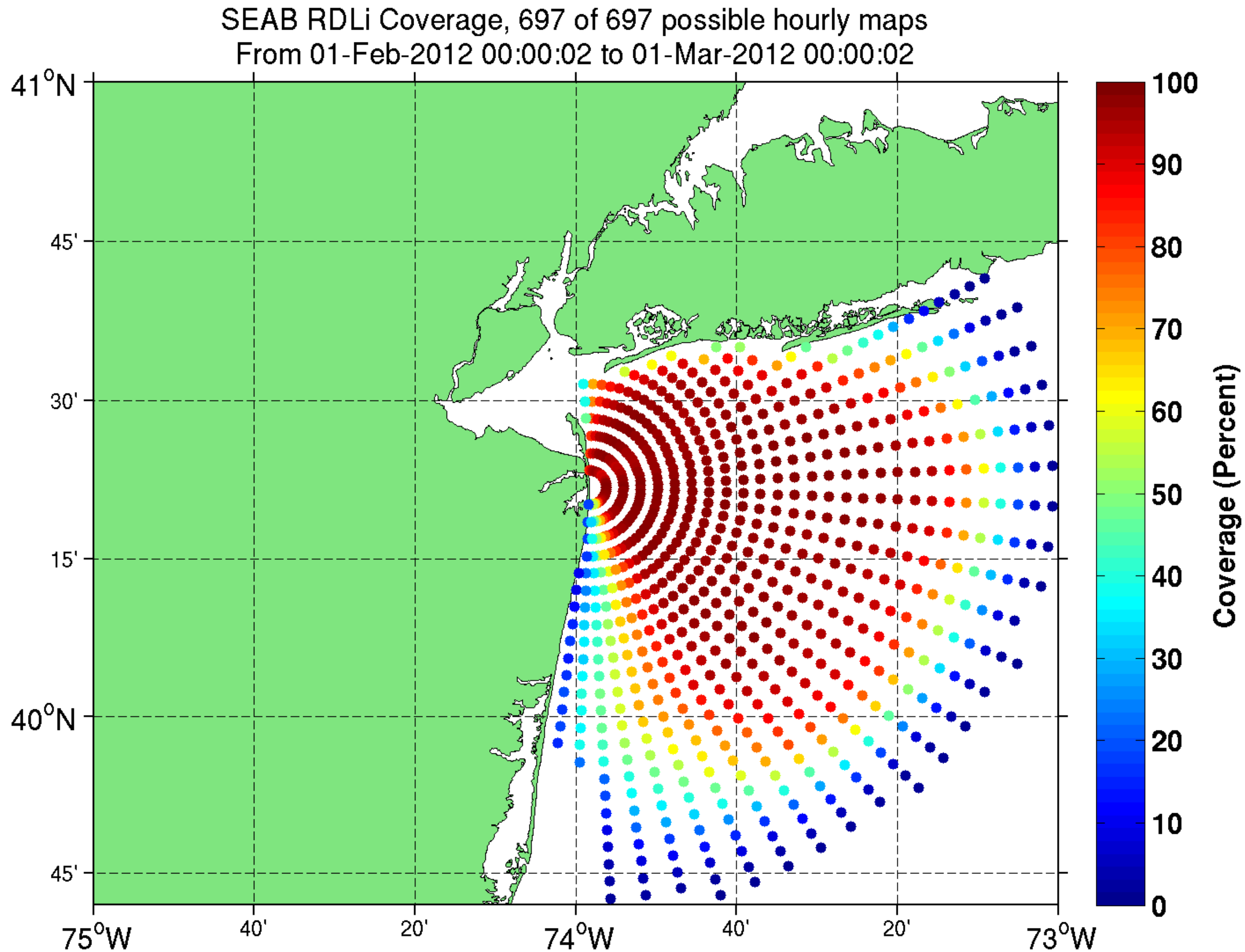
BPU Monthly Radial Coverage Maps

December 1, 2011 to December 31, 2012

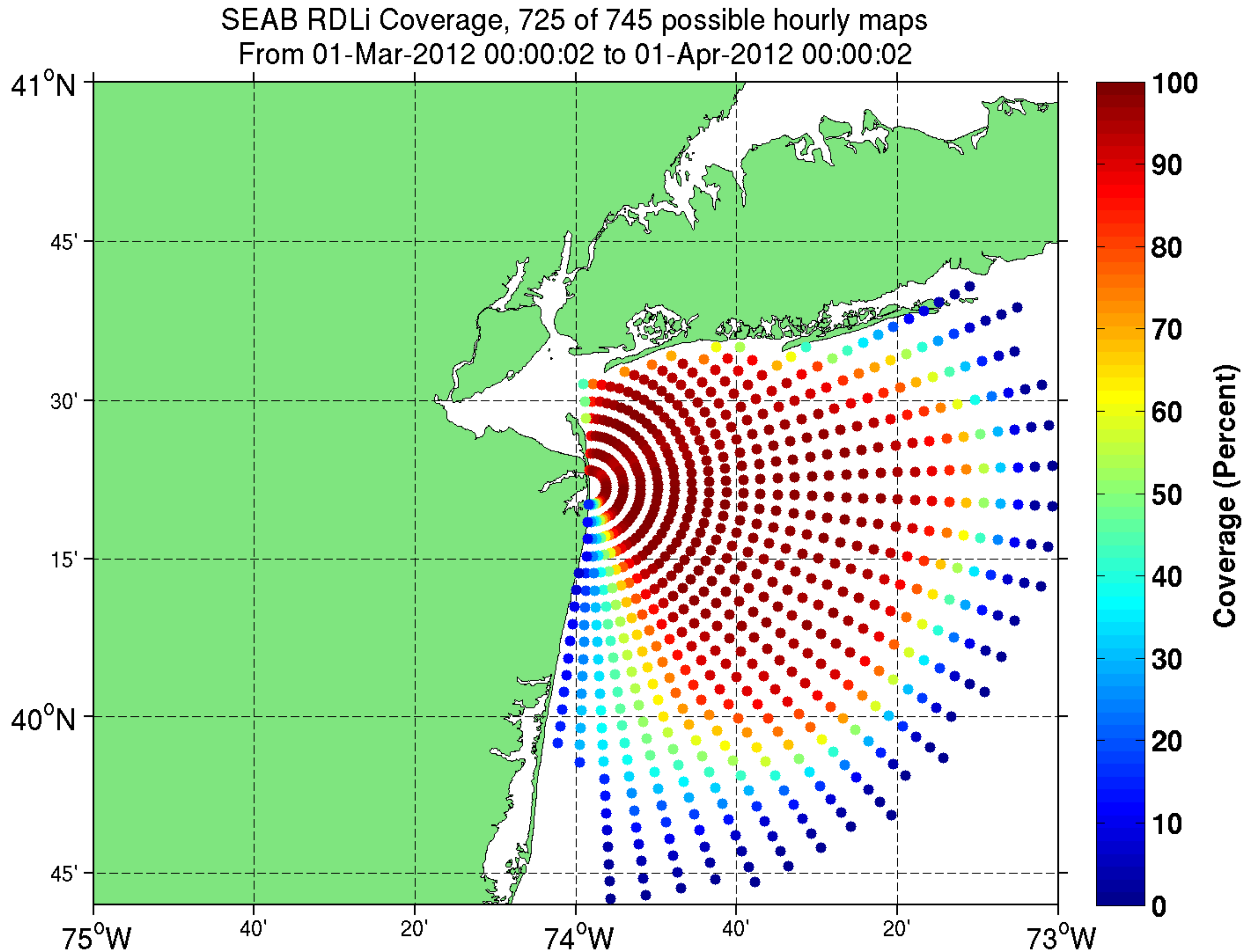
SEA BRIGHT
IDEAL RADIALS

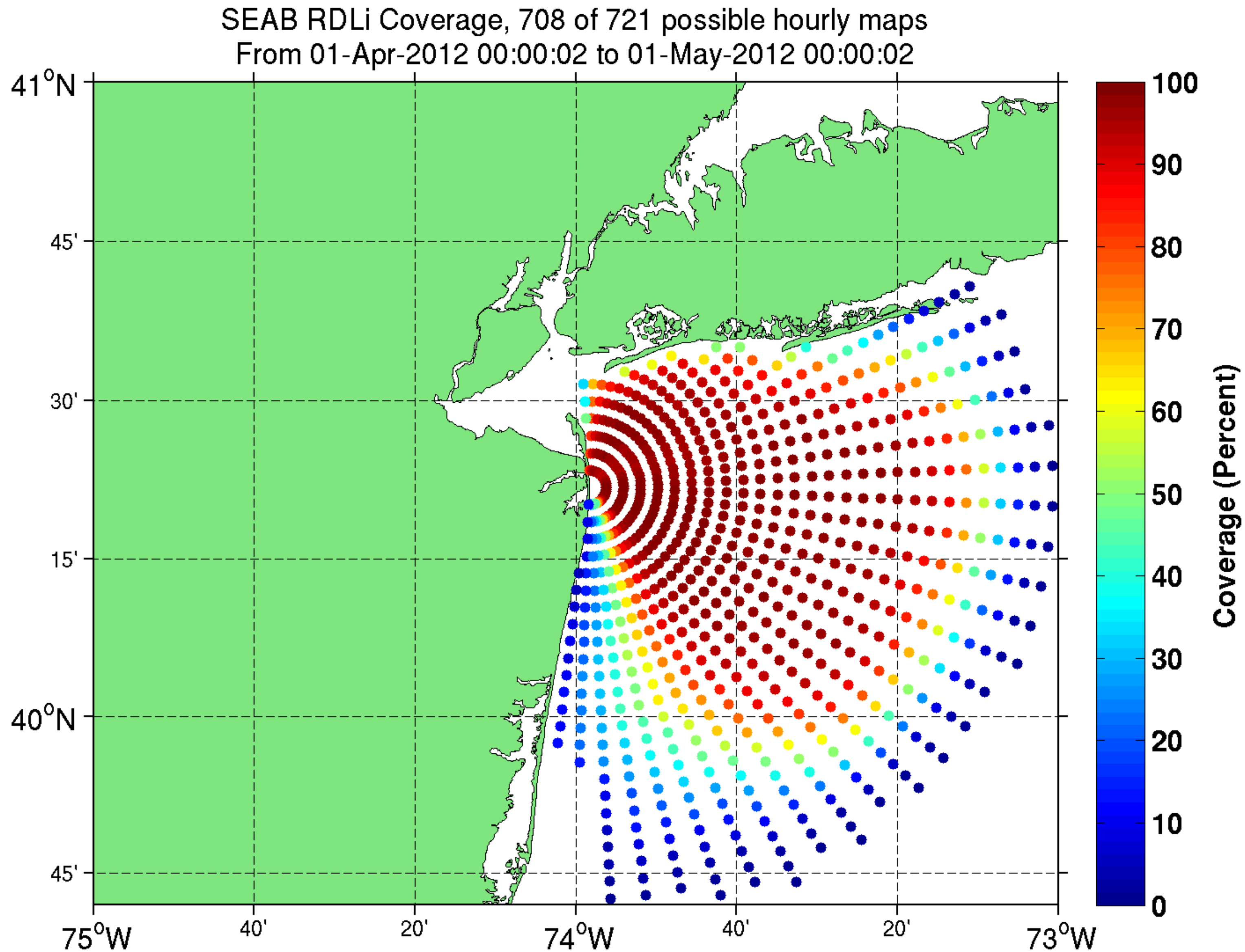


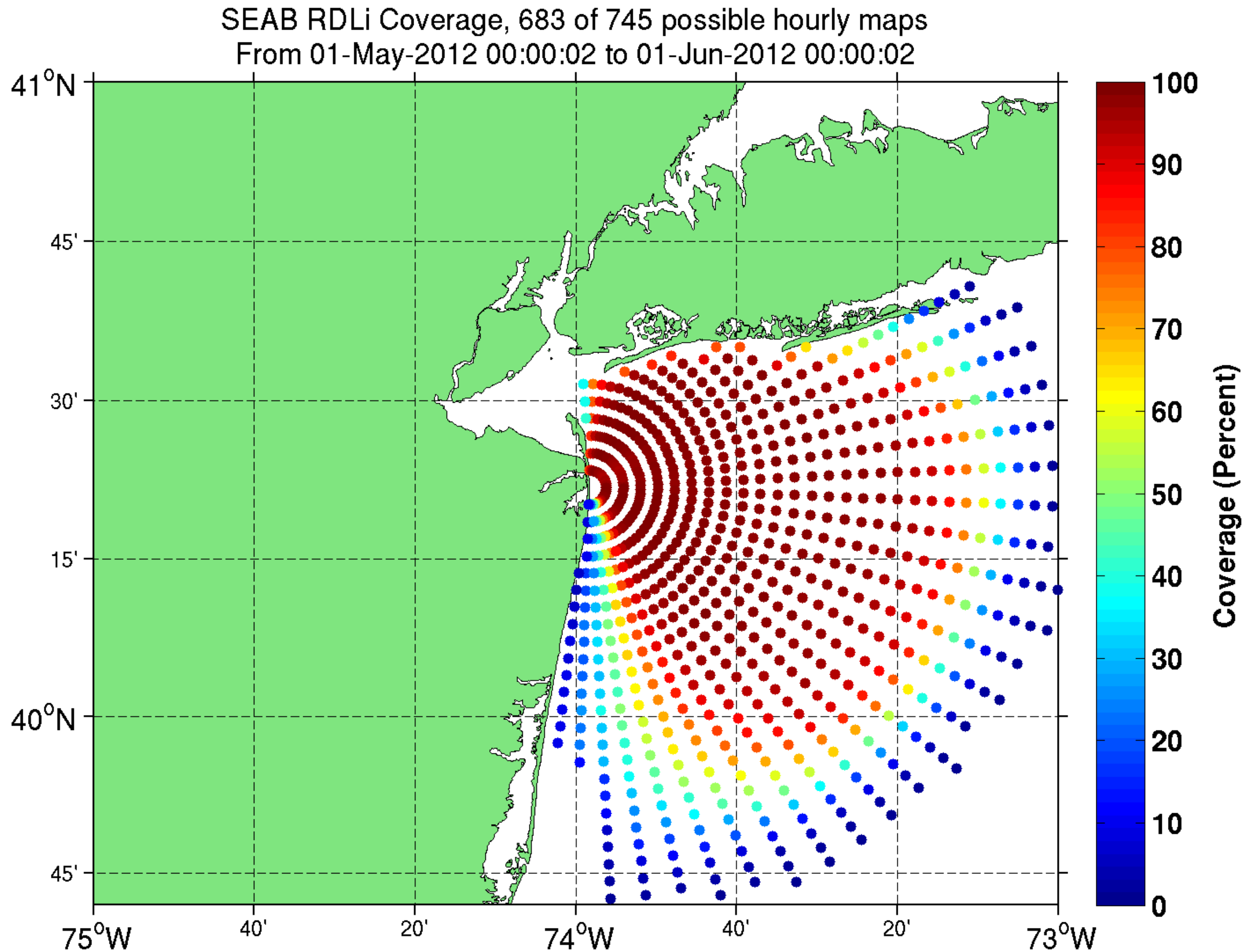
SEAB RDLi Coverage, 742 of 745 possible hourly maps
From 01-Jan-2012 00:00:02 to 01-Feb-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)



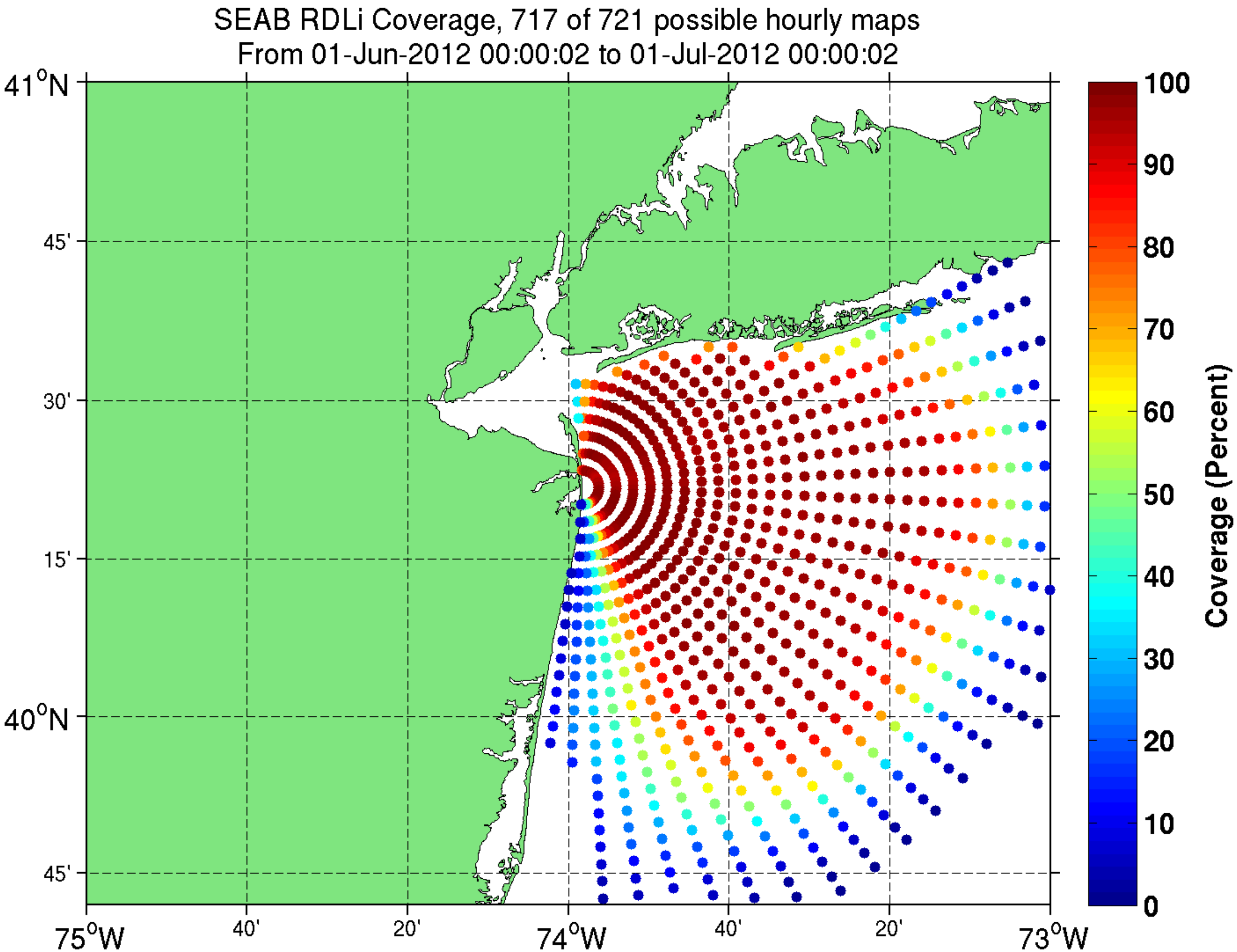
SEAB RDLi Coverage, 697 of 697 possible hourly maps
From 01-Feb-2012 00:00:02 to 01-Mar-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0


SEAB RDLi Coverage, 725 of 745 possible hourly maps
From 01-Mar-2012 00:00:02 to 01-Apr-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

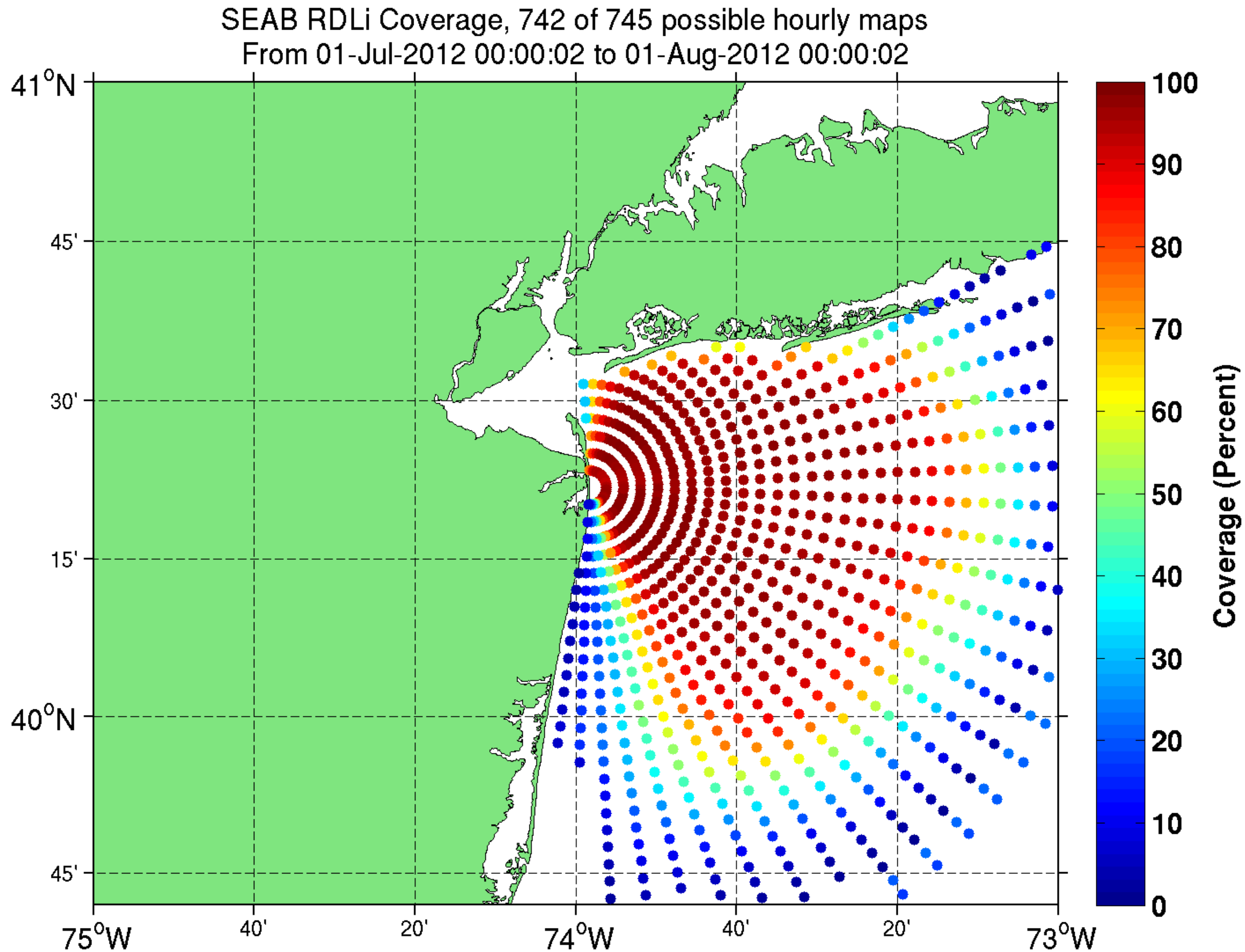

SEAB RDLi Coverage, 708 of 721 possible hourly maps
From 01-Apr-2012 00:00:02 to 01-May-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

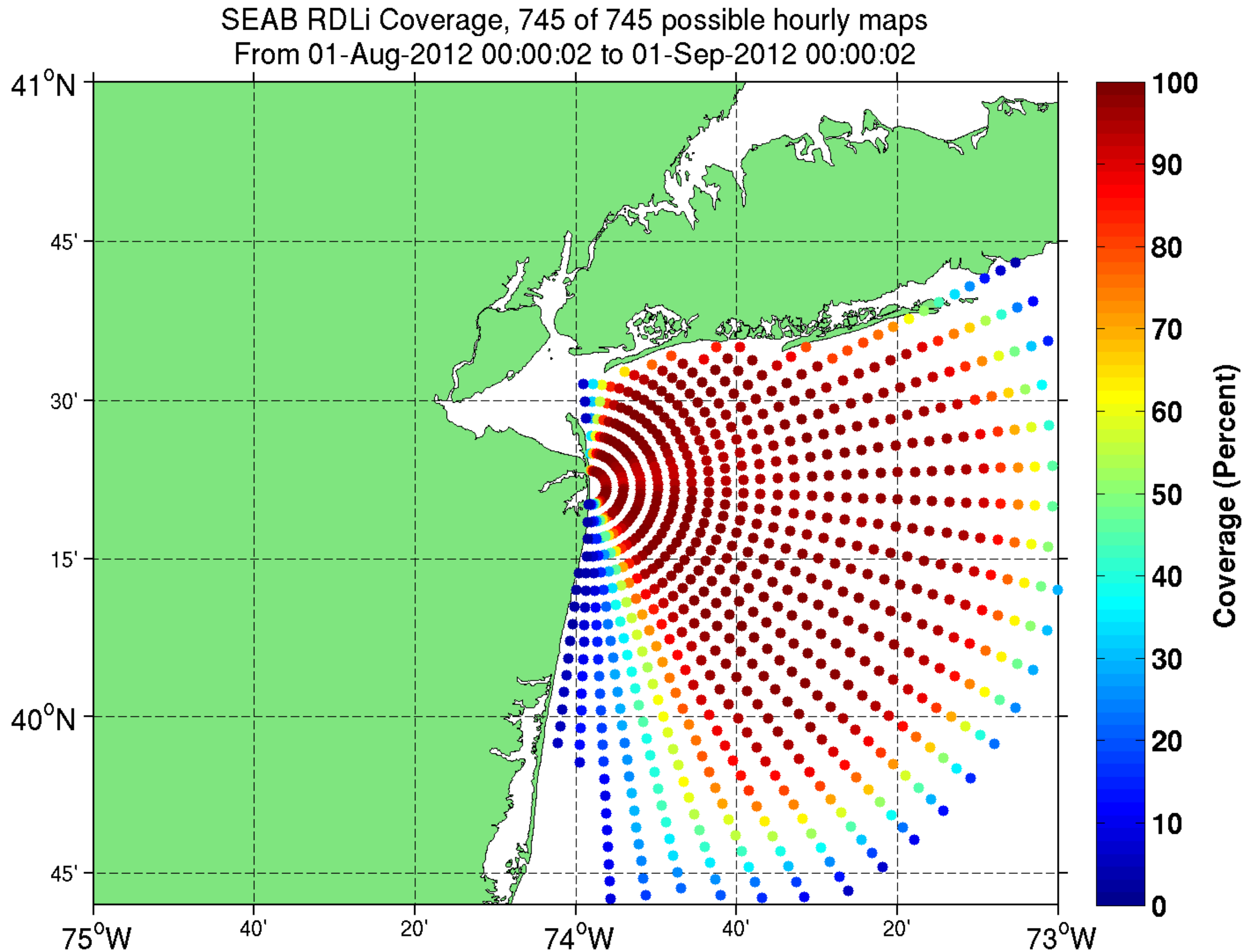


SEAB RDLi Coverage, 683 of 745 possible hourly maps
From 01-May-2012 00:00:02 to 01-Jun-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

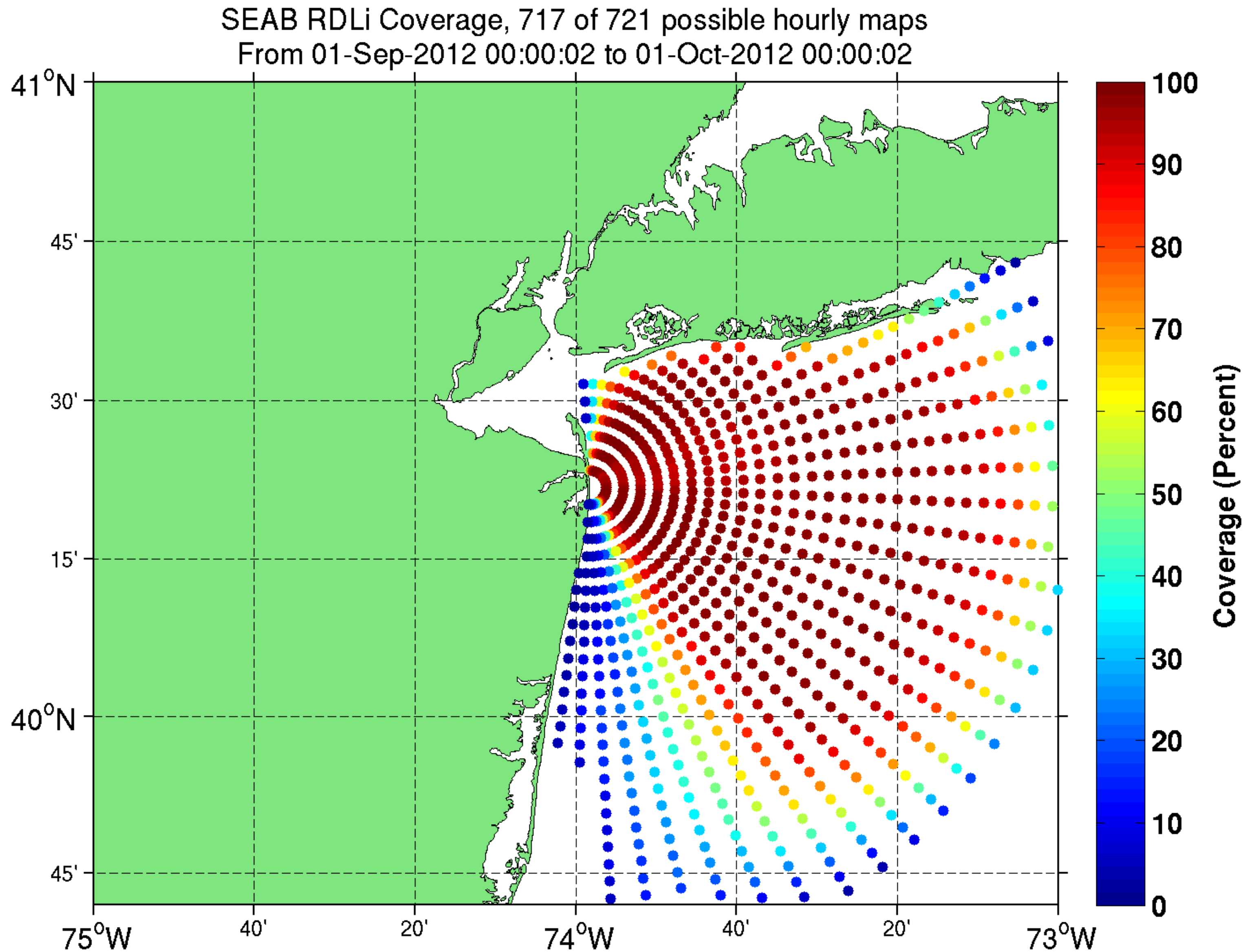


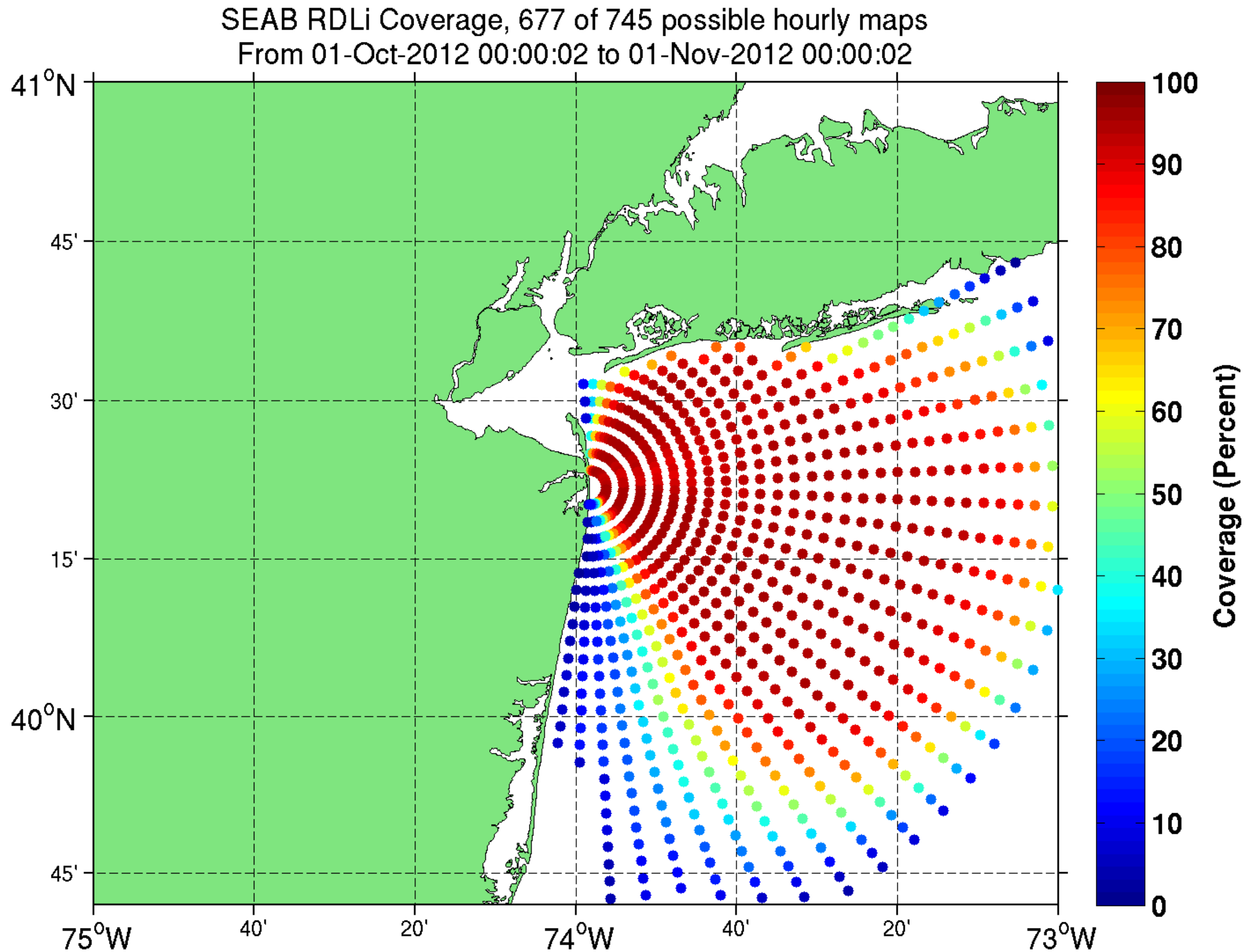
SEAB RDLi Coverage, 717 of 721 possible hourly maps
From 01-Jun-2012 00:00:02 to 01-Jul-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)


SEAB RDLi Coverage, 742 of 745 possible hourly maps
From 01-Jul-2012 00:00:02 to 01-Aug-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

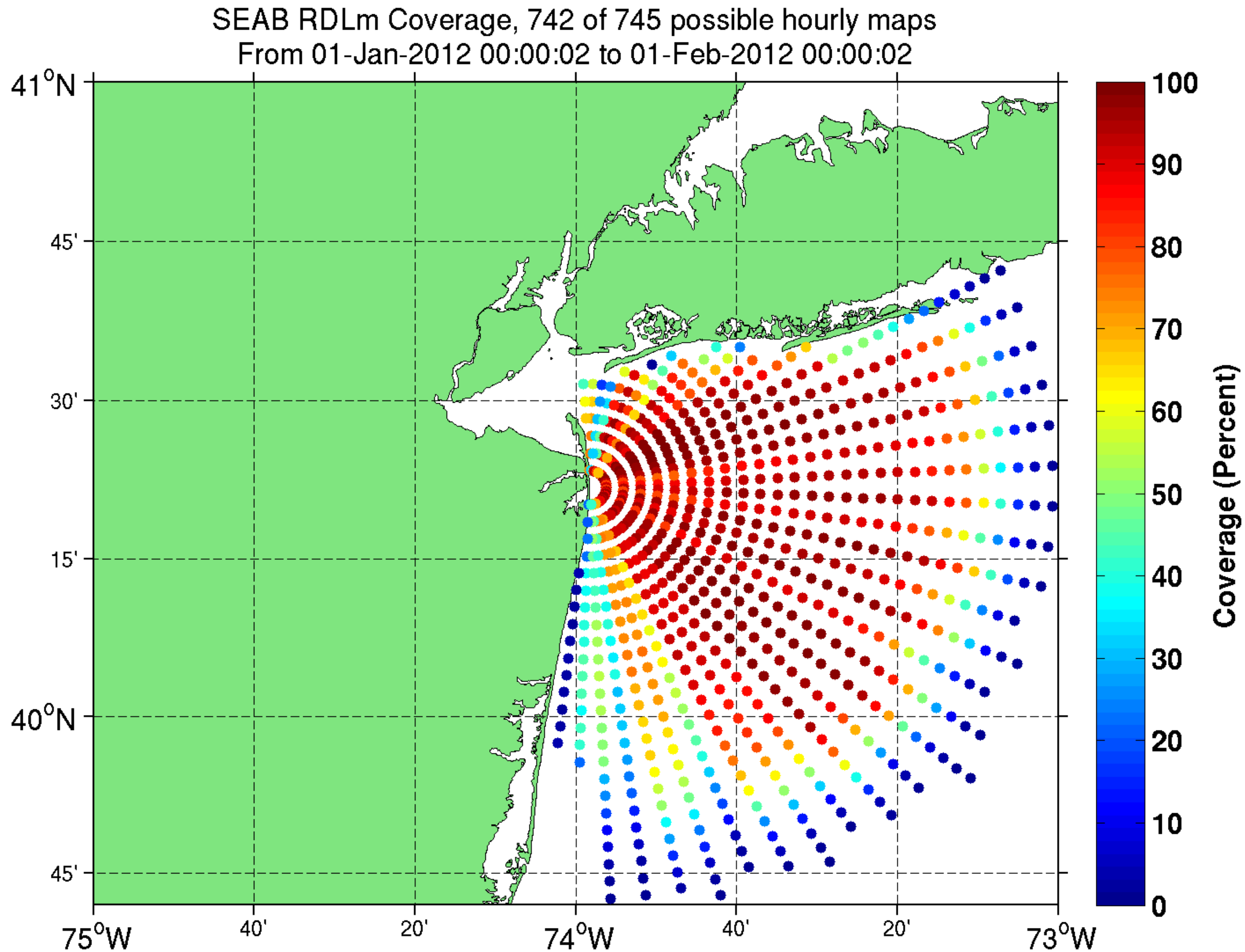


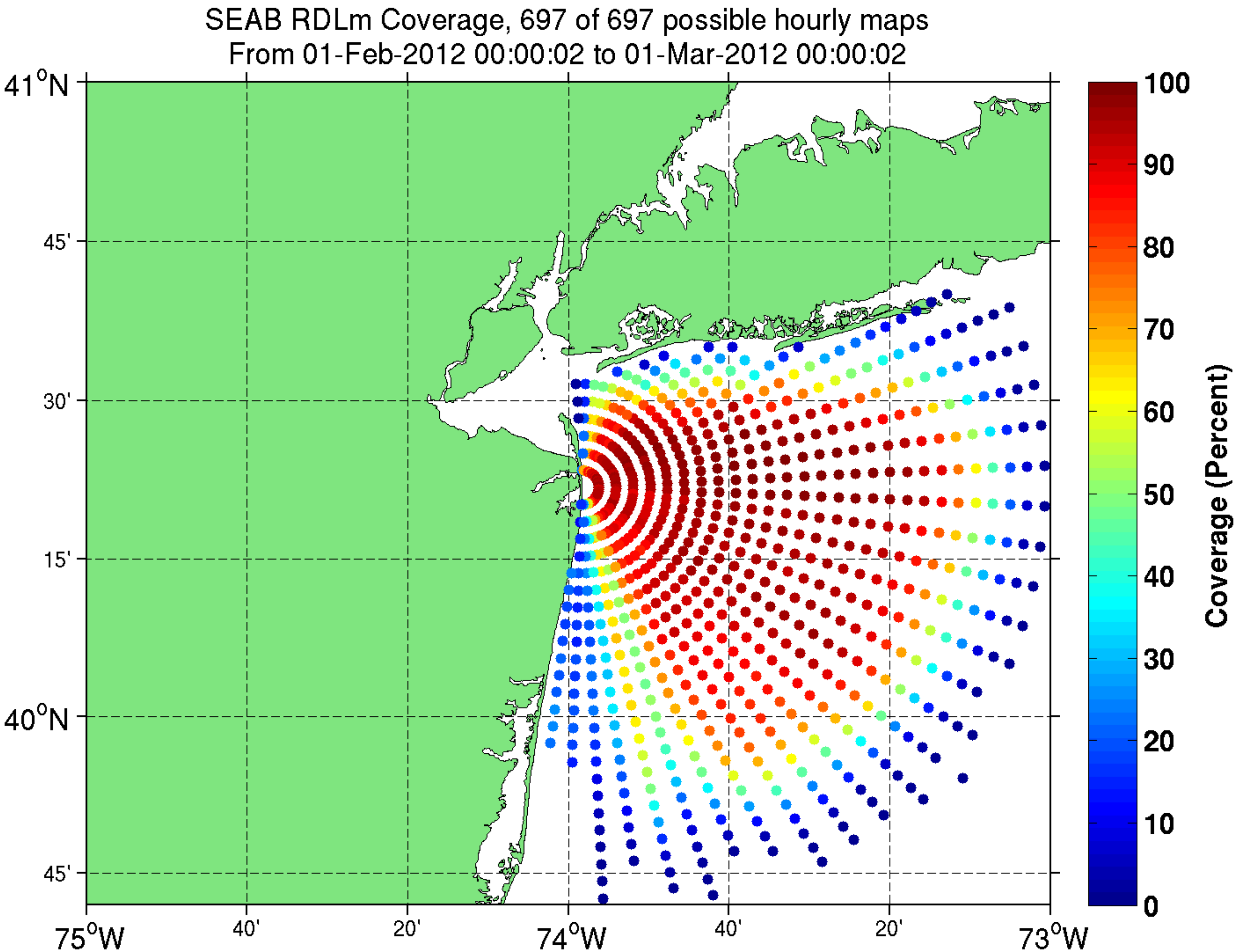
SEAB RDLi Coverage, 745 of 745 possible hourly maps
From 01-Aug-2012 00:00:02 to 01-Sep-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)


SEAB RDLi Coverage, 717 of 721 possible hourly maps
From 01-Sep-2012 00:00:02 to 01-Oct-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

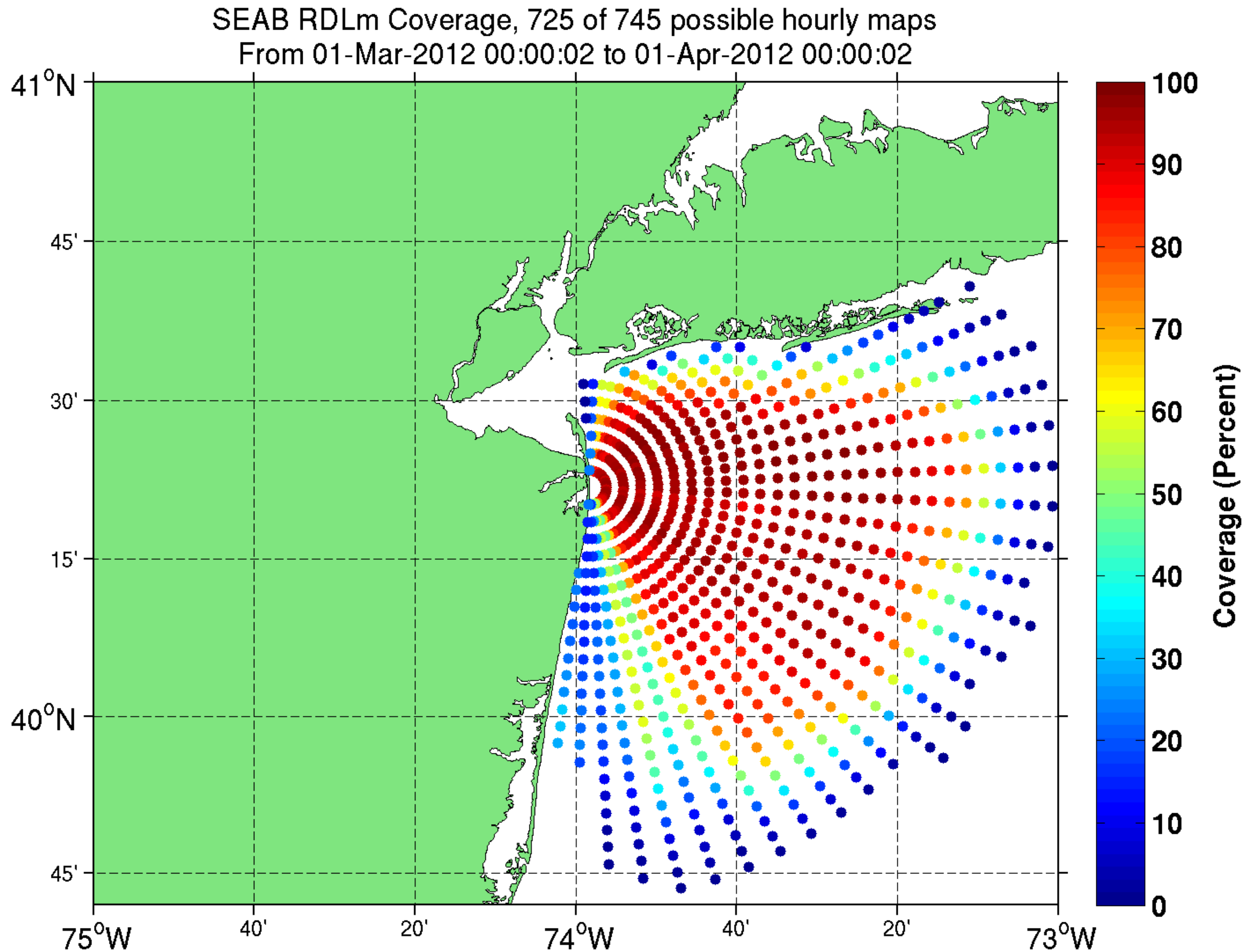

SEAB RDLi Coverage, 677 of 745 possible hourly maps
From 01-Oct-2012 00:00:02 to 01-Nov-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

SEA BRIGHT
MEASURED RADIALS

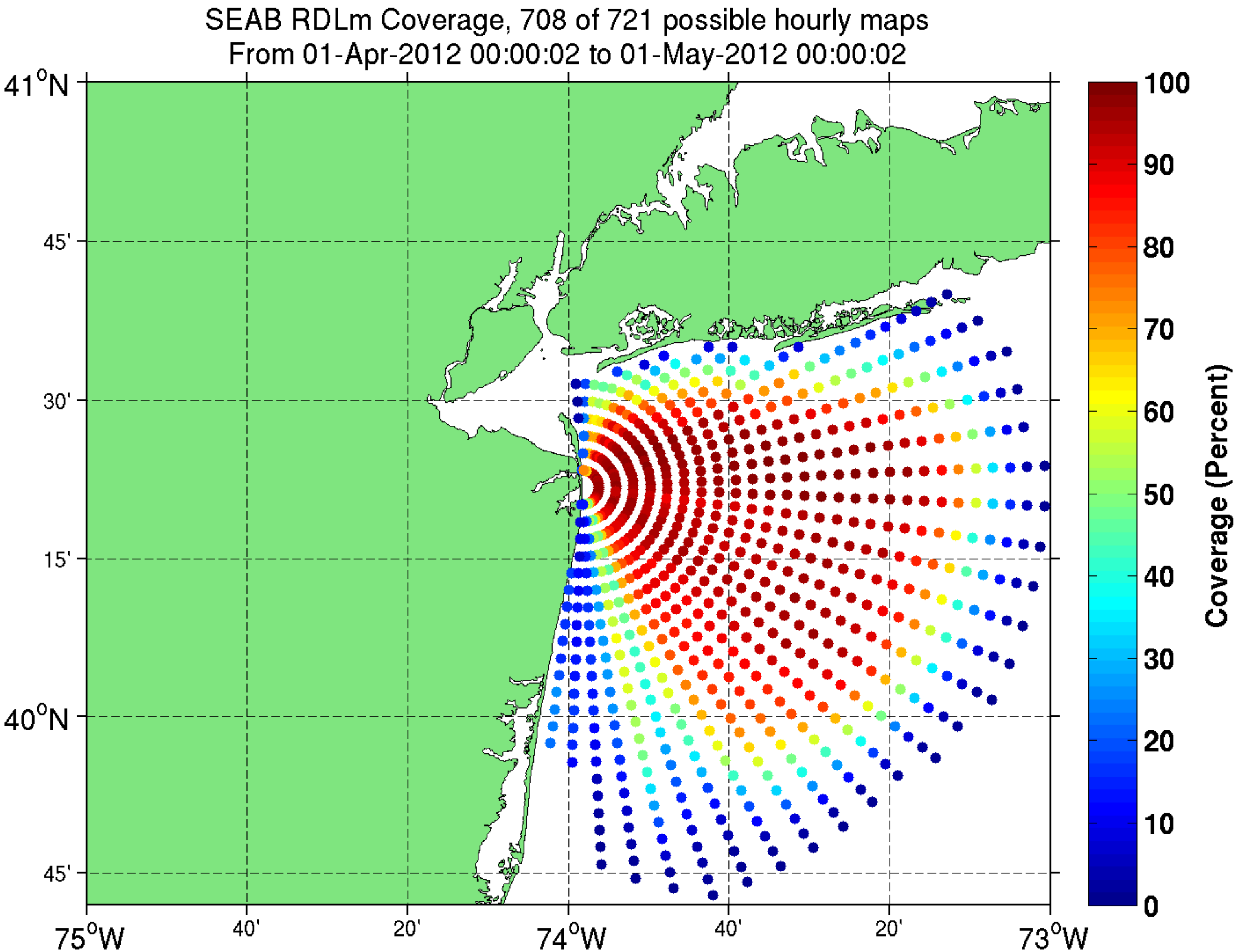

SEAB RDLm Coverage, 742 of 745 possible hourly maps
From 01-Jan-2012 00:00:02 to 01-Feb-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

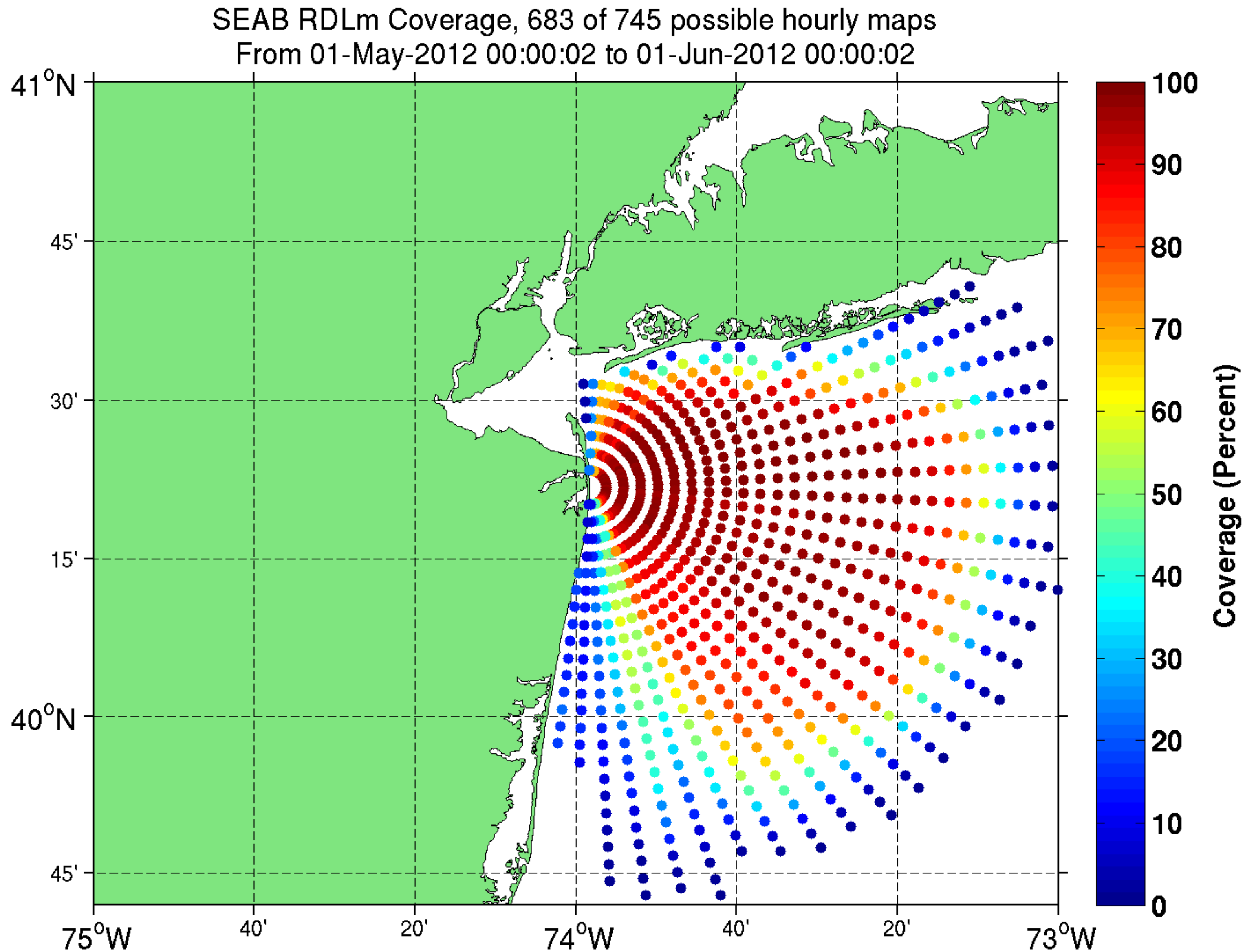


SEAB RDLm Coverage, 697 of 697 possible hourly maps
From 01-Feb-2012 00:00:02 to 01-Mar-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

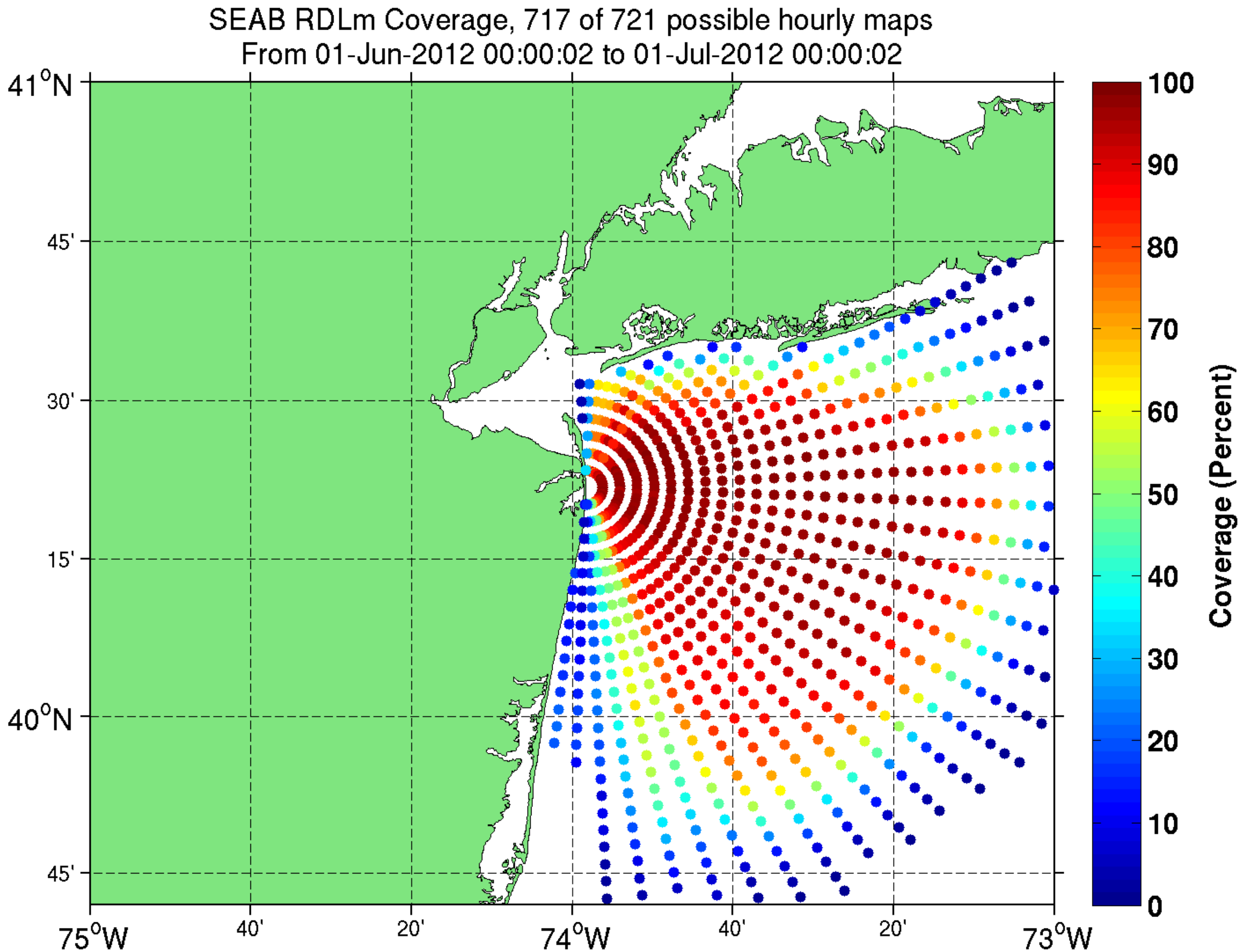


SEAB RDLm Coverage, 725 of 745 possible hourly maps
From 01-Mar-2012 00:00:02 to 01-Apr-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

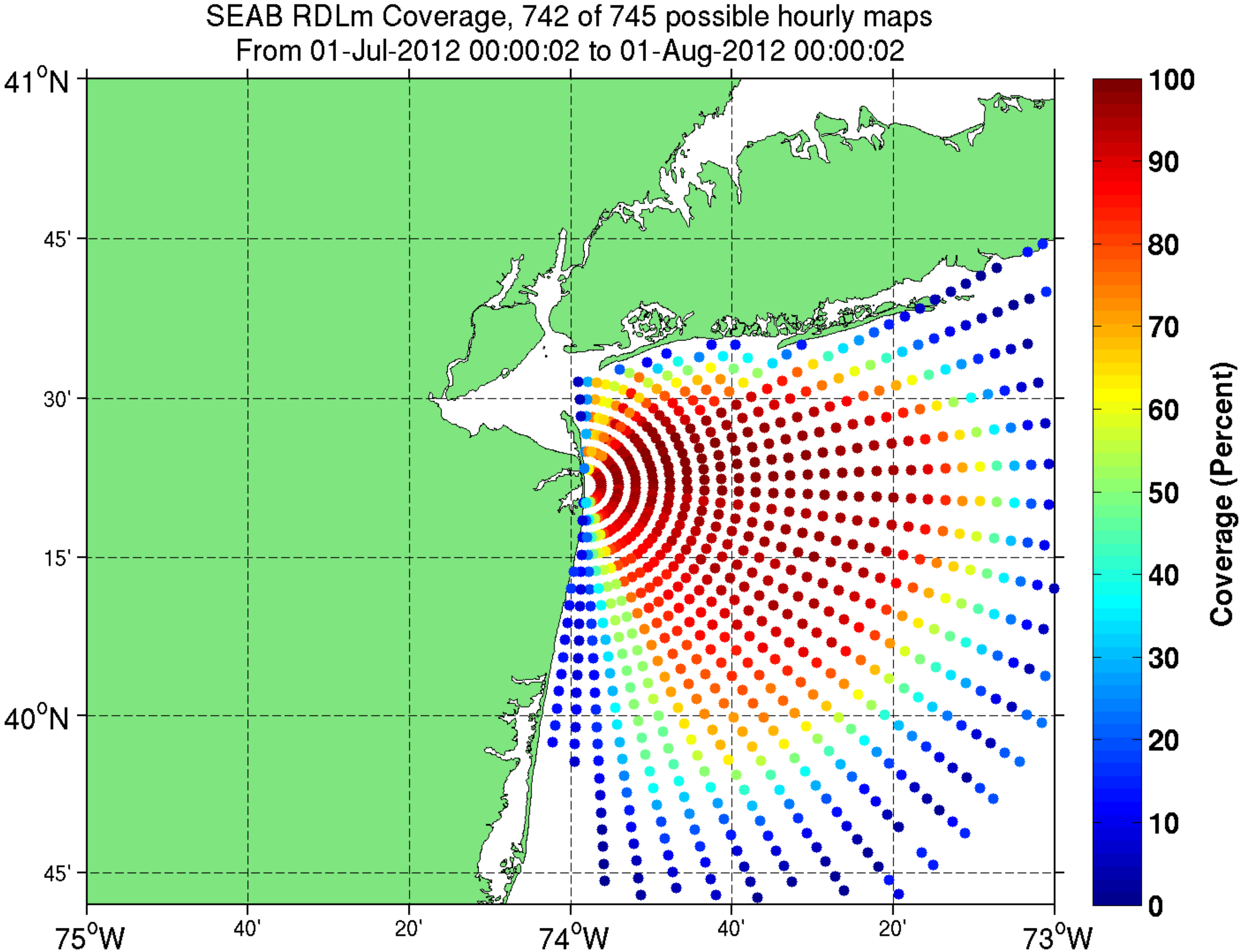

SEAB RDLm Coverage, 708 of 721 possible hourly maps
From 01-Apr-2012 00:00:02 to 01-May-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)



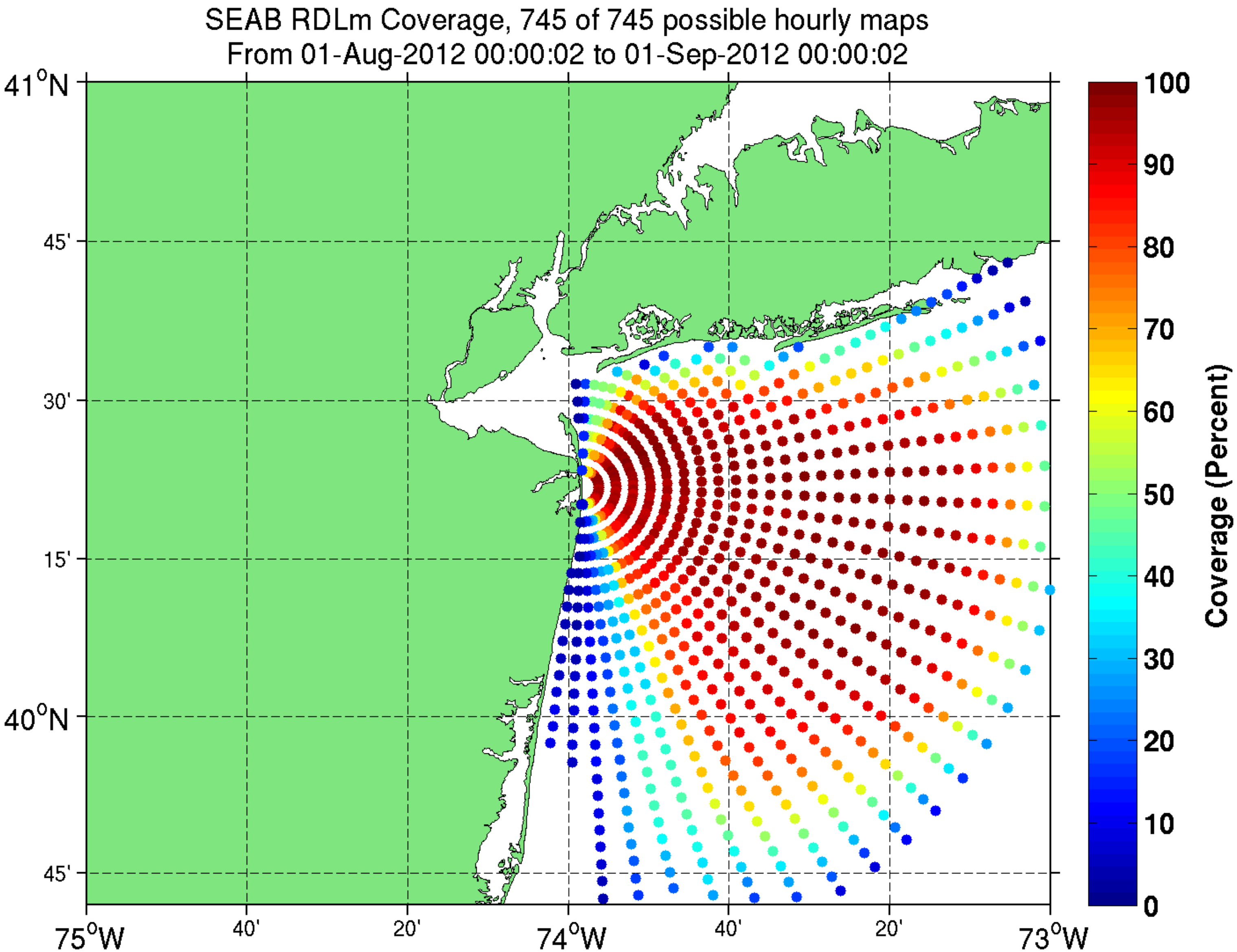
SEAB RDLm Coverage, 683 of 745 possible hourly maps
From 01-May-2012 00:00:02 to 01-Jun-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

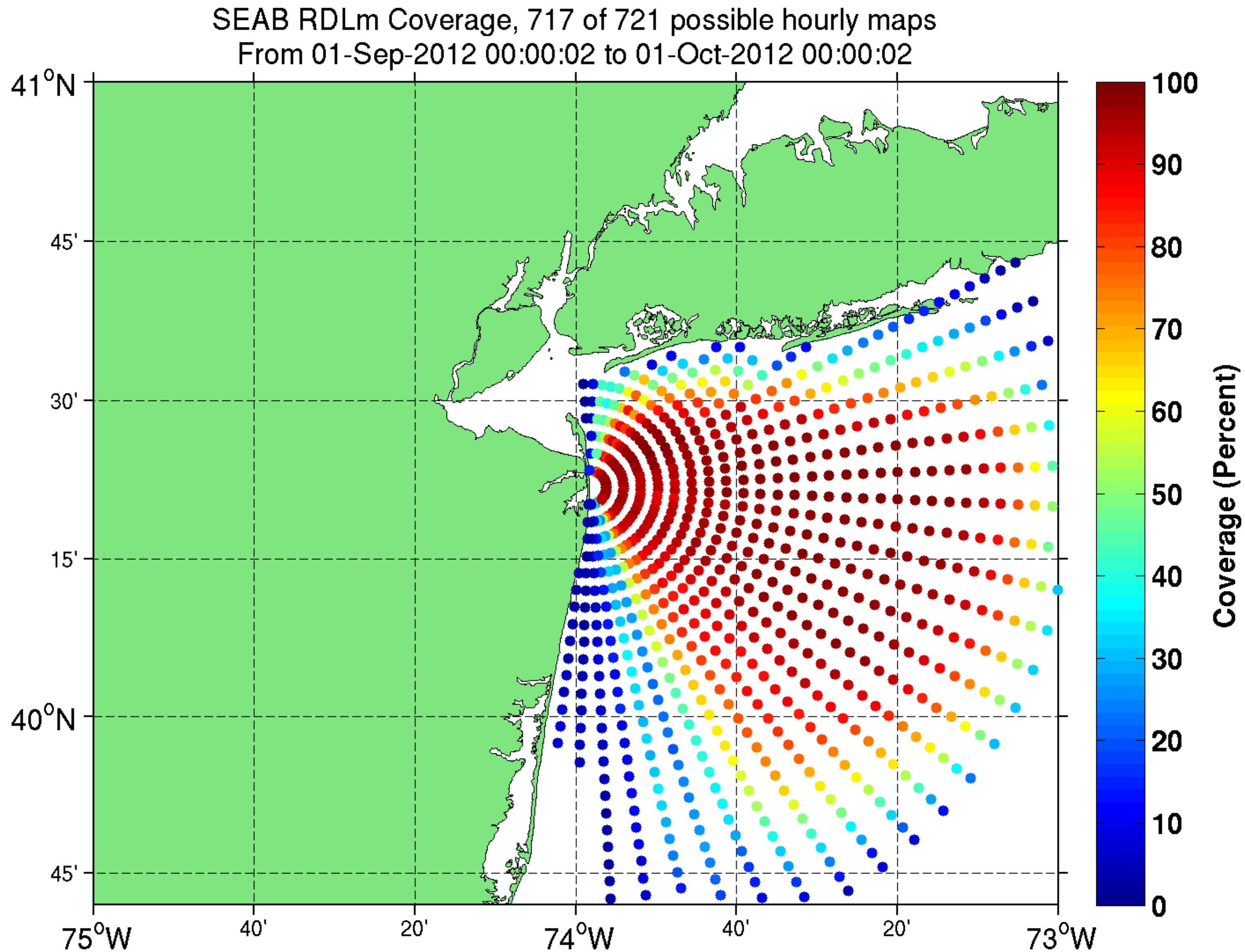


SEAB RDLm Coverage, 717 of 721 possible hourly maps
From 01-Jun-2012 00:00:02 to 01-Jul-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

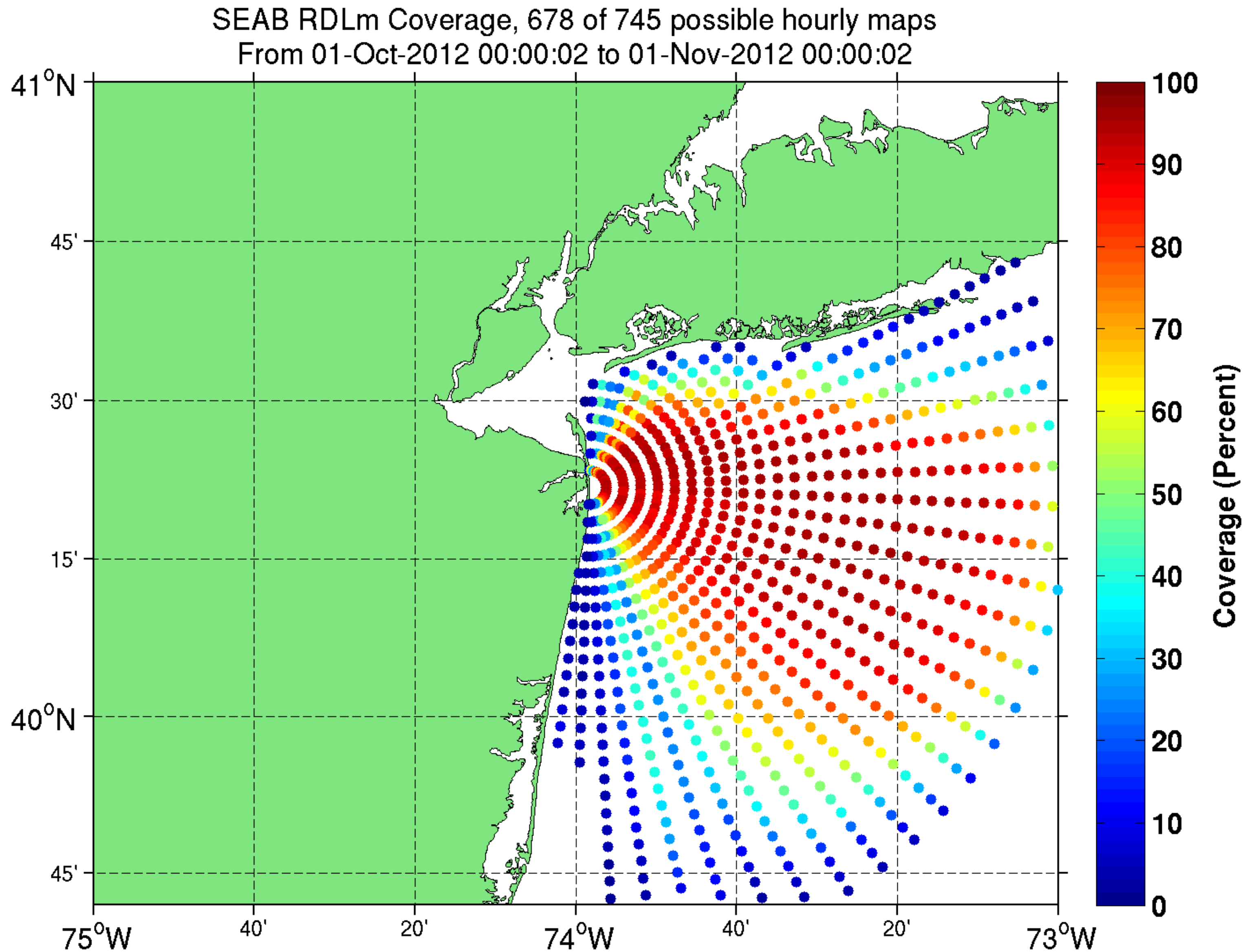


SEAB RDLm Coverage, 742 of 745 possible hourly maps
From 01-Jul-2012 00:00:02 to 01-Aug-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)


SEAB RDLm Coverage, 745 of 745 possible hourly maps
From 01-Aug-2012 00:00:02 to 01-Sep-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

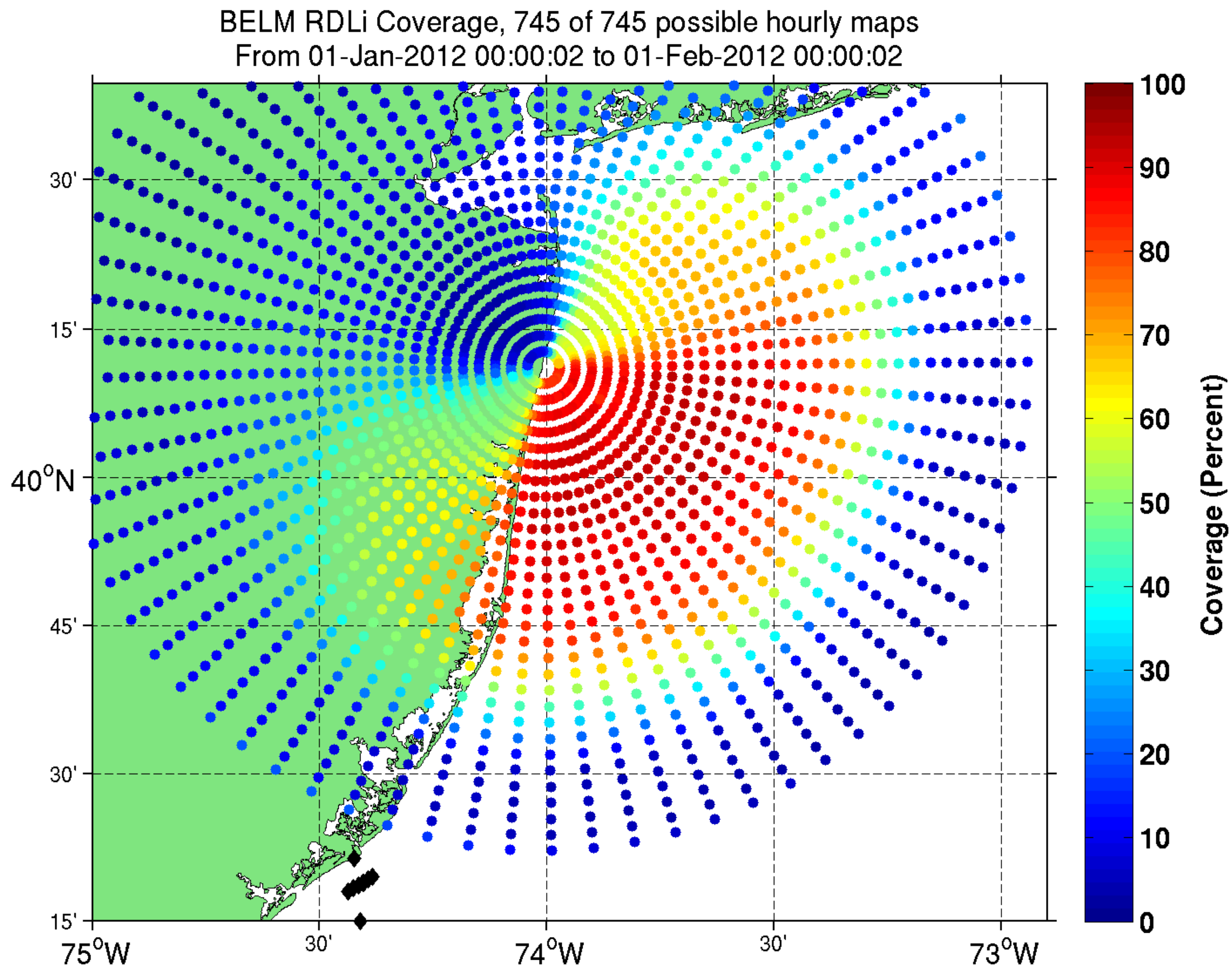


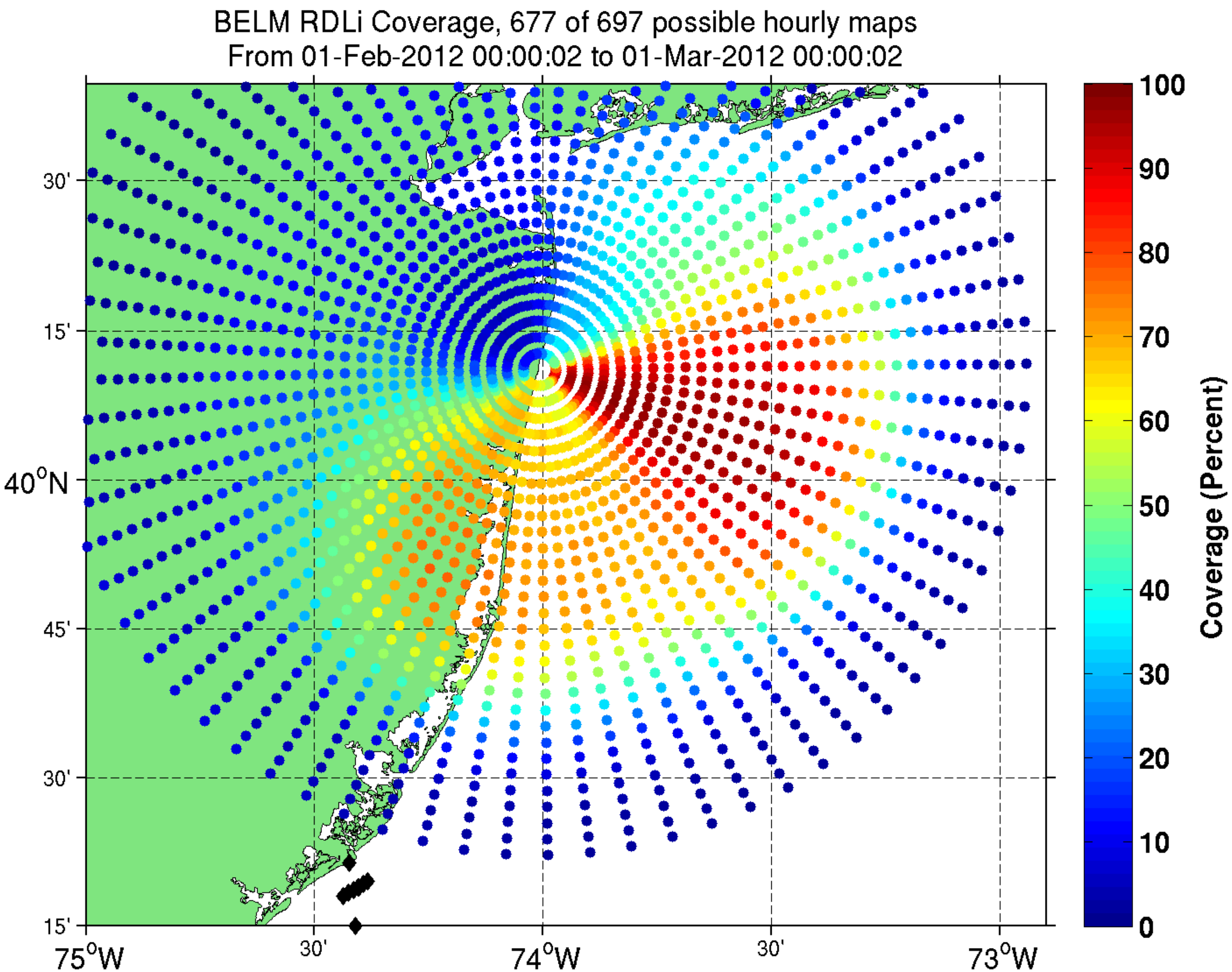
SEAB RDLm Coverage, 717 of 721 possible hourly maps
From 01-Sep-2012 00:00:02 to 01-Oct-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

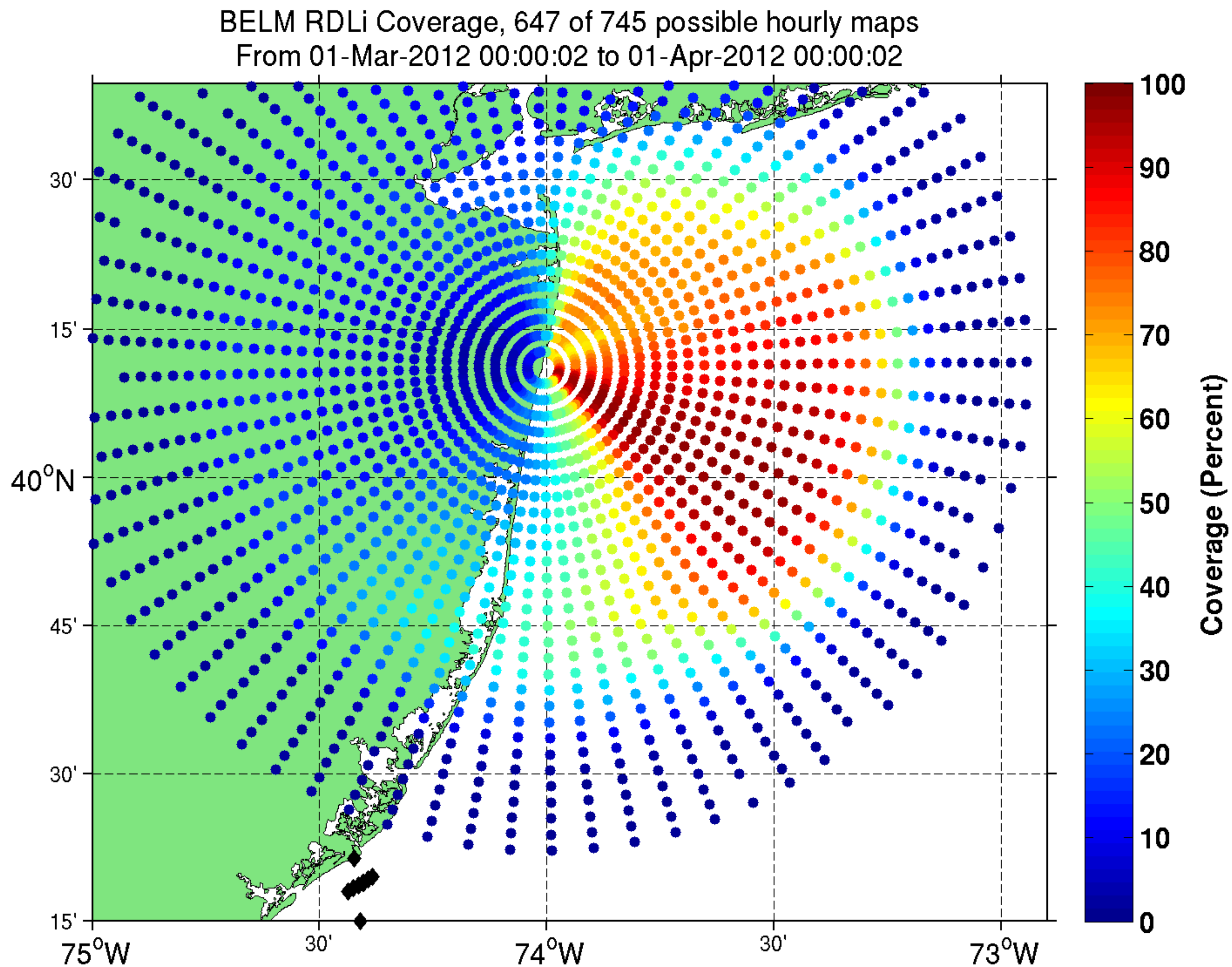


SEAB RDLm Coverage, 678 of 745 possible hourly maps
From 01-Oct-2012 00:00:02 to 01-Nov-2012 00:00:02
41°N
45'
30'
15'
40°N
45'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

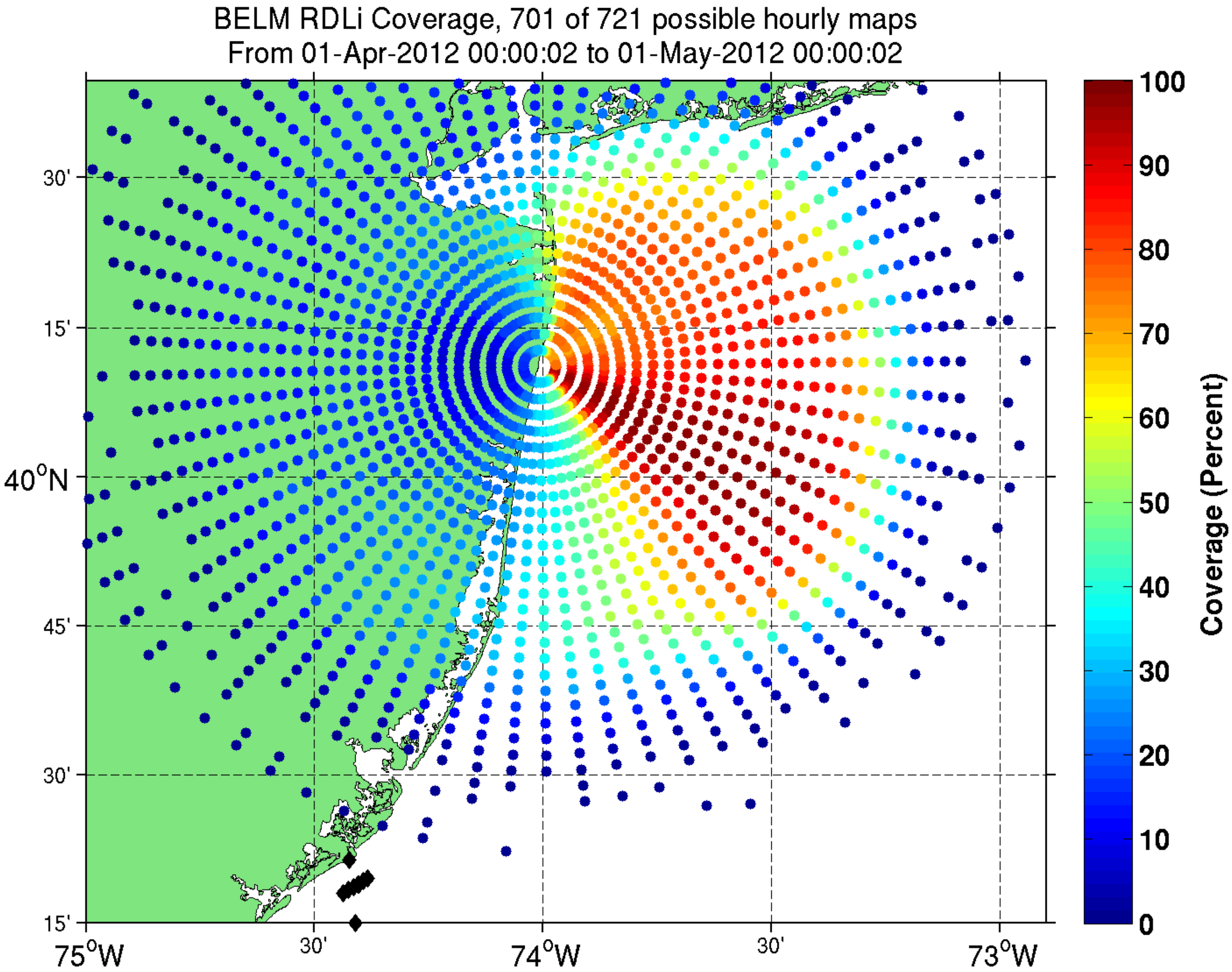
BELMAR
IDEAL RADIALS


BELM RDLi Coverage, 745 of 745 possible hourly maps
From 01-Jan-2012 00:00:02 to 01-Feb-2012 00:00:02
30'
15'
40°N
45'
30'
15'
75°W
30'
74°W
30'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

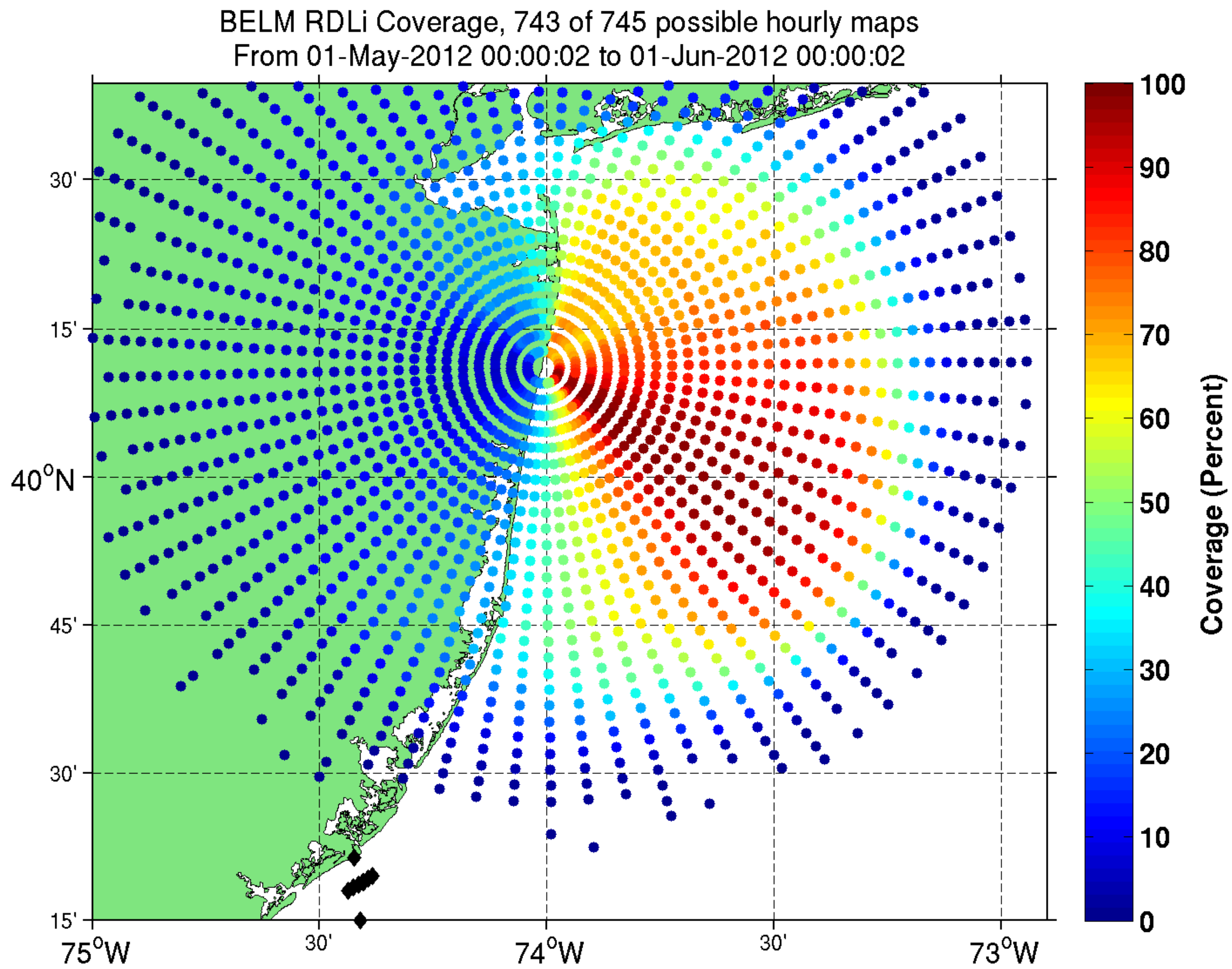

BELM RDLi Coverage, 677 of 697 possible hourly maps
From 01-Feb-2012 00:00:02 to 01-Mar-2012 00:00:02
30'
15'
40°N
45'
30'
15'
75°W
30'
74°W
30'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)



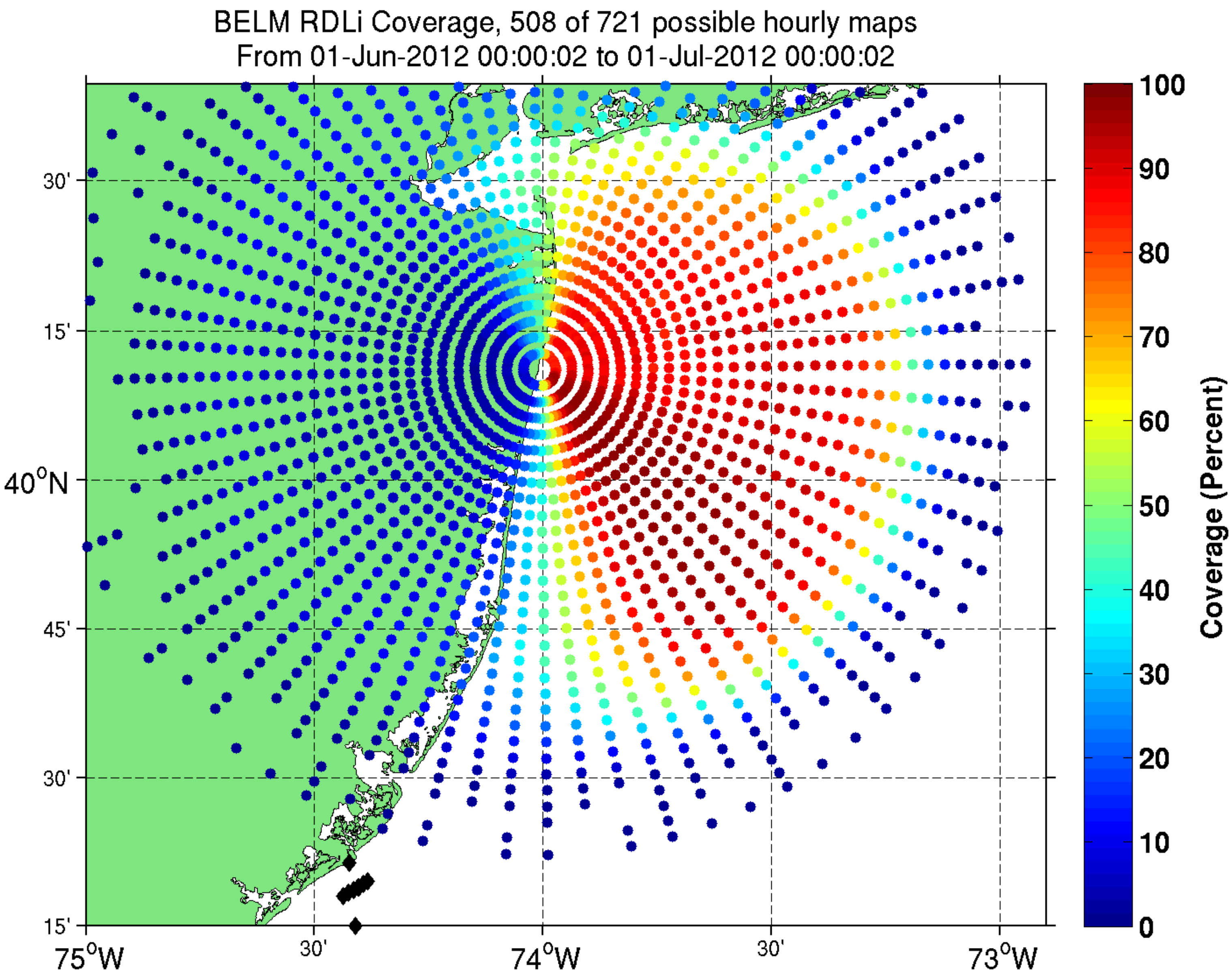
BELM RDLi Coverage, 647 of 745 possible hourly maps
From 01-Mar-2012 00:00:02 to 01-Apr-2012 00:00:02
30'
15'
40°N
45'
30'
15'
75°W
30'
74°W
30'
73°W
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

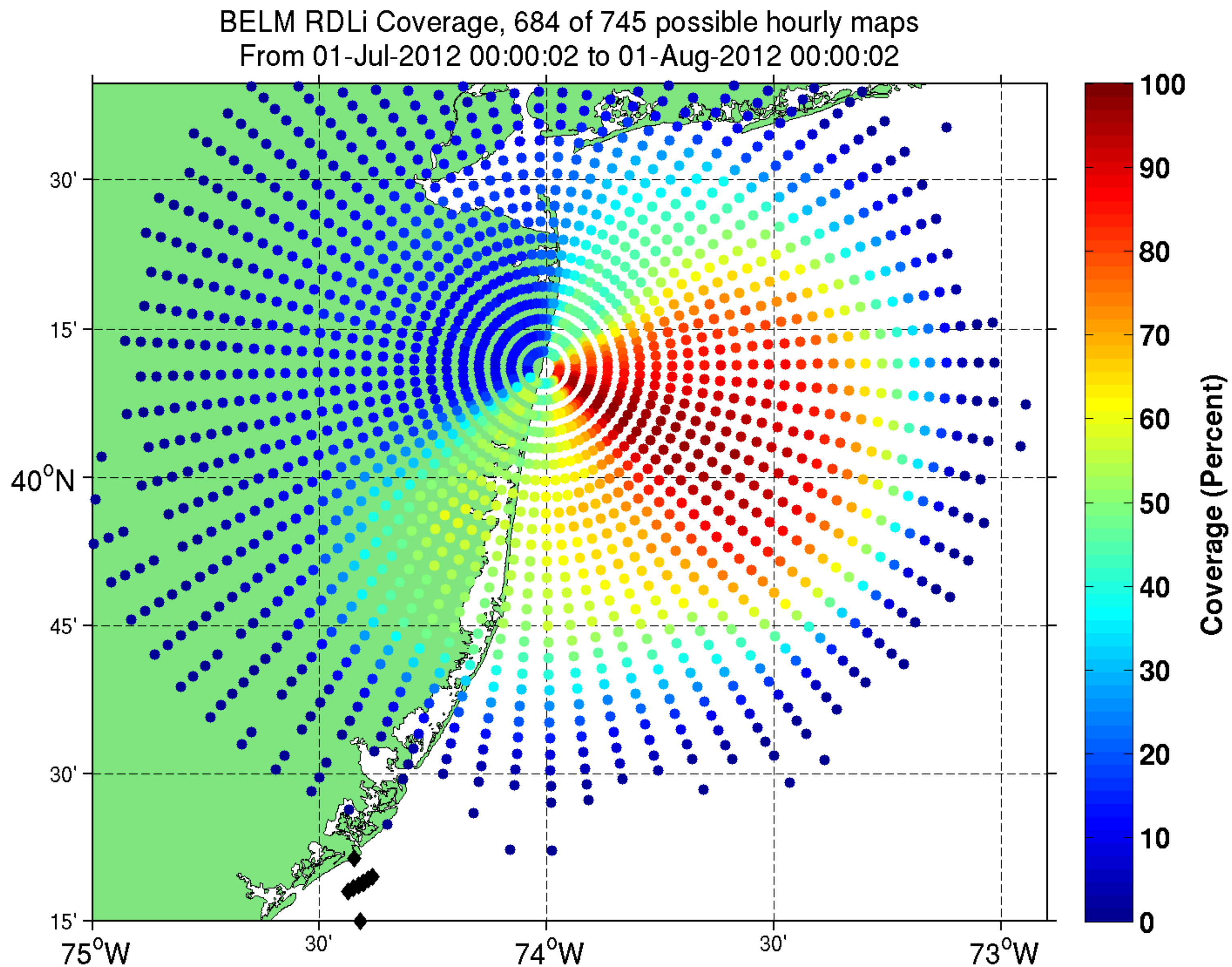


BELM RDLi Coverage, 701 of 721 possible hourly maps
From 01-Apr-2012 00:00:02 to 01-May-2012 00:00:02
30'
15'
40°N
45'
30'
15'
75°W
30'
74°W
30'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

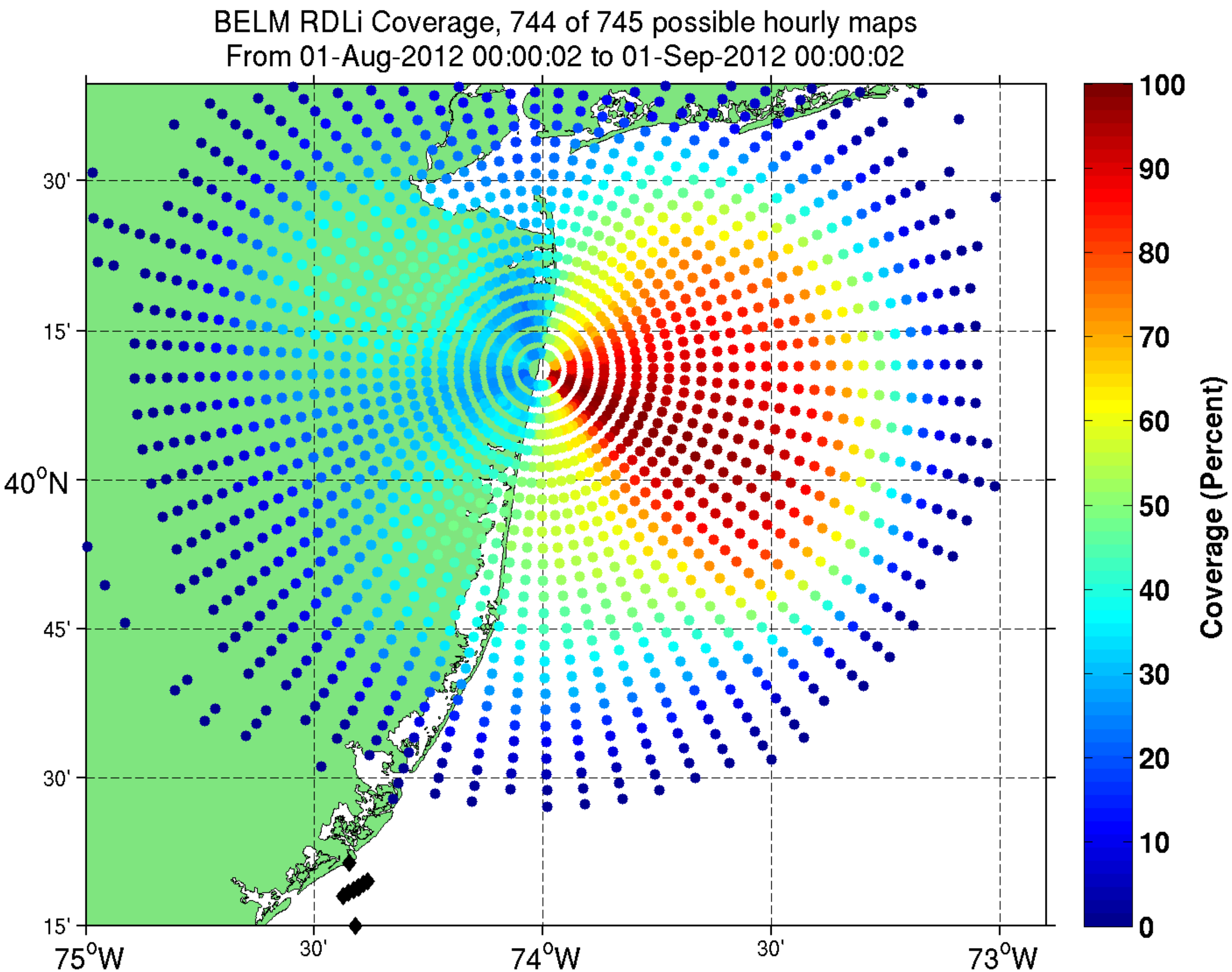


BELM RDLi Coverage, 743 of 745 possible hourly maps
From 01-May-2012 00:00:02 to 01-Jun-2012 00:00:02
30'
15'
40°N
45'
30'
15'
75°W
30'
74°W
30'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

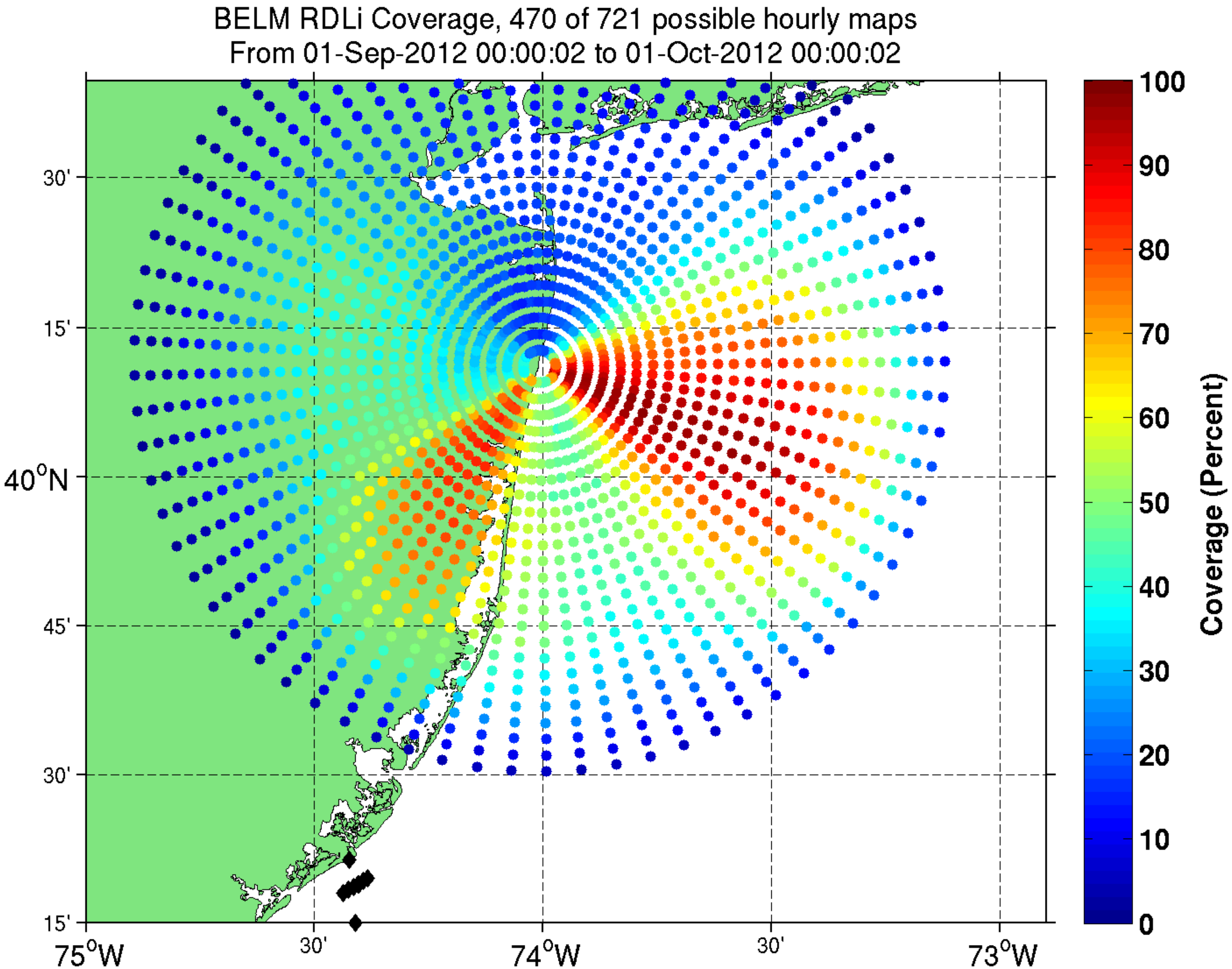

BELM RDLi Coverage, 508 of 721 possible hourly maps
From 01-Jun-2012 00:00:02 to 01-Jul-2012 00:00:02
30'
15'
40°N
45'
30'
15'
75°W
30'
74°W
30'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)



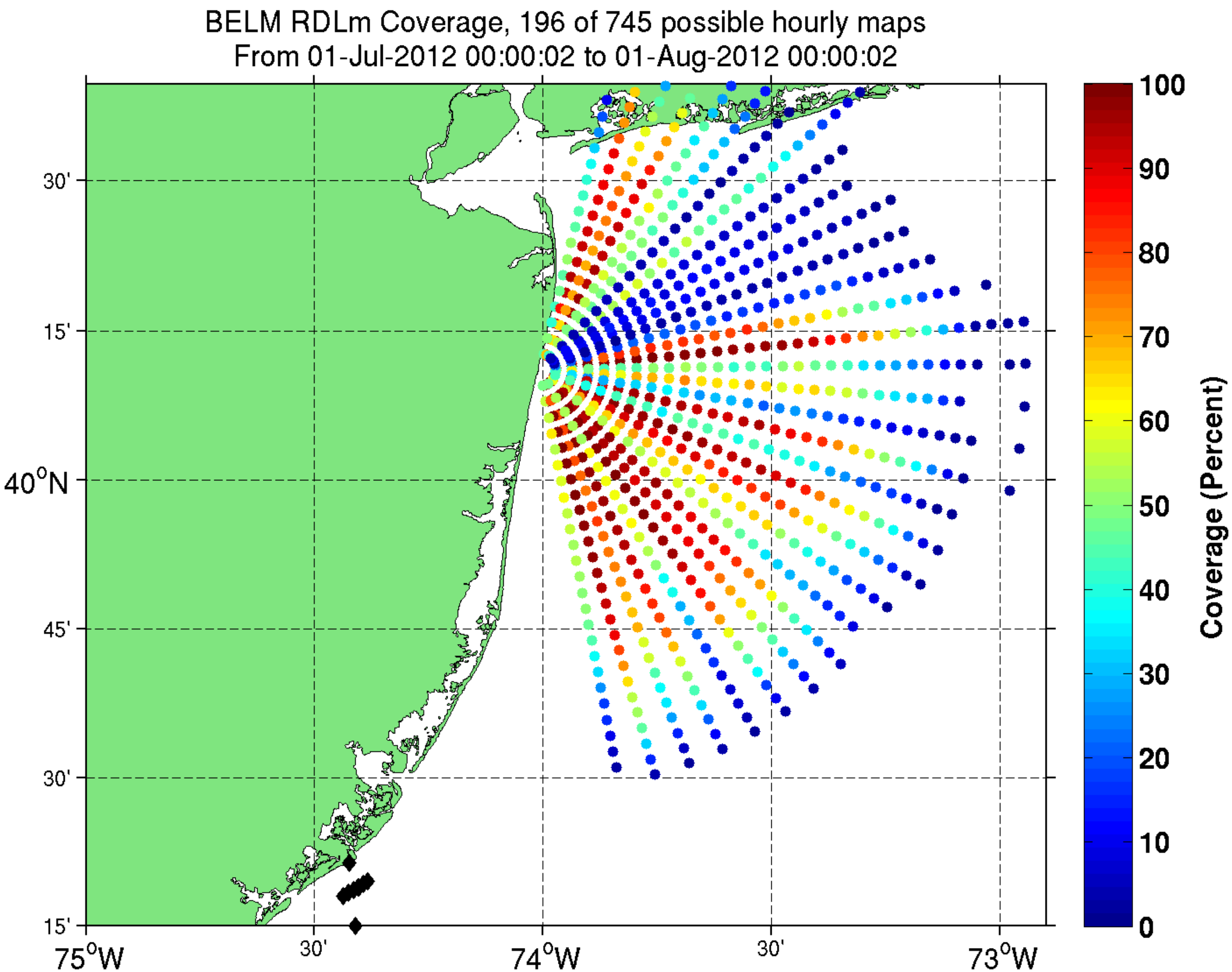
BELM RDLi Coverage, 684 of 745 possible hourly maps
From 01-Jul-2012 00:00:02 to 01-Aug-2012 00:00:02
30'
15'
40°N
45'
30'
15'
75°W
30'
74°W
30'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

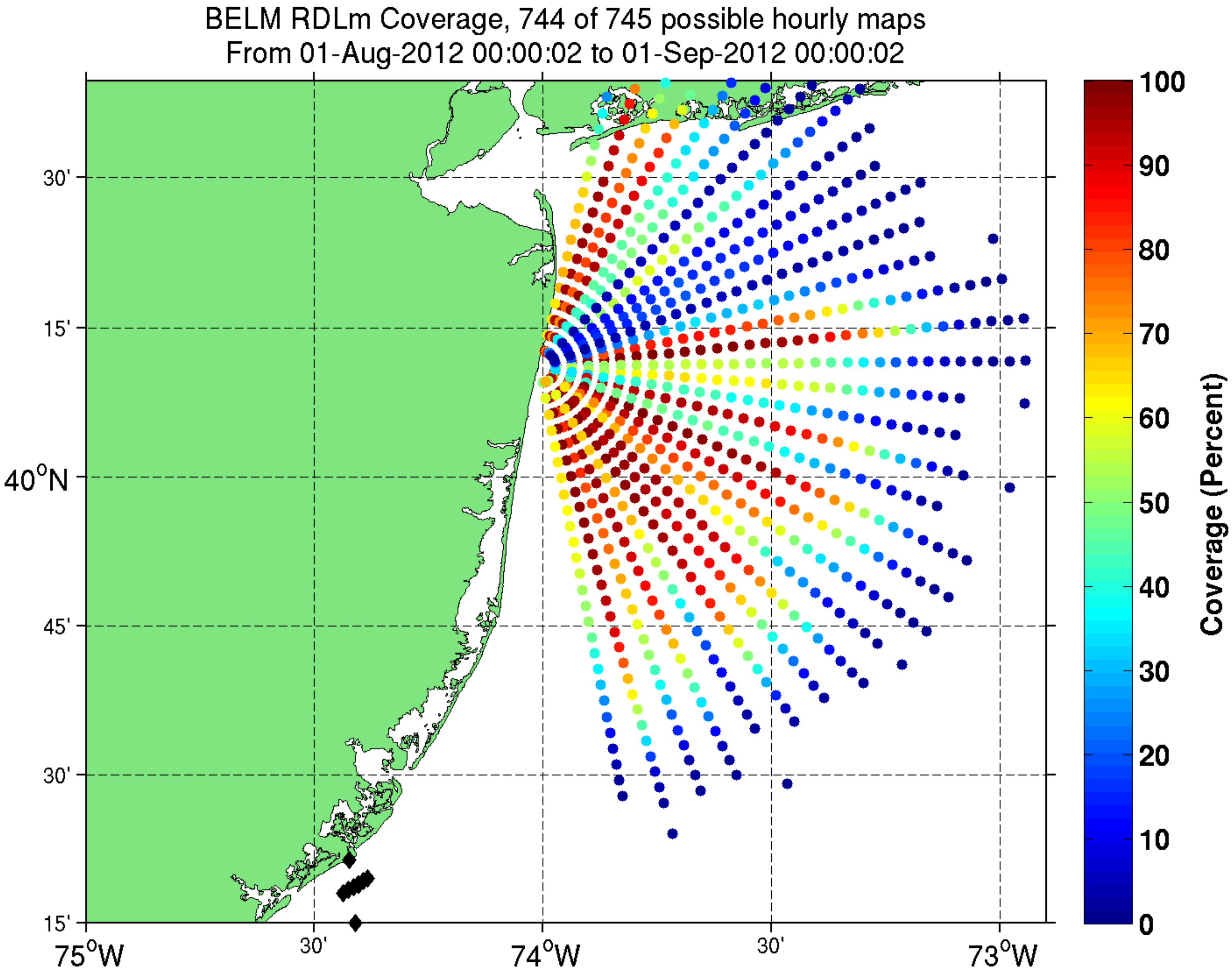


BELM RDLi Coverage, 744 of 745 possible hourly maps
From 01-Aug-2012 00:00:02 to 01-Sep-2012 00:00:02
30'
15'
40°N
45'
30'
15'
75°W
30'
74°W
30'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

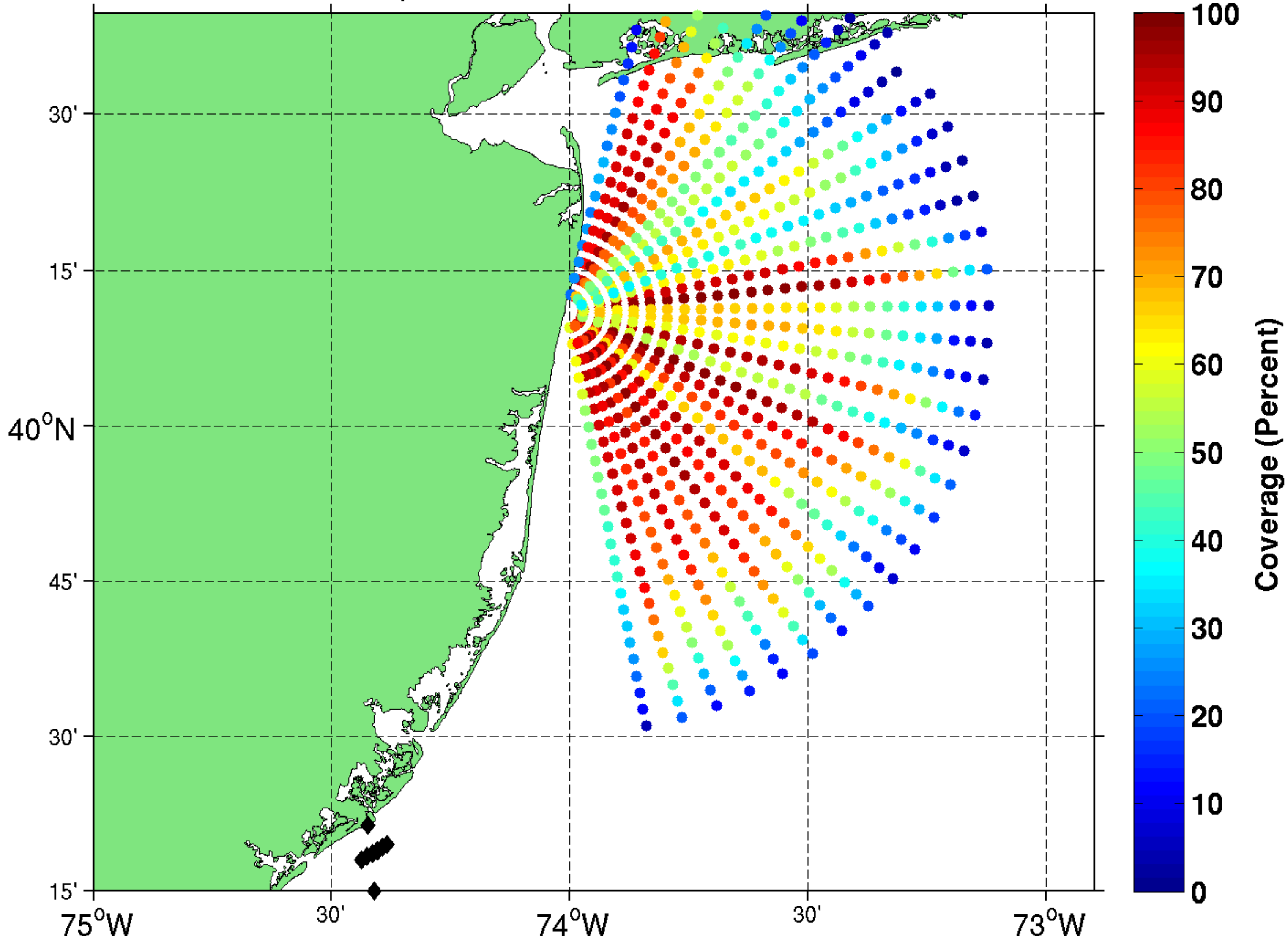

BELM RDLi Coverage, 470 of 721 possible hourly maps
From 01-Sep-2012 00:00:02 to 01-Oct-2012 00:00:02
30'
15'
40°N
45'
30'
15'
75°W
30'
74°W
30'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

BELMAR
MEASURED RADIALS

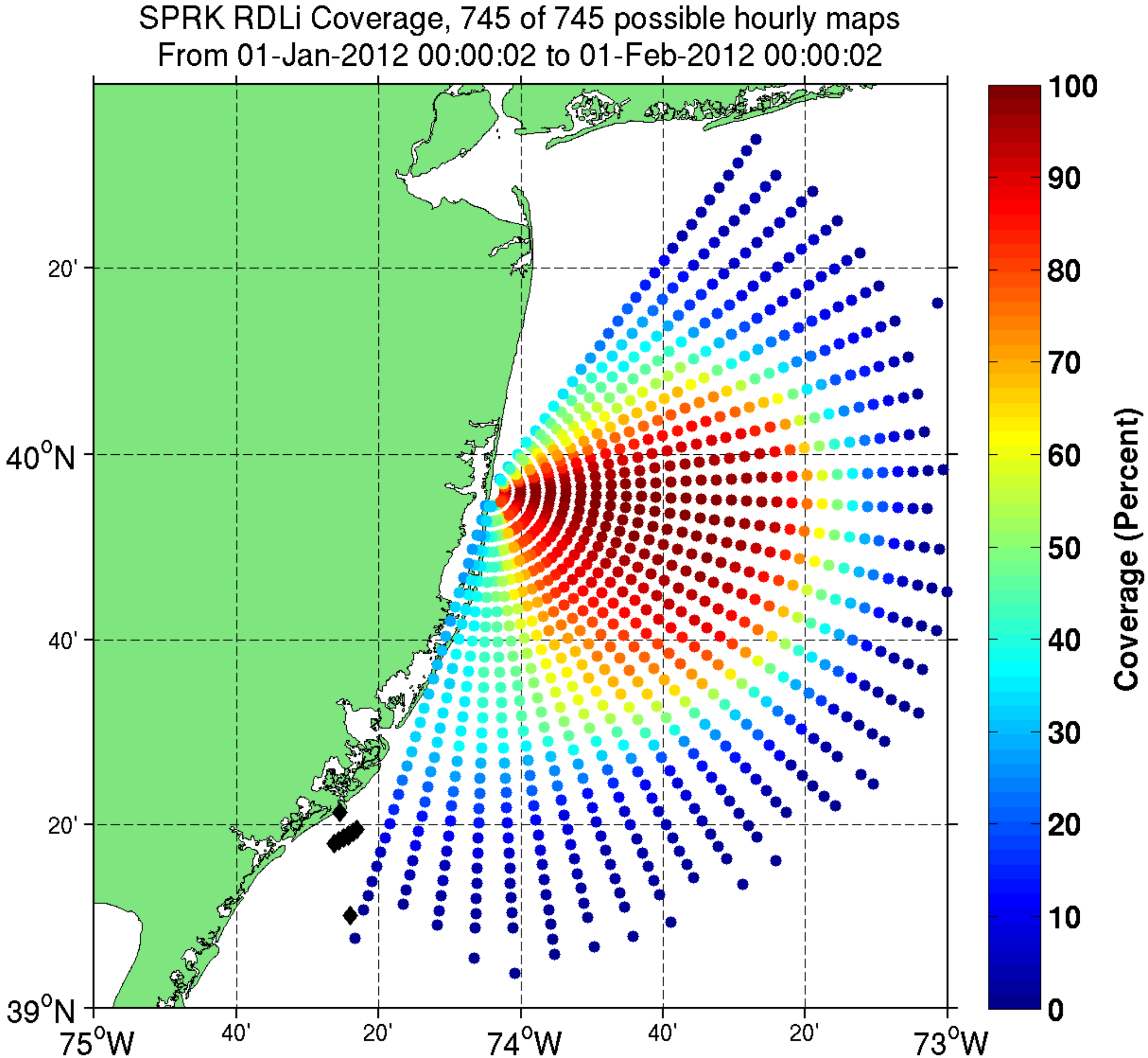

BELM RDLm Coverage, 196 of 745 possible hourly maps
From 01-Jul-2012 00:00:02 to 01-Aug-2012 00:00:02
30'
15'
40°N
45'
30'
15'
75°W
30'
74°W
30'
73°W
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

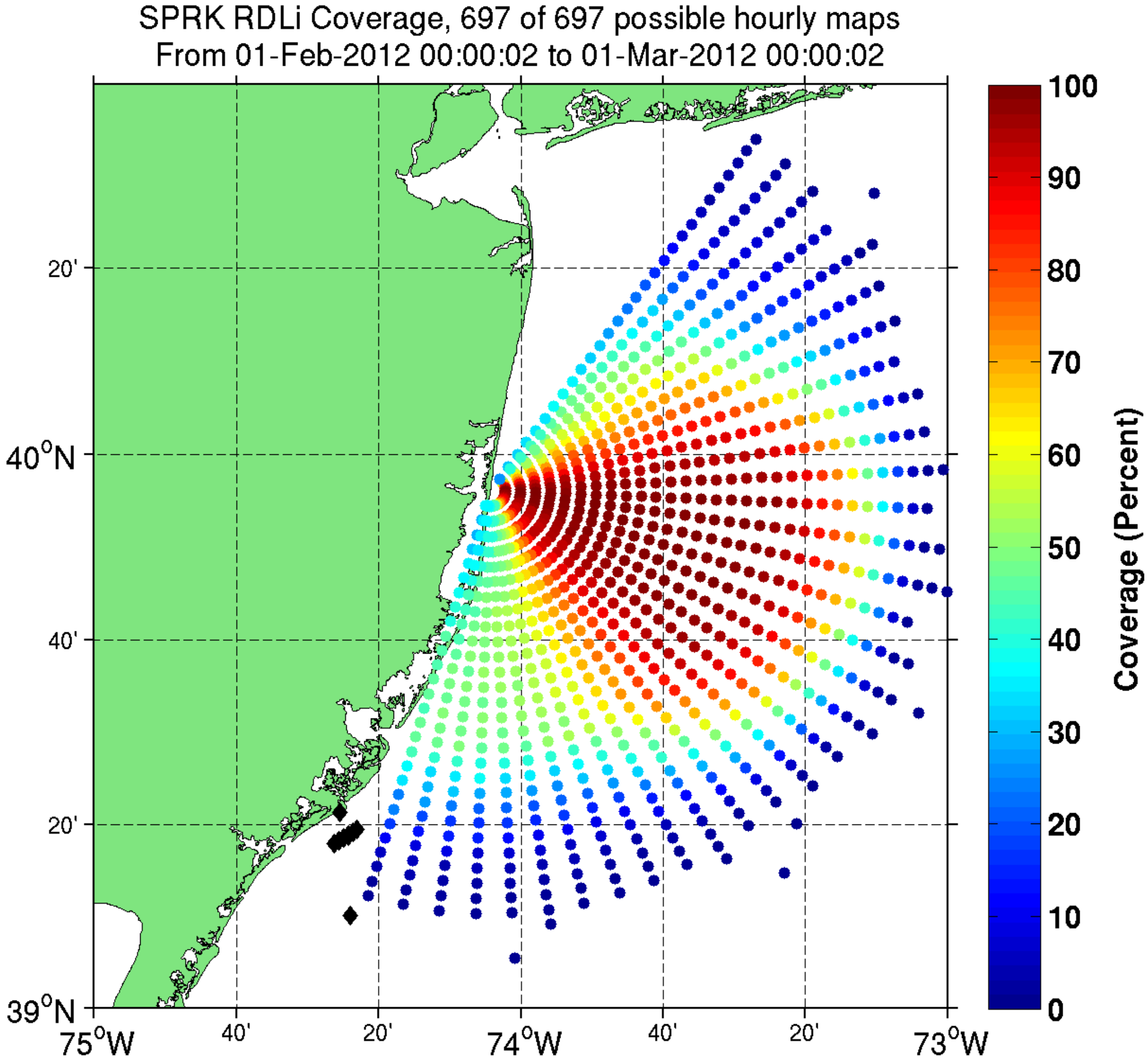

BELM RDLm Coverage, 744 of 745 possible hourly maps
From 01-Aug-2012 00:00:02 to 01-Sep-2012 00:00:02
30'
15'
40°N
45'
30'
15'
75°W
30'
74°W
30'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

BELM RDLm Coverage, 470 of 721 possible hourly maps
From 01-Sep-2012 00:00:02 to 01-Oct-2012 00:00:02



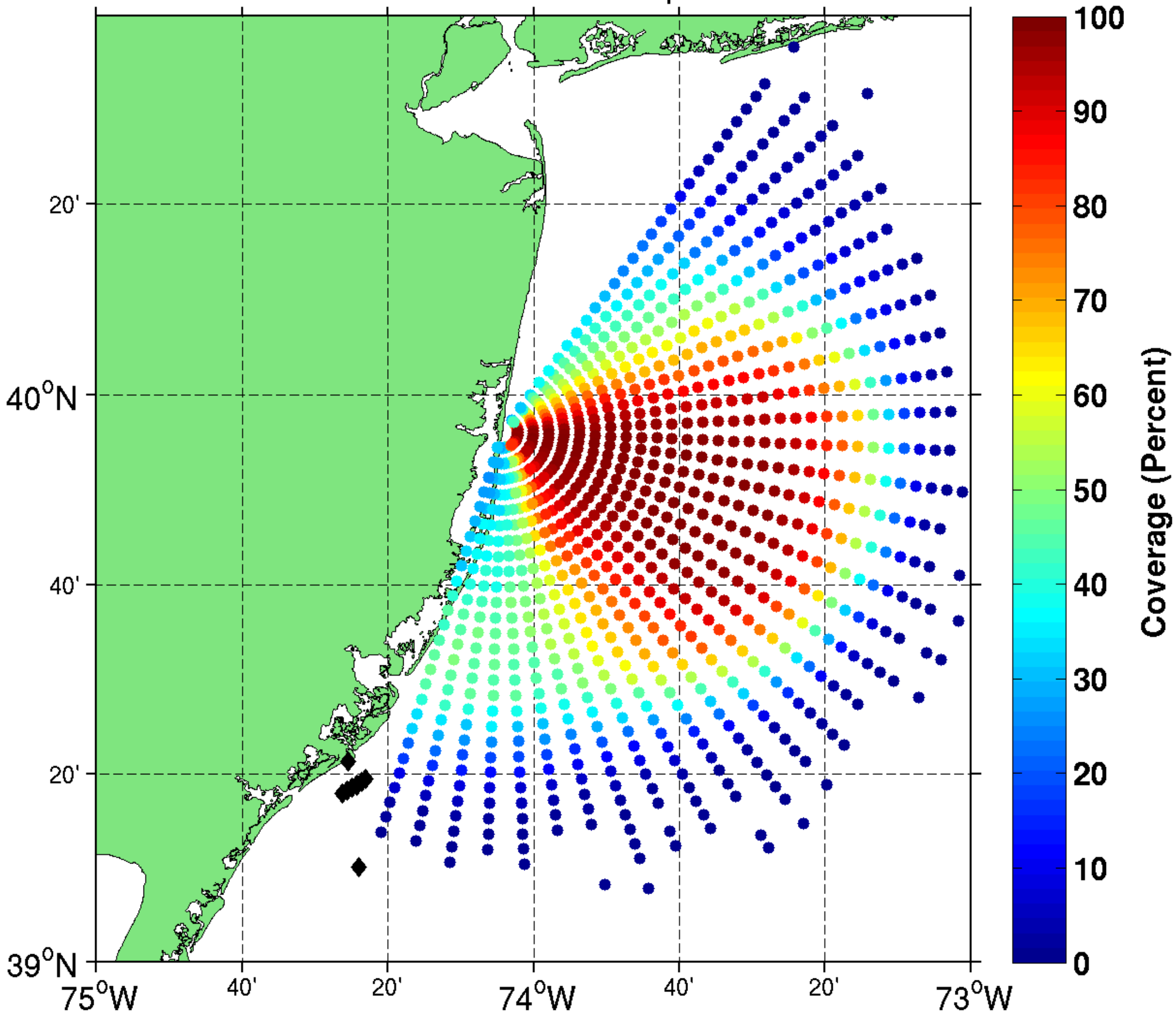
SEASIDE PARK
IDEAL RADIALS


SPRK RDLi Coverage, 745 of 745 possible hourly maps
From 01-Jan-2012 00:00:02 to 01-Feb-2012 00:00:02
20'
40°N
40'
20'
39°N
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

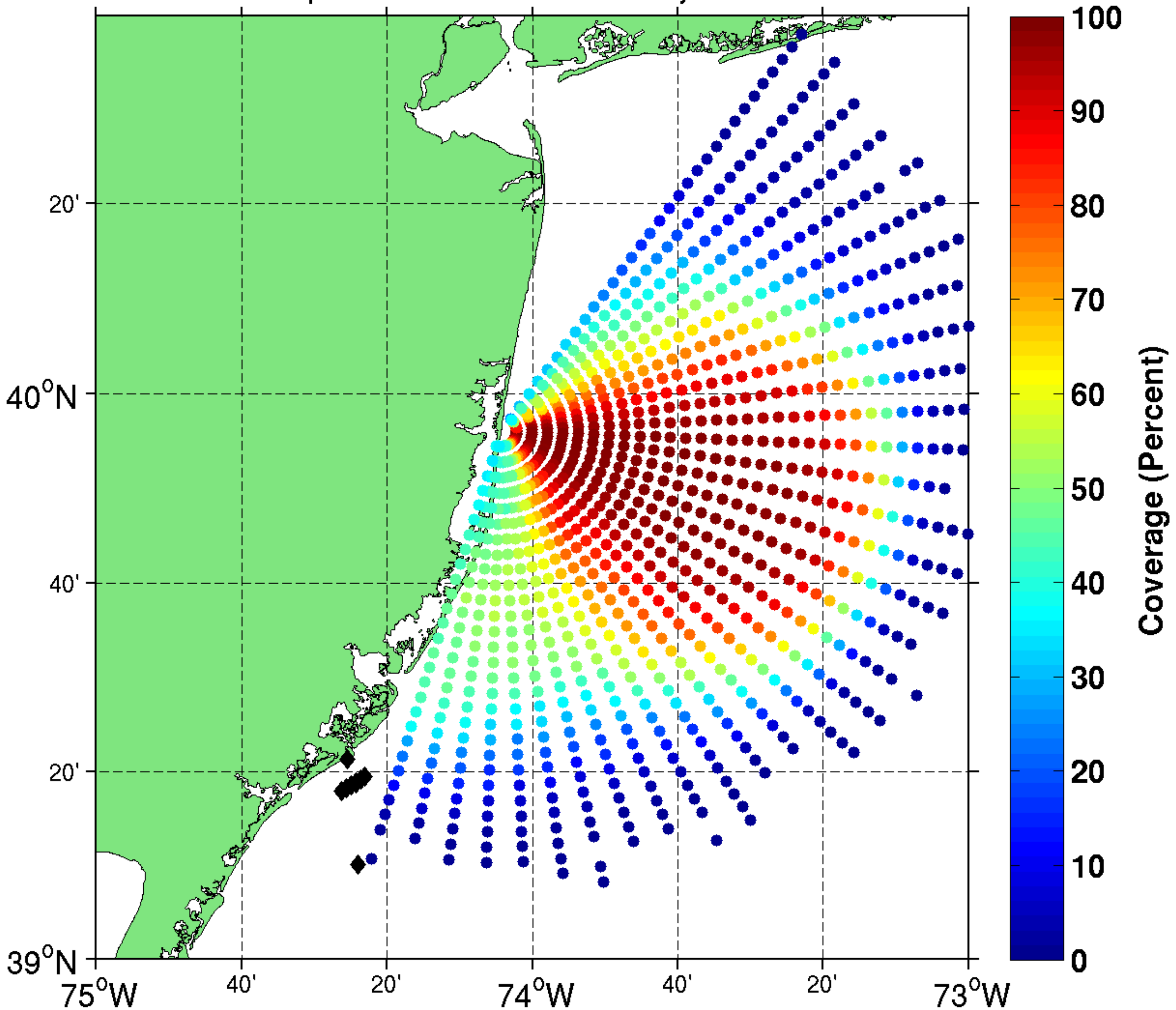


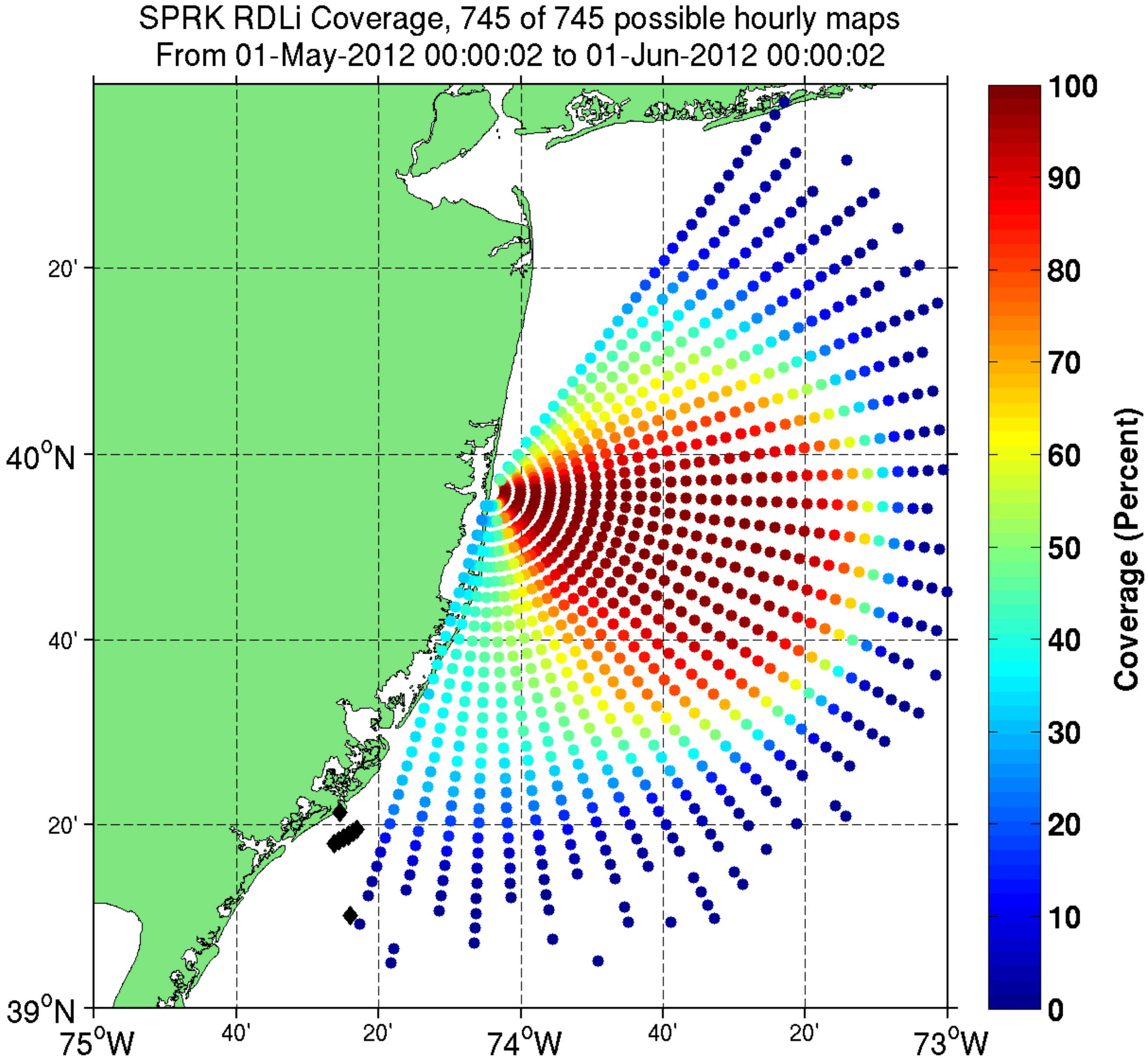
SPRK RDLi Coverage, 697 of 697 possible hourly maps
From 01-Feb-2012 00:00:02 to 01-Mar-2012 00:00:02
20'
40°N
40'
20'
39°N
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

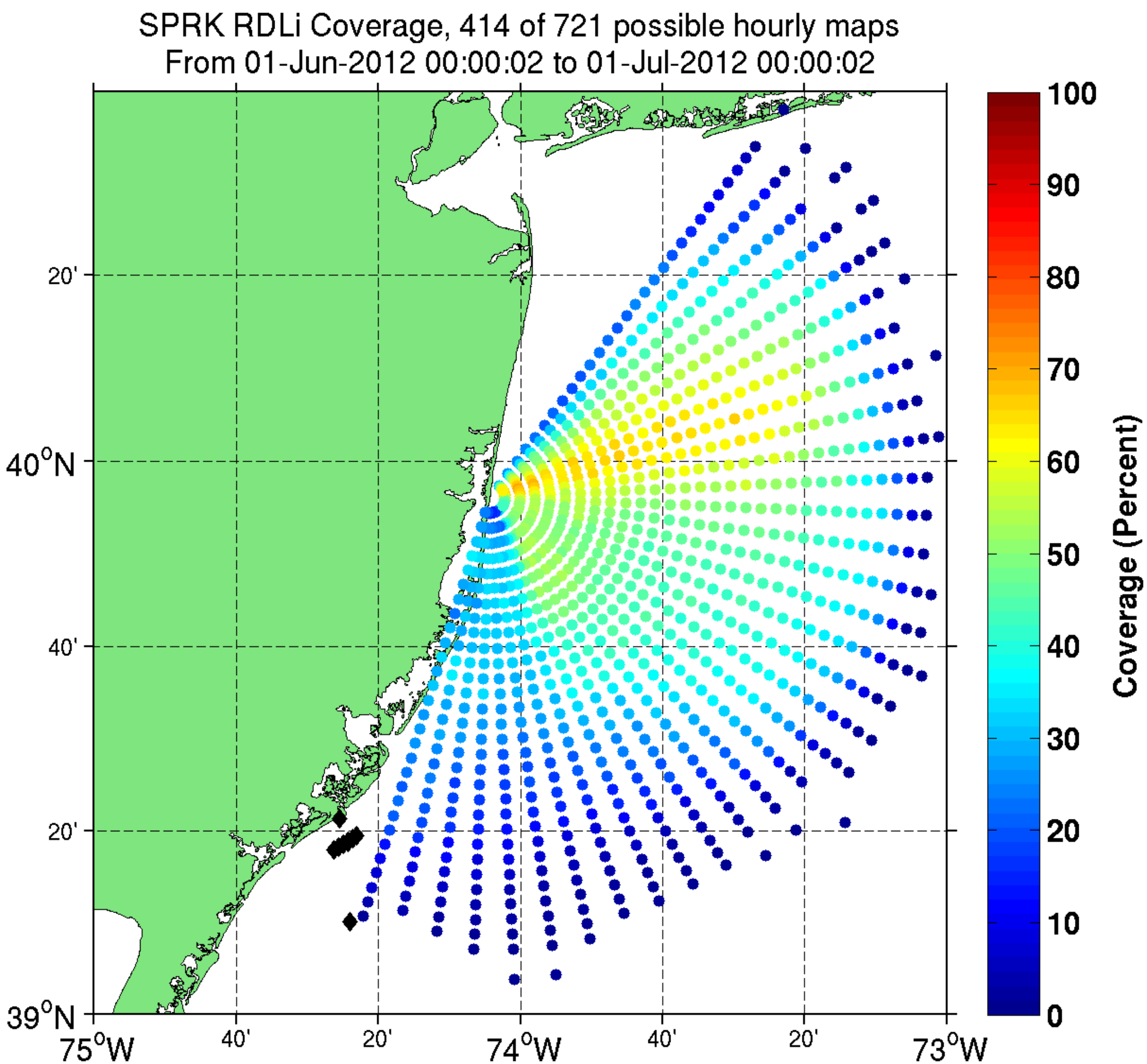
SPRK RDLi Coverage, 745 of 745 possible hourly maps
From 01-Mar-2012 00:00:02 to 01-Apr-2012 00:00:02



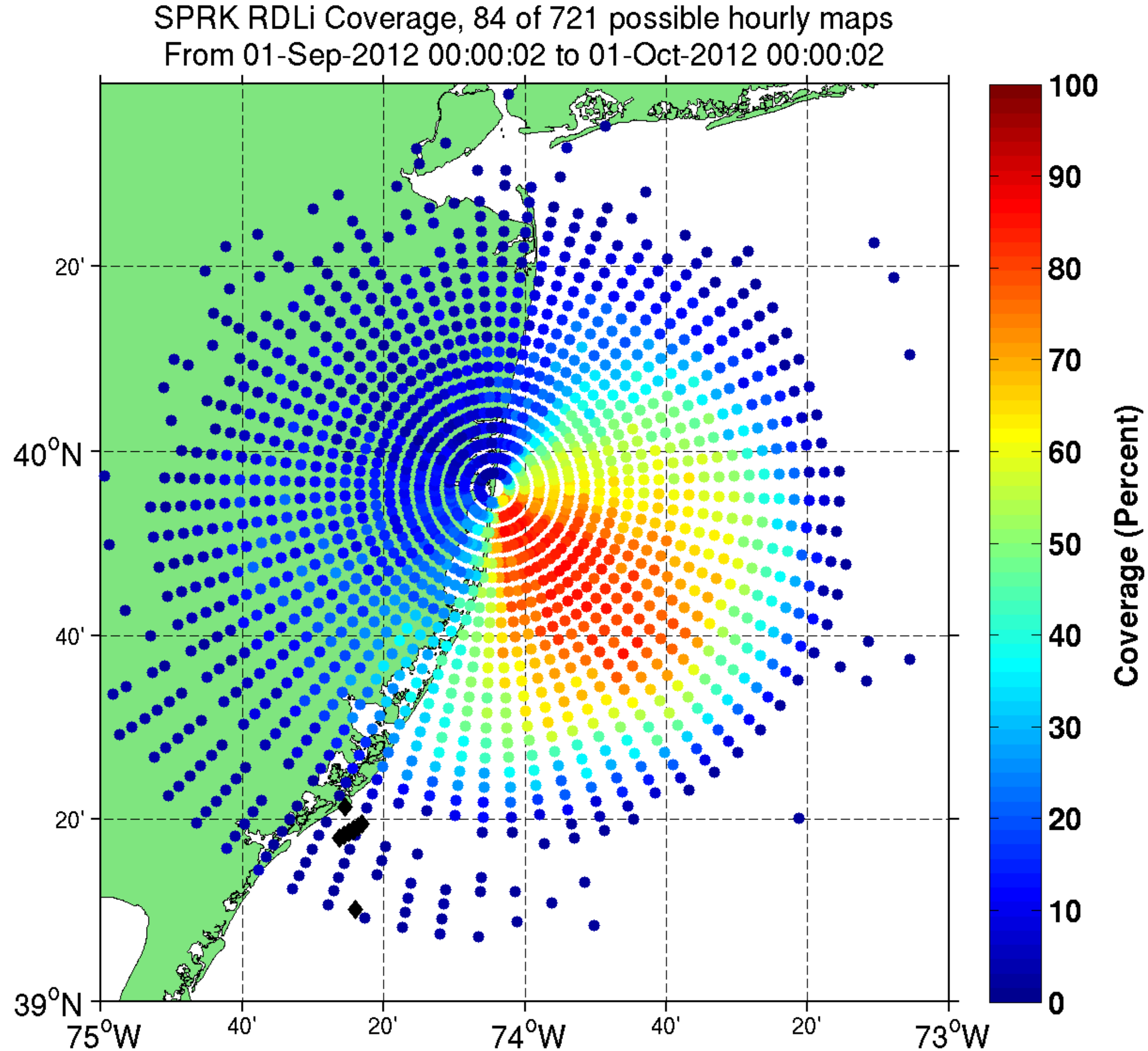
SPRK RDLi Coverage, 721 of 721 possible hourly maps
From 01-Apr-2012 00:00:02 to 01-May-2012 00:00:02



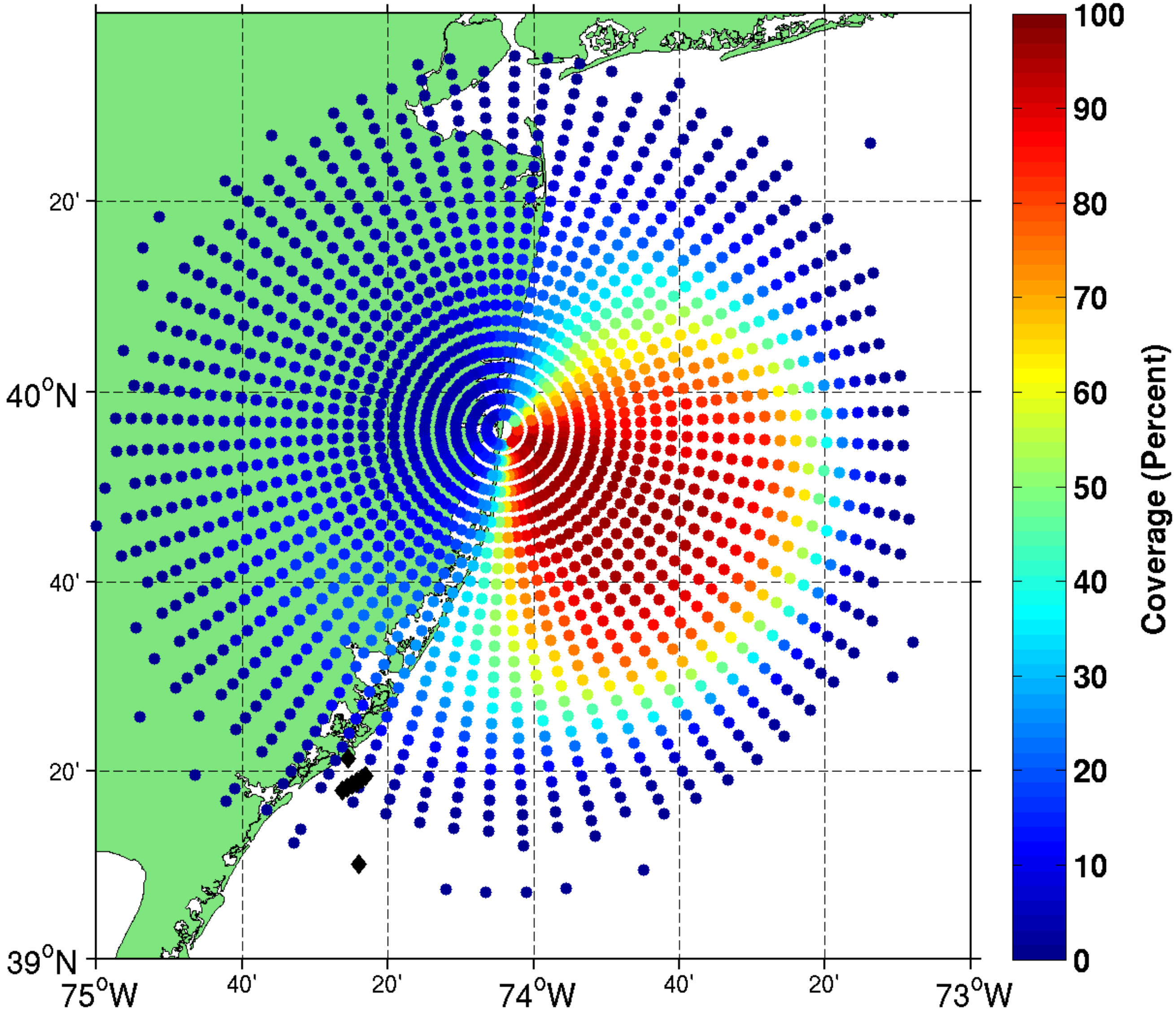

SPRK RDLi Coverage, 745 of 745 possible hourly maps
From 01-May-2012 00:00:02 to 01-Jun-2012 00:00:02
20'
40°N
40'
20'
39°N
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)



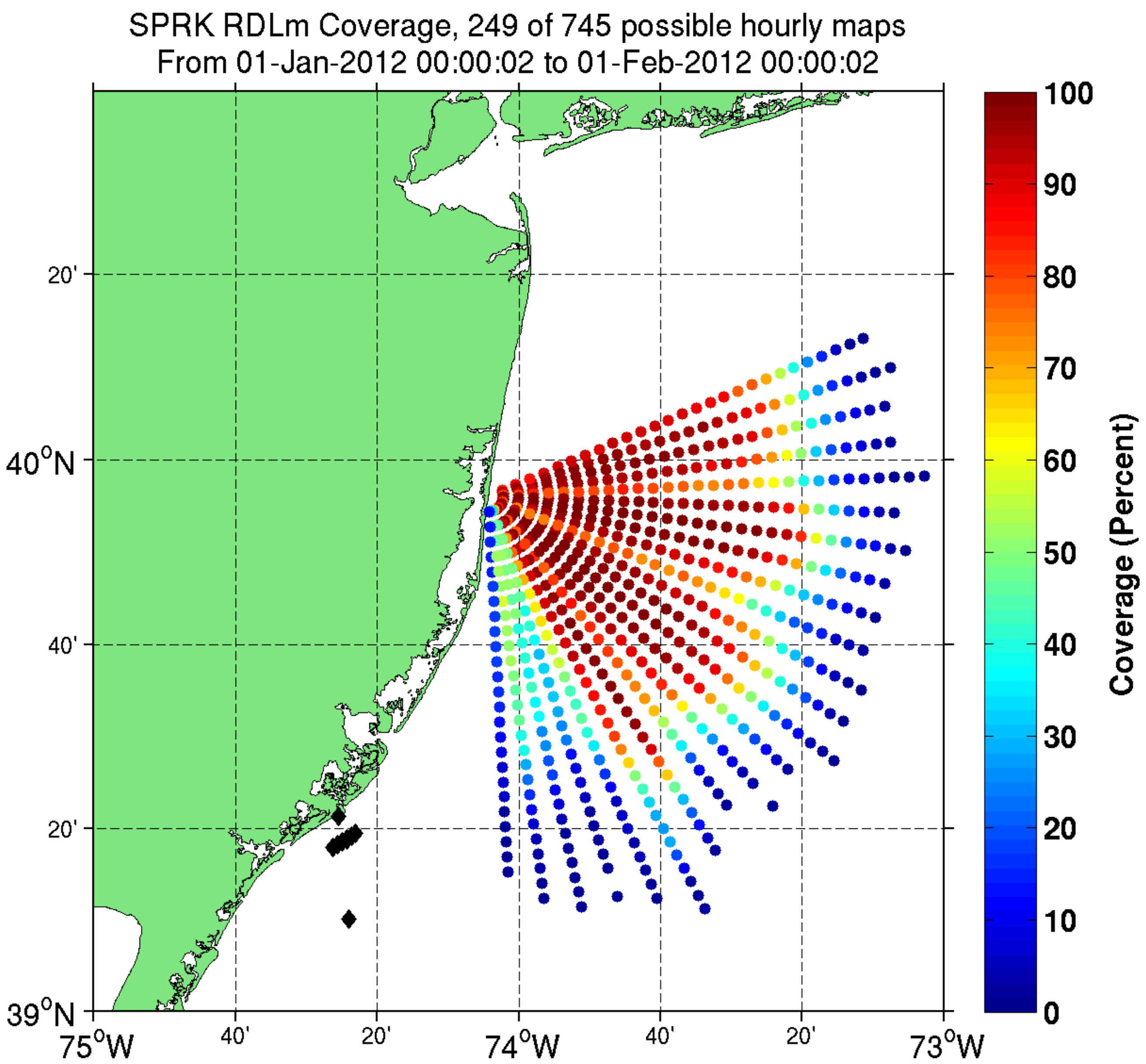
SPRK RDLi Coverage, 414 of 721 possible hourly maps
From 01-Jun-2012 00:00:02 to 01-Jul-2012 00:00:02
20'
40°N
40'
20'
39°N
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

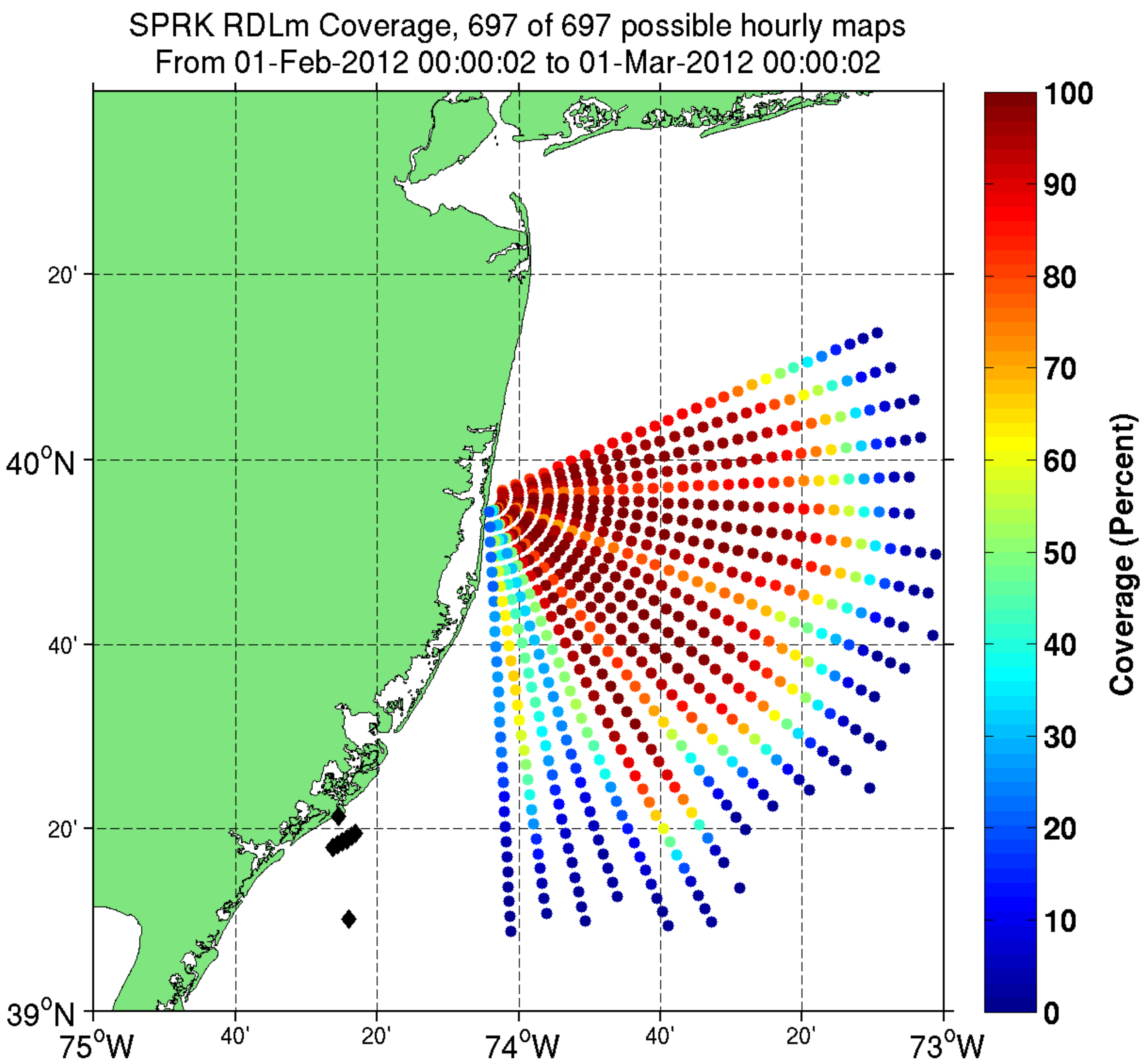

SPRK RDLi Coverage, 84 of 721 possible hourly maps
From 01-Sep-2012 00:00:02 to 01-Oct-2012 00:00:02
20'
40°N
40'
20'
39°N
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

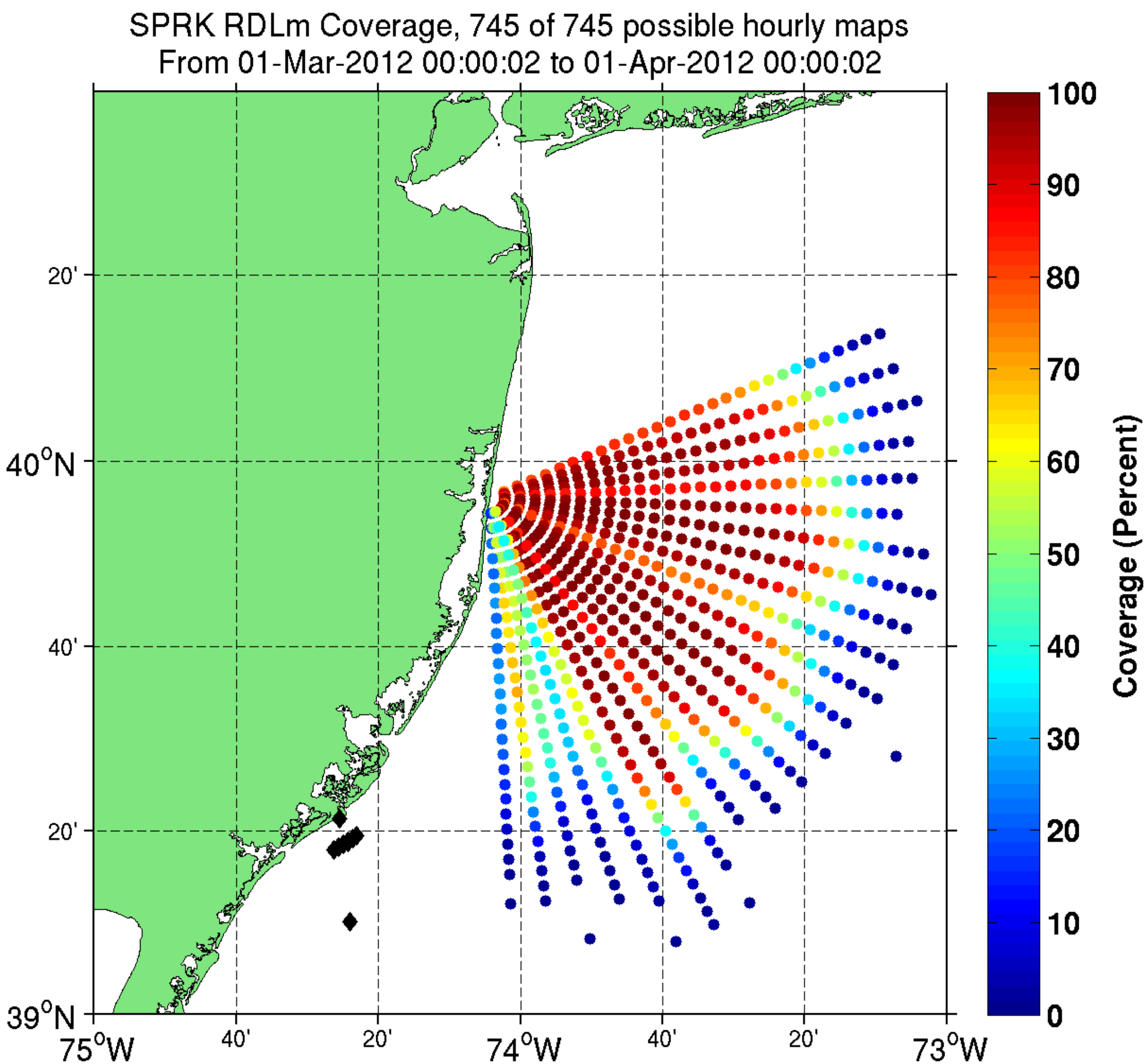
SPRK RDLi Coverage, 690 of 745 possible hourly maps
From 01-Oct-2012 00:00:02 to 01-Nov-2012 00:00:02

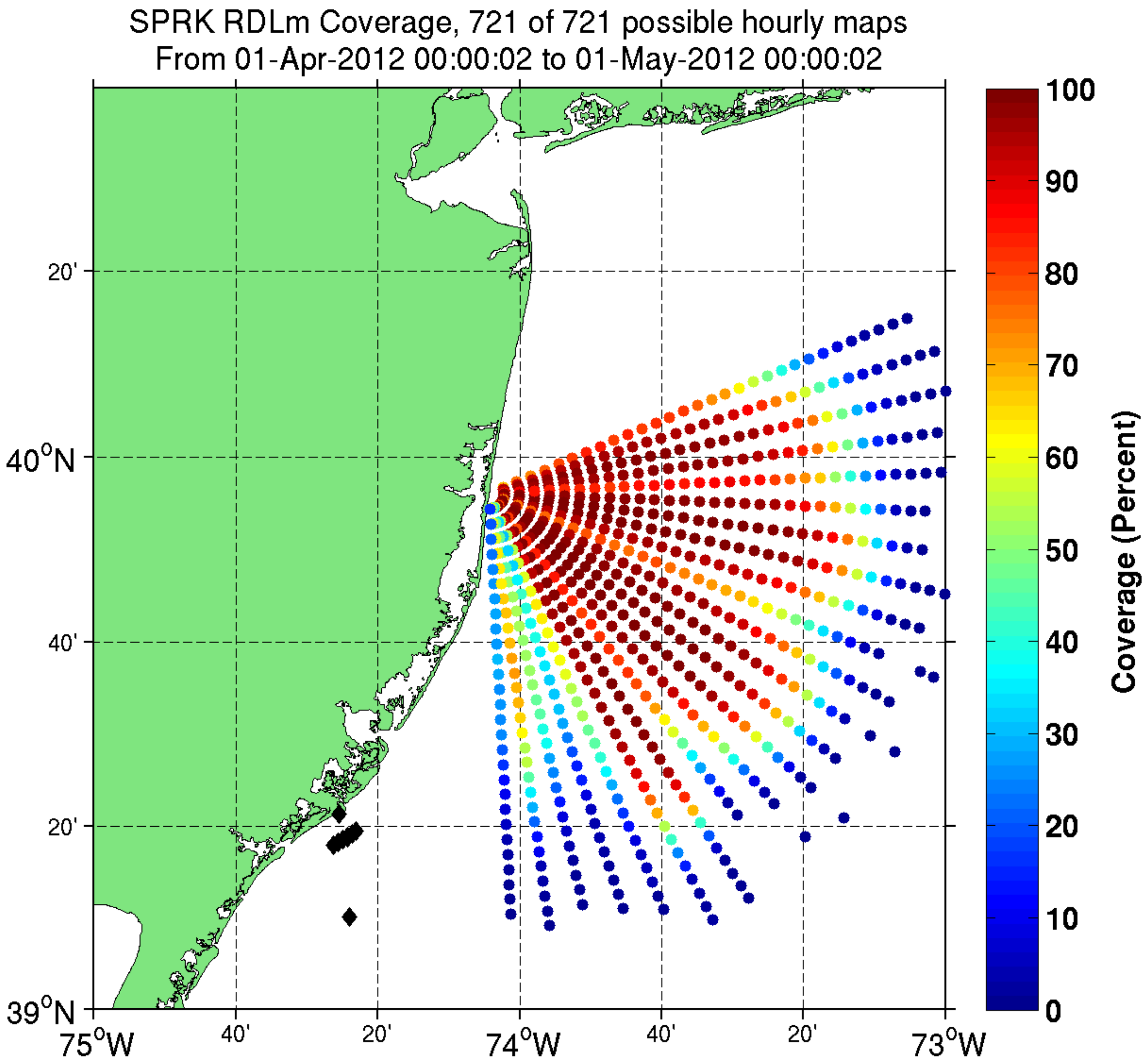


SEASIDE PARK
MEASURED RADIALS

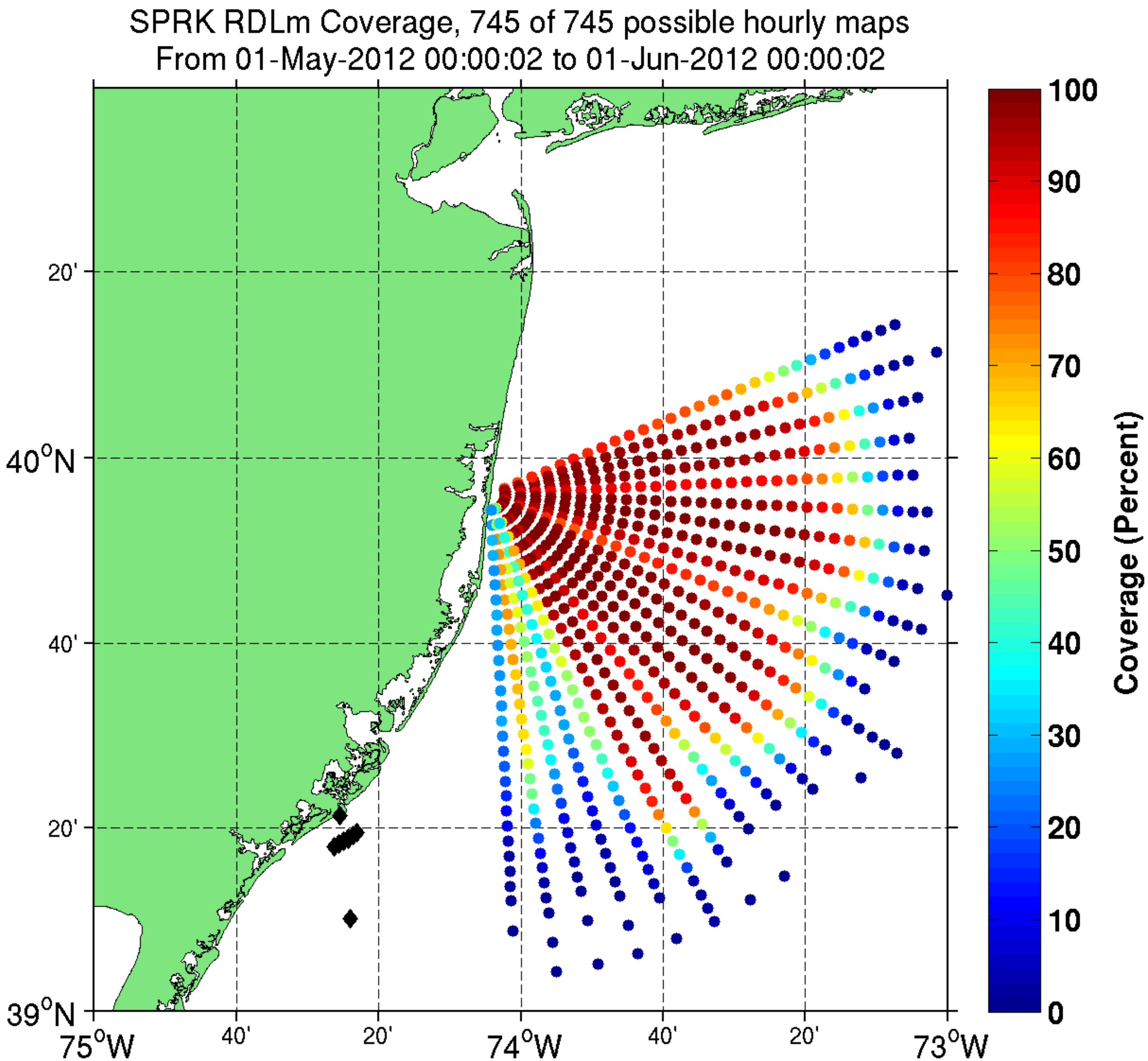

SPRK RDLm Coverage, 249 of 745 possible hourly maps
From 01-Jan-2012 00:00:02 to 01-Feb-2012 00:00:02
20'
40°N
40'
20'
39°N
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)


SPRK RDLm Coverage, 697 of 697 possible hourly maps
From 01-Feb-2012 00:00:02 to 01-Mar-2012 00:00:02
20'
40°N
40'
20'
39°N
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

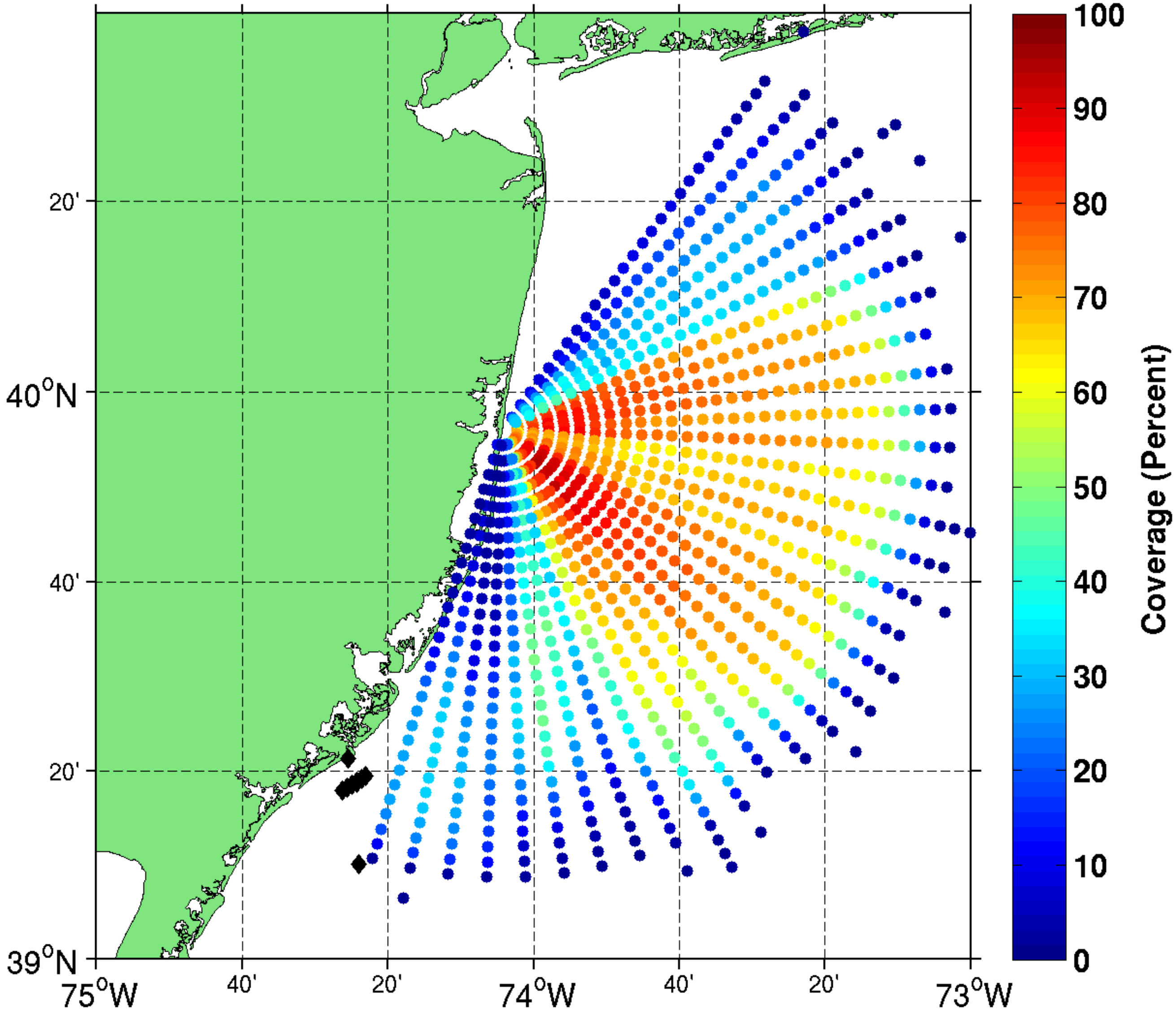

SPRK RDLm Coverage, 745 of 745 possible hourly maps
From 01-Mar-2012 00:00:02 to 01-Apr-2012 00:00:02
20'
40°N
40'
20'
39°N
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

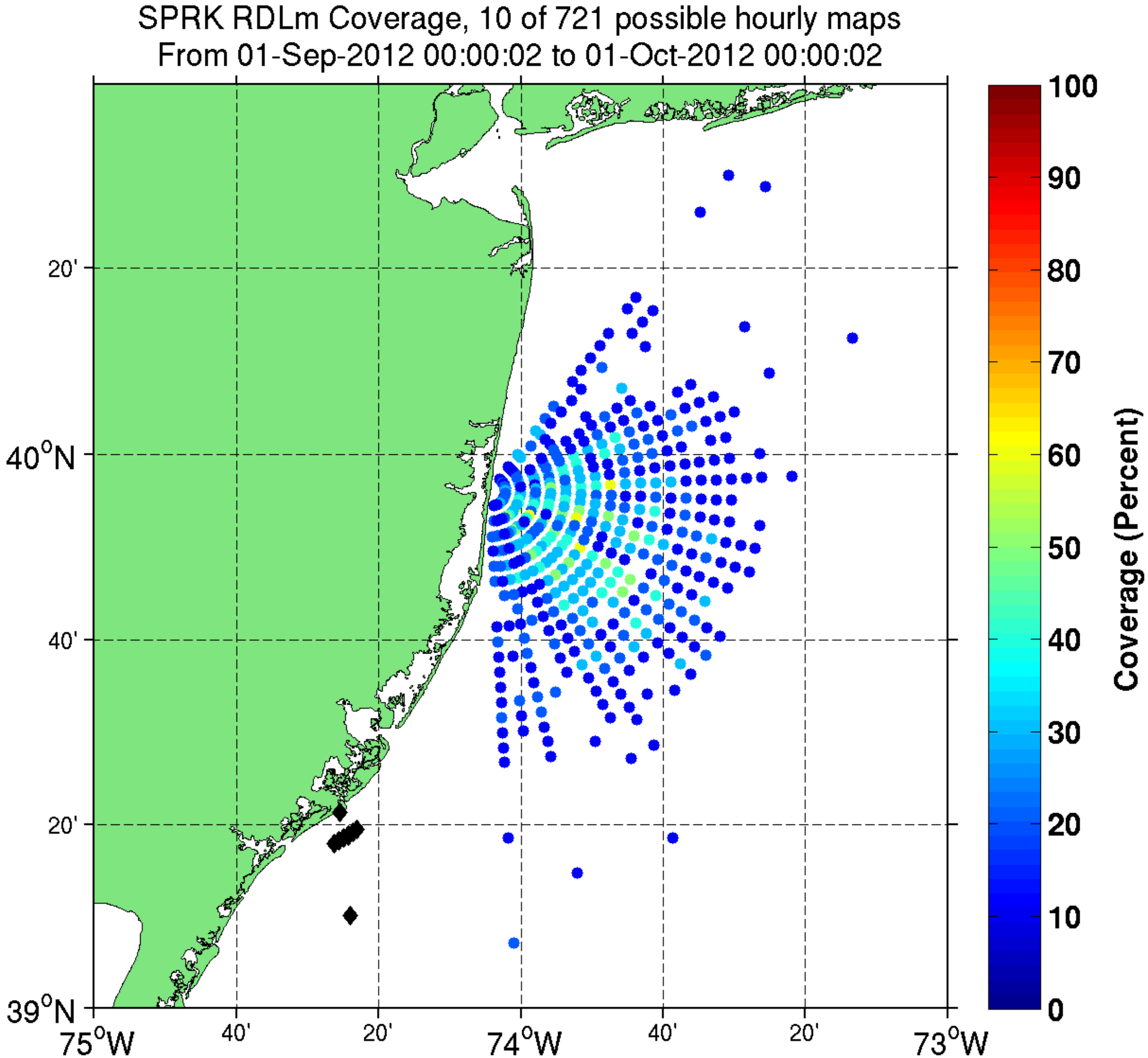


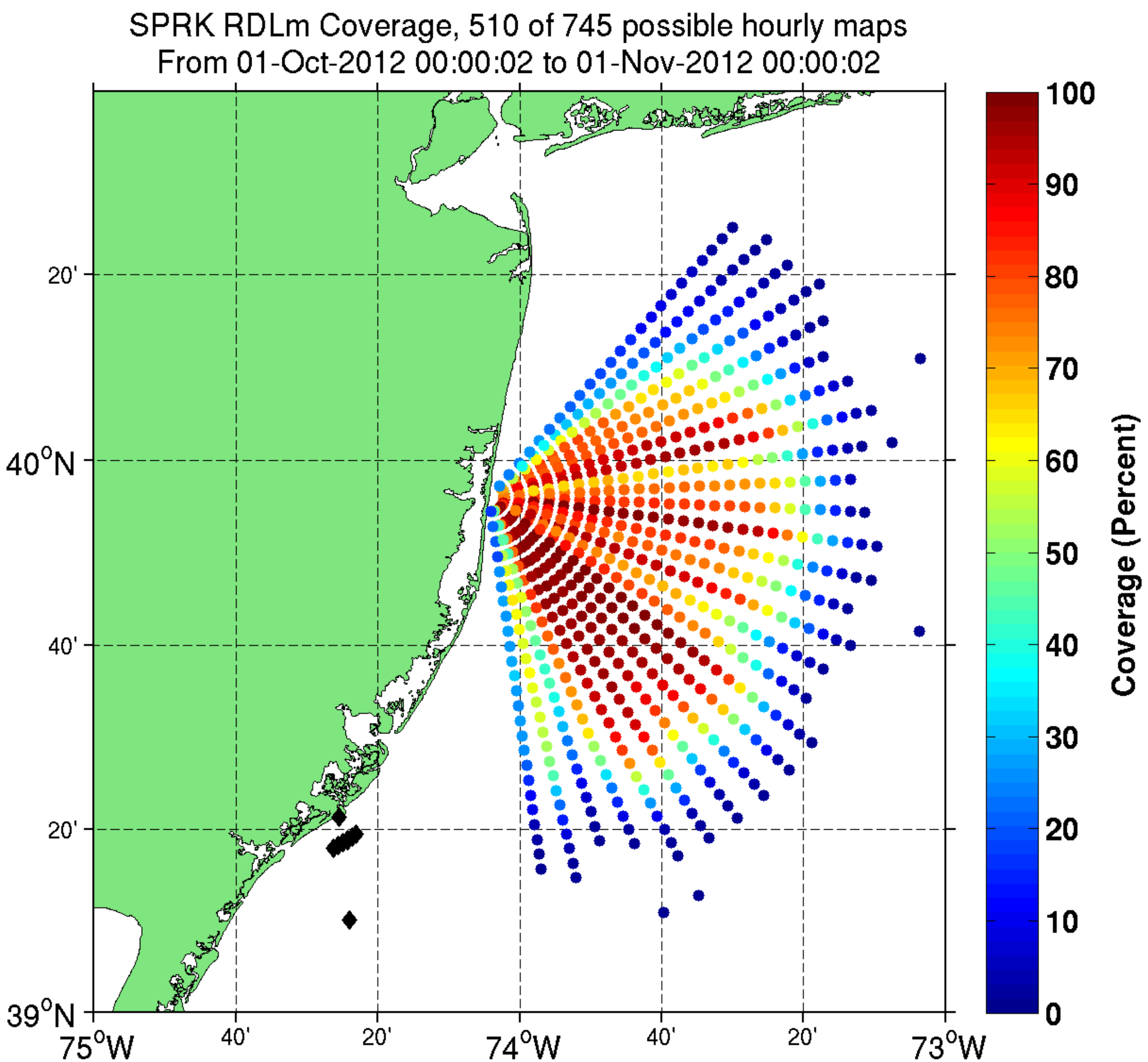
SPRK RDLm Coverage, 721 of 721 possible hourly maps
From 01-Apr-2012 00:00:02 to 01-May-2012 00:00:02
20'
40°N
40'
20'
39°N
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)


SPRK RDLm Coverage, 745 of 745 possible hourly maps
From 01-May-2012 00:00:02 to 01-Jun-2012 00:00:02
20'
40°N
40'
20'
39°N
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

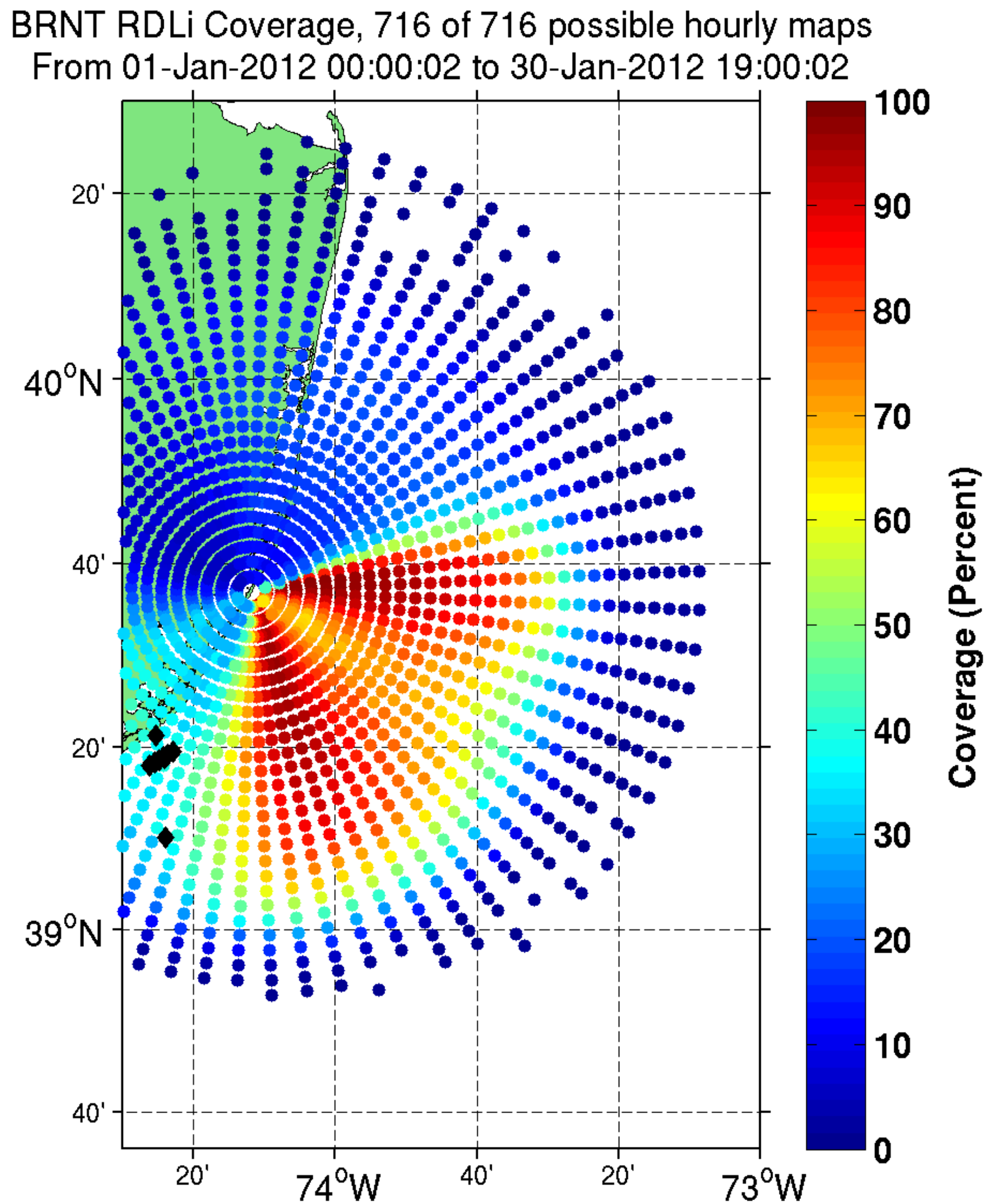
SPRK RDLm Coverage, 415 of 721 possible hourly maps
From 01-Jun-2012 00:00:02 to 01-Jul-2012 00:00:02

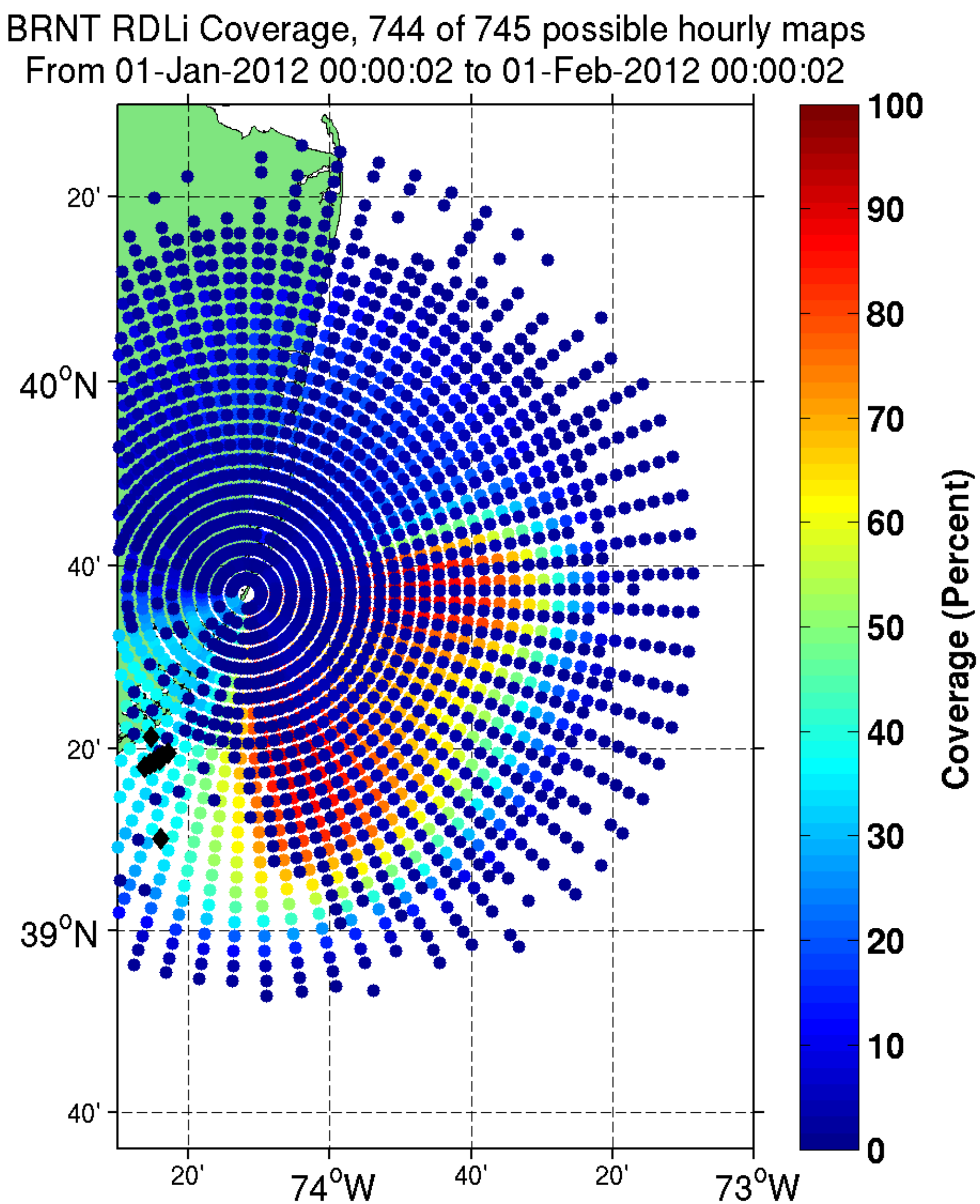



SPRK RDLm Coverage, 10 of 721 possible hourly maps
From 01-Sep-2012 00:00:02 to 01-Oct-2012 00:00:02
20'
40°N
40'
20'
39°N
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)


SPRK RDLm Coverage, 510 of 745 possible hourly maps
From 01-Oct-2012 00:00:02 to 01-Nov-2012 00:00:02
20'
40°N
40'
20'
39°N
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

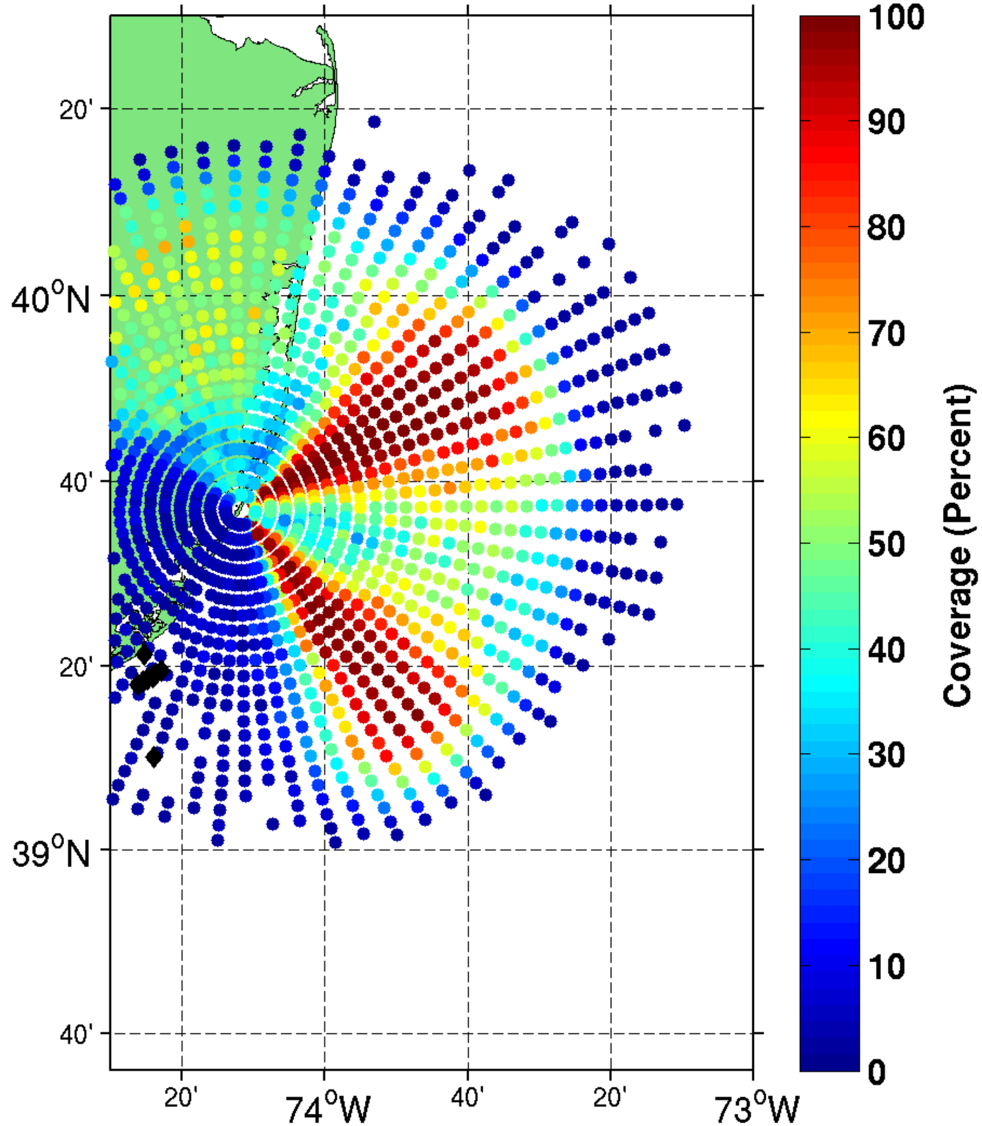
BRANT BEACH
IDEAL RADIALS

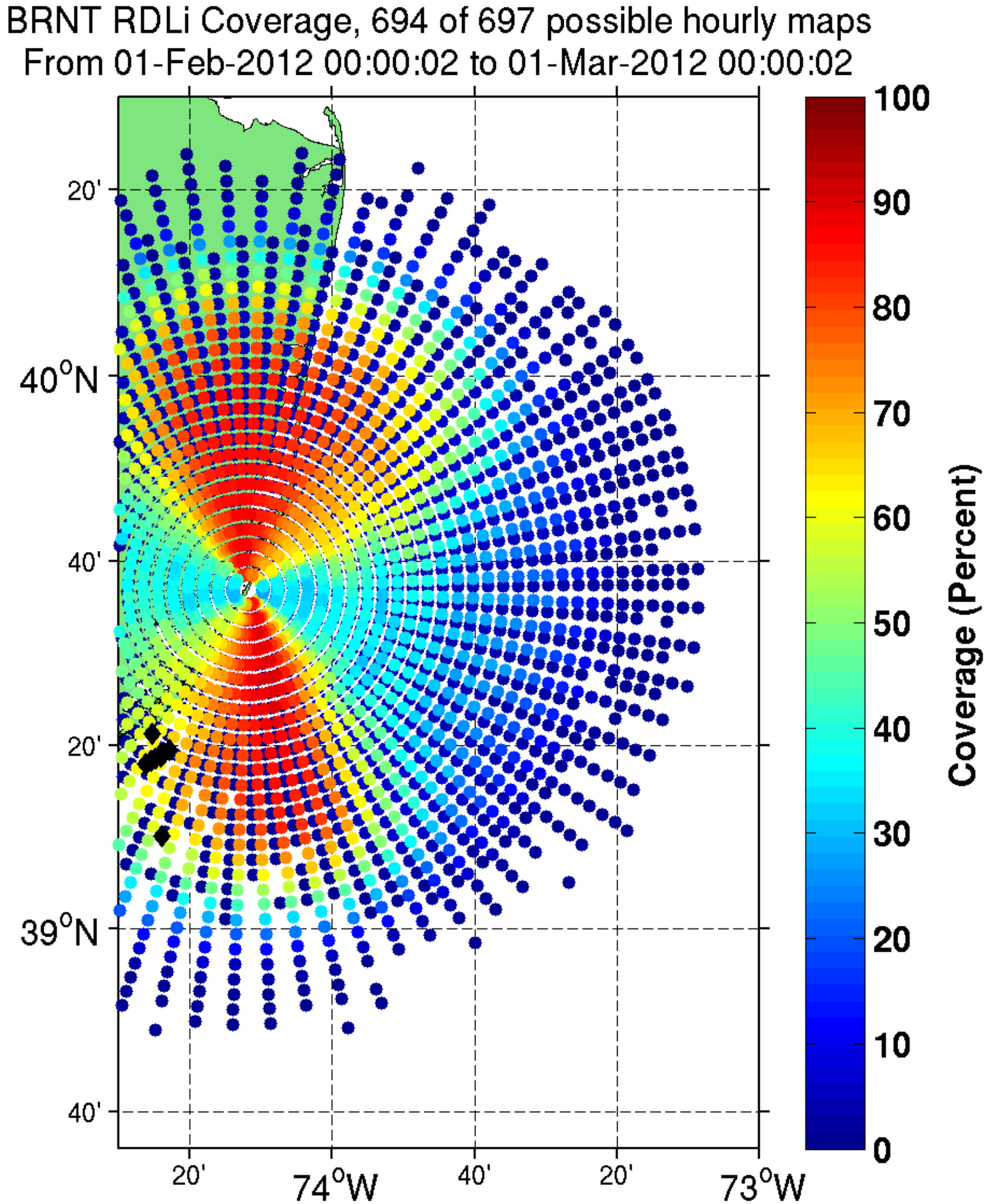

BRNT RDLi Coverage, 716 of 716 possible hourly maps
From 01-Jan-2012 00:00:02 to 30-Jan-2012 19:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

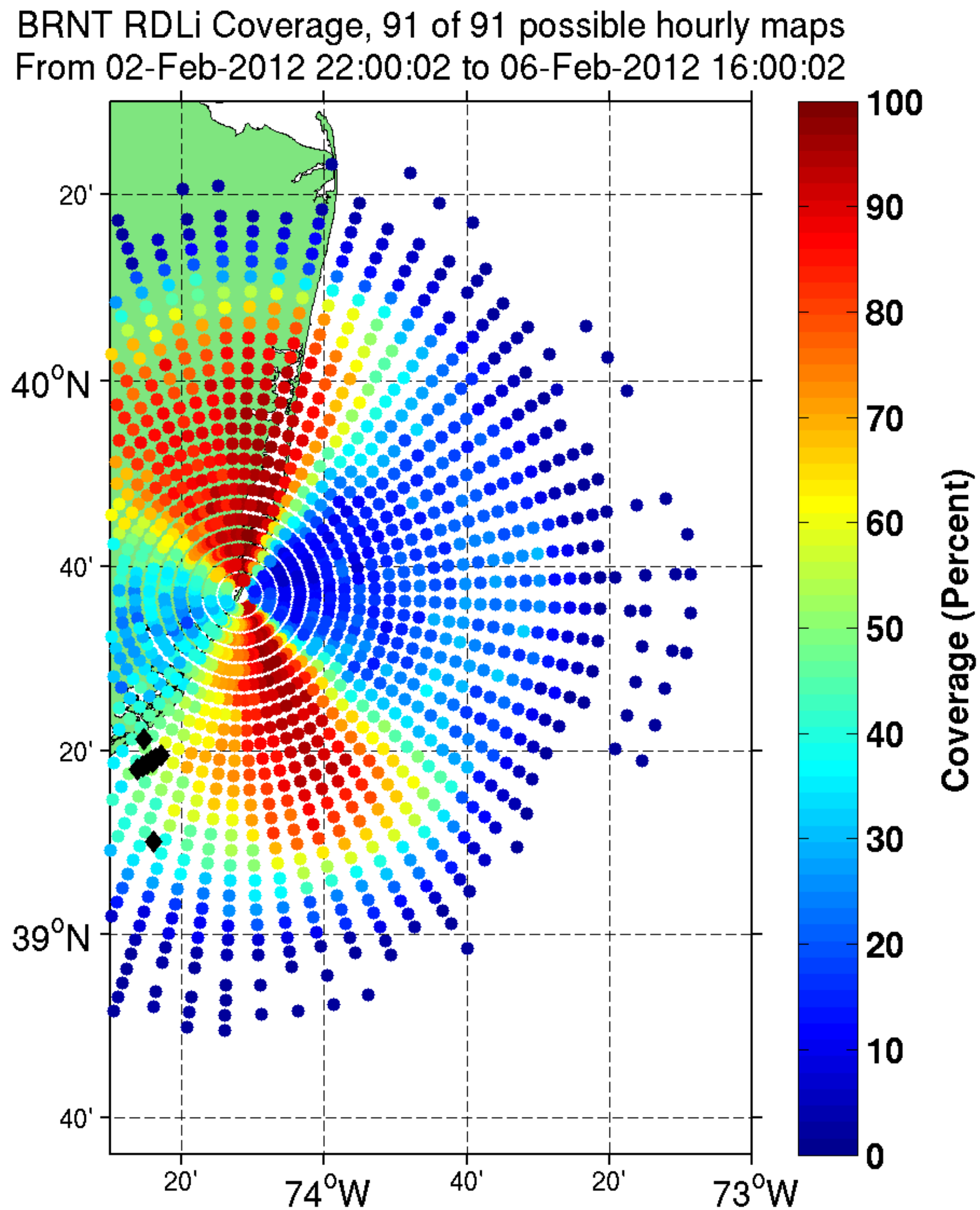


BRNT RDLi Coverage, 744 of 745 possible hourly maps
From 01-Jan-2012 00:00:02 to 01-Feb-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

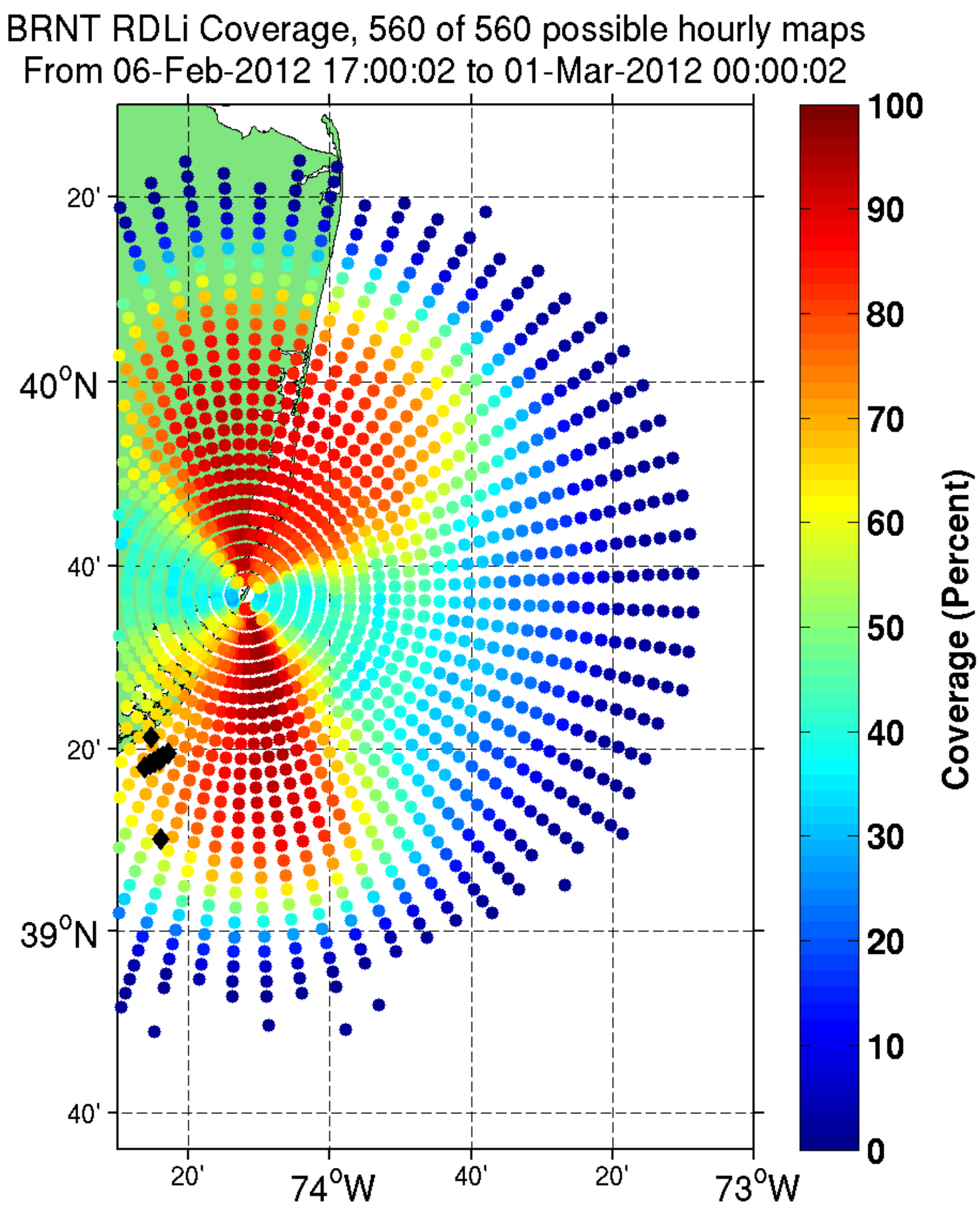
BRNT RDLi Coverage, 70 of 74 possible hourly maps
From 30-Jan-2012 20:00:02 to 02-Feb-2012 21:00:02

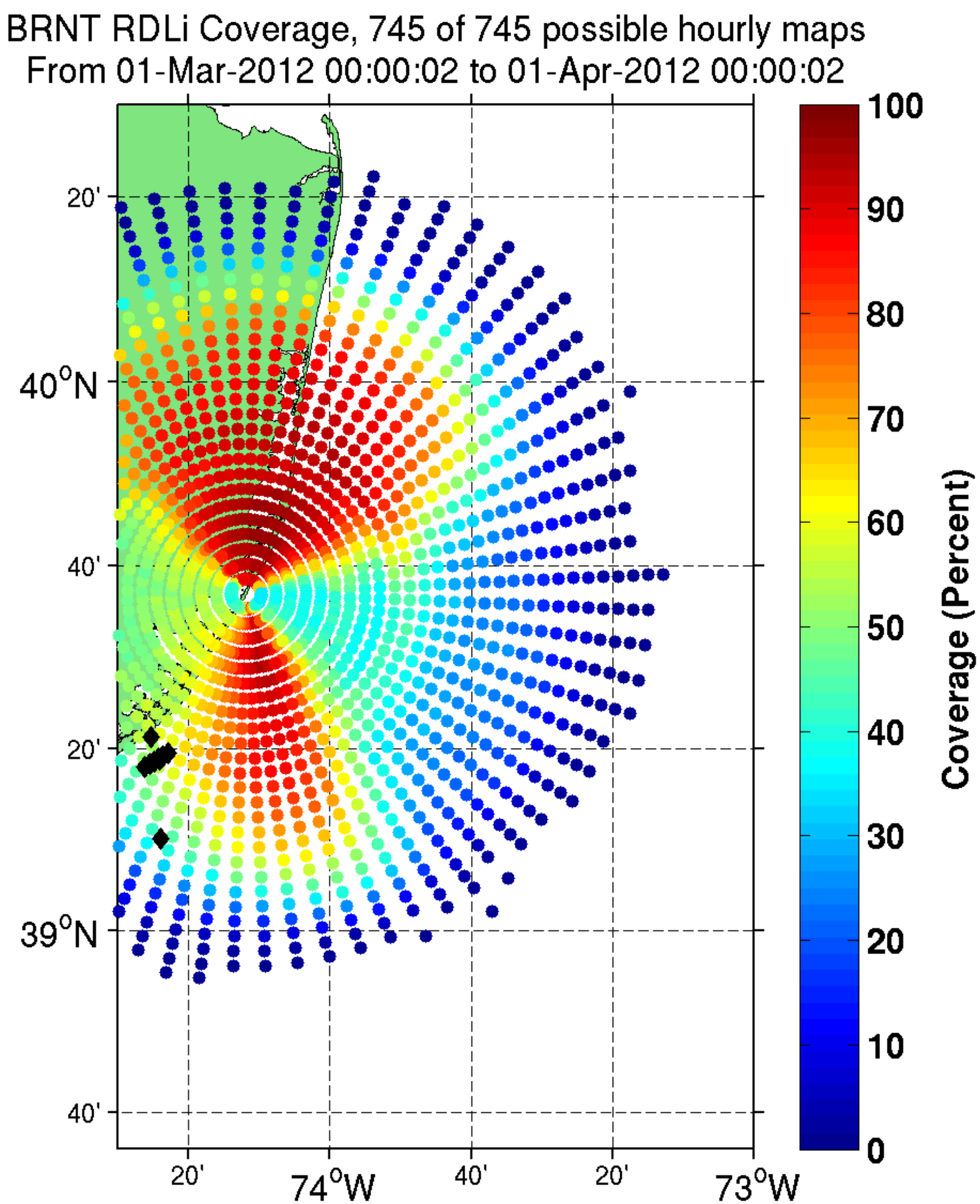


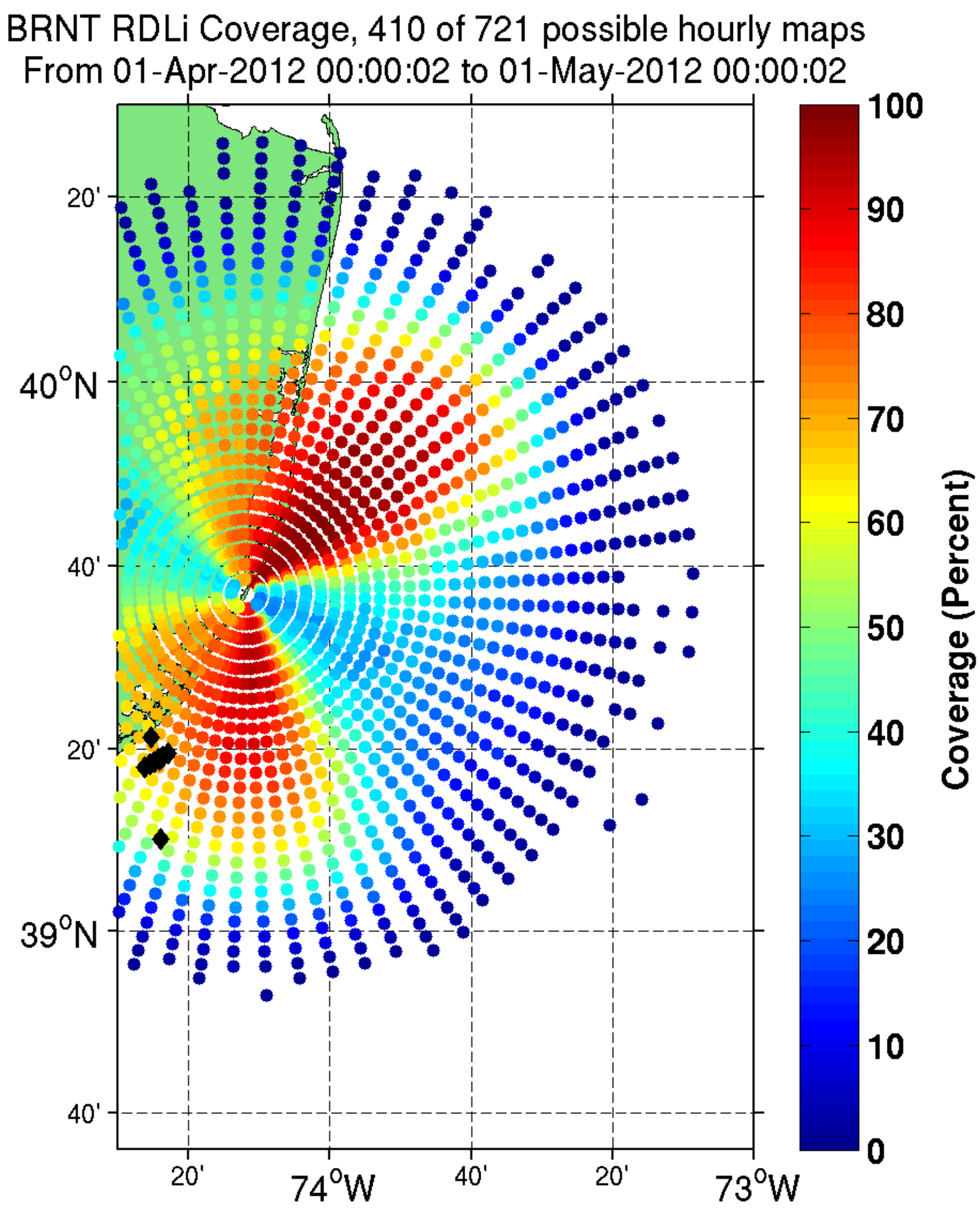

BRNT RDLi Coverage, 694 of 697 possible hourly maps
From 01-Feb-2012 00:00:02 to 01-Mar-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

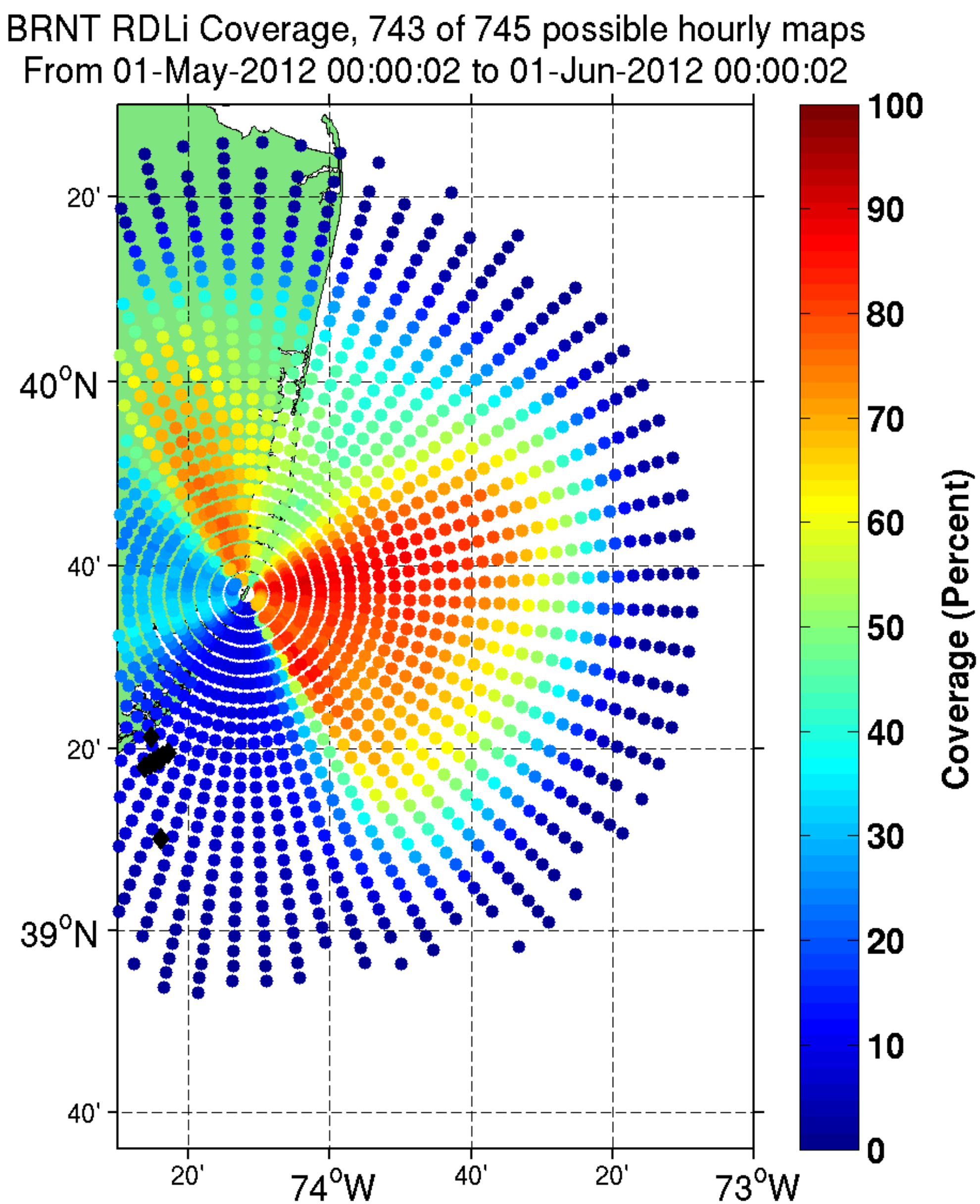


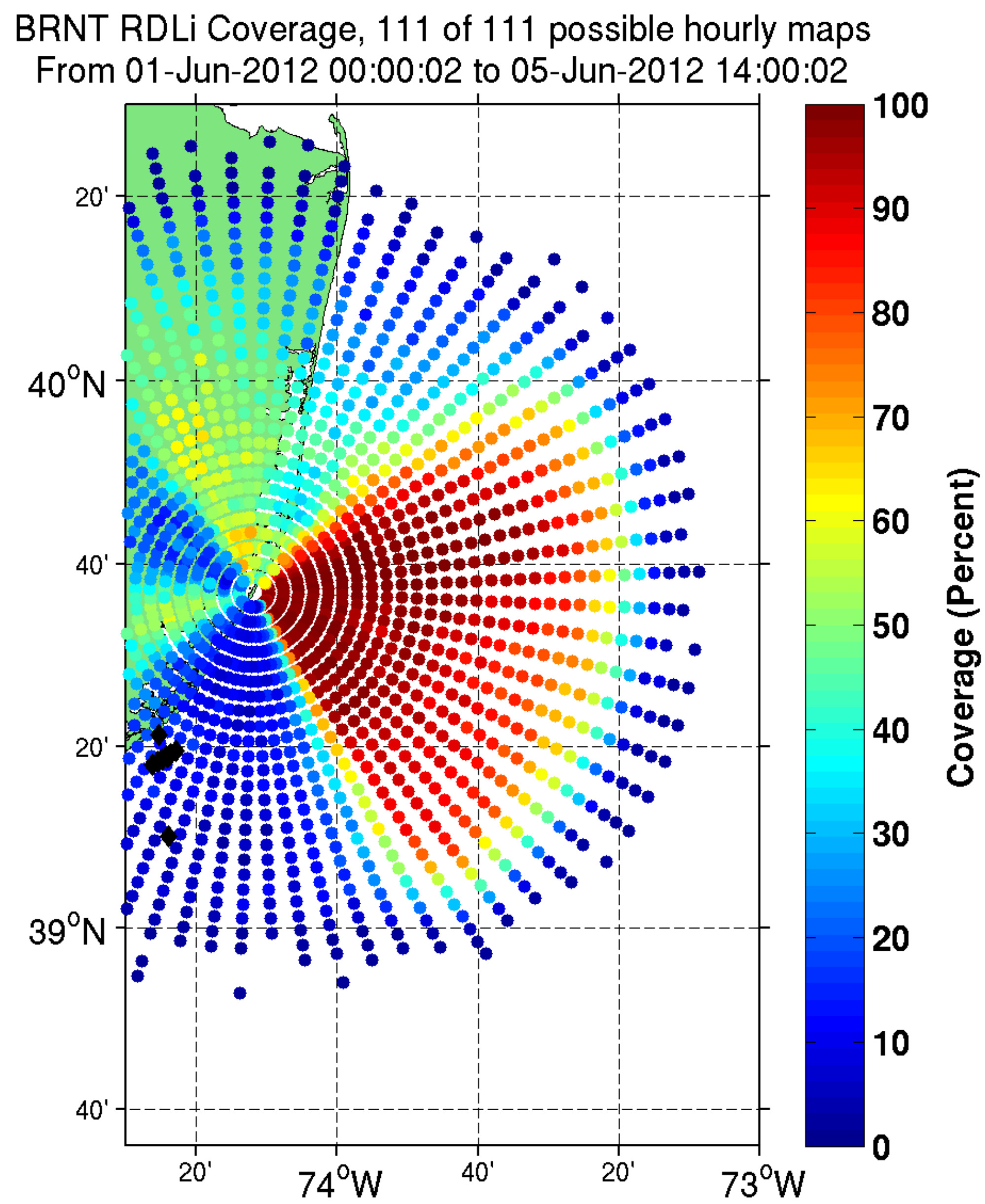
BRNT RDLi Coverage, 91 of 91 possible hourly maps
From 02-Feb-2012 22:00:02 to 06-Feb-2012 16:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

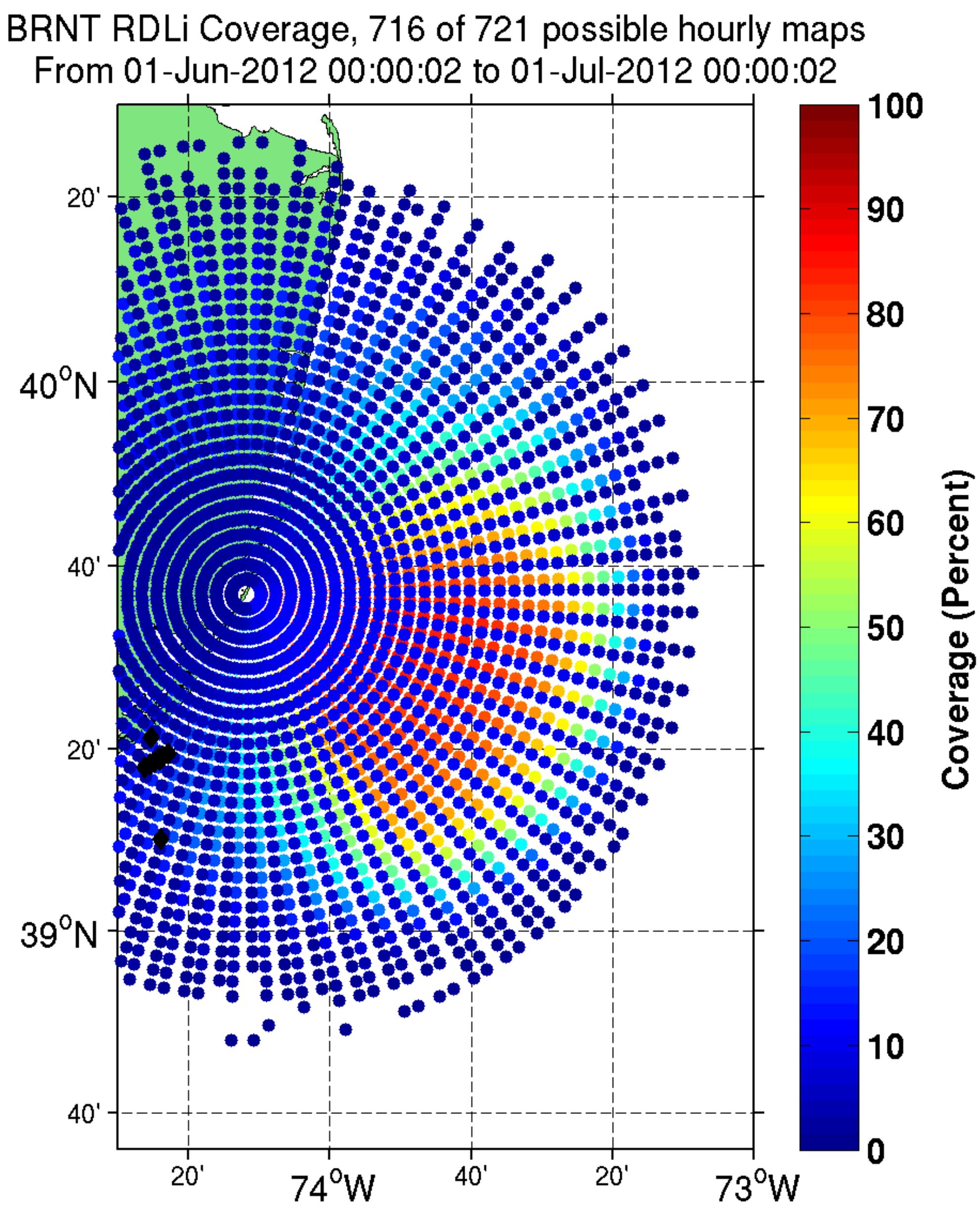

BRNT RDLi Coverage, 560 of 560 possible hourly maps
From 06-Feb-2012 17:00:02 to 01-Mar-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)


BRNT RDLi Coverage, 745 of 745 possible hourly maps
From 01-Mar-2012 00:00:02 to 01-Apr-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

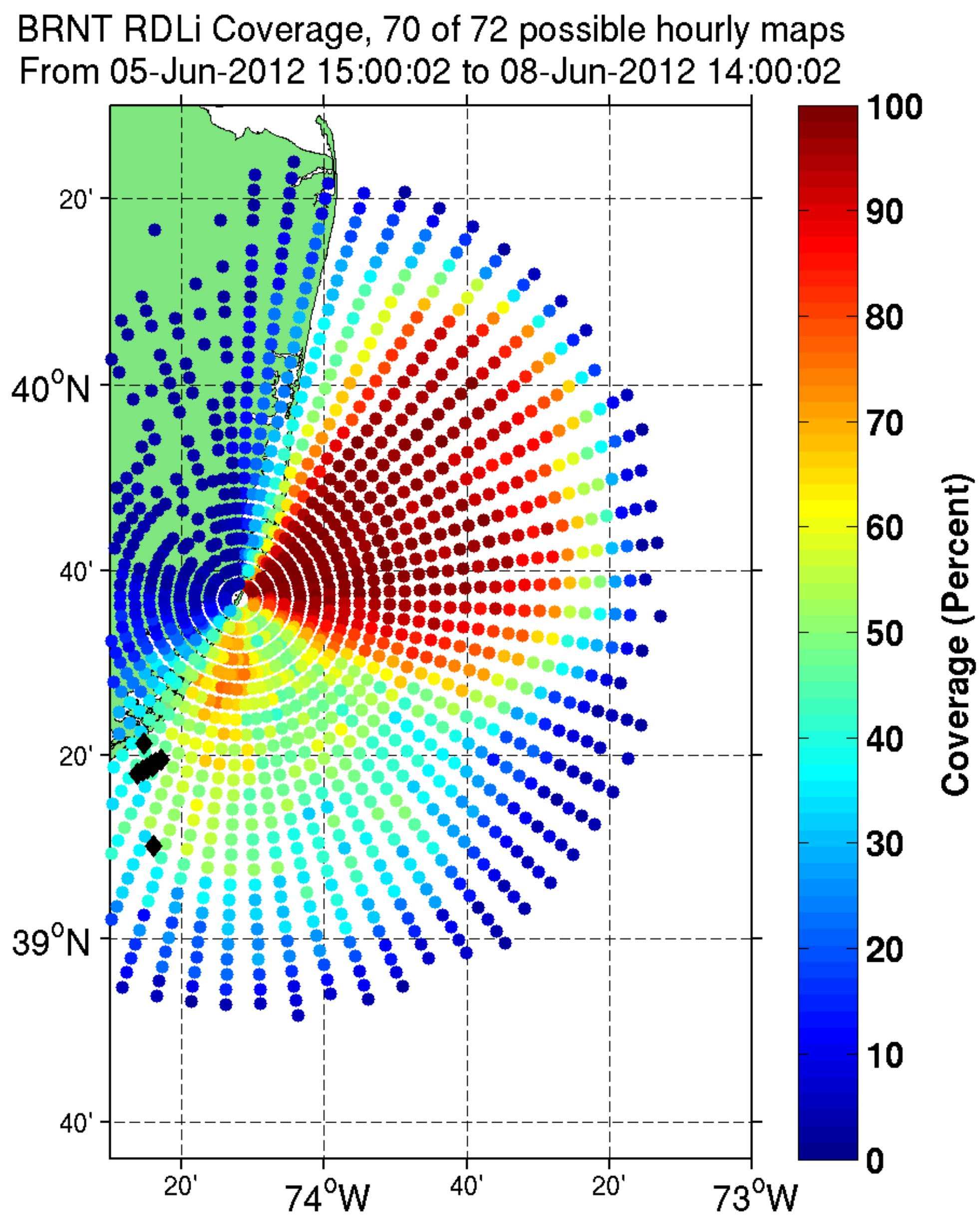

BRNT RDLi Coverage, 410 of 721 possible hourly maps
From 01-Apr-2012 00:00:02 to 01-May-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

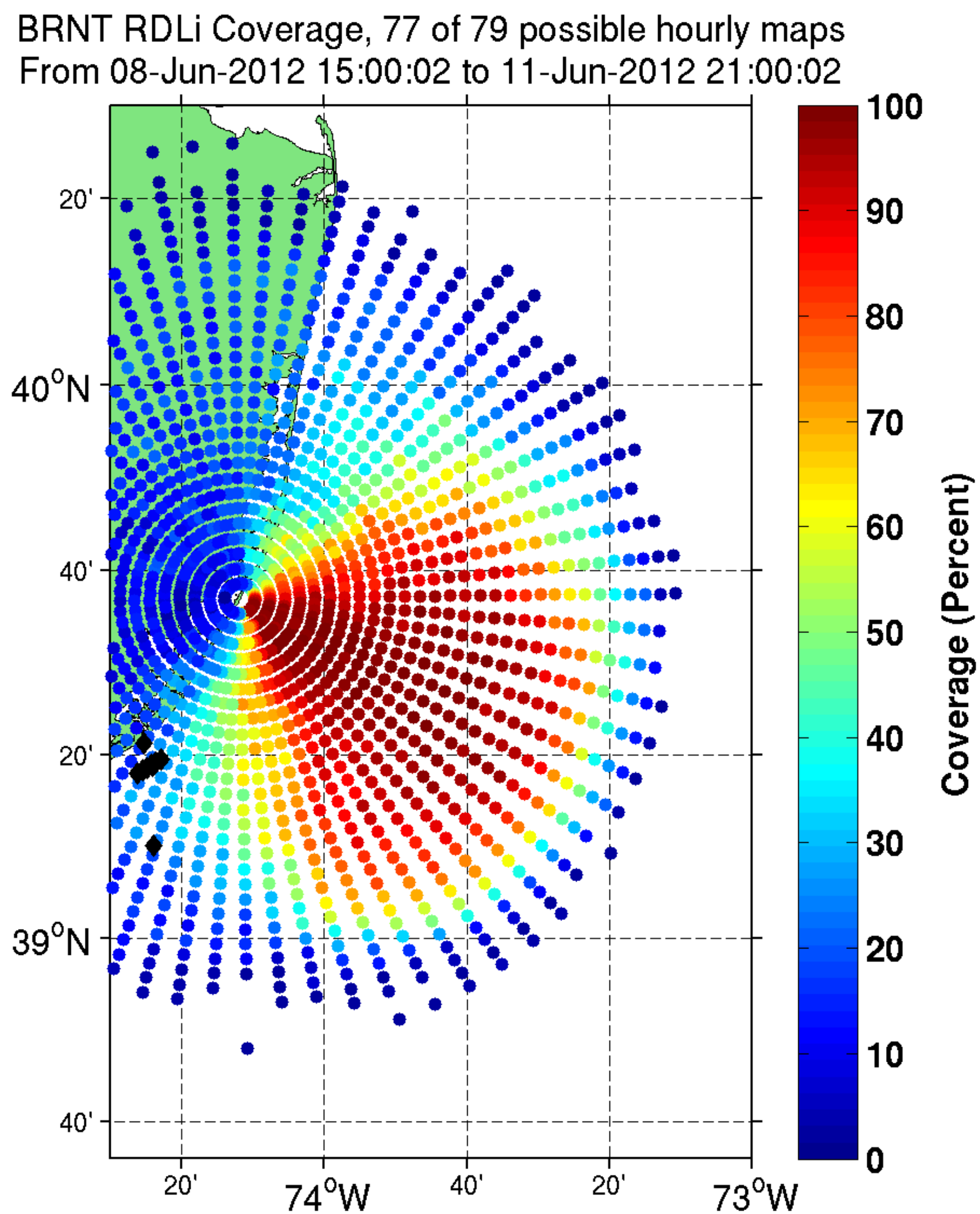

BRNT RDLi Coverage, 743 of 745 possible hourly maps
From 01-May-2012 00:00:02 to 01-Jun-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

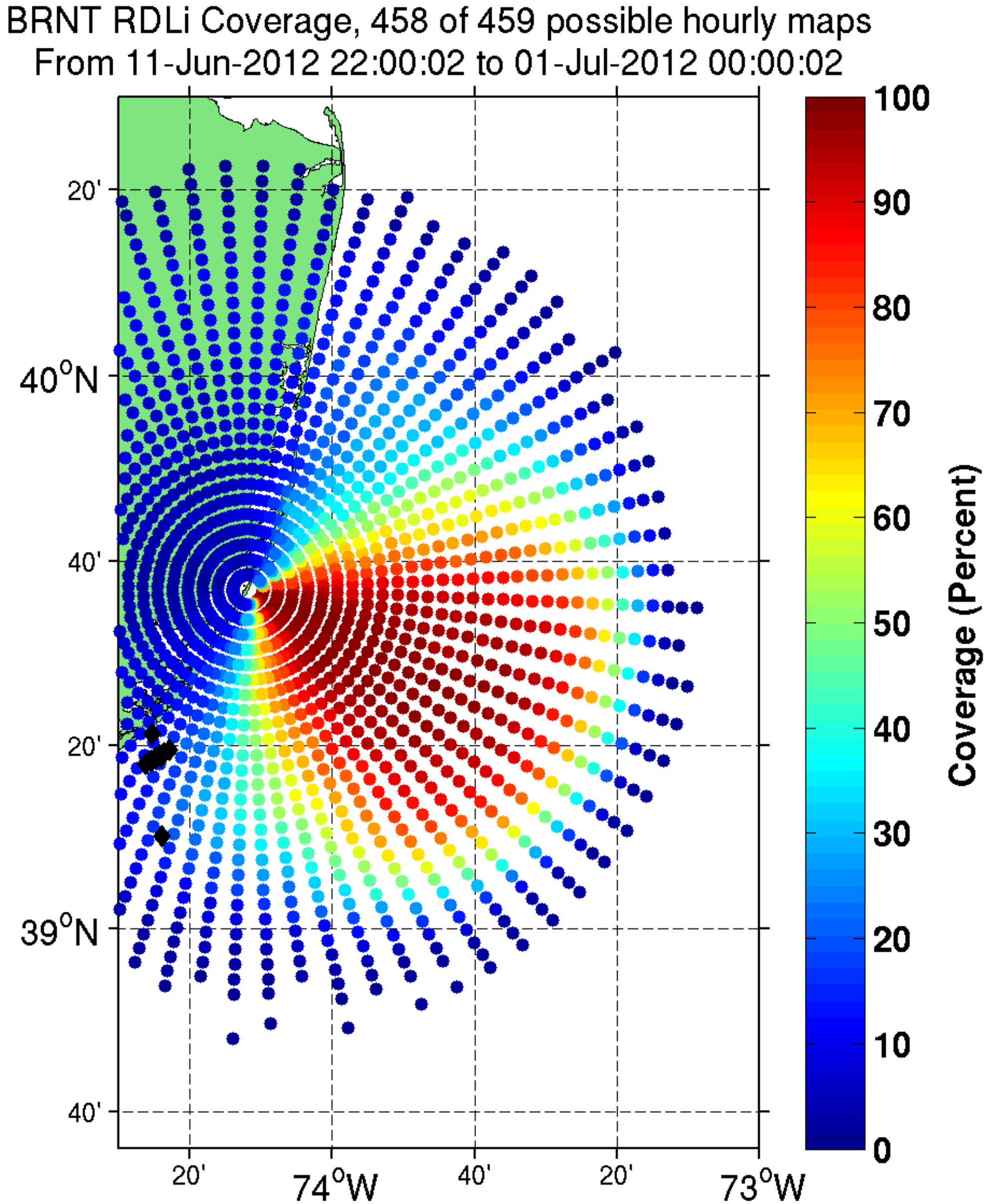

BRNT RDLi Coverage, 111 of 111 possible hourly maps
From 01-Jun-2012 00:00:02 to 05-Jun-2012 14:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)



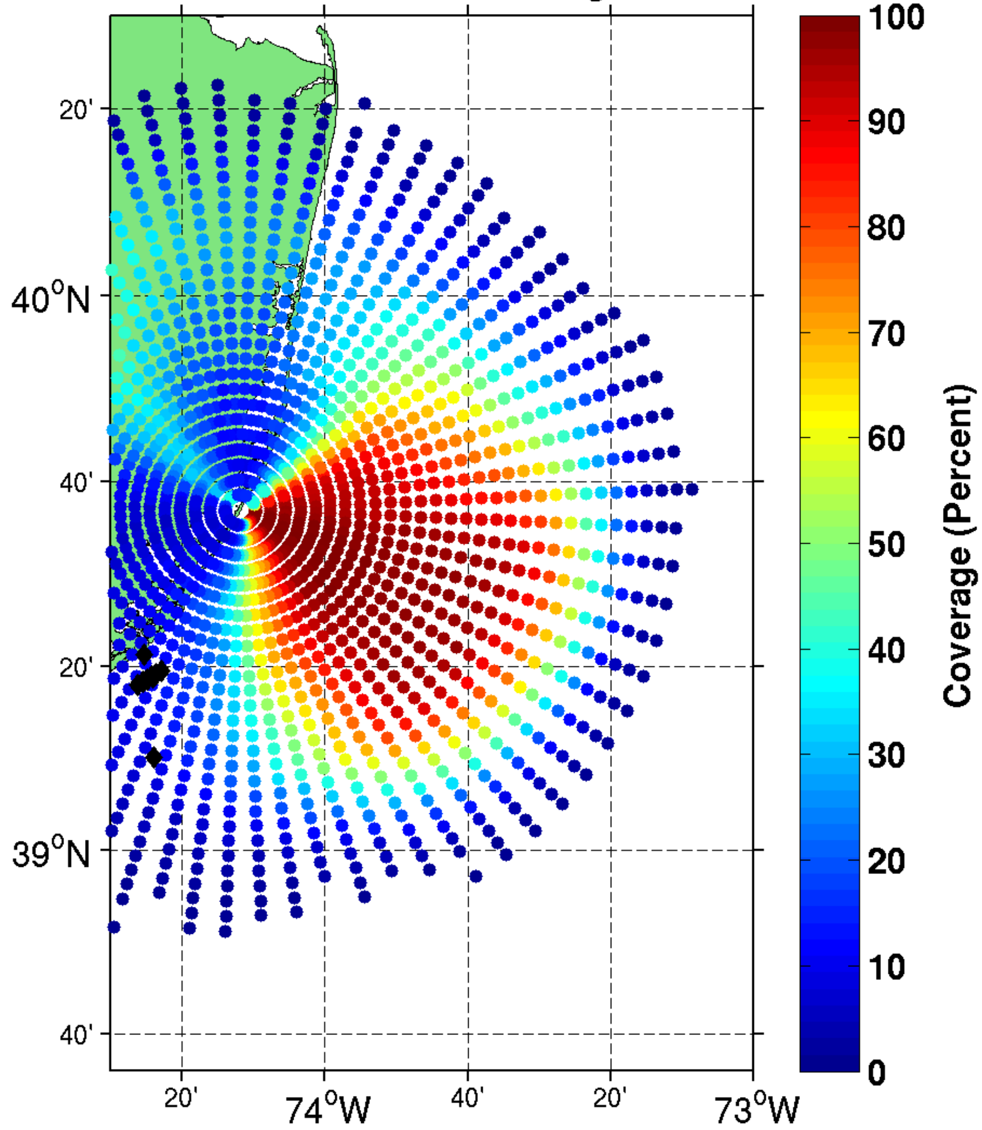
BRNT RDLi Coverage, 716 of 721 possible hourly maps
From 01-Jun-2012 00:00:02 to 01-Jul-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

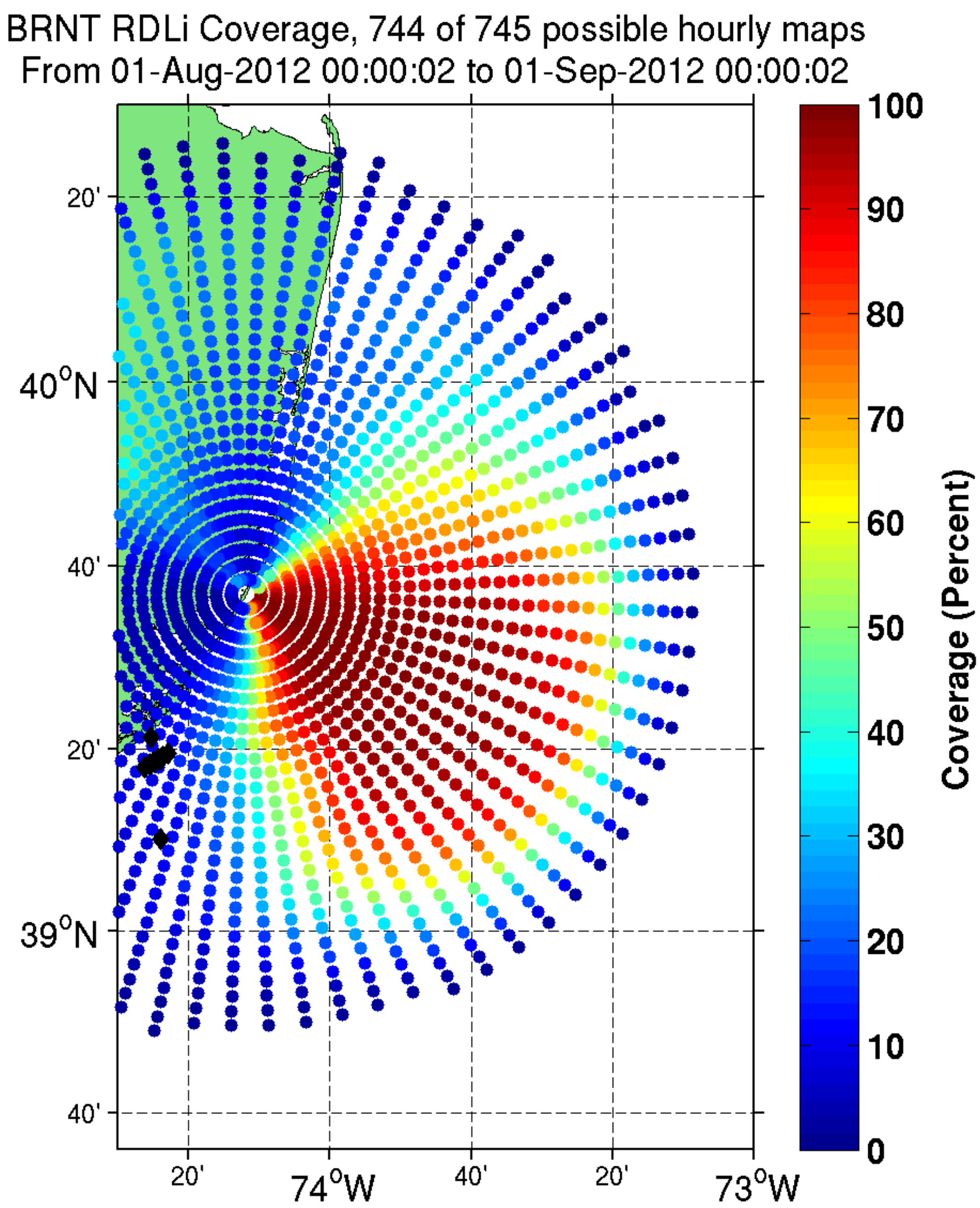

BRNT RDLi Coverage, 70 of 72 possible hourly maps
From 05-Jun-2012 15:00:02 to 08-Jun-2012 14:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

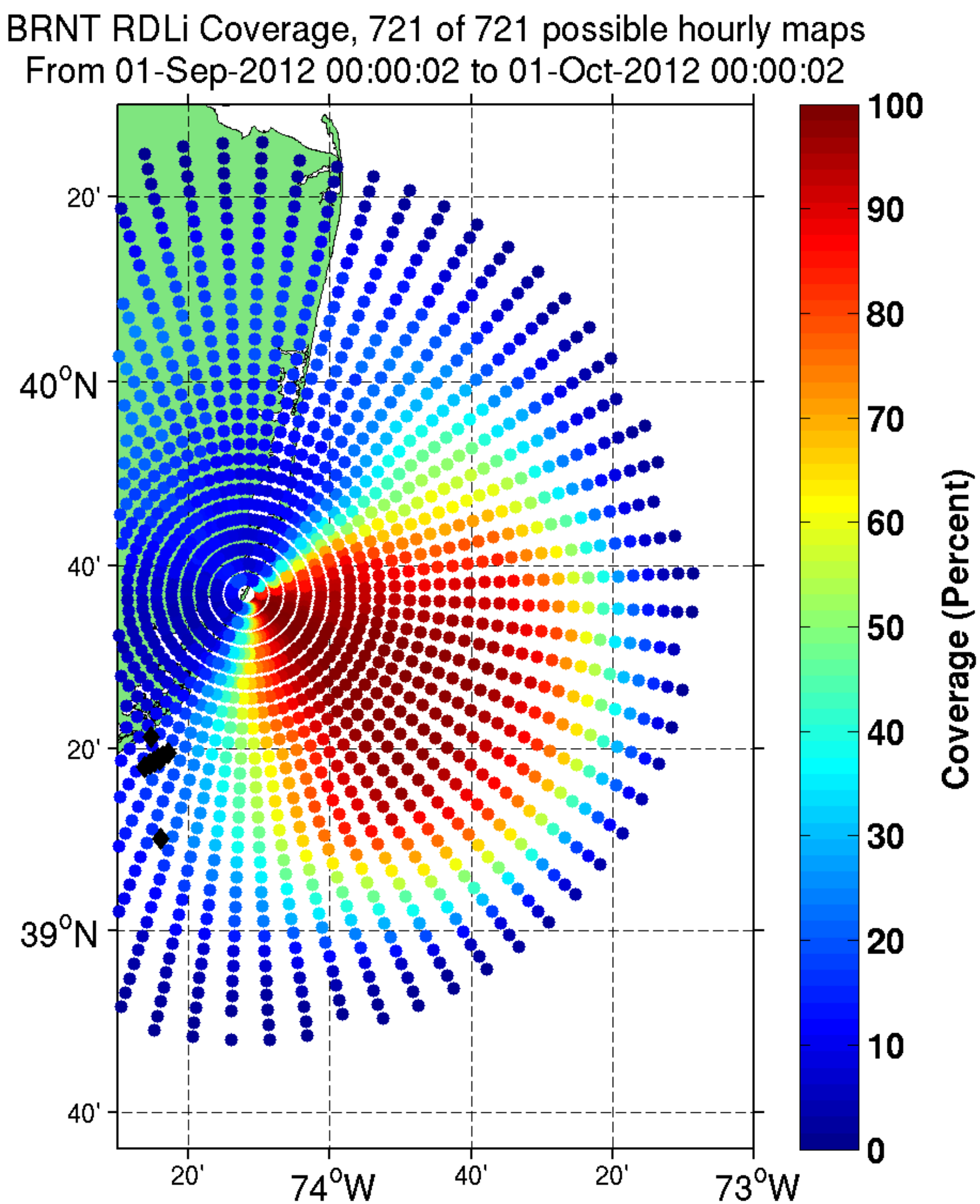

BRNT RDLi Coverage, 77 of 79 possible hourly maps
From 08-Jun-2012 15:00:02 to 11-Jun-2012 21:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)


BRNT RDLi Coverage, 458 of 459 possible hourly maps
From 11-Jun-2012 22:00:02 to 01-Jul-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

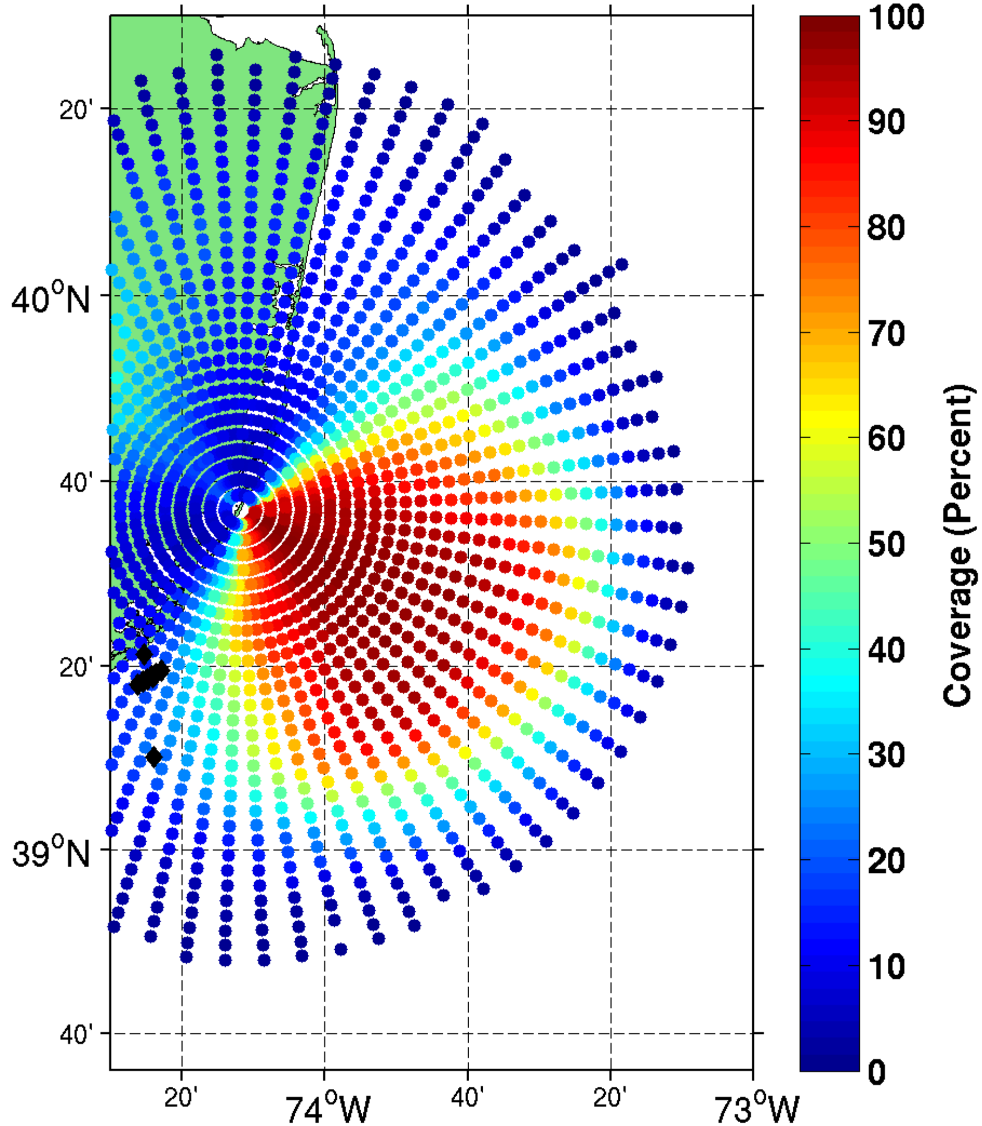
BRNT RDLi Coverage, 745 of 745 possible hourly maps
From 01-Jul-2012 00:00:02 to 01-Aug-2012 00:00:02

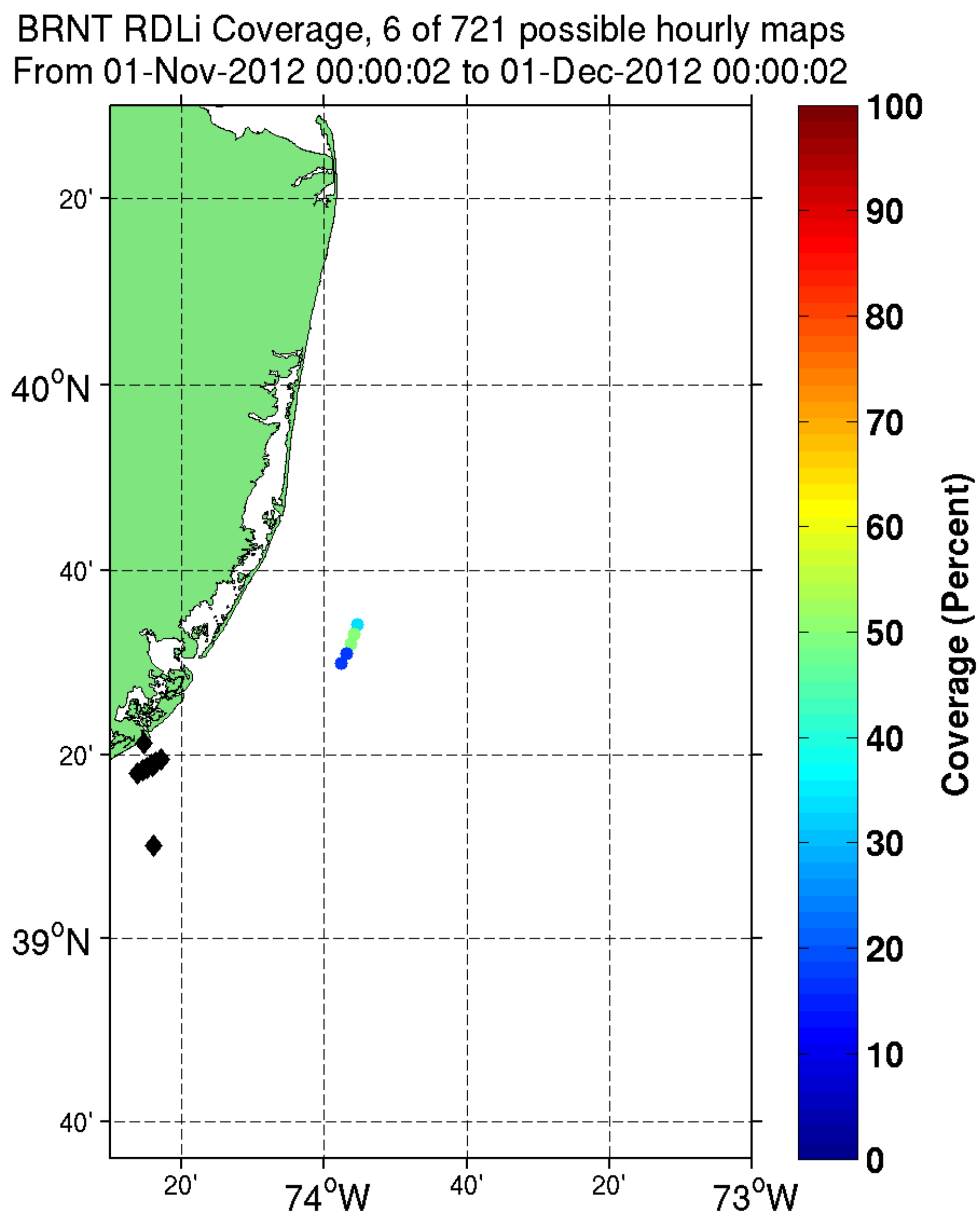


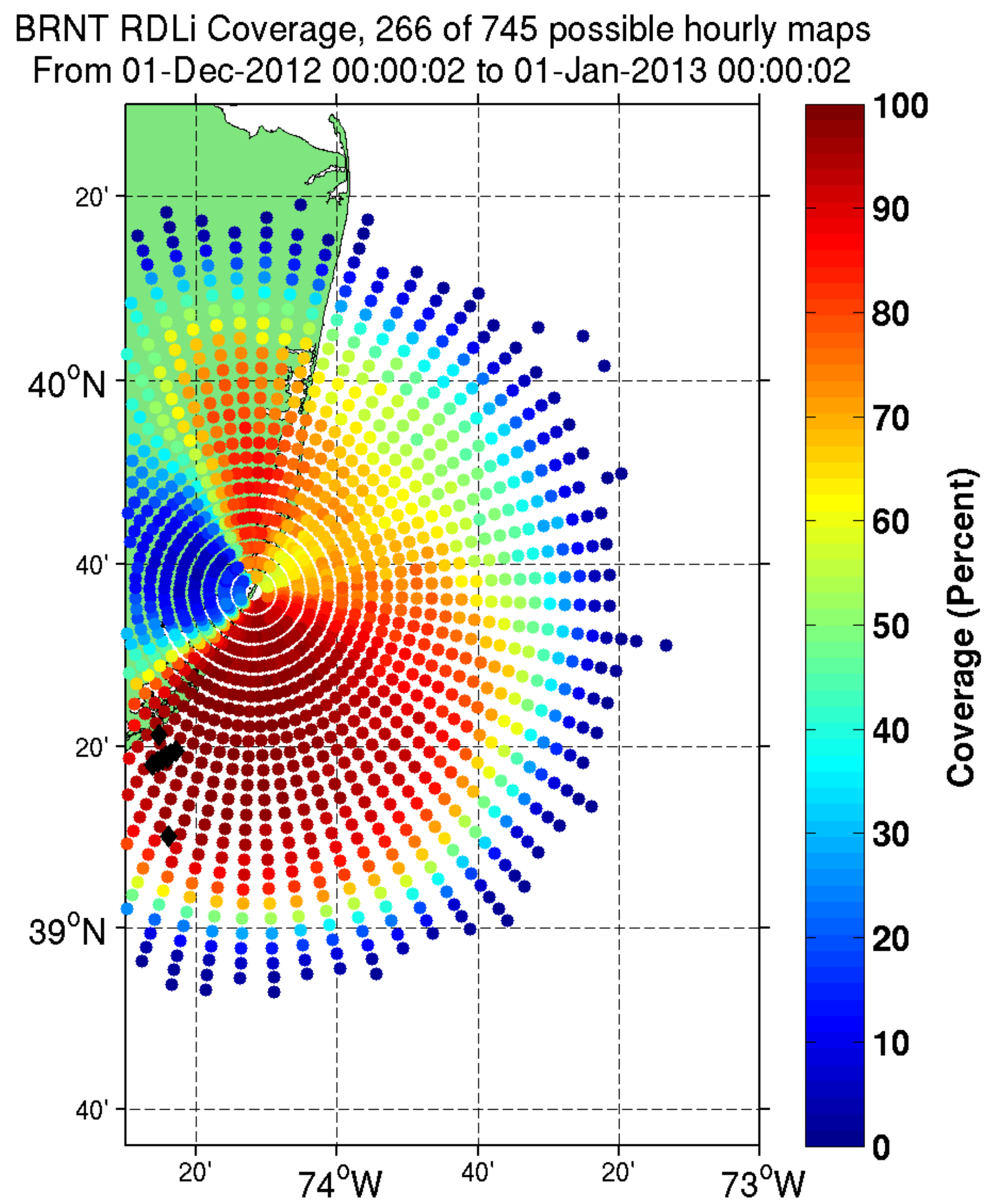

BRNT RDLi Coverage, 744 of 745 possible hourly maps
From 01-Aug-2012 00:00:02 to 01-Sep-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)


BRNT RDLi Coverage, 721 of 721 possible hourly maps
From 01-Sep-2012 00:00:02 to 01-Oct-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

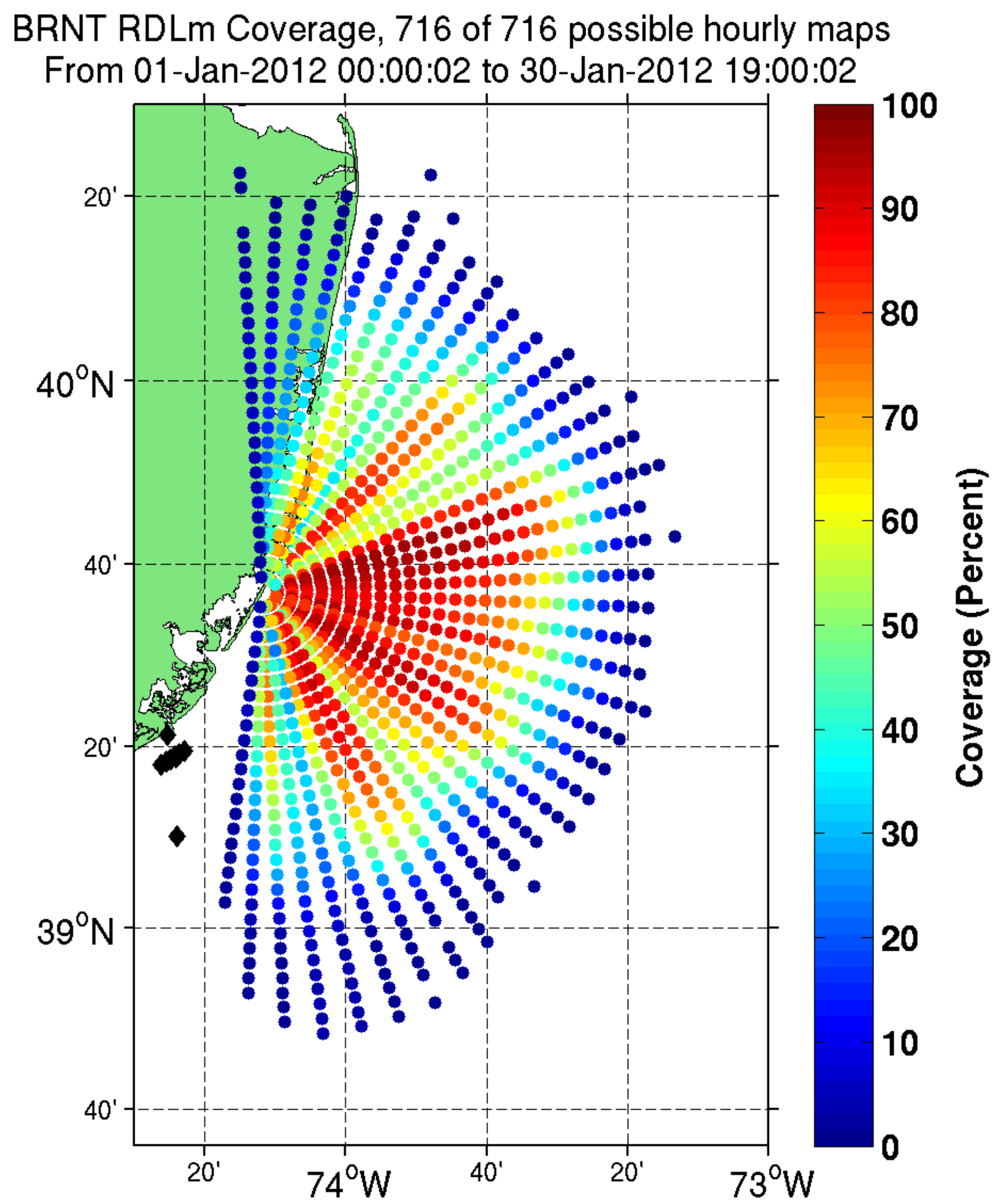
BRNT RDLi Coverage, 690 of 745 possible hourly maps
From 01-Oct-2012 00:00:02 to 01-Nov-2012 00:00:02

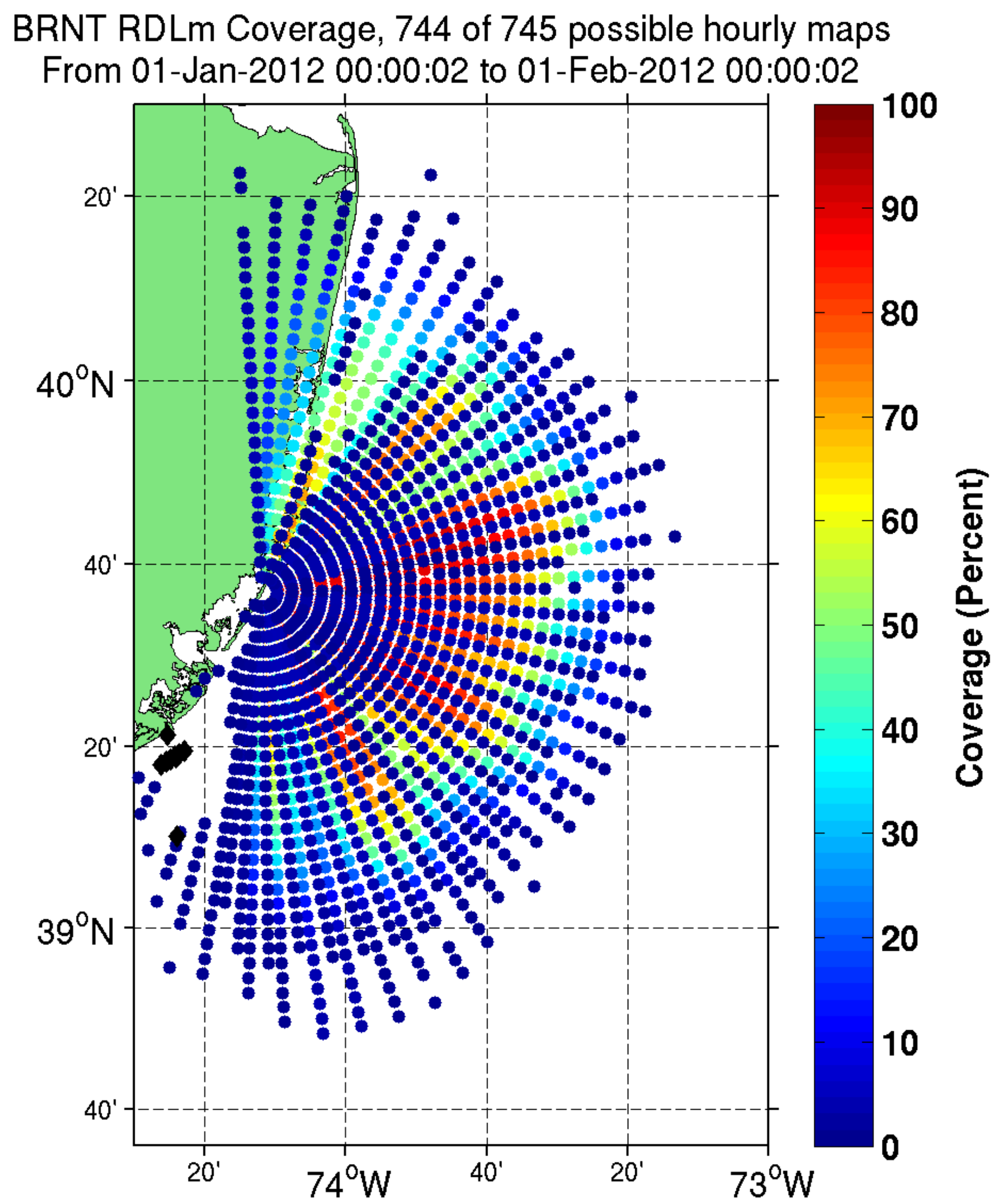



BRNT RDLi Coverage, 6 of 721 possible hourly maps
From 01-Nov-2012 00:00:02 to 01-Dec-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

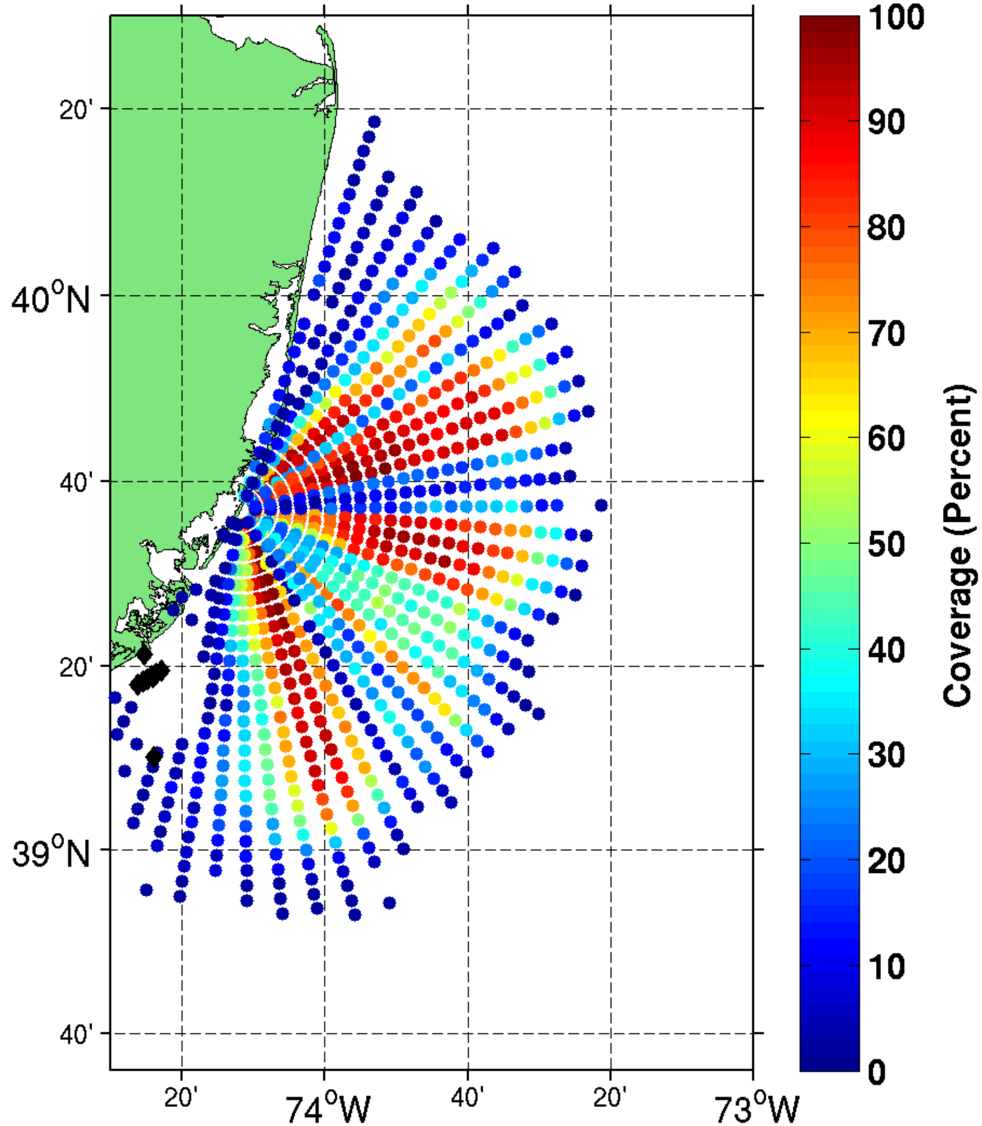

BRNT RDLi Coverage, 266 of 745 possible hourly maps
From 01-Dec-2012 00:00:02 to 01-Jan-2013 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

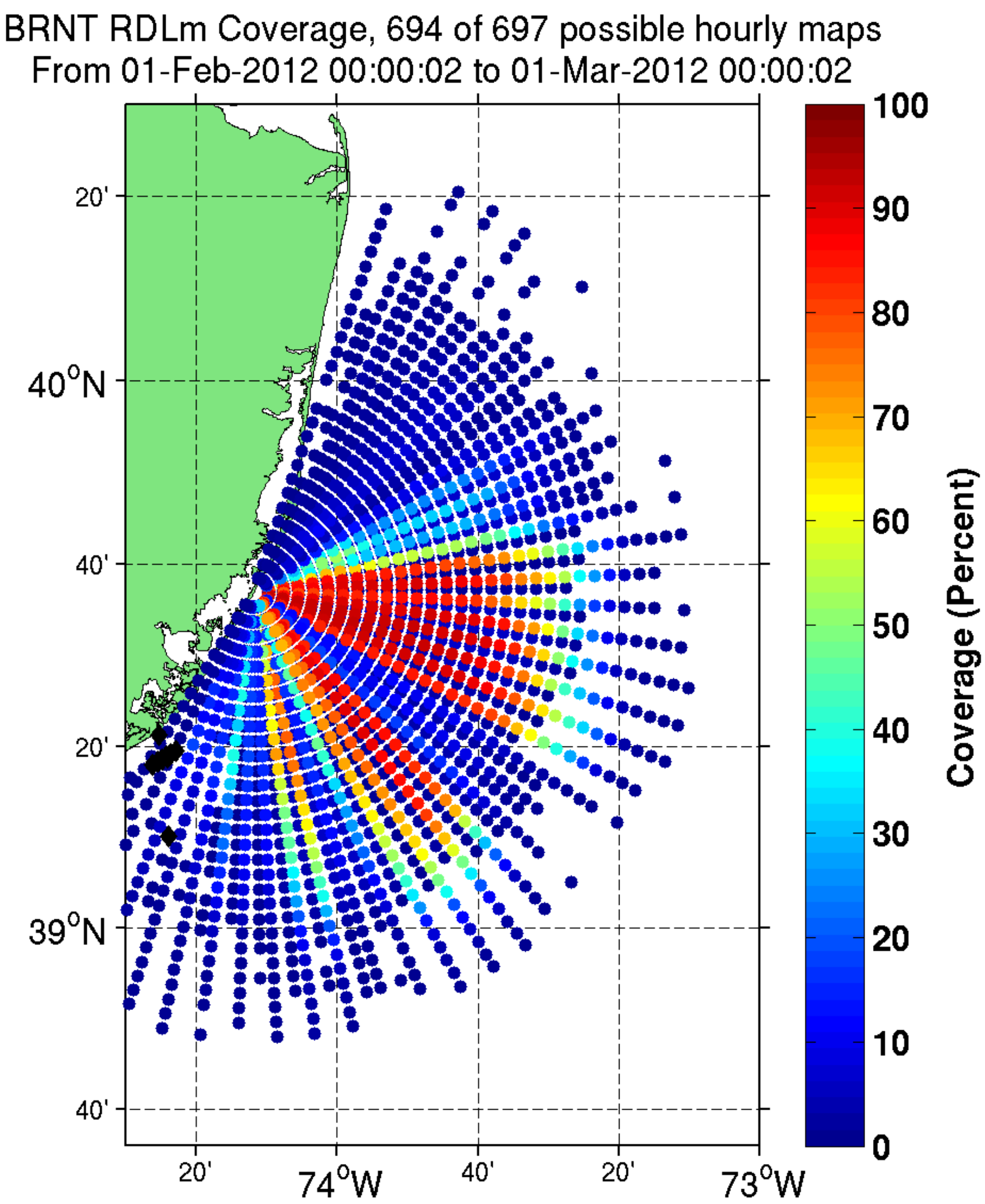
BRANT BEACH
MEASURED RADIALS

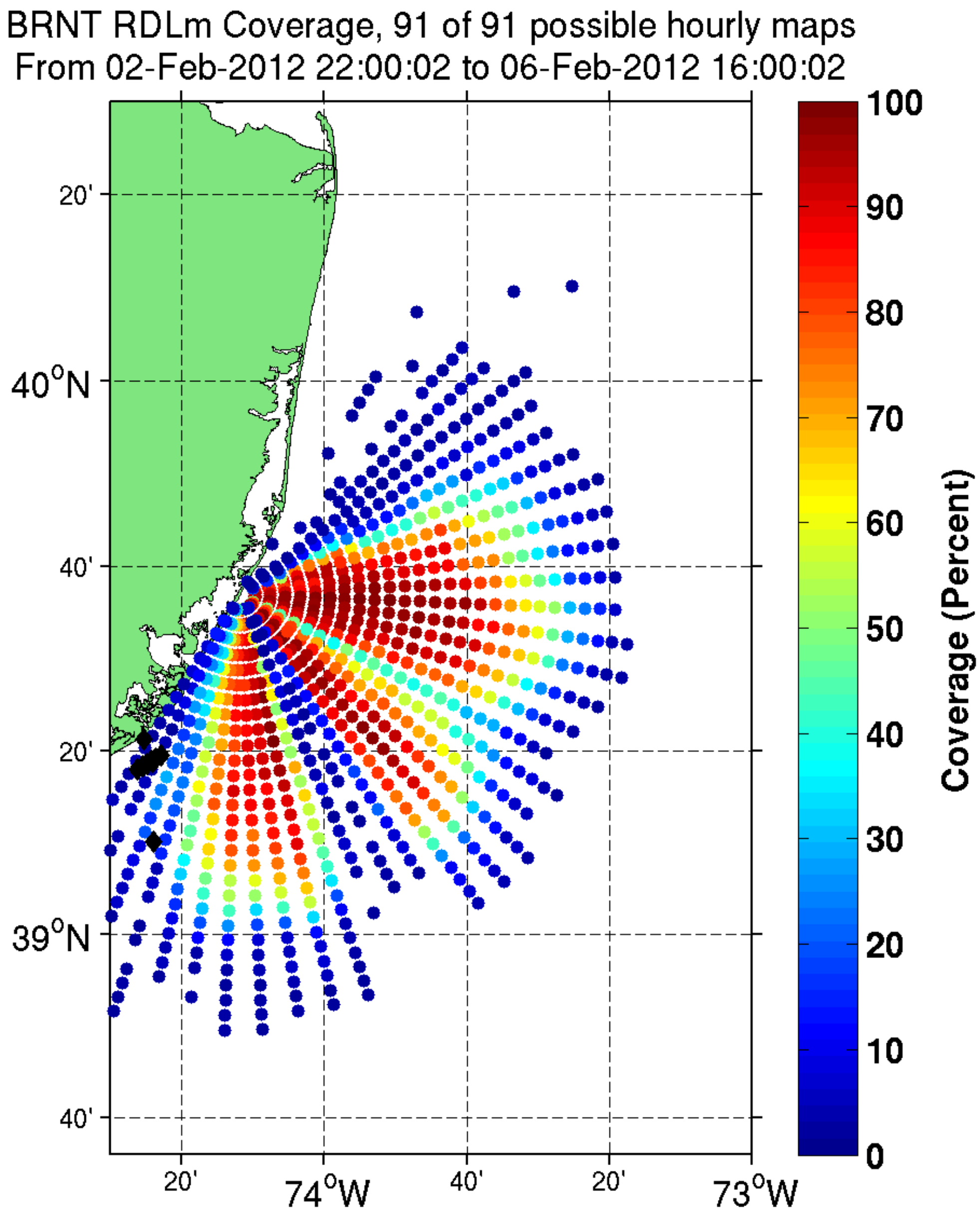

BRNT RDLm Coverage, 716 of 716 possible hourly maps
From 01-Jan-2012 00:00:02 to 30-Jan-2012 19:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)


BRNT RDLm Coverage, 744 of 745 possible hourly maps
From 01-Jan-2012 00:00:02 to 01-Feb-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

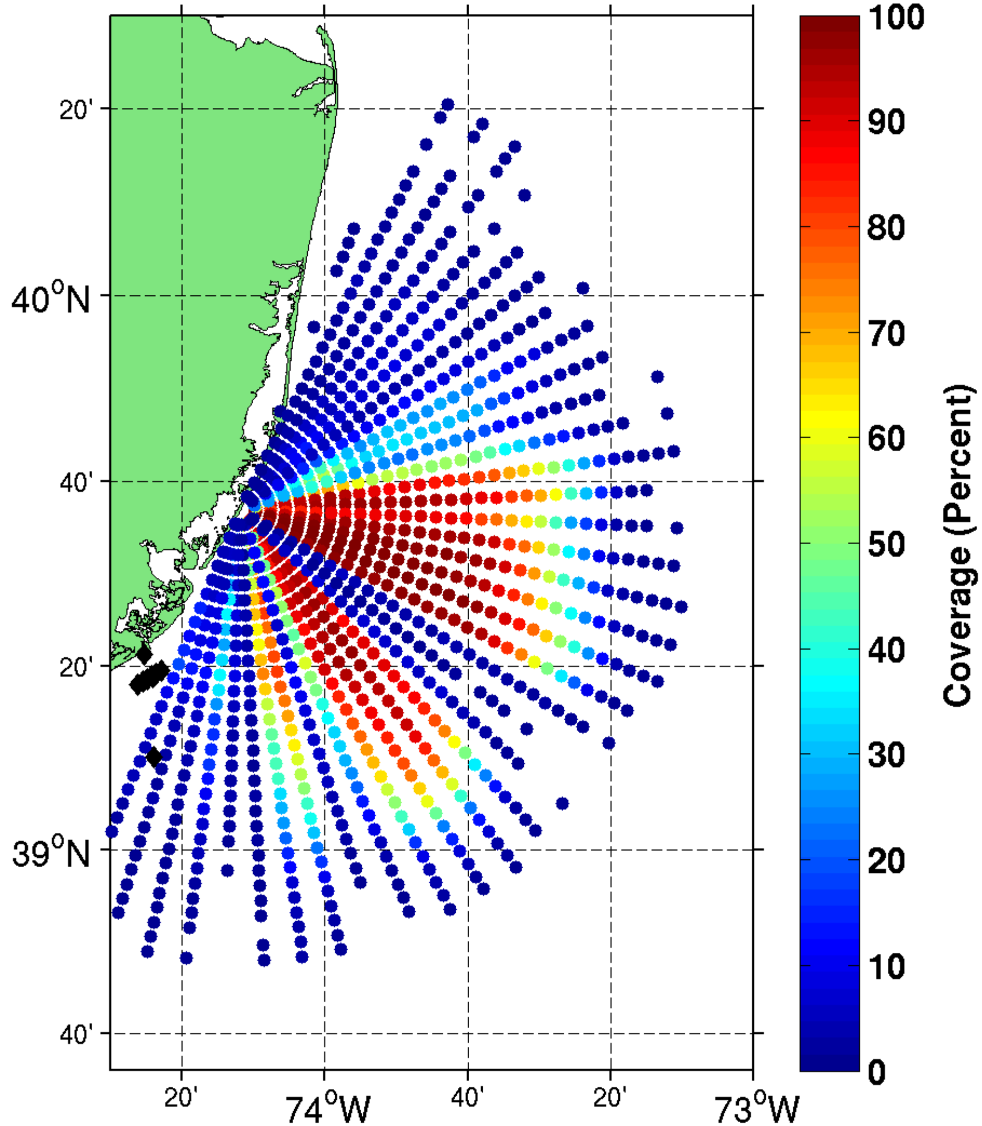
BRNT RDLm Coverage, 70 of 74 possible hourly maps
From 30-Jan-2012 20:00:02 to 02-Feb-2012 21:00:02

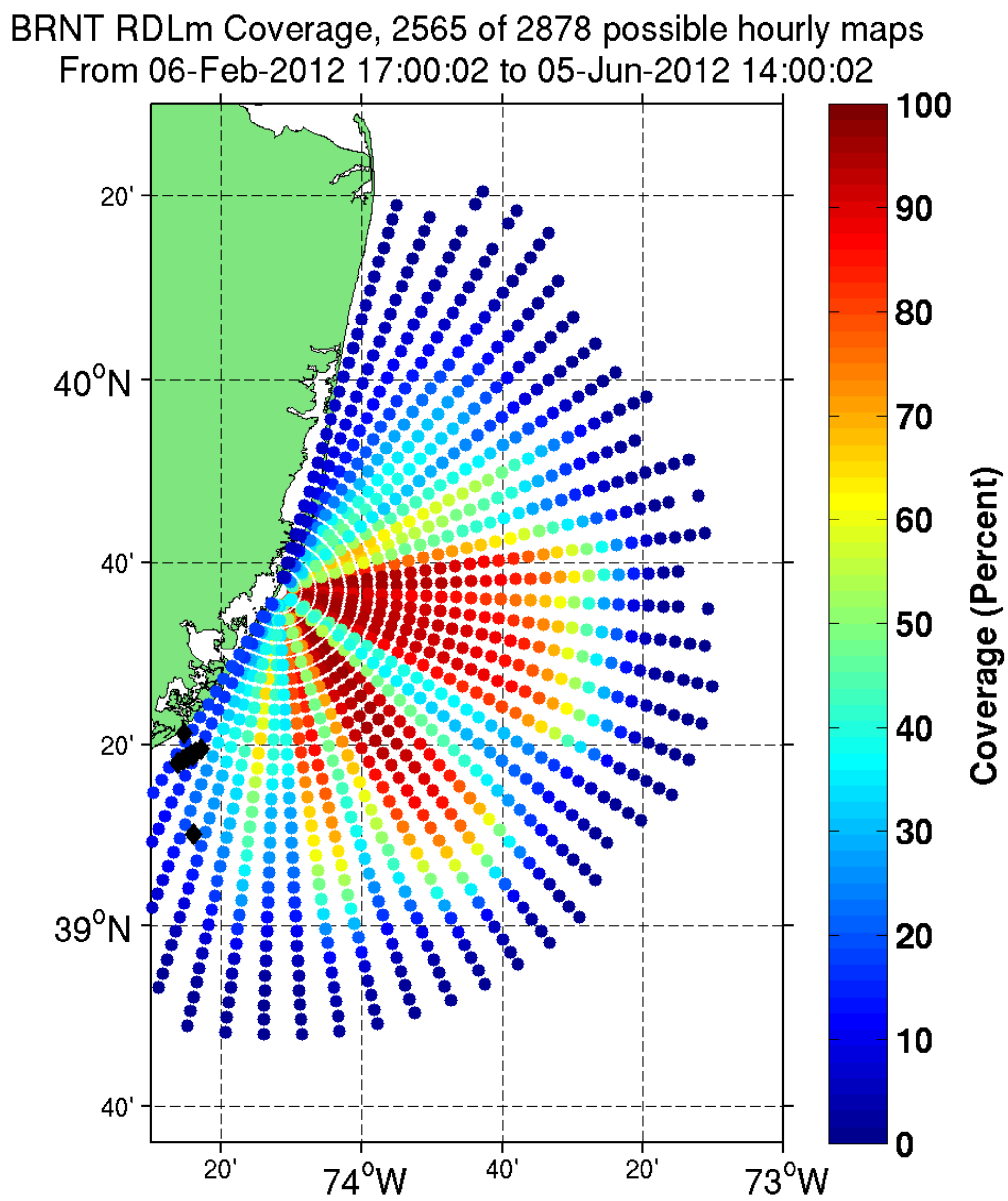



BRNT RDLm Coverage, 694 of 697 possible hourly maps
From 01-Feb-2012 00:00:02 to 01-Mar-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

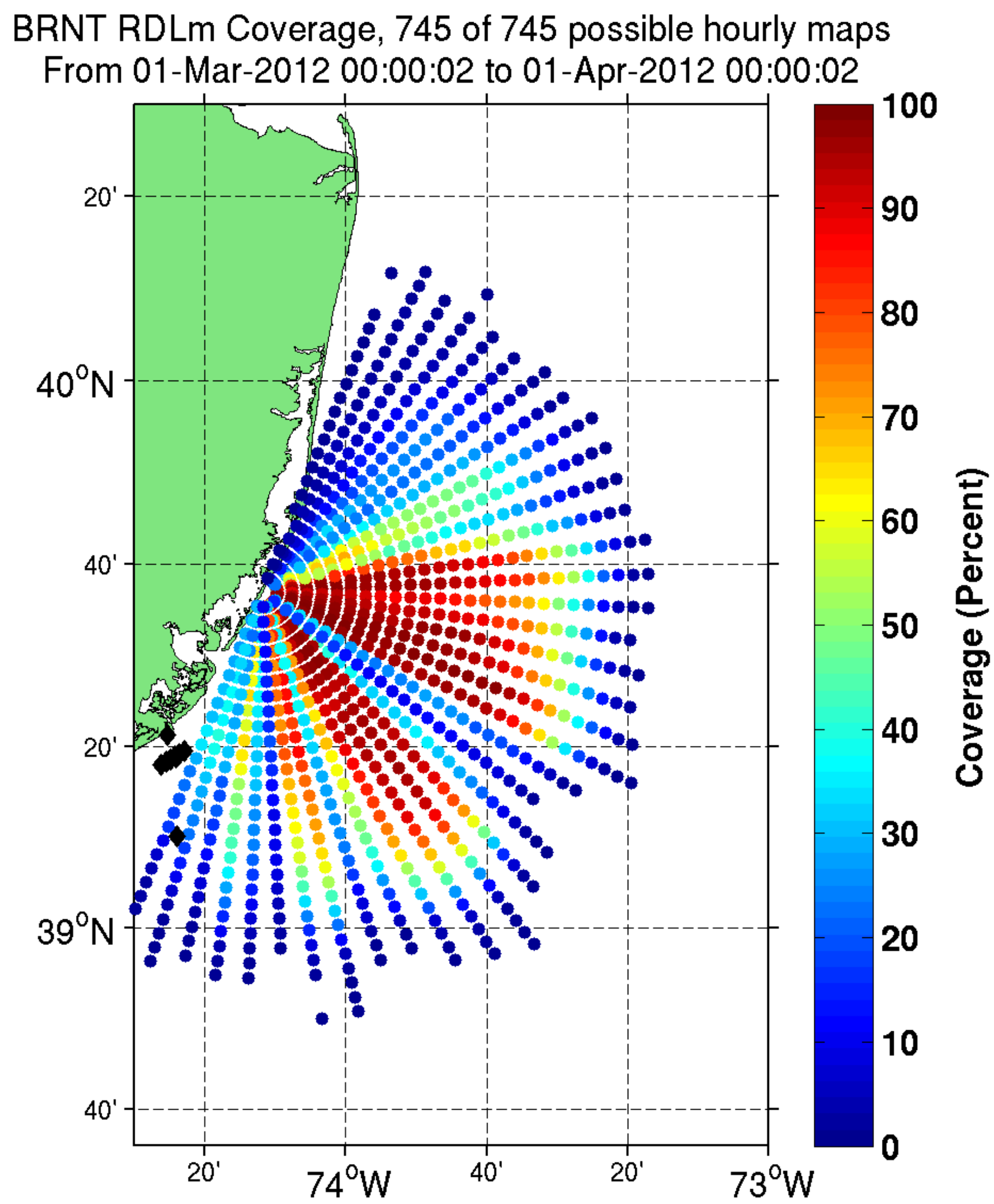

BRNT RDLm Coverage, 91 of 91 possible hourly maps
From 02-Feb-2012 22:00:02 to 06-Feb-2012 16:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

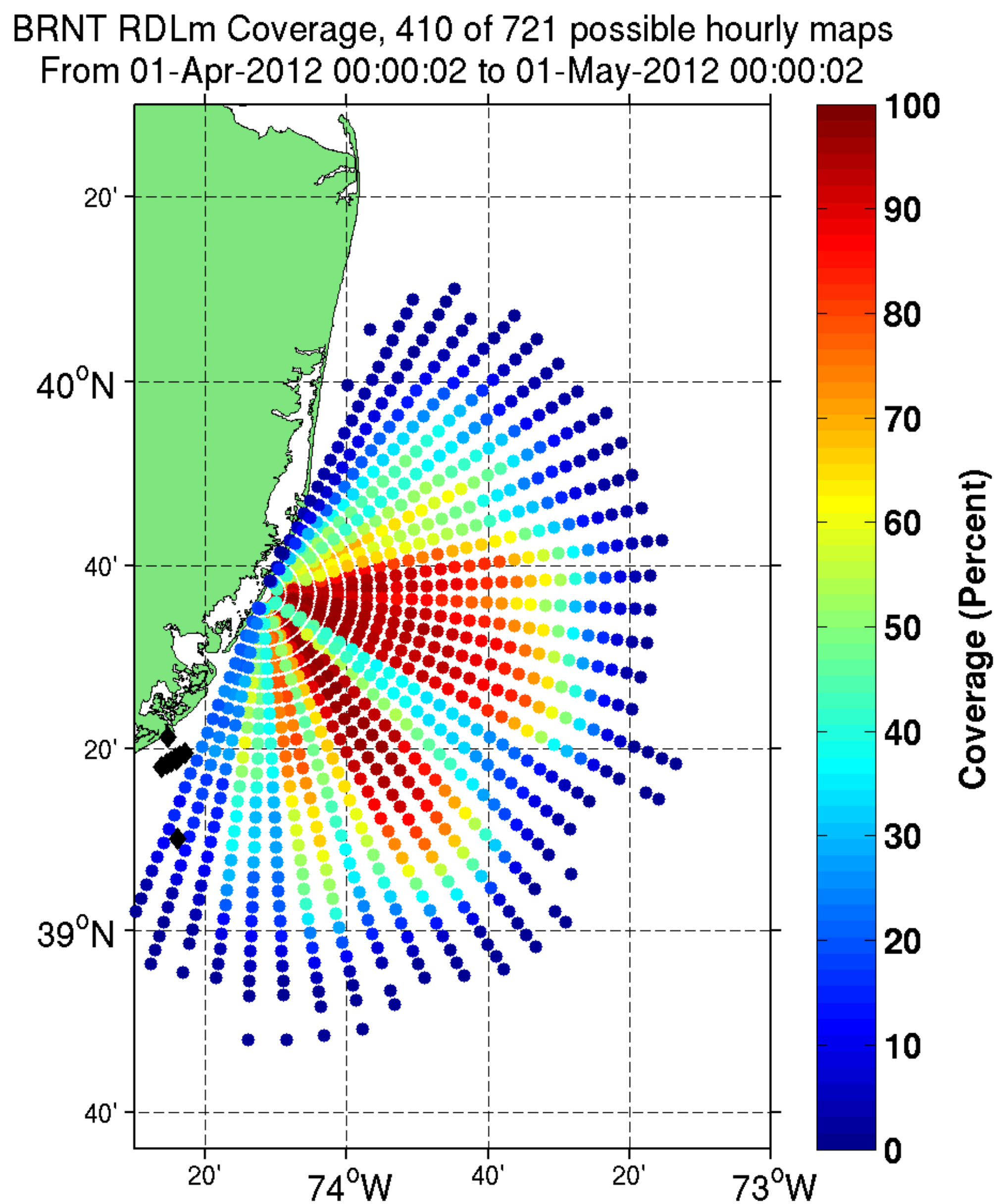
BRNT RDLm Coverage, 560 of 560 possible hourly maps
From 06-Feb-2012 17:00:02 to 01-Mar-2012 00:00:02

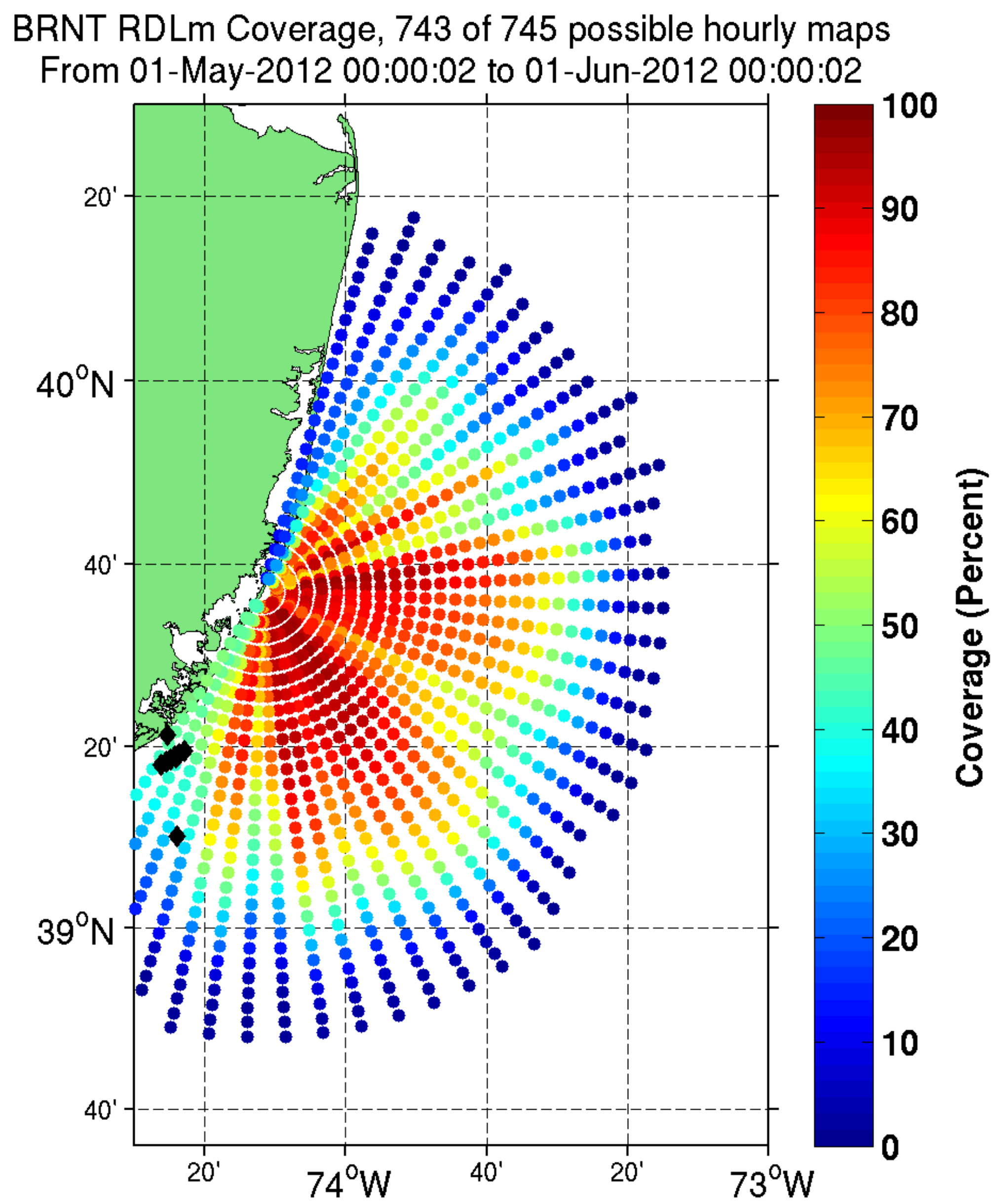




BRNT RDLm Coverage, 2565 of 2878 possible hourly maps
From 06-Feb-2012 17:00:02 to 05-Jun-2012 14:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

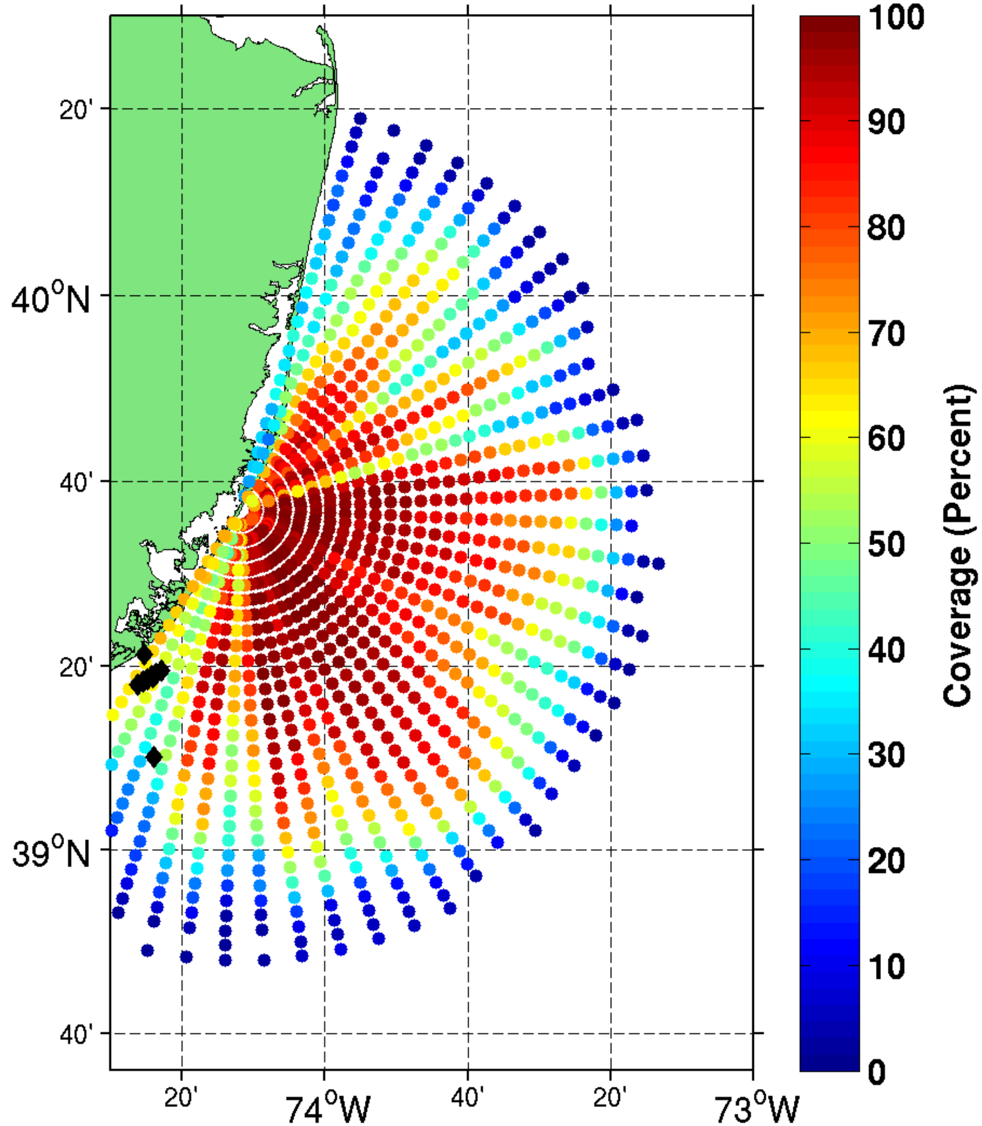

BRNT RDLm Coverage, 745 of 745 possible hourly maps
From 01-Mar-2012 00:00:02 to 01-Apr-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

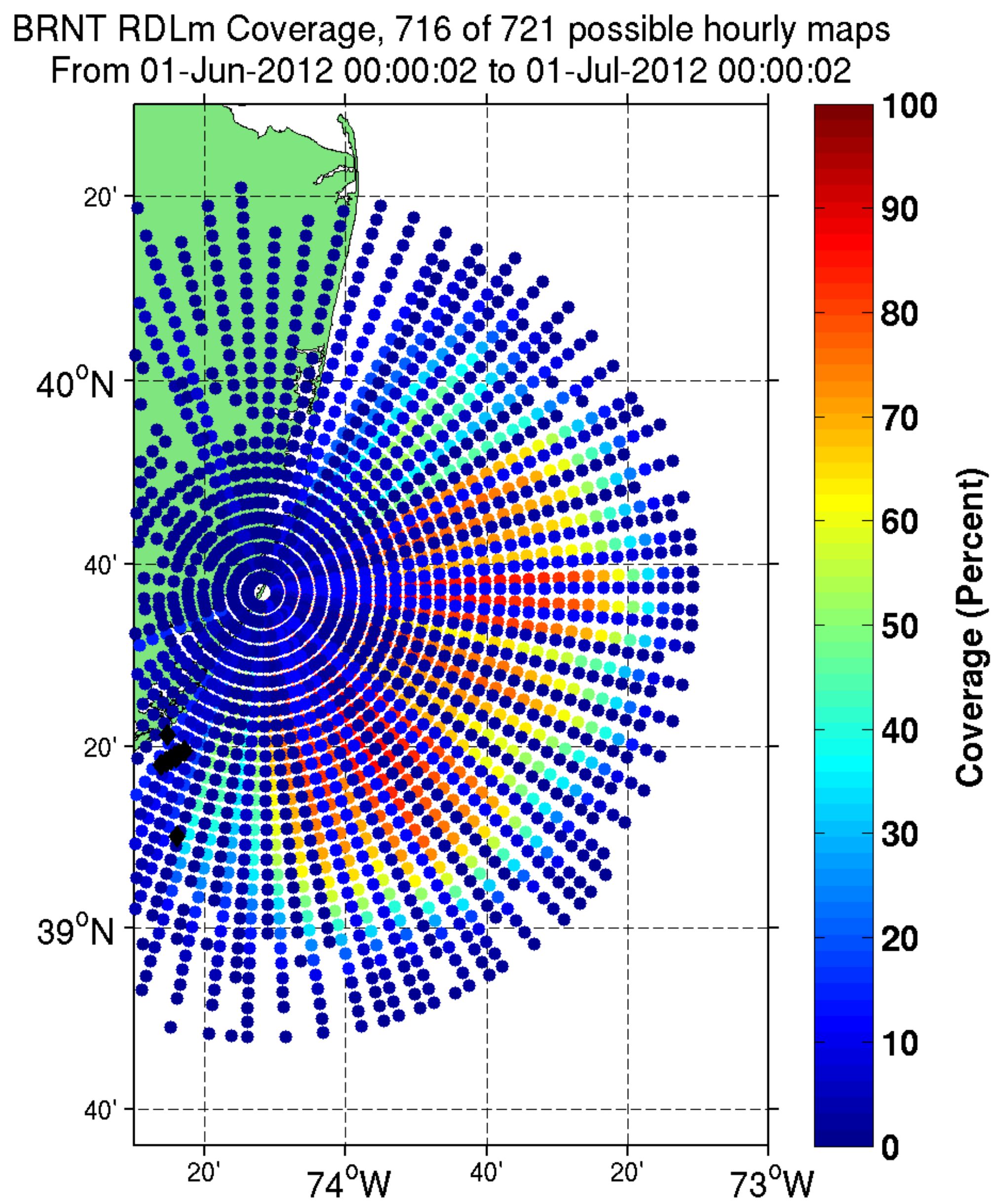

BRNT RDLm Coverage, 410 of 721 possible hourly maps
From 01-Apr-2012 00:00:02 to 01-May-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

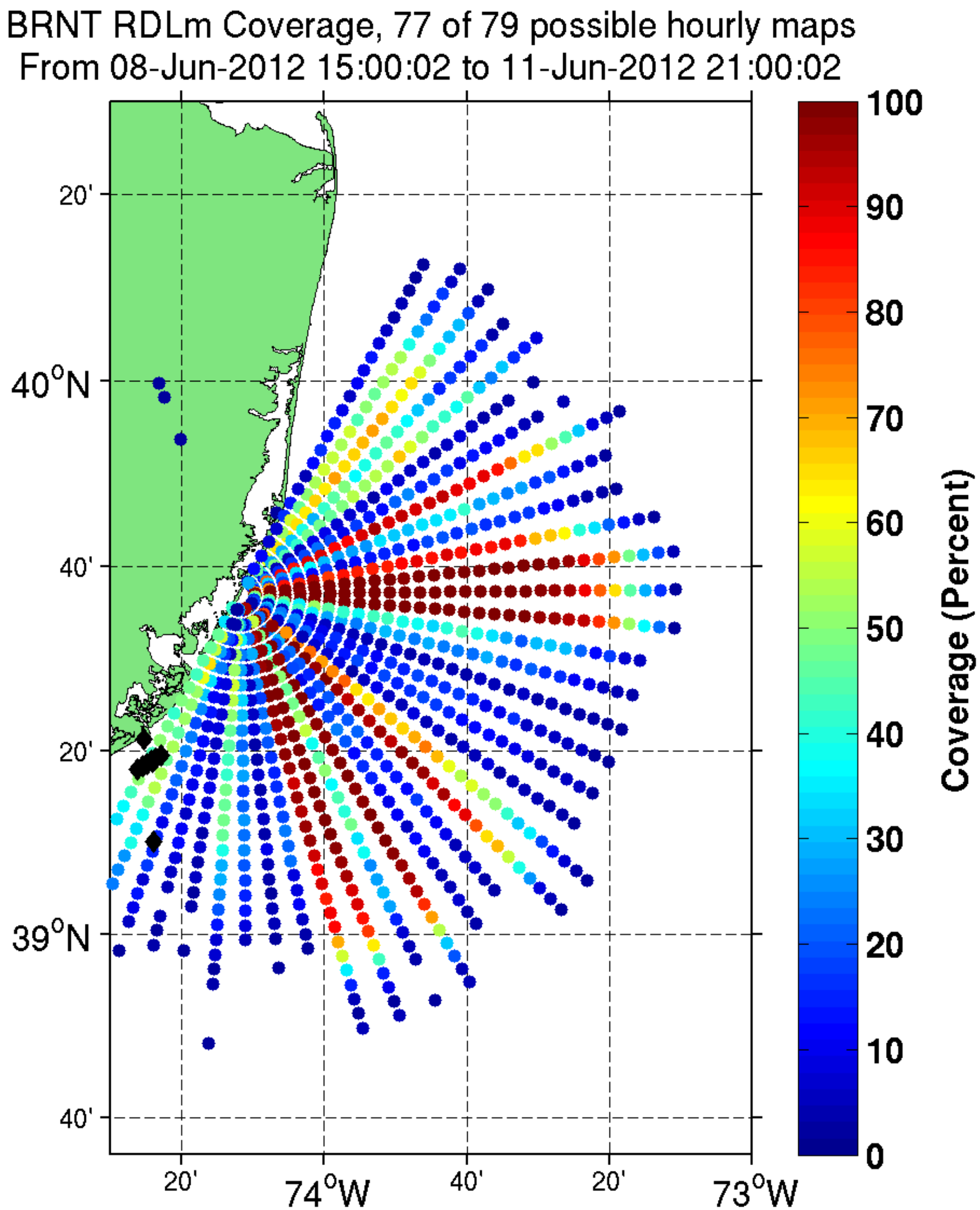


BRNT RDLm Coverage, 743 of 745 possible hourly maps
From 01-May-2012 00:00:02 to 01-Jun-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

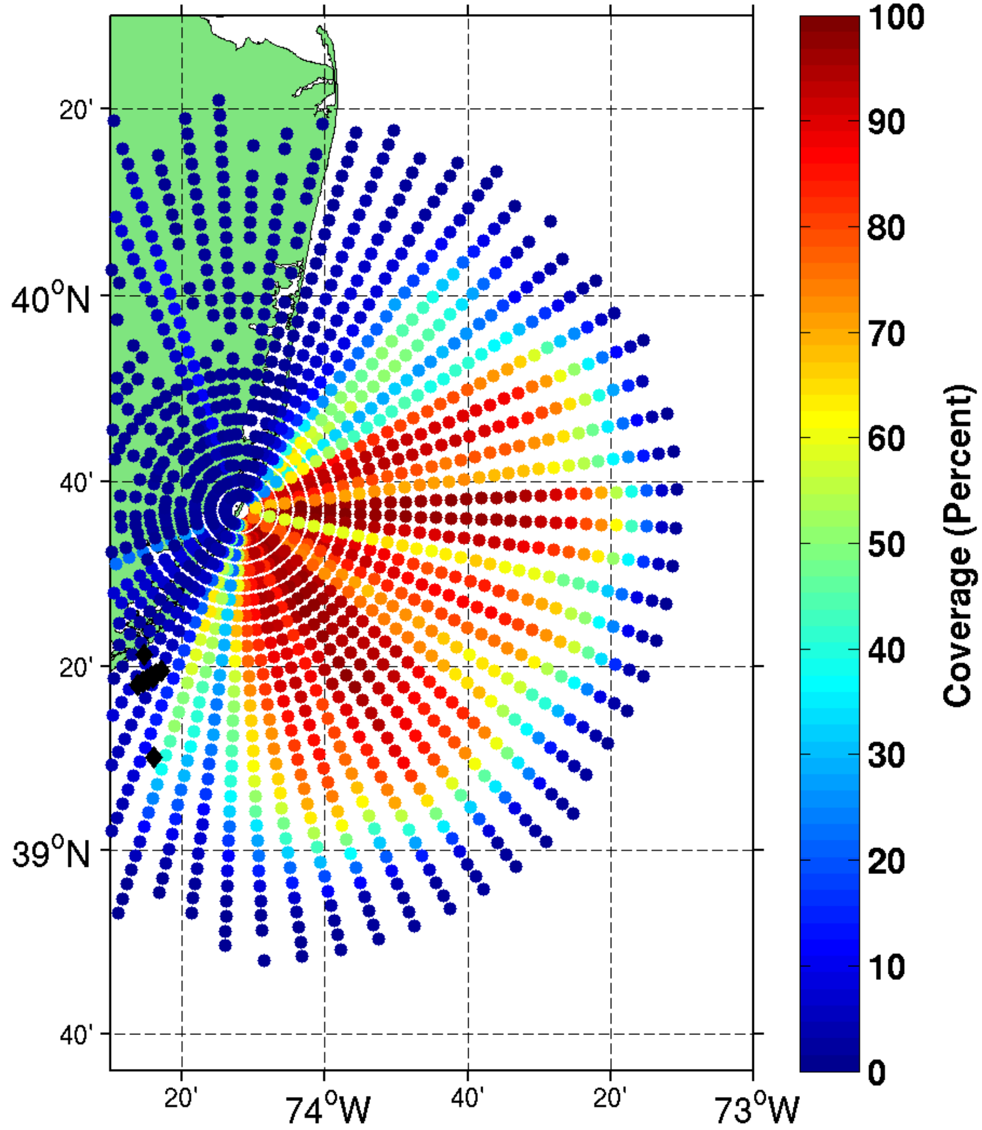
BRNT RDLm Coverage, 111 of 111 possible hourly maps
From 01-Jun-2012 00:00:02 to 05-Jun-2012 14:00:02



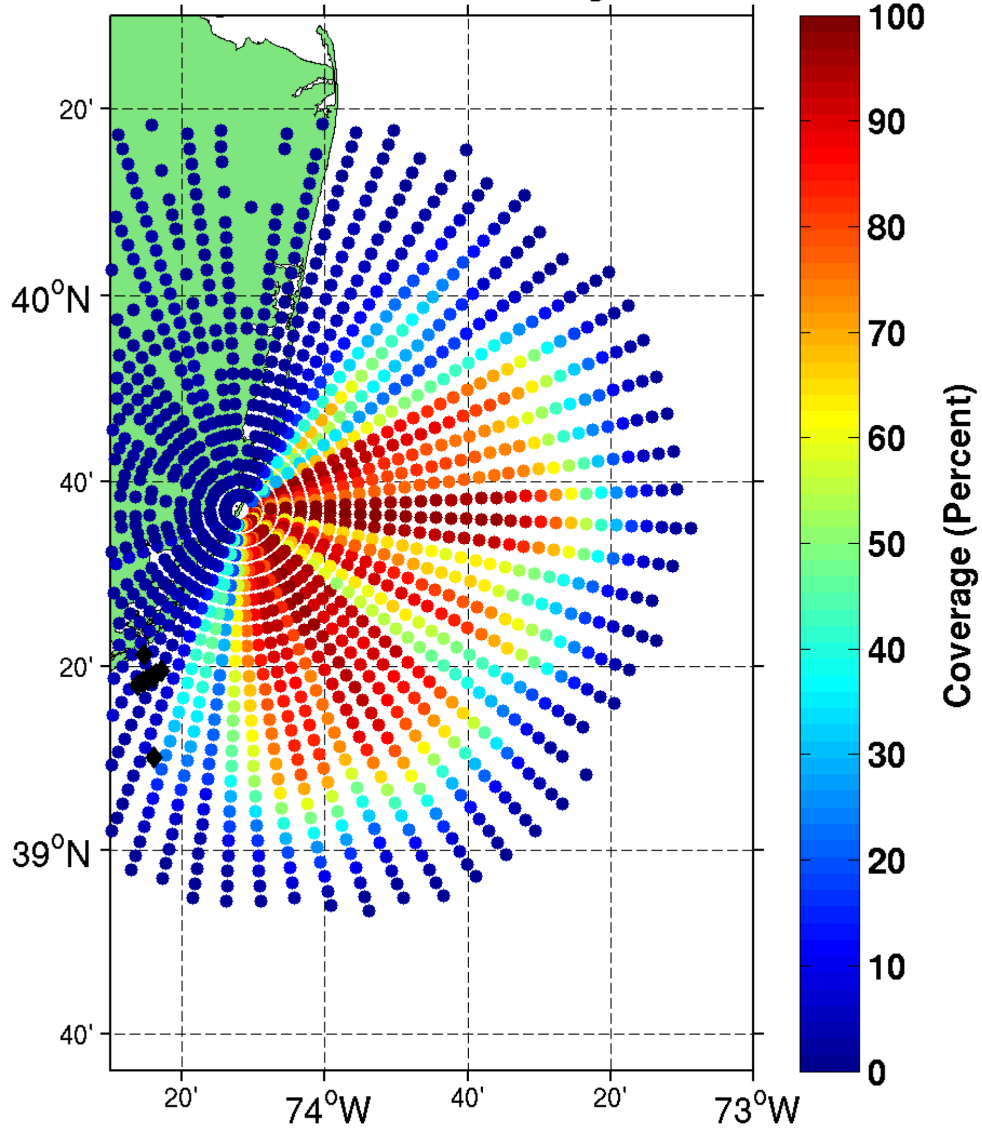

BRNT RDLm Coverage, 716 of 721 possible hourly maps
From 01-Jun-2012 00:00:02 to 01-Jul-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

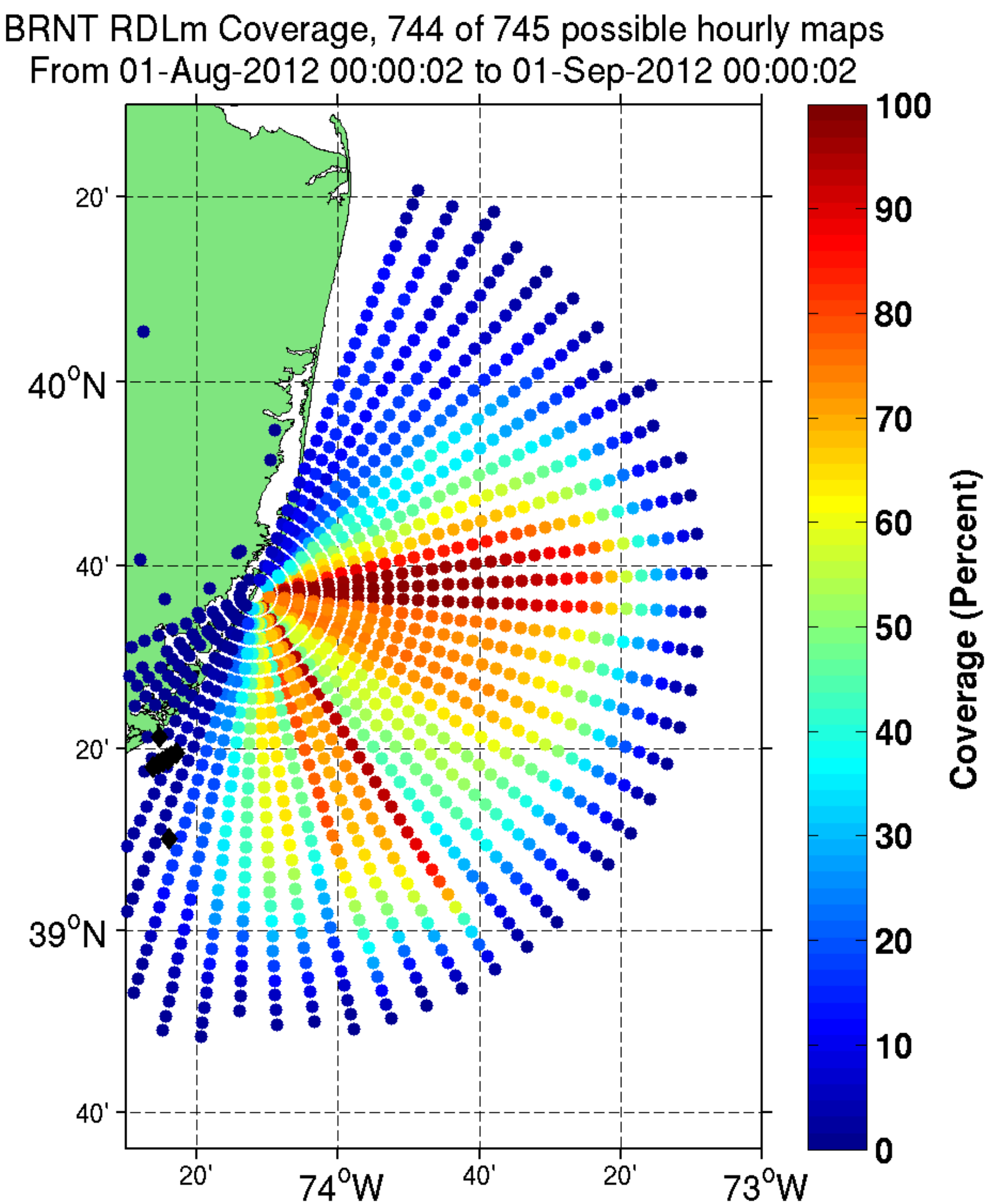

BRNT RDLm Coverage, 77 of 79 possible hourly maps
From 08-Jun-2012 15:00:02 to 11-Jun-2012 21:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

BRNT RDLm Coverage, 458 of 459 possible hourly maps
From 11-Jun-2012 22:00:02 to 01-Jul-2012 00:00:02

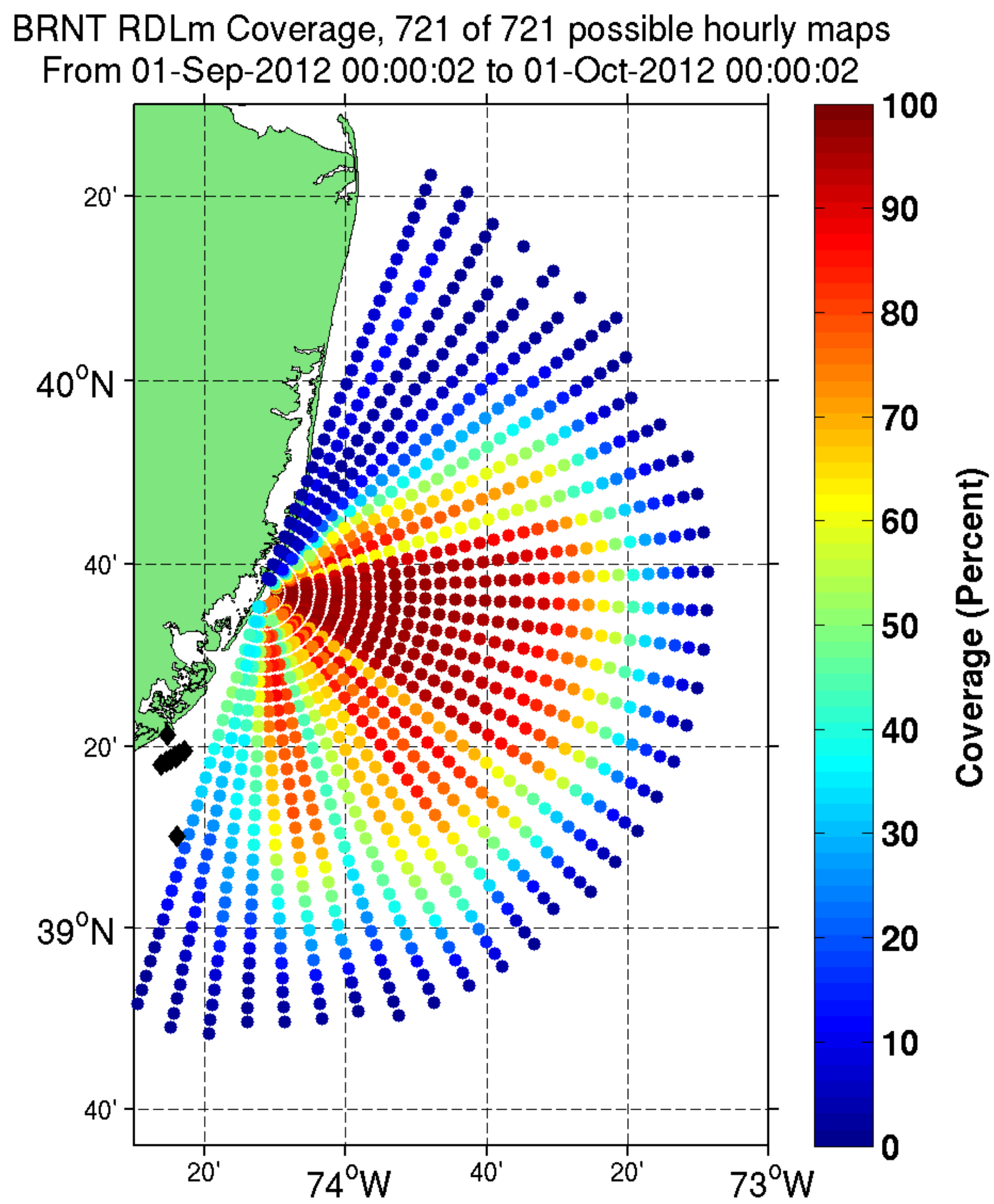


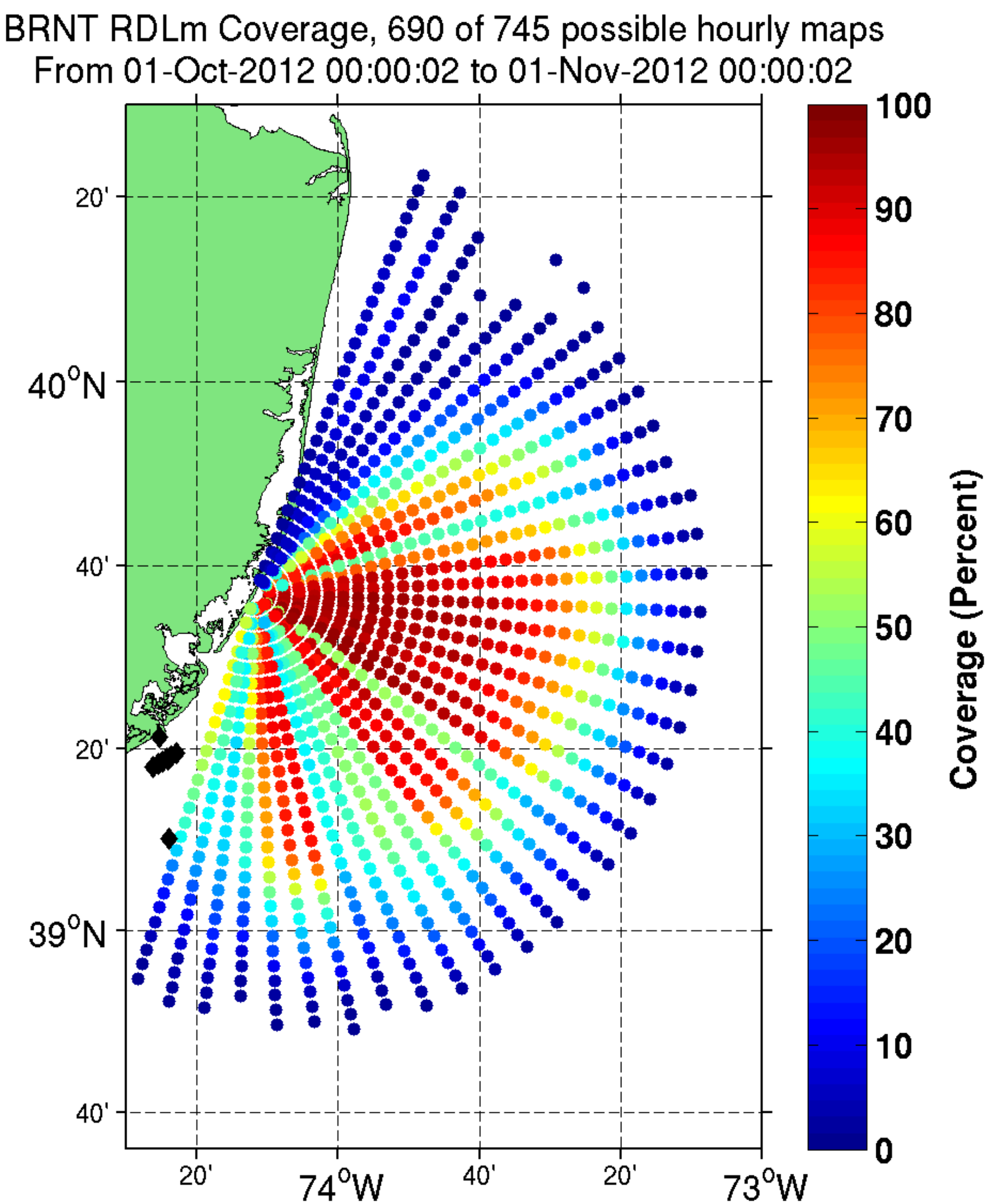
BRNT RDLm Coverage, 745 of 745 possible hourly maps
From 01-Jul-2012 00:00:02 to 01-Aug-2012 00:00:02

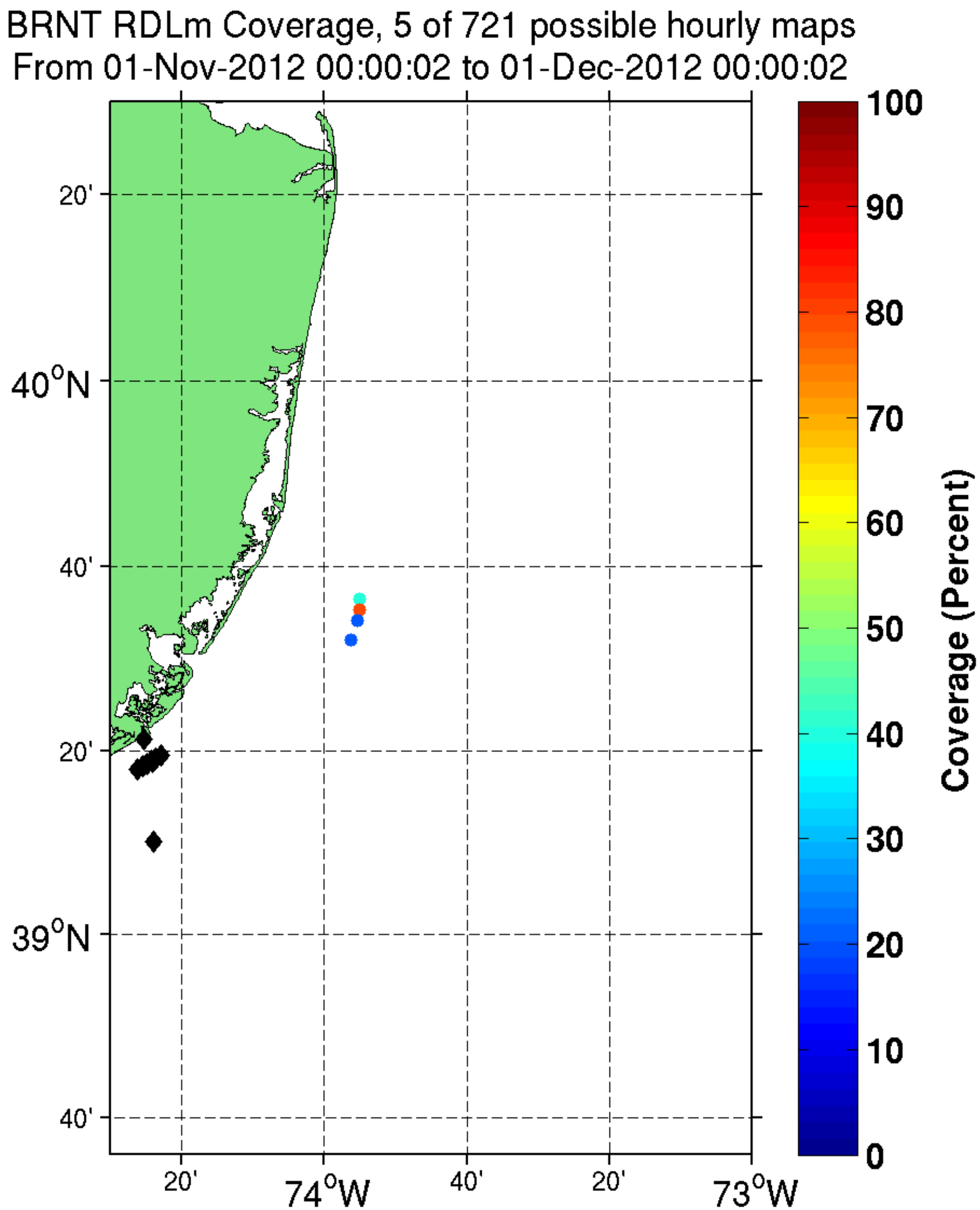




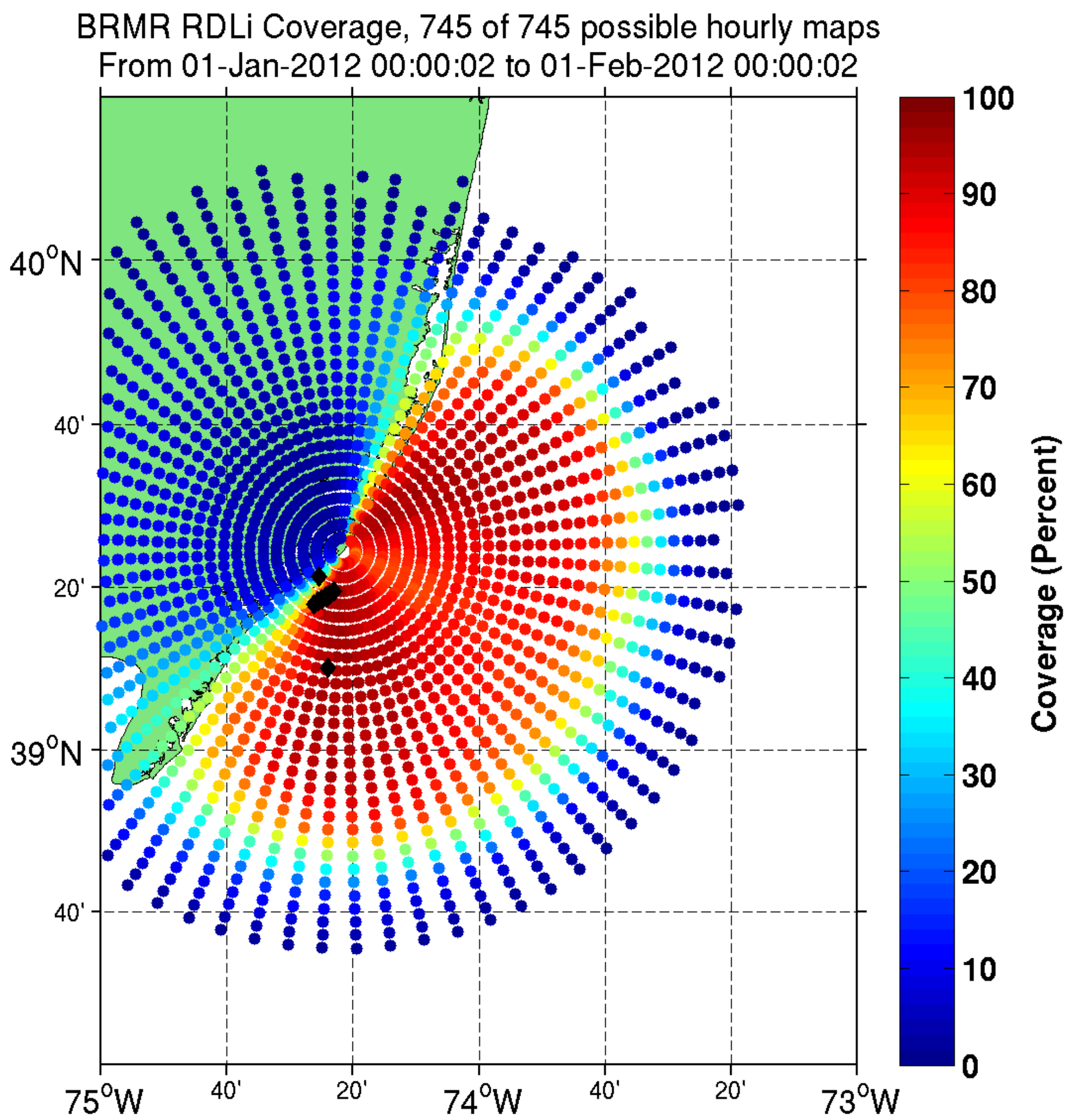
BRNT RDLm Coverage, 744 of 745 possible hourly maps
From 01-Aug-2012 00:00:02 to 01-Sep-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)


BRNT RDLm Coverage, 721 of 721 possible hourly maps
From 01-Sep-2012 00:00:02 to 01-Oct-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

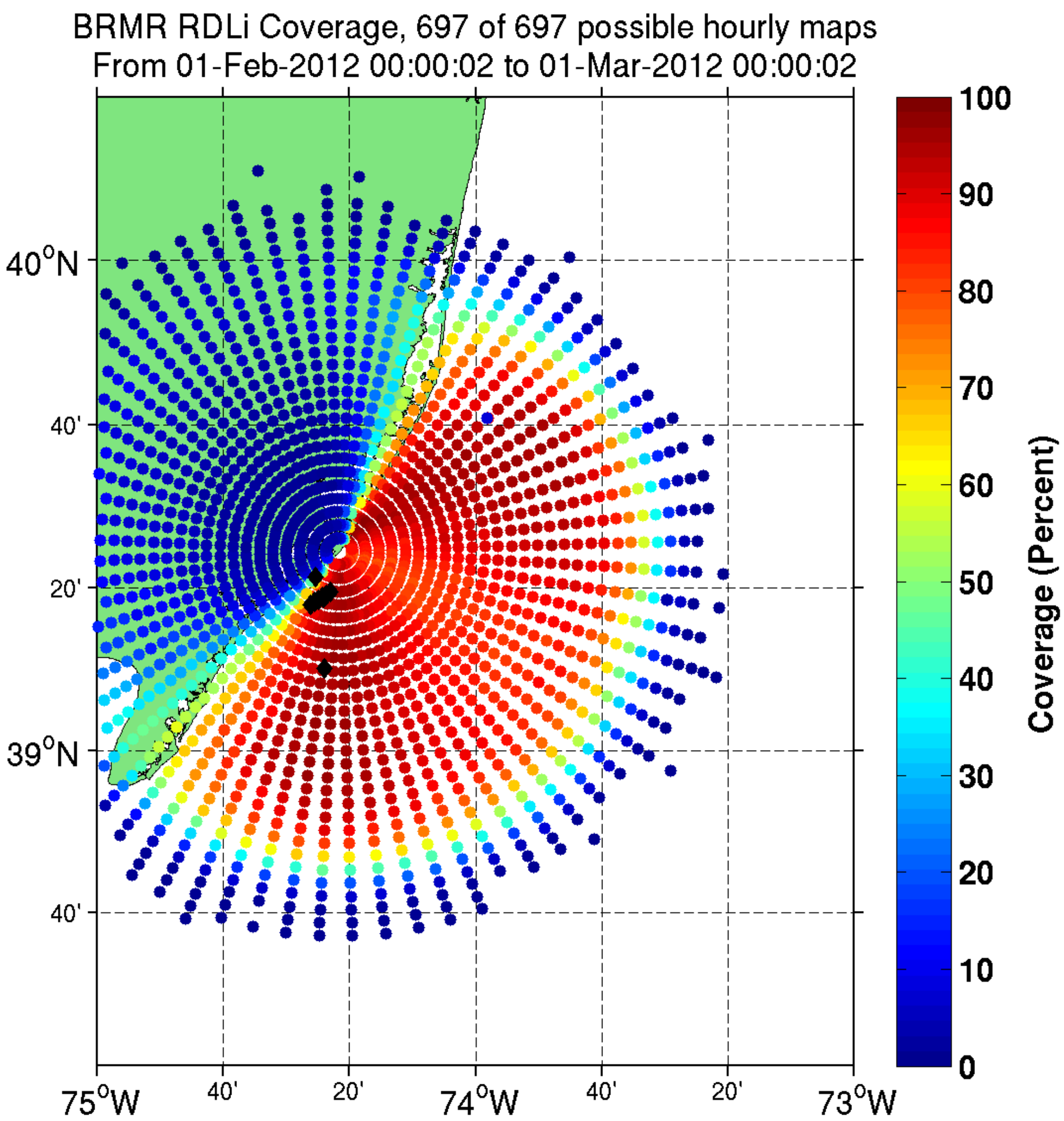

BRNT RDLm Coverage, 690 of 745 possible hourly maps
From 01-Oct-2012 00:00:02 to 01-Nov-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

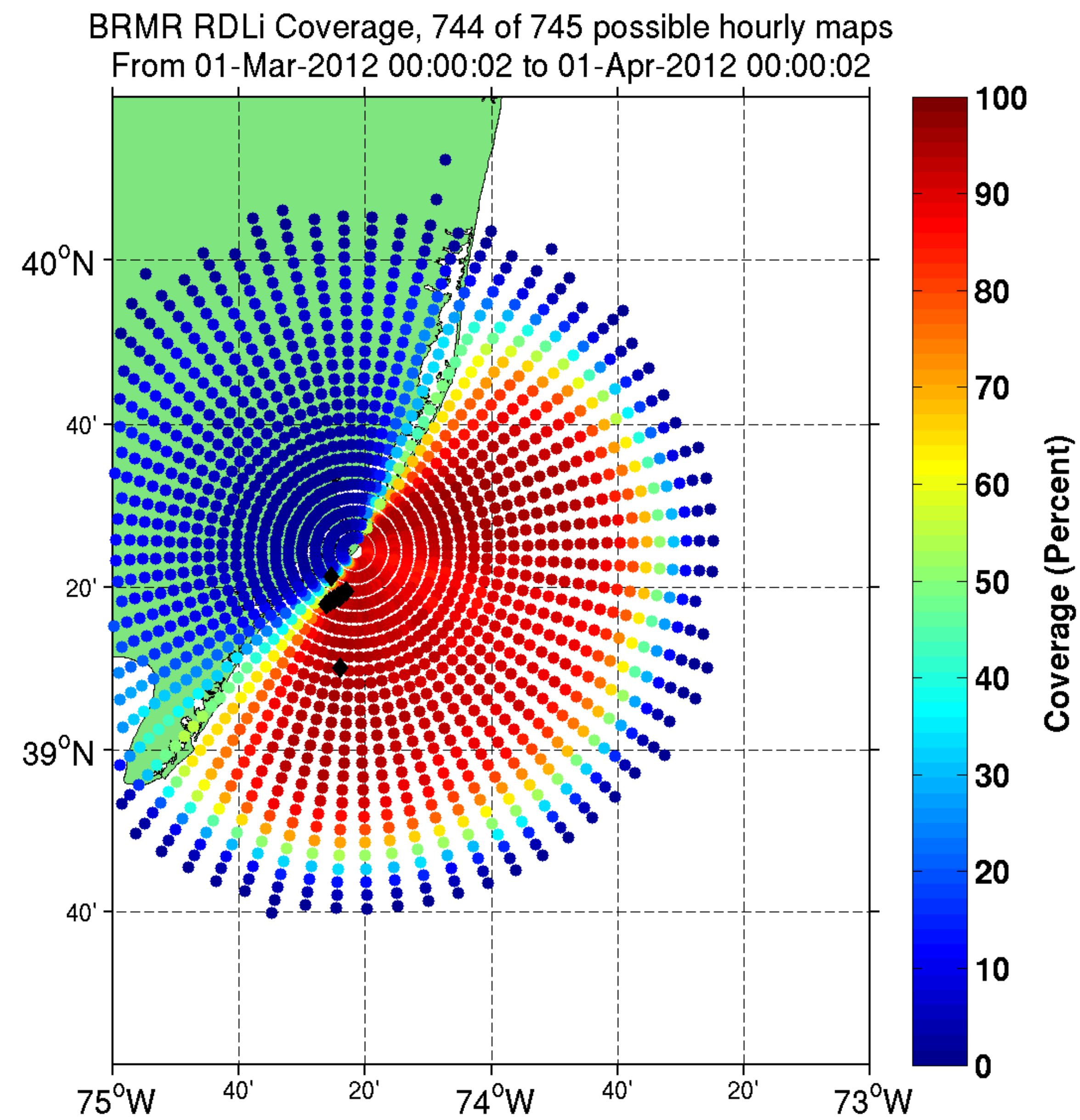

BRNT RDLm Coverage, 5 of 721 possible hourly maps
From 01-Nov-2012 00:00:02 to 01-Dec-2012 00:00:02
20'
40°N
40'
20'
39°N
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

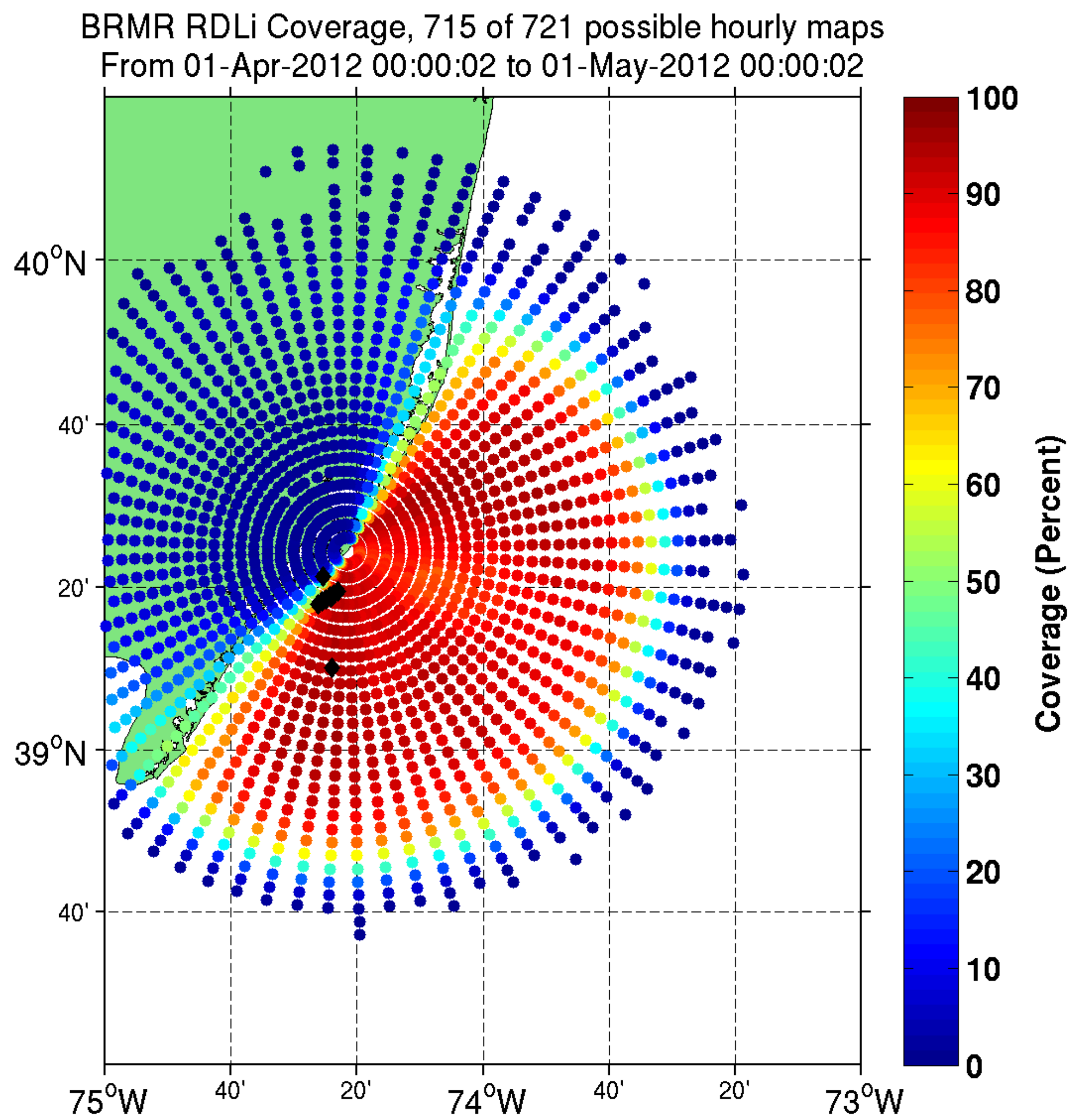
BRIGANTINE IDEAL RADIALS



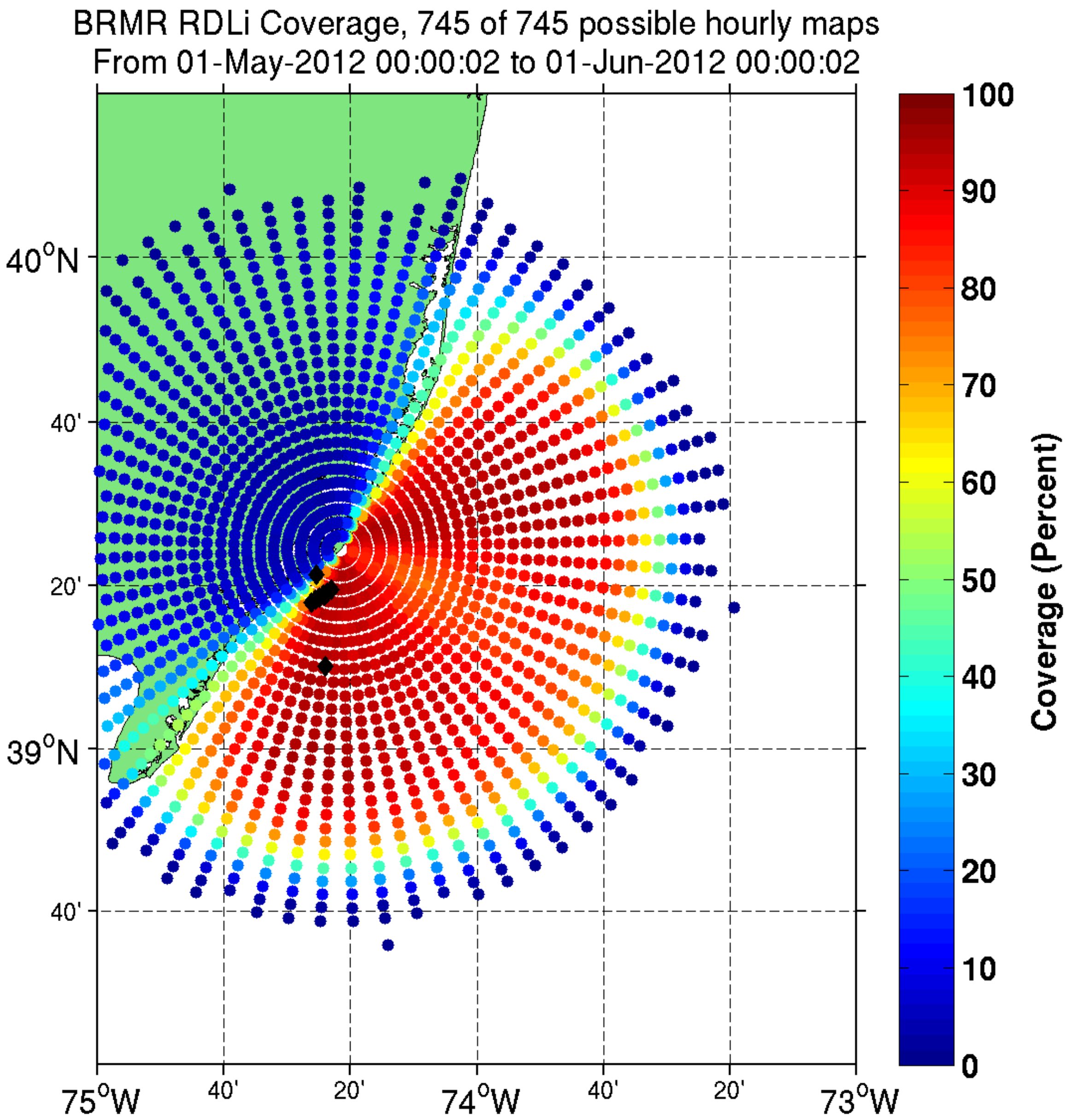
BRMR RDLi Coverage, 745 of 745 possible hourly maps
From 01-Jan-2012 00:00:02 to 01-Feb-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)


BRMR RDLi Coverage, 697 of 697 possible hourly maps
From 01-Feb-2012 00:00:02 to 01-Mar-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

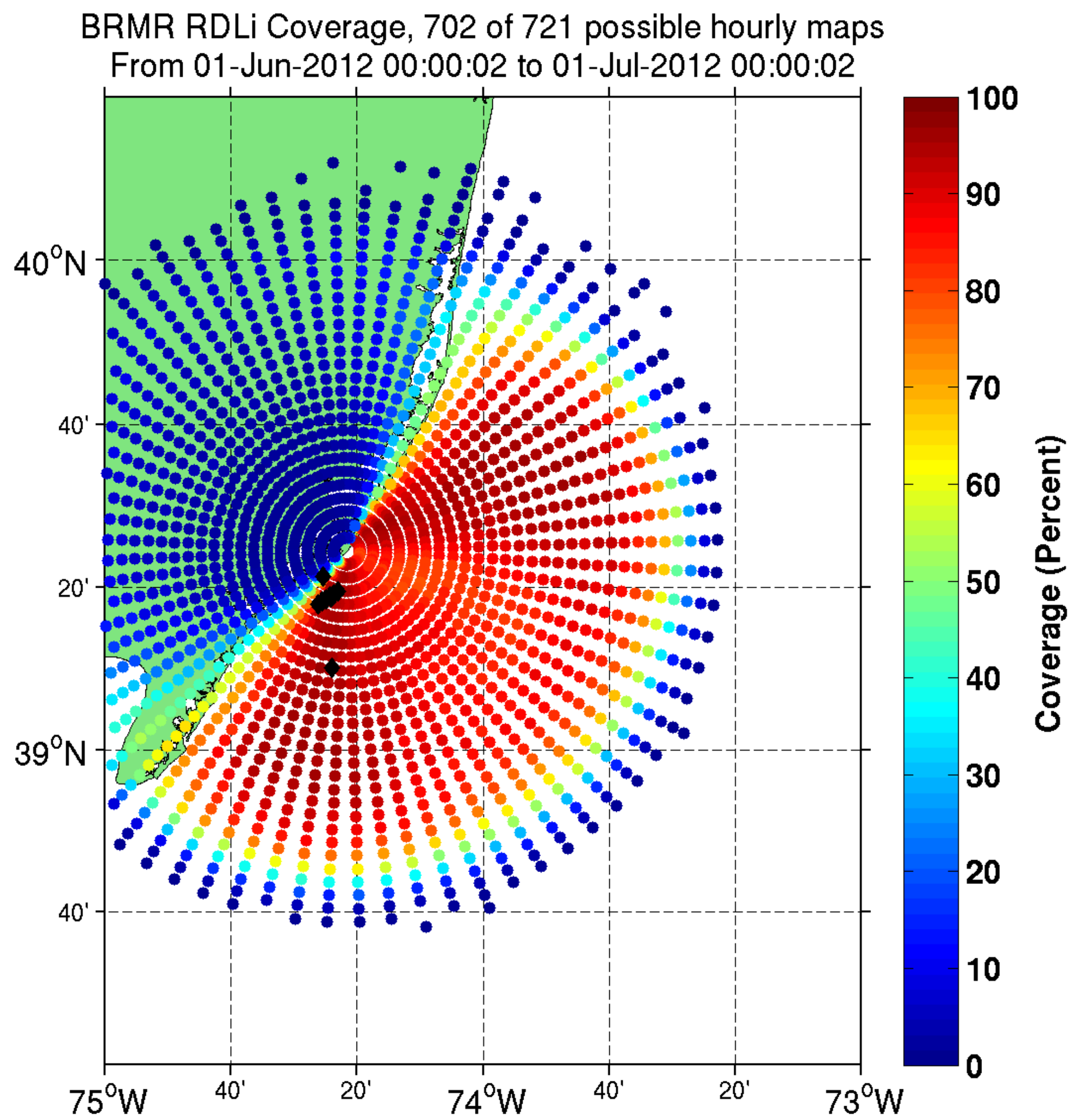

BRMR RDLi Coverage, 744 of 745 possible hourly maps
From 01-Mar-2012 00:00:02 to 01-Apr-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

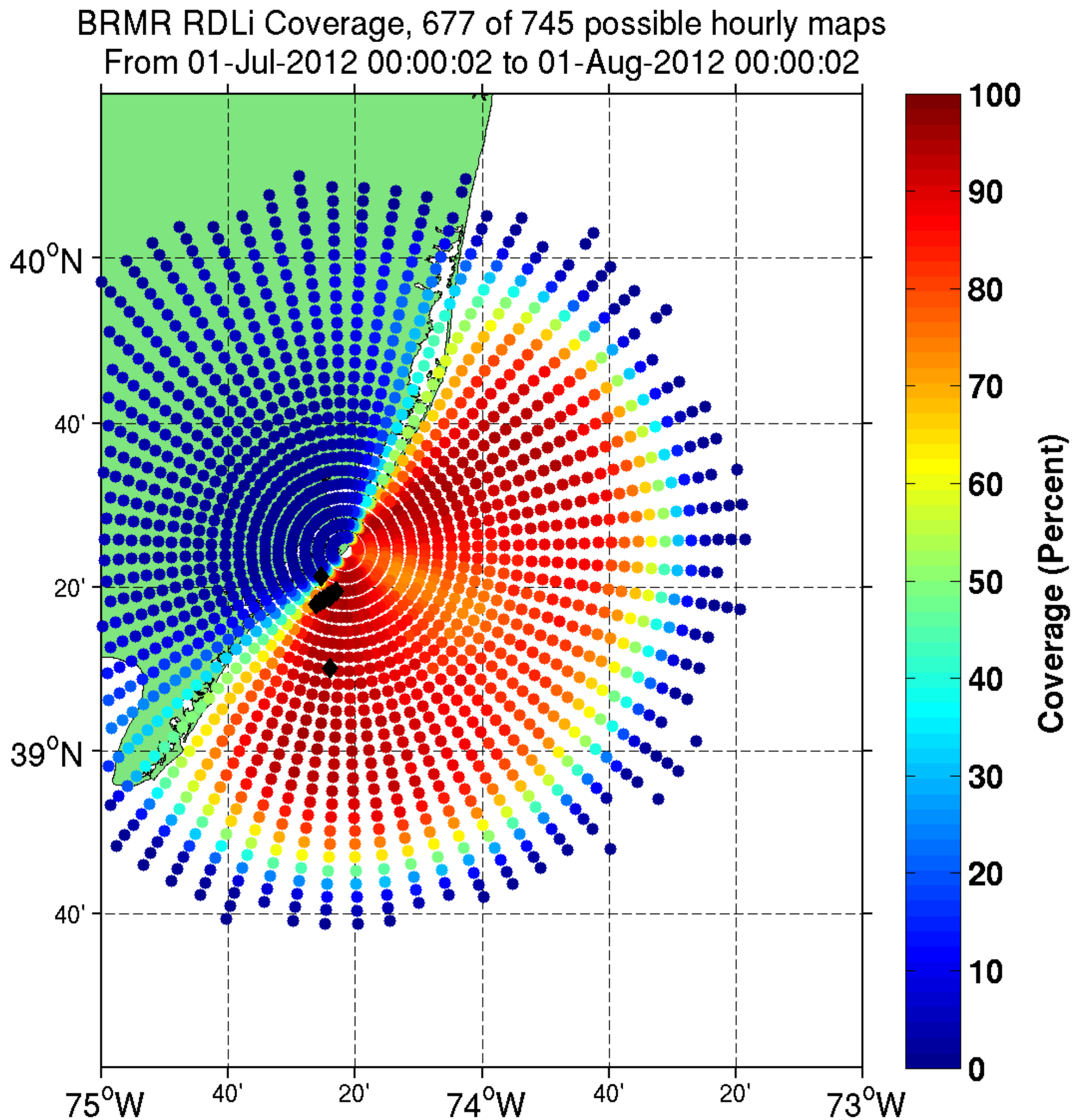


BRMR RDLi Coverage, 715 of 721 possible hourly maps
From 01-Apr-2012 00:00:02 to 01-May-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

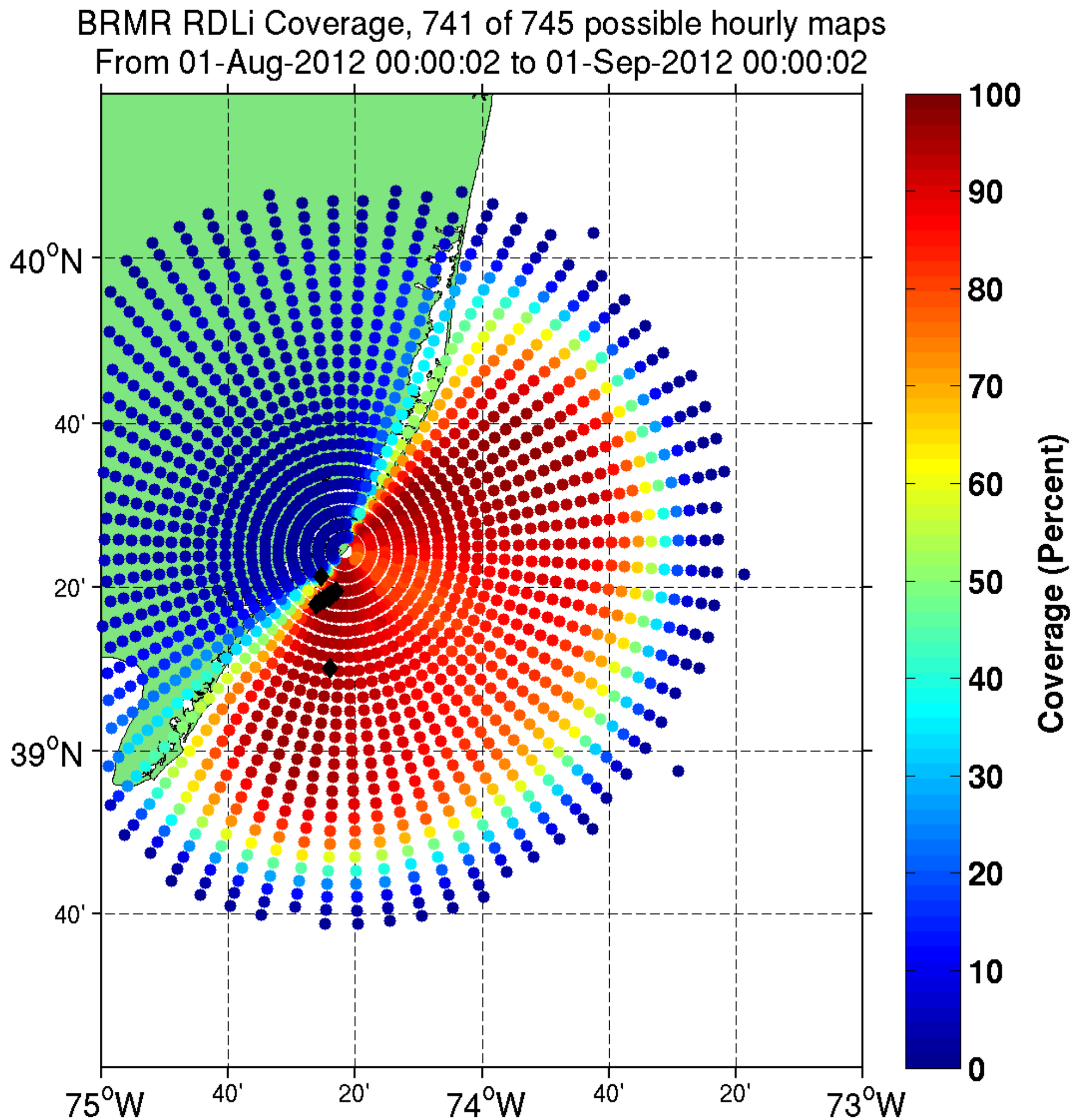


BRMR RDLi Coverage, 745 of 745 possible hourly maps
From 01-May-2012 00:00:02 to 01-Jun-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

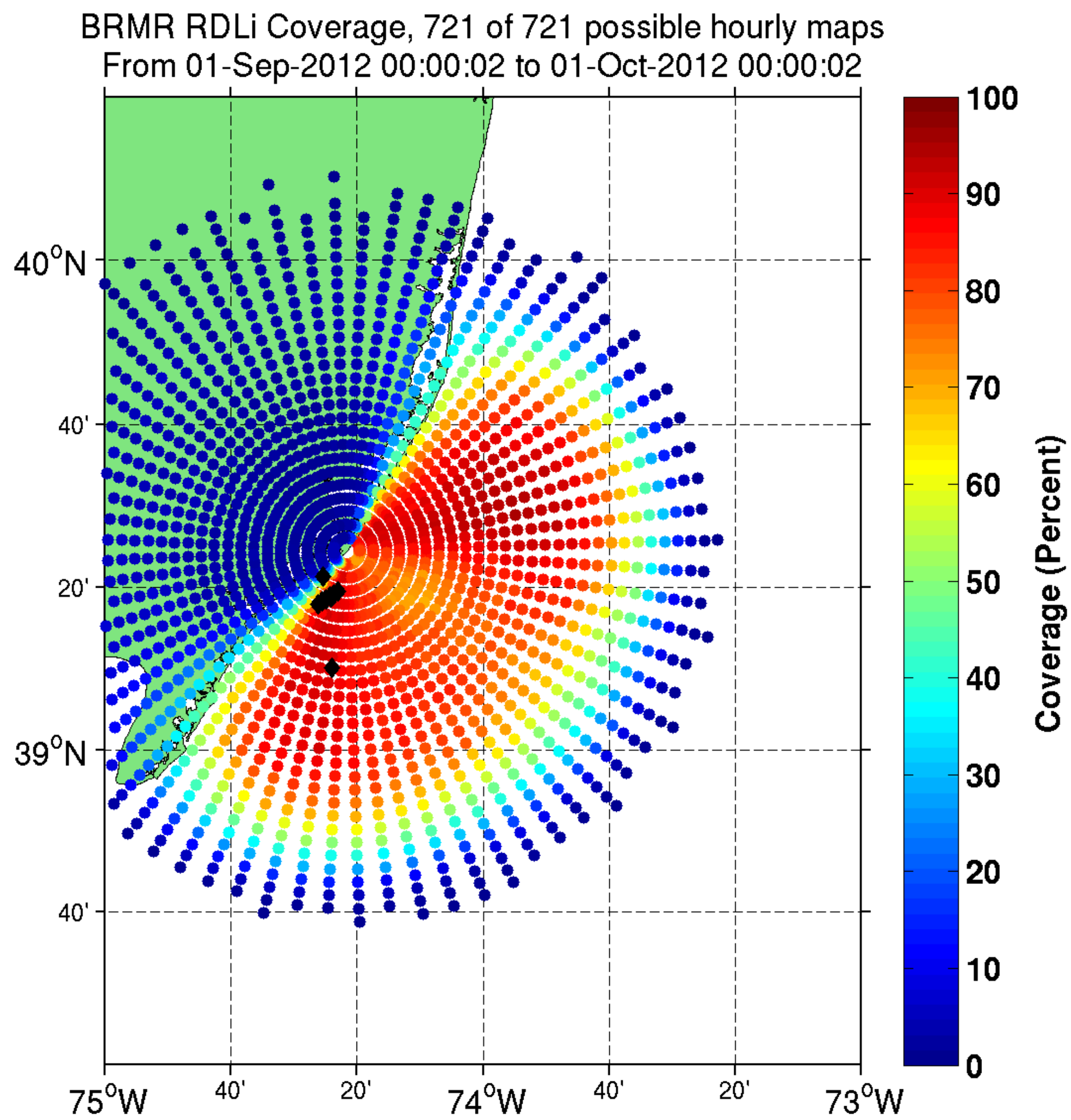

BRMR RDLi Coverage, 702 of 721 possible hourly maps
From 01-Jun-2012 00:00:02 to 01-Jul-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)



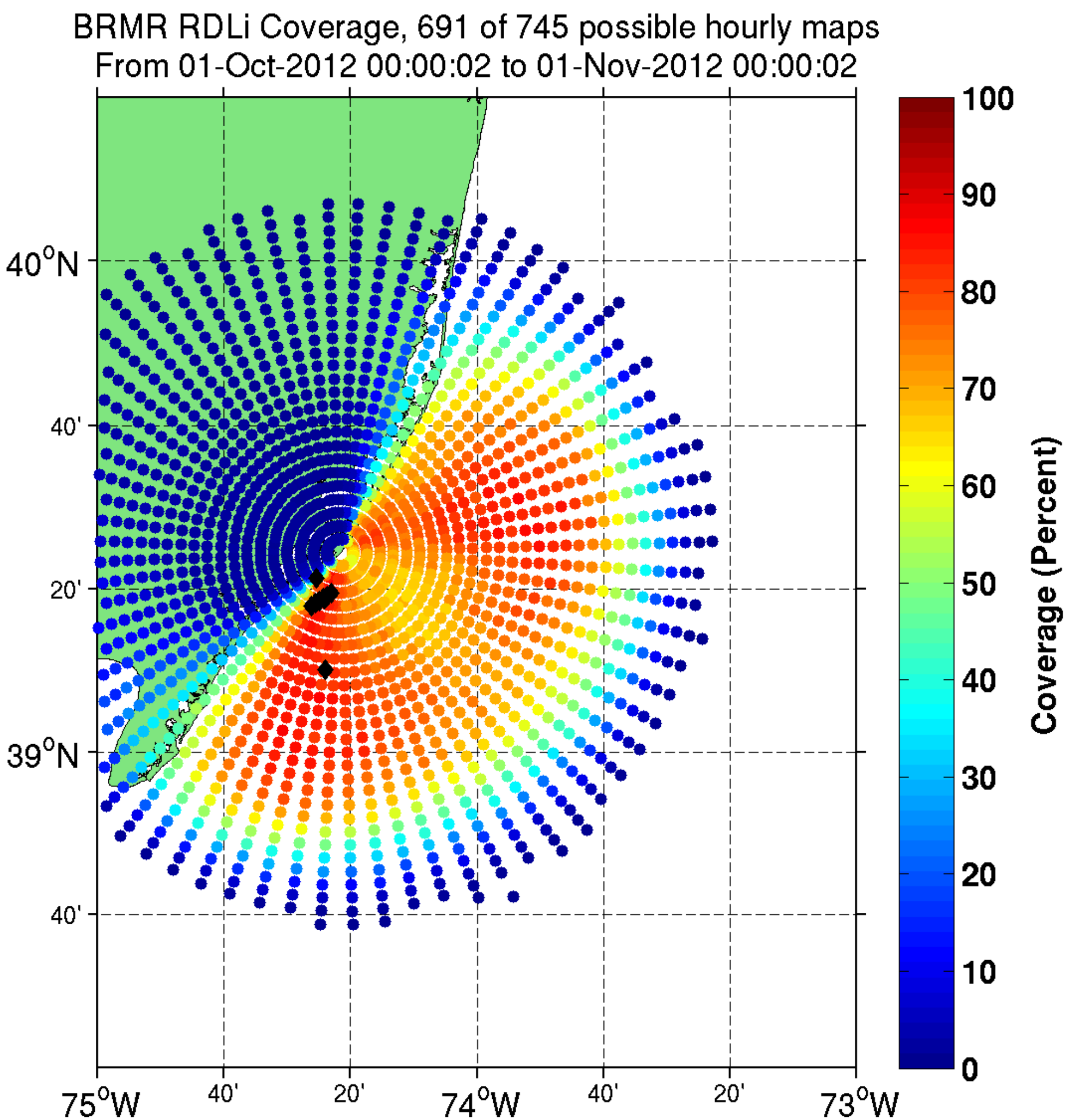
BRMR RDLi Coverage, 677 of 745 possible hourly maps
From 01-Jul-2012 00:00:02 to 01-Aug-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)



BRMR RDLi Coverage, 741 of 745 possible hourly maps
From 01-Aug-2012 00:00:02 to 01-Sep-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0



BRMR RDLi Coverage, 721 of 721 possible hourly maps
From 01-Sep-2012 00:00:02 to 01-Oct-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0



BRMR RDLi Coverage, 691 of 745 possible hourly maps
From 01-Oct-2012 00:00:02 to 01-Nov-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
Coverage (Percent)
100
90
80
70
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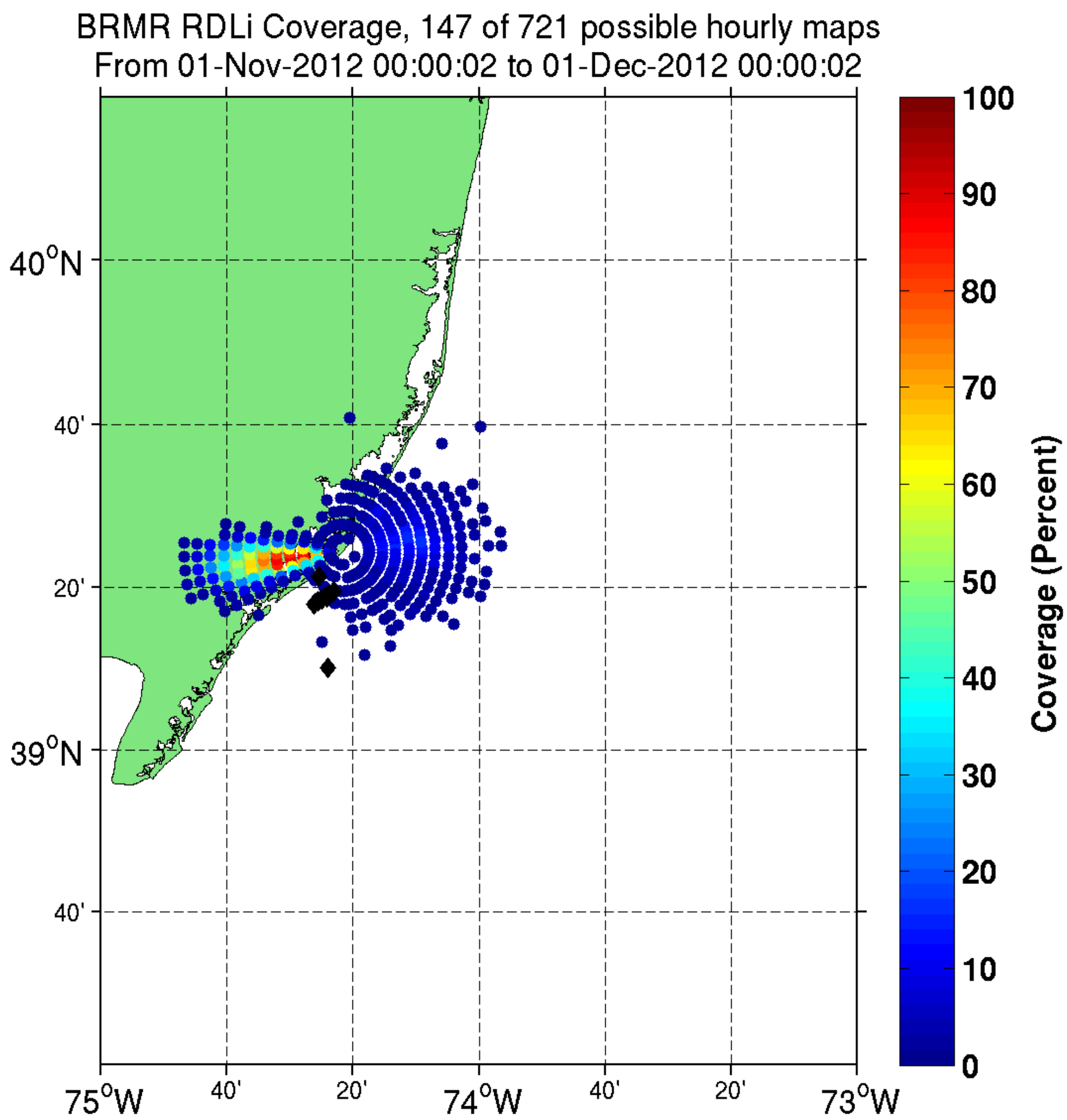
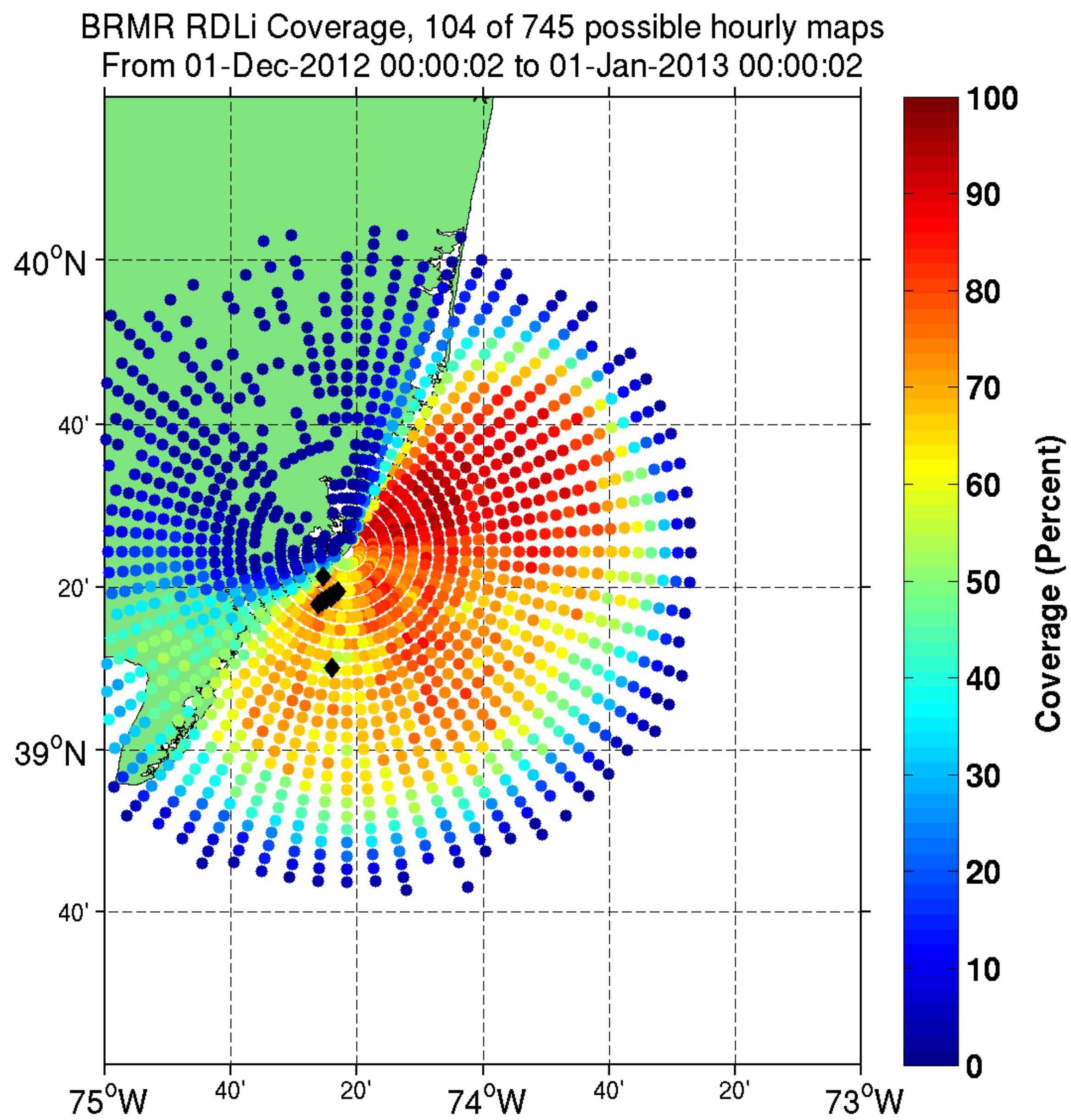
50
40
30
20
10
0

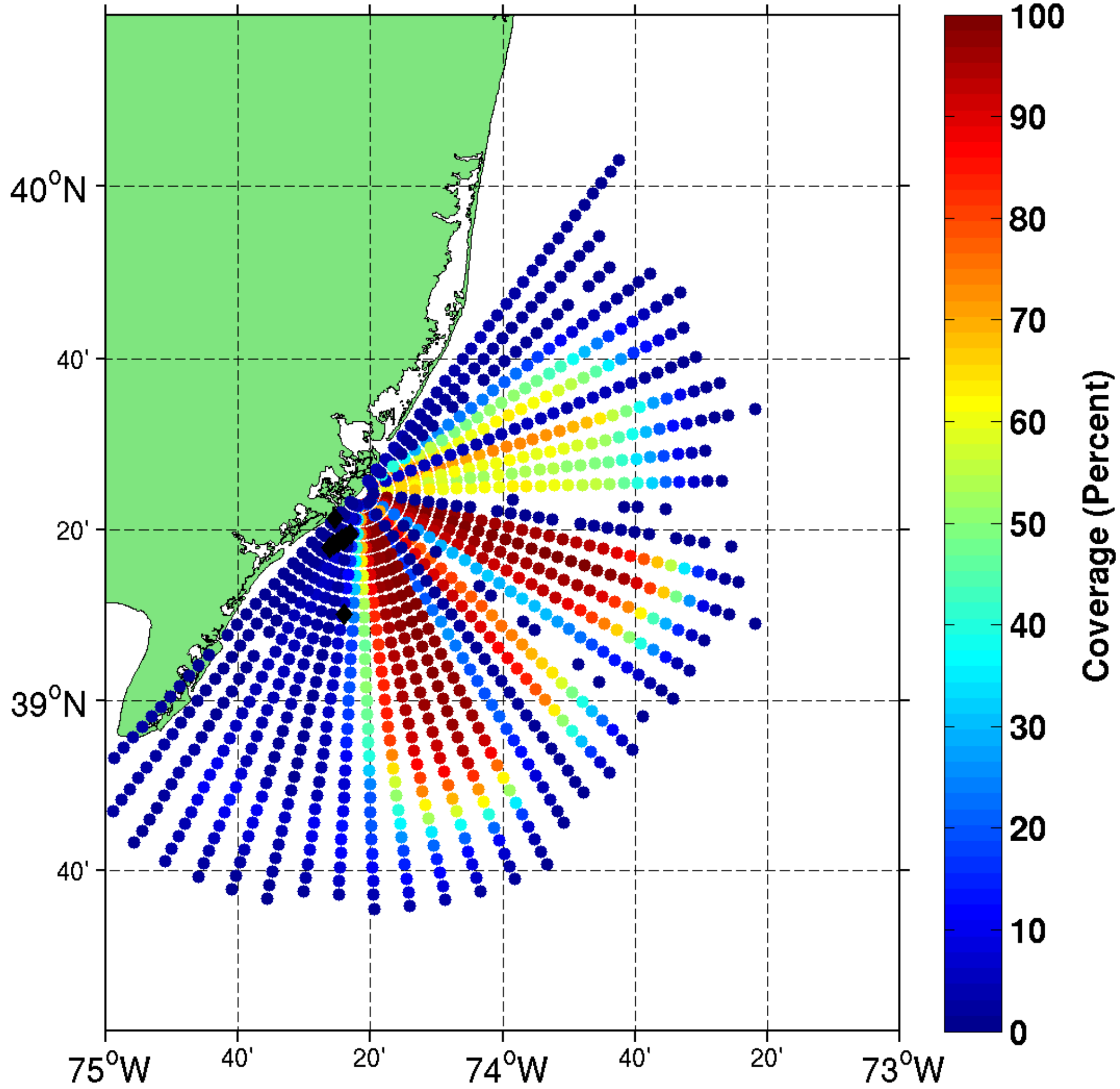

BRMR RDLi Coverage, 147 of 721 possible hourly maps
From 01-Nov-2012 00:00:02 to 01-Dec-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

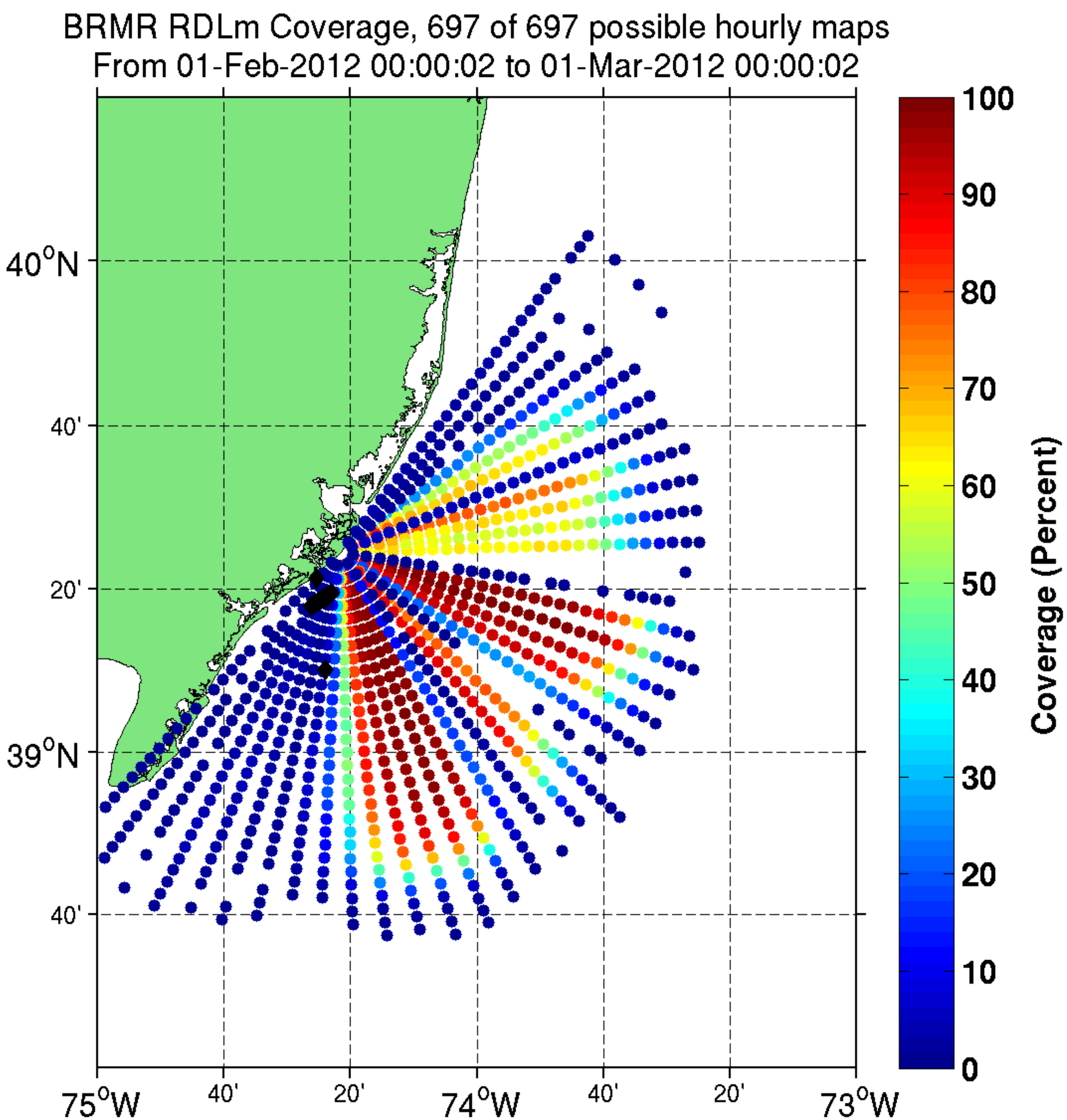


BRMR RDLi Coverage, 104 of 745 possible hourly maps
From 01-Dec-2012 00:00:02 to 01-Jan-2013 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

BRIAGANTINE MEASURED RADIALS

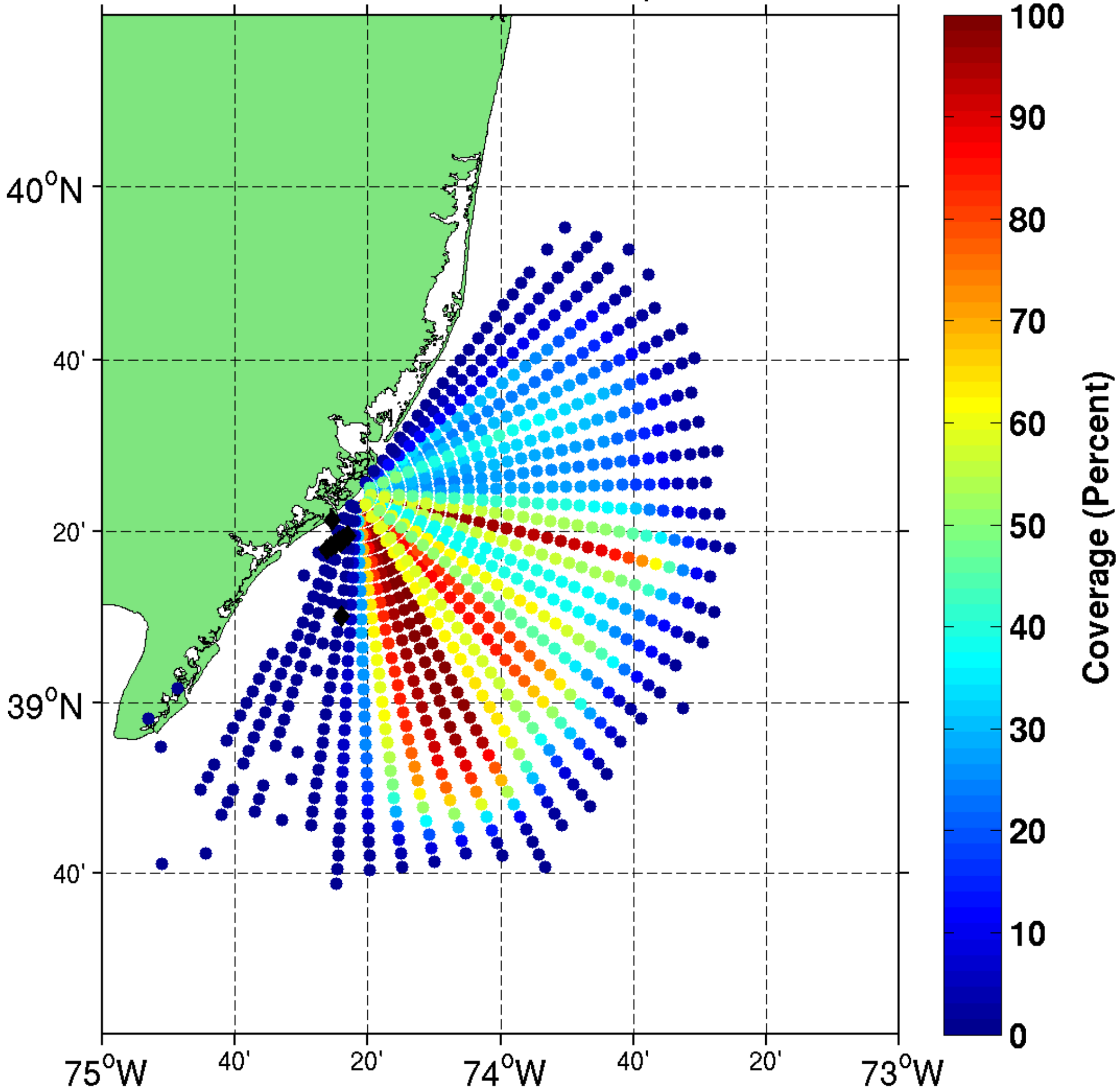
BRMR RDLm Coverage, 745 of 745 possible hourly maps
From 01-Jan-2012 00:00:02 to 01-Feb-2012 00:00:02

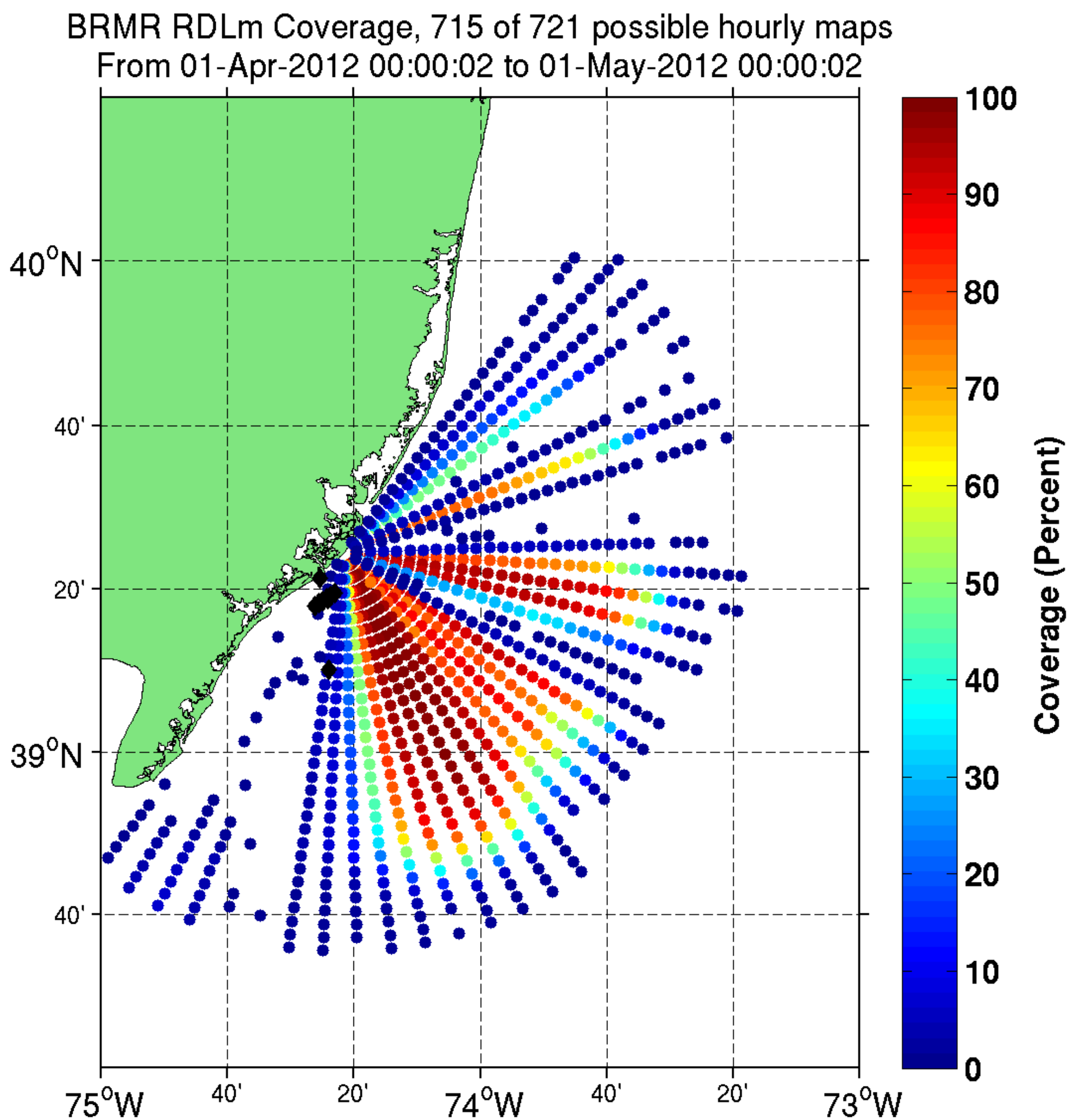


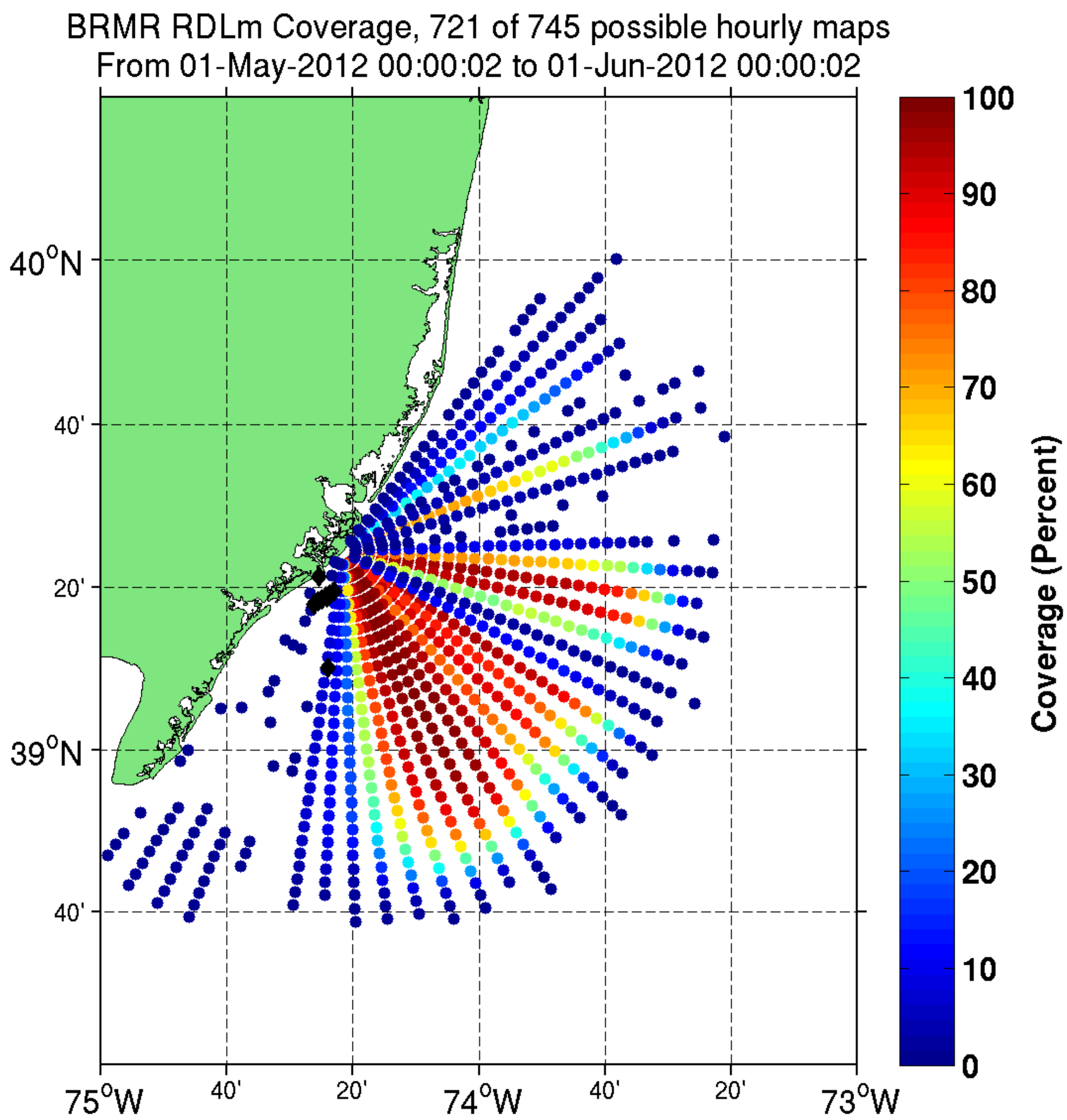


BRMR RDLm Coverage, 697 of 697 possible hourly maps
From 01-Feb-2012 00:00:02 to 01-Mar-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

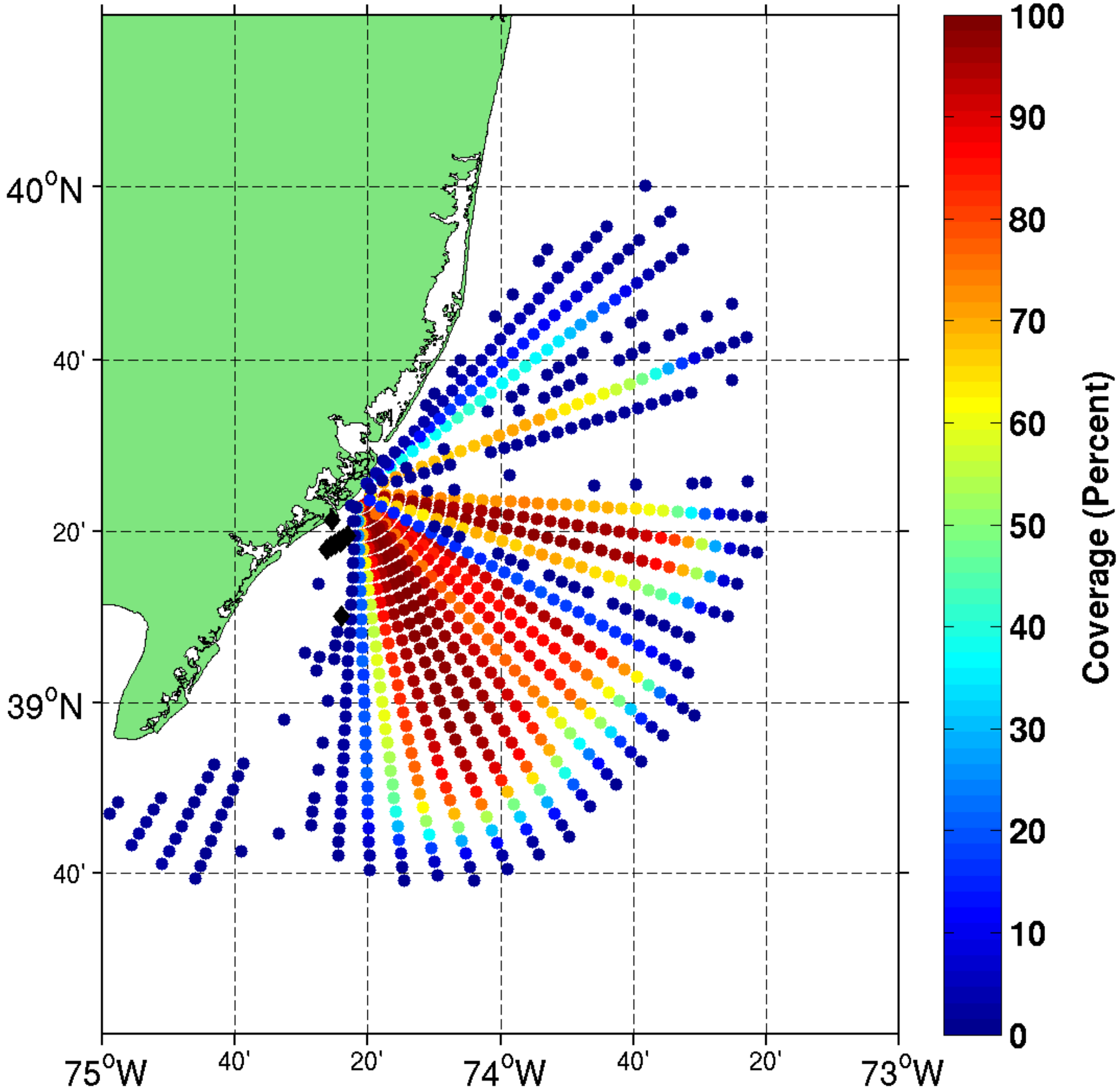
BRMR RDLm Coverage, 727 of 745 possible hourly maps
From 01-Mar-2012 00:00:02 to 01-Apr-2012 00:00:02

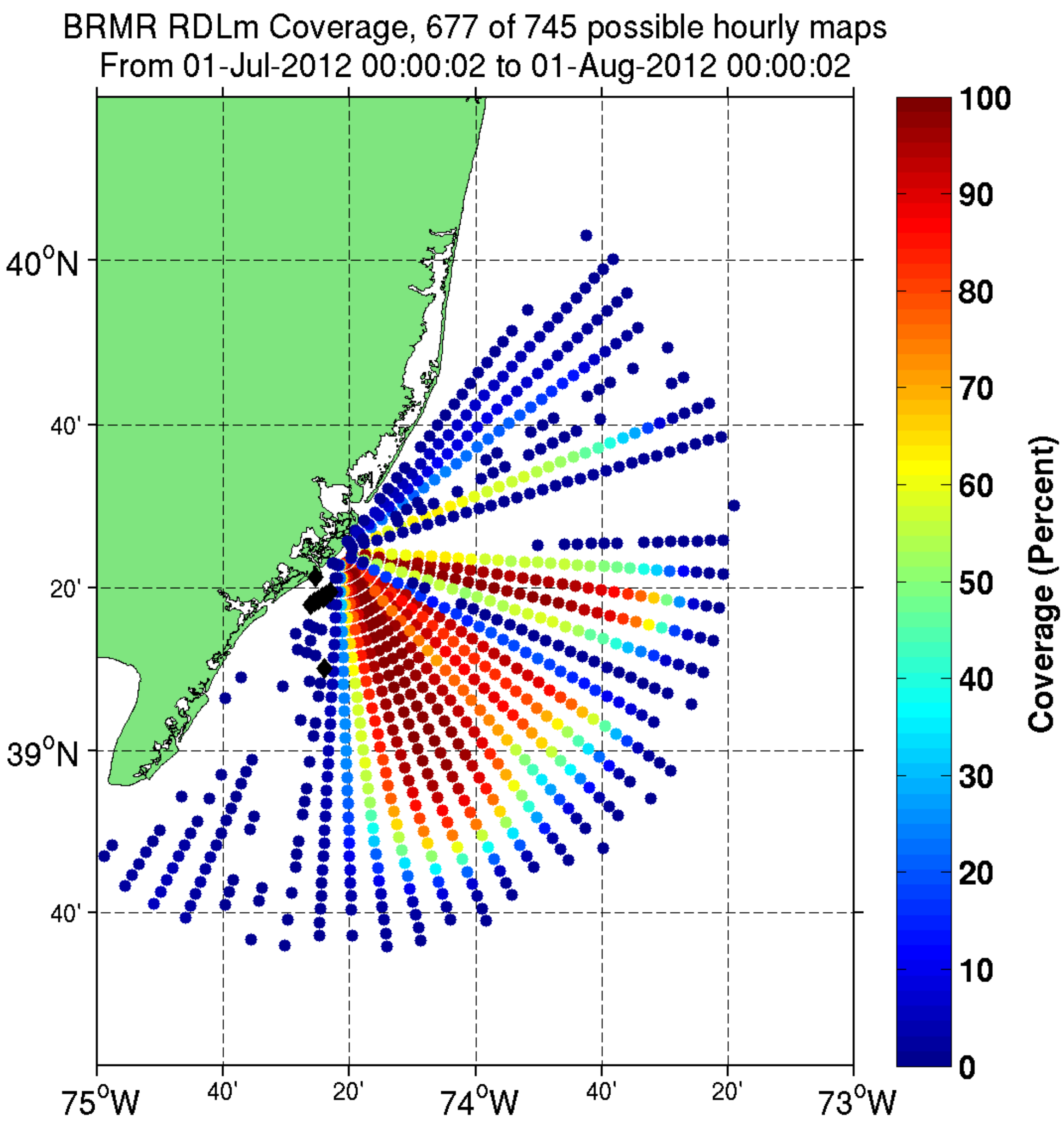



BRMR RDLm Coverage, 715 of 721 possible hourly maps
From 01-Apr-2012 00:00:02 to 01-May-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

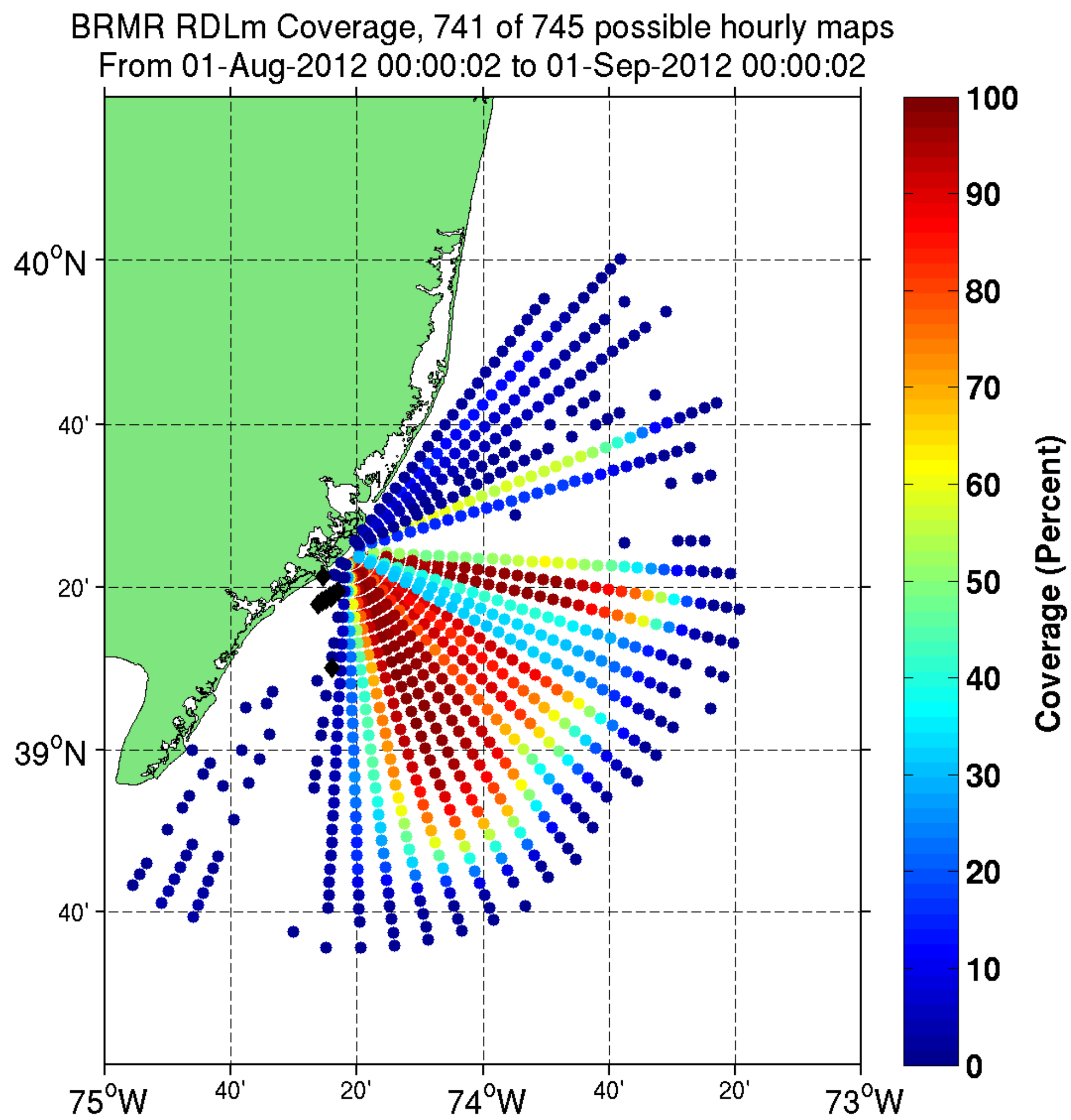

BRMR RDLm Coverage, 721 of 745 possible hourly maps
From 01-May-2012 00:00:02 to 01-Jun-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

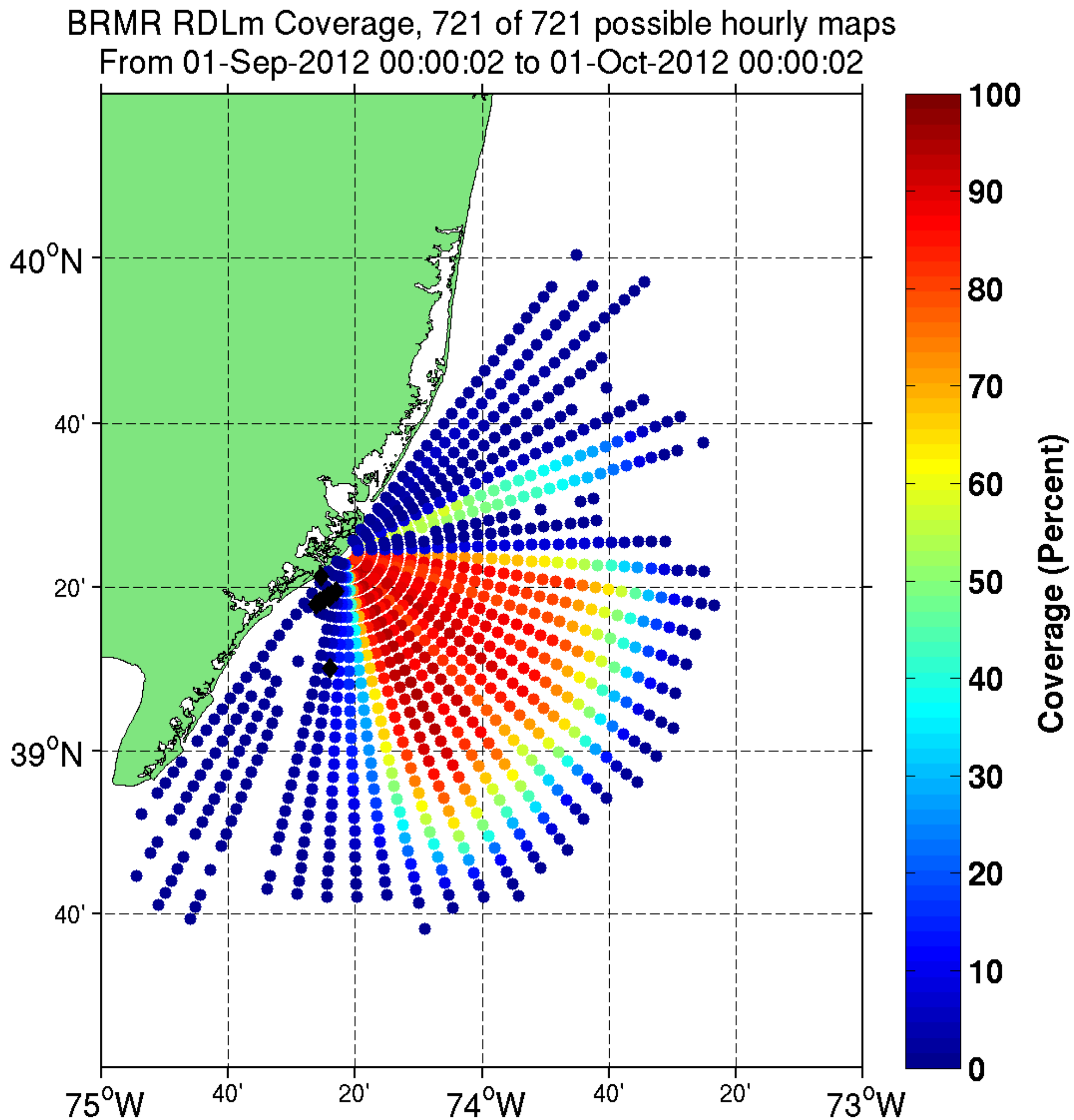
BRMR RDLm Coverage, 702 of 721 possible hourly maps
From 01-Jun-2012 00:00:02 to 01-Jul-2012 00:00:02





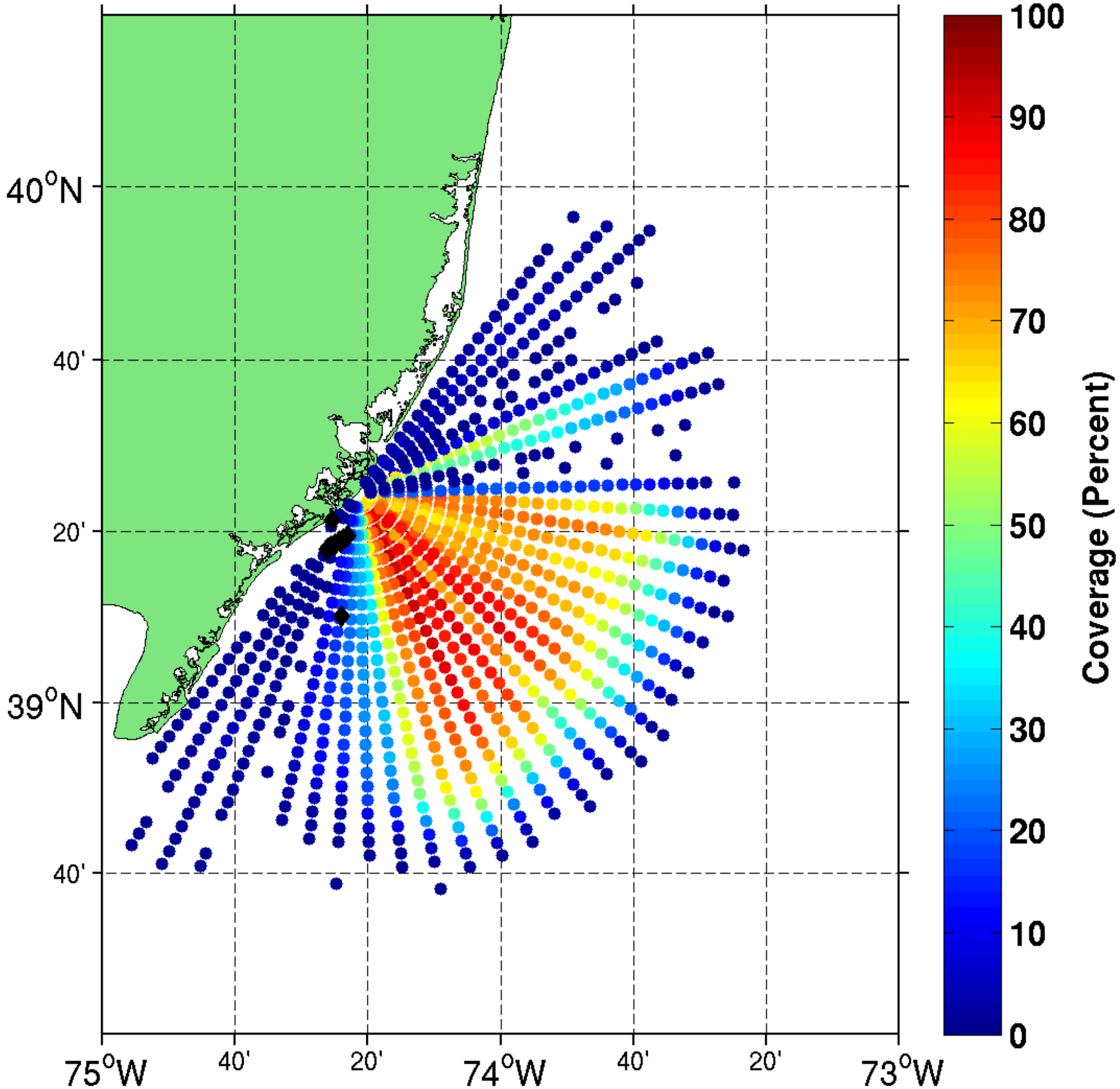
BRMR RDLm Coverage, 677 of 745 possible hourly maps
From 01-Jul-2012 00:00:02 to 01-Aug-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

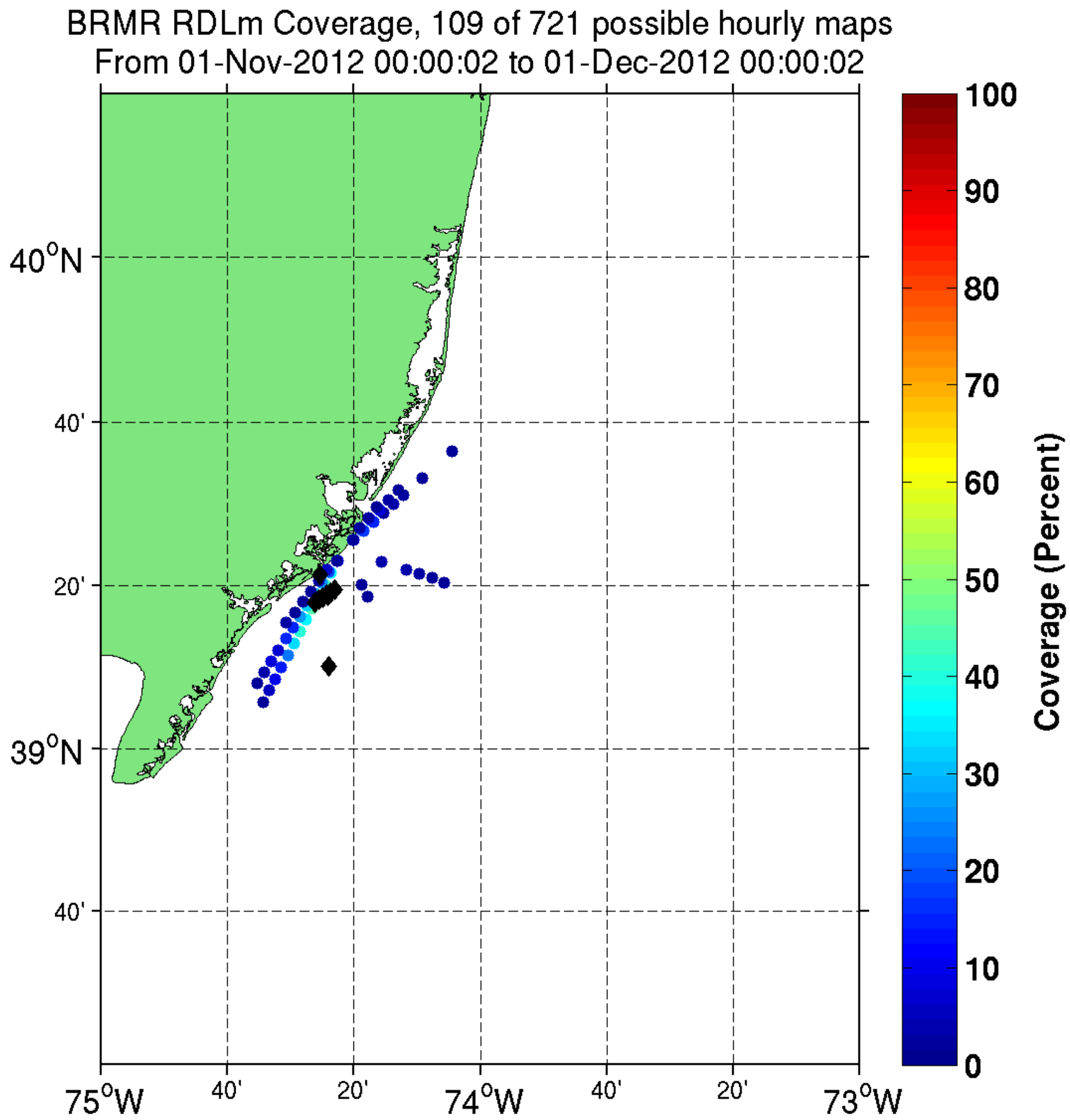

BRMR RDLm Coverage, 741 of 745 possible hourly maps
From 01-Aug-2012 00:00:02 to 01-Sep-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)



BRMR RDLm Coverage, 721 of 721 possible hourly maps
From 01-Sep-2012 00:00:02 to 01-Oct-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

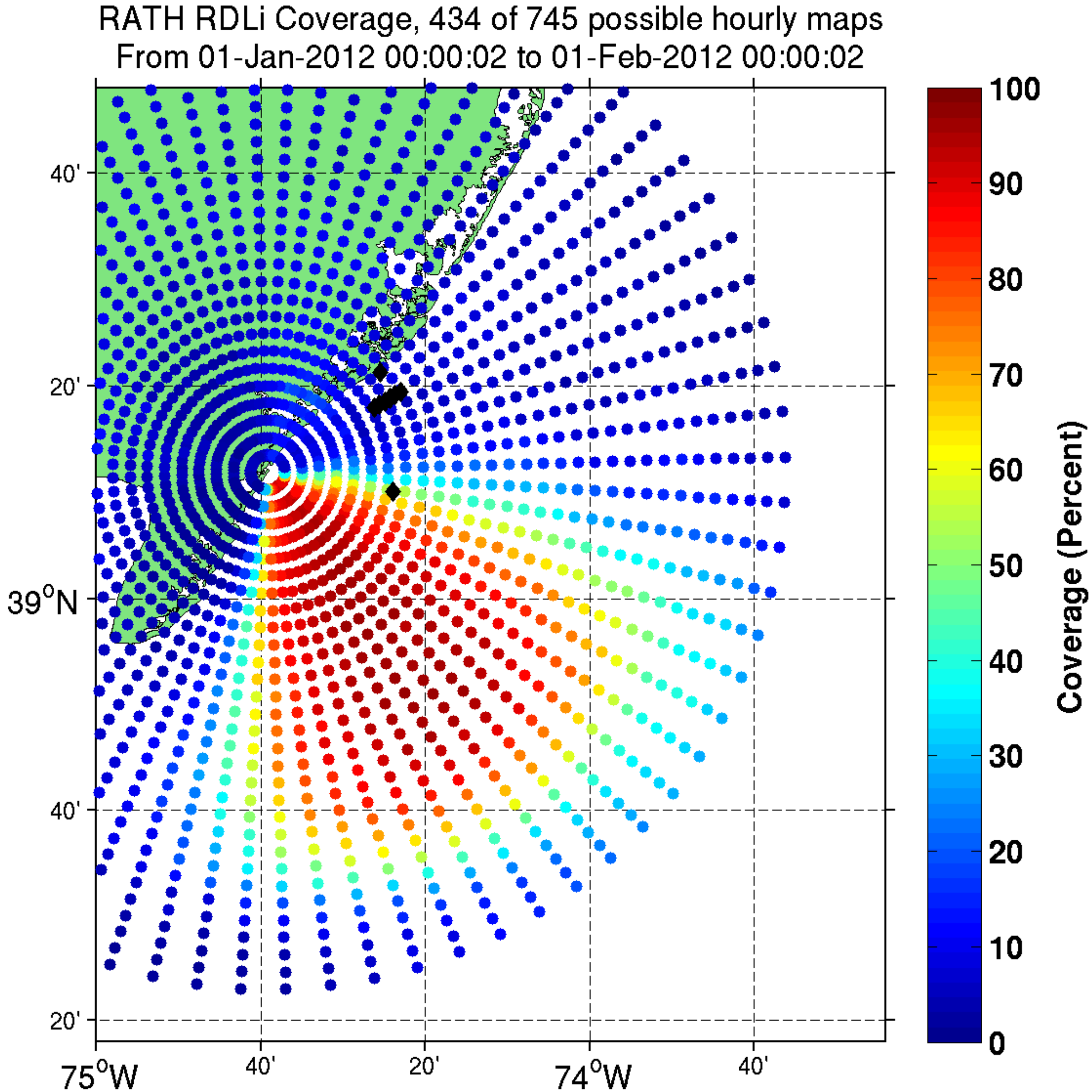
BRMR RDLm Coverage, 691 of 745 possible hourly maps
From 01-Oct-2012 00:00:02 to 01-Nov-2012 00:00:02

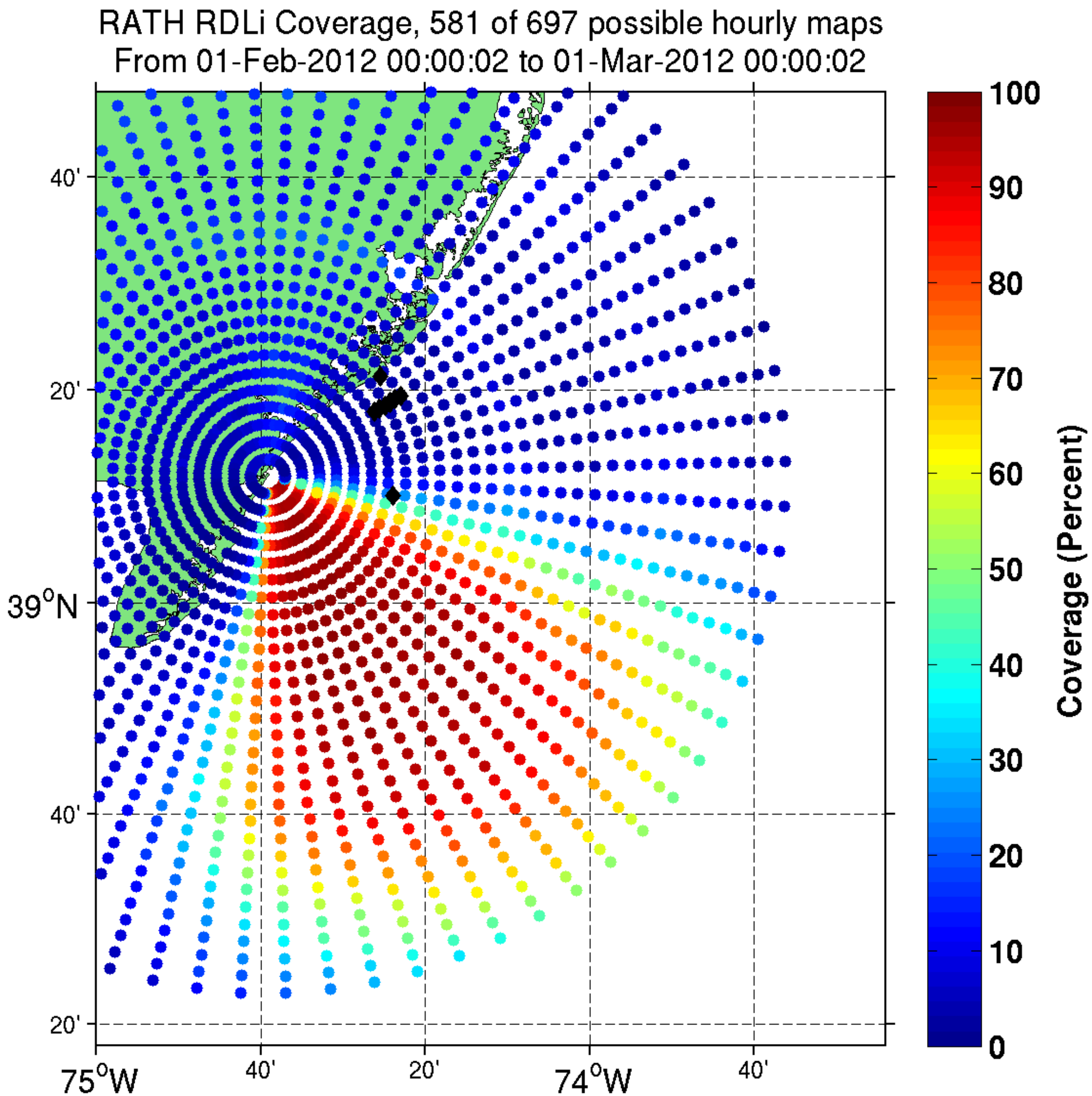




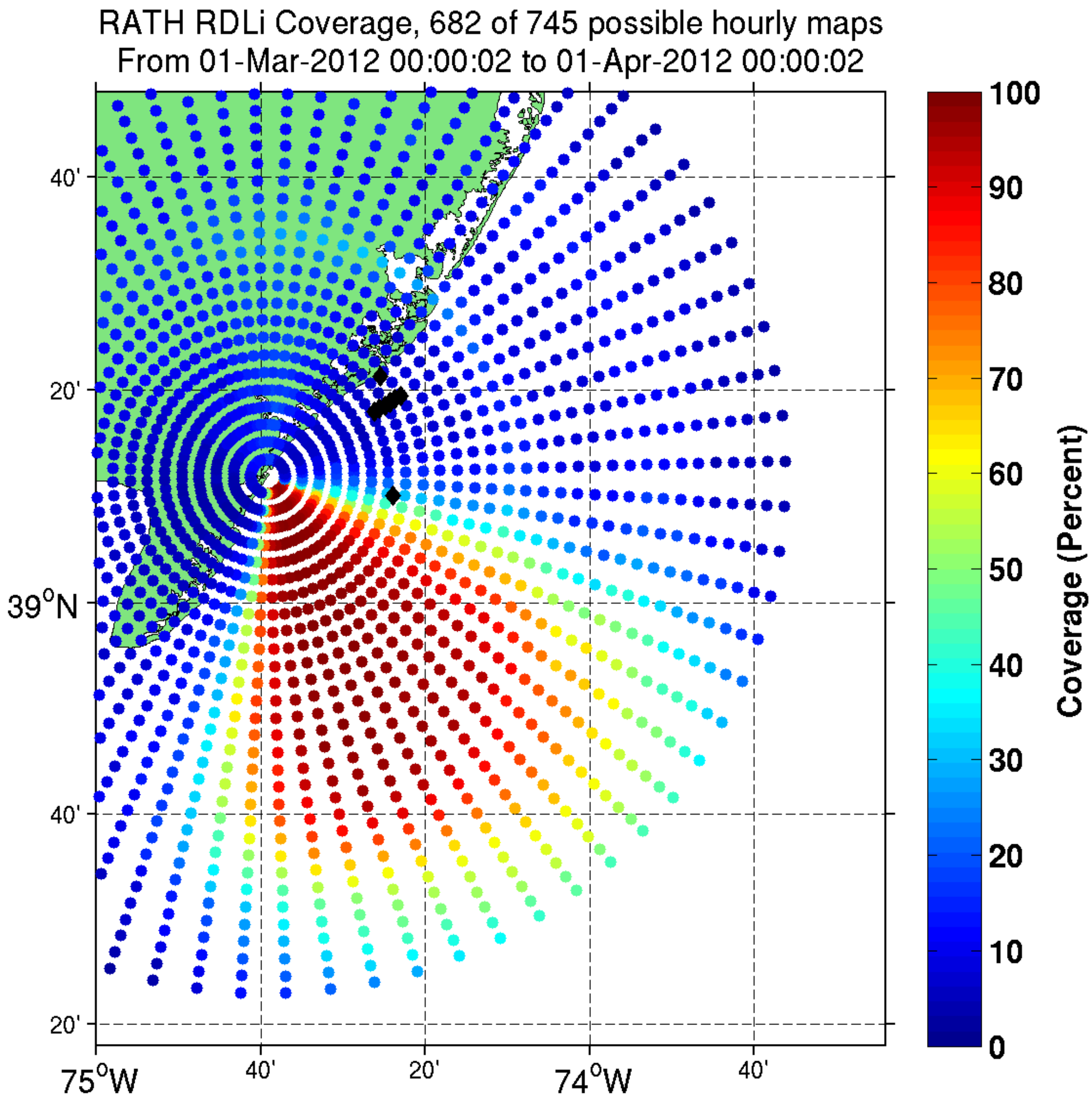
BRMR RDLm Coverage, 109 of 721 possible hourly maps
From 01-Nov-2012 00:00:02 to 01-Dec-2012 00:00:02
40°N
40'
20'
39°N
40'
75°W
40'
20'
74°W
40'
20'
73°W
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

STRATHMERE
IDEAL RADIALS

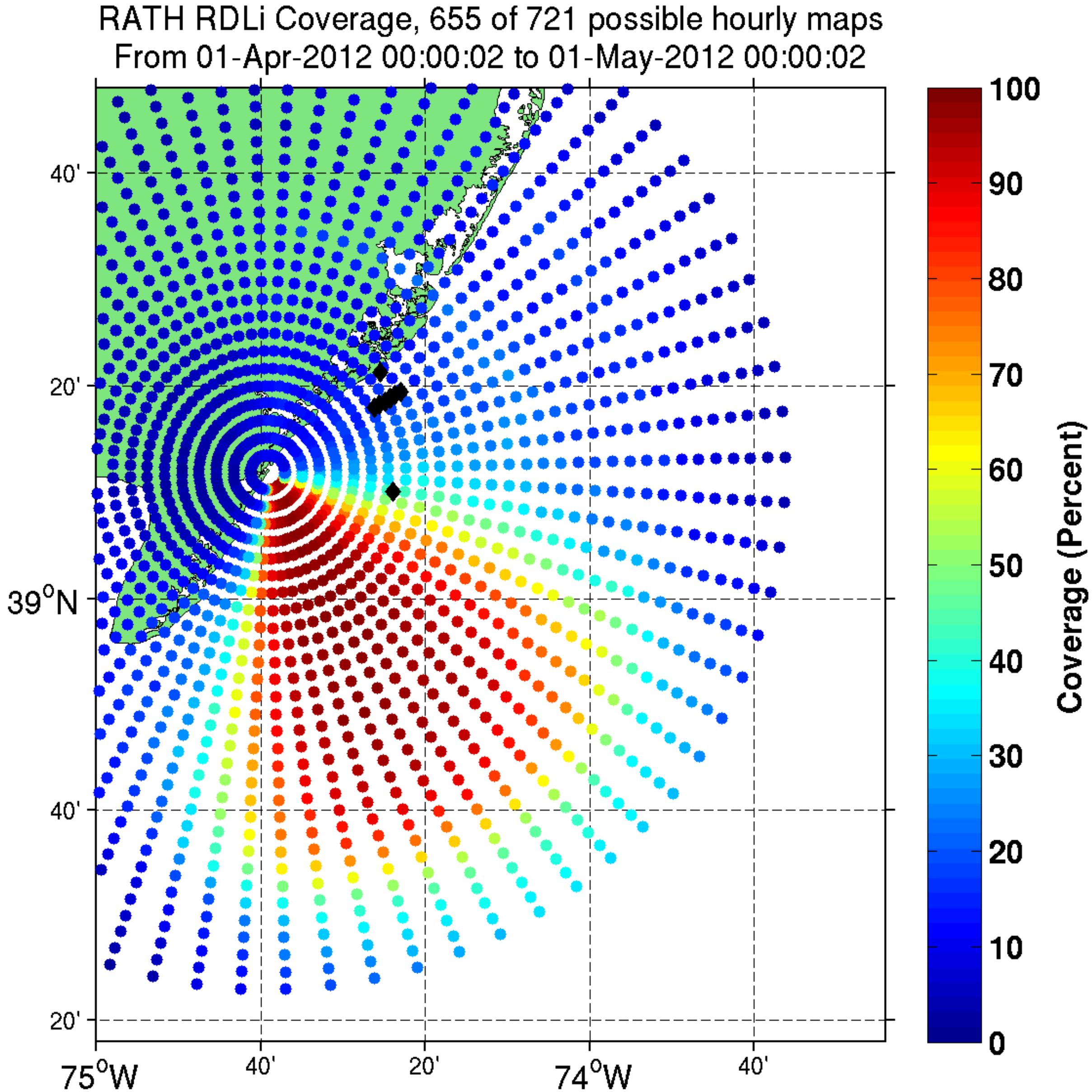

RATH RDLi Coverage, 434 of 745 possible hourly maps
From 01-Jan-2012 00:00:02 to 01-Feb-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0



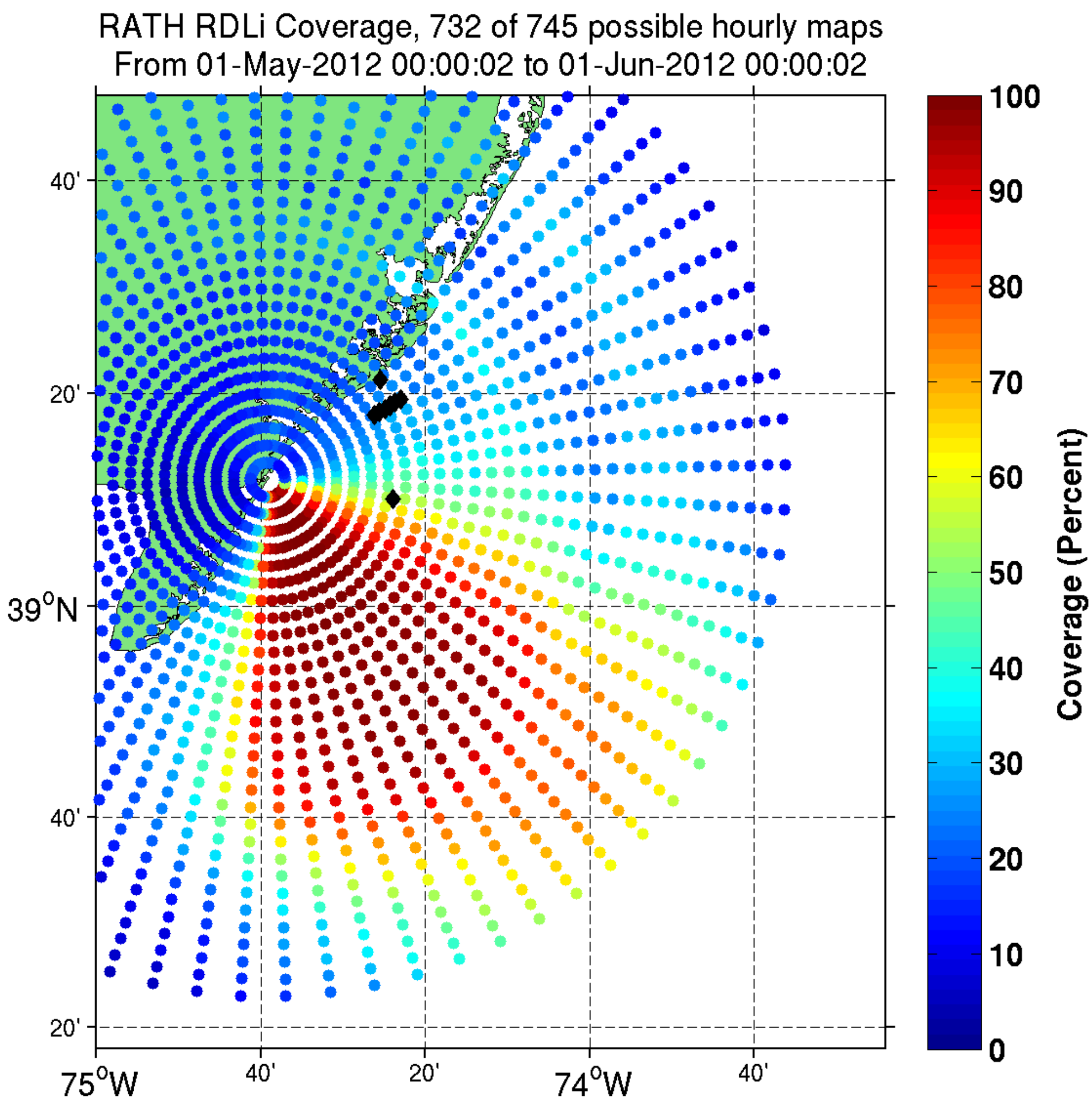
RATH RDLi Coverage, 581 of 697 possible hourly maps
From 01-Feb-2012 00:00:02 to 01-Mar-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)



RATH RDLi Coverage, 682 of 745 possible hourly maps
From 01-Mar-2012 00:00:02 to 01-Apr-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

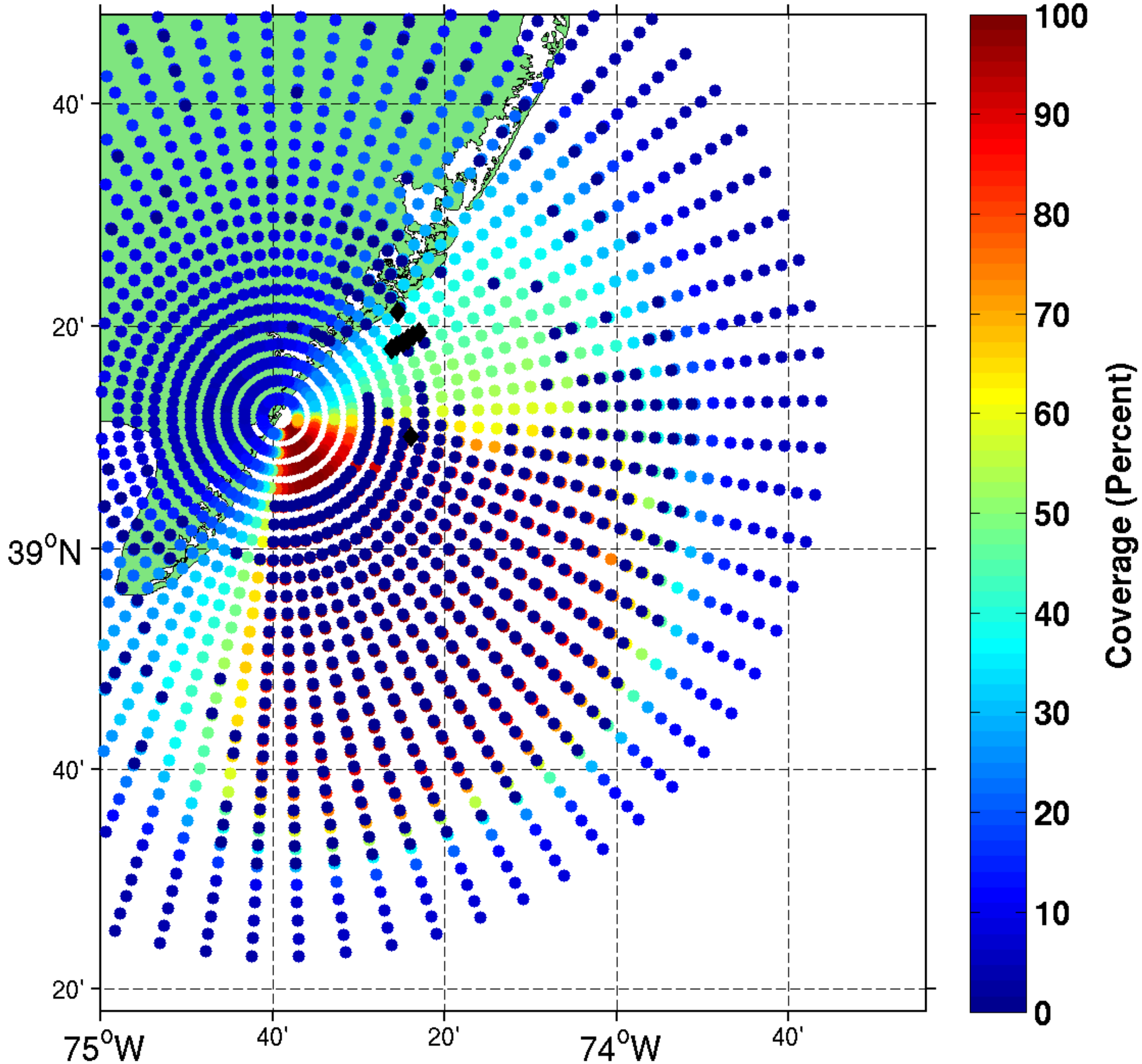


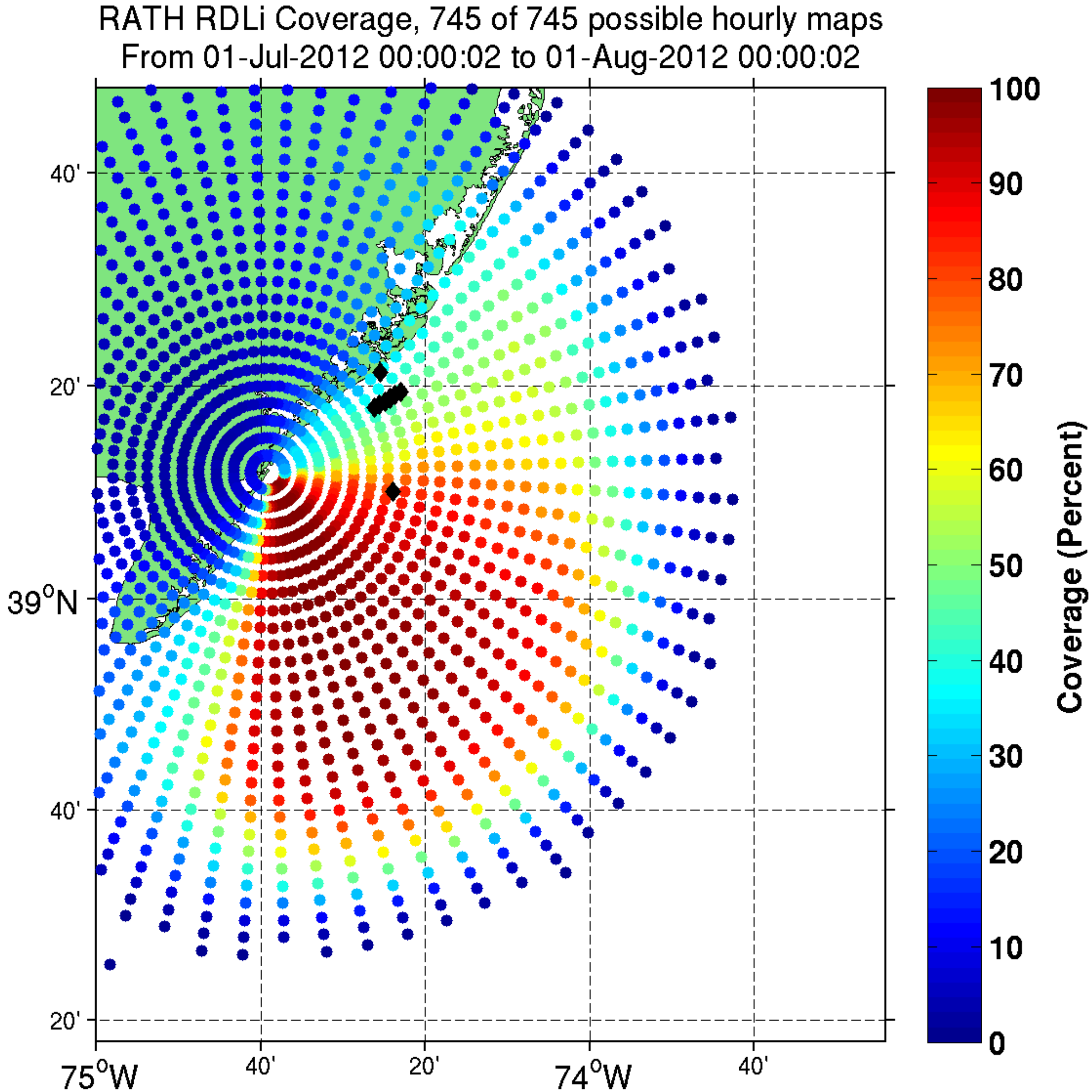
RATH RDLi Coverage, 655 of 721 possible hourly maps
From 01-Apr-2012 00:00:02 to 01-May-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)



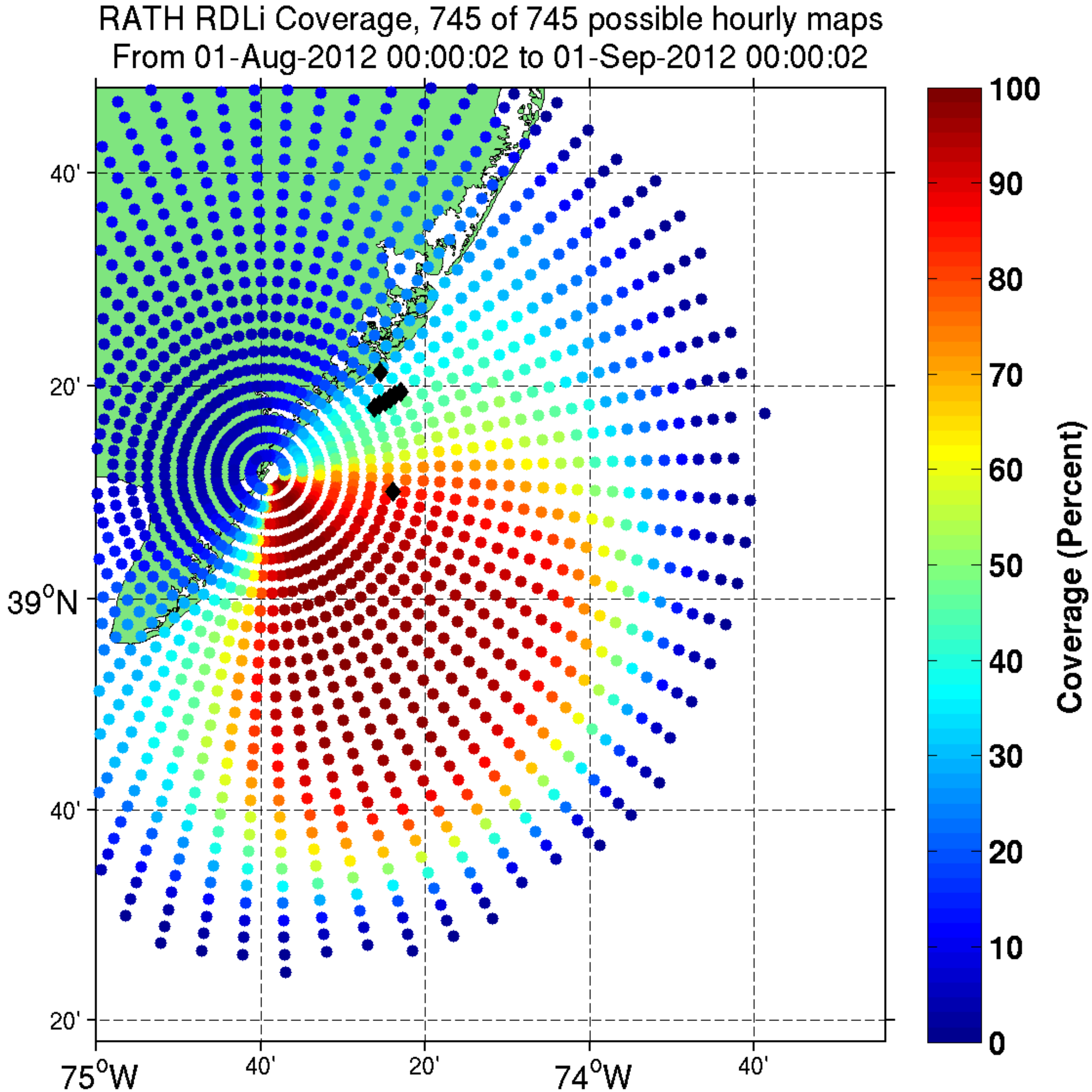
RATH RDLi Coverage, 732 of 745 possible hourly maps
From 01-May-2012 00:00:02 to 01-Jun-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

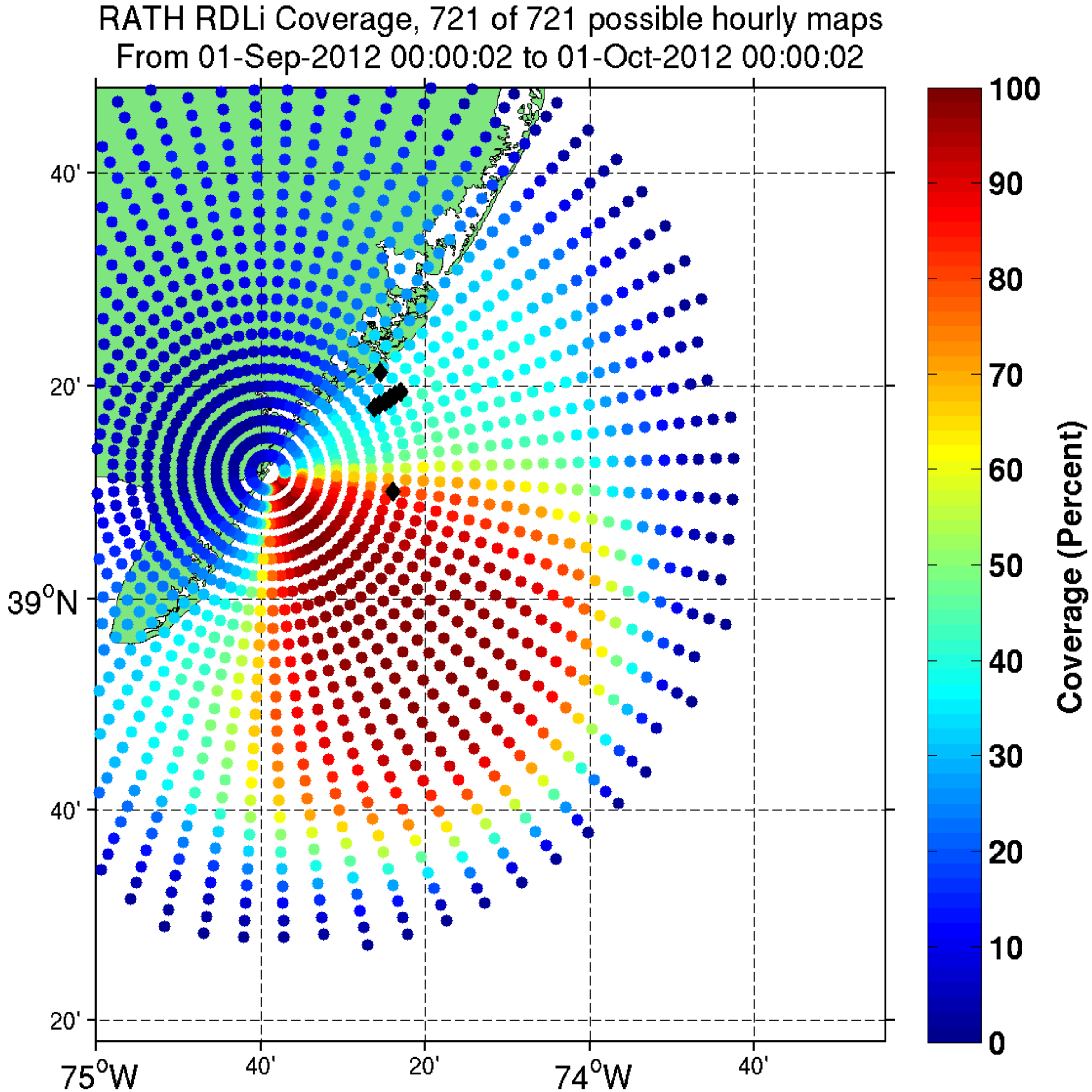
RATH RDLi Coverage, 721 of 721 possible hourly maps
From 01-Jun-2012 00:00:02 to 01-Jul-2012 00:00:02



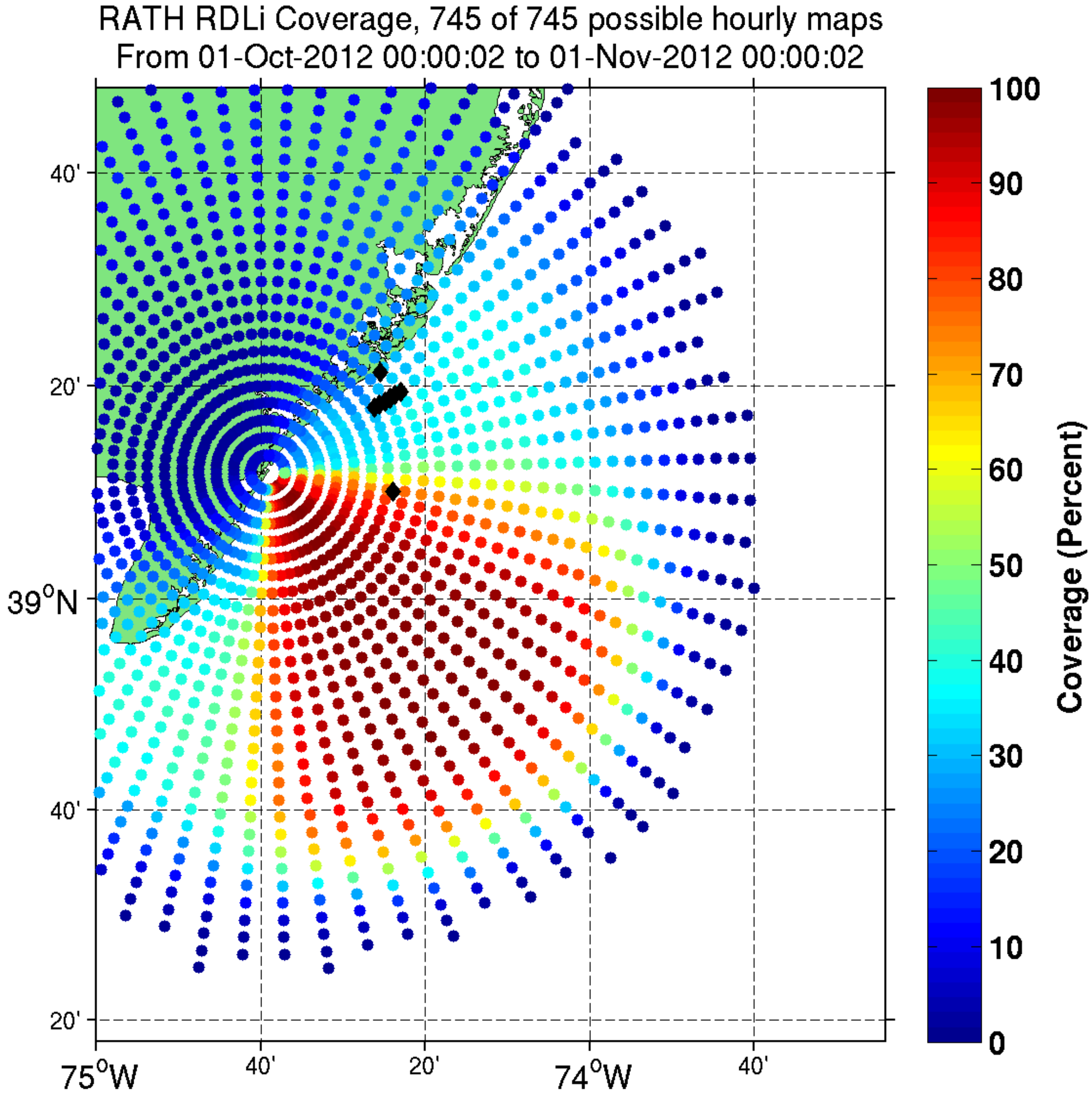


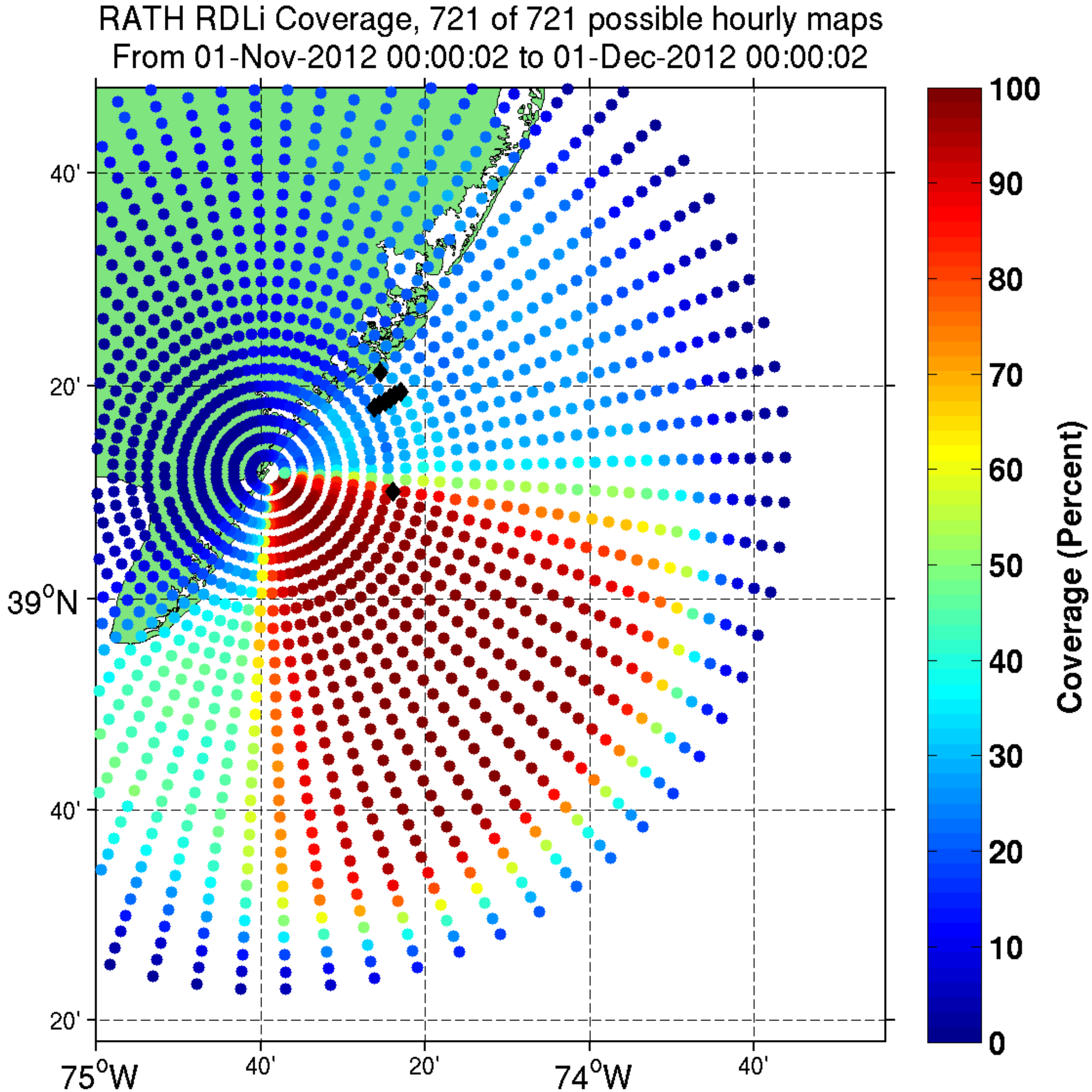
RATH RDLi Coverage, 745 of 745 possible hourly maps
From 01-Jul-2012 00:00:02 to 01-Aug-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

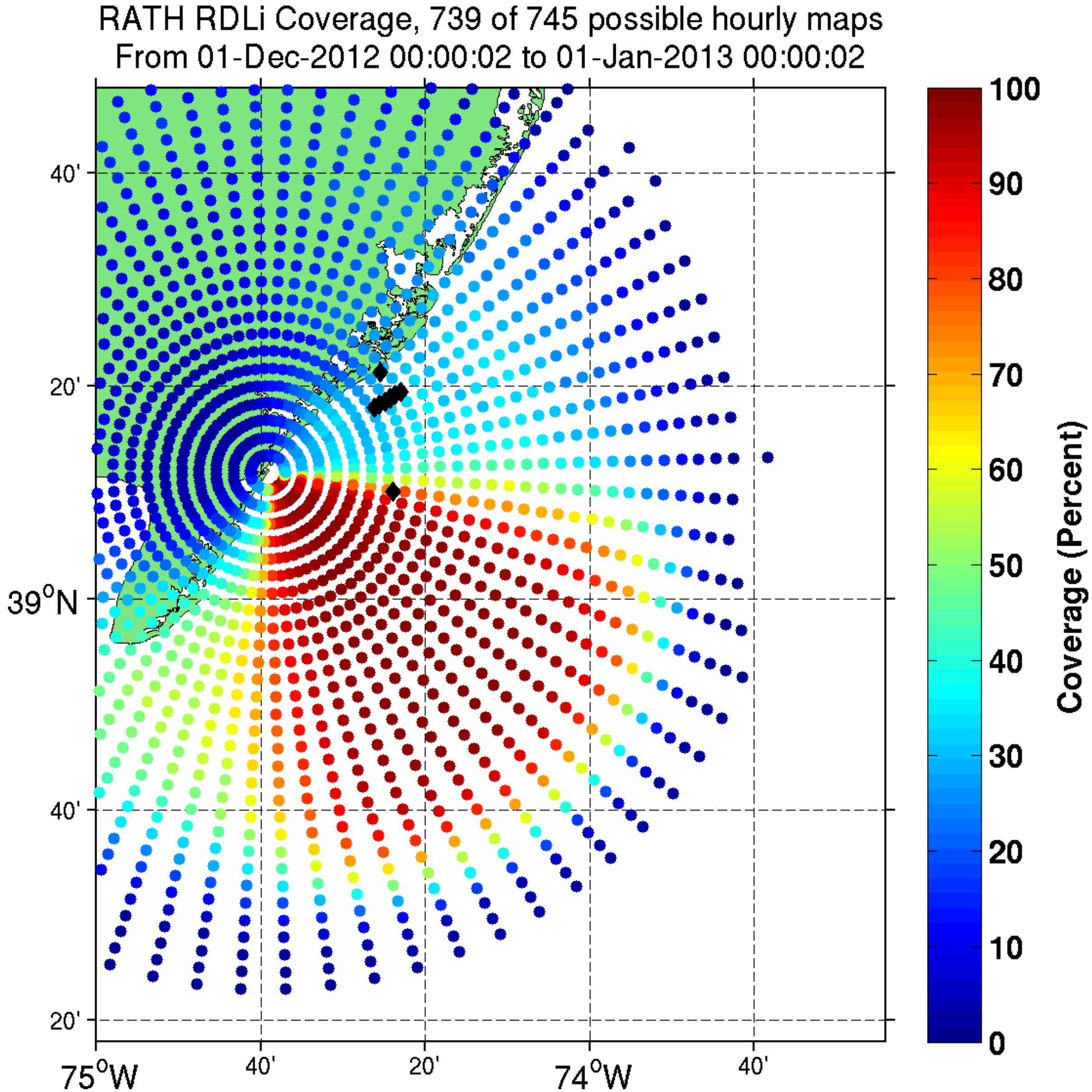

RATH RDLi Coverage, 745 of 745 possible hourly maps
From 01-Aug-2012 00:00:02 to 01-Sep-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)



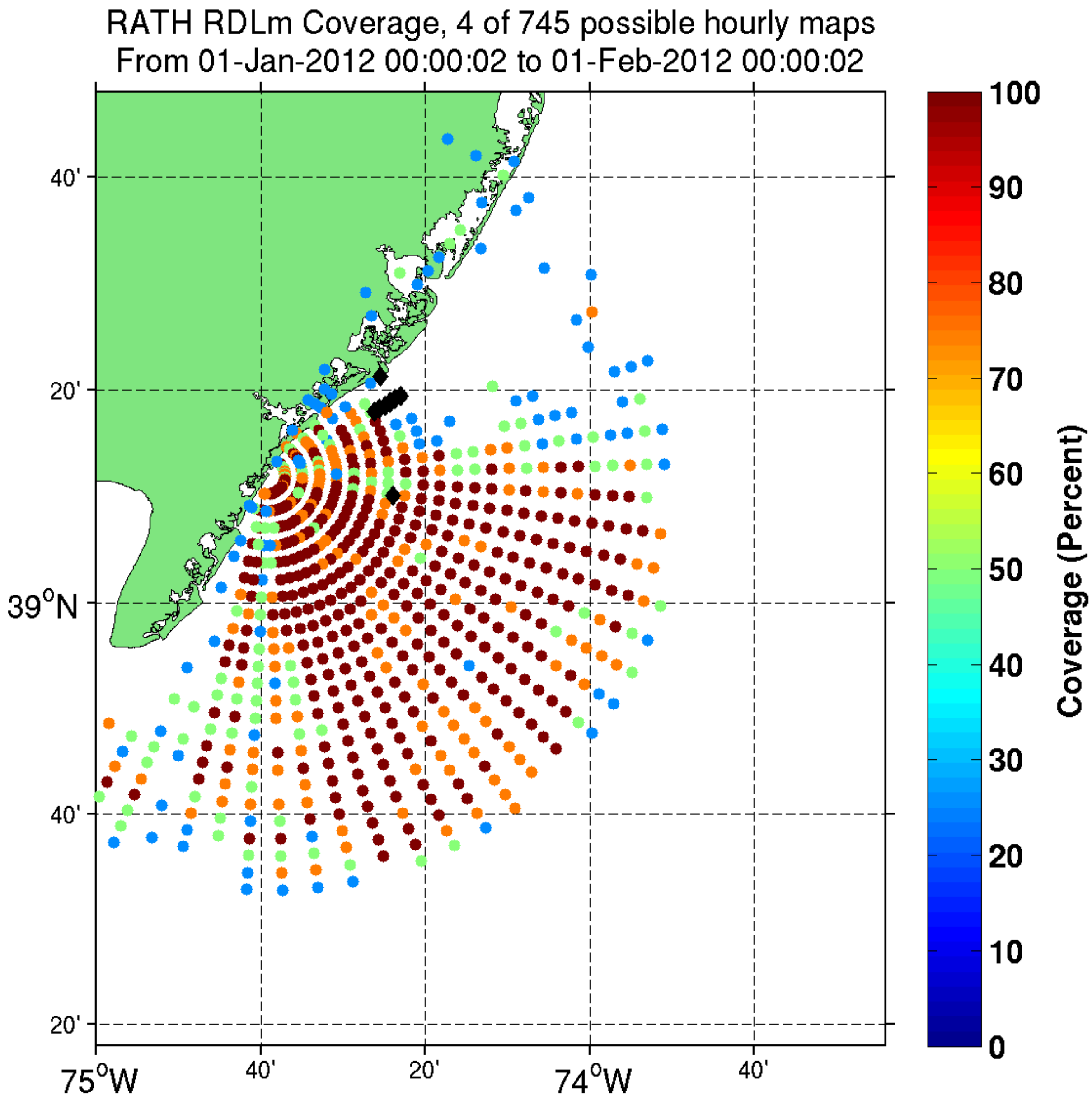
RATH RDLi Coverage, 721 of 721 possible hourly maps
From 01-Sep-2012 00:00:02 to 01-Oct-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

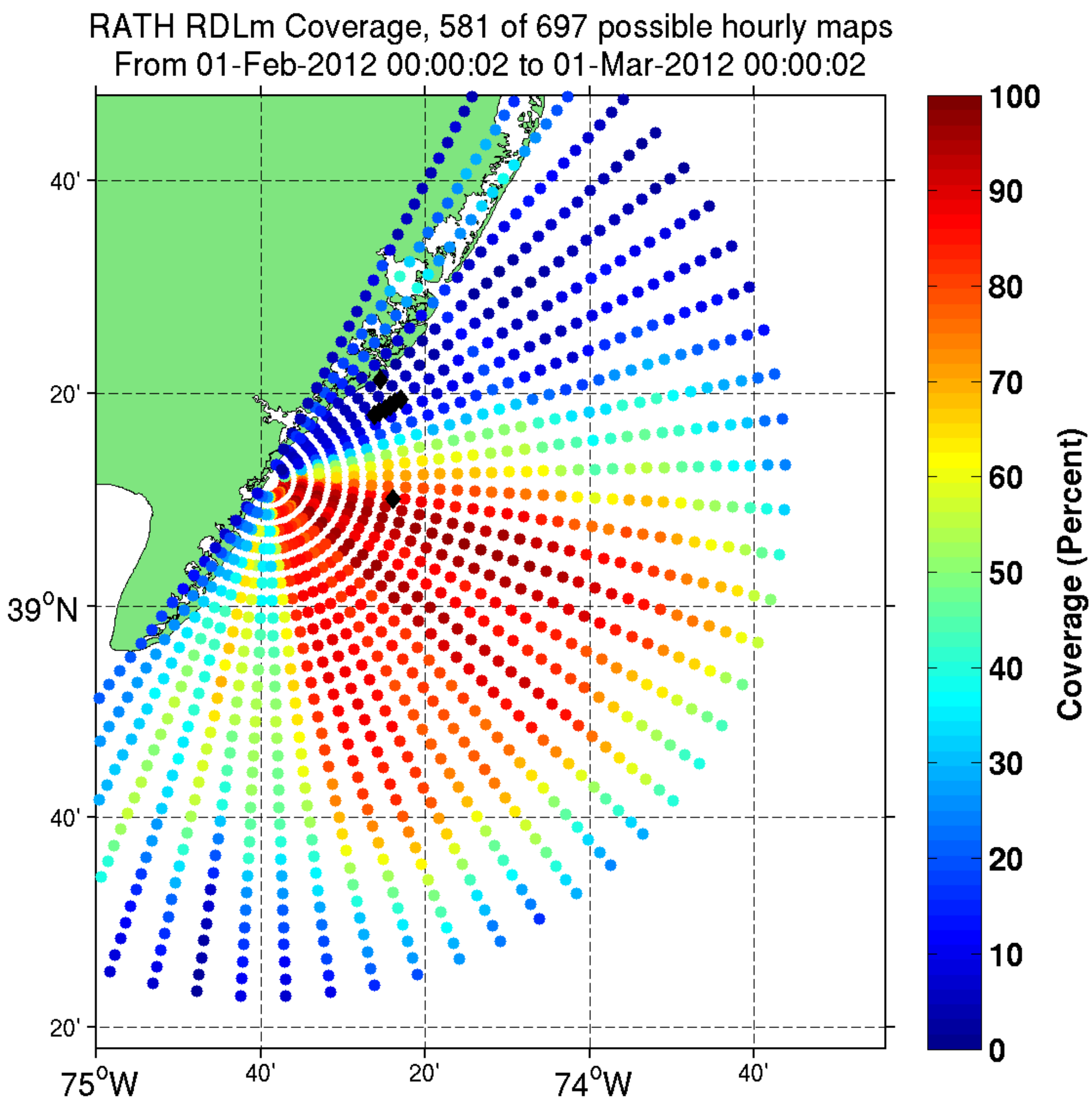

RATH RDLi Coverage, 745 of 745 possible hourly maps
From 01-Oct-2012 00:00:02 to 01-Nov-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

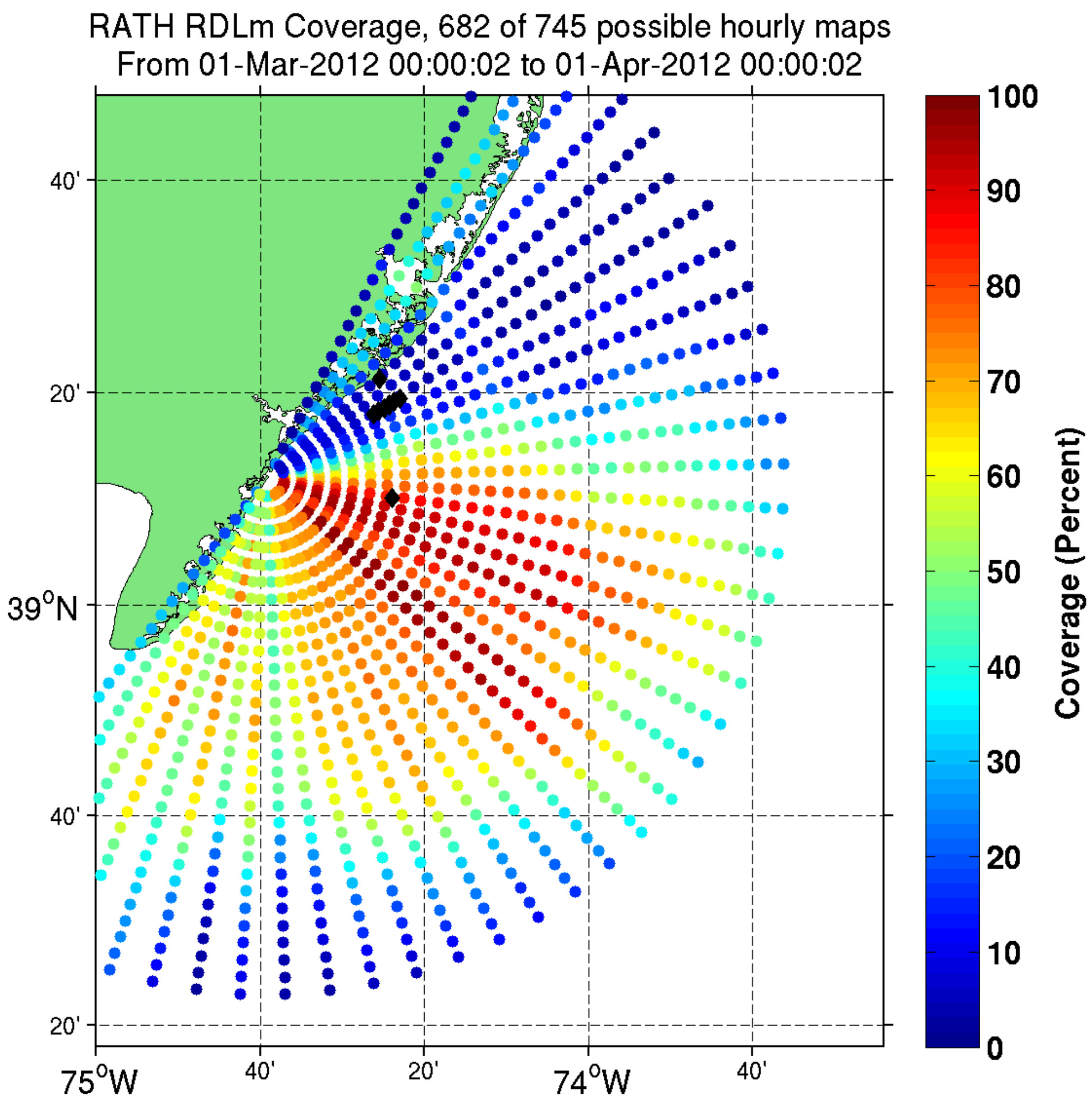

RATH RDLi Coverage, 721 of 721 possible hourly maps
From 01-Nov-2012 00:00:02 to 01-Dec-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

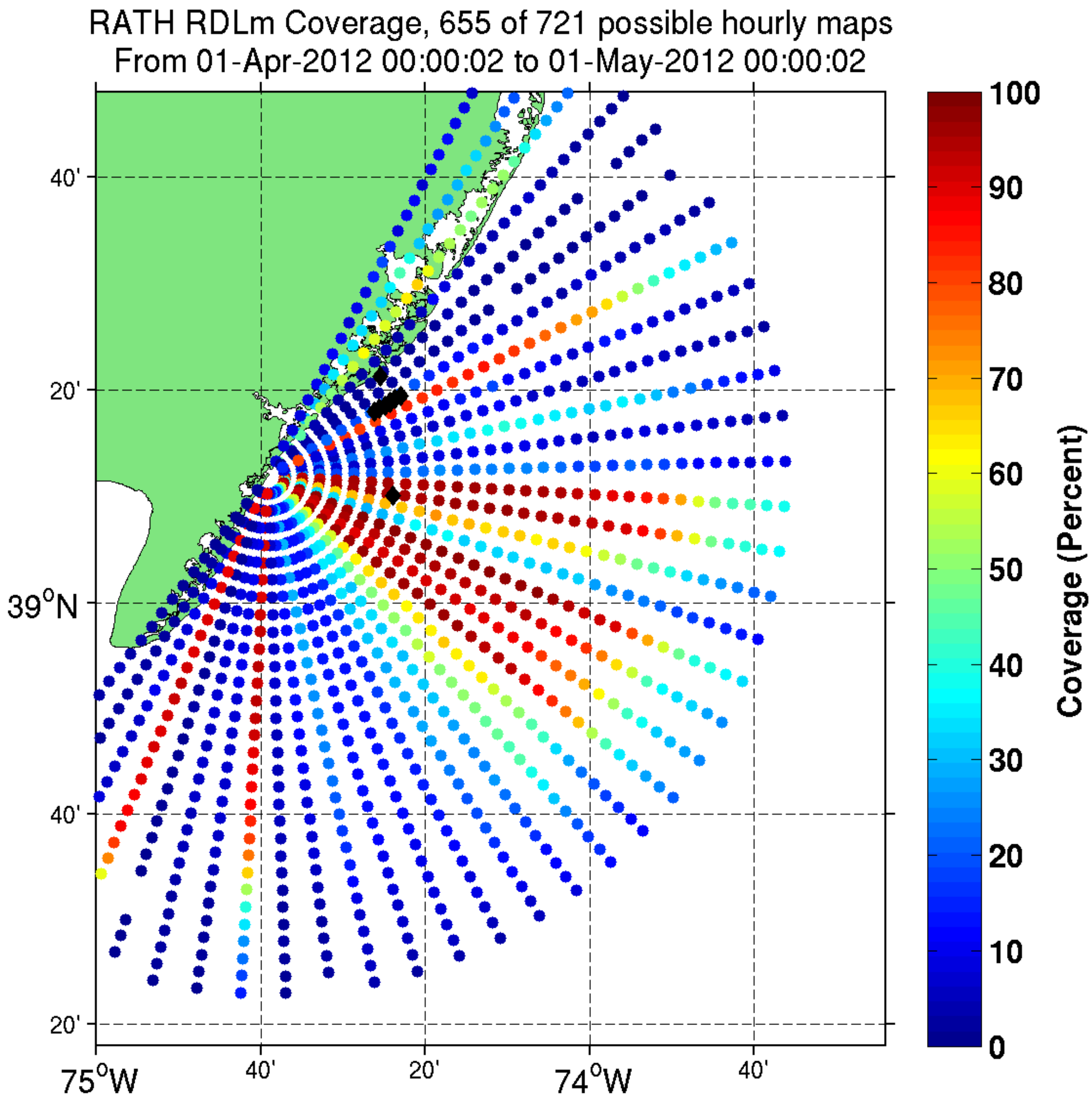

RATH RDLi Coverage, 739 of 745 possible hourly maps
From 01-Dec-2012 00:00:02 to 01-Jan-2013 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

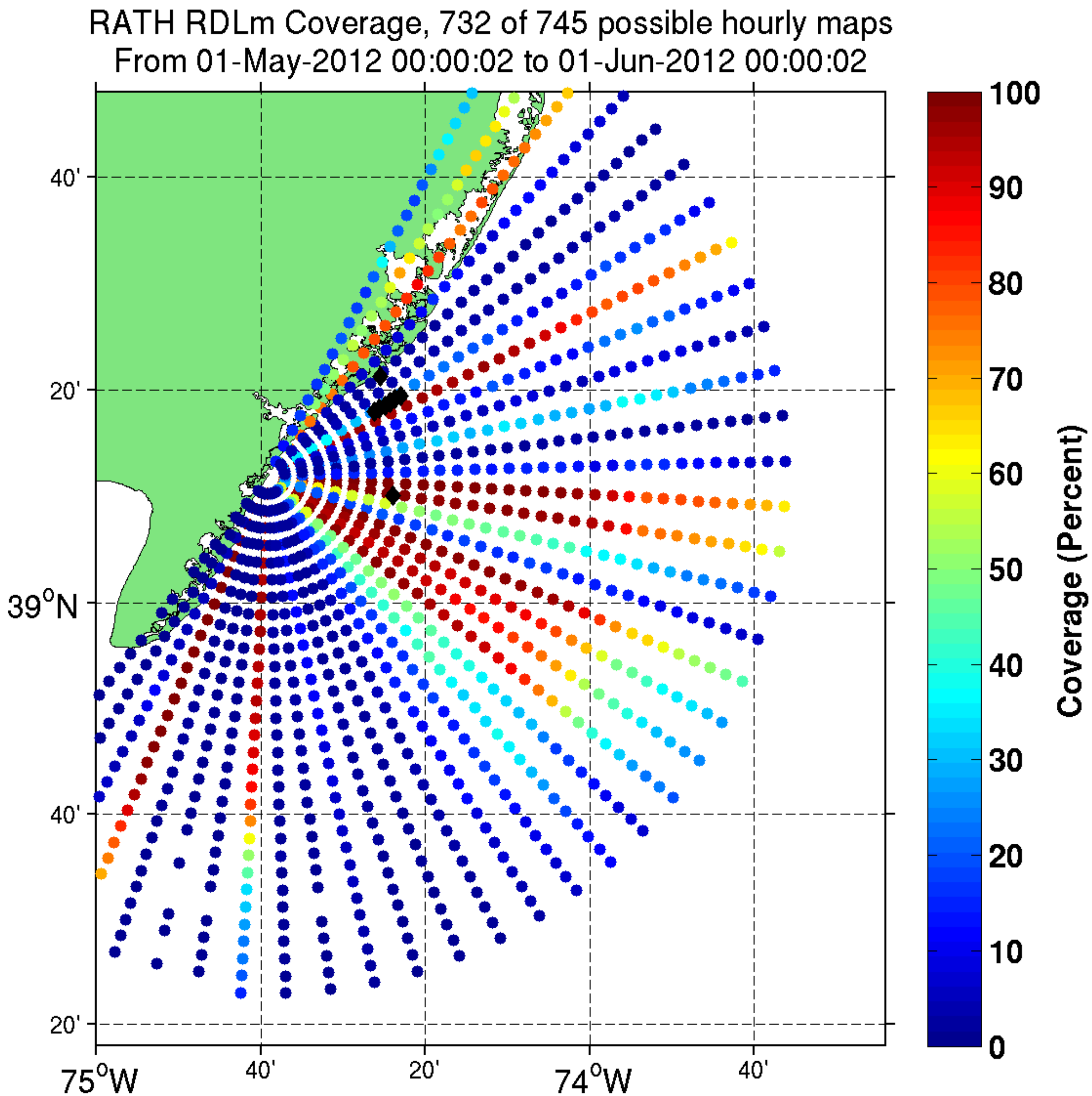
STRATHMERE
MEASURED RADIALS


RATH RDLm Coverage, 4 of 745 possible hourly maps
From 01-Jan-2012 00:00:02 to 01-Feb-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

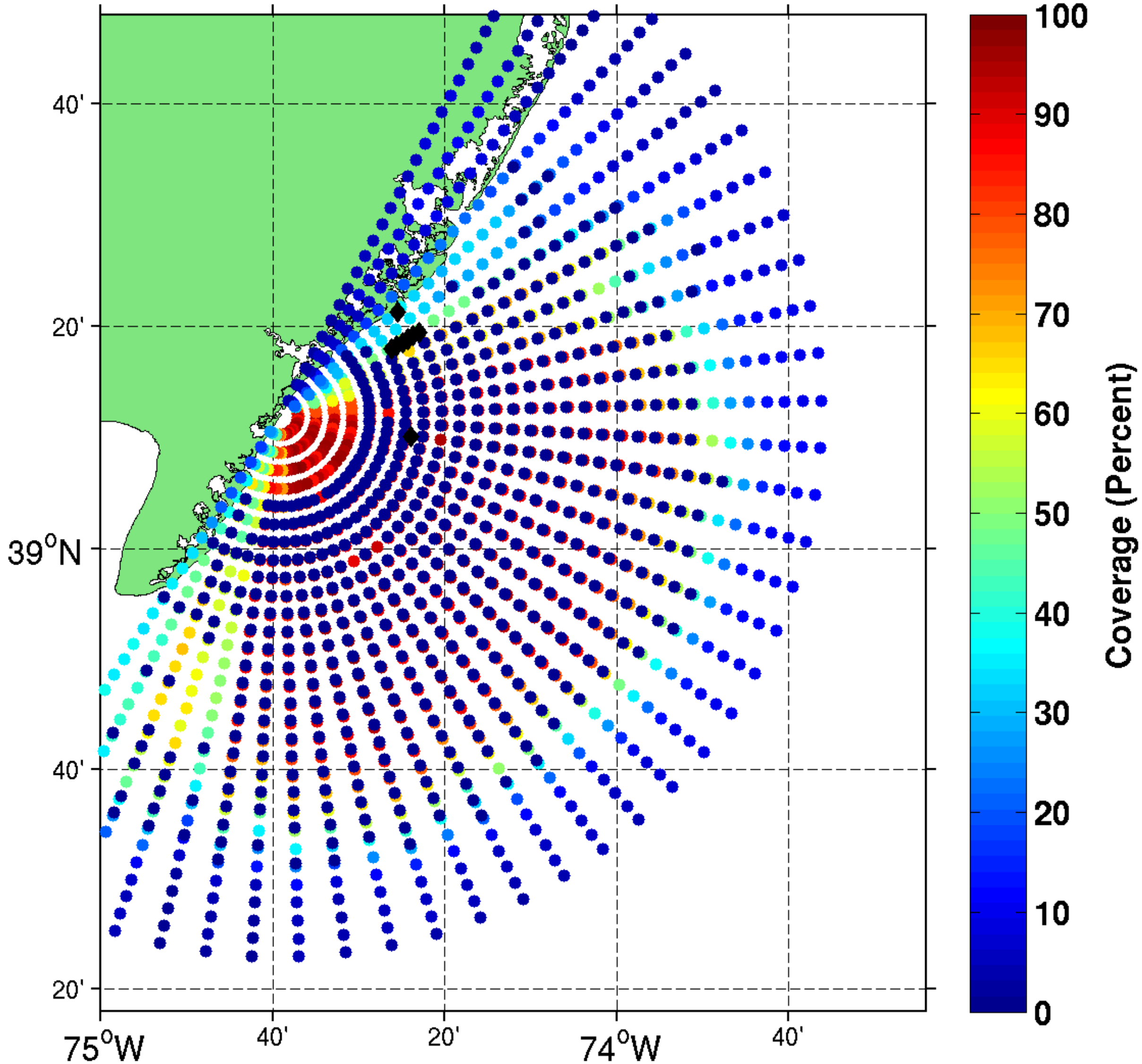

RATH RDLm Coverage, 581 of 697 possible hourly maps
From 01-Feb-2012 00:00:02 to 01-Mar-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)


RATH RDLm Coverage, 682 of 745 possible hourly maps
From 01-Mar-2012 00:00:02 to 01-Apr-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

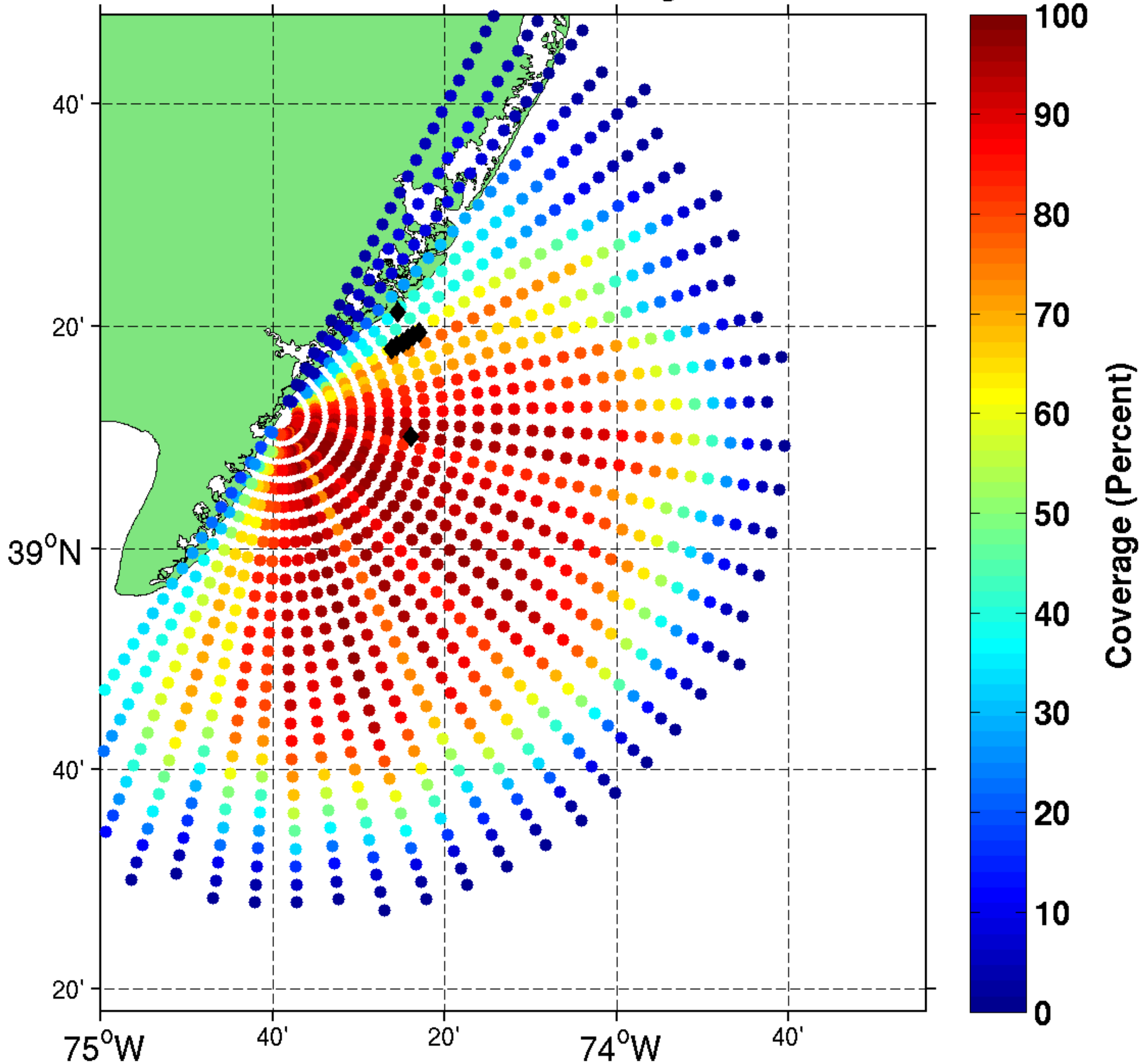

RATH RDLm Coverage, 655 of 721 possible hourly maps
From 01-Apr-2012 00:00:02 to 01-May-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

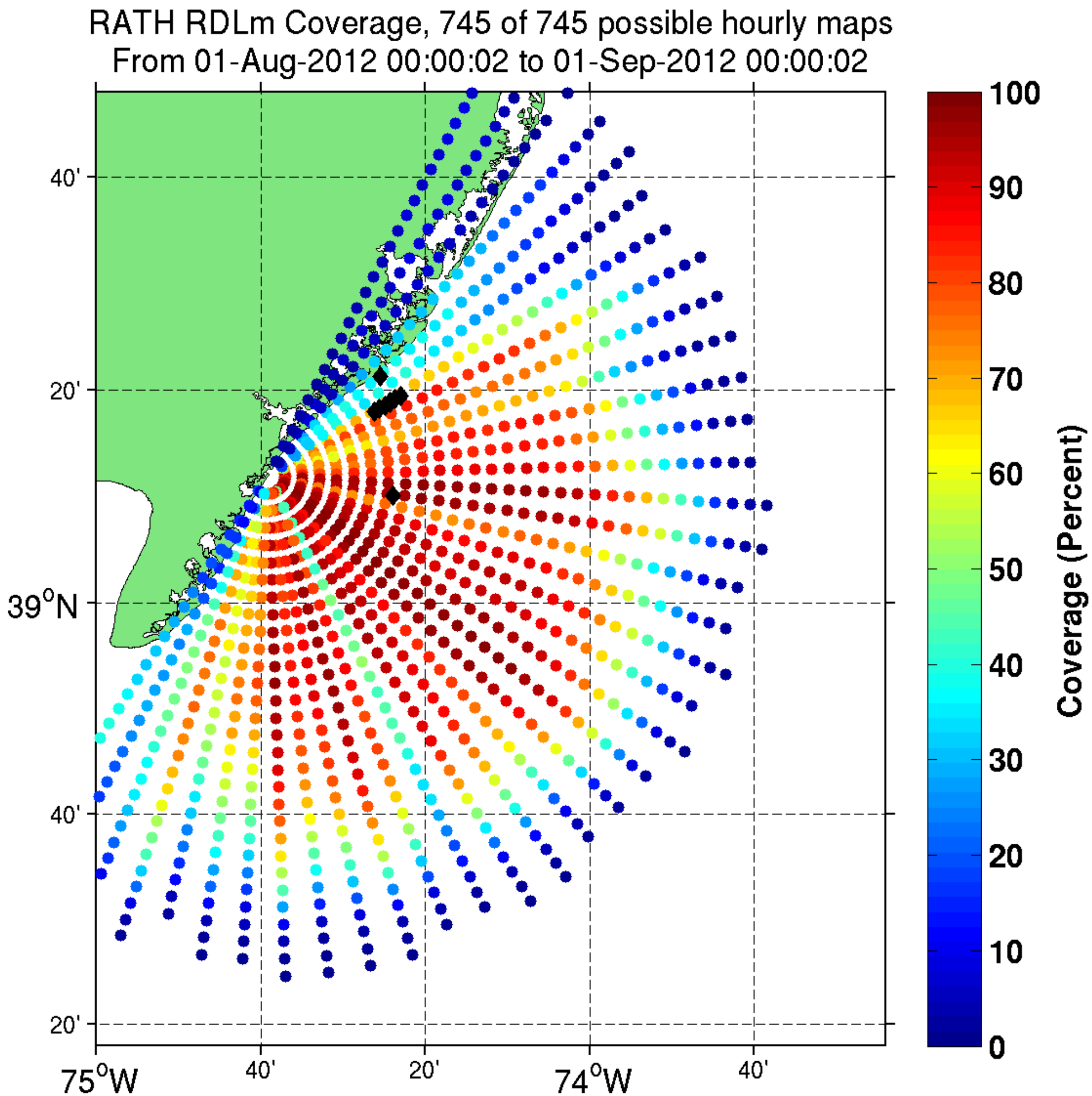

RATH RDLm Coverage, 732 of 745 possible hourly maps
From 01-May-2012 00:00:02 to 01-Jun-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

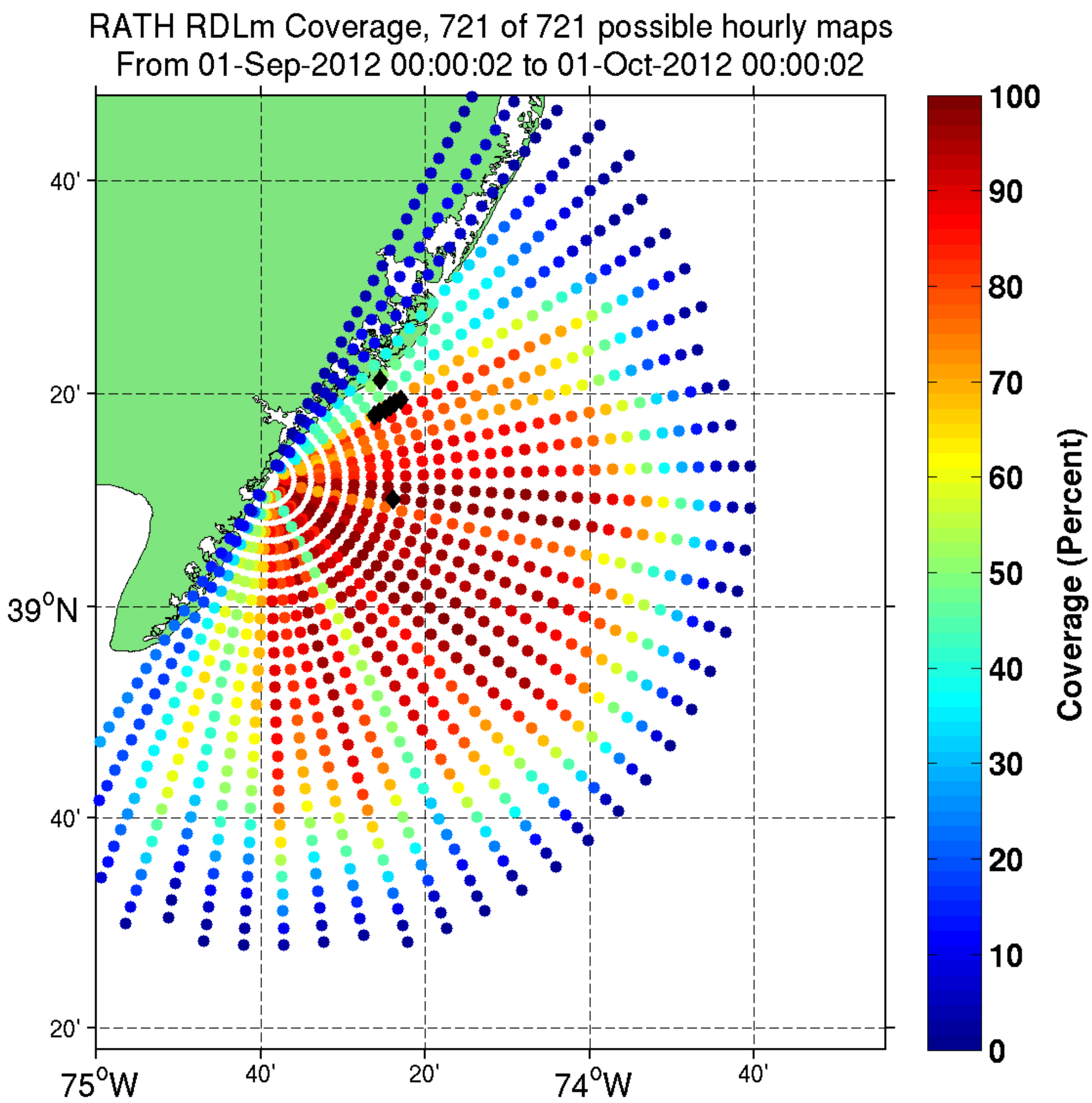
RATH RDLm Coverage, 721 of 721 possible hourly maps
From 01-Jun-2012 00:00:02 to 01-Jul-2012 00:00:02



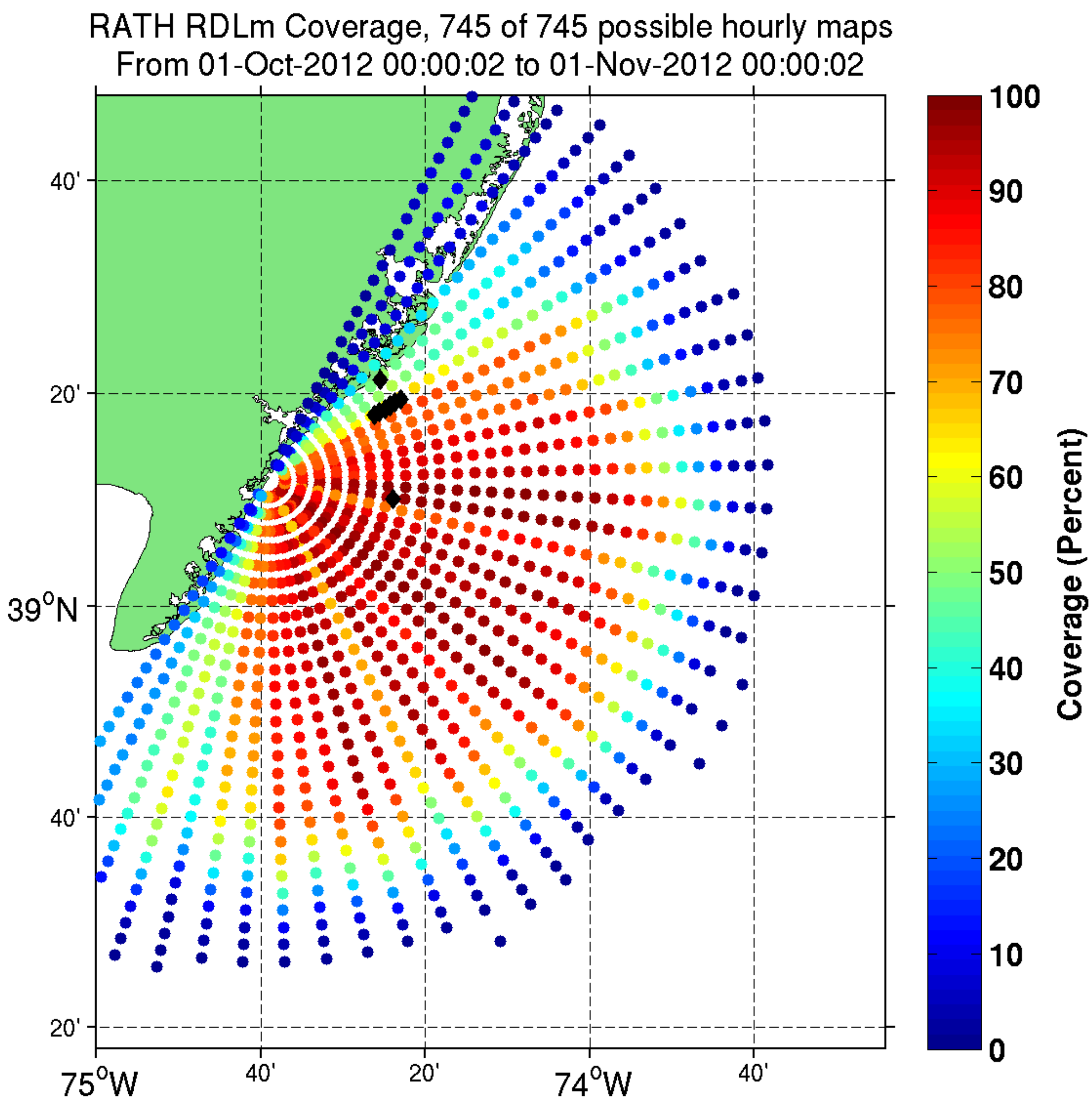
RATH RDLm Coverage, 745 of 745 possible hourly maps
From 01-Jul-2012 00:00:02 to 01-Aug-2012 00:00:02



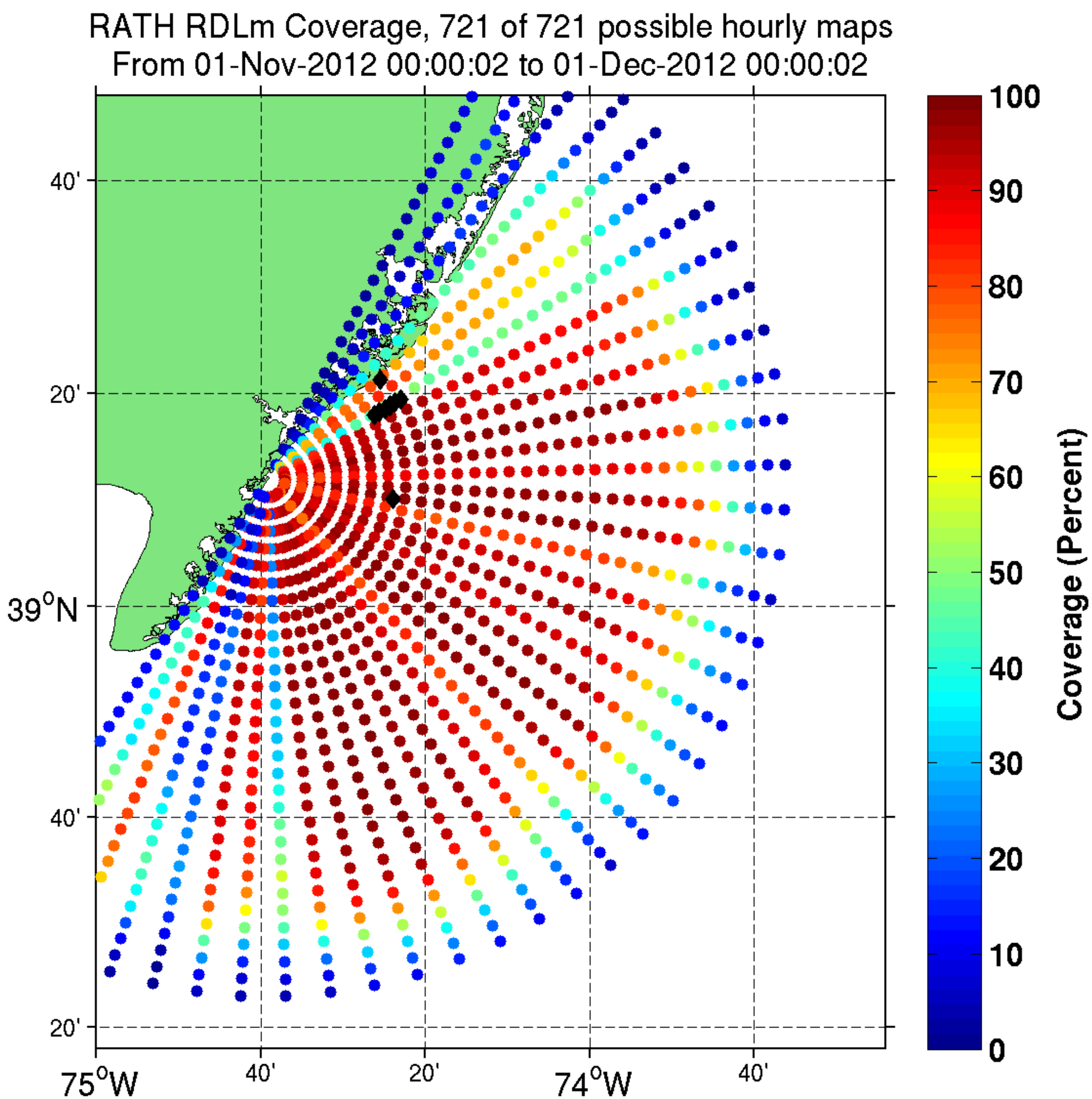

RATH RDLm Coverage, 745 of 745 possible hourly maps
From 01-Aug-2012 00:00:02 to 01-Sep-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)



RATH RDLm Coverage, 721 of 721 possible hourly maps
From 01-Sep-2012 00:00:02 to 01-Oct-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

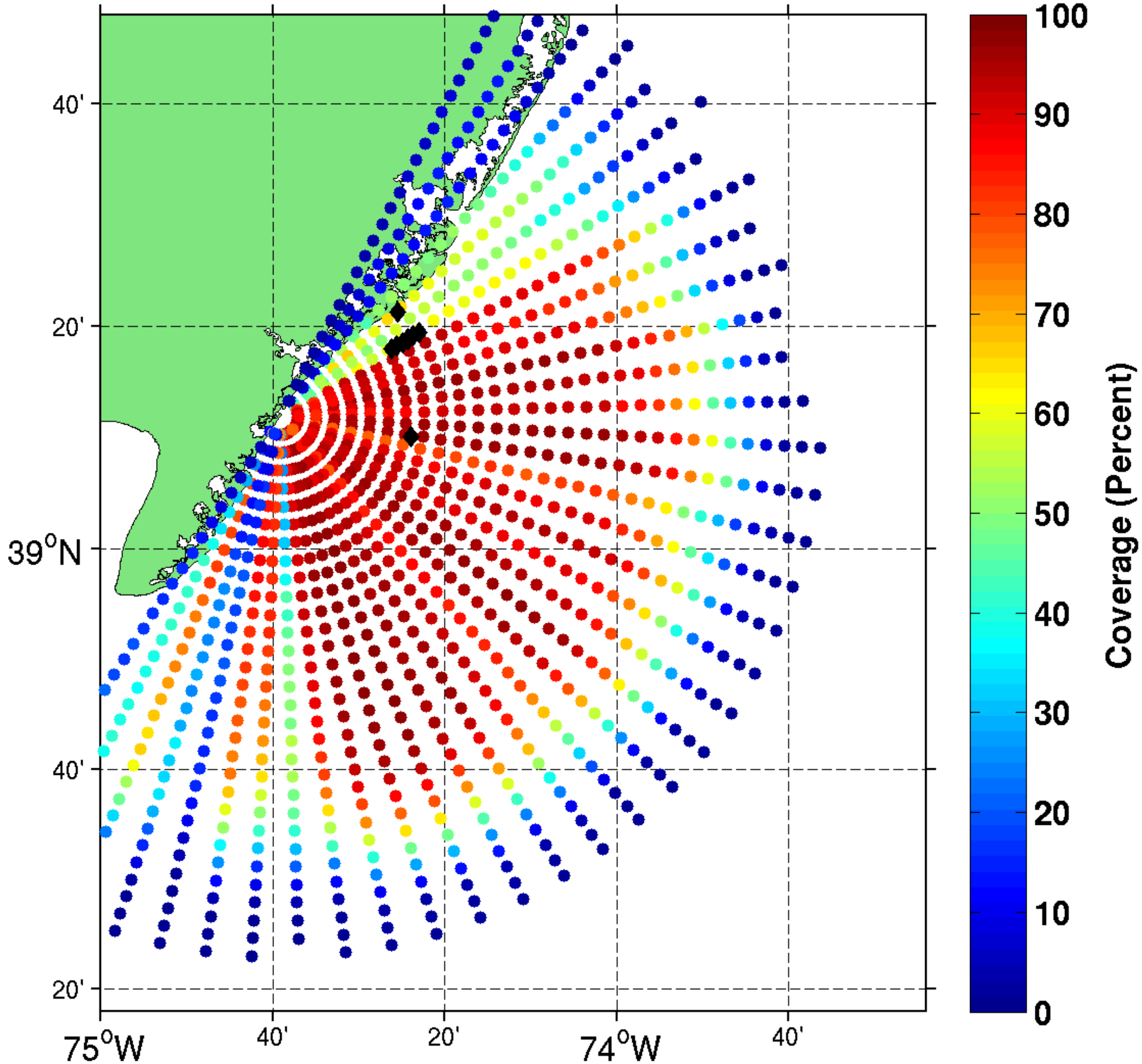


RATH RDLm Coverage, 745 of 745 possible hourly maps
From 01-Oct-2012 00:00:02 to 01-Nov-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

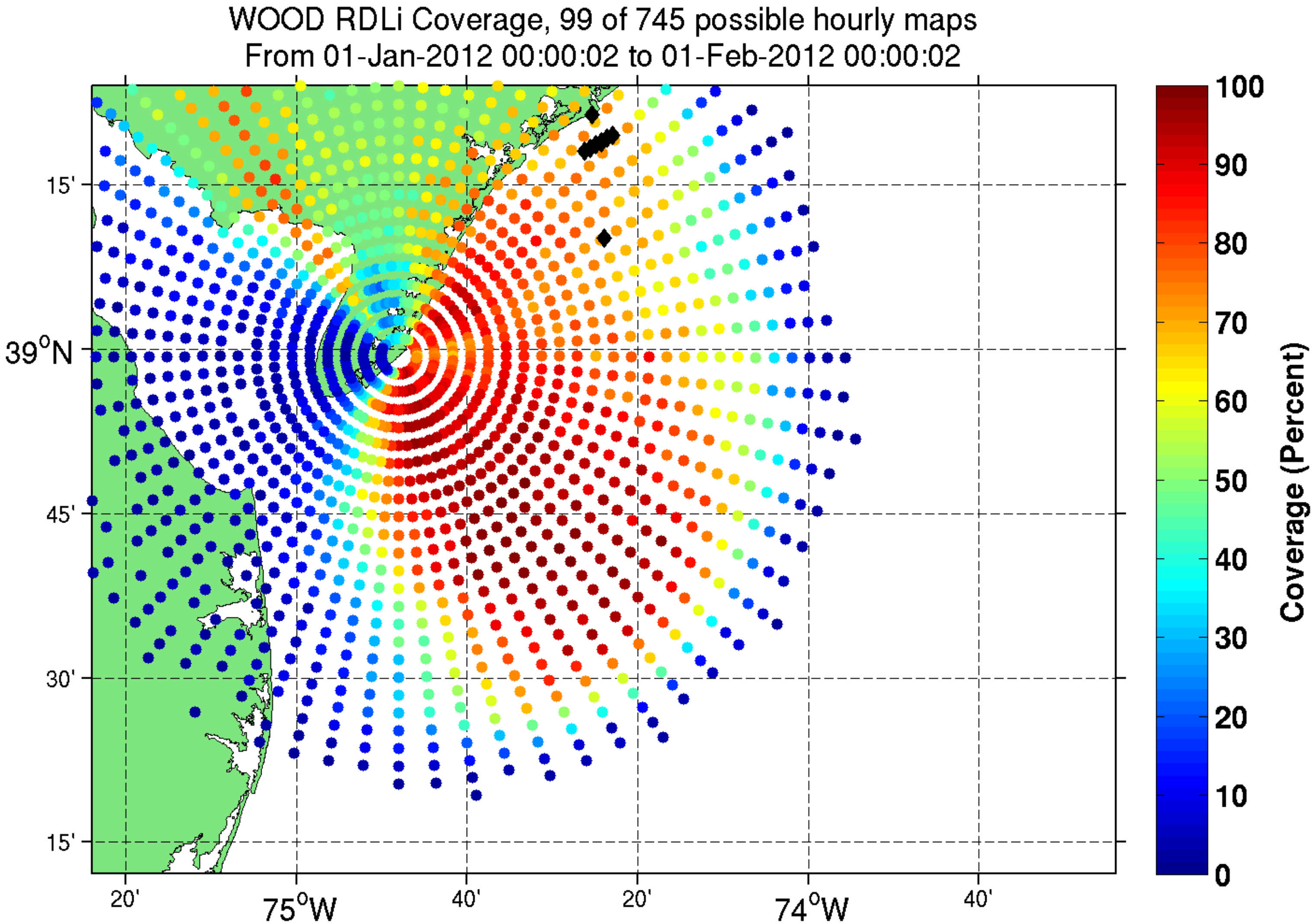


RATH RDLm Coverage, 721 of 721 possible hourly maps
From 01-Nov-2012 00:00:02 to 01-Dec-2012 00:00:02
40'
20'
39°N
40'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

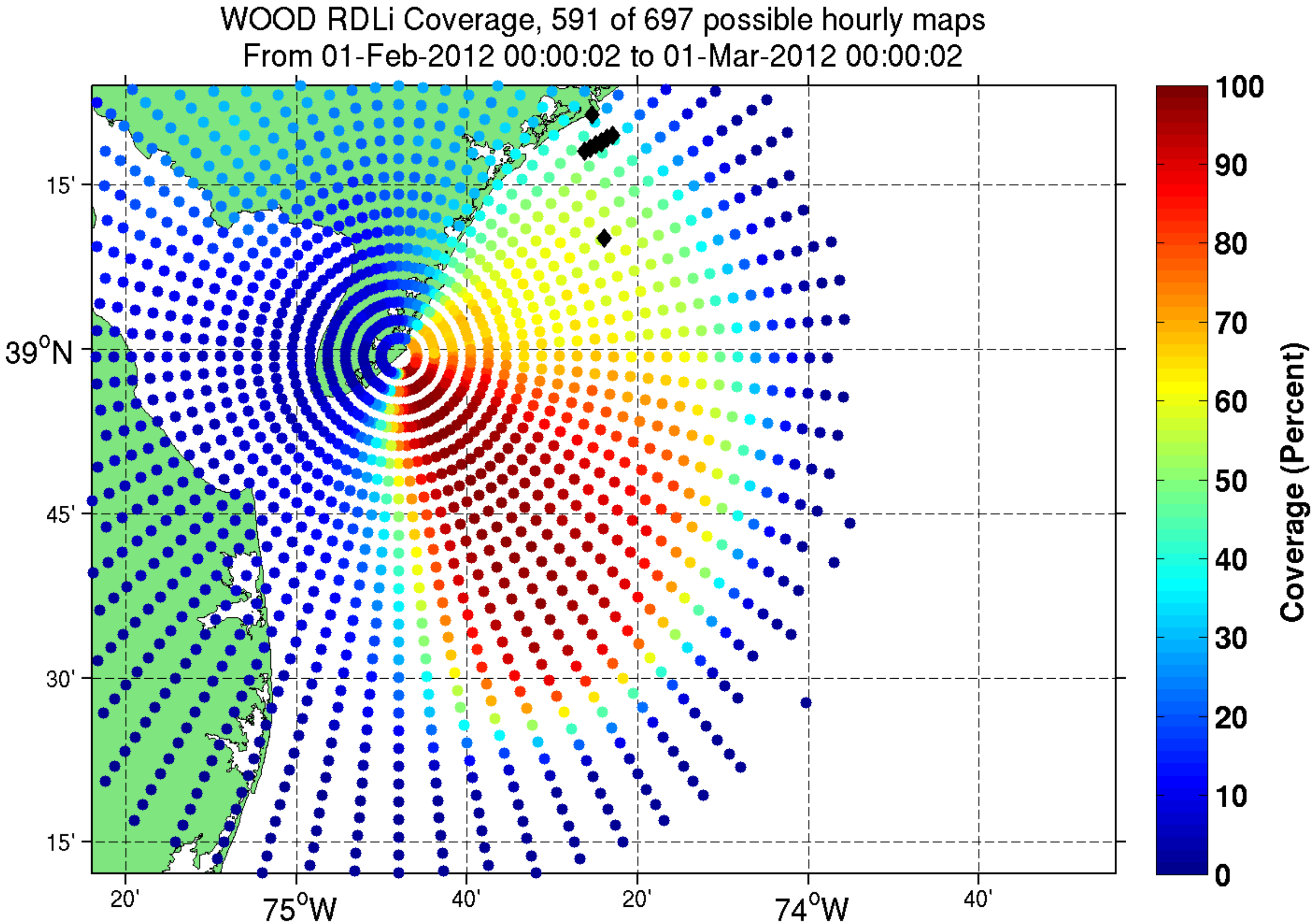
RATH RDLm Coverage, 739 of 745 possible hourly maps
From 01-Dec-2012 00:00:02 to 01-Jan-2013 00:00:02



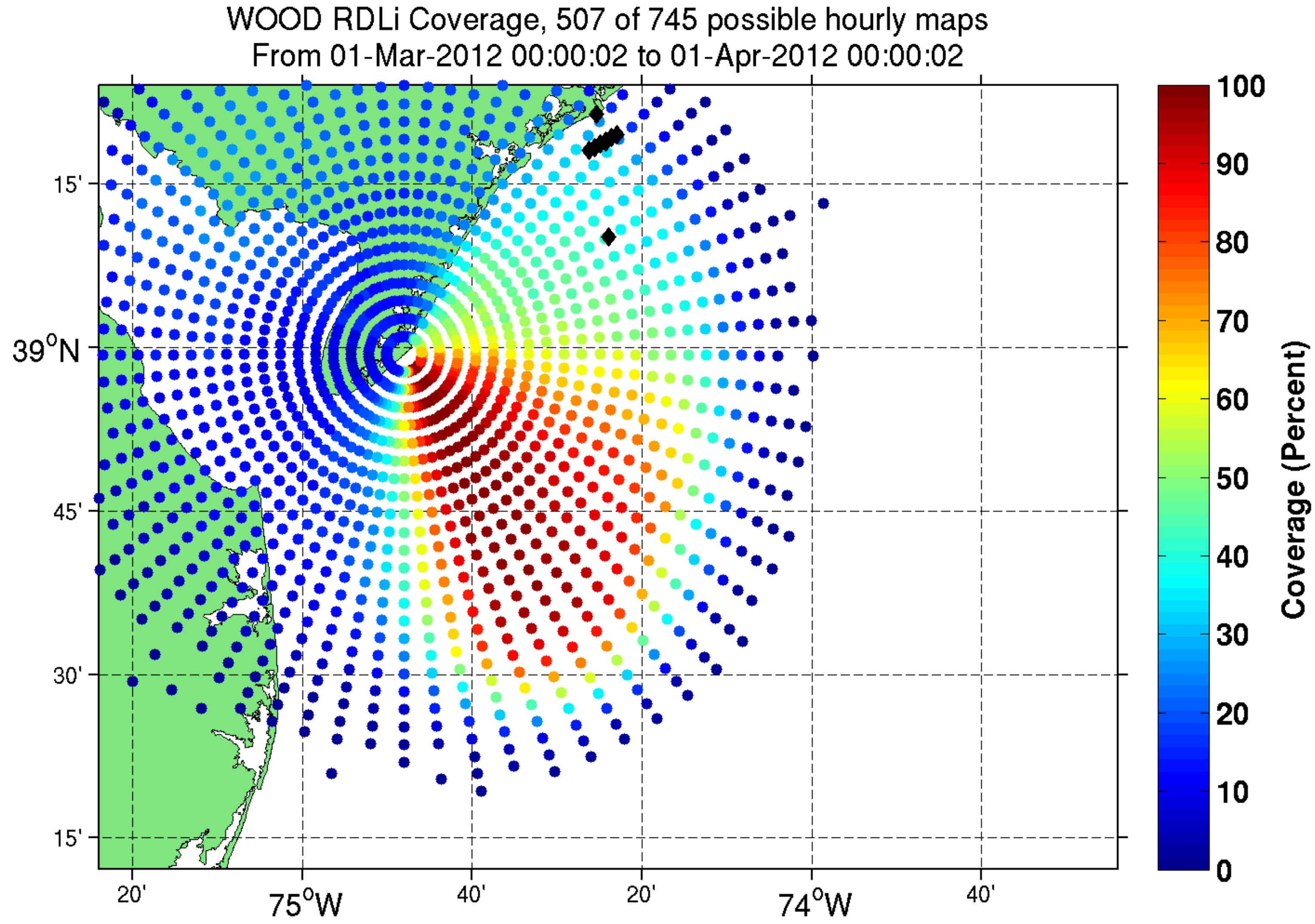
NORTH WILDWOOD
IDEAL RADIALS



WOOD RDLi Coverage, 99 of 745 possible hourly maps
From 01-Jan-2012 00:00:02 to 01-Feb-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

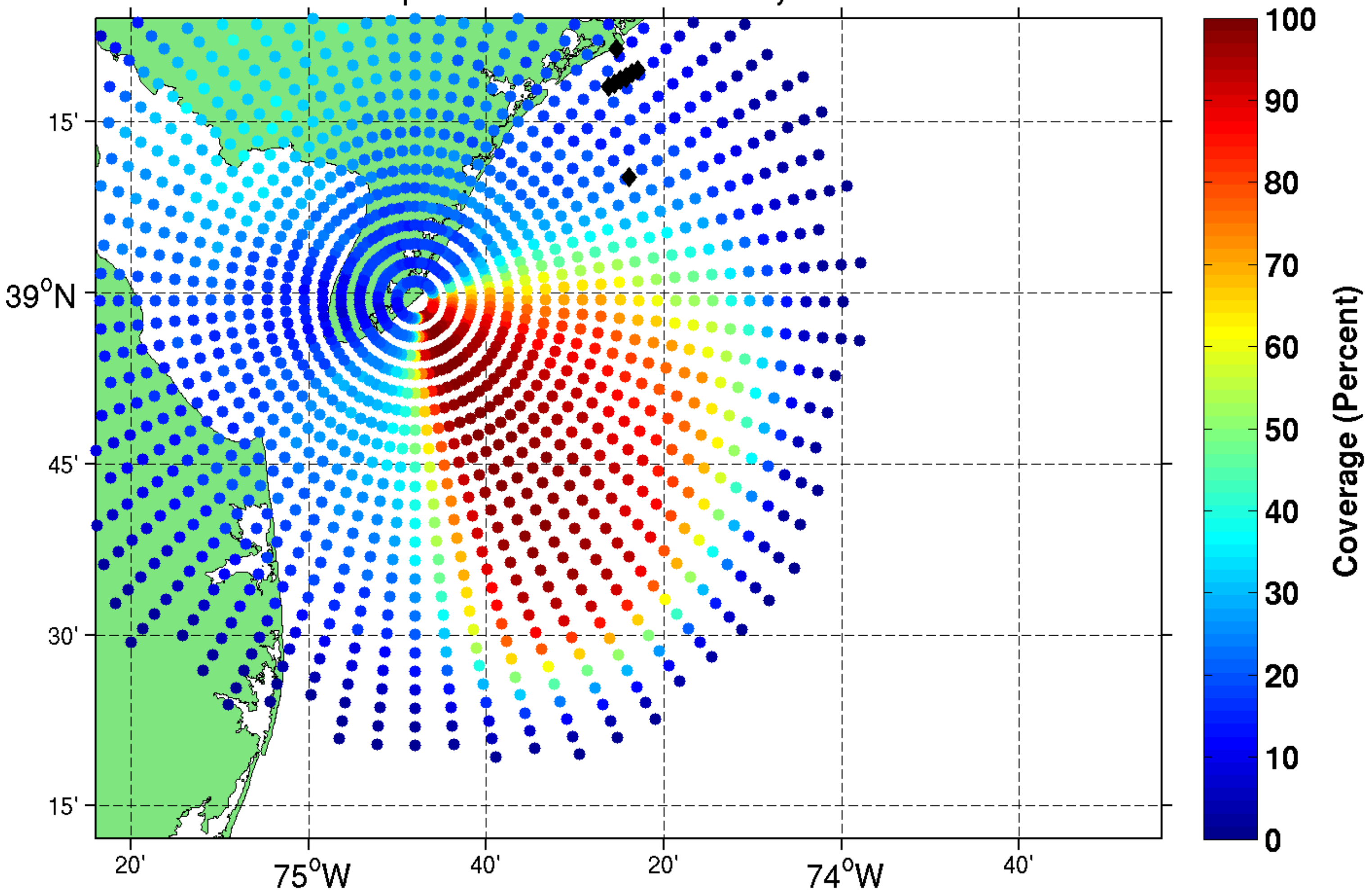


WOOD RDLi Coverage, 591 of 697 possible hourly maps
From 01-Feb-2012 00:00:02 to 01-Mar-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

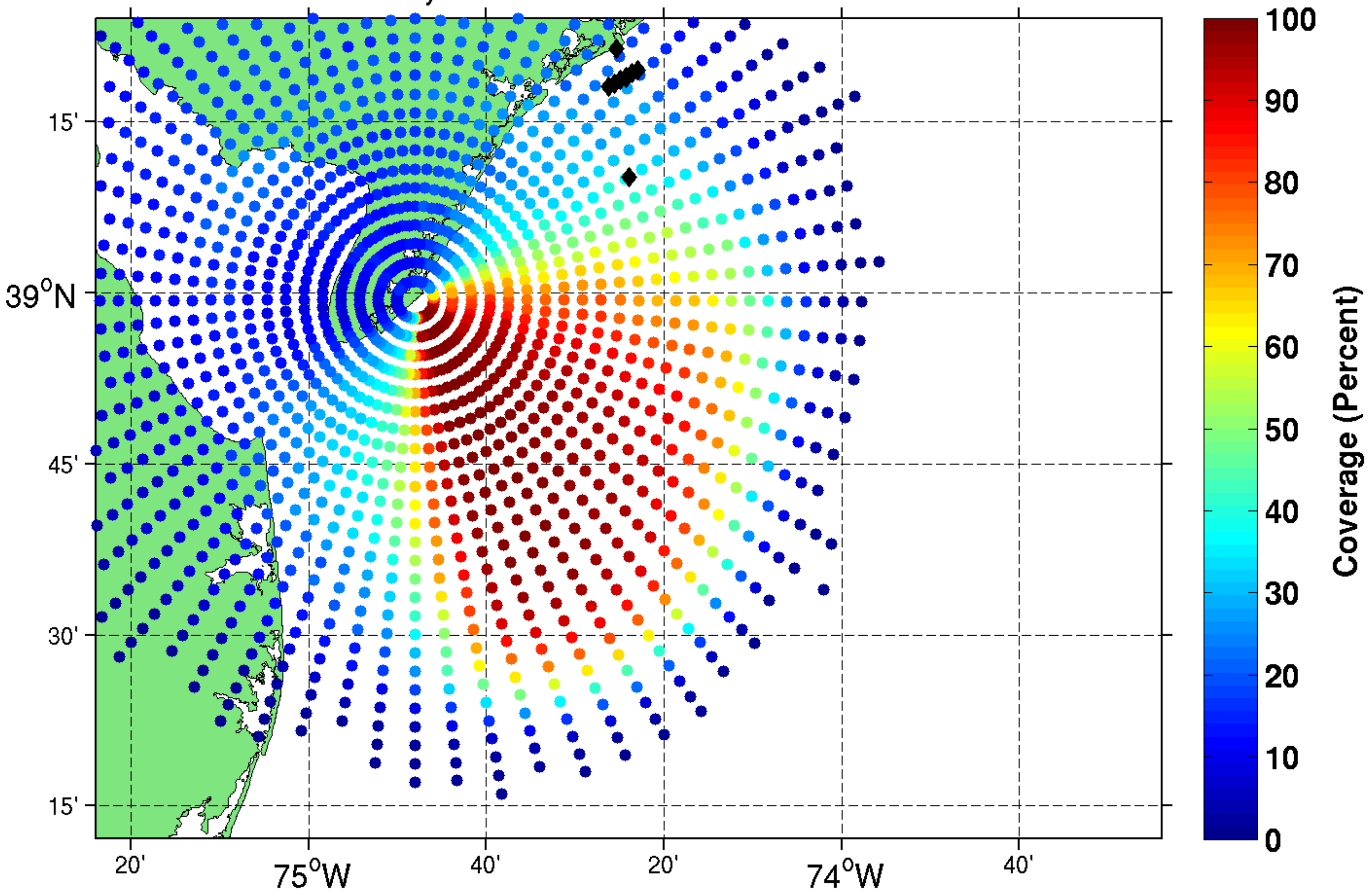


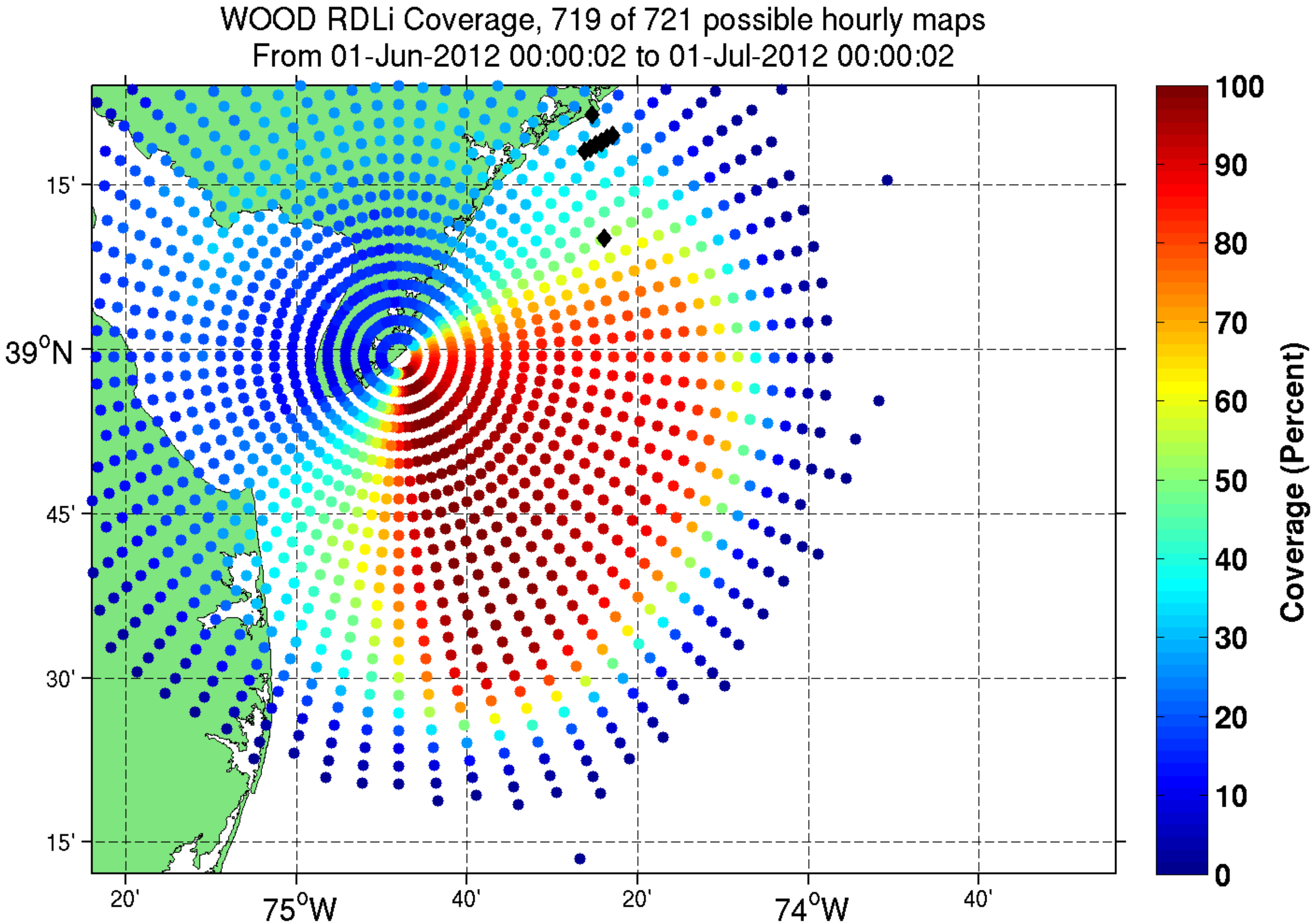
WOOD RDLi Coverage, 507 of 745 possible hourly maps
From 01-Mar-2012 00:00:02 to 01-Apr-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

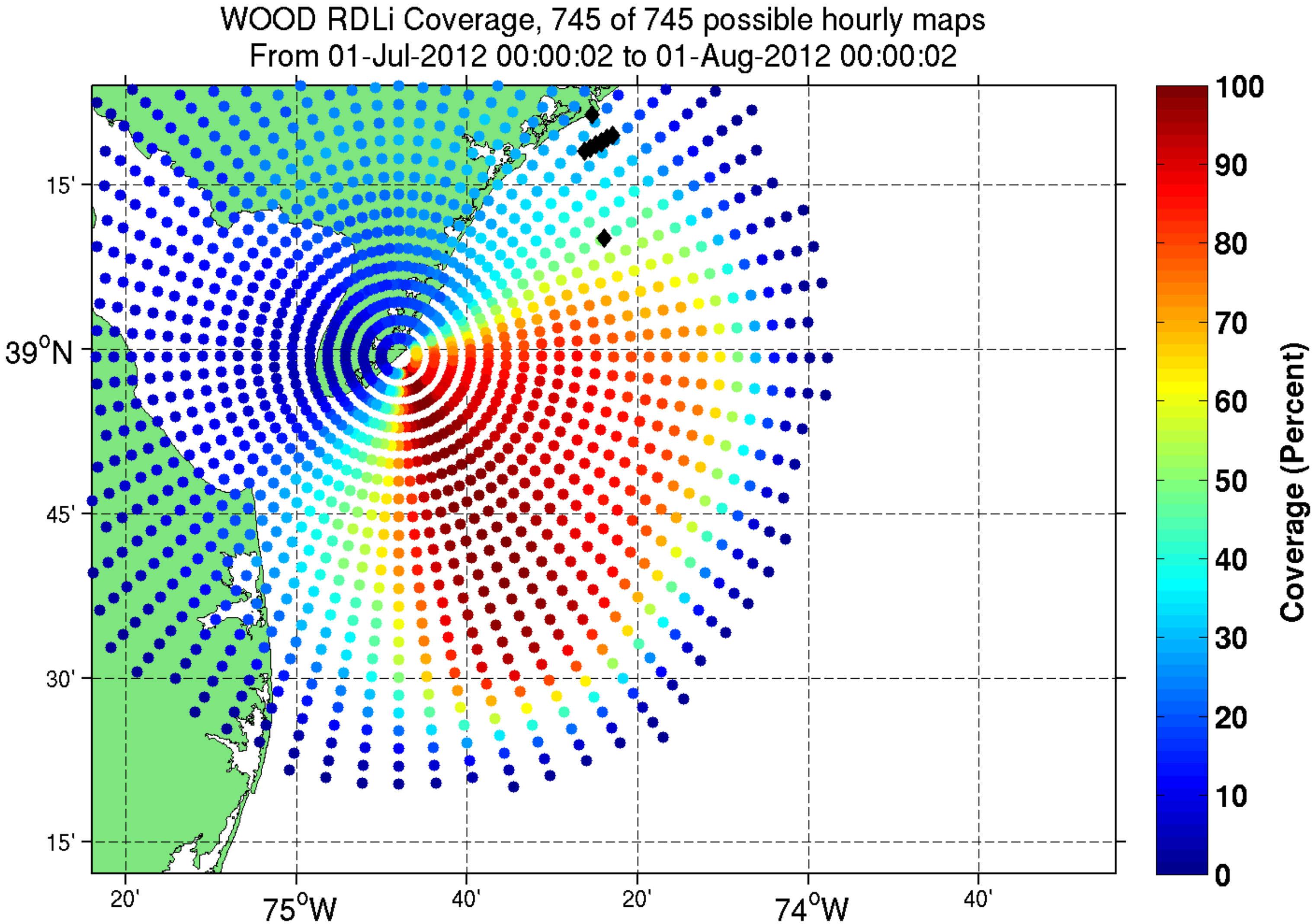
WOOD RDLi Coverage, 622 of 721 possible hourly maps
From 01-Apr-2012 00:00:02 to 01-May-2012 00:00:02



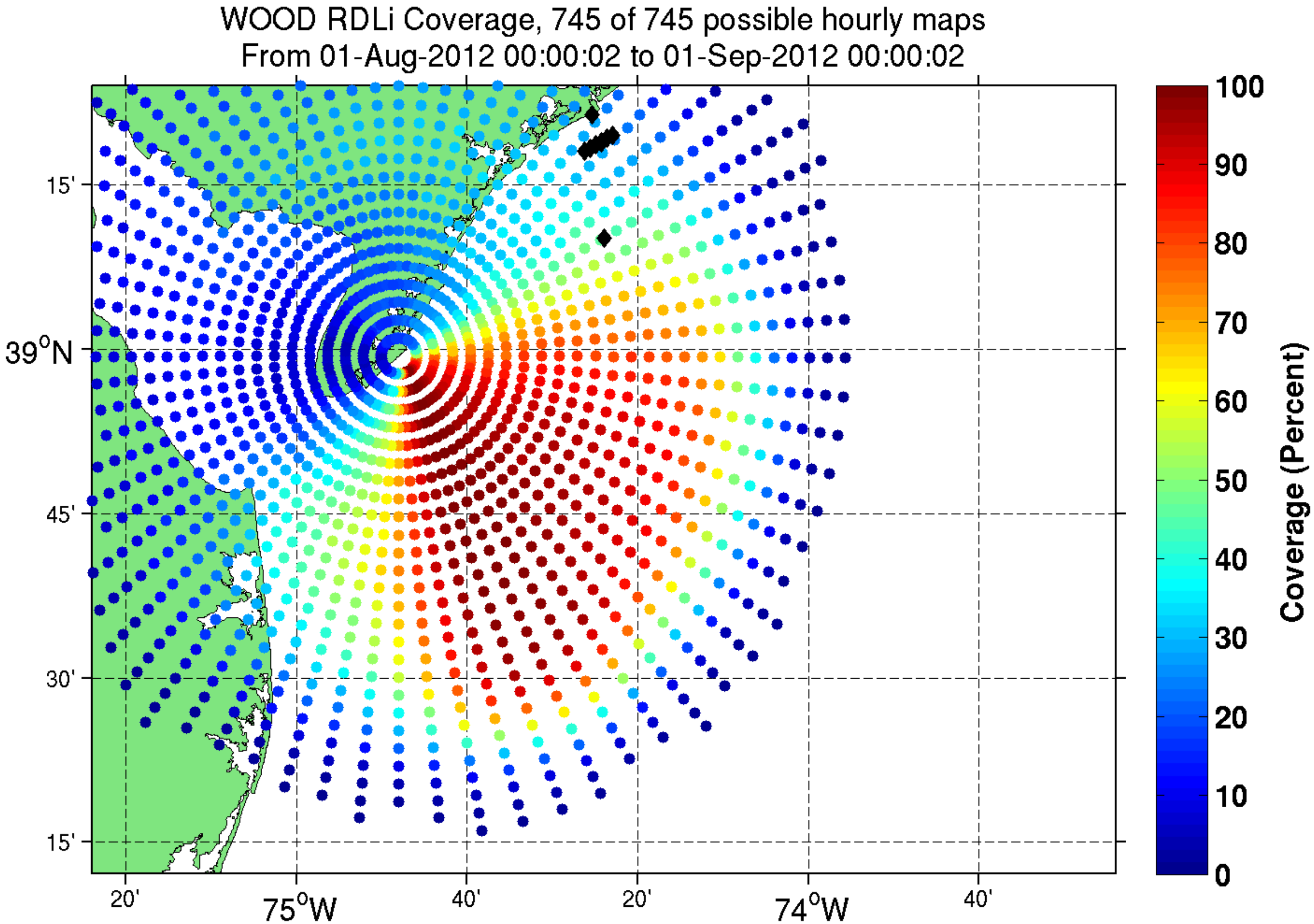
WOOD RDLi Coverage, 735 of 745 possible hourly maps
From 01-May-2012 00:00:02 to 01-Jun-2012 00:00:02



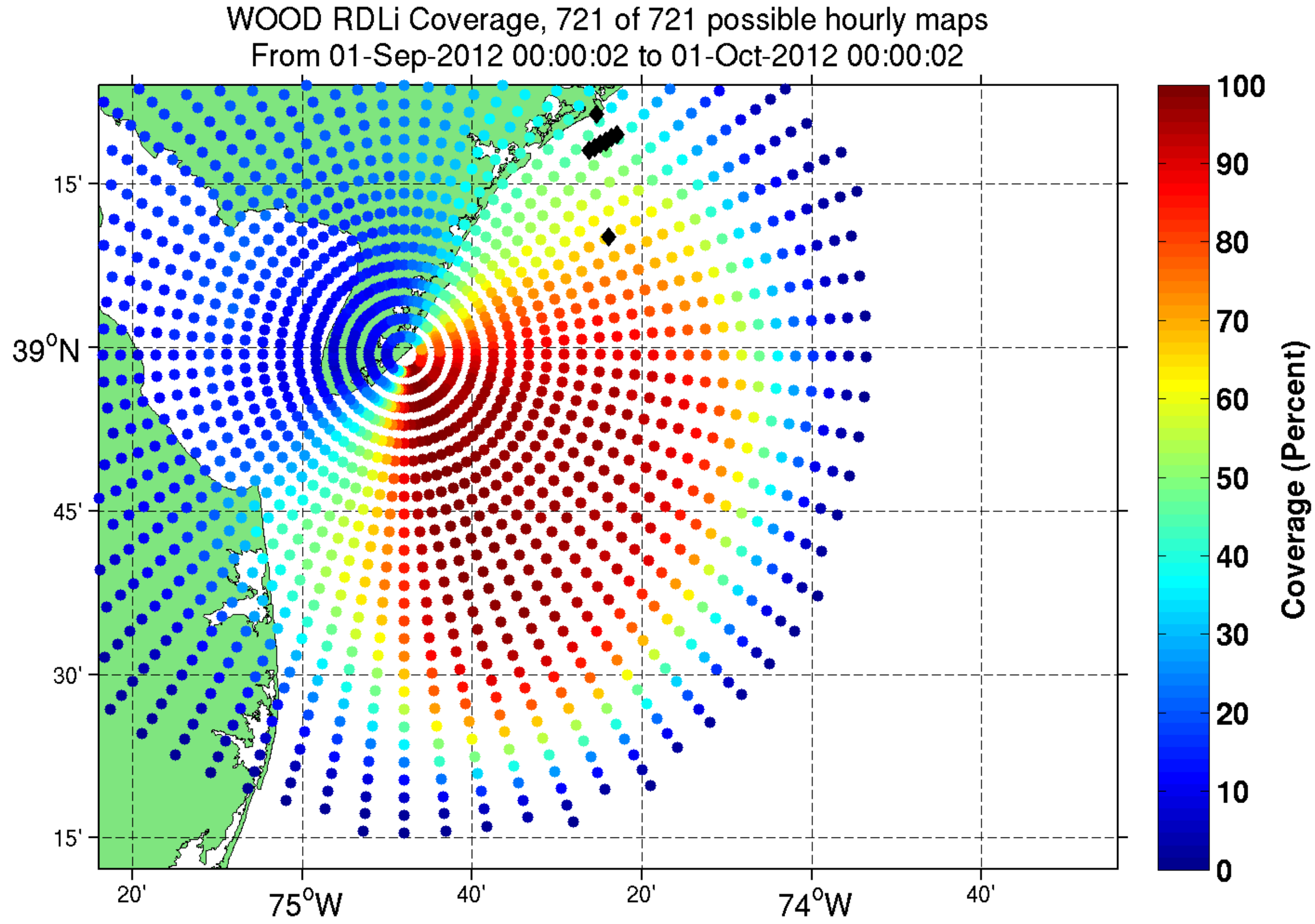

WOOD RDLi Coverage, 719 of 721 possible hourly maps
From 01-Jun-2012 00:00:02 to 01-Jul-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0



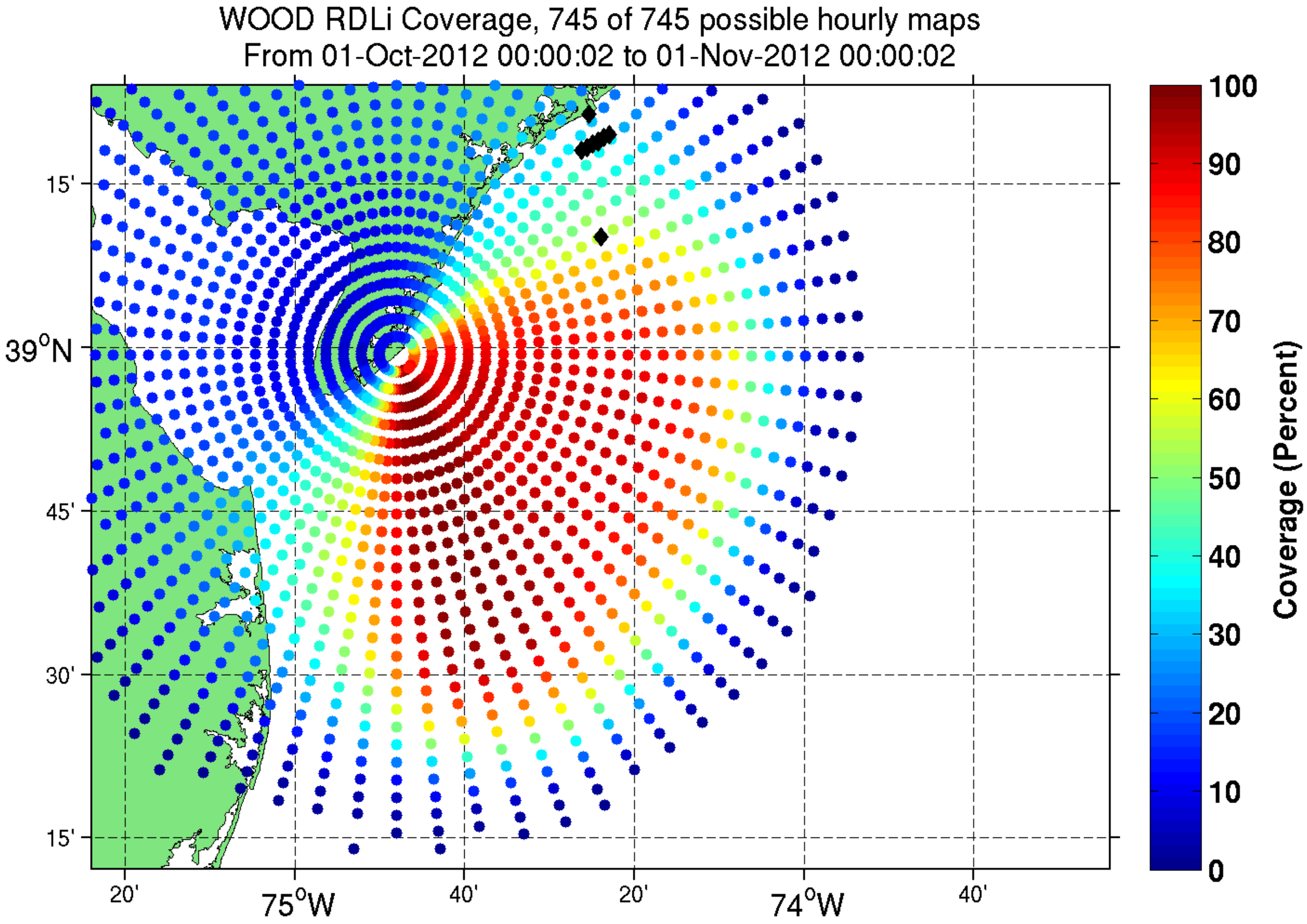
WOOD RDLi Coverage, 745 of 745 possible hourly maps
From 01-Jul-2012 00:00:02 to 01-Aug-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

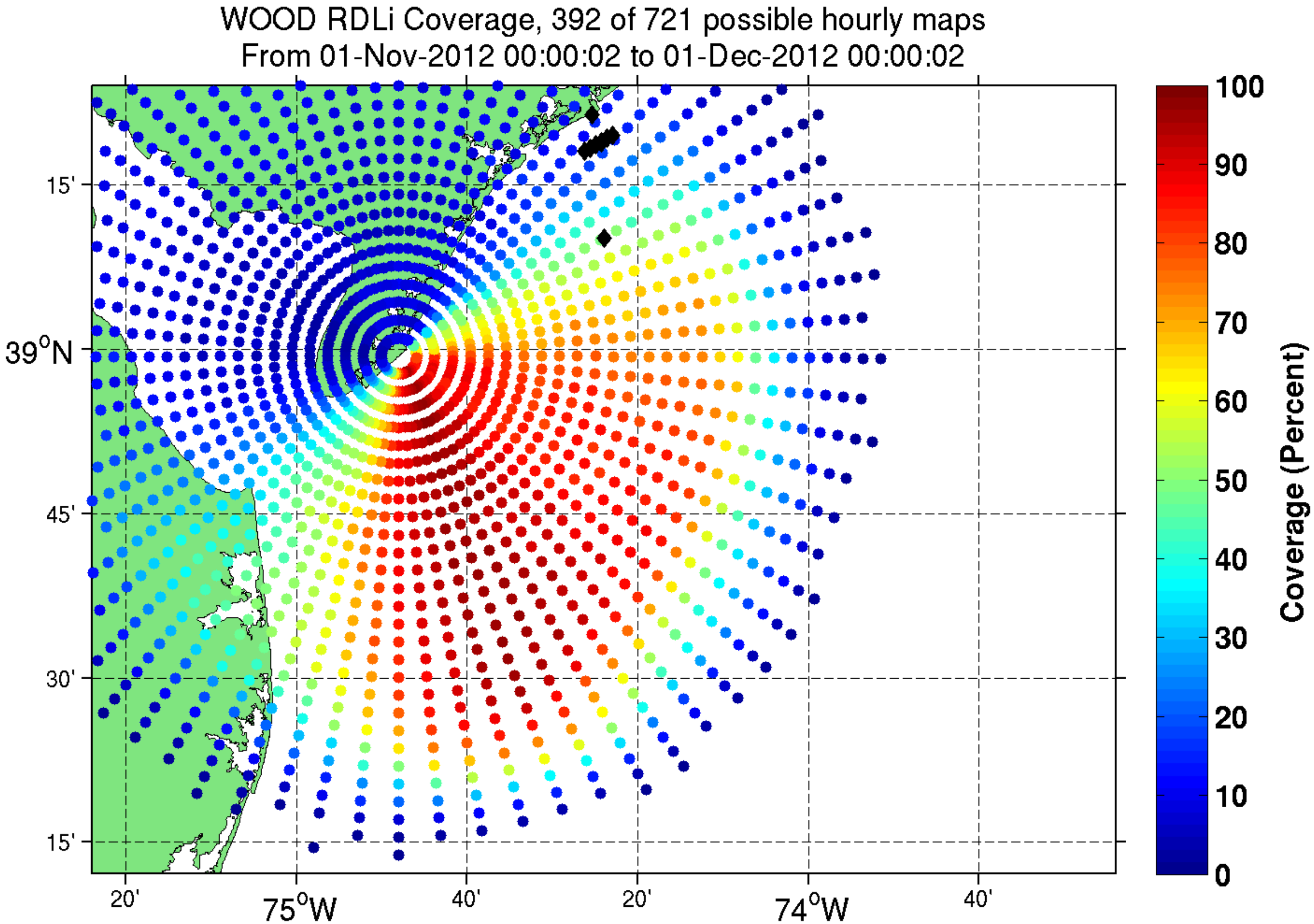


WOOD RDLi Coverage, 745 of 745 possible hourly maps
From 01-Aug-2012 00:00:02 to 01-Sep-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

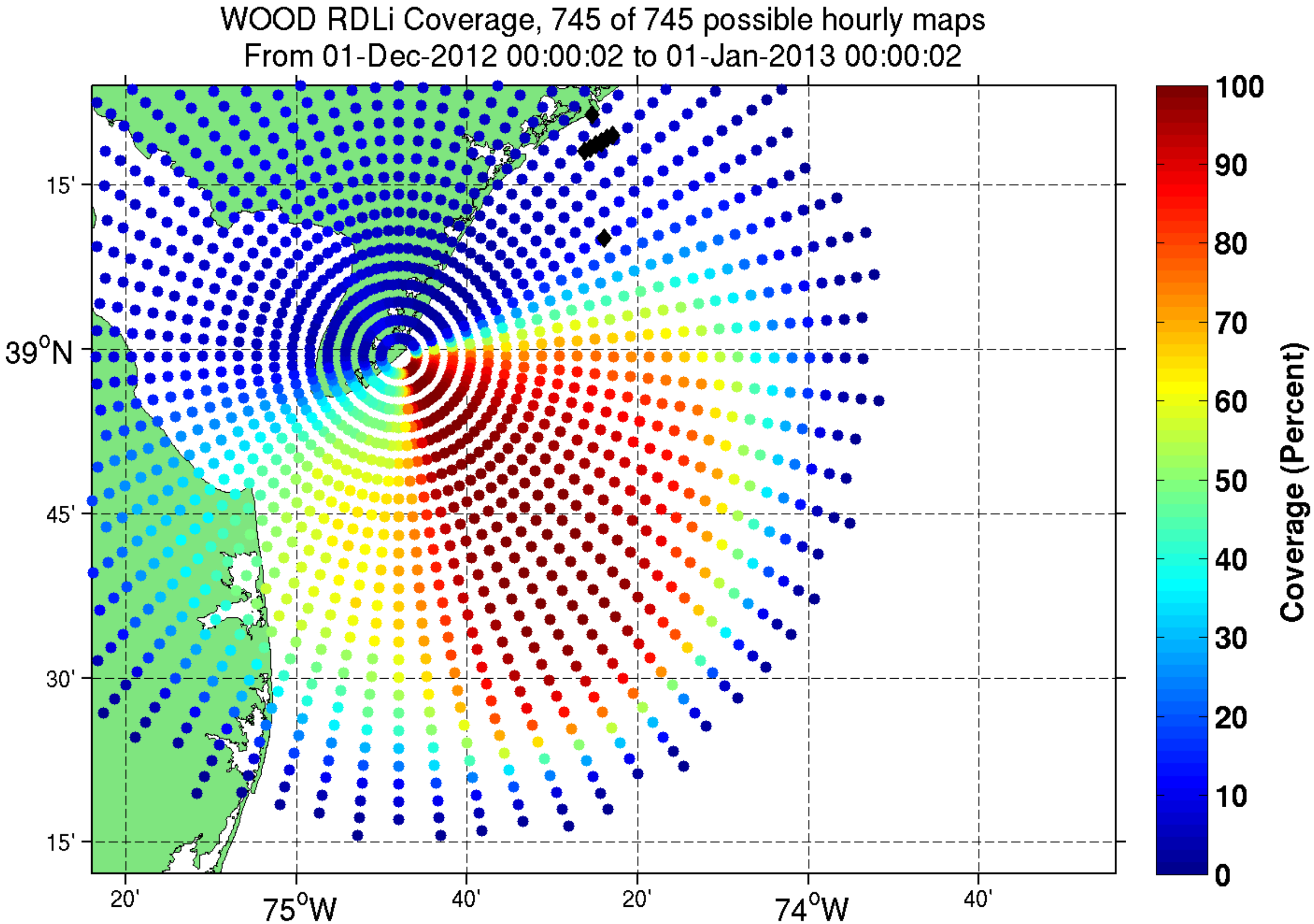


WOOD RDLi Coverage, 721 of 721 possible hourly maps
From 01-Sep-2012 00:00:02 to 01-Oct-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0


WOOD RDLi Coverage, 745 of 745 possible hourly maps
From 01-Oct-2012 00:00:02 to 01-Nov-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)



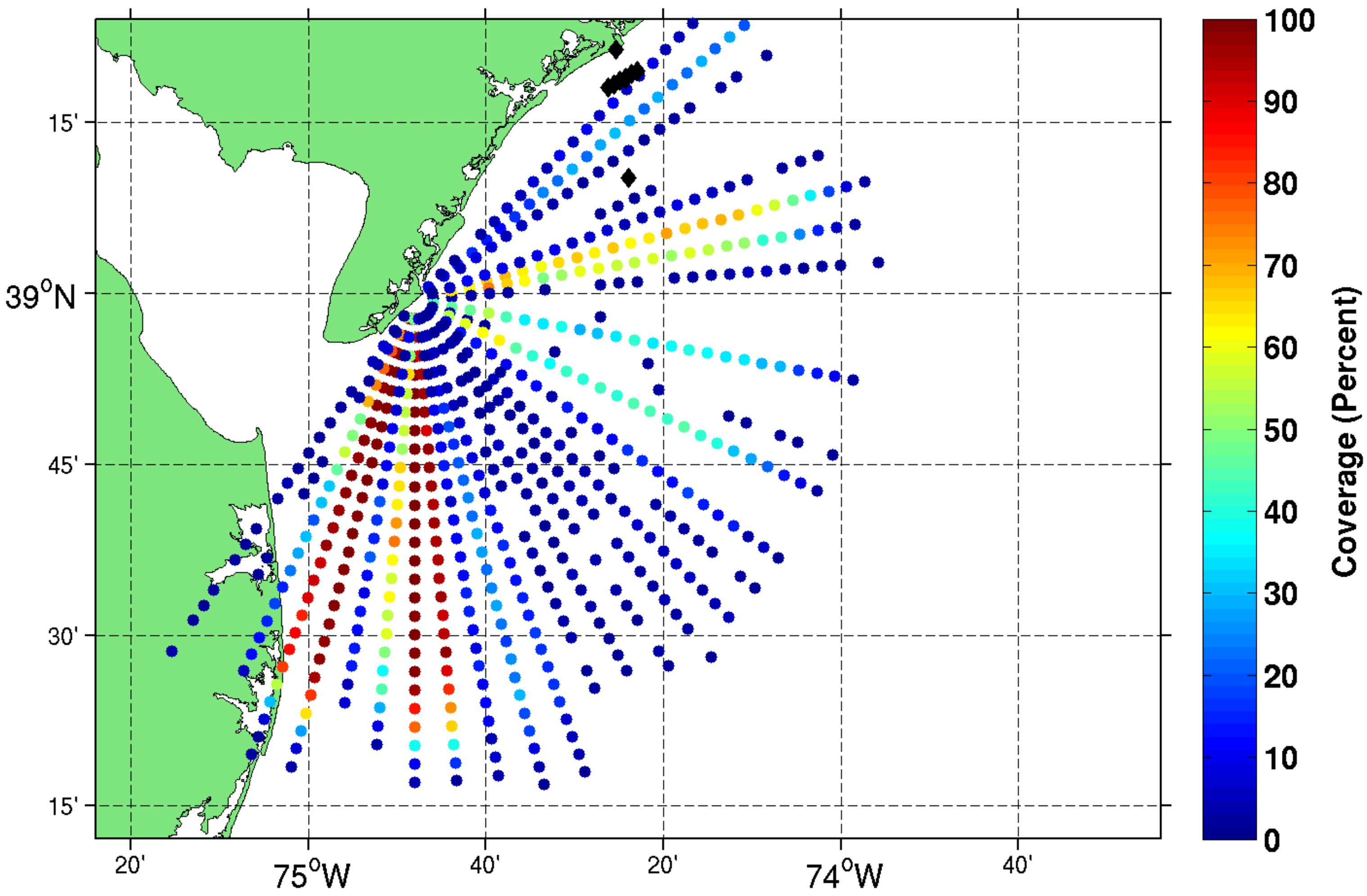
WOOD RDLi Coverage, 392 of 721 possible hourly maps
From 01-Nov-2012 00:00:02 to 01-Dec-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

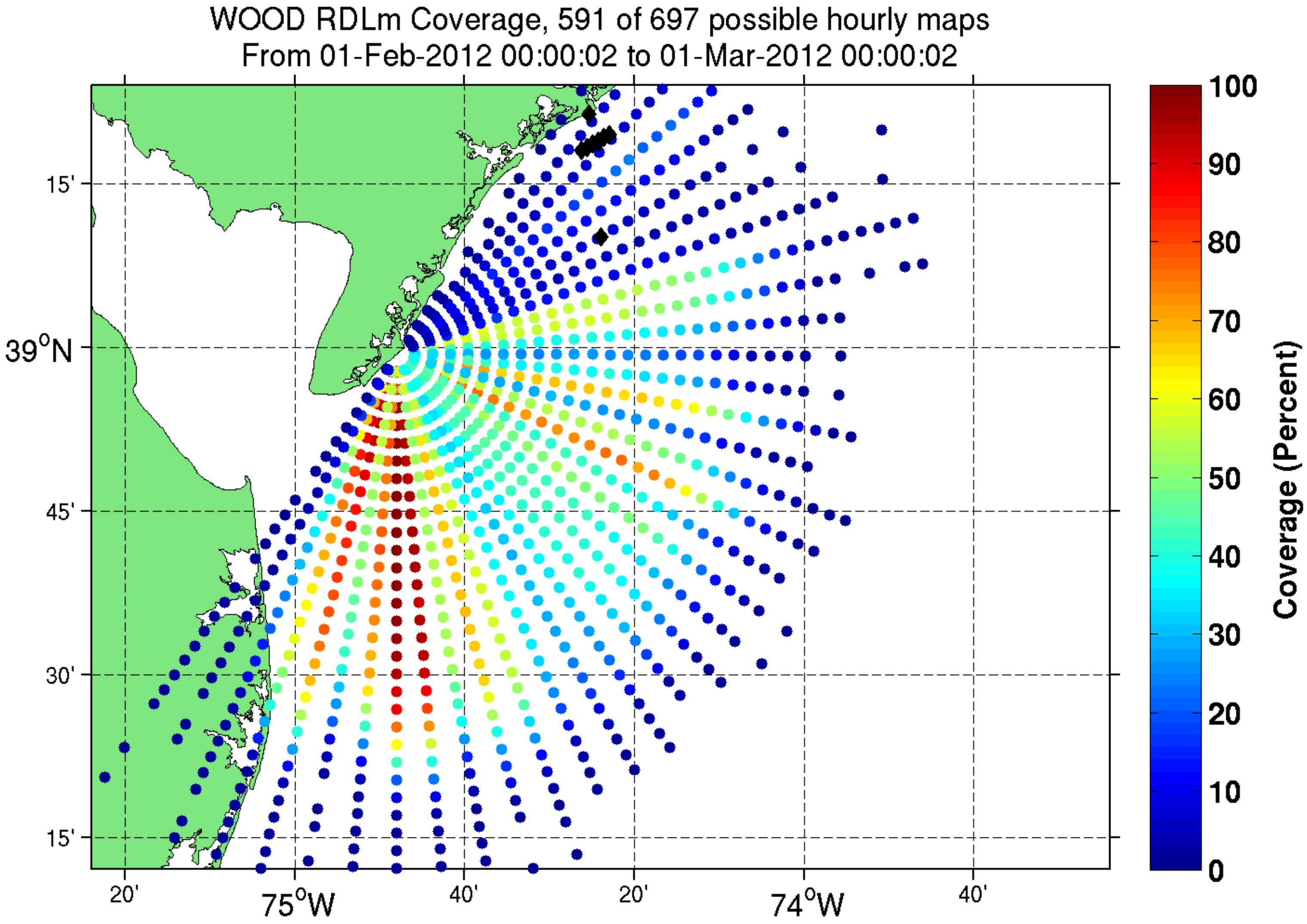


WOOD RDLi Coverage, 745 of 745 possible hourly maps
From 01-Dec-2012 00:00:02 to 01-Jan-2013 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

NORTH WILDWOOD MEASURED RADIALS

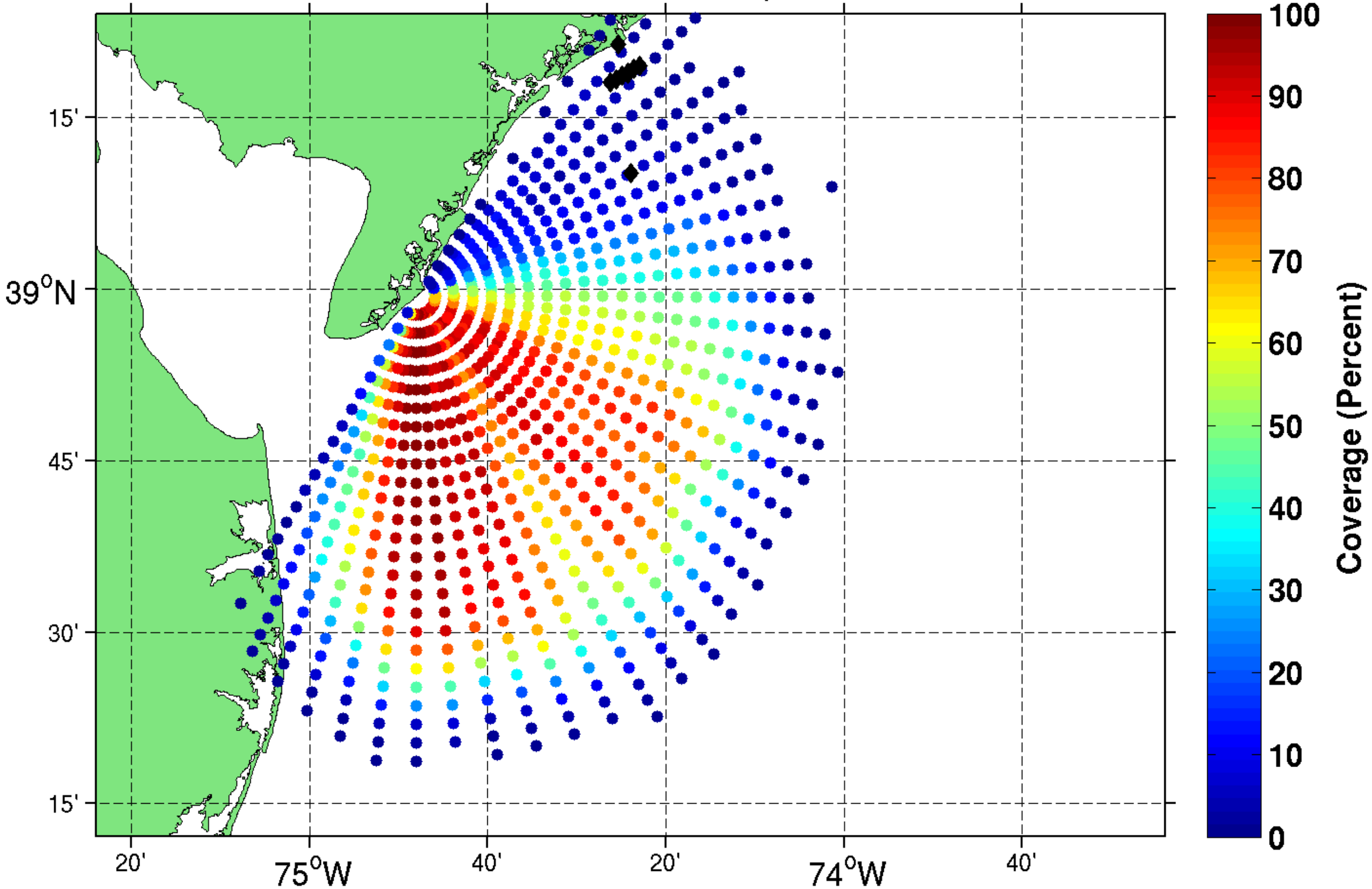
WOOD RDLm Coverage, 119 of 745 possible hourly maps
From 01-Jan-2012 00:00:02 to 01-Feb-2012 00:00:02

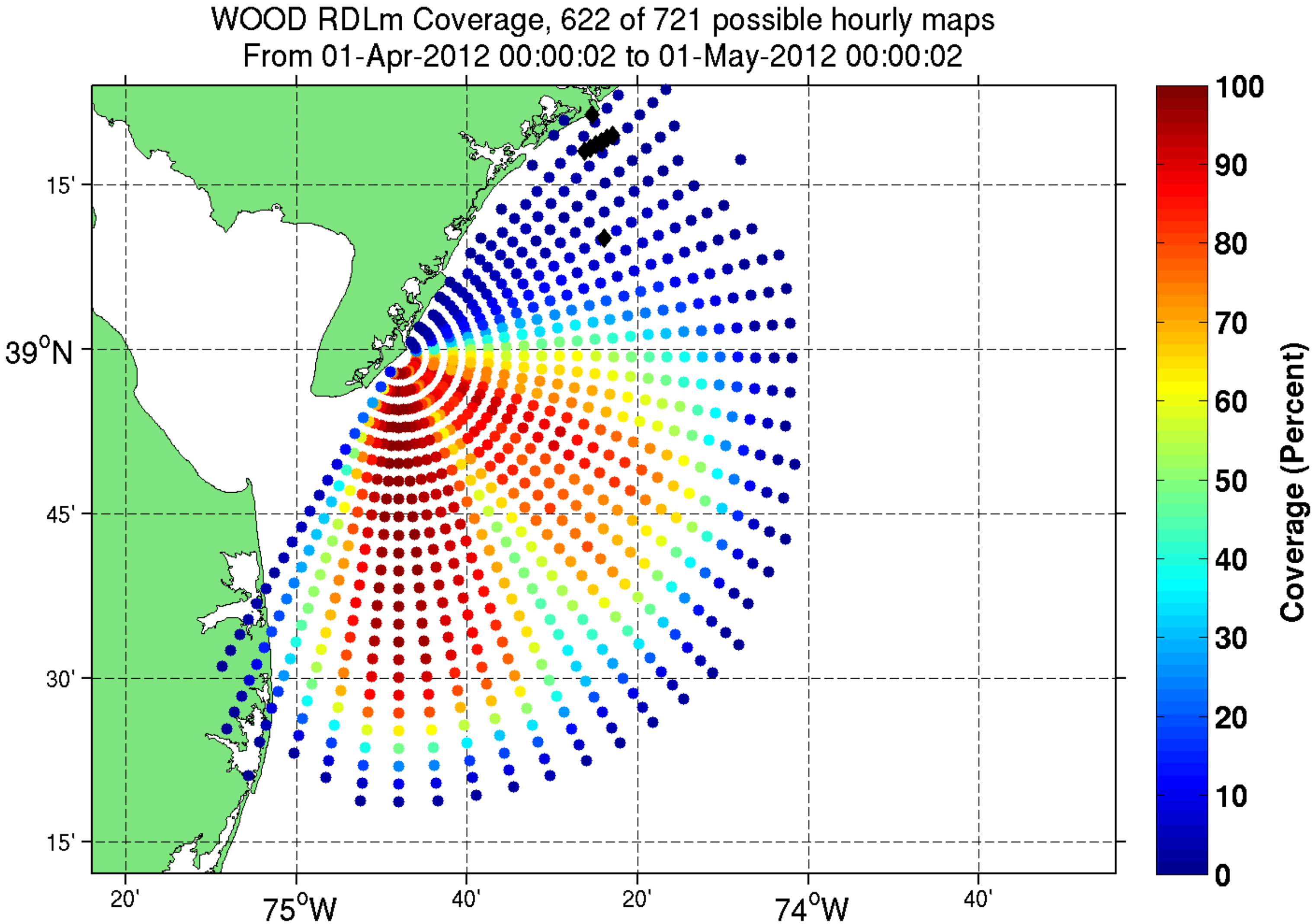


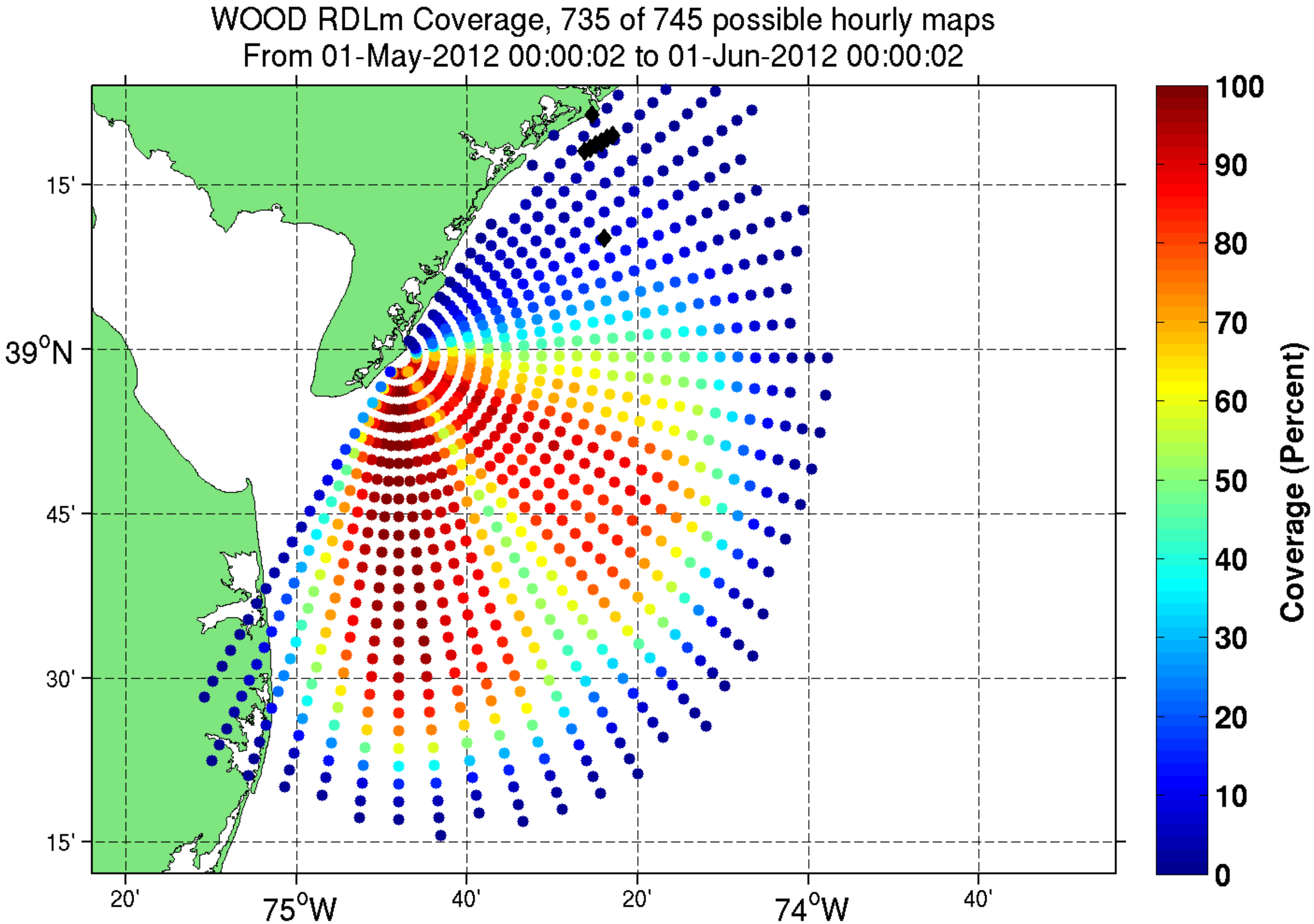


WOOD RDLm Coverage, 591 of 697 possible hourly maps
From 01-Feb-2012 00:00:02 to 01-Mar-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

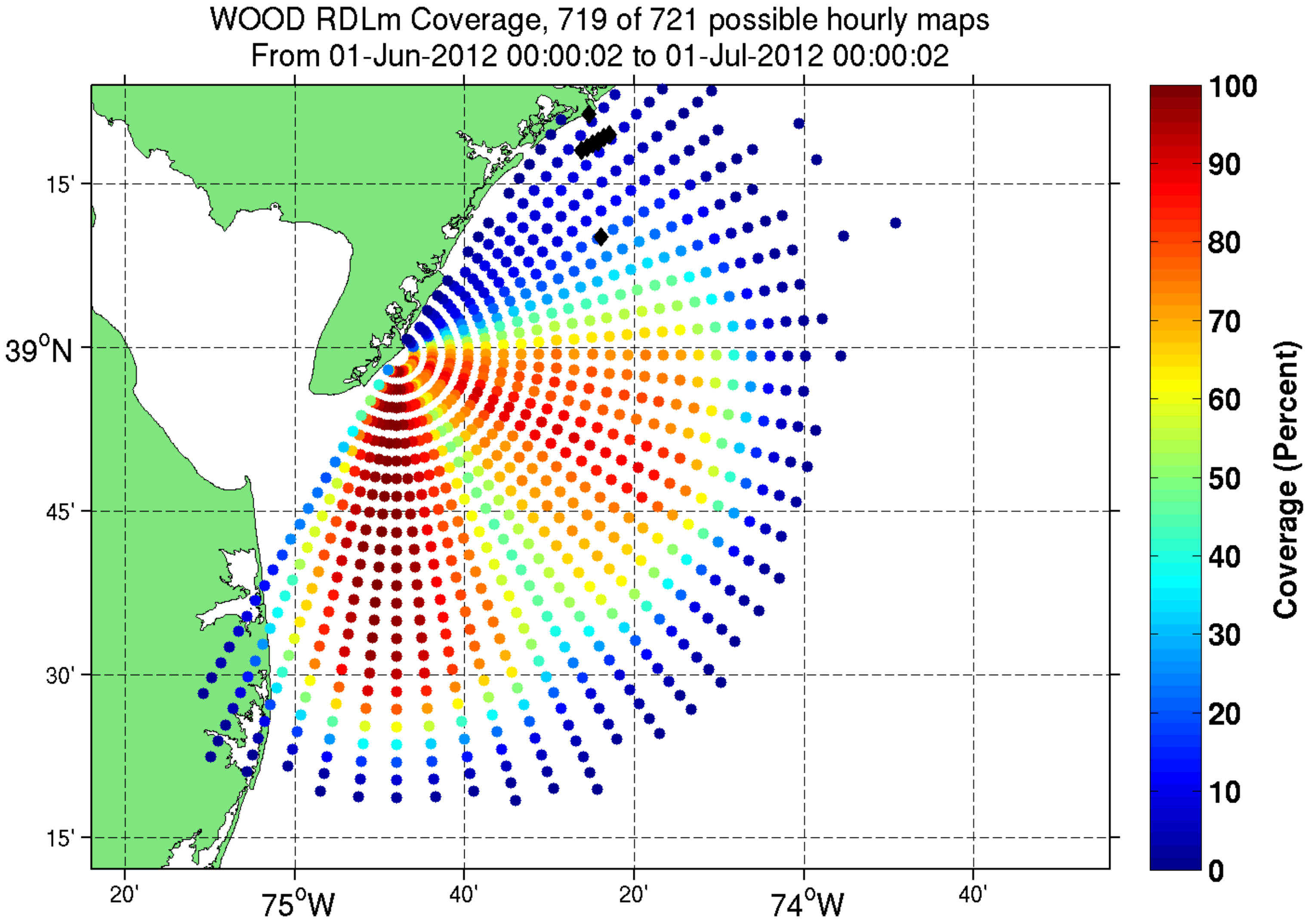
WOOD RDLm Coverage, 507 of 745 possible hourly maps
From 01-Mar-2012 00:00:02 to 01-Apr-2012 00:00:02



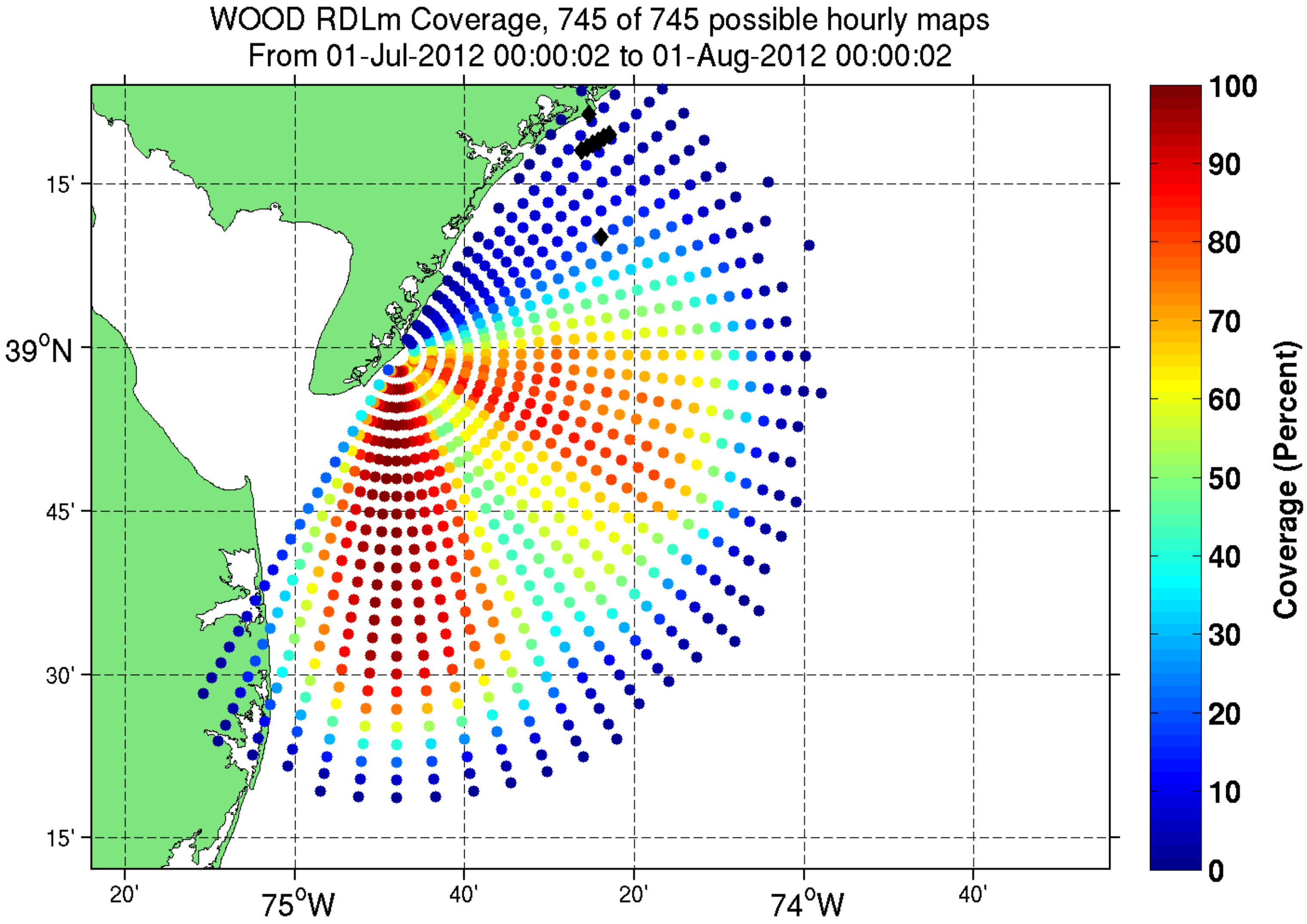

WOOD RDLm Coverage, 622 of 721 possible hourly maps
From 01-Apr-2012 00:00:02 to 01-May-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0



WOOD RDLm Coverage, 735 of 745 possible hourly maps
From 01-May-2012 00:00:02 to 01-Jun-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

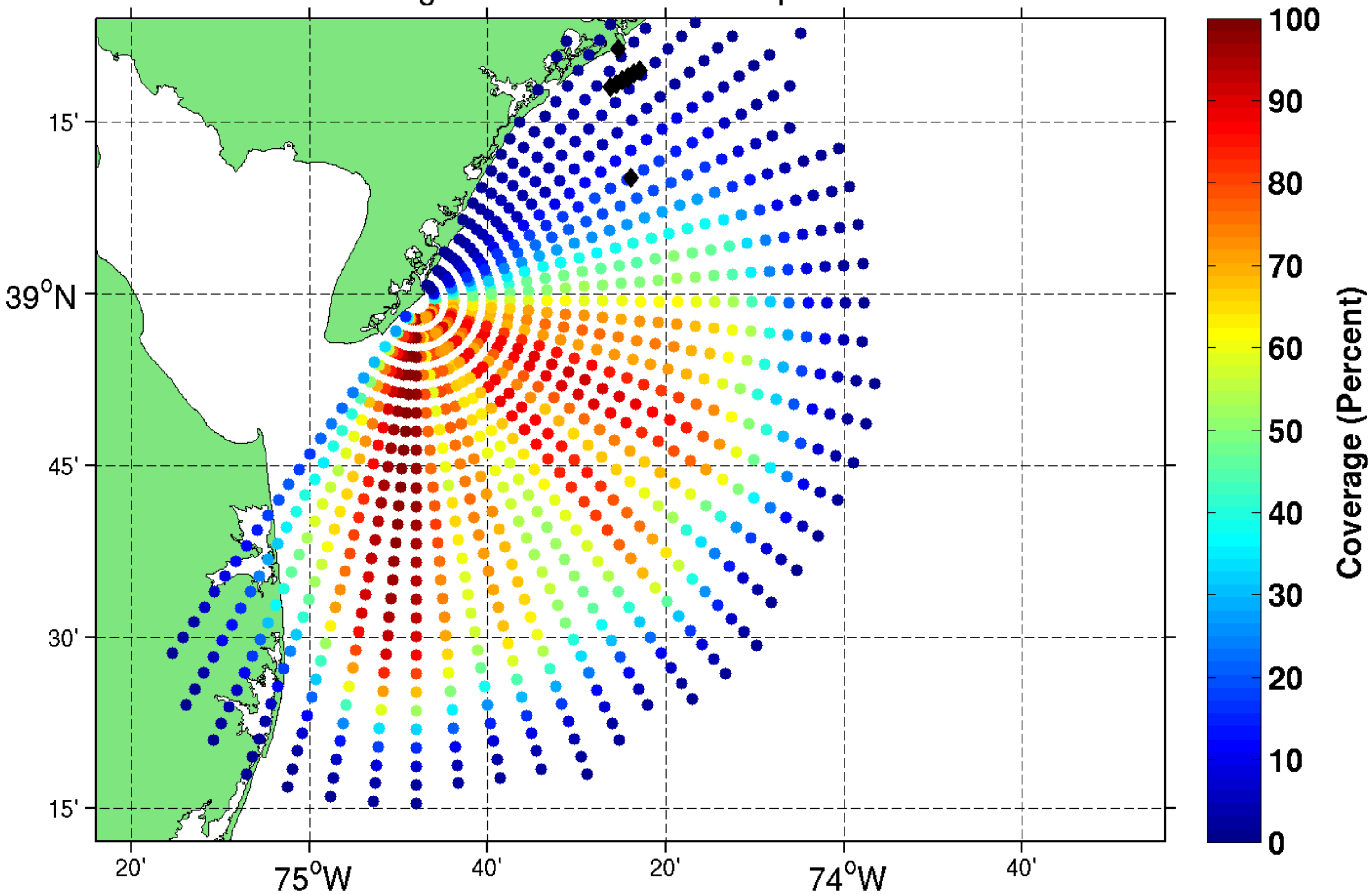


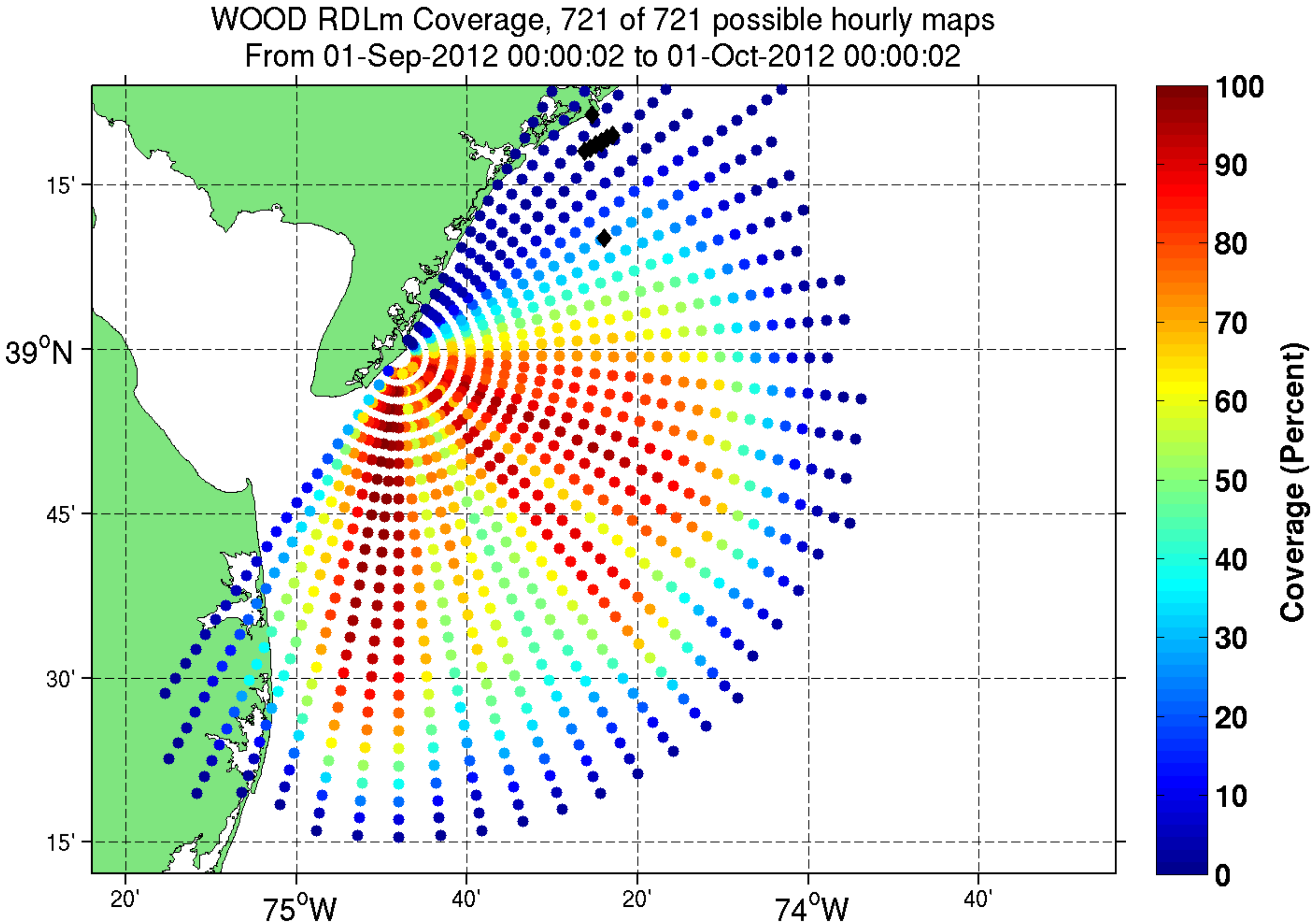
WOOD RDLm Coverage, 719 of 721 possible hourly maps
From 01-Jun-2012 00:00:02 to 01-Jul-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

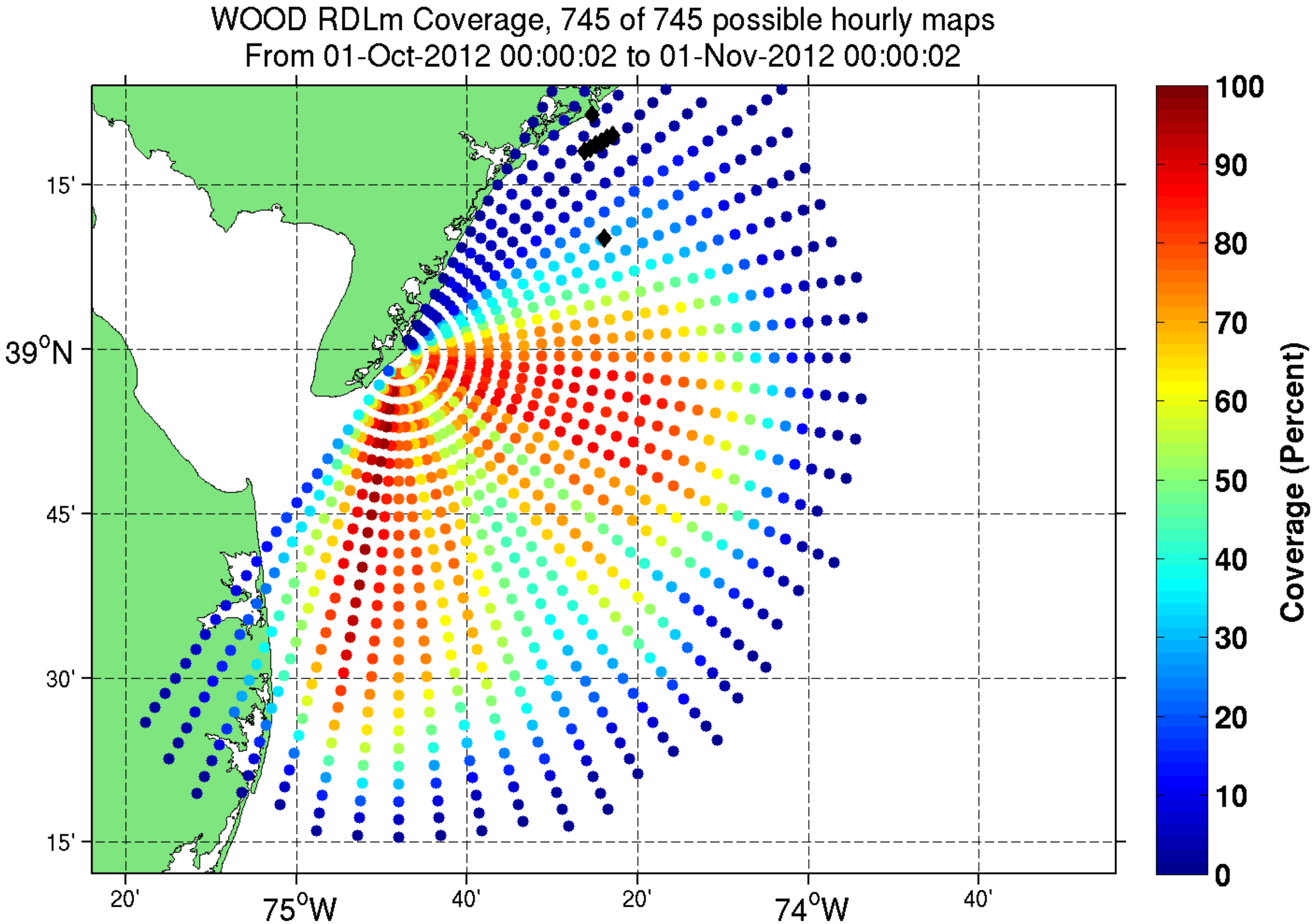


WOOD RDLm Coverage, 745 of 745 possible hourly maps
From 01-Jul-2012 00:00:02 to 01-Aug-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

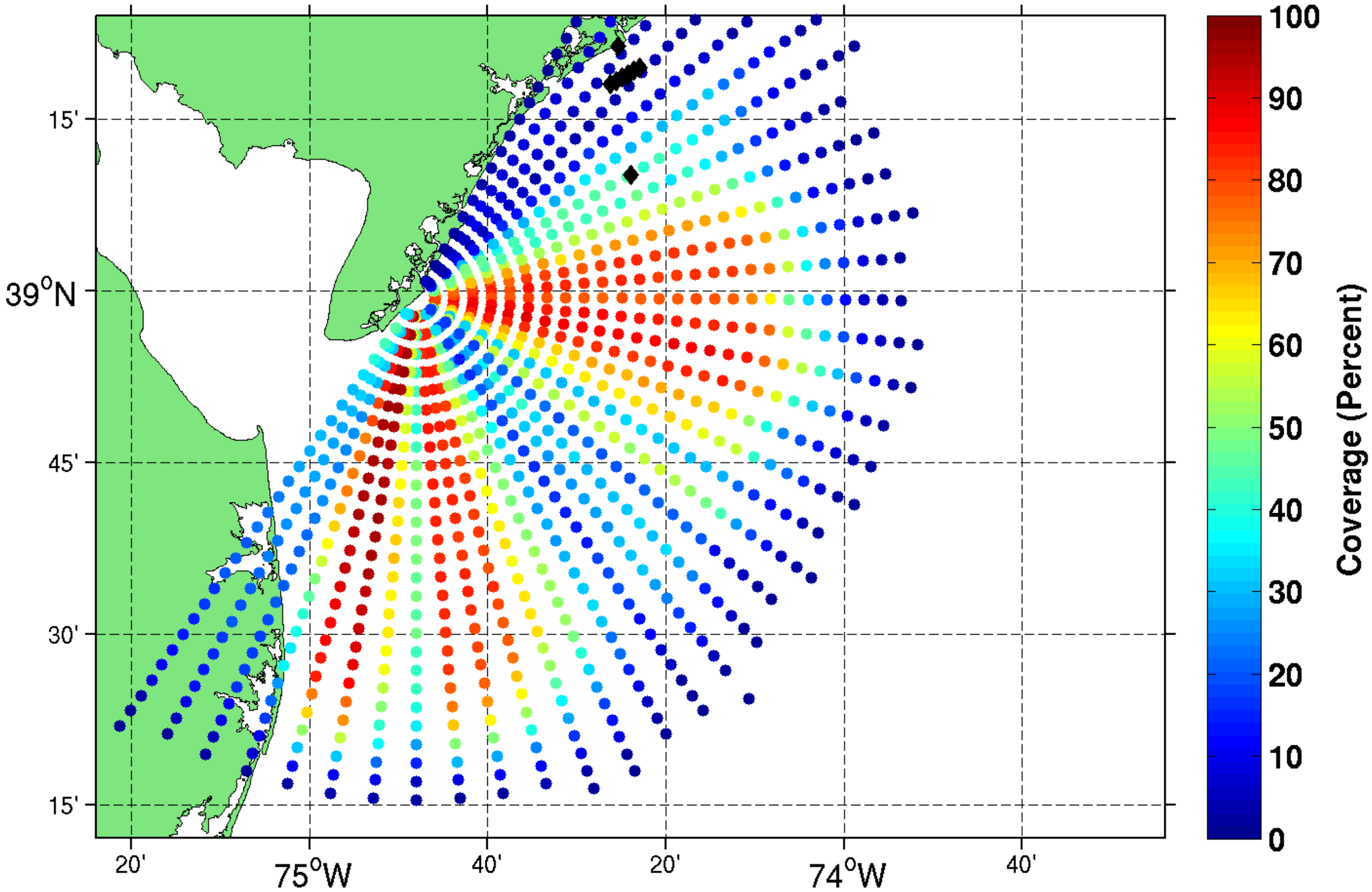
WOOD RDLm Coverage, 745 of 745 possible hourly maps
From 01-Aug-2012 00:00:02 to 01-Sep-2012 00:00:02

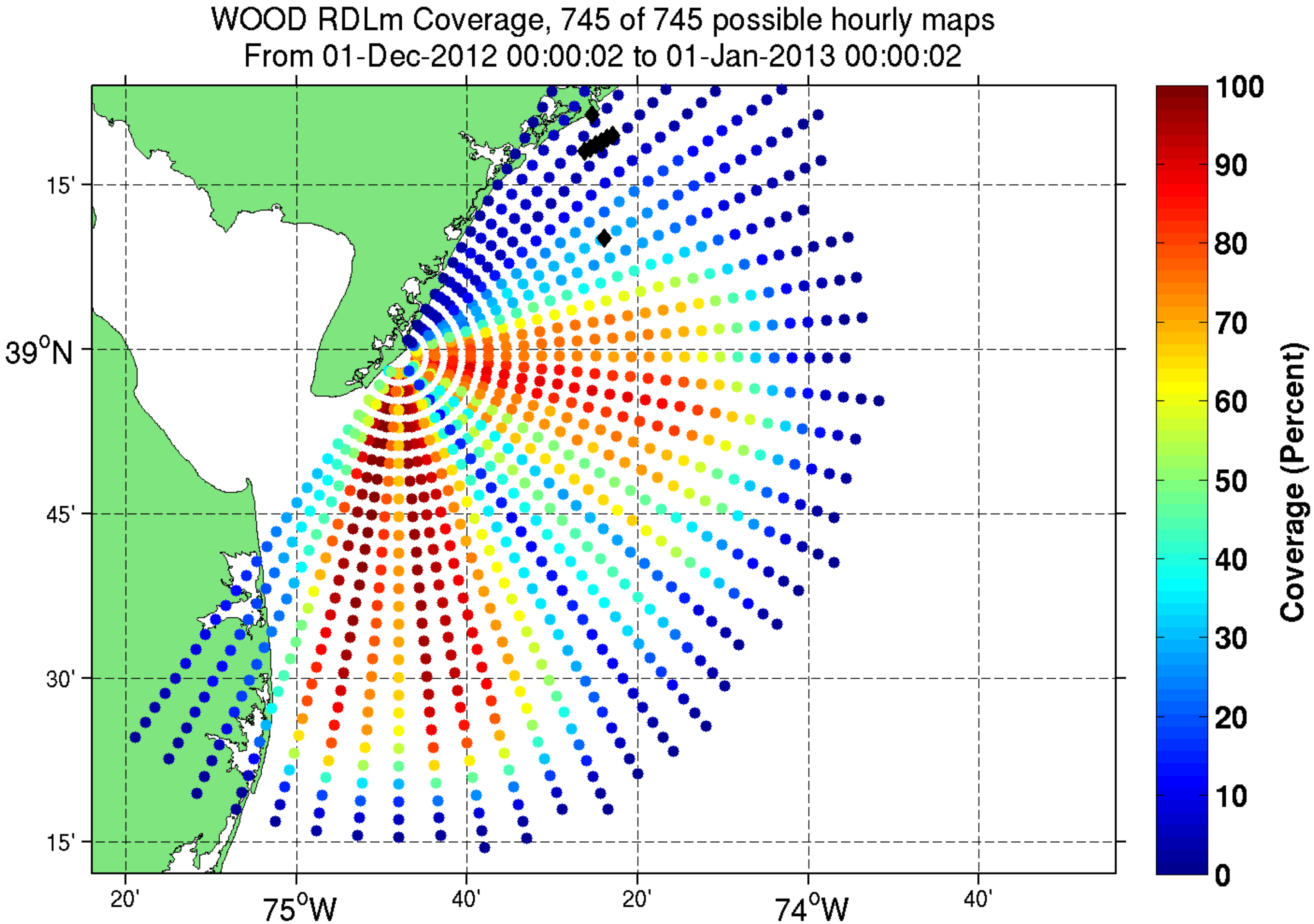



WOOD RDLm Coverage, 721 of 721 possible hourly maps
From 01-Sep-2012 00:00:02 to 01-Oct-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)


WOOD RDLm Coverage, 745 of 745 possible hourly maps
From 01-Oct-2012 00:00:02 to 01-Nov-2012 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
100
90
80
70
60
50
40
30
20
10
0
Coverage (Percent)

WOOD RDLm Coverage, 391 of 721 possible hourly maps
From 01-Nov-2012 00:00:02 to 01-Dec-2012 00:00:02





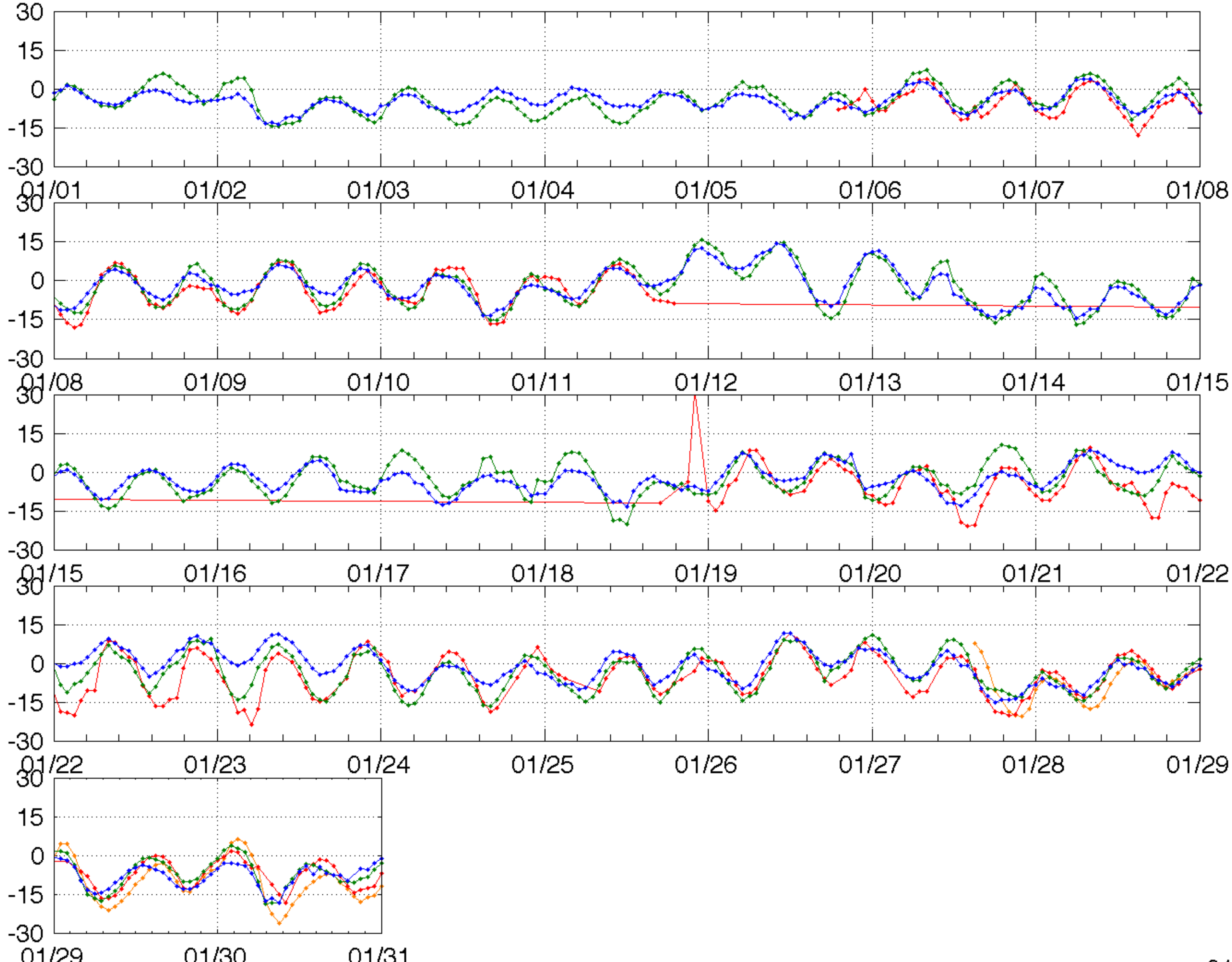
WOOD RDLm Coverage, 745 of 745 possible hourly maps
From 01-Dec-2012 00:00:02 to 01-Jan-2013 00:00:02
15'
39°N
45'
30'
15'
20'
75°W
40'
20'
74°W
40'
Coverage (Percent)
100
90
80
70
60
50
40
30
20
10
0

Section 07 (January to June):

BPU
Average Radial Velocity

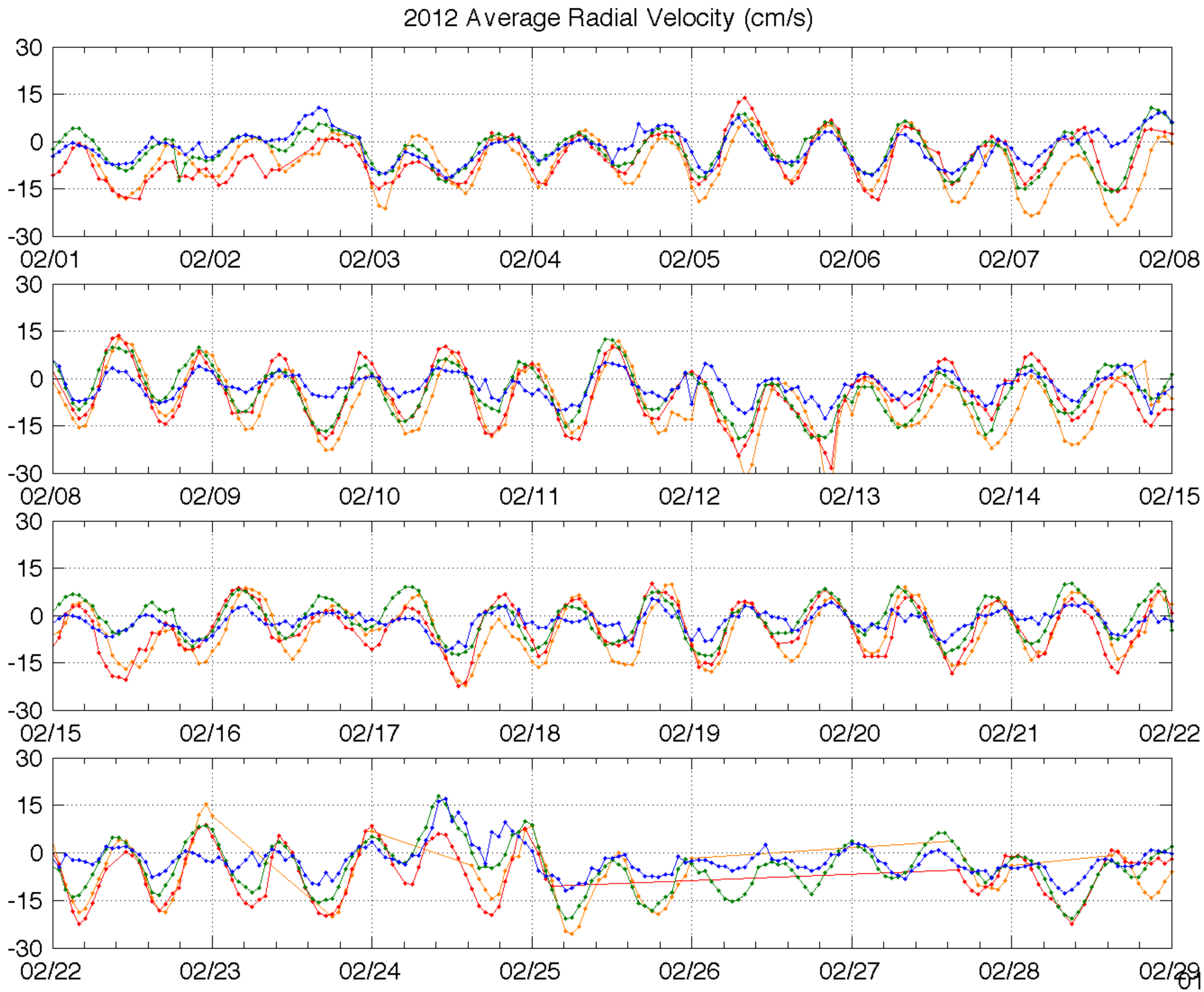
January 1, 2012 to June 30, 2012
BRNT - RDLm
BRMR- RDLi
RATH- RDLi
WOOD- RDLi

2012 Average Radial Velocity (cm/s)

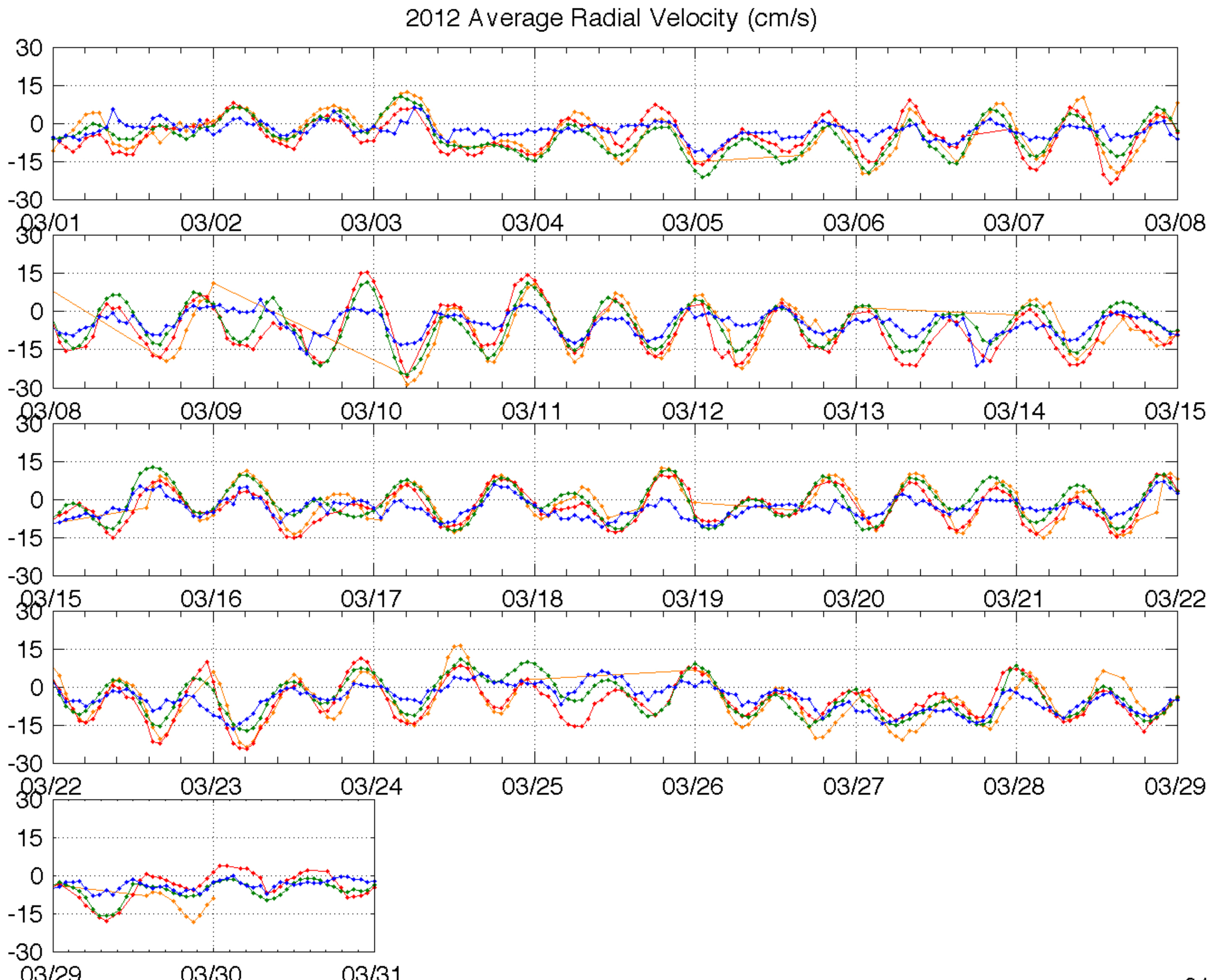


01/23/13

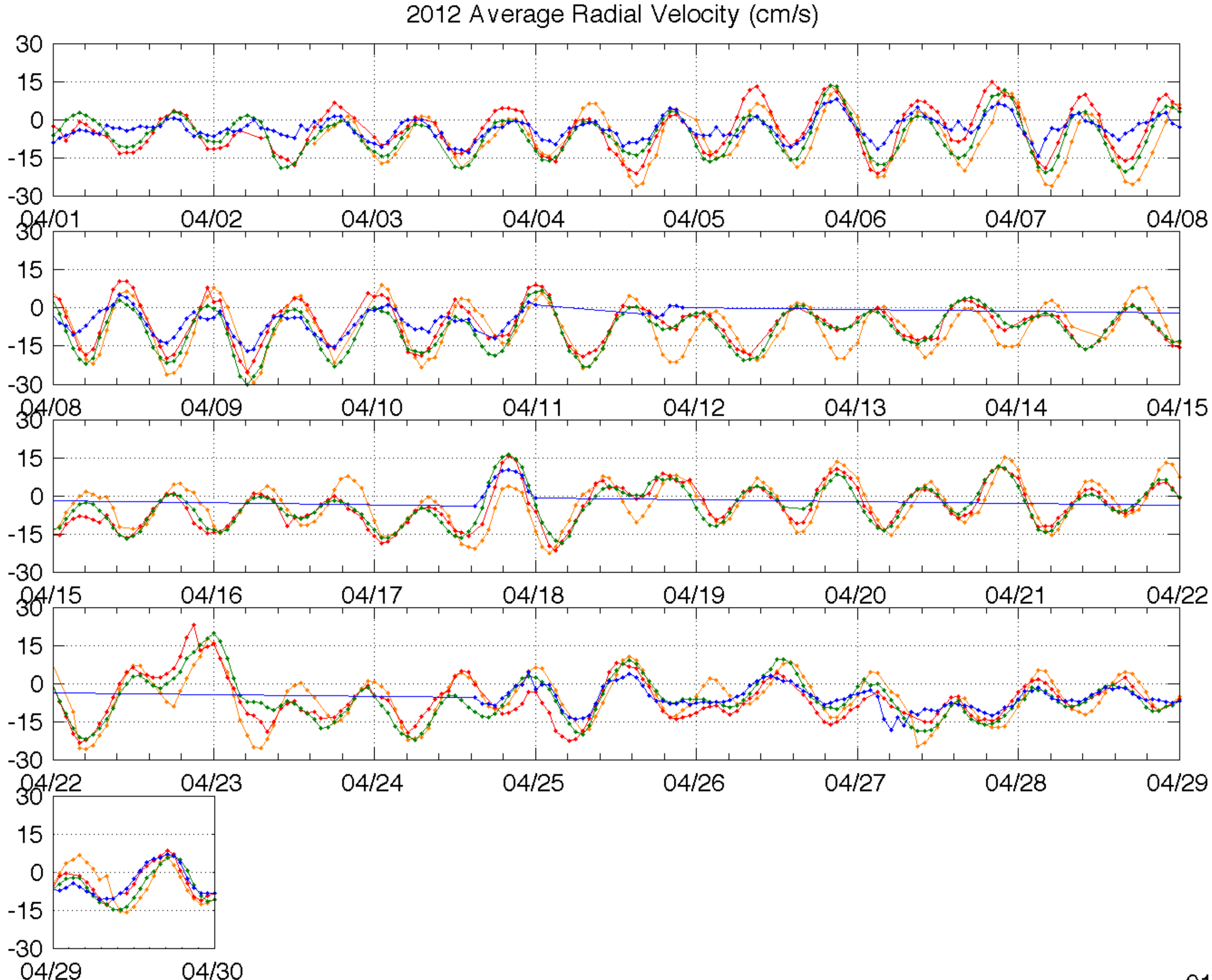
/home/hroarty/codar/BPU/average_radial_plots/wrapper_avg_rad_vel_monthly.m



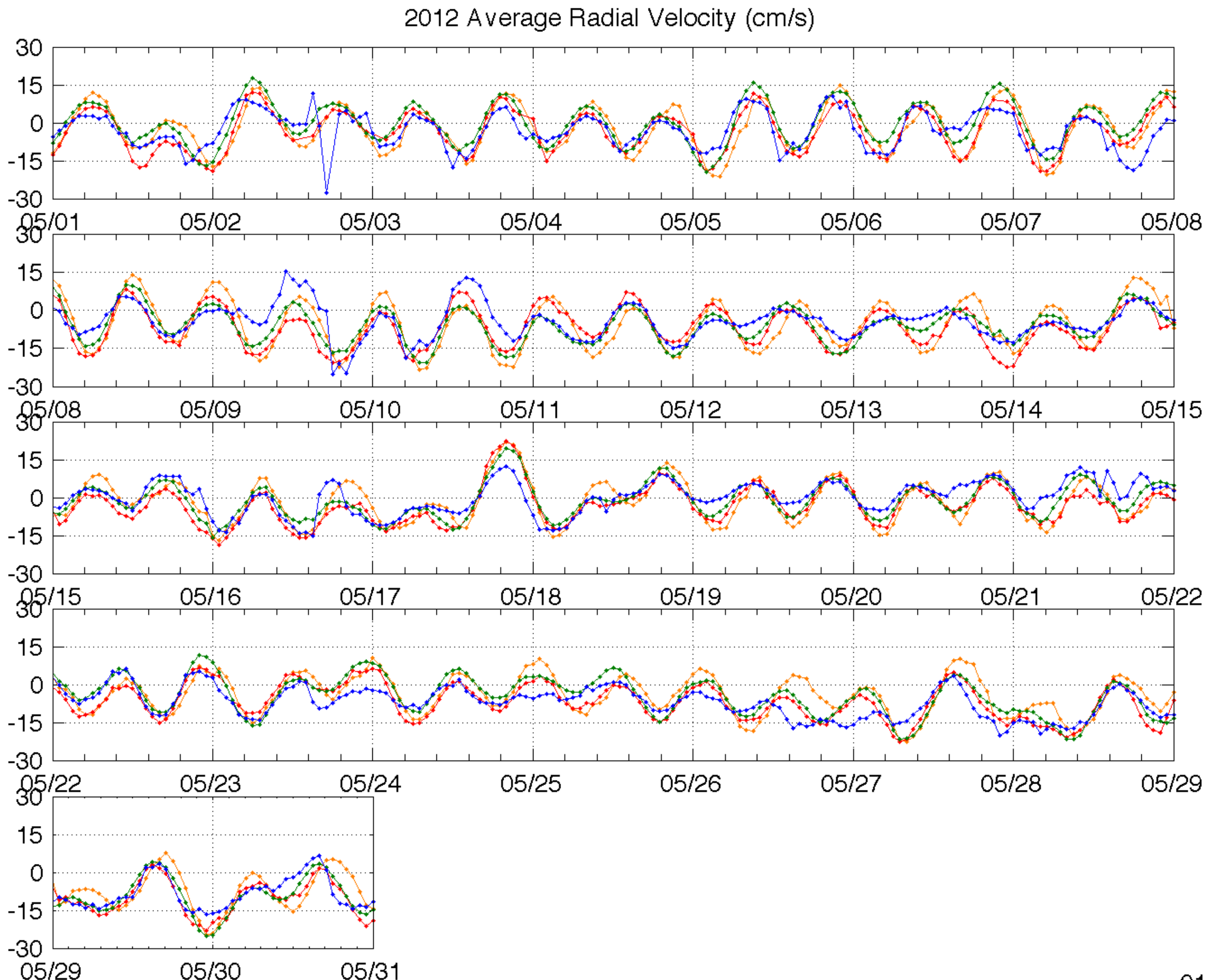
01/23/13
/home/hroarty/codar/BPU/average_radial_plots/wrapper_avg_rad_vel_monthly.m



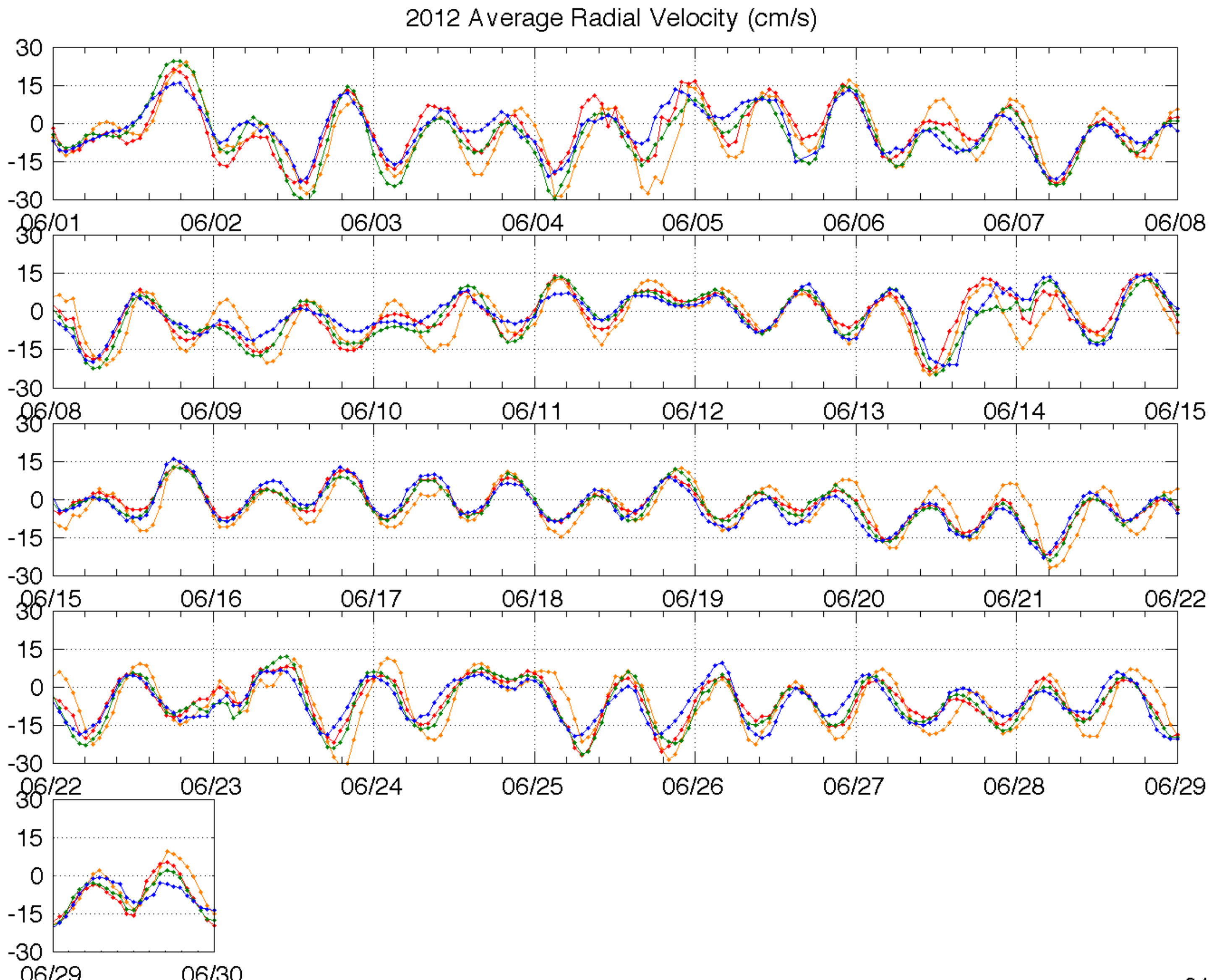
01/23/13
/home/hroarty/codar/BPU/average_radial_plots/wrapper_avg_rad_vel_monthly.m



01/23/13
/home/hroarty/codar/BPU/average_radial_plots/wrapper_avg_rad_vel_monthly.m



01/23/13
/home/hroarty/codar/BPU/average_radial_plots/wrapper_avg_rad_vel_monthly.m



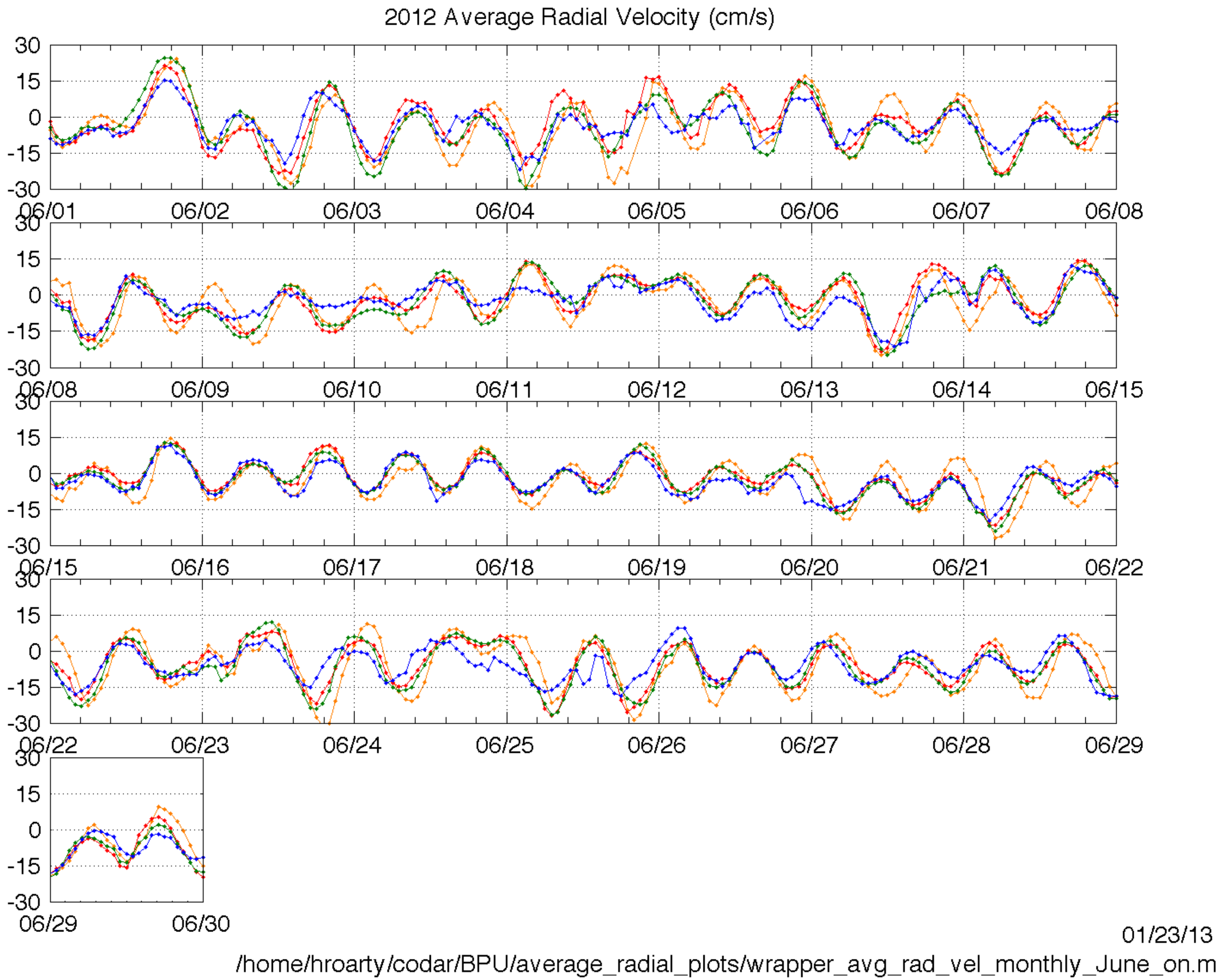
01/23/13

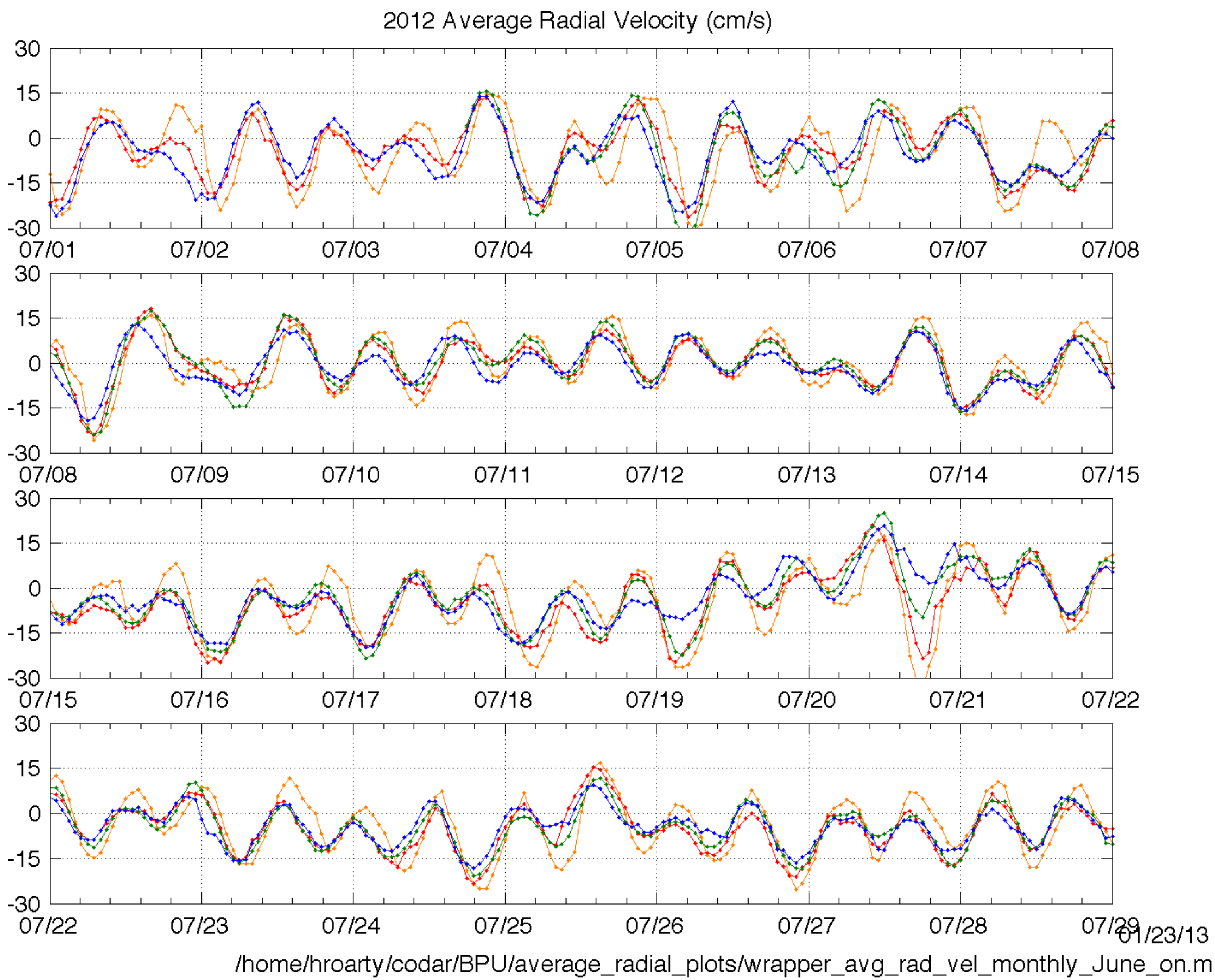
/home/hroarty/codar/BPU/average_radial_plots/wrapper_avg_rad_vel_monthly.m

Section 07 (June to October):

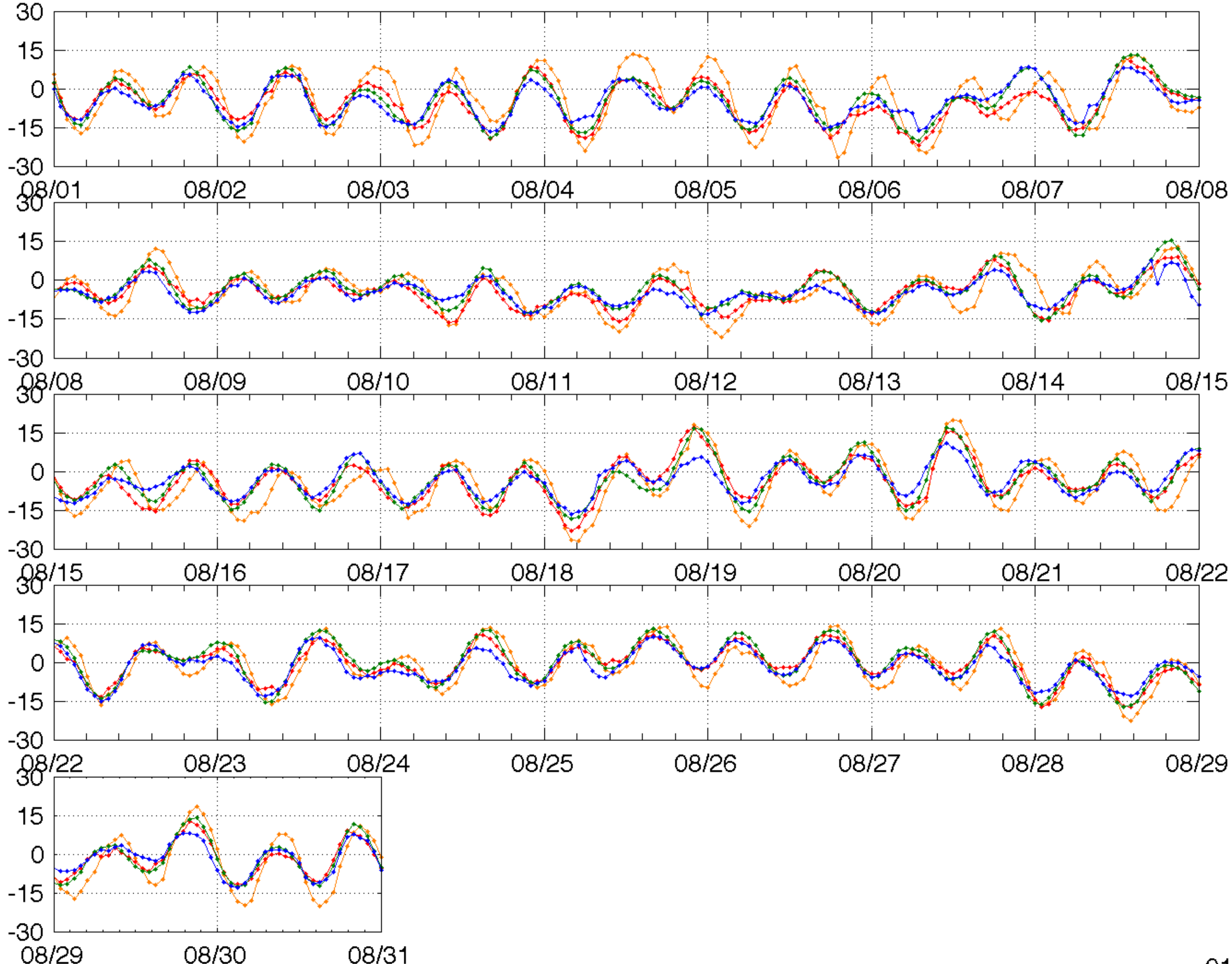
BPU
Average Radial Velocity

June 1, 2012 to October 31, 2012
BRNT - RDLi
BRMR- RDLi
RATH- RDLi
WOOD- RDLi


2012 Average Radial Velocity (cm/s)
30
15
0
-15
-30
06/01
06/02
06/03
06/04
06/05
06/06
06/07
06/08
06/09
06/10
06/11
06/12
06/13
06/14
06/15
06/16
06/17
06/18
06/19
06/20
06/21
06/22
06/23
06/24
06/25
06/26
06/27
06/28
06/29
06/30
01/23/13
/home/hroarty/codar/BPU/average_radial_plots/wrapper_avg_rad_vel_monthly_June_on.m

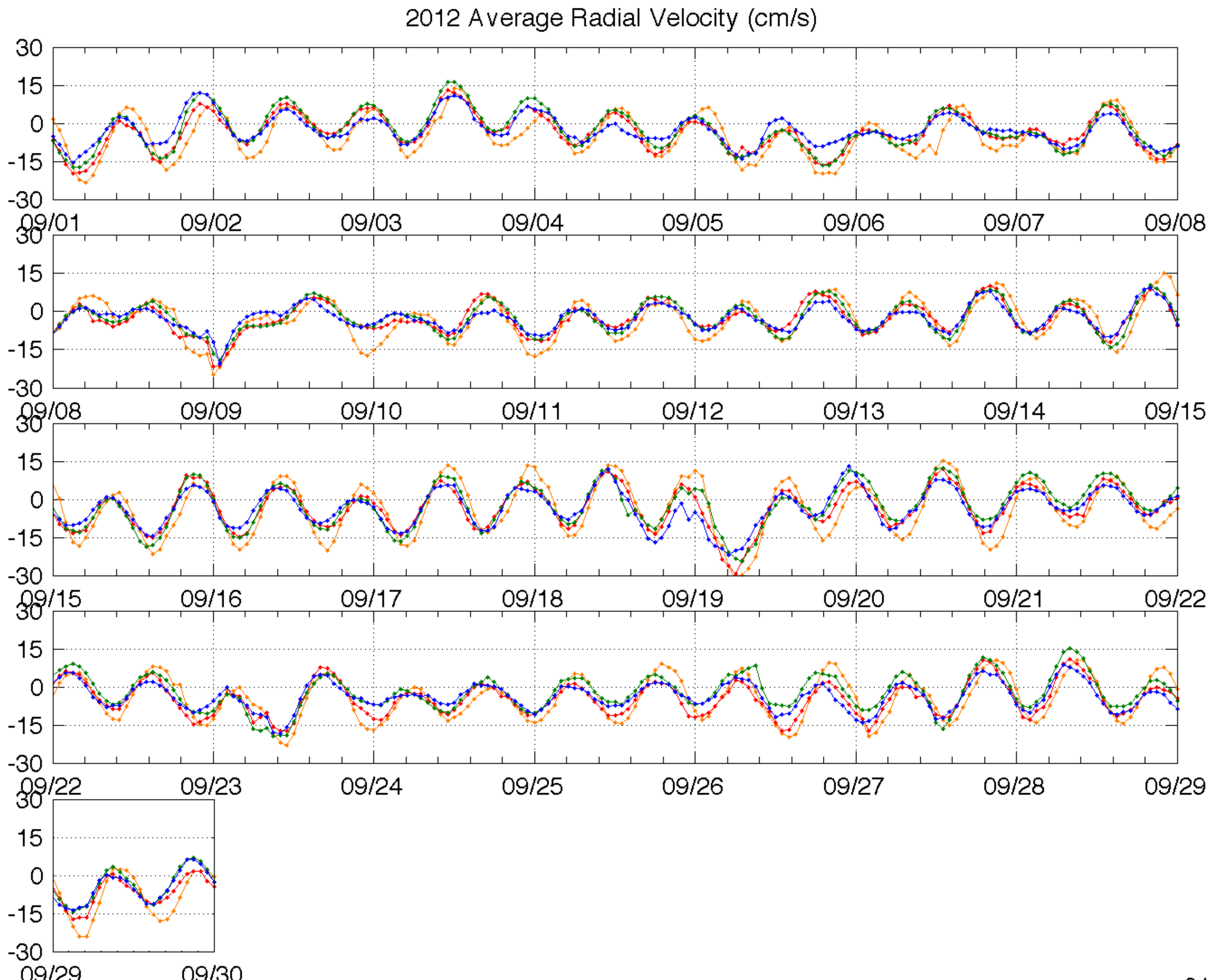

2012 Average Radial Velocity (cm/s)
30
15
0
-15
-30
07/01
07/02
07/03
07/04
07/05
07/06
07/07
07/08
07/09
07/10
07/11
07/12
07/13
07/14
07/15
07/16
07/17
07/18
07/19
07/20
07/21
07/22
07/23
07/24
07/25
07/26
07/27
07/28
07/29
01/23/13
/home/hroarty/codar/BPU/average_radial_plots/wrapper_avg_rad_vel_monthly_June_on.m

2012 Average Radial Velocity (cm/s)



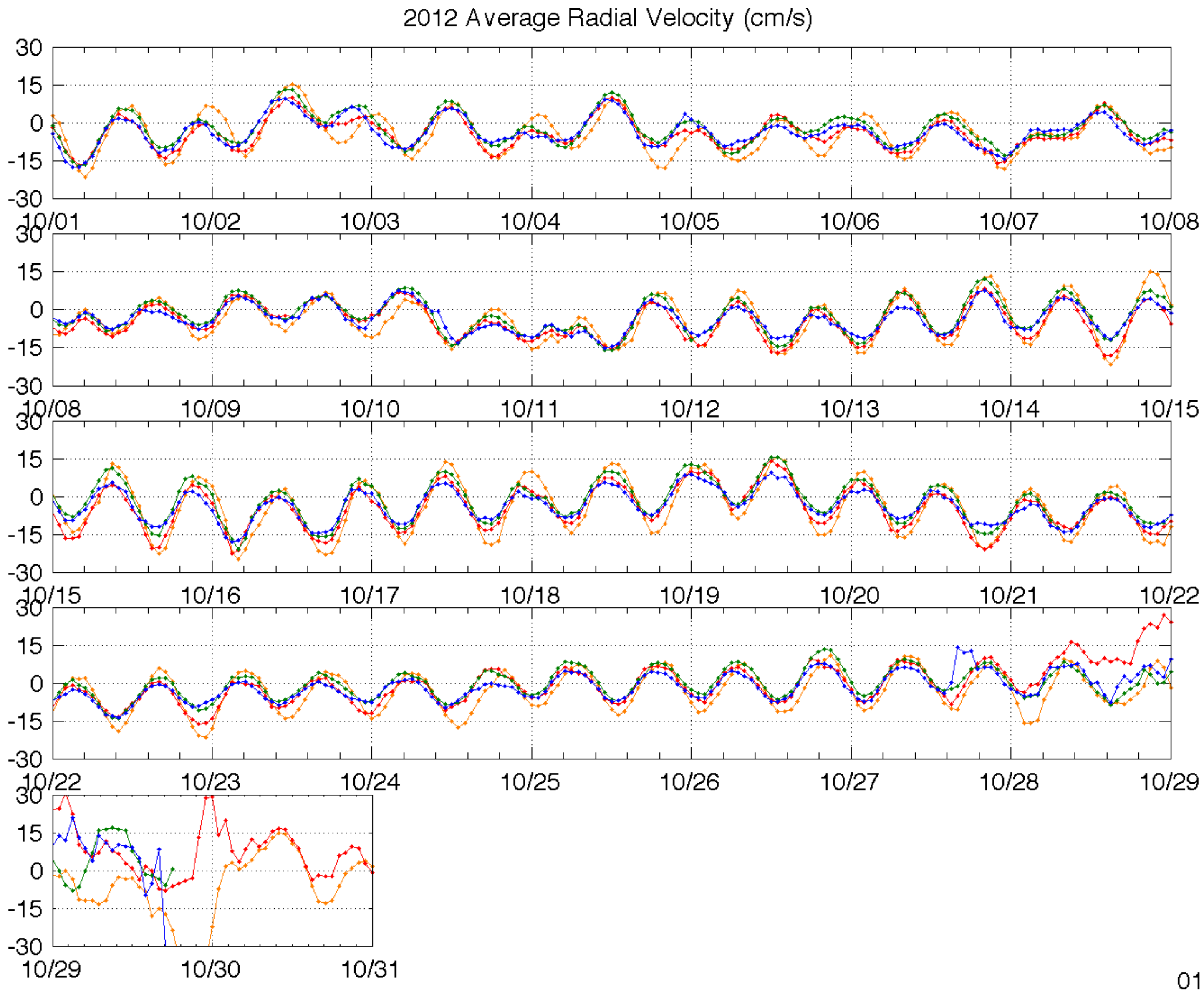
01/23/13

/home/hroarty/codar/BPU/average_radial_plots/wrapper_avg_rad_vel_monthly_June_on.m



01/23/13

/home/hroarty/codar/BPU/average_radial_plots/wrapper_avg_rad_vel_monthly_June_on.m



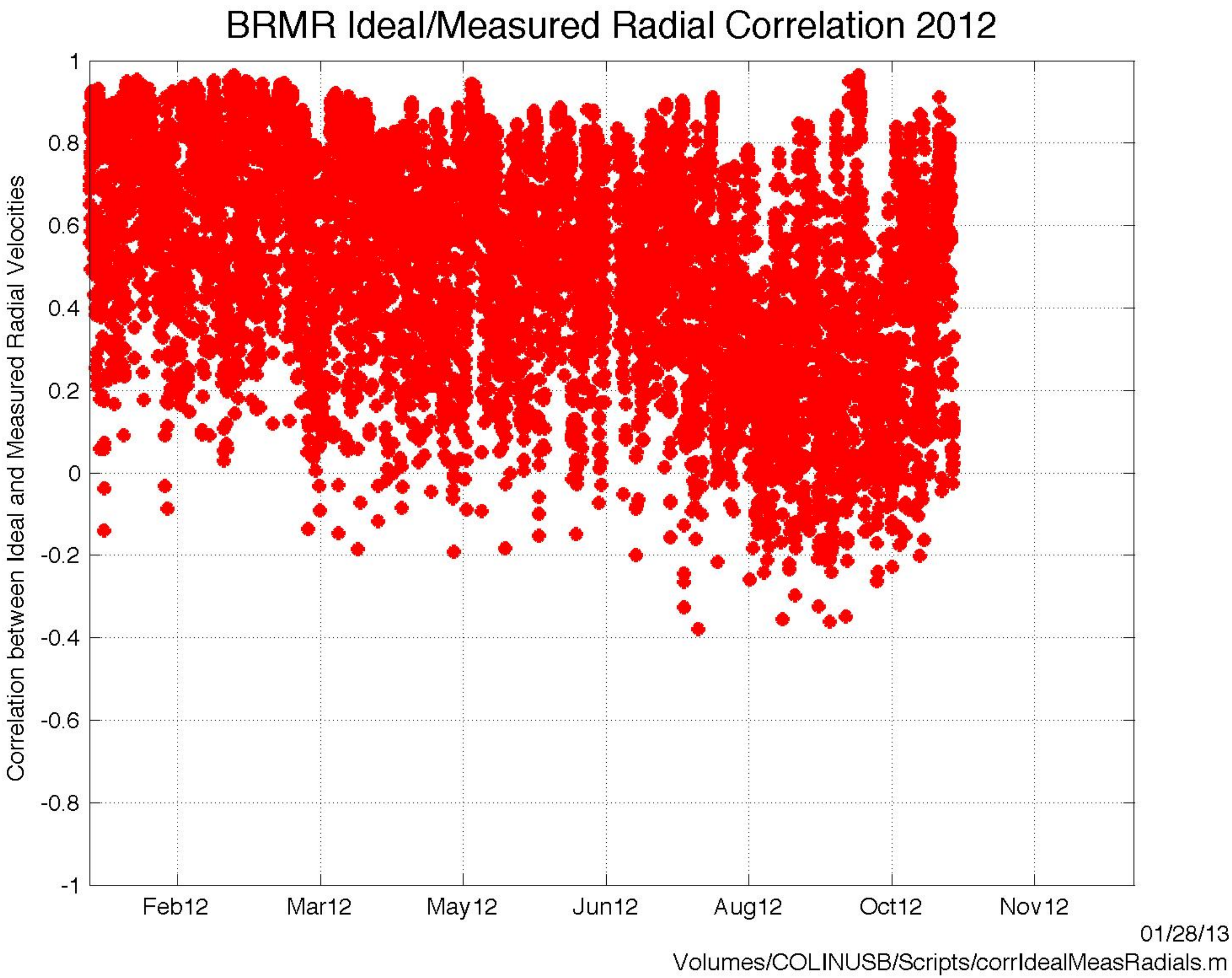
01/23/13

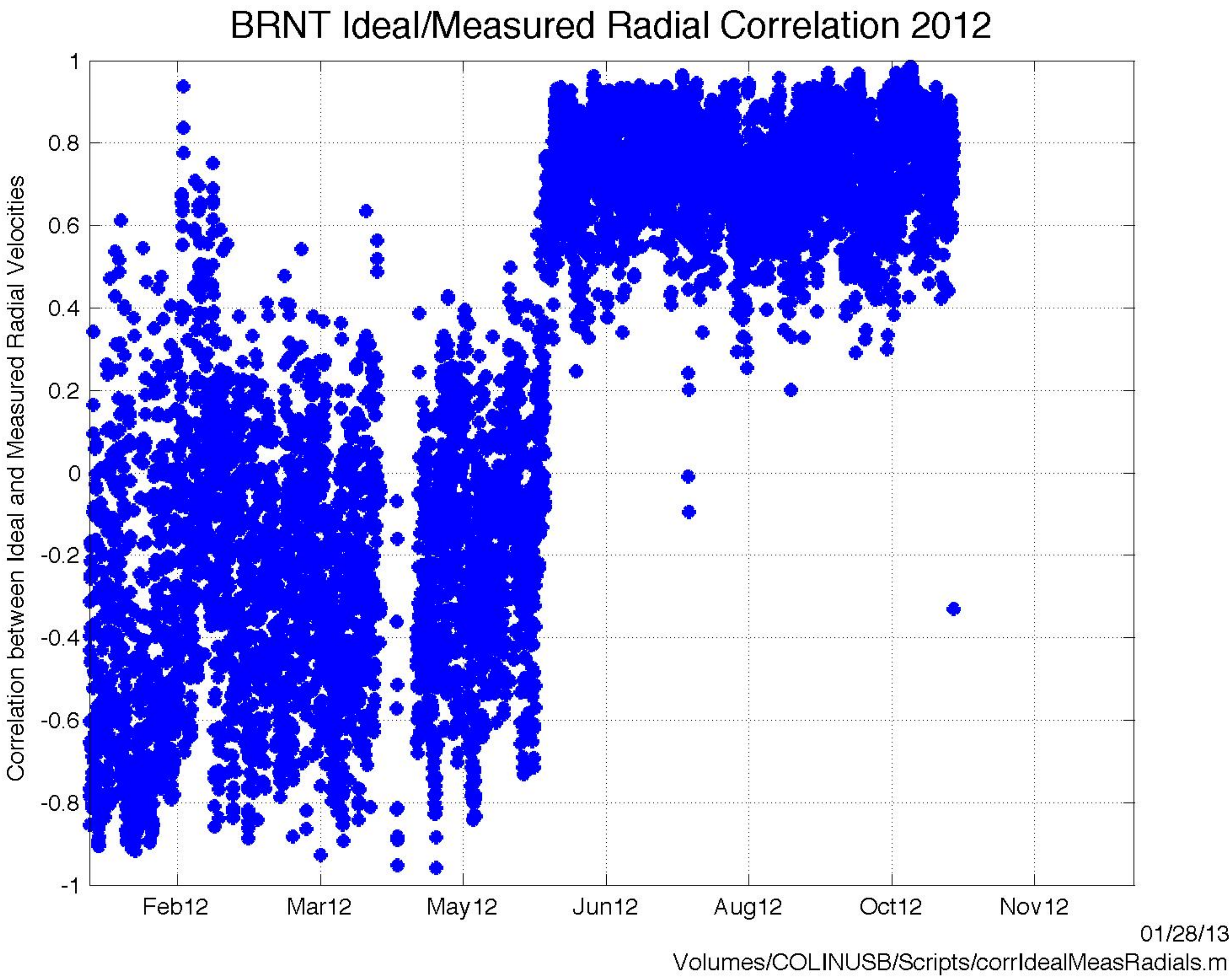
/home/hroarty/codar/BPU/average_radial_plots/wrapper_avg_rad_vel_monthly_June_on.m

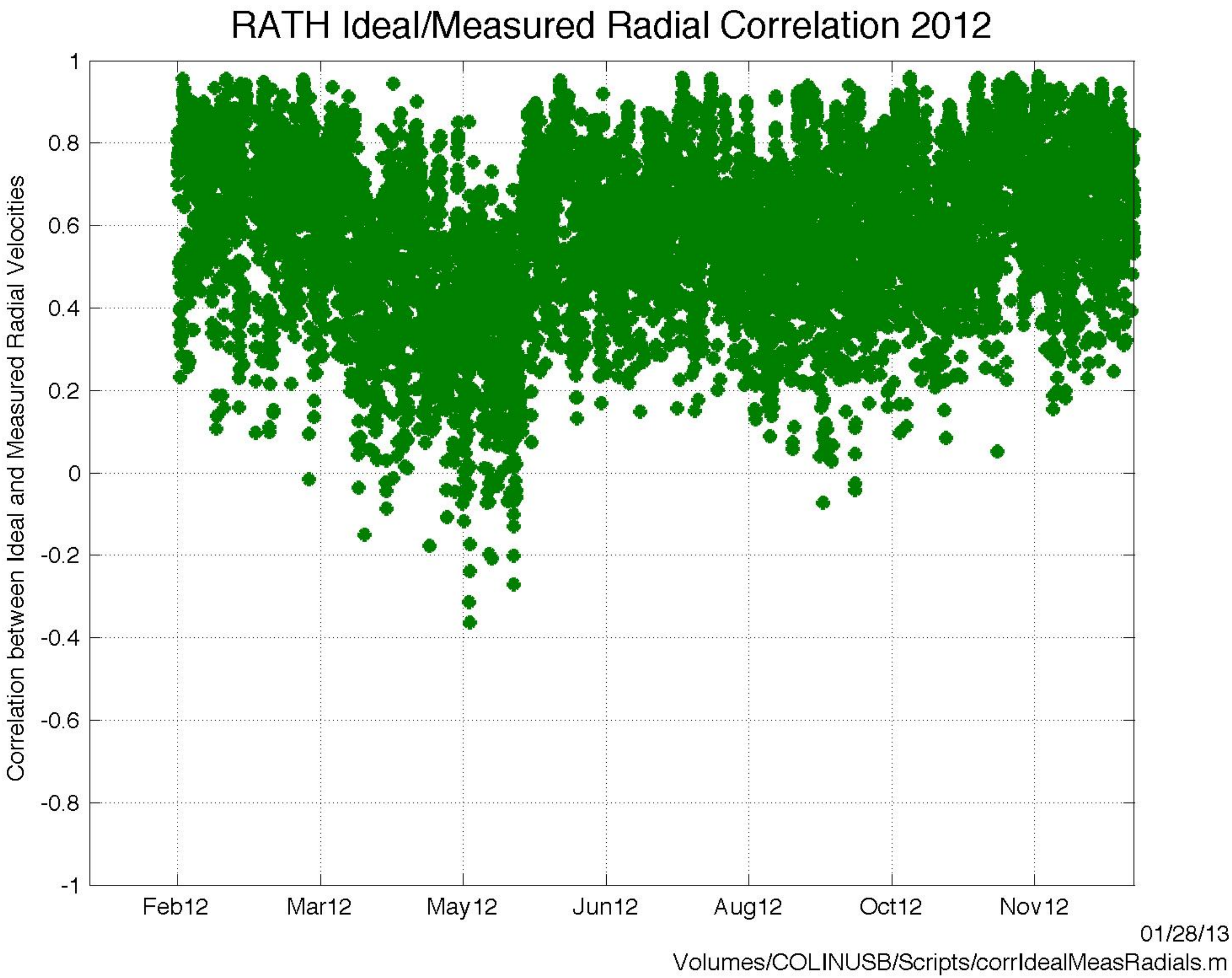
Section 08:

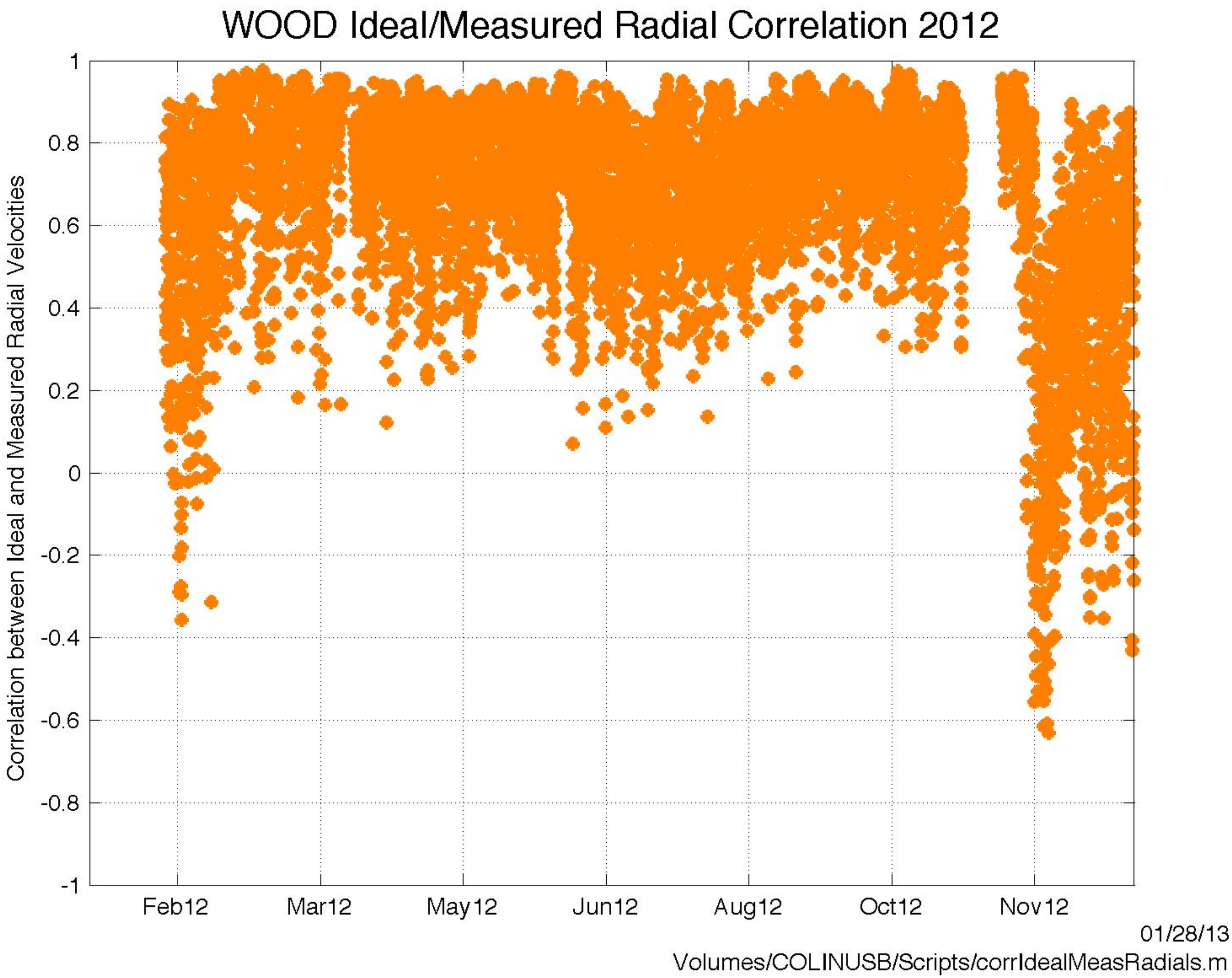
BPU
Ideal and Measured Radial Correlation Time Series Plots

January 1, 2012 to December 31, 2012


BRMR Ideal/Measured Radial Correlation 2012
Correlation between Ideal and Measured Radial Velocities
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Feb12
Mar12
May12
Jun12
Aug12
Oct12
Nov12
01/28/13
Volumes/COLINUSB/Scripts/corrIdealMeasRadials.m


BRNT Ideal/Measured Radial Correlation 2012
Correlation between Ideal and Measured Radial Velocities
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Feb12
Mar12
May12
Jun12
Aug12
Oct12
Nov12
01/28/13
Volumes/COLINUSB/Scripts/corrIdealMeasRadials.m


RATH Ideal/Measured Radial Correlation 2012
Correlation between Ideal and Measured Radial Velocities
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Feb12
Mar12
May12
Jun12
Aug12
Oct12
Nov12
01/28/13
Volumes/COLINUSB/Scripts/corrIdealMeasRadials.m



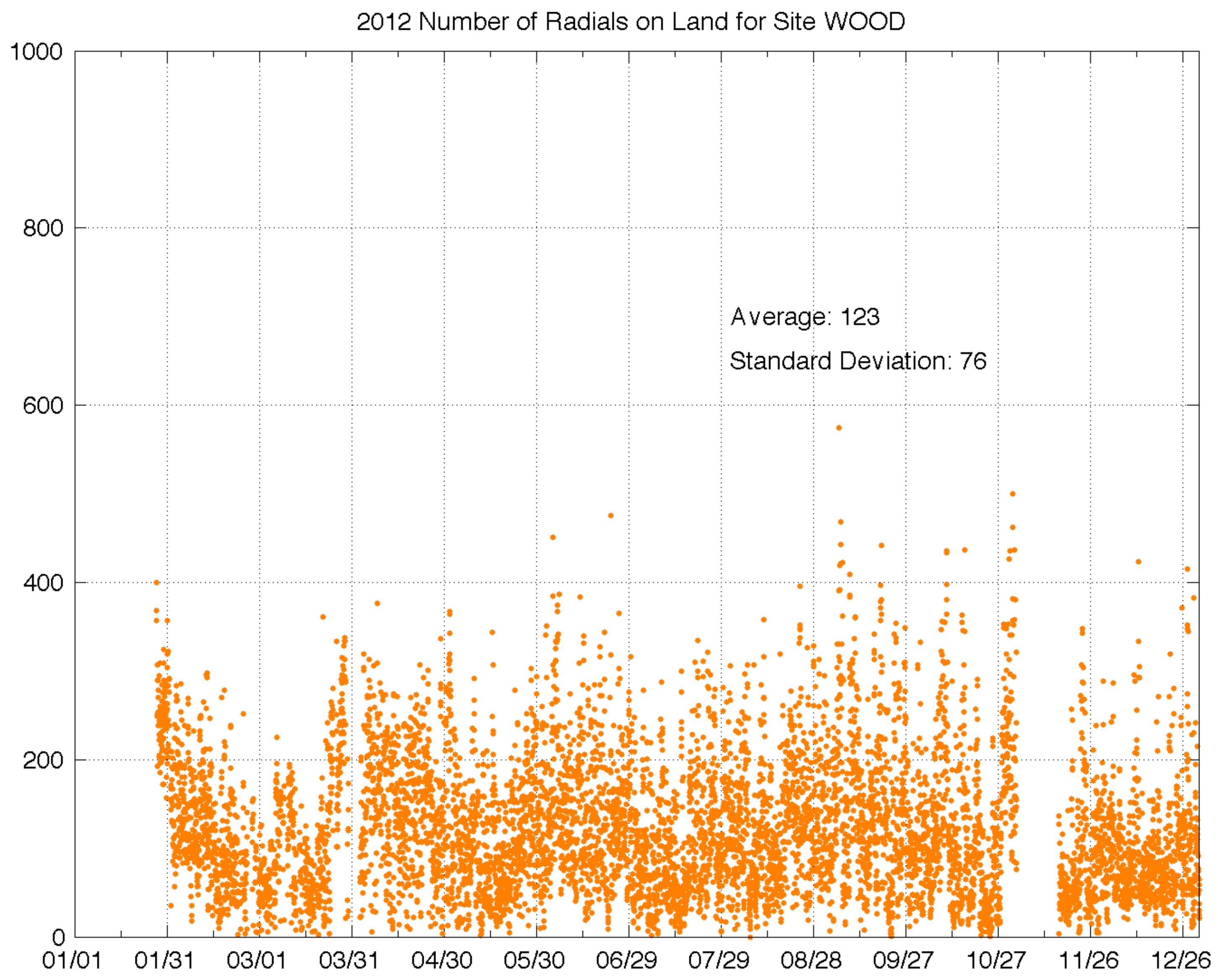
WOOD Ideal/Measured Radial Correlation 2012
Correlation between Ideal and Measured Radial Velocities
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Feb12
Mar12
May12
Jun12
Aug12
Oct12
Nov12
01/28/13
Volumes/COLINUSB/Scripts/corrIdealMeasRadials.m

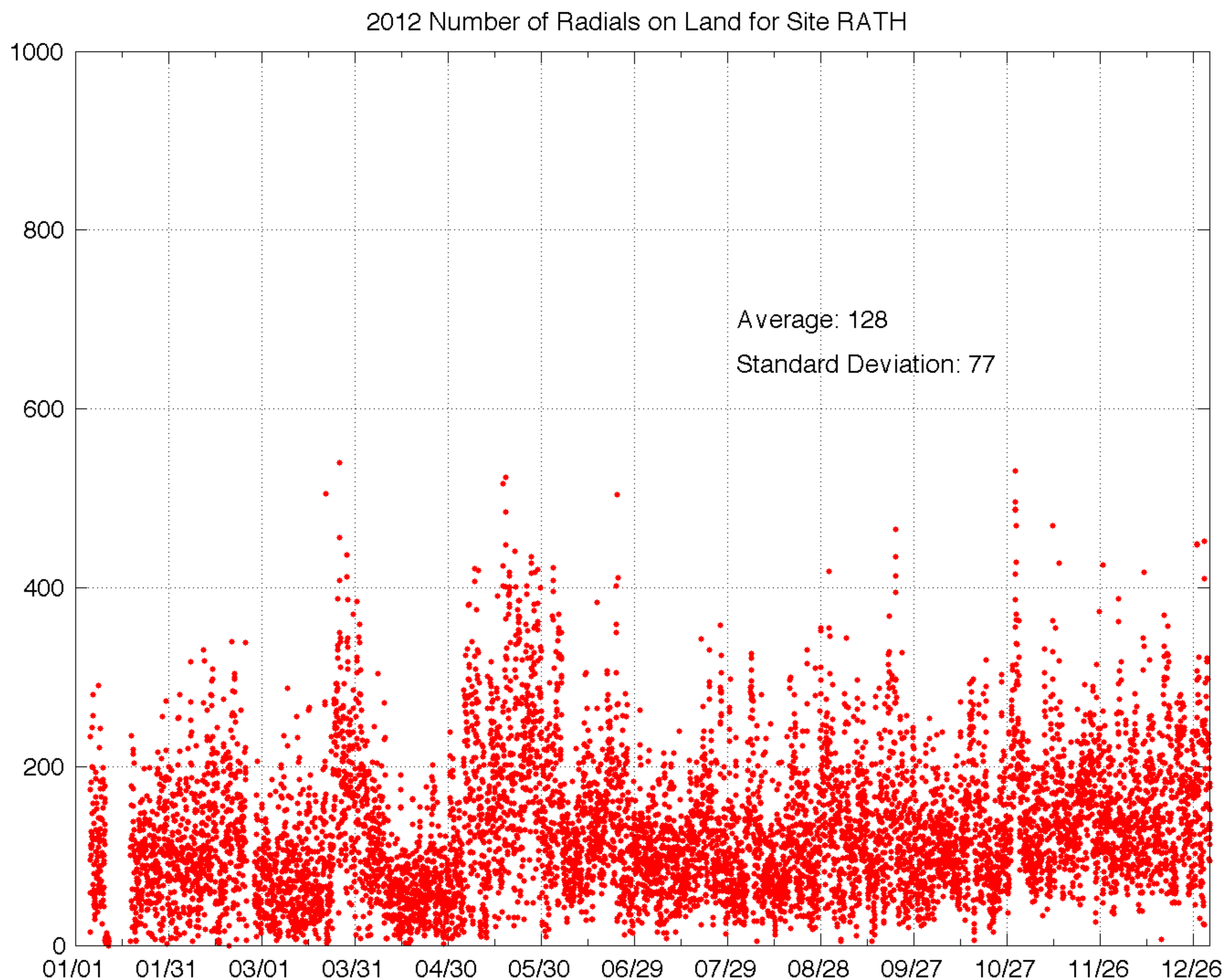
Section 09:

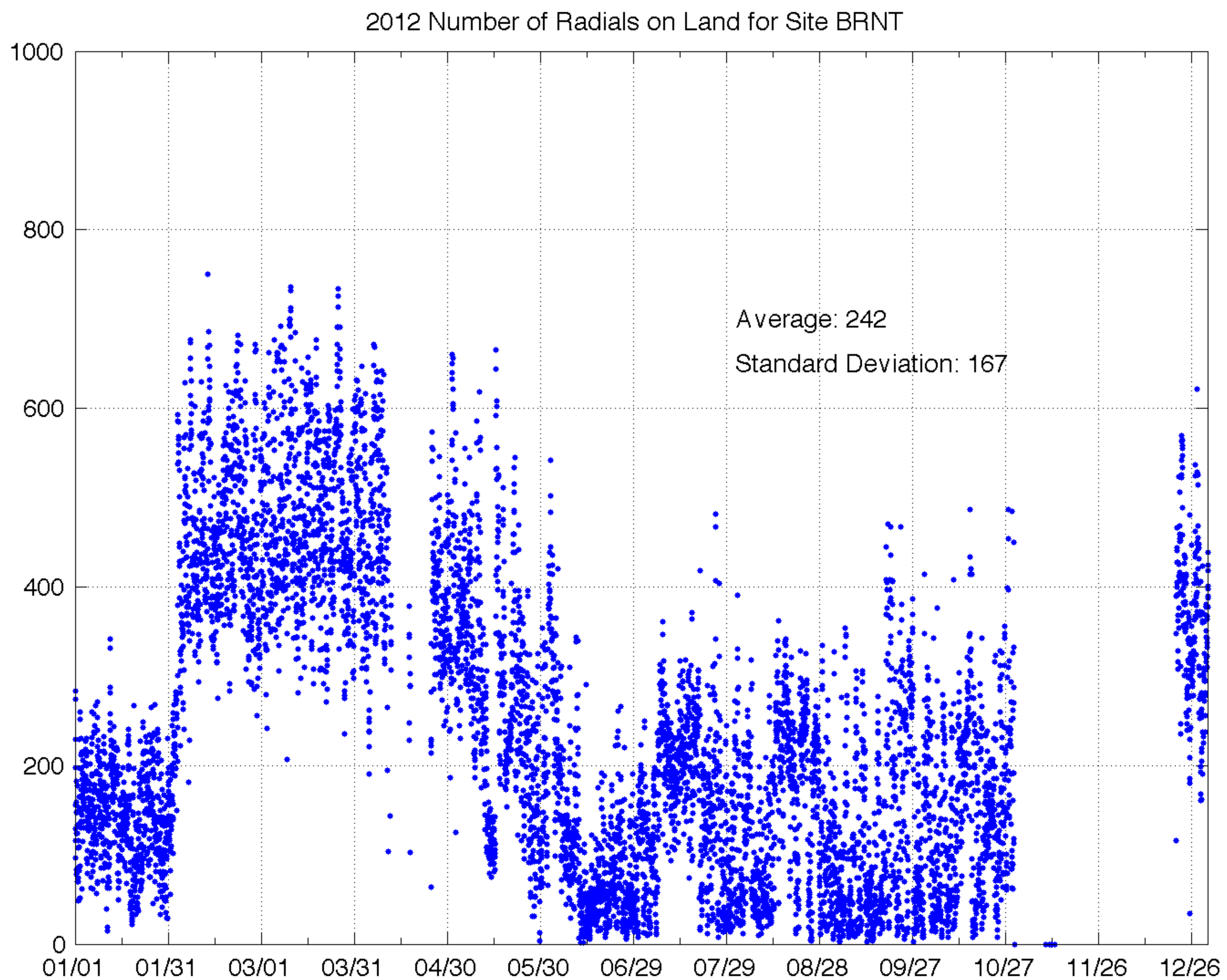
BPU
Ideal Radials Filtered by Land Mask

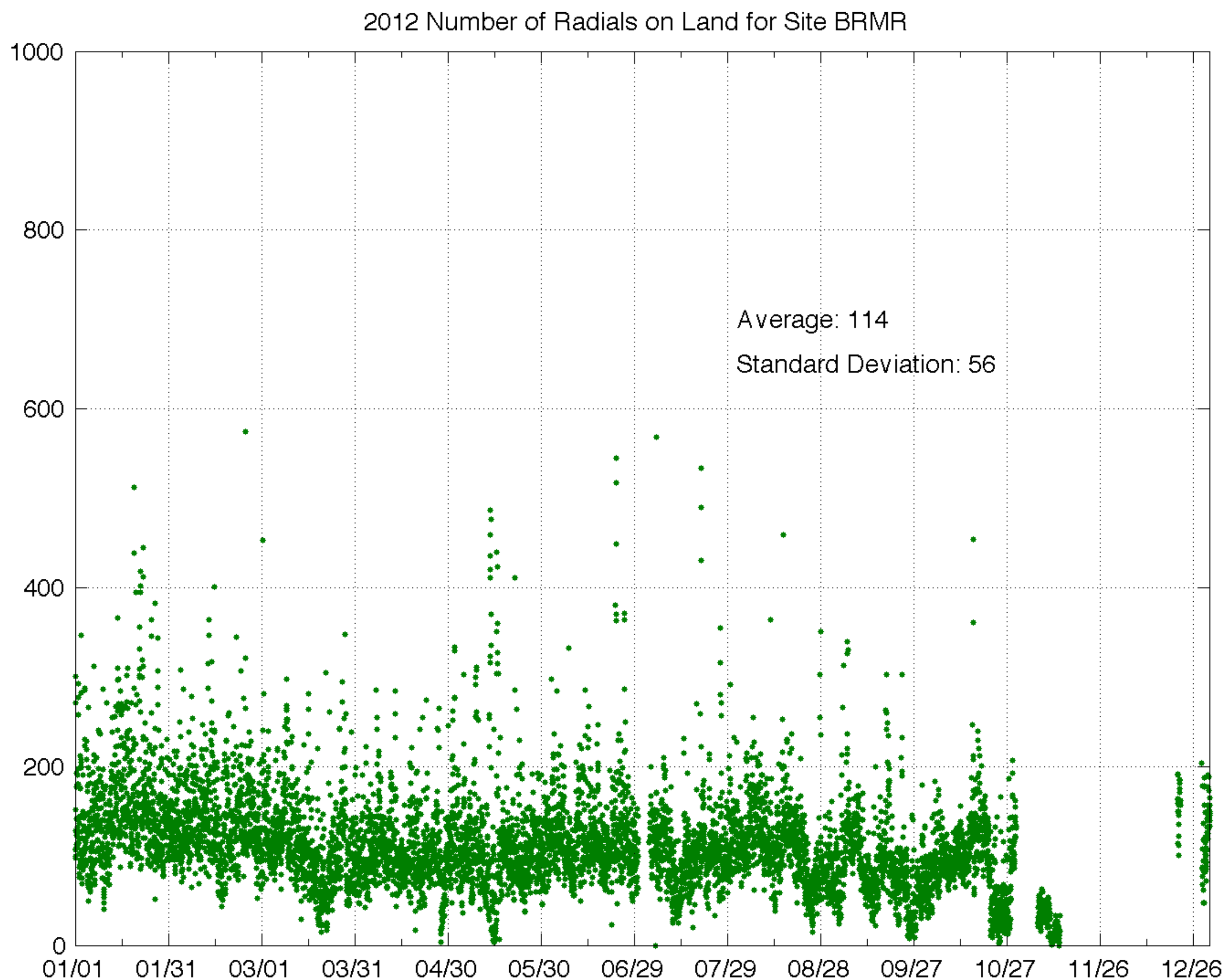
January 1, 2012 to December 31, 2012

NUMBER
IDEAL RADIALS FILTERED BY LAND MASK

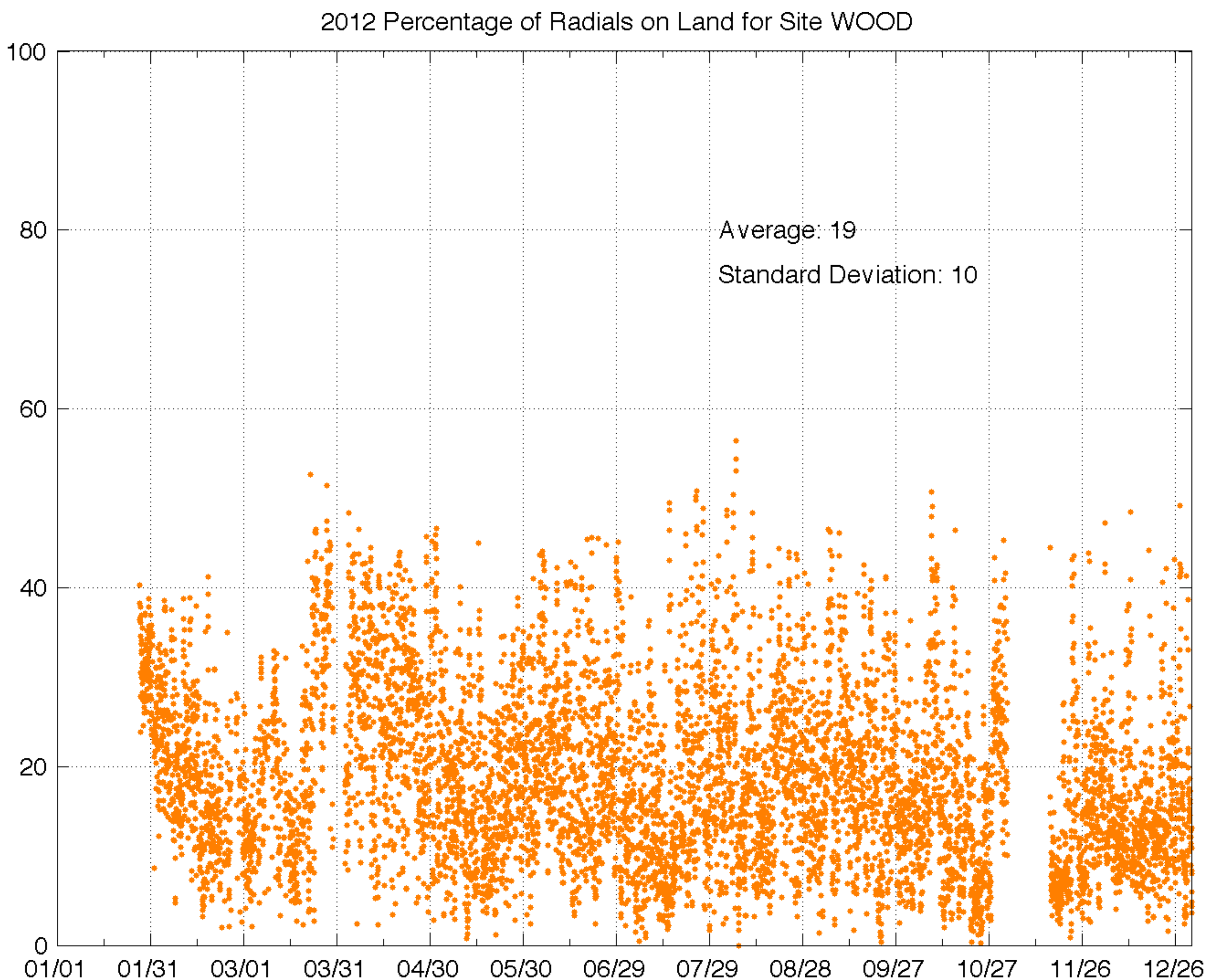

2012 Number of Radials on Land for Site WOOD
Average: 123
Standard Deviation: 76
1000
800
600
400
200
0
01/01
01/31
03/01
03/31
04/30
05/30
06/29
07/29
08/28
09/27
10/27
11/26
12/26

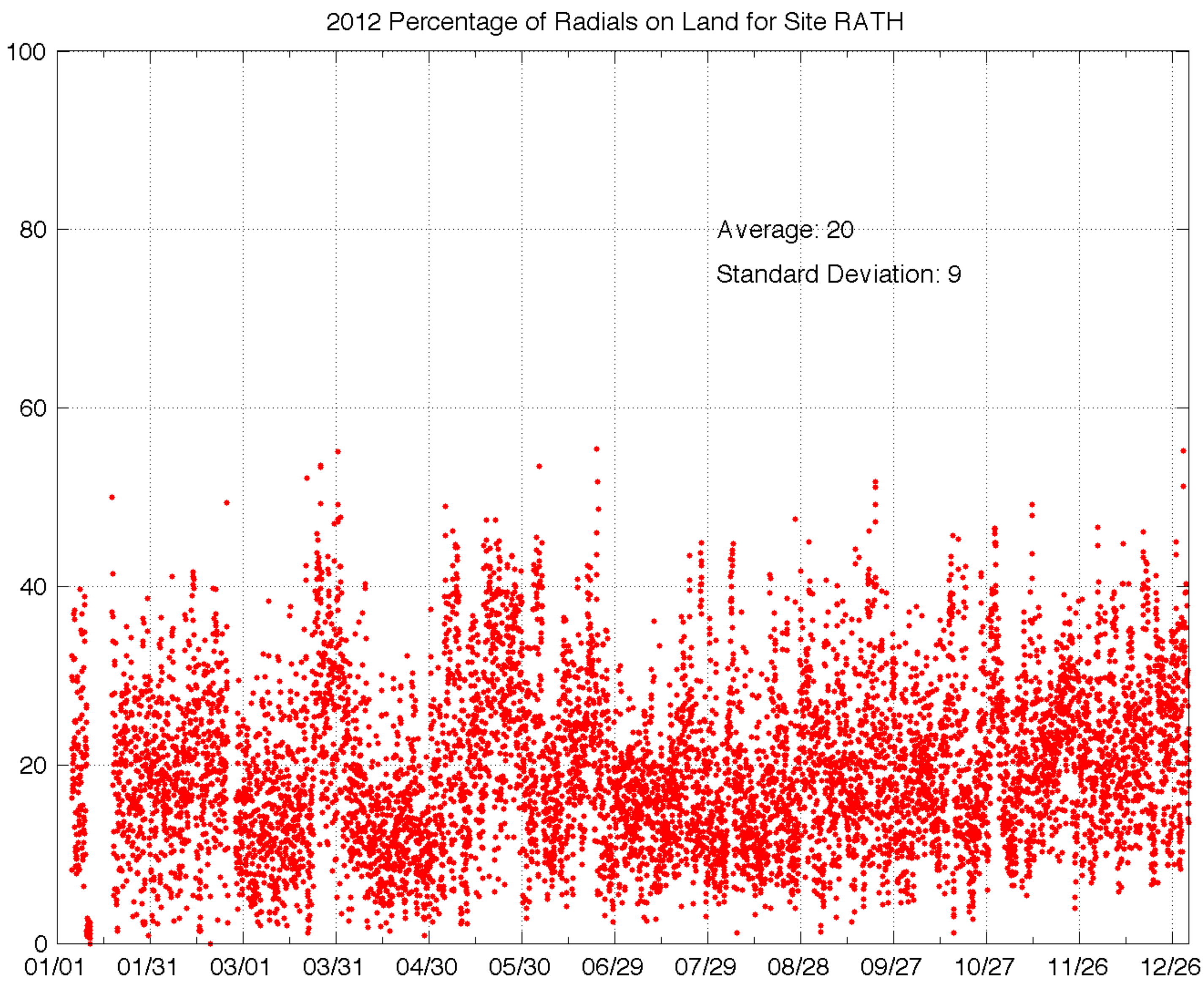

2012 Number of Radials on Land for Site RATH
Average: 128
Standard Deviation: 77
1000
800
600
400
200
0
01/01
01/31
03/01
03/31
04/30
05/30
06/29
07/29
08/28
09/27
10/27
11/26
12/26

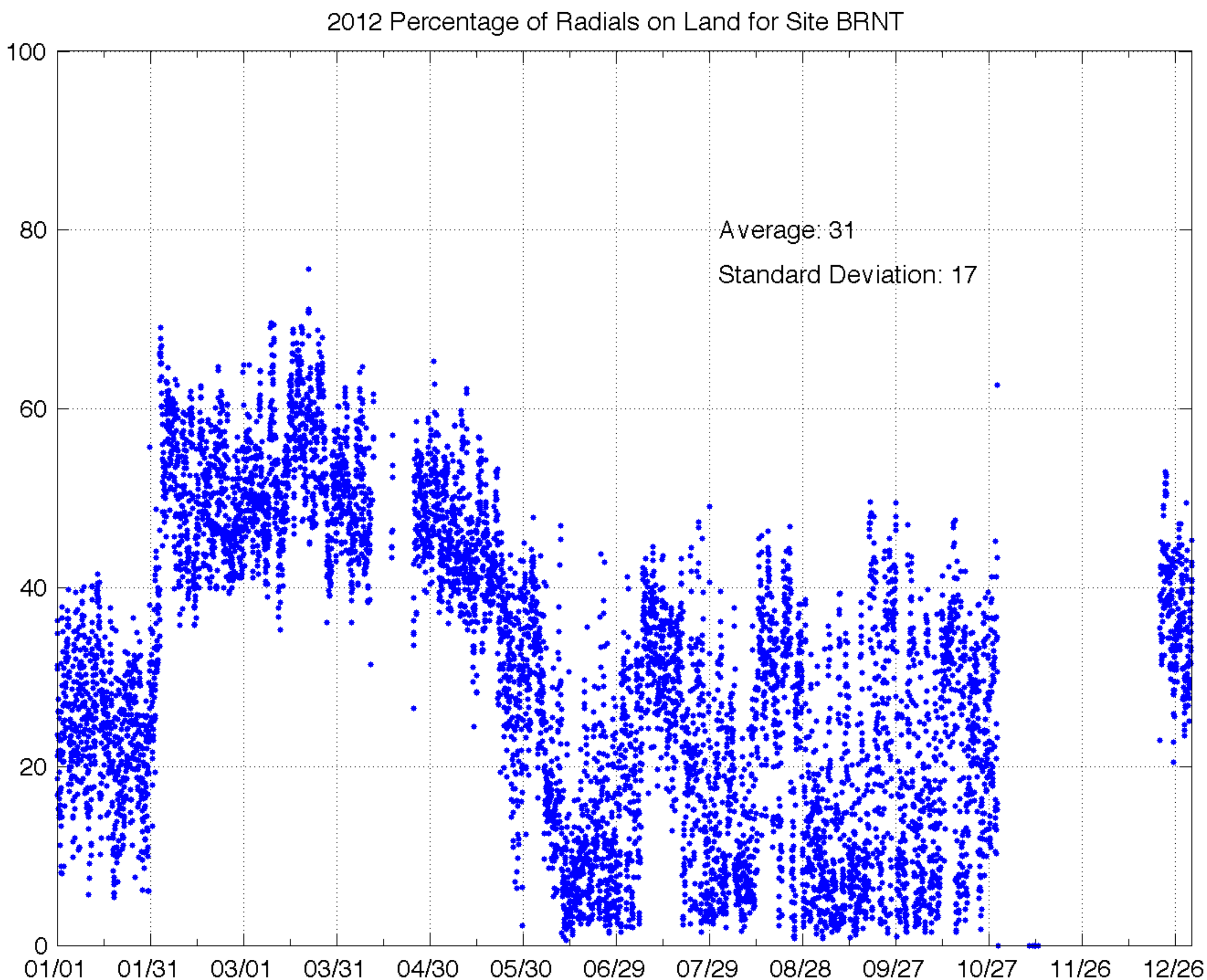

2012 Number of Radials on Land for Site BRNT
Average: 242
Standard Deviation: 167
1000
800
600
400
200
0
01/01
01/31
03/01
03/31
04/30
05/30
06/29
07/29
08/28
09/27
10/27
11/26
12/26


2012 Number of Radials on Land for Site BRMR
Average: 114
Standard Deviation: 56
1000
800
600
400
200
0
01/01
01/31
03/01
03/31
04/30
05/30
06/29
07/29
08/28
09/27
10/27
11/26
12/26

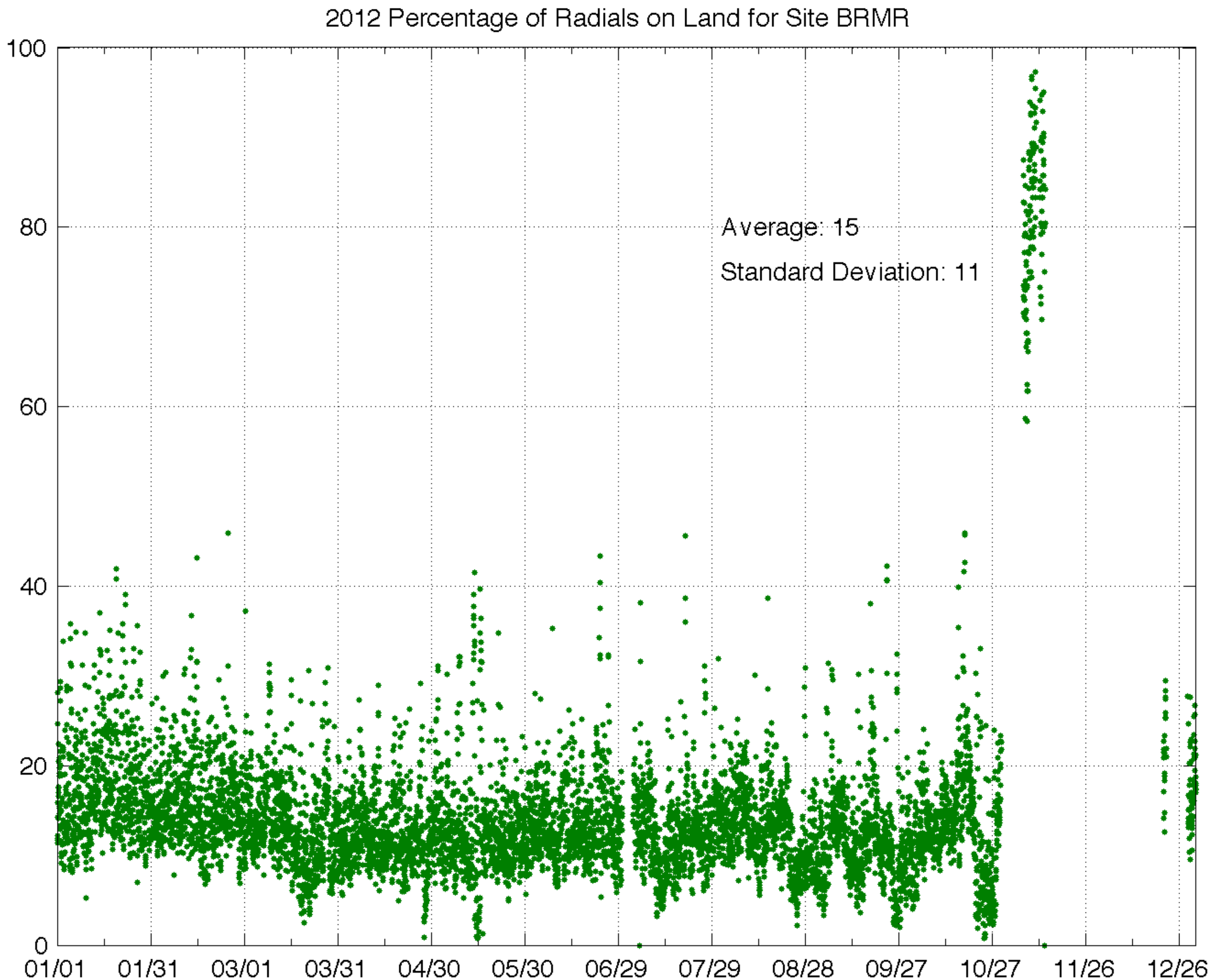
PERCENTAGE IDEAL RADIALS FILTERED BY LAND MASK


2012 Percentage of Radials on Land for Site WOOD
Average: 19
Standard Deviation: 10
100
80
60
40
20
0
01/01
01/31
03/01
03/31
04/30
05/30
06/29
07/29
08/28
09/27
10/27
11/26
12/26


2012 Percentage of Radials on Land for Site RATH
Average: 20
Standard Deviation: 9
100
80
60
40
20
0
01/01
01/31
03/01
03/31
04/30
05/30
06/29
07/29
08/28
09/27
10/27
11/26
12/26



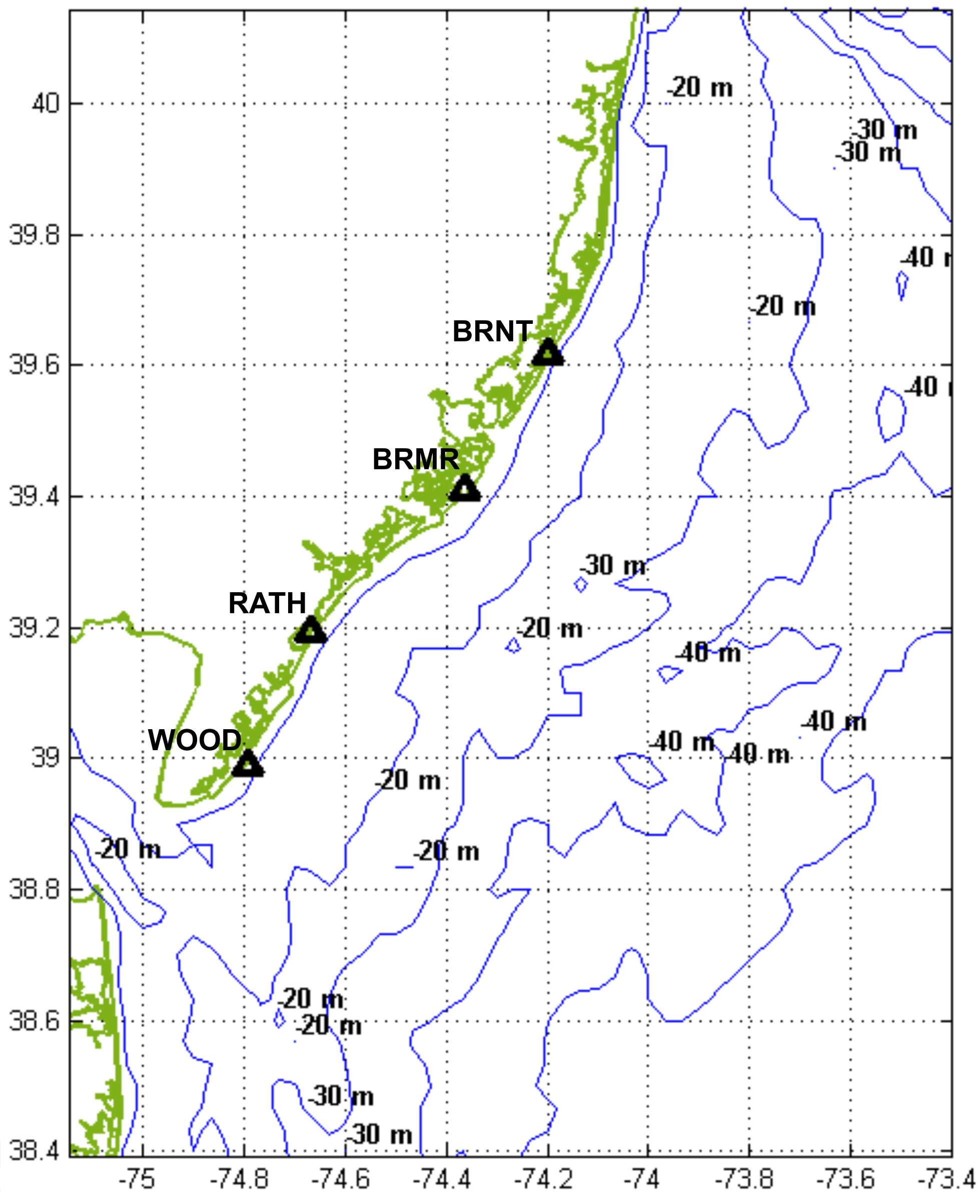
2012 Percentage of Radials on Land for Site BRNT
Average: 31
Standard Deviation: 17
100
80
60
40
20
0
01/01
01/31
03/01
03/31
04/30
05/30
06/29
07/29
08/28
09/27
10/27
11/26
12/26

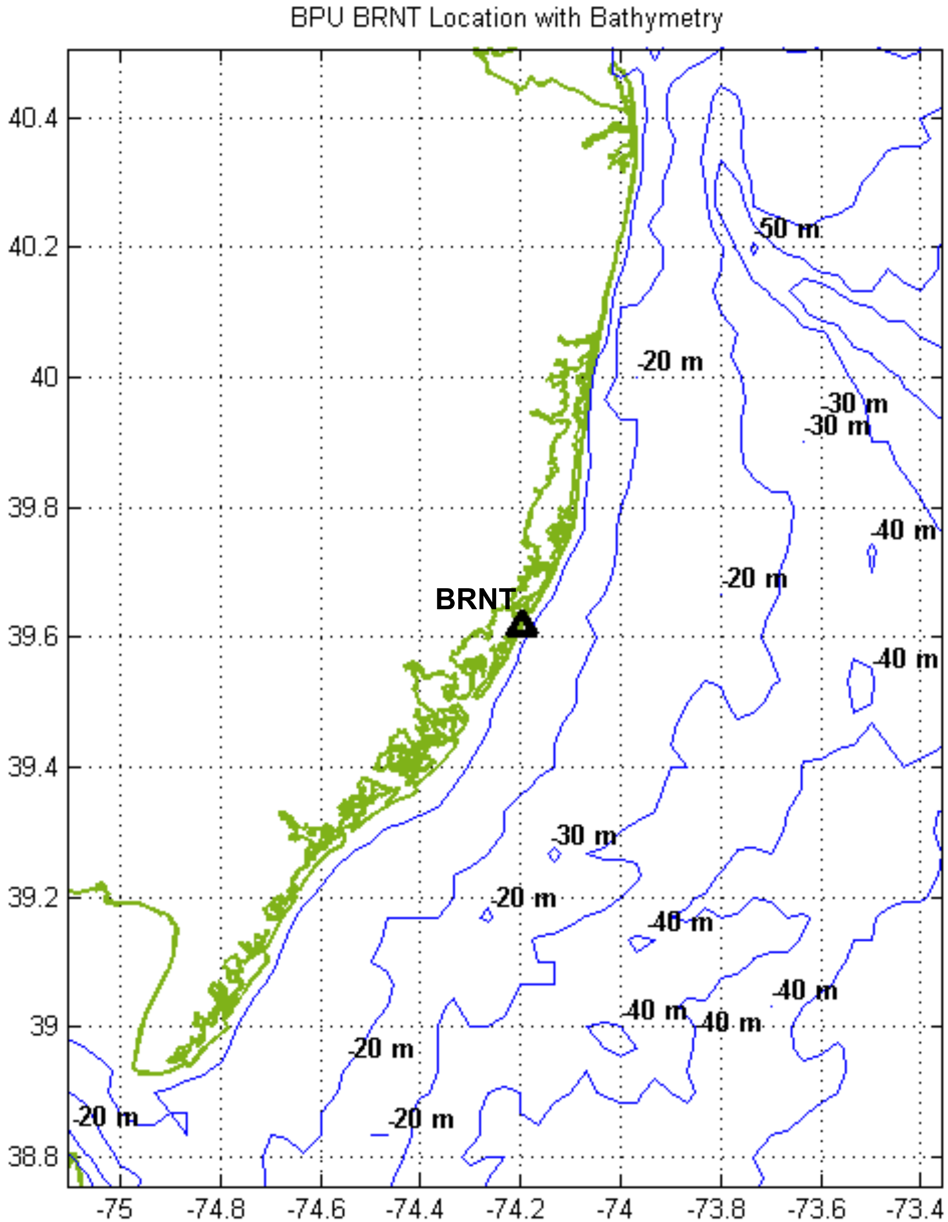

2012 Percentage of Radials on Land for Site BRMR
Average: 15
Standard Deviation: 11
100
80
60
40
20
0
01/01
01/31
03/01
03/31
04/30
05/30
06/29
07/29
08/28
09/27
10/27
11/26
12/26

Section 10:

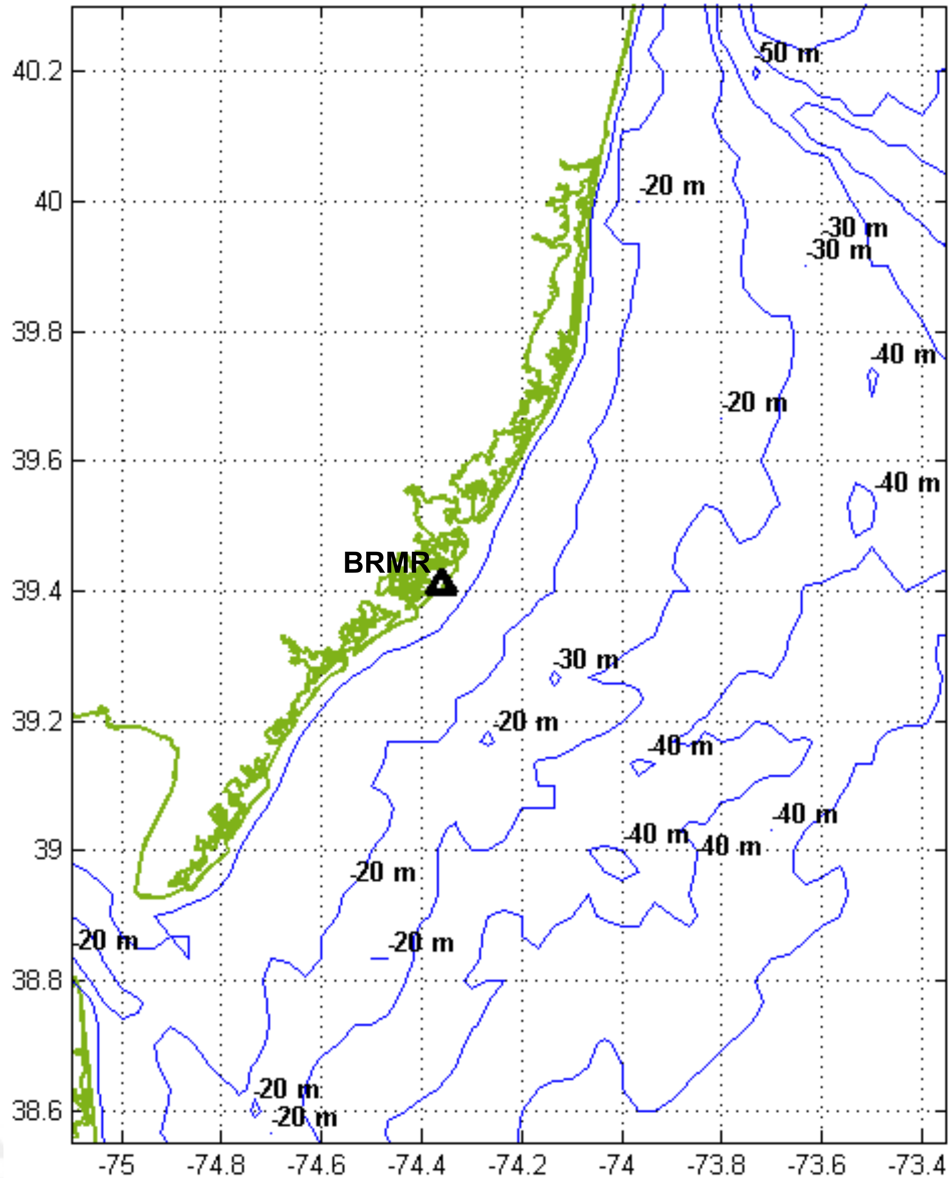
BPU Site Locations with Bathymetry Maps

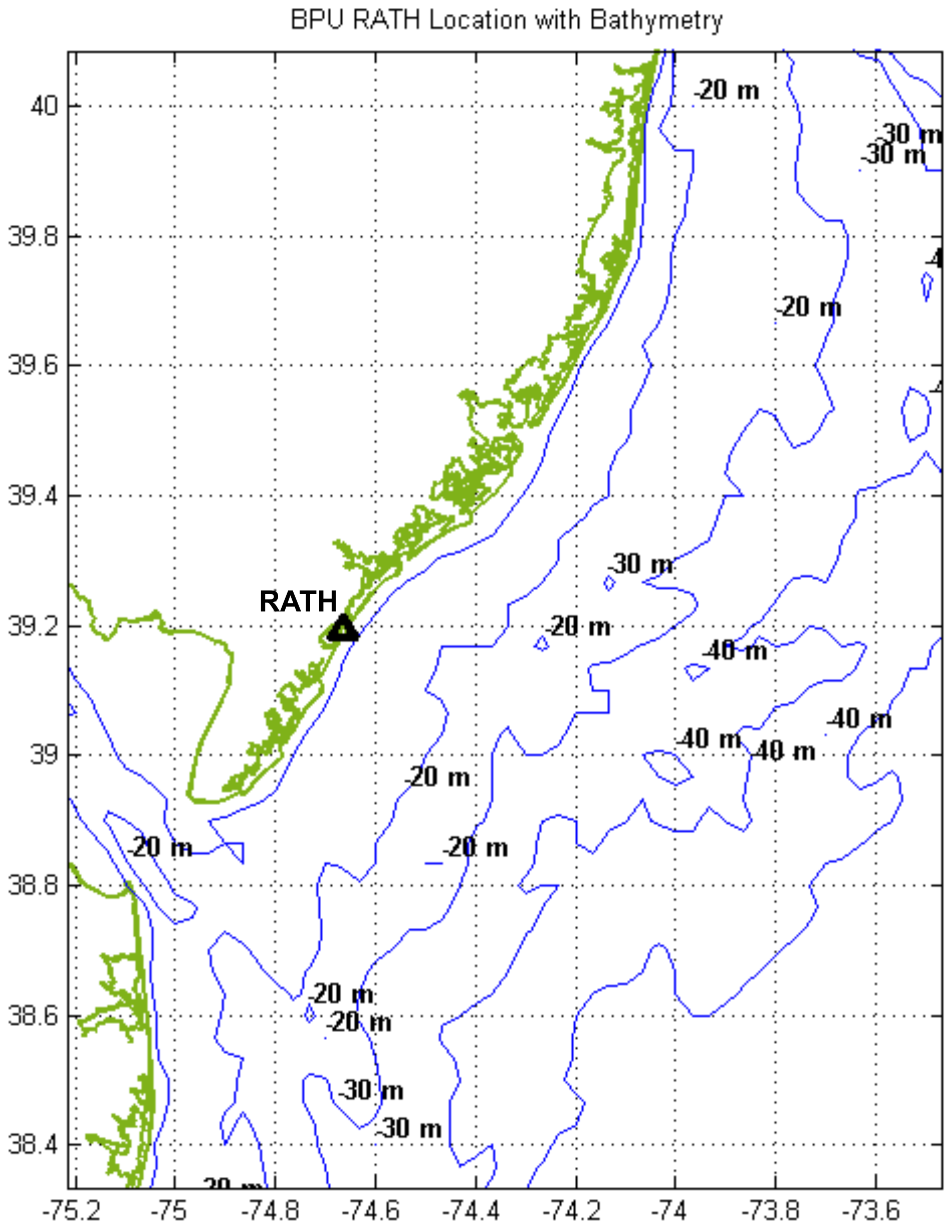
4 BPU Site Locations with Bathymetry



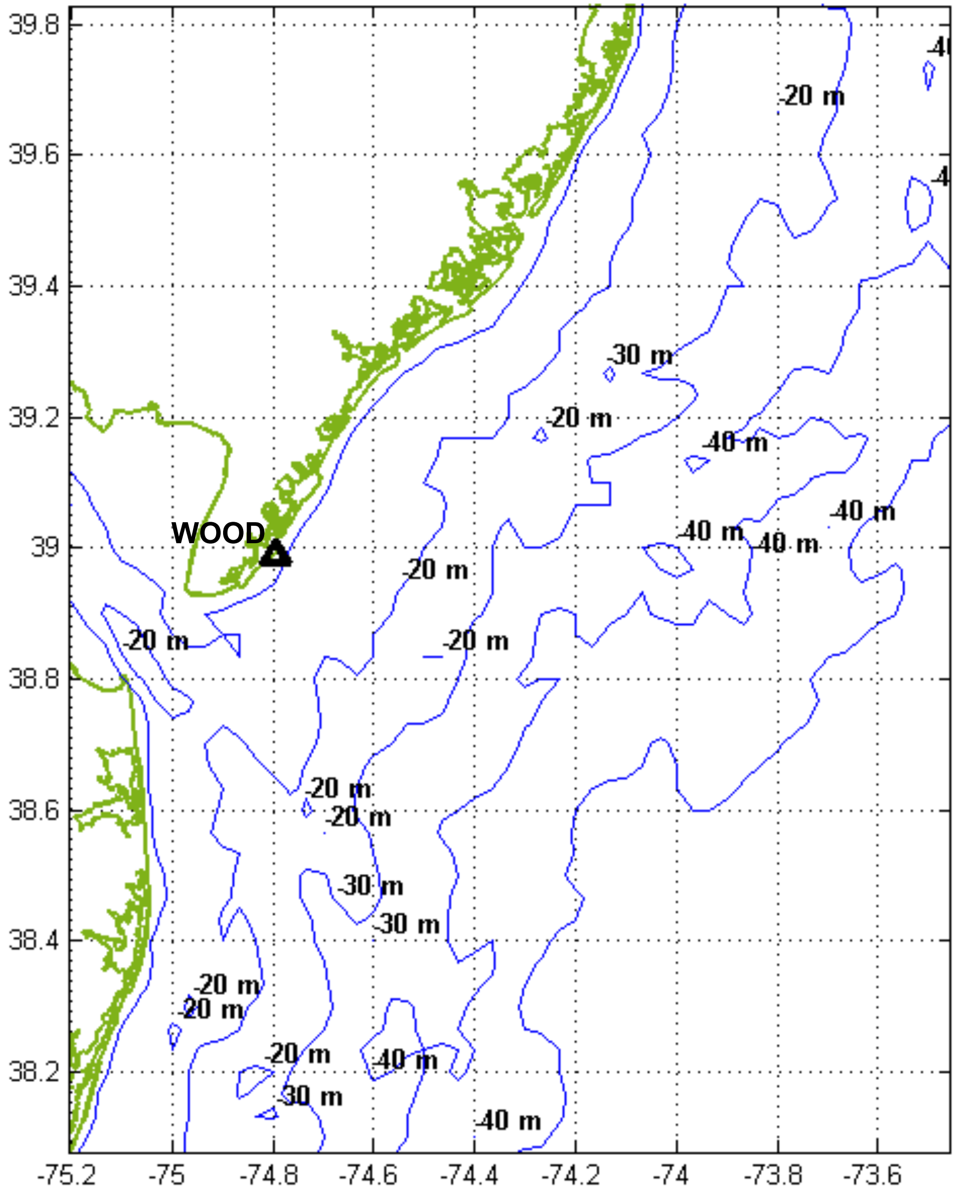

BPU BRNT Location with Bathymetry
BRNT
-20 m
-30 m
-30 m
-40 m
-20 m
-40 m
-50 m
-30 m
-20 m
-40 m
-40 m
-40 m
-40 m
-20 m
-20 m
-20 m
40.4
40.2
40
39.8
39.6
39.4
39.2
39
38.8
-75
-74.8
-74.6
-74.4
-74.2
-74
-73.8
-73.6
-73.4

BPU BRMR Location with Bathymetry




BPU RATH Location with Bathymetry
RATH
-20 m
-30 m
-40 m
40
39.8
39.6
39.4
39.2
39
38.8
38.6
38.4
-75.2
-75
-74.8
-74.6
-74.4
-74.2
-74
-73.8
-73.6

BPU WOOD Location with Bathymetry

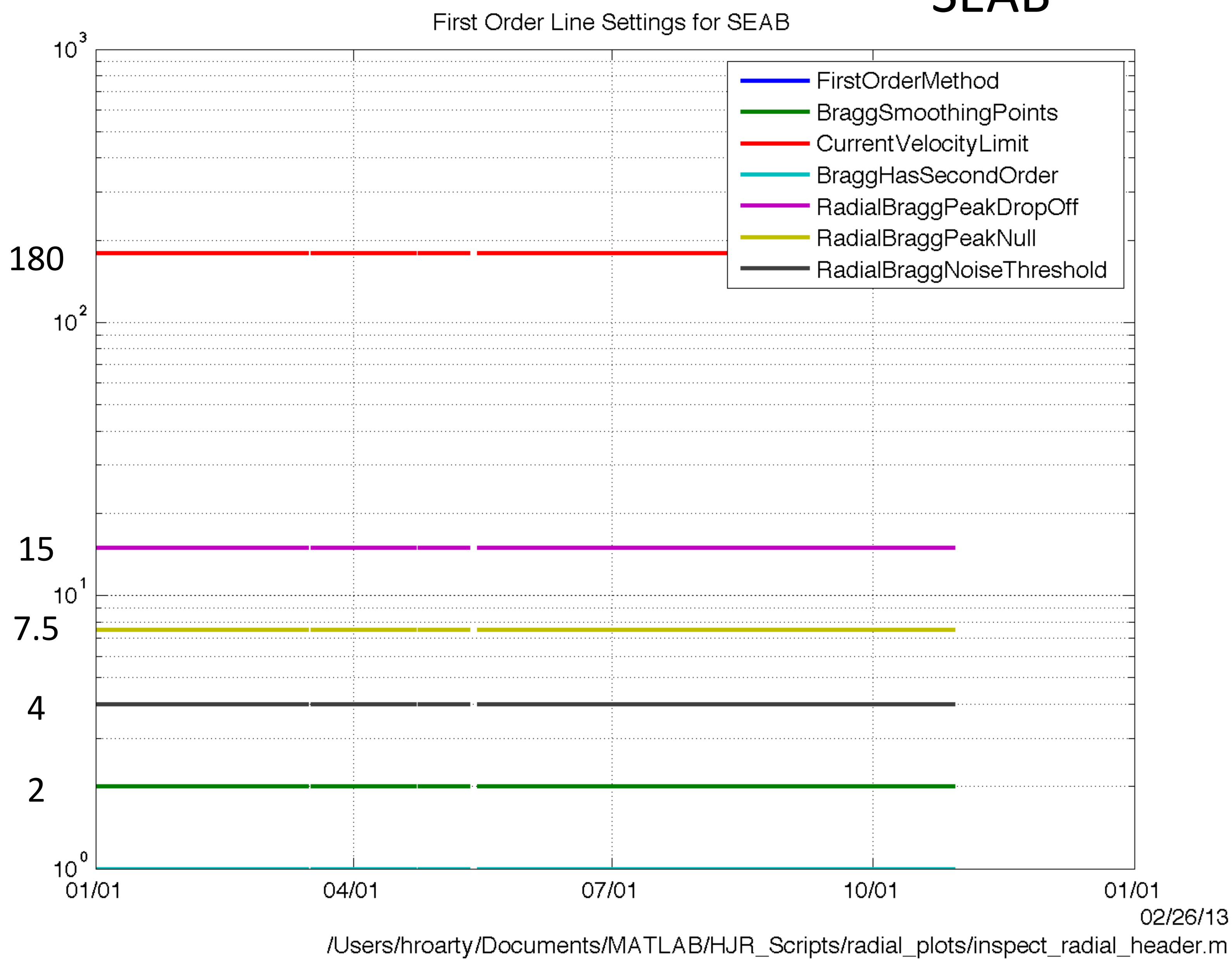


Section 11:

13 MHz First Order Line Setting Inspection

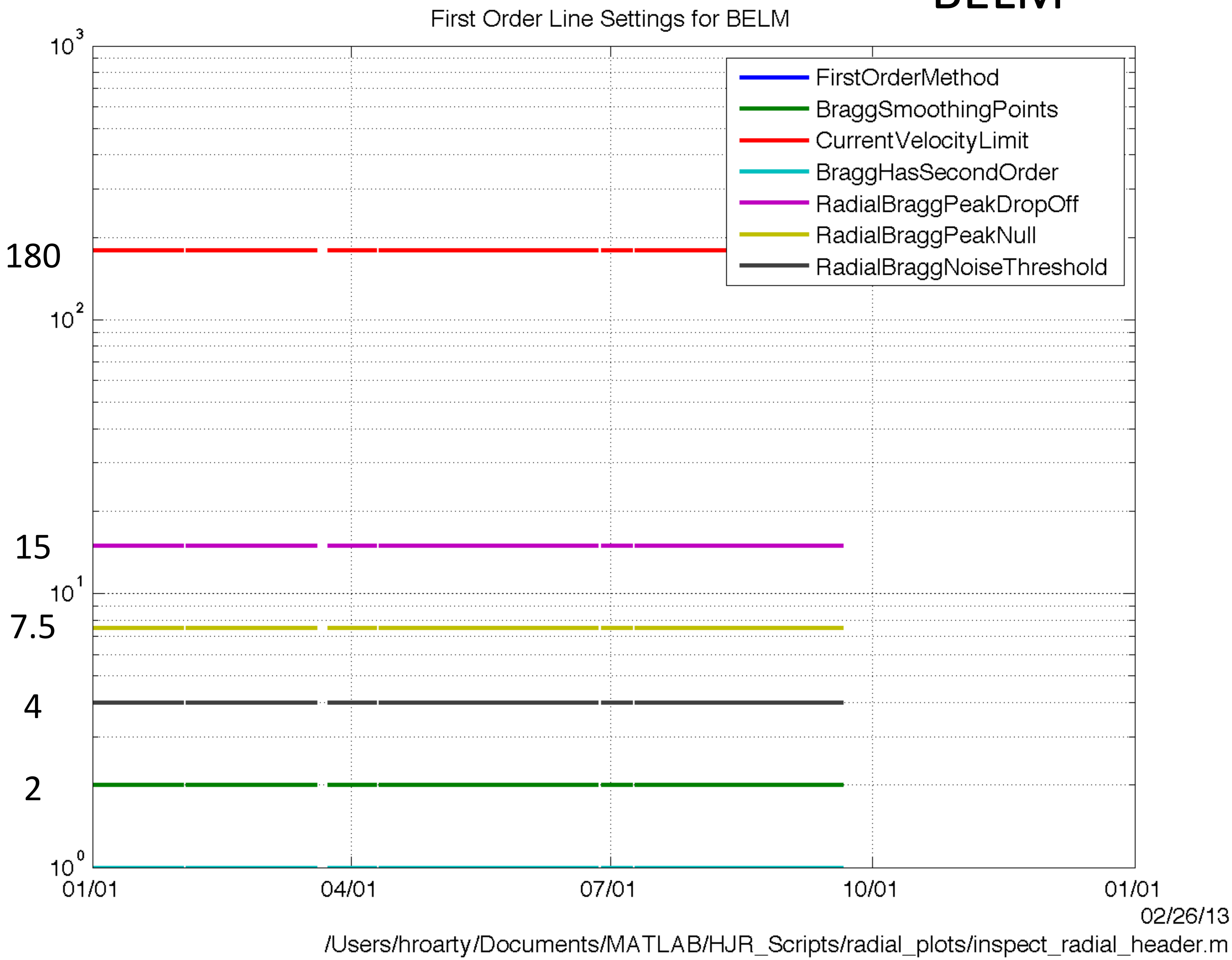
January 1, 2012 to December 31, 2012

SEAB



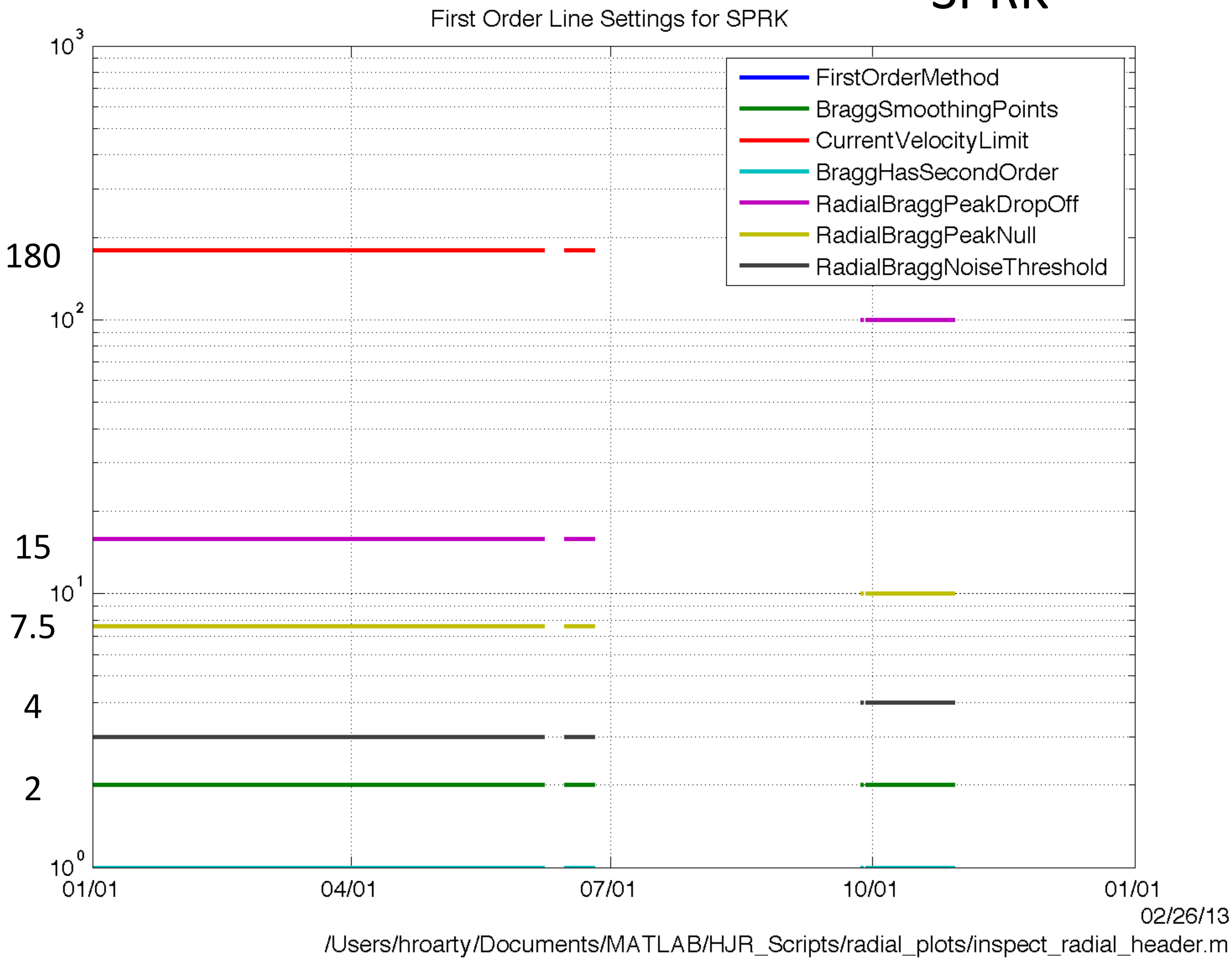
First Order Line Settings for SEAB
FirstOrderMethod
BraggSmoothingPoints
CurrentVelocityLimit
BraggHasSecondOrder
RadialBraggPeakDropOff
RadialBraggPeakNull
RadialBraggNoiseThreshold
180
15
7.5
4
2
10^3
10^2
10^1
10^0
01/01
04/01
07/01
10/01
01/01
02/26/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/radial_plots/inspect_radial_header.m

BELM



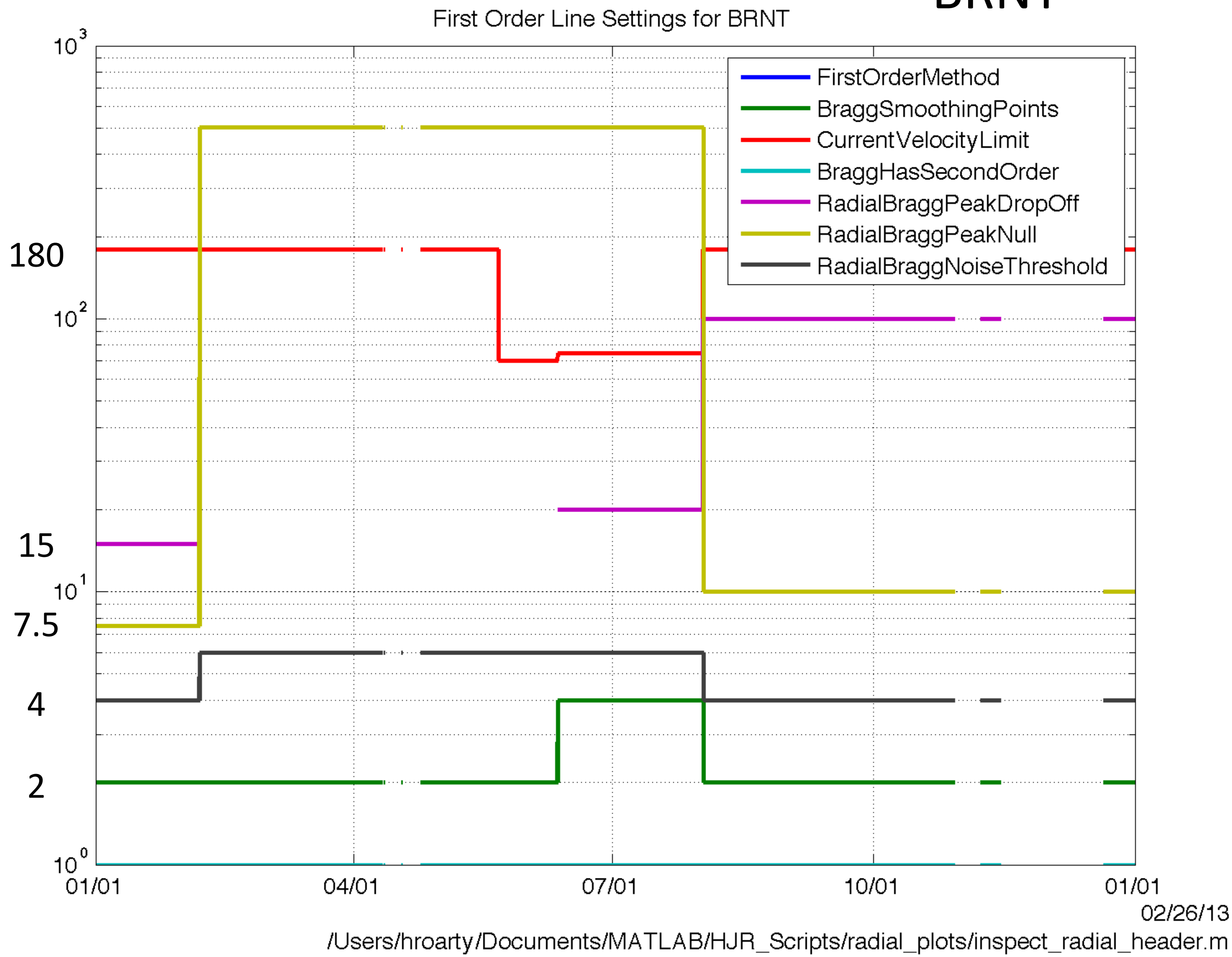
BPU/20130226_FOL_Inspection

SPRK



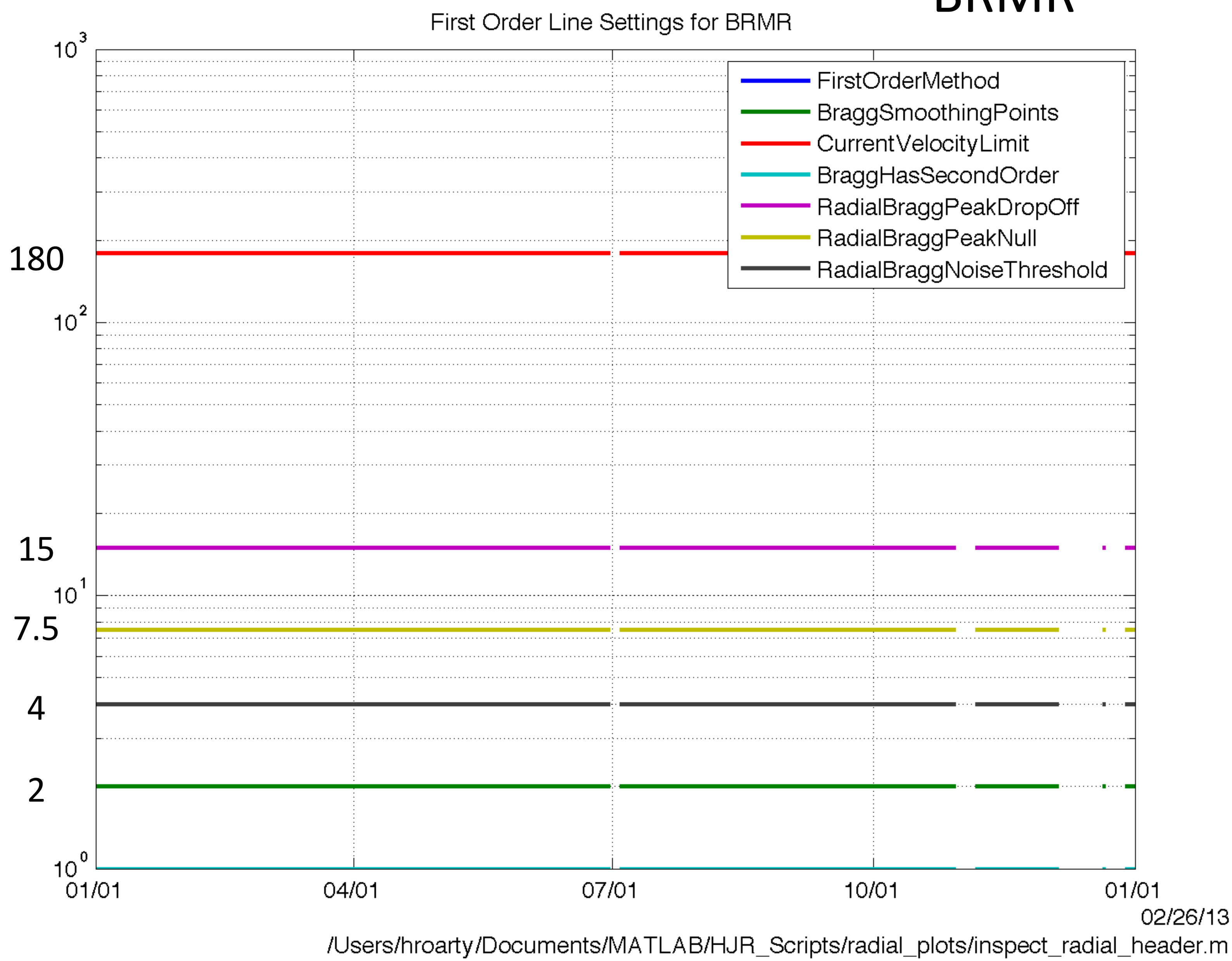
First Order Line Settings for SPRK
FirstOrderMethod
BraggSmoothingPoints
CurrentVelocityLimit
BraggHasSecondOrder
RadialBraggPeakDropOff
RadialBraggPeakNull
RadialBraggNoiseThreshold
180
15
7.5
4
2
10^3
10^2
10^1
10^0
01/01
04/01
07/01
10/01
01/01
02/26/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/radial_plots/inspect_radial_header.m

BRNT



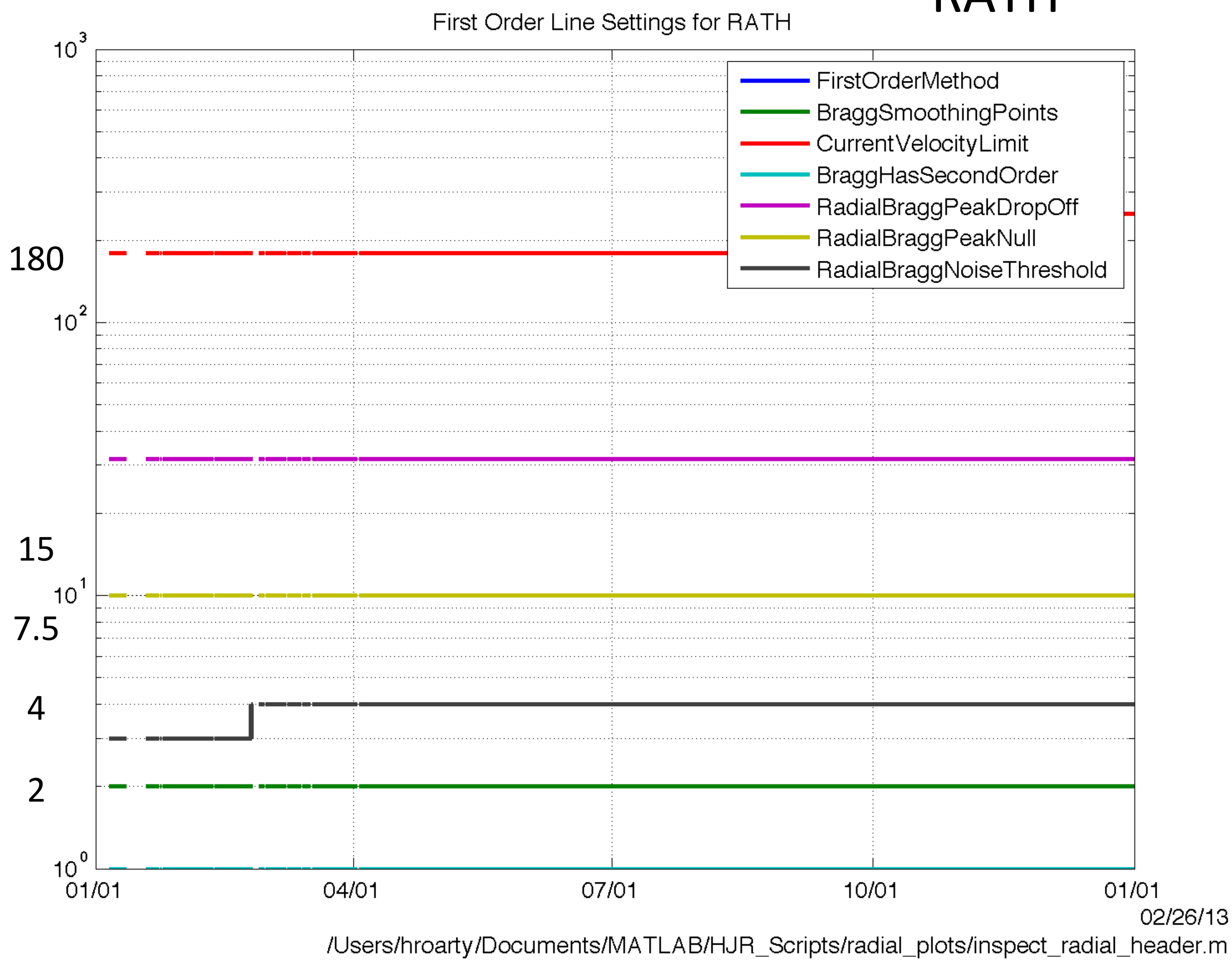
First Order Line Settings for BRNT
FirstOrderMethod
BraggSmoothingPoints
CurrentVelocityLimit
BraggHasSecondOrder
RadialBraggPeakDropOff
RadialBraggPeakNull
RadialBraggNoiseThreshold
180
15
7.5
4
2
10^3
10^2
10^1
10^0
01/01
04/01
07/01
10/01
01/01
02/26/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/radial_plots/inspect_radial_header.m

BRMR

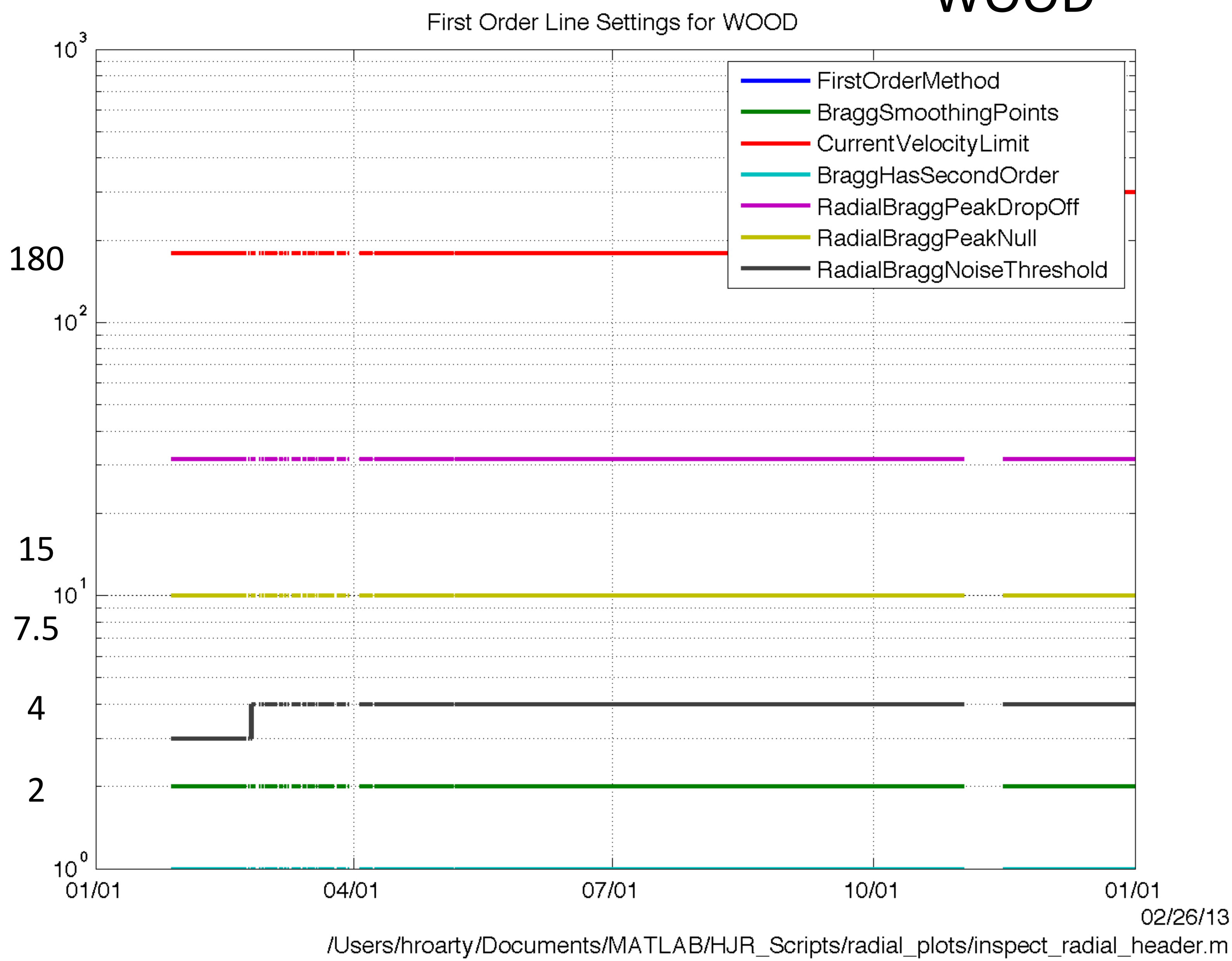


BPU/20130226_FOL_Inspection

RATH


First Order Line Settings for RATH
10^3
10^2
10^1
10^0
180
15
7.5
4
2
FirstOrderMethod
BraggSmoothingPoints
CurrentVelocityLimit
BraggHasSecondOrder
RadialBraggPeakDropOff
RadialBraggPeakNull
RadialBraggNoiseThreshold
01/01
04/01
07/01
10/01
01/01
02/26/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/radial_plots/inspect_radial_header.m

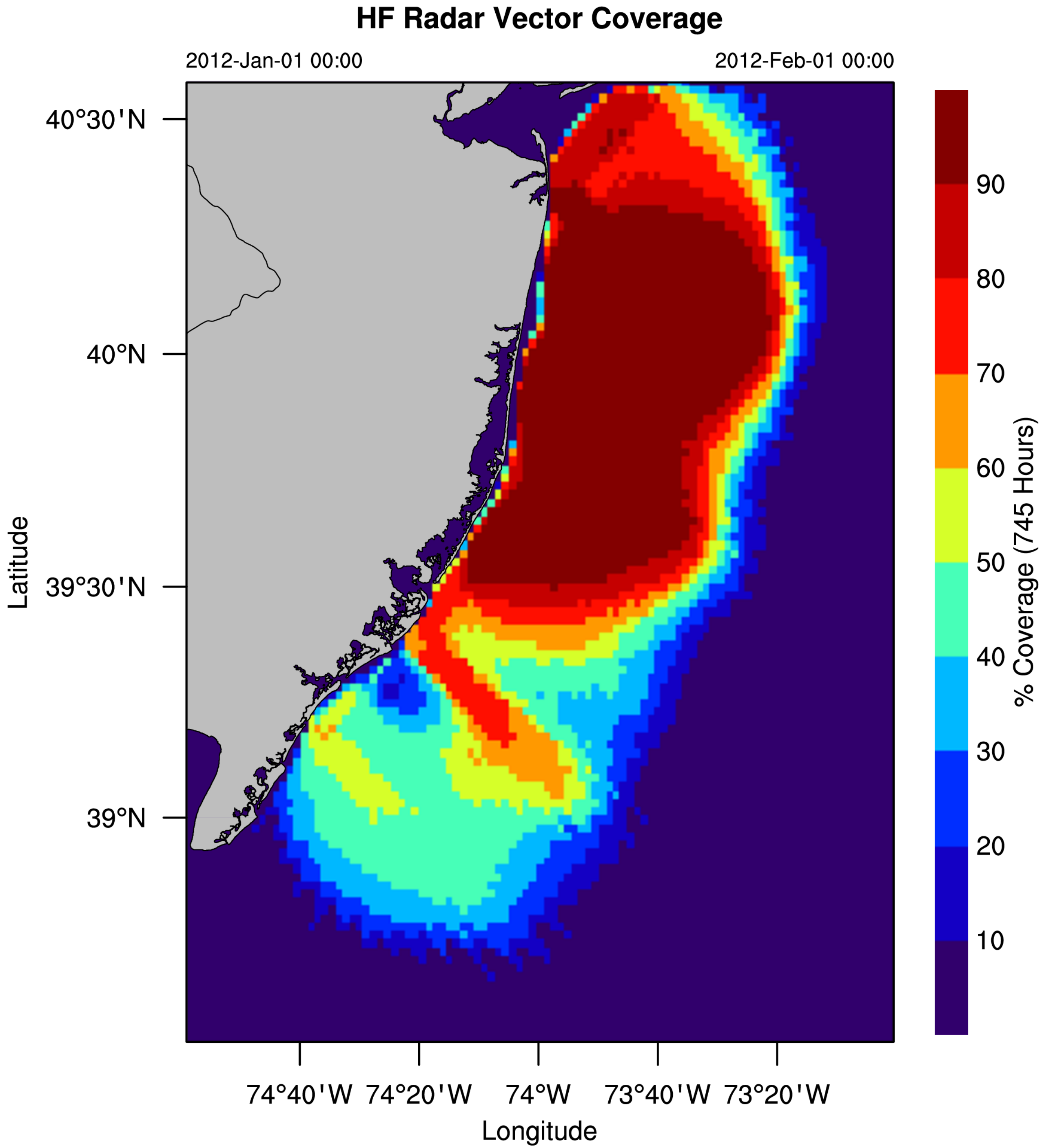
WOOD


First Order Line Settings for WOOD
10^3
180
10^2
15
10^1
7.5
4
2
10^0
01/01
04/01
07/01
10/01
01/01
02/26/13
/Users/hroarty/Documents/MATLAB/HJR_Scripts/radial_plots/inspect_radial_header.m
FirstOrderMethod
BraggSmoothingPoints
CurrentVelocityLimit
BraggHasSecondOrder
RadialBraggPeakDropOff
RadialBraggPeakNull
RadialBraggNoiseThreshold

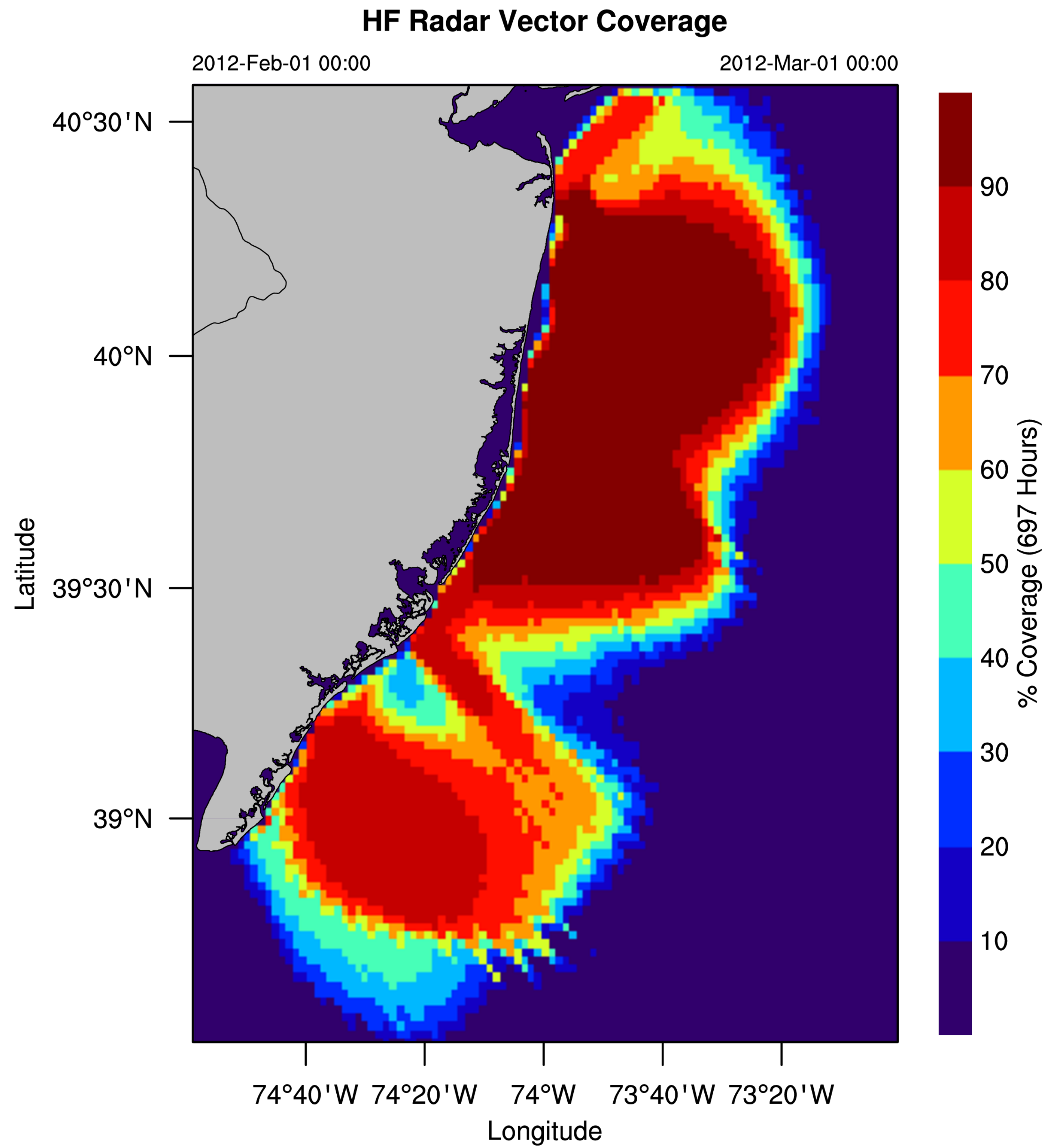
Section 12:

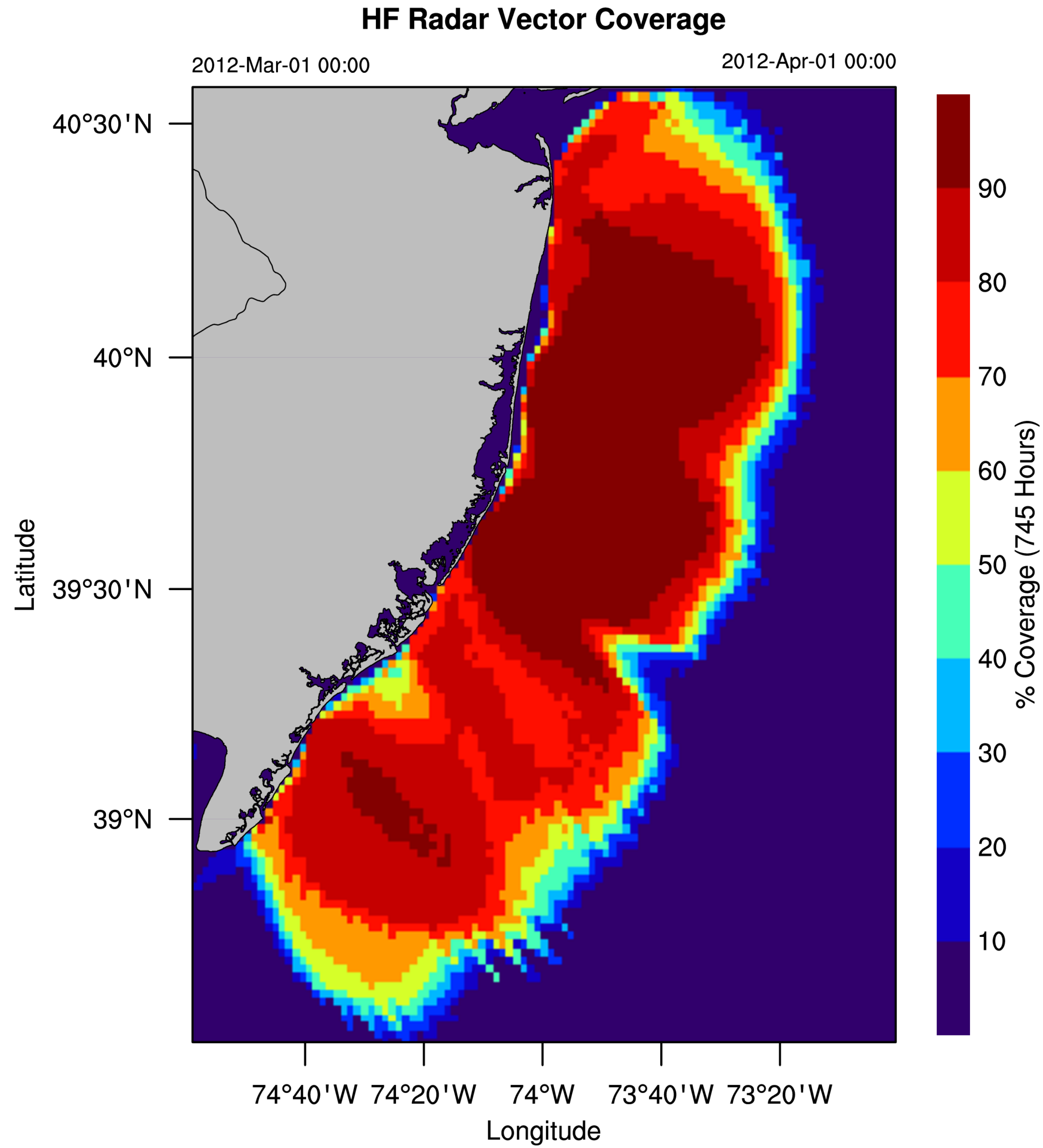
HF Radar Vector Coverage

January 1, 2012 to December 31, 2012

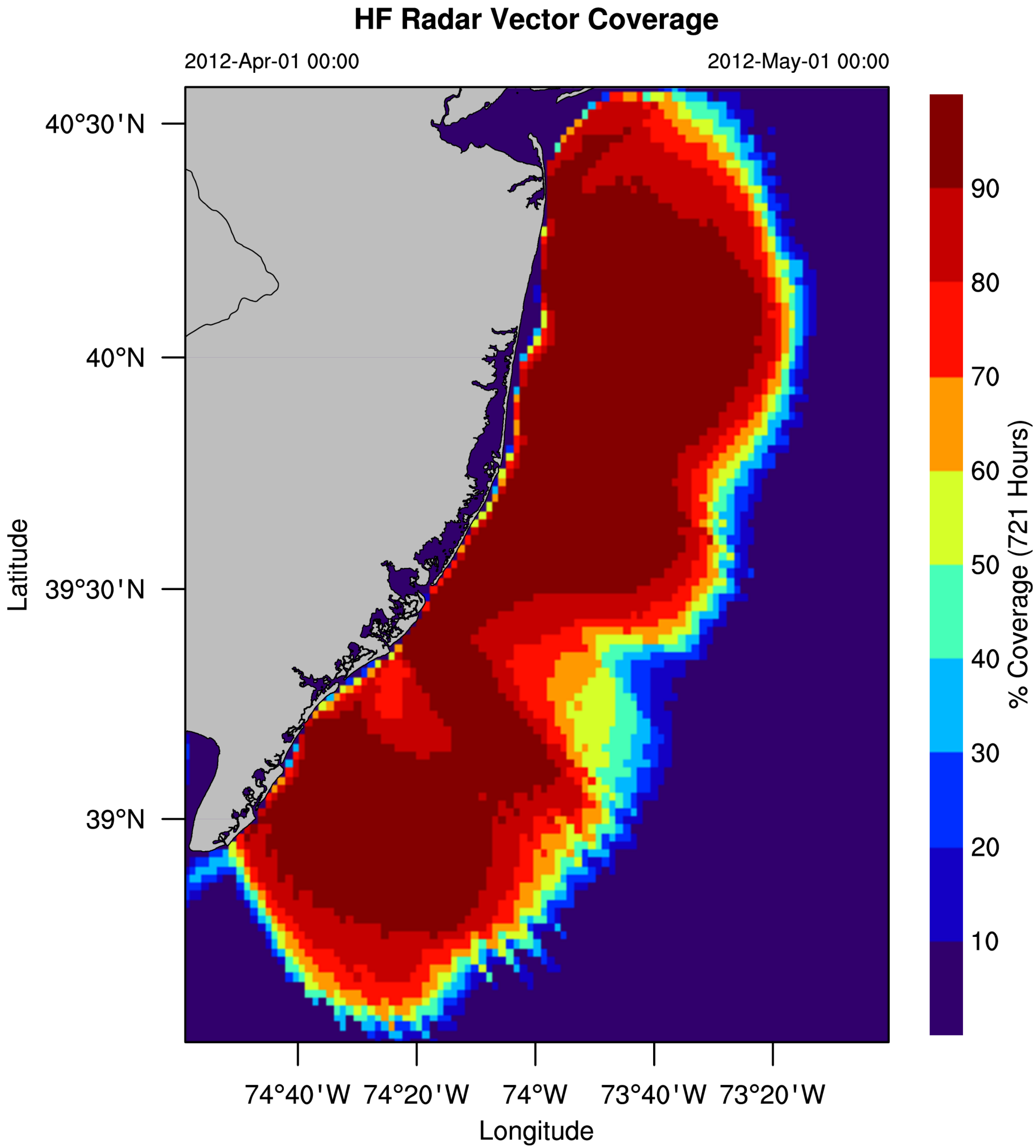


HF Radar Vector Coverage
2012-Jan-01 00:00
2012-Feb-01 00:00
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°20'W
74°W
73°40'W
73°20'W
Longitude
90
80
70
60
50
40
30
20
10
% Coverage (745 Hours)

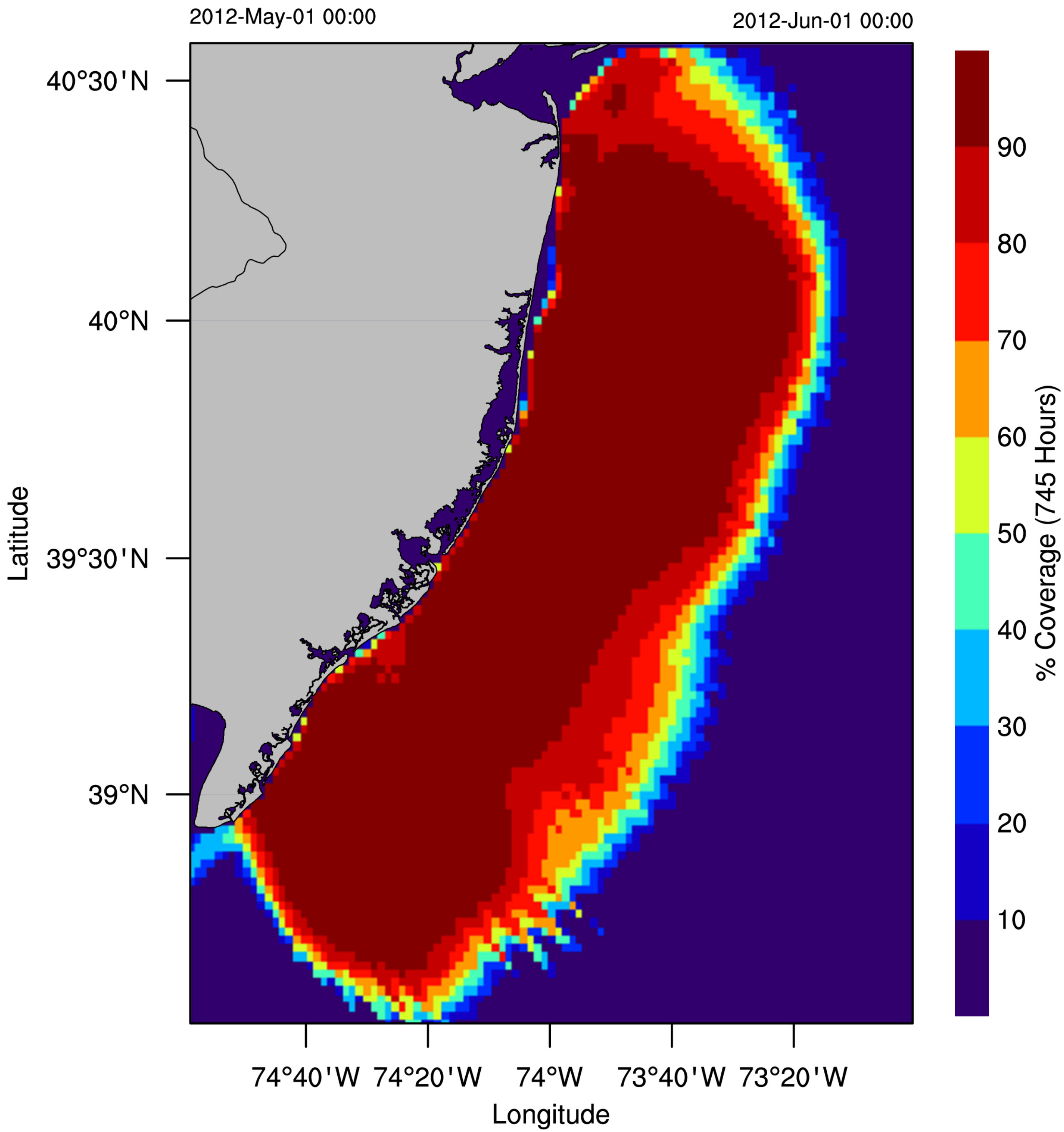

HF Radar Vector Coverage
2012-Feb-01 00:00
2012-Mar-01 00:00
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°20'W
74°W
73°40'W
73°20'W
Longitude
90
80
70
60
50
40
30
20
10
% Coverage (697 Hours)

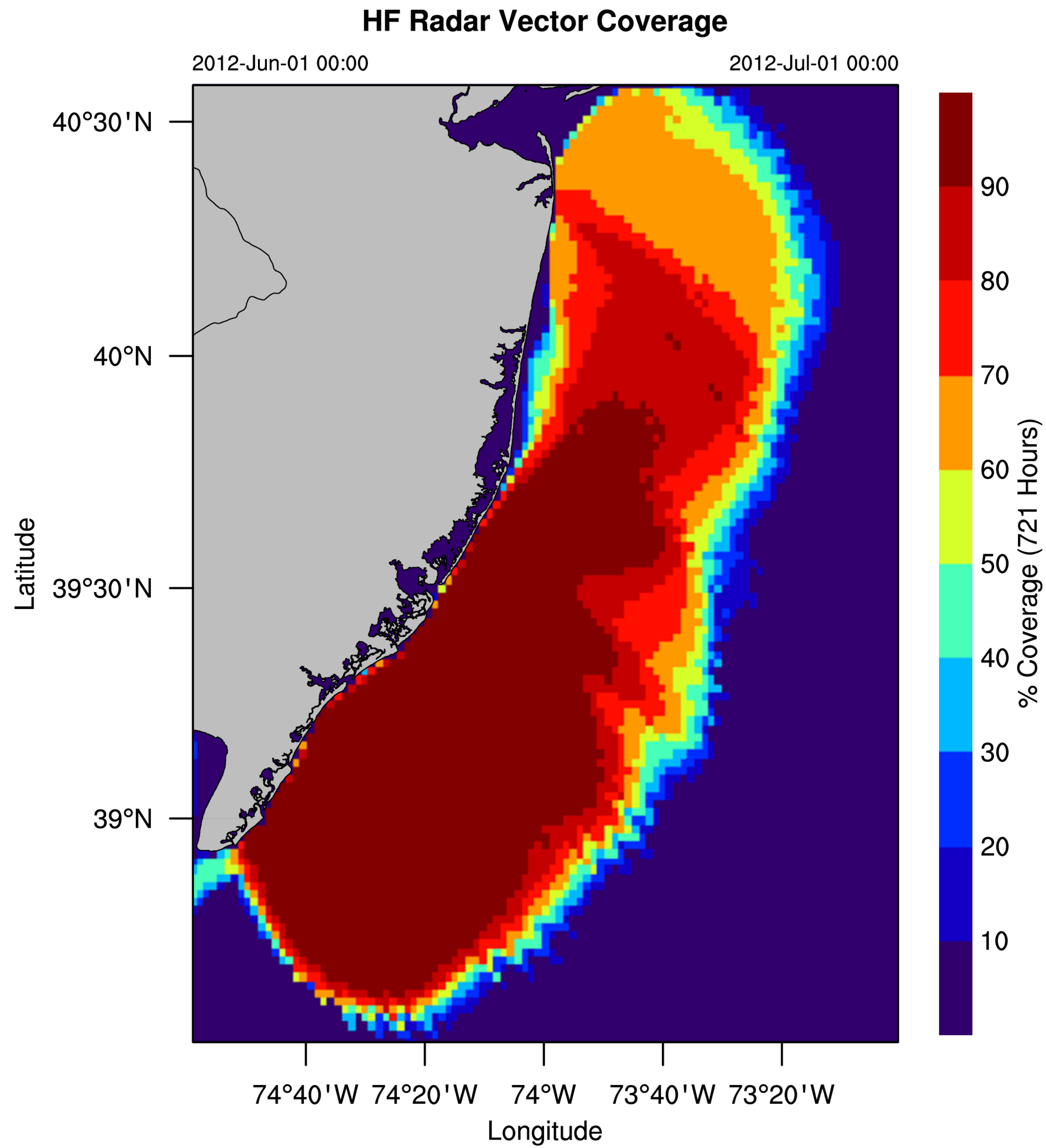


HF Radar Vector Coverage
2012-Mar-01 00:00
2012-Apr-01 00:00
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°20'W
74°W
73°40'W
73°20'W
Longitude
90
80
70
60
50
40
30
20
10
% Coverage (745 Hours)

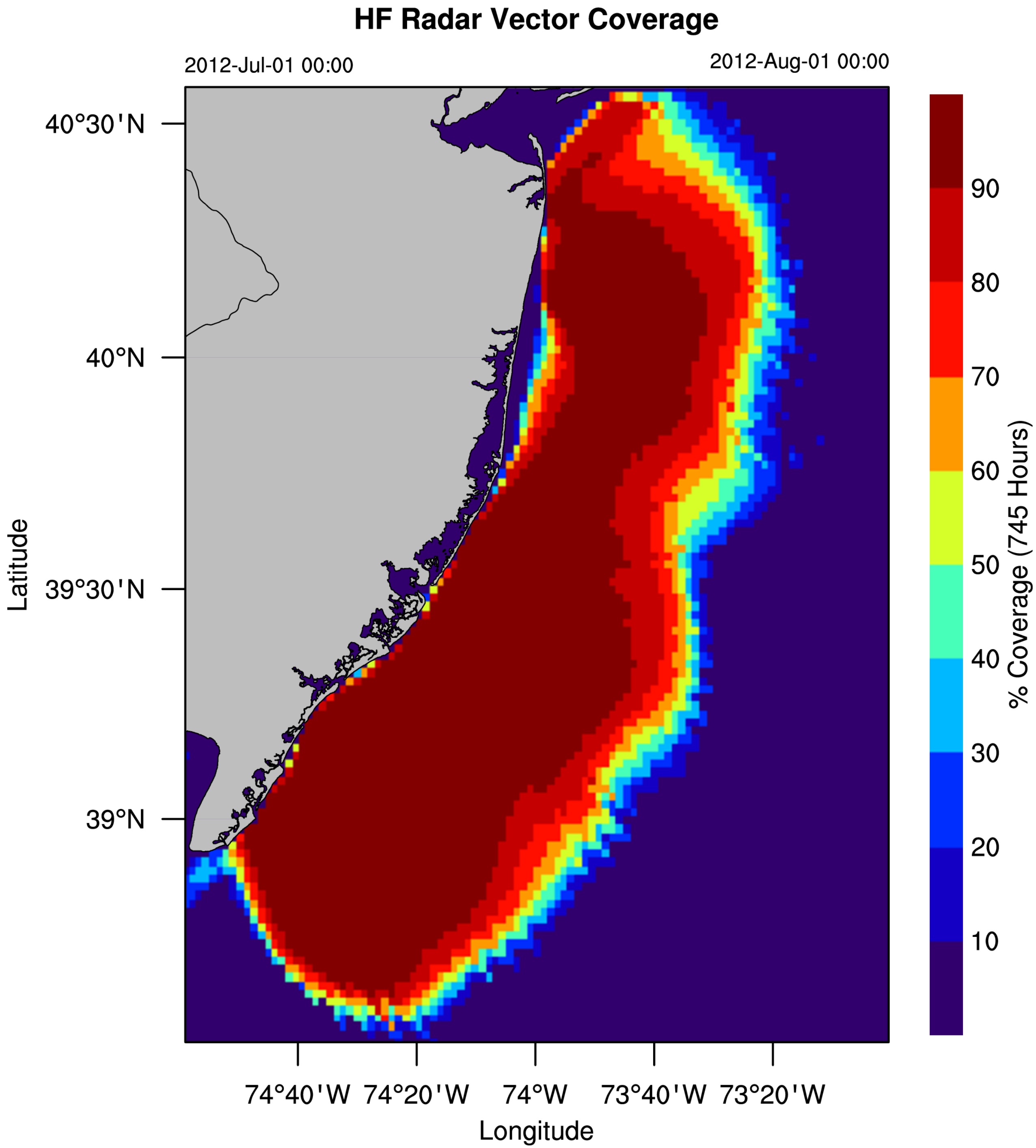

HF Radar Vector Coverage
2012-Apr-01 00:00
2012-May-01 00:00
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°20'W
74°W
73°40'W
73°20'W
Longitude
90
80
70
60
50
40
30
20
10
% Coverage (721 Hours)

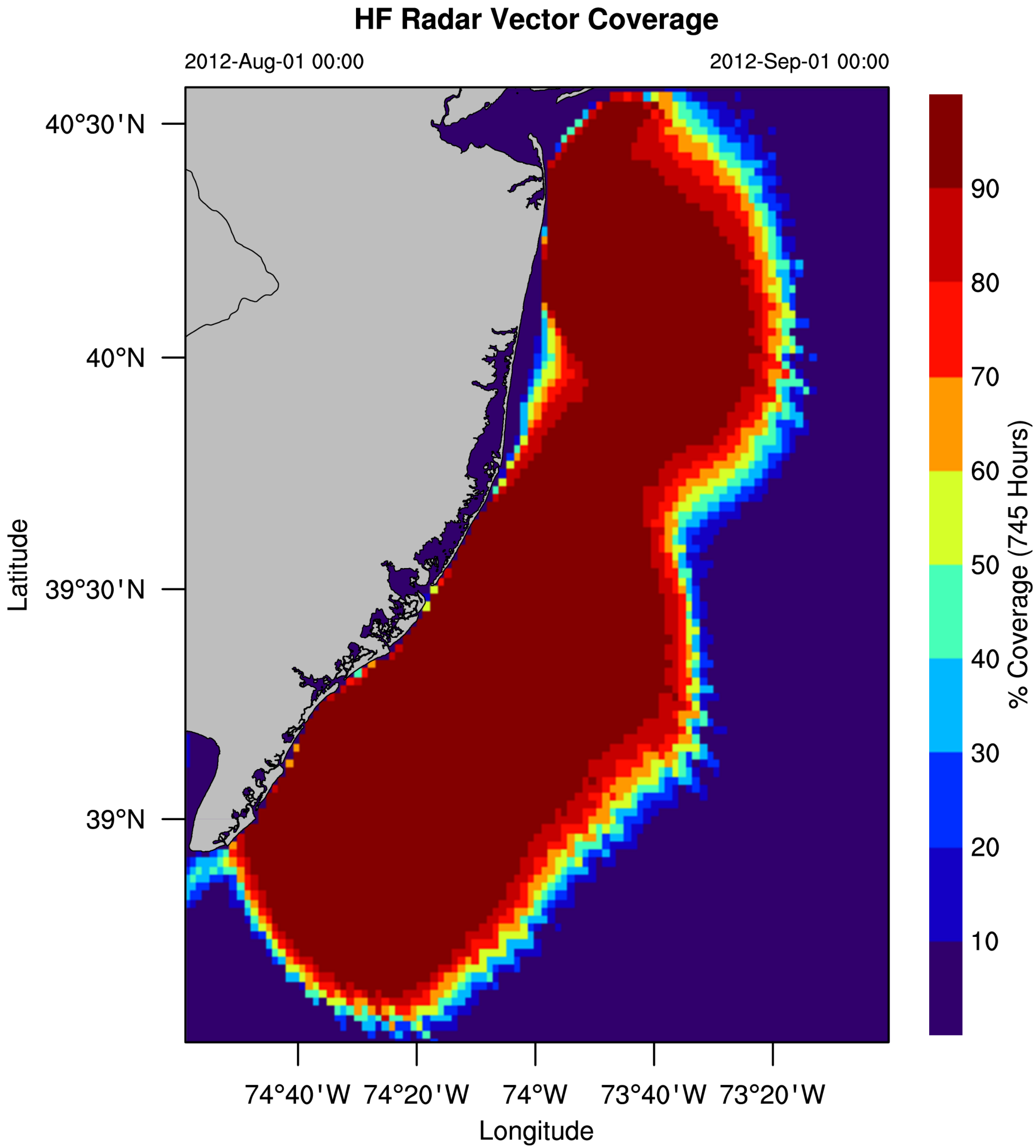
HF Radar Vector Coverage

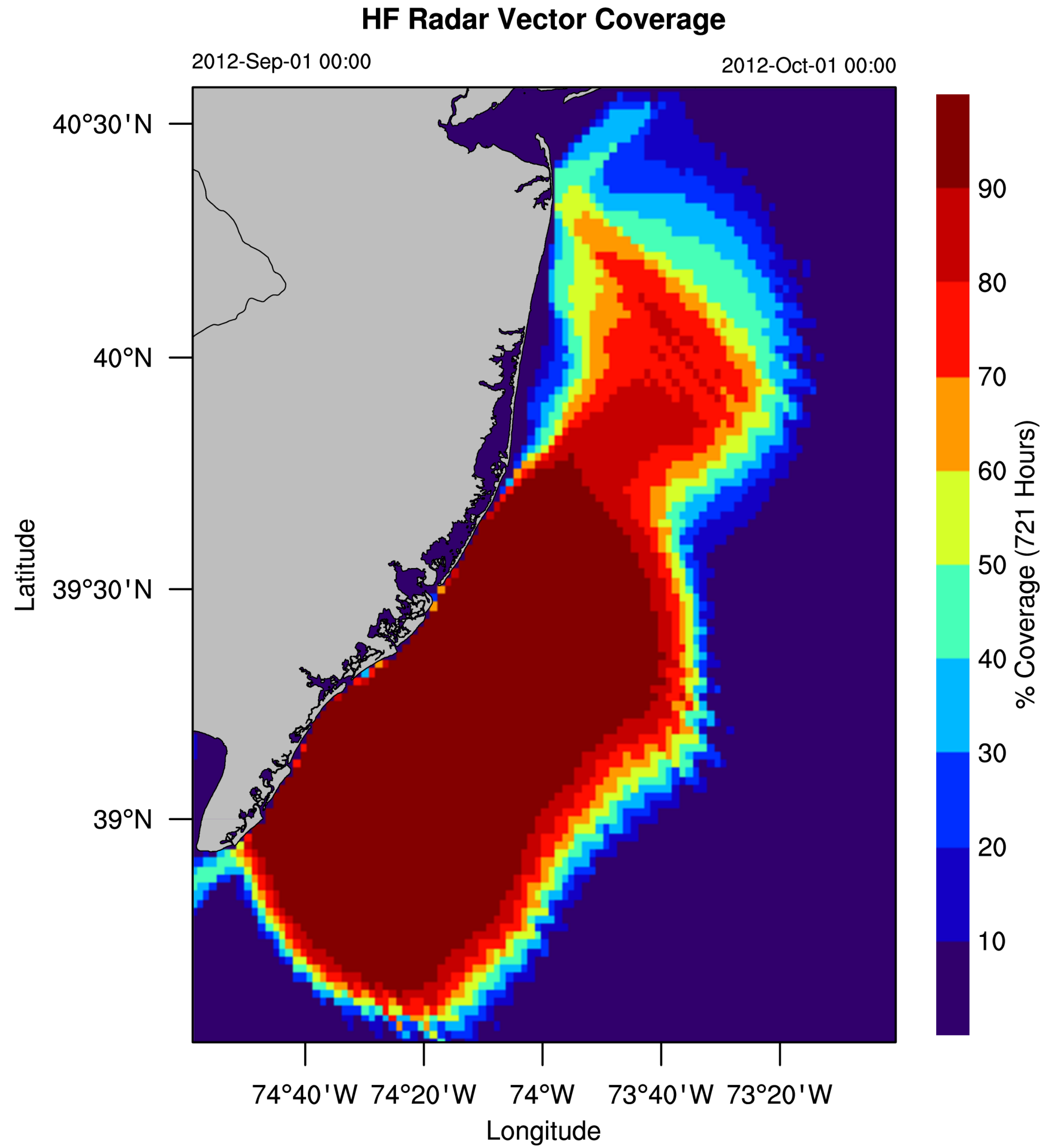


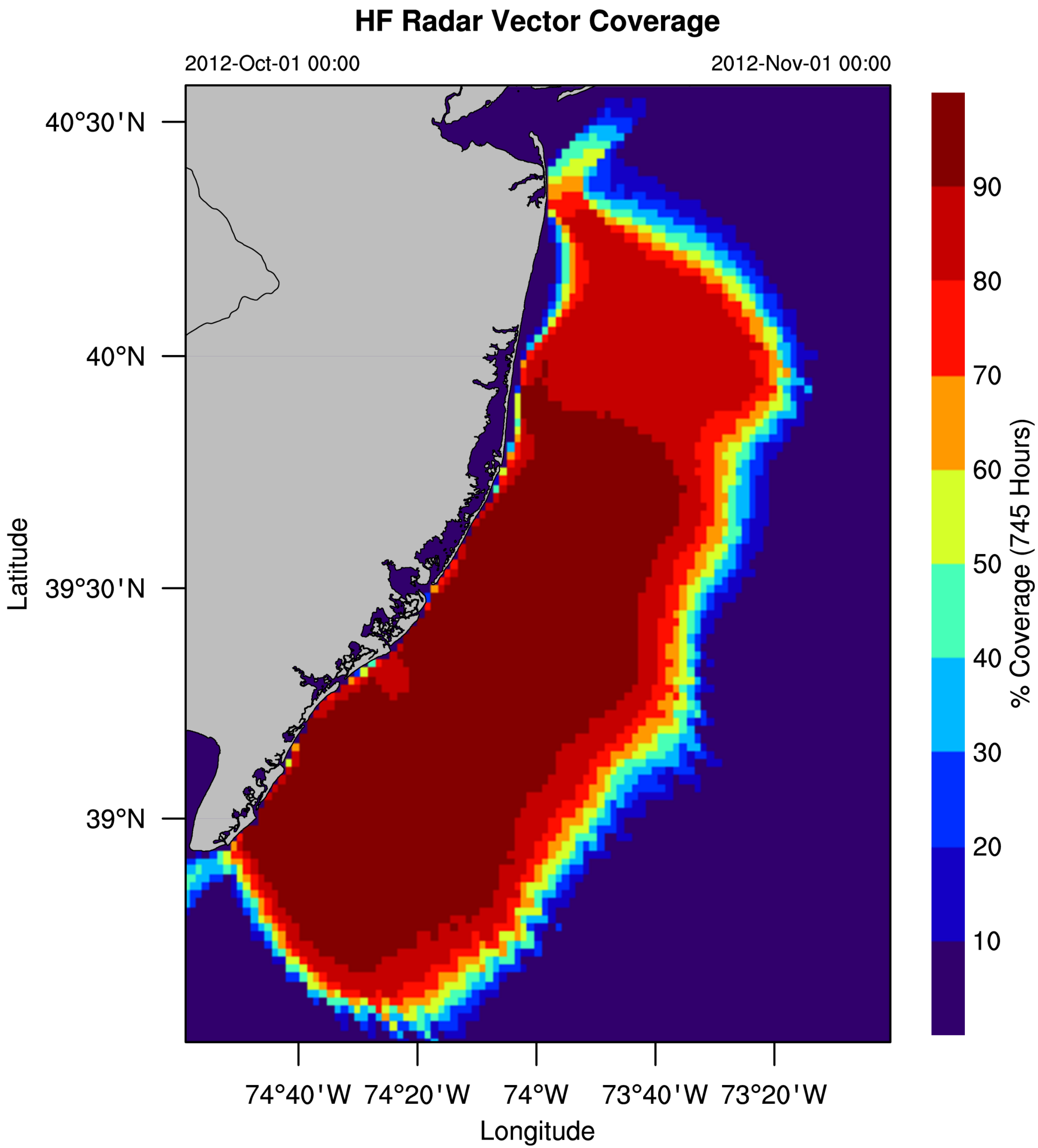


HF Radar Vector Coverage
2012-Jun-01 00:00
2012-Jul-01 00:00
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°20'W
74°W
73°40'W
73°20'W
Longitude
90
80
70
60
50
40
30
20
10
% Coverage (721 Hours)

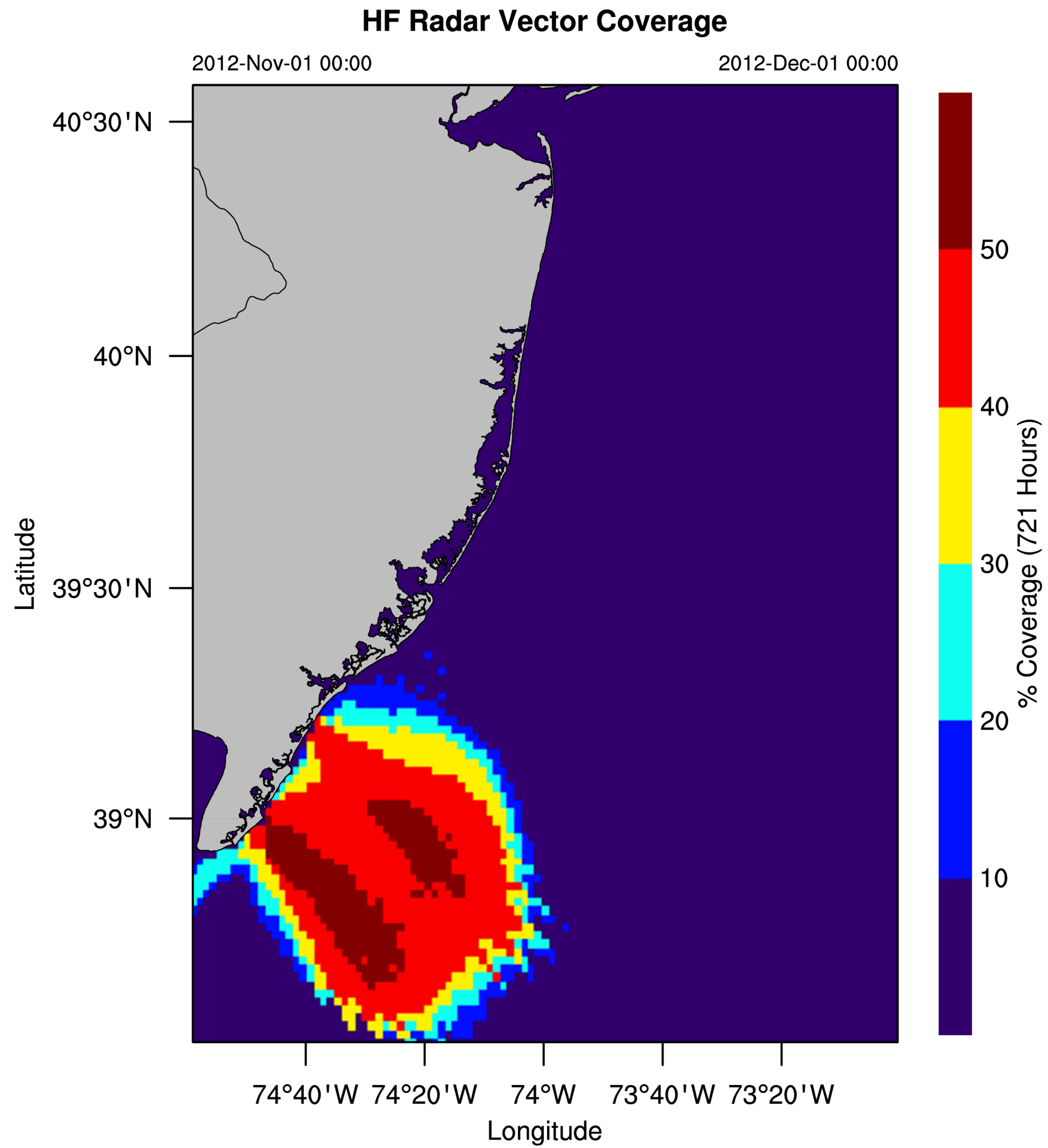

HF Radar Vector Coverage
2012-Jul-01 00:00
2012-Aug-01 00:00
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°20'W
74°W
73°40'W
73°20'W
Longitude
90
80
70
60
50
40
30
20
10
% Coverage (745 Hours)


HF Radar Vector Coverage
2012-Aug-01 00:00
2012-Sep-01 00:00
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°20'W
74°W
73°40'W
73°20'W
Longitude
90
80
70
60
50
40
30
20
10
% Coverage (745 Hours)

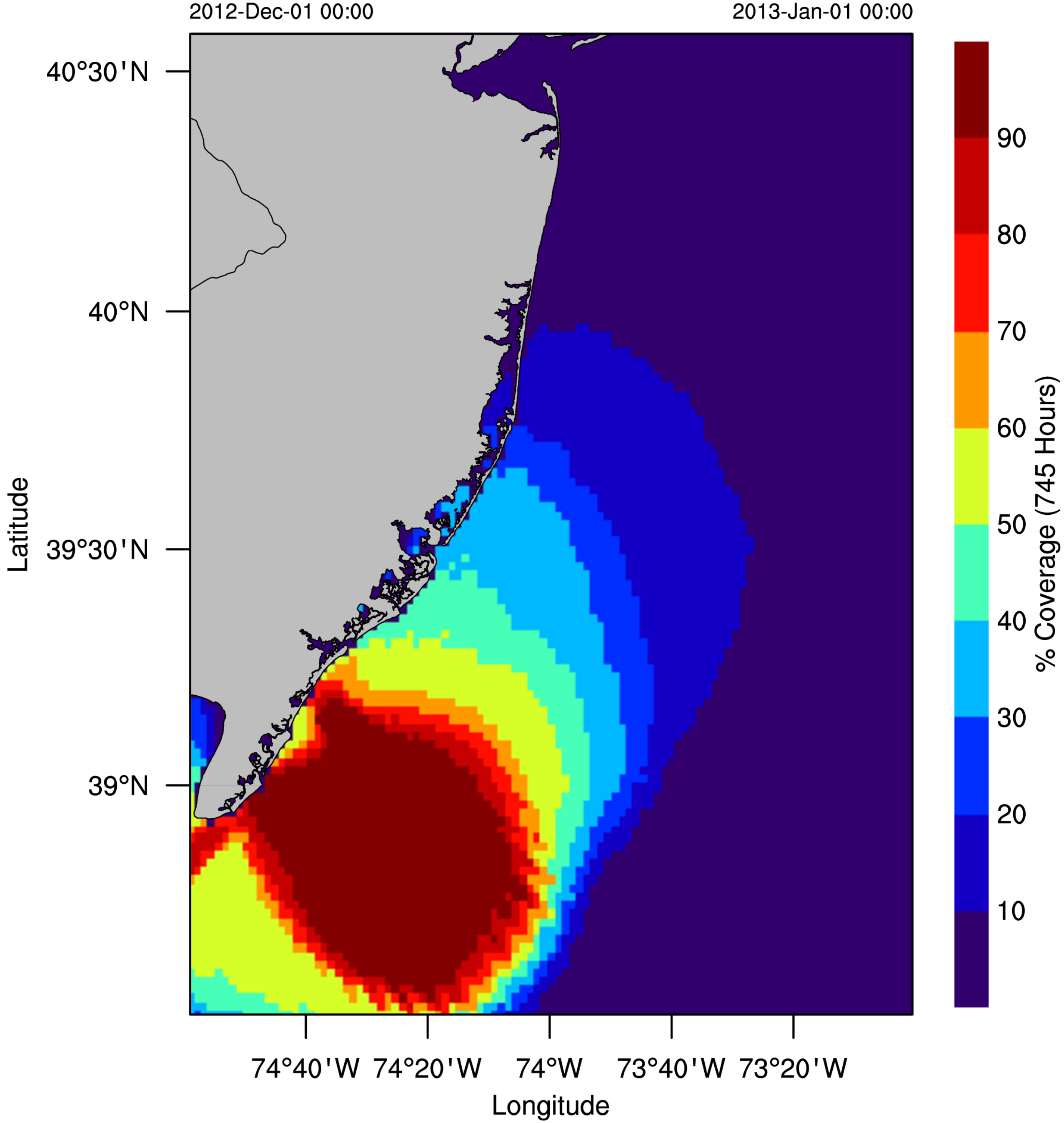

HF Radar Vector Coverage
2012-Sep-01 00:00
2012-Oct-01 00:00
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°20'W
74°W
73°40'W
73°20'W
Longitude
% Coverage (721 Hours)
10
20
30
40
50
60
70
80
90



HF Radar Vector Coverage
2012-Oct-01 00:00
2012-Nov-01 00:00
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°20'W
74°W
73°40'W
73°20'W
Longitude
% Coverage (745 Hours)
90
80
70
60
50
40
30
20
10


HF Radar Vector Coverage
2012-Nov-01 00:00
2012-Dec-01 00:00
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°20'W
74°W
73°40'W
73°20'W
Longitude
10
20
30
40
50
% Coverage (721 Hours)

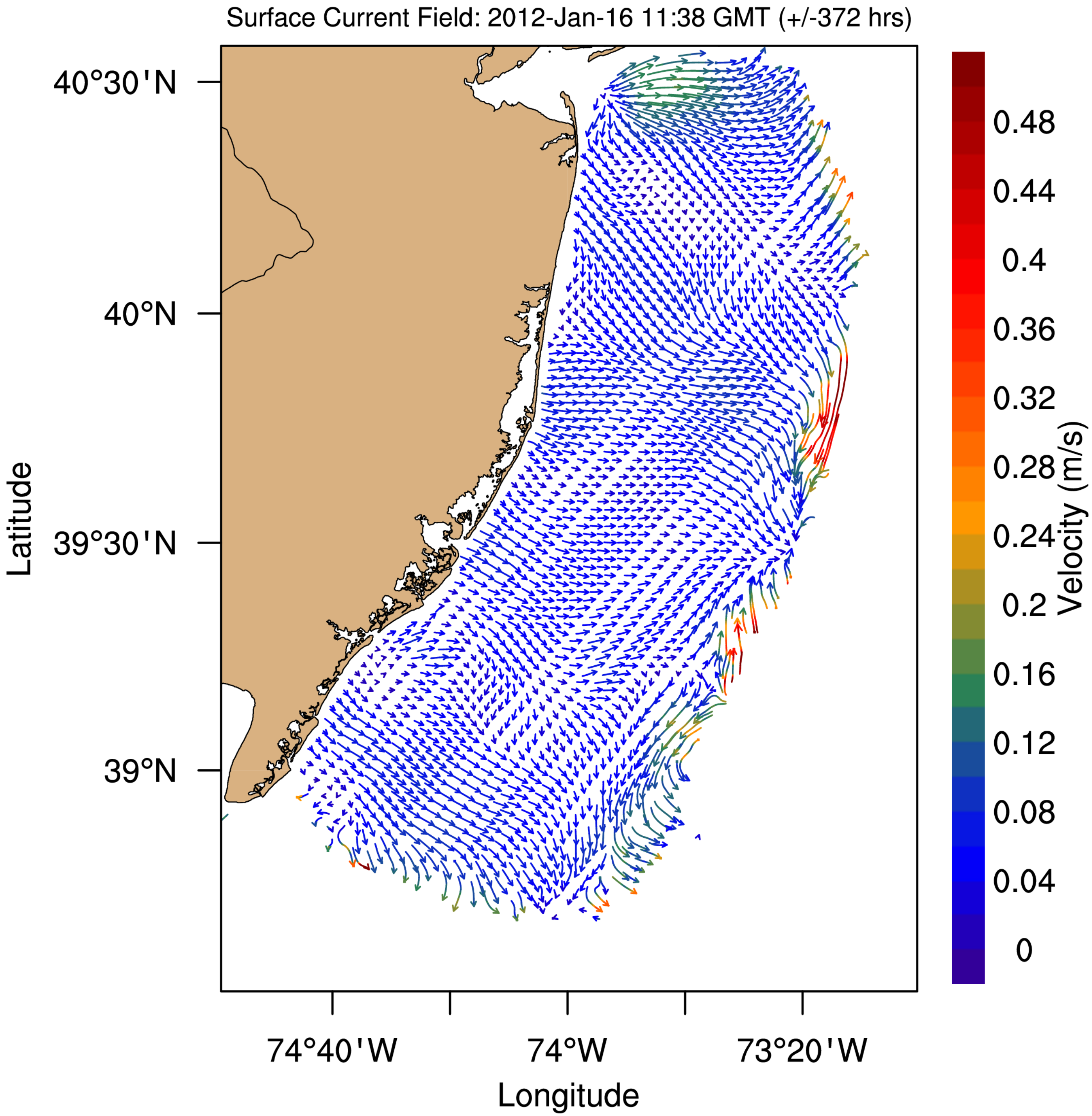
HF Radar Vector Coverage

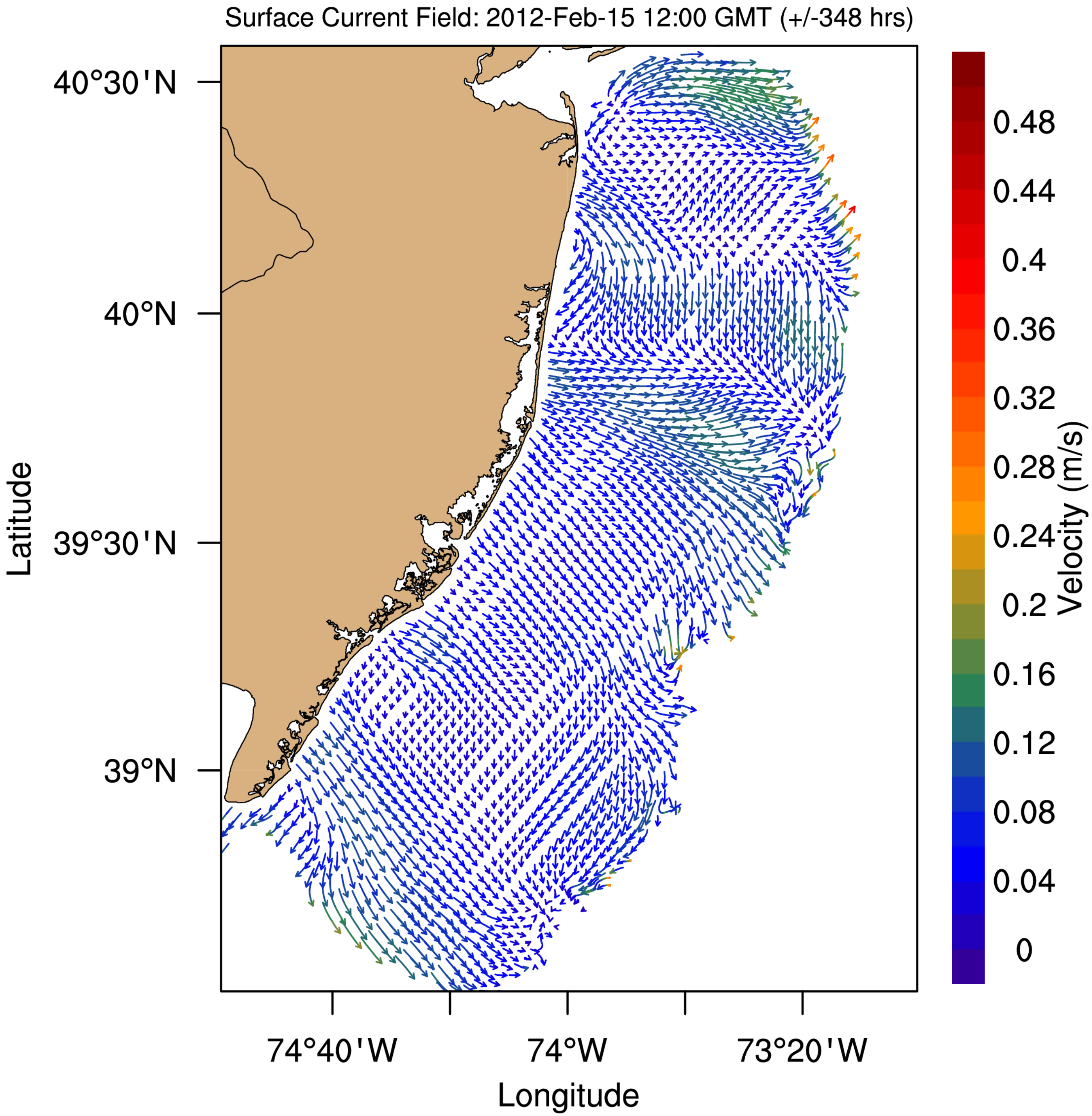


Section 13:

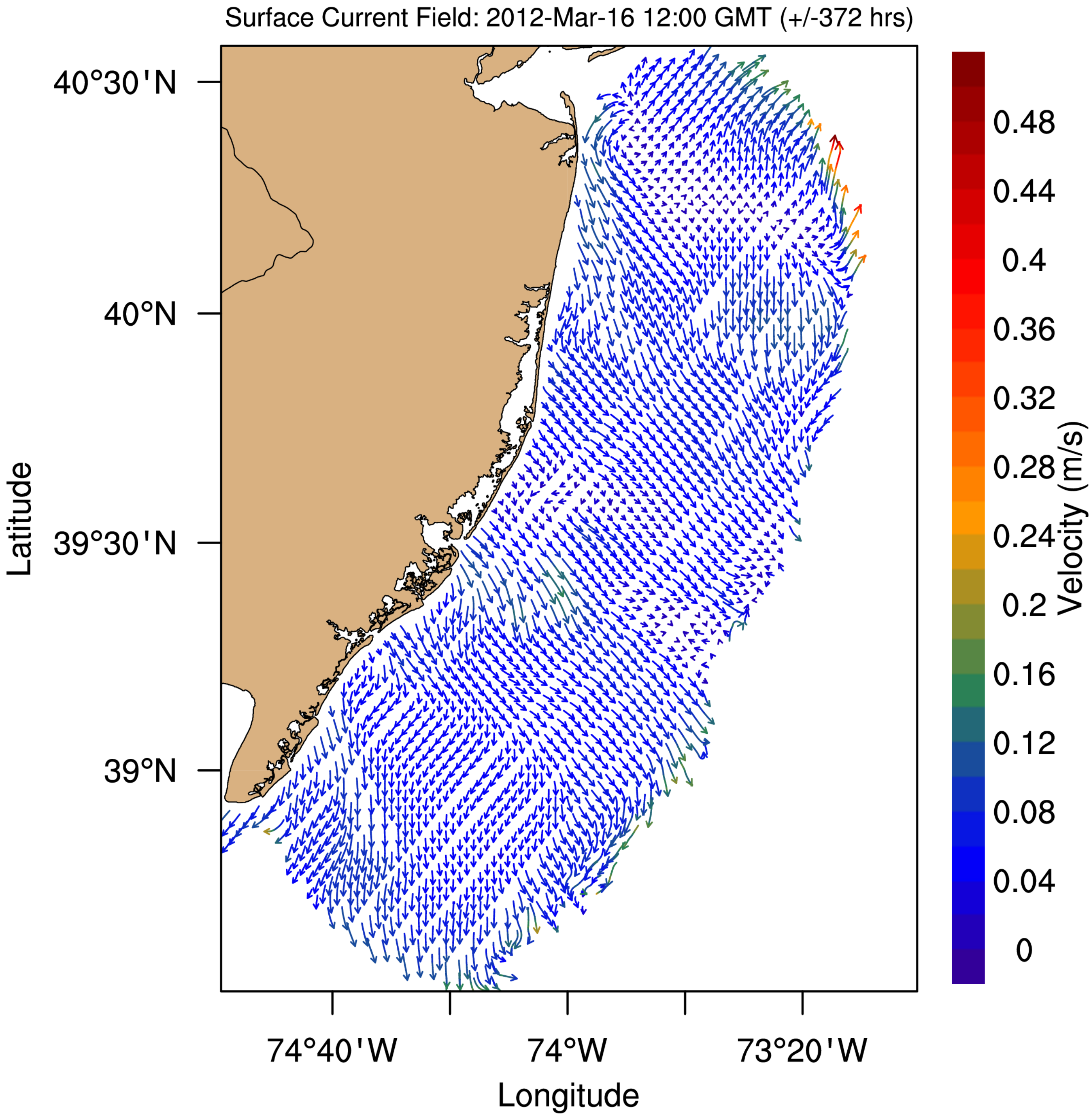
BPU 13 MHz
Monthly Average Surface Current Maps

January 1, 2012 to December 31, 2012

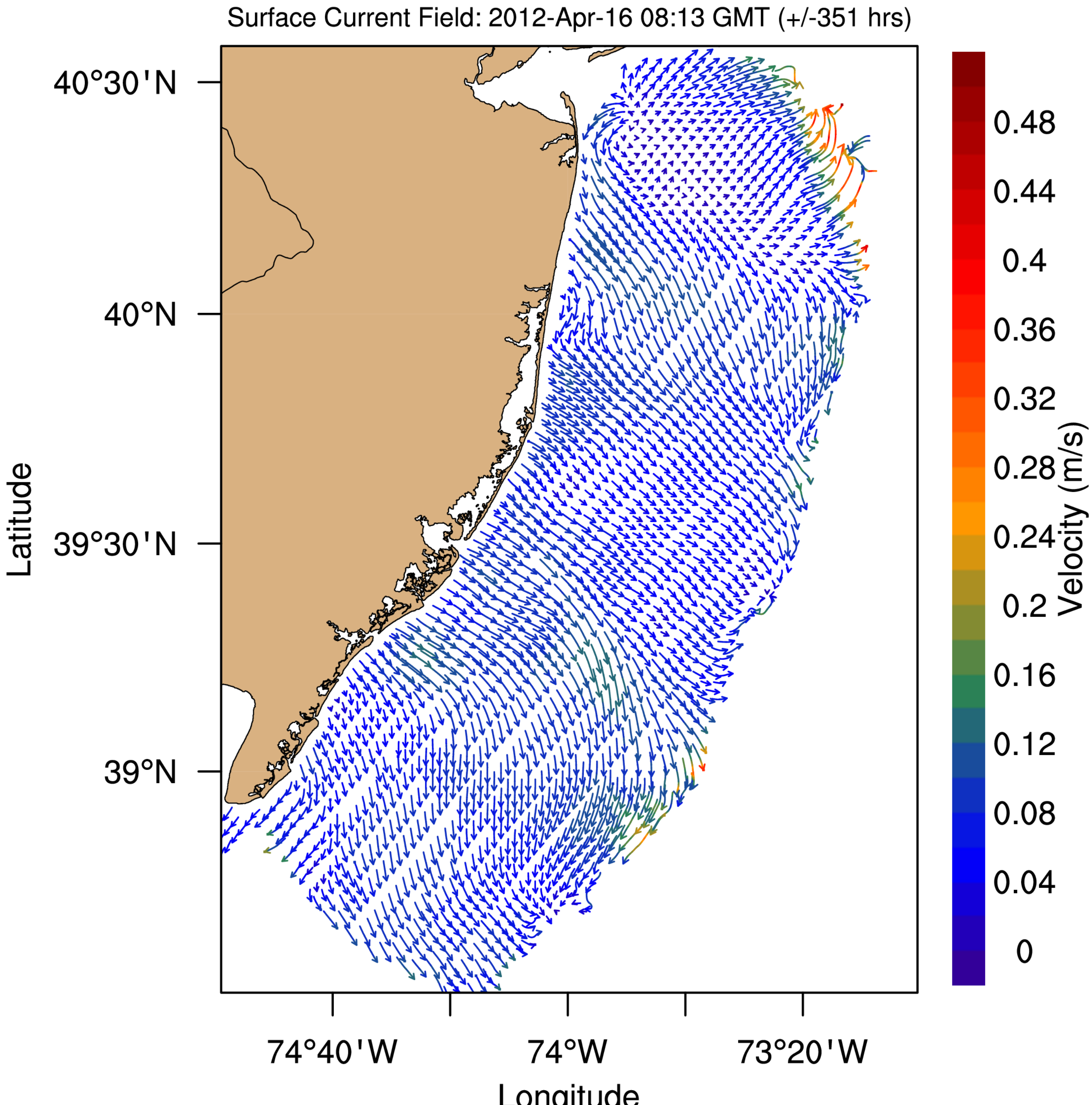

Surface Current Field: 2012-Jan-16 11:38 GMT (+/-372 hrs)
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°W
73°20'W
Longitude
Velocity (m/s)
0.48
0.44
0.4
0.36
0.32
0.28
0.24
0.2
0.16
0.12
0.08
0.04
0



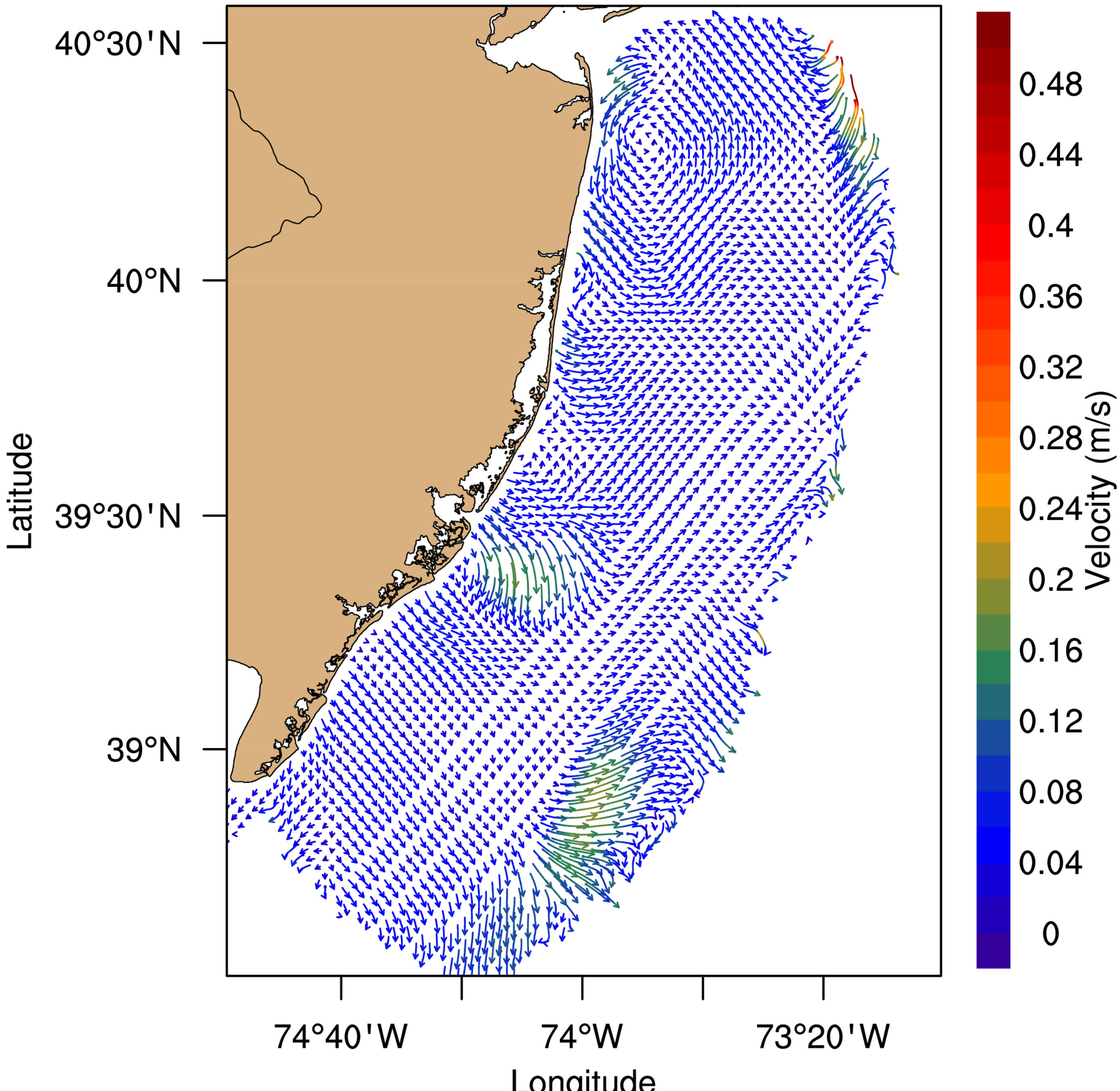
Surface Current Field: 2012-Feb-15 12:00 GMT (+/-348 hrs)
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°W
73°20'W
Longitude
0.48
0.44
0.4
0.36
0.32
0.28
0.24
0.2
0.16
0.12
0.08
0.04
0
Velocity (m/s)

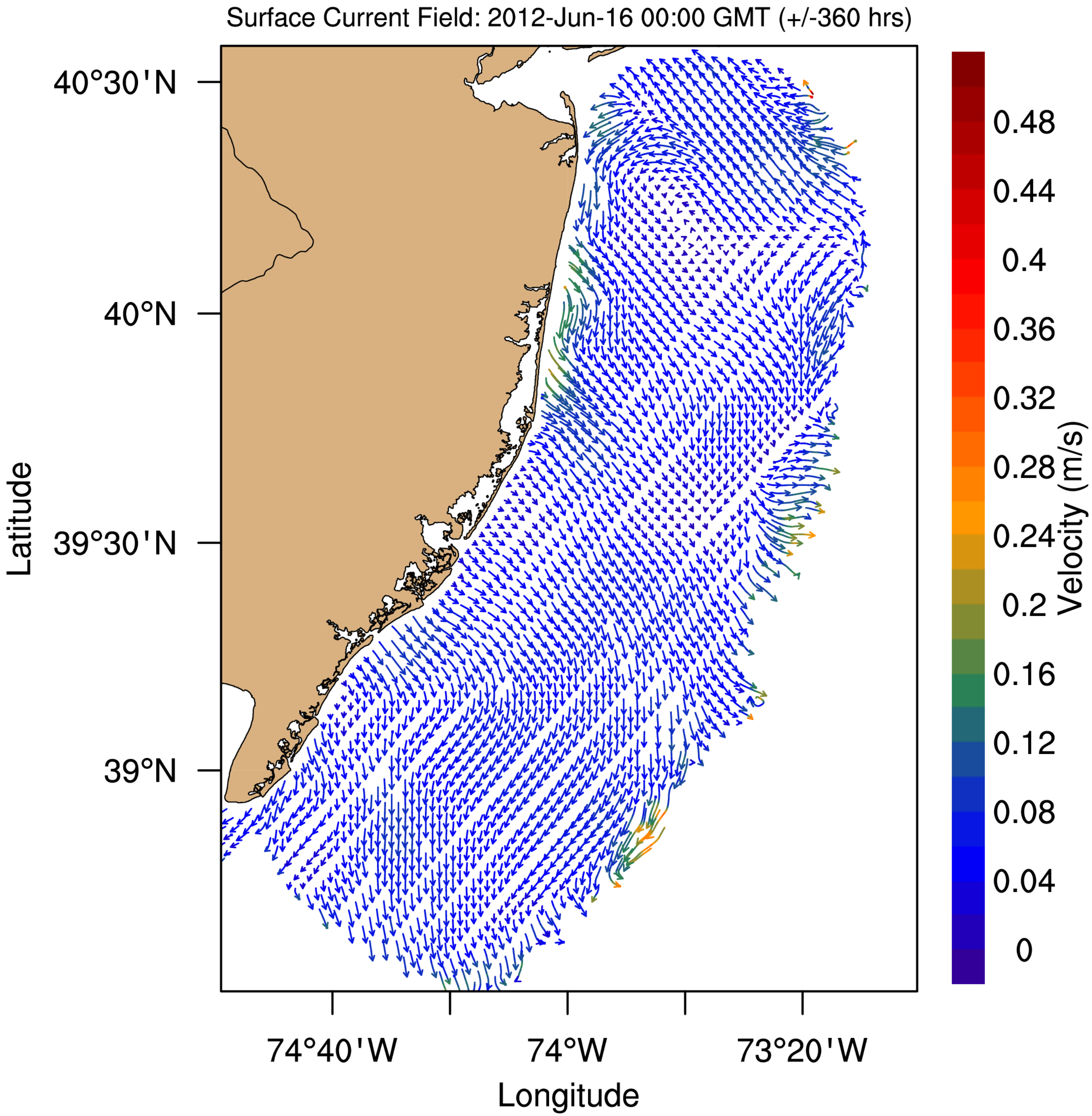


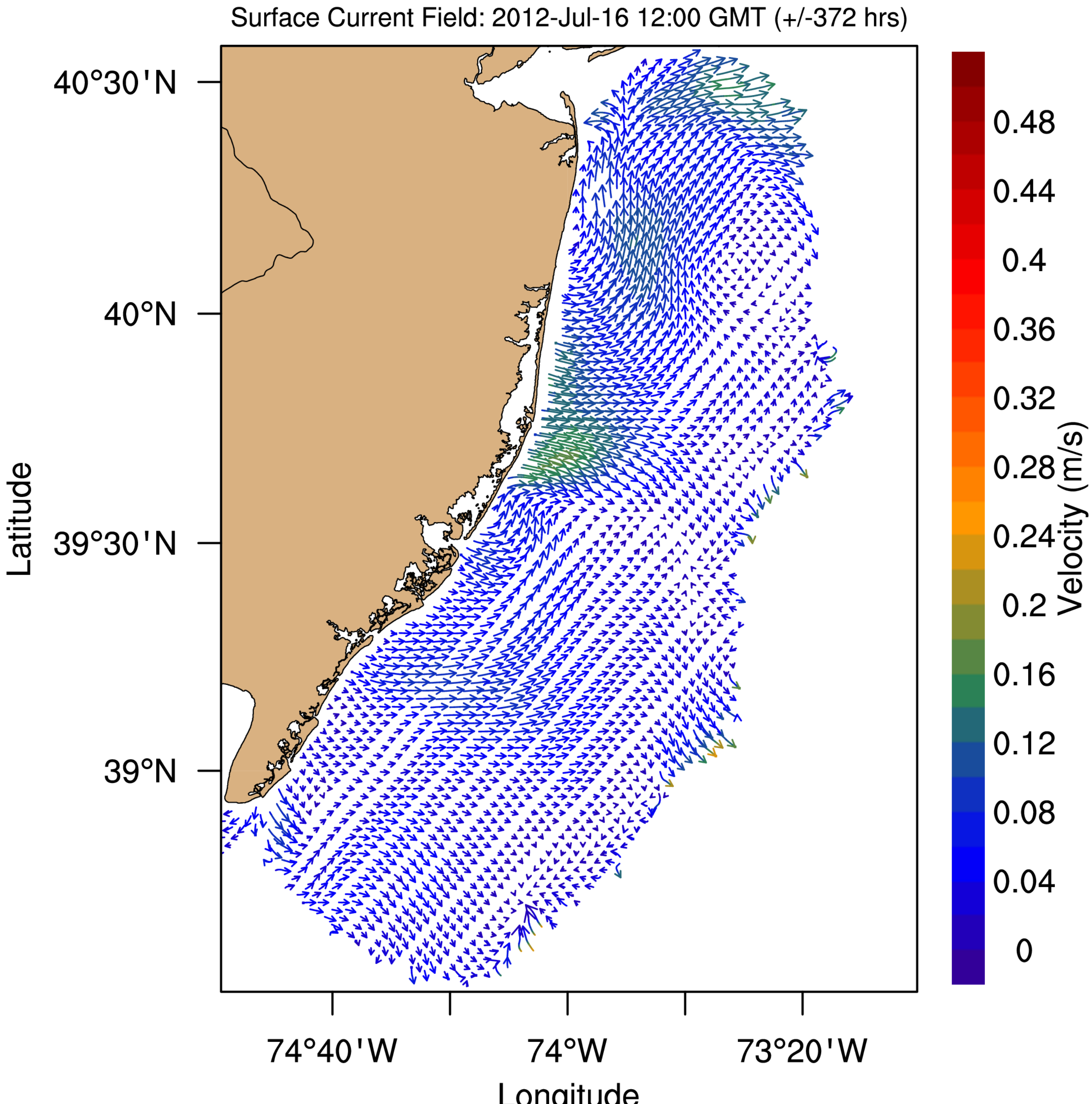
Surface Current Field: 2012-Mar-16 12:00 GMT (+/-372 hrs)
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°W
73°20'W
Longitude
0.48
0.44
0.4
0.36
0.32
0.28
0.24
0.2
0.16
0.12
0.08
0.04
0
Velocity (m/s)


Surface Current Field: 2012-Apr-16 08:13 GMT (+/-351 hrs)
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°W
73°20'W
Longitude
0.48
0.44
0.4
0.36
0.32
0.28
0.24
0.2
0.16
0.12
0.08
0.04
0
Velocity (m/s)

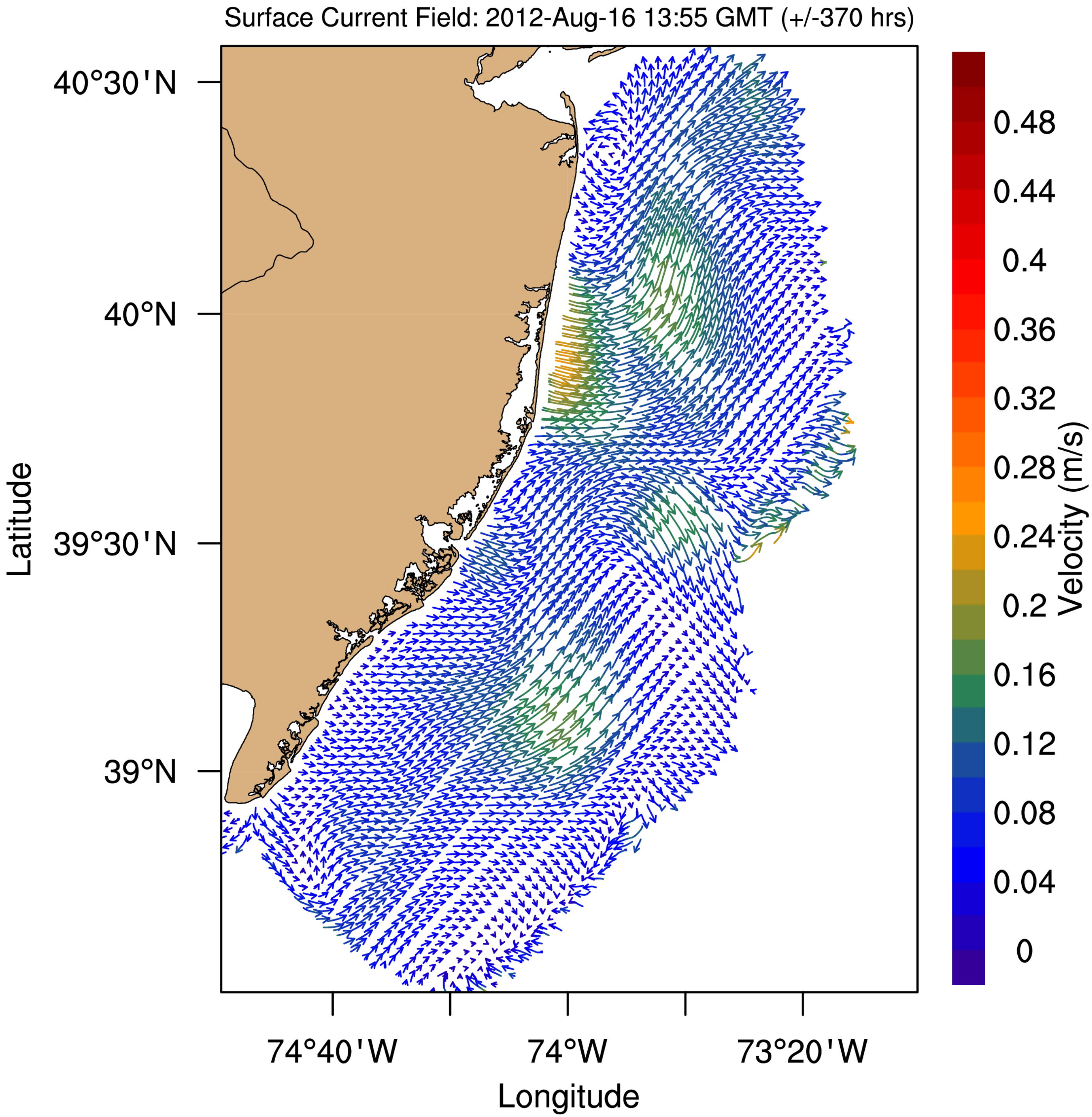
Surface Current Field: 2012-May-16 12:00 GMT (+/-372 hrs)

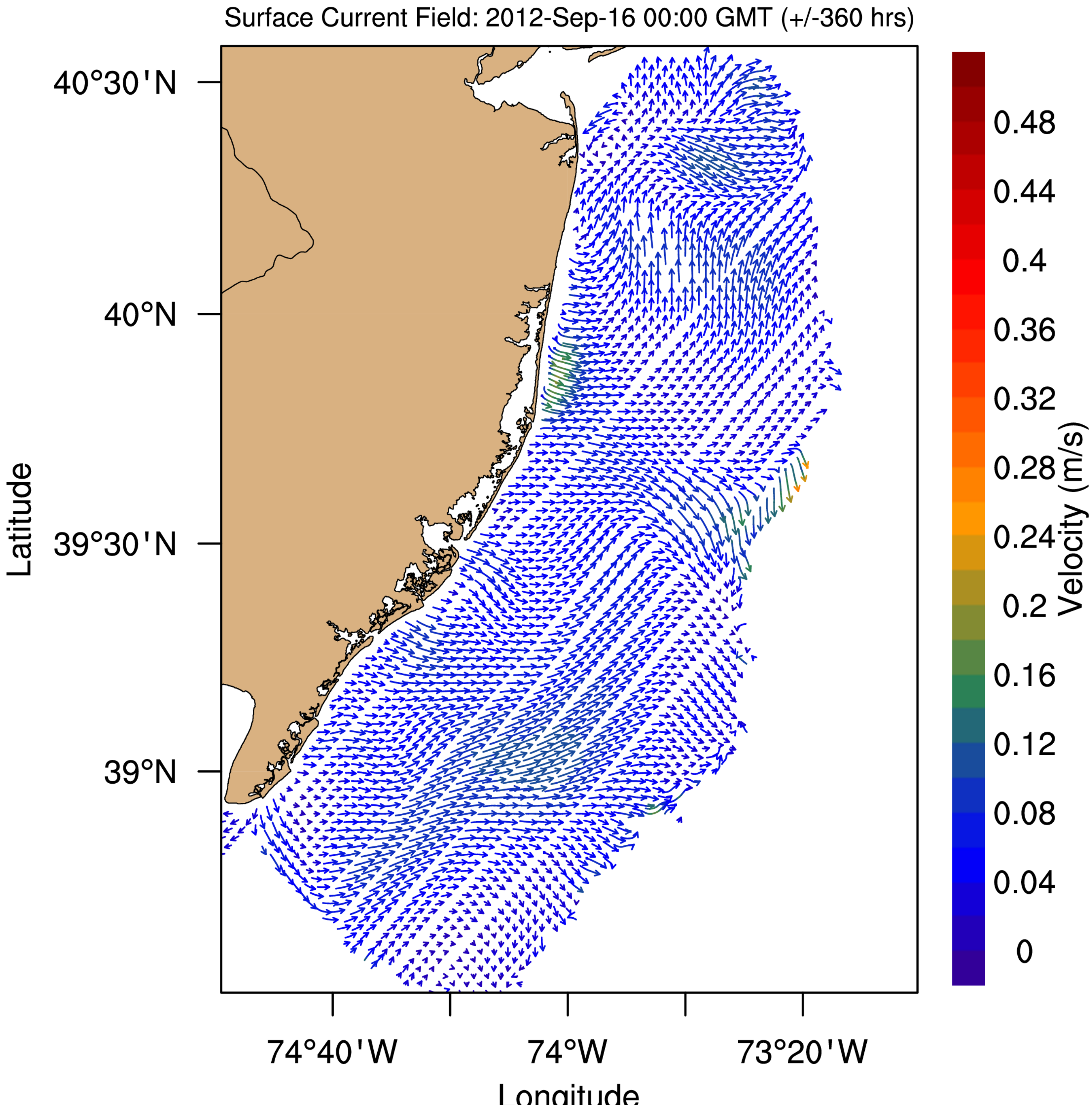


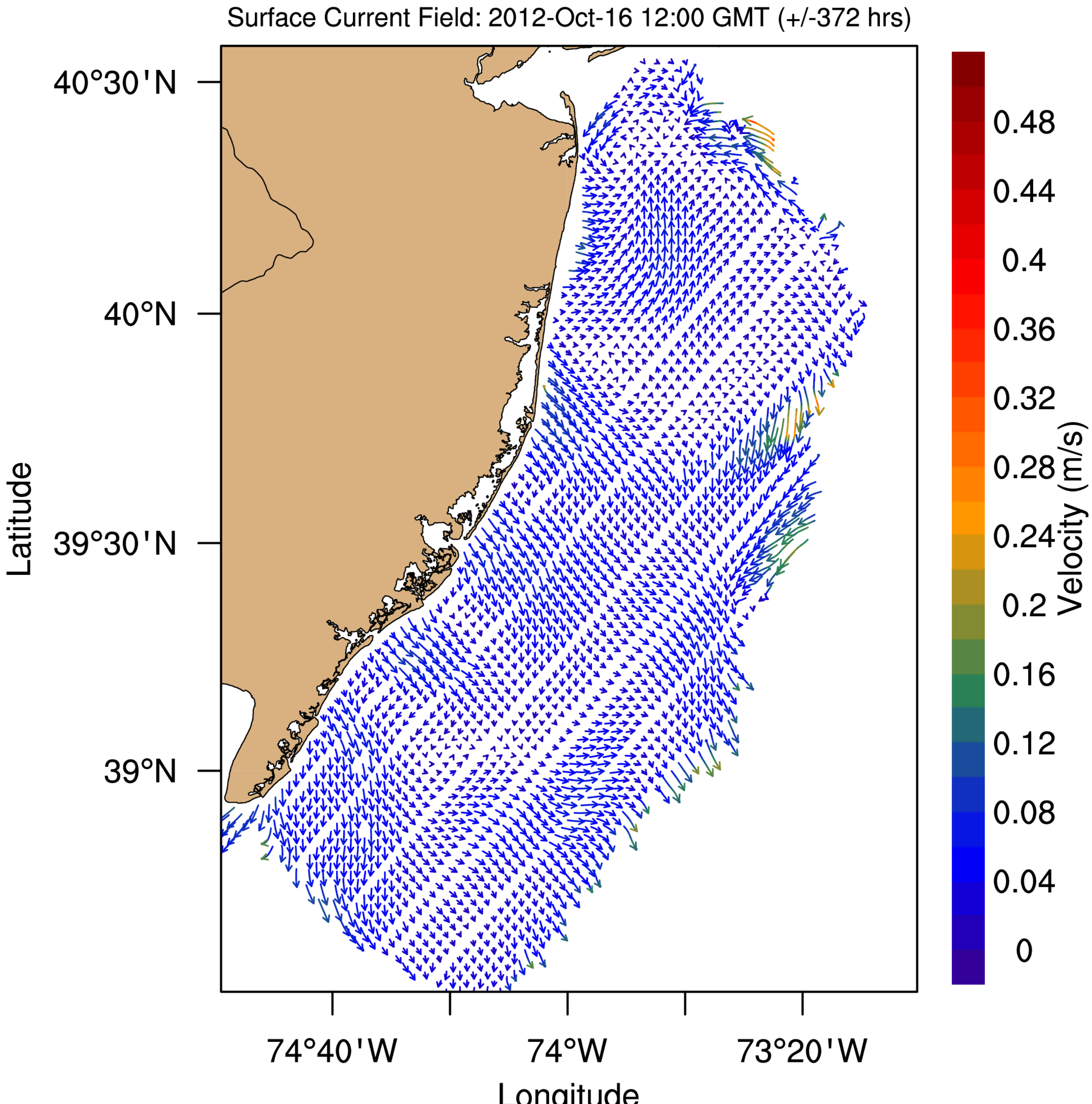

Surface Current Field: 2012-Jun-16 00:00 GMT (+/-360 hrs)
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°W
73°20'W
Longitude
Velocity (m/s)
0.48
0.44
0.4
0.36
0.32
0.28
0.24
0.2
0.16
0.12
0.08
0.04
0

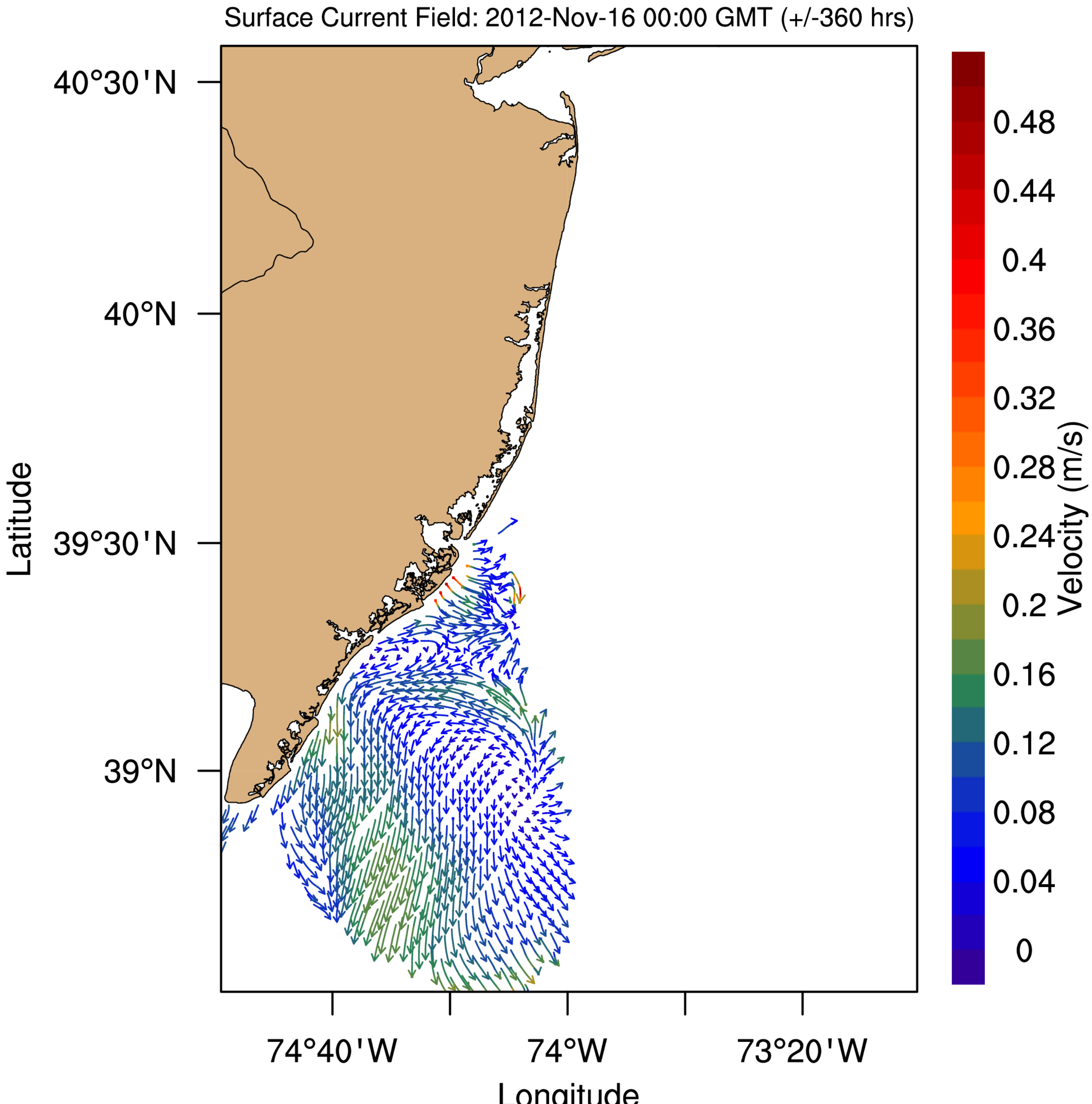


Surface Current Field: 2012-Jul-16 12:00 GMT (+/-372 hrs)
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°W
73°20'W
Longitude
Velocity (m/s)
0.48
0.44
0.4
0.36
0.32
0.28
0.24
0.2
0.16
0.12
0.08
0.04
0

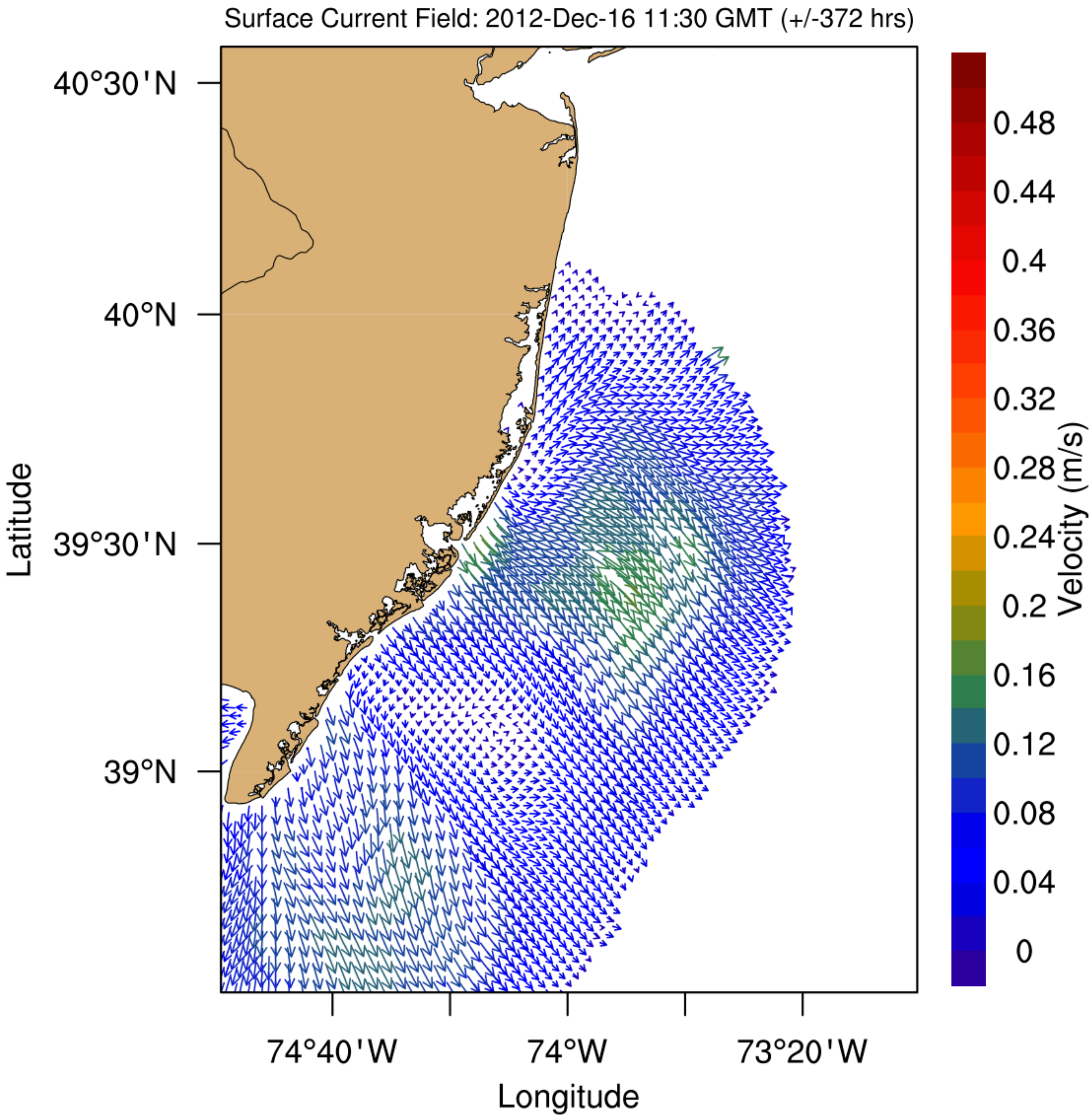

Surface Current Field: 2012-Aug-16 13:55 GMT (+/-370 hrs)
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°W
73°20'W
Longitude
0.48
0.44
0.4
0.36
0.32
0.28
0.24
0.2
0.16
0.12
0.08
0.04
0
Velocity (m/s)


Surface Current Field: 2012-Sep-16 00:00 GMT (+/-360 hrs)
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°W
73°20'W
Longitude
Velocity (m/s)
0.48
0.44
0.4
0.36
0.32
0.28
0.24
0.2
0.16
0.12
0.08
0.04
0


Surface Current Field: 2012-Oct-16 12:00 GMT (+/-372 hrs)
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°W
73°20'W
Longitude
Velocity (m/s)
0.48
0.44
0.4
0.36
0.32
0.28
0.24
0.2
0.16
0.12
0.08
0.04
0



Surface Current Field: 2012-Nov-16 00:00 GMT (+/-360 hrs)
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°W
73°20'W
Longitude
0.48
0.44
0.4
0.36
0.32
0.28
0.24
0.2
0.16
0.12
0.08
0.04
0
Velocity (m/s)

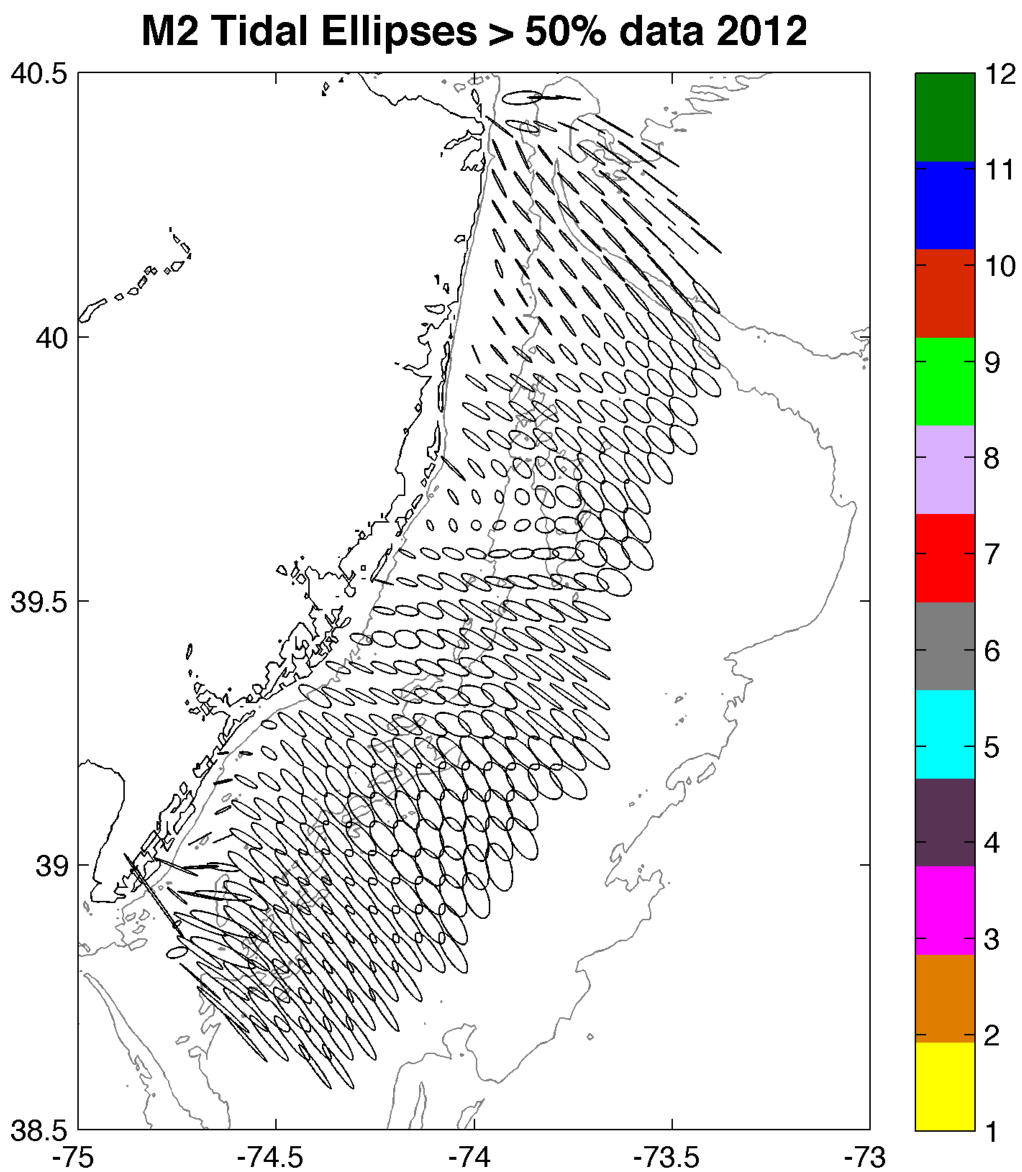


Surface Current Field: 2012-Dec-16 11:30 GMT (+/-372 hrs)
40°30'N
40°N
39°30'N
39°N
Latitude
74°40'W
74°W
73°20'W
Longitude
Velocity (m/s)
0.48
0.44
0.4
0.36
0.32
0.28
0.24
0.2
0.16
0.12
0.08
0.04
0

Section 14:

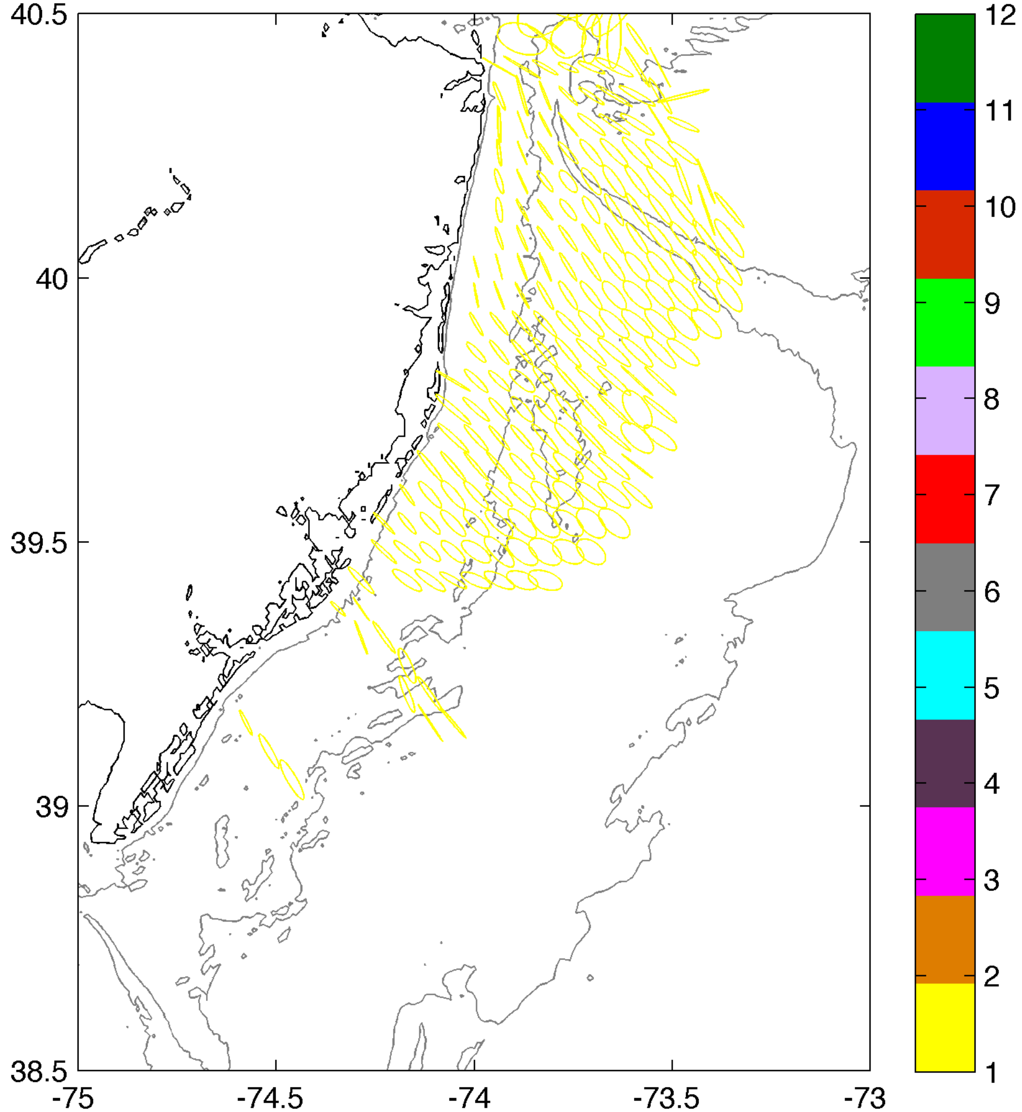
BPU
M2 Tidal Ellipses

January 1, 2012 to December 31, 2012

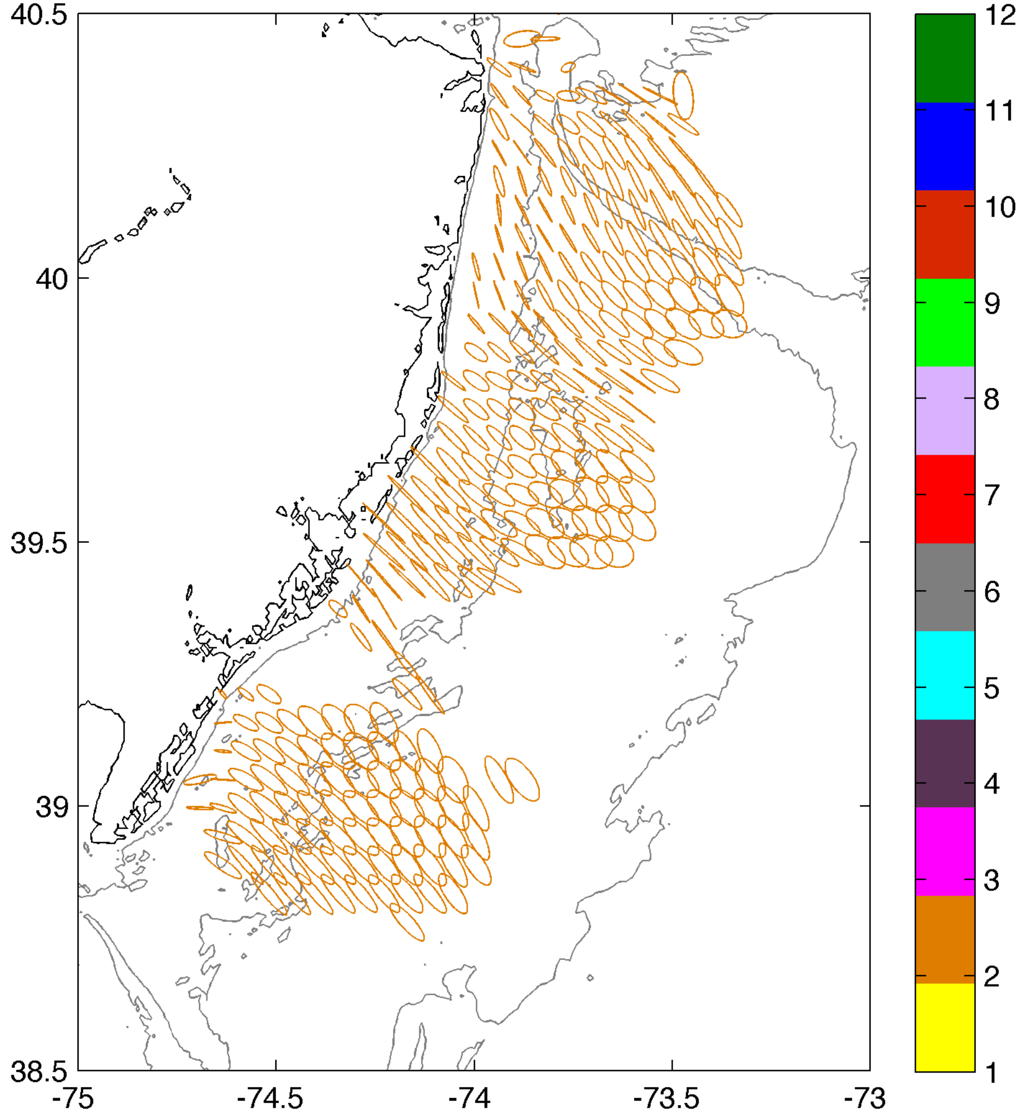


M2 Tidal Ellipses > 50% data 2012
40.5
40
39.5
39
38.5
-75
-74.5
-74
-73.5
-73
12
11
10
9
8
7
6
5
4
3
2
1

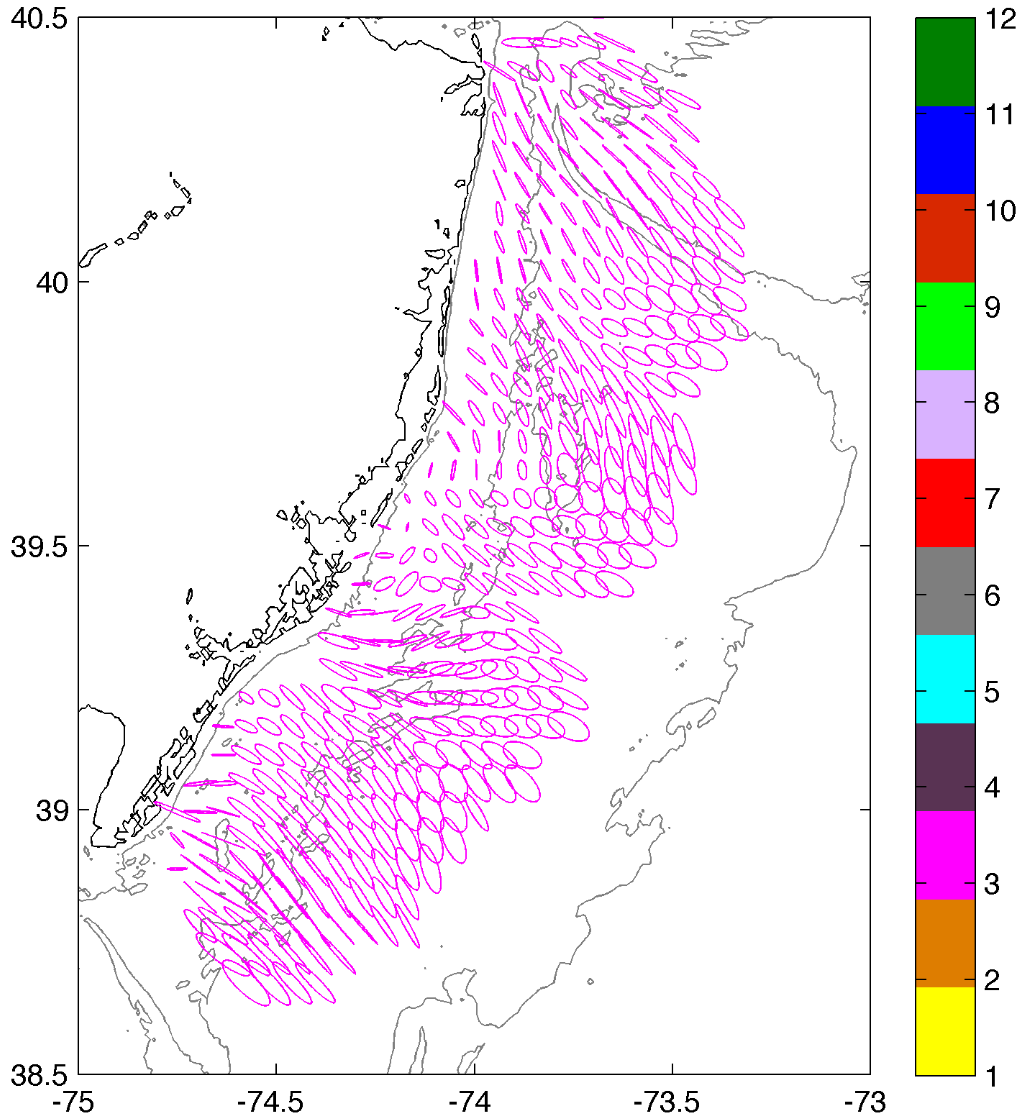
M2 Tidal Ellipses > 50% dataJanuary 2012

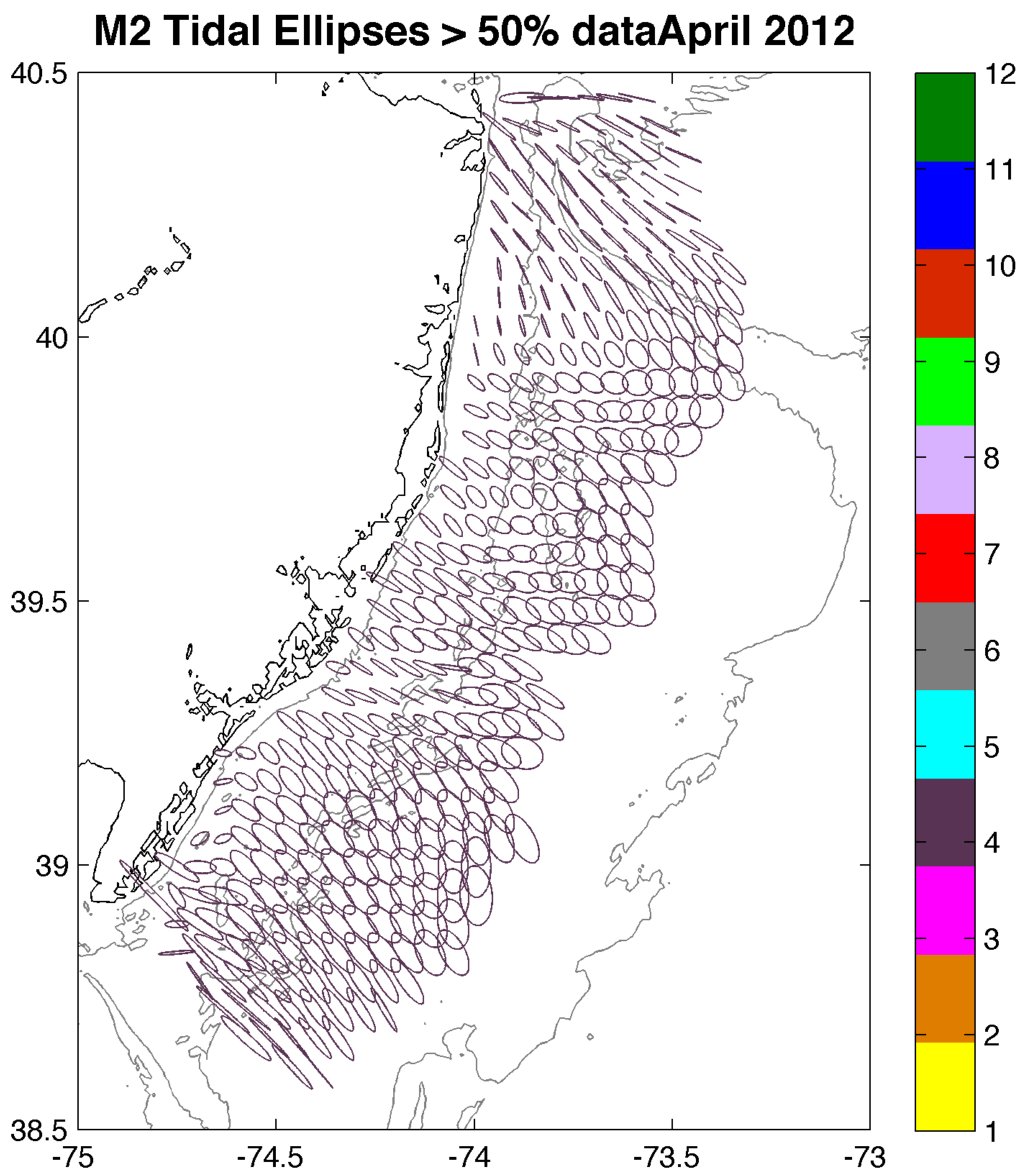


M2 Tidal Ellipses > 50% dataFebruary 2012

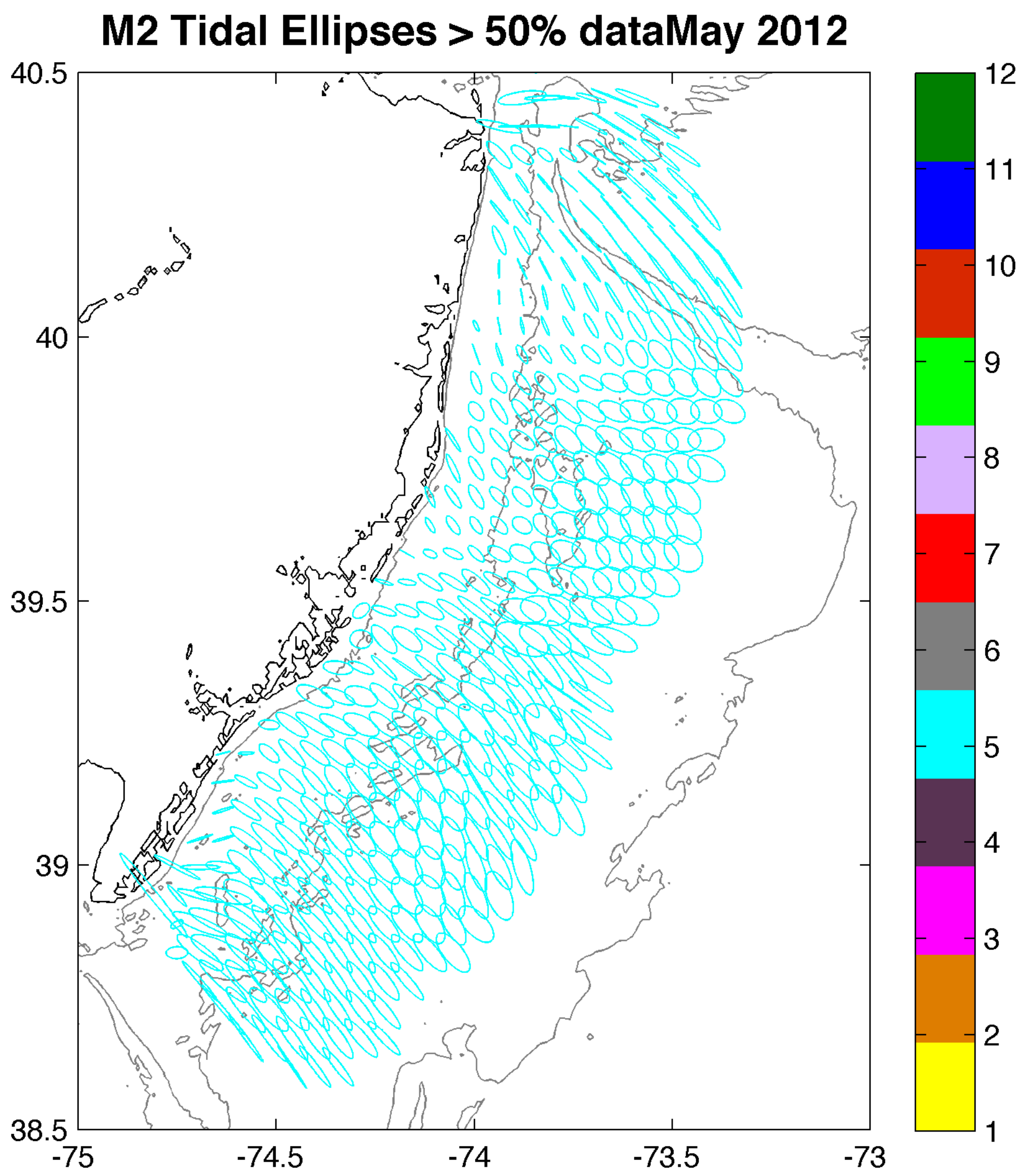


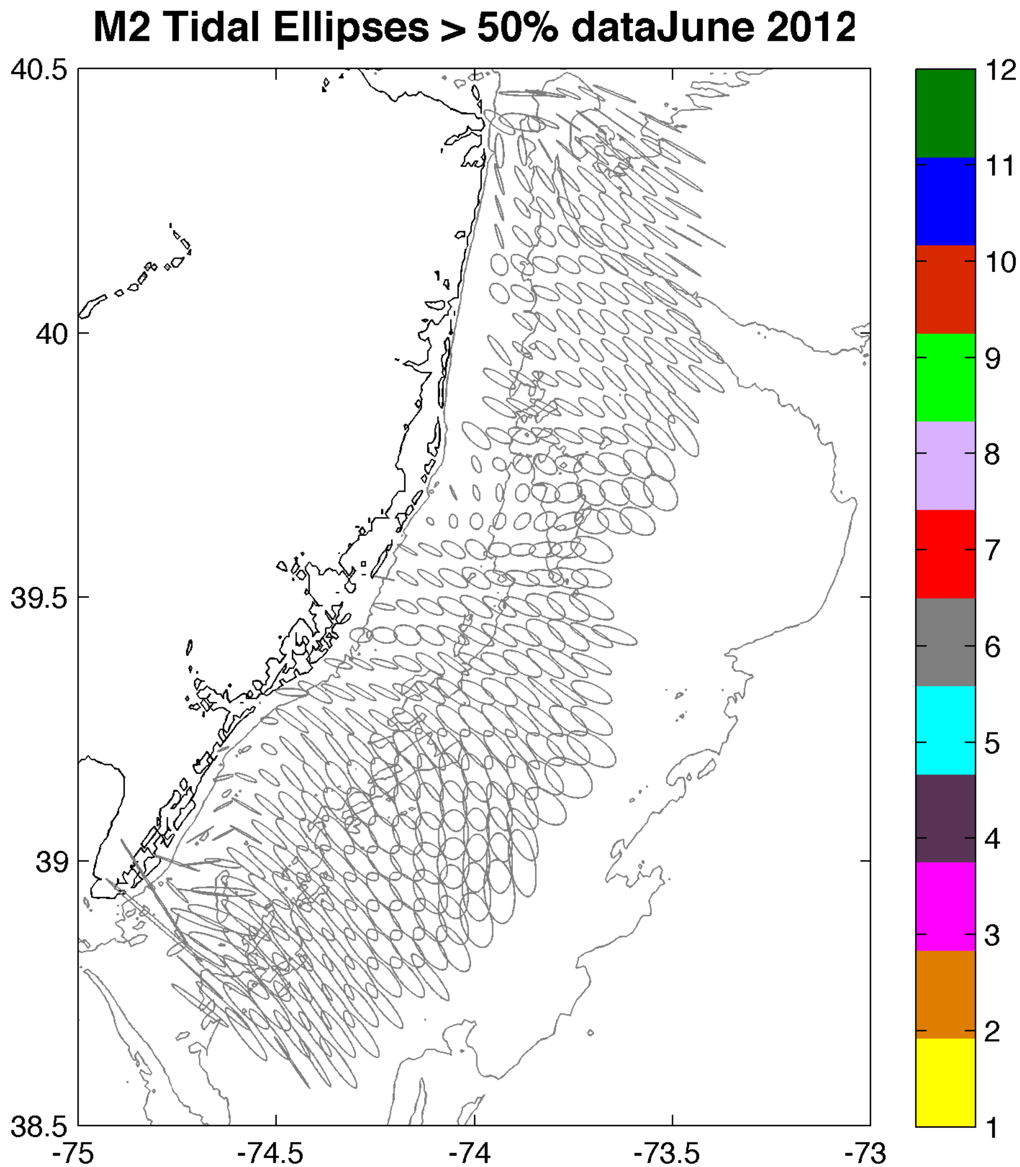
M2 Tidal Ellipses > 50% dataMarch 2012

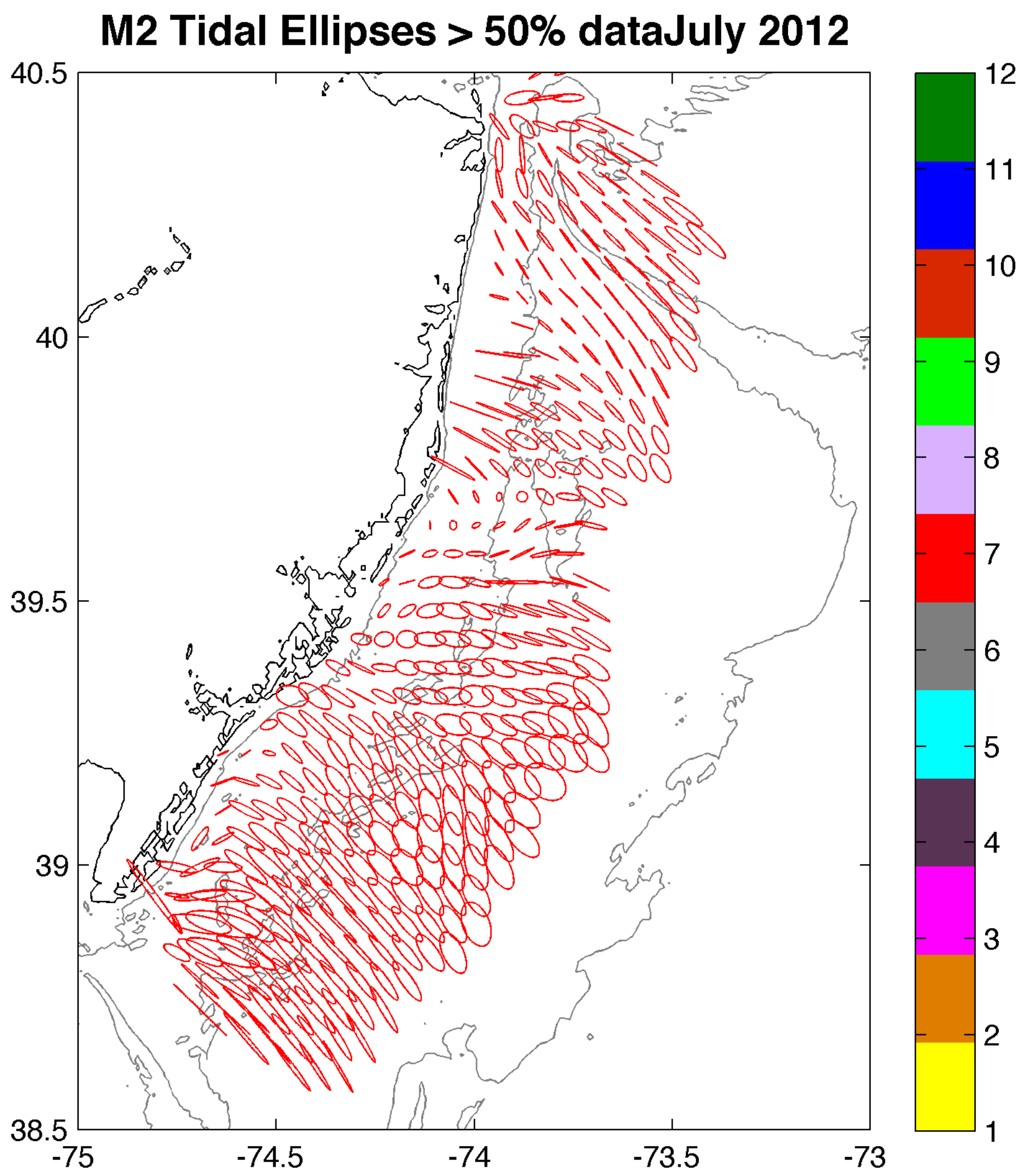


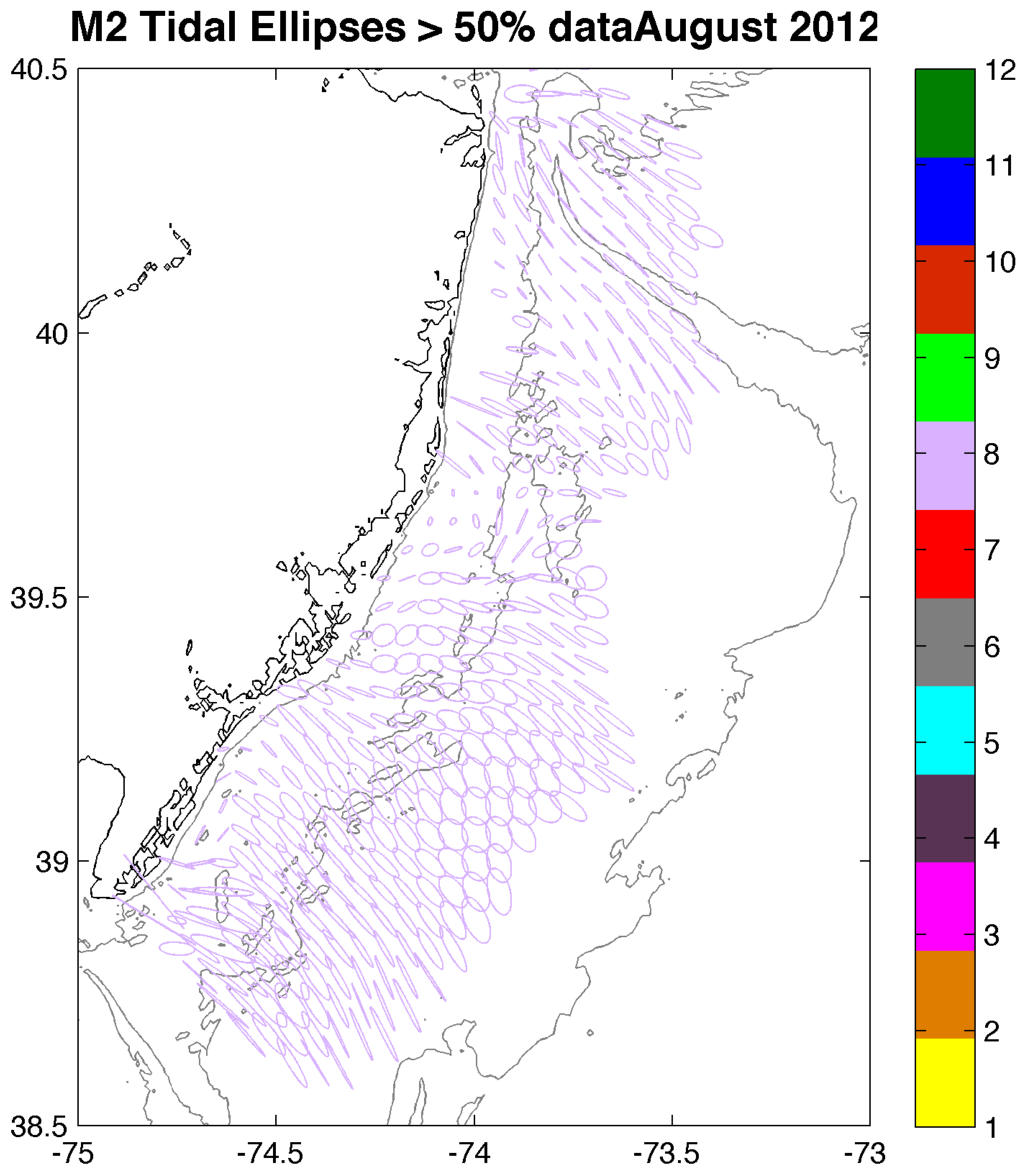


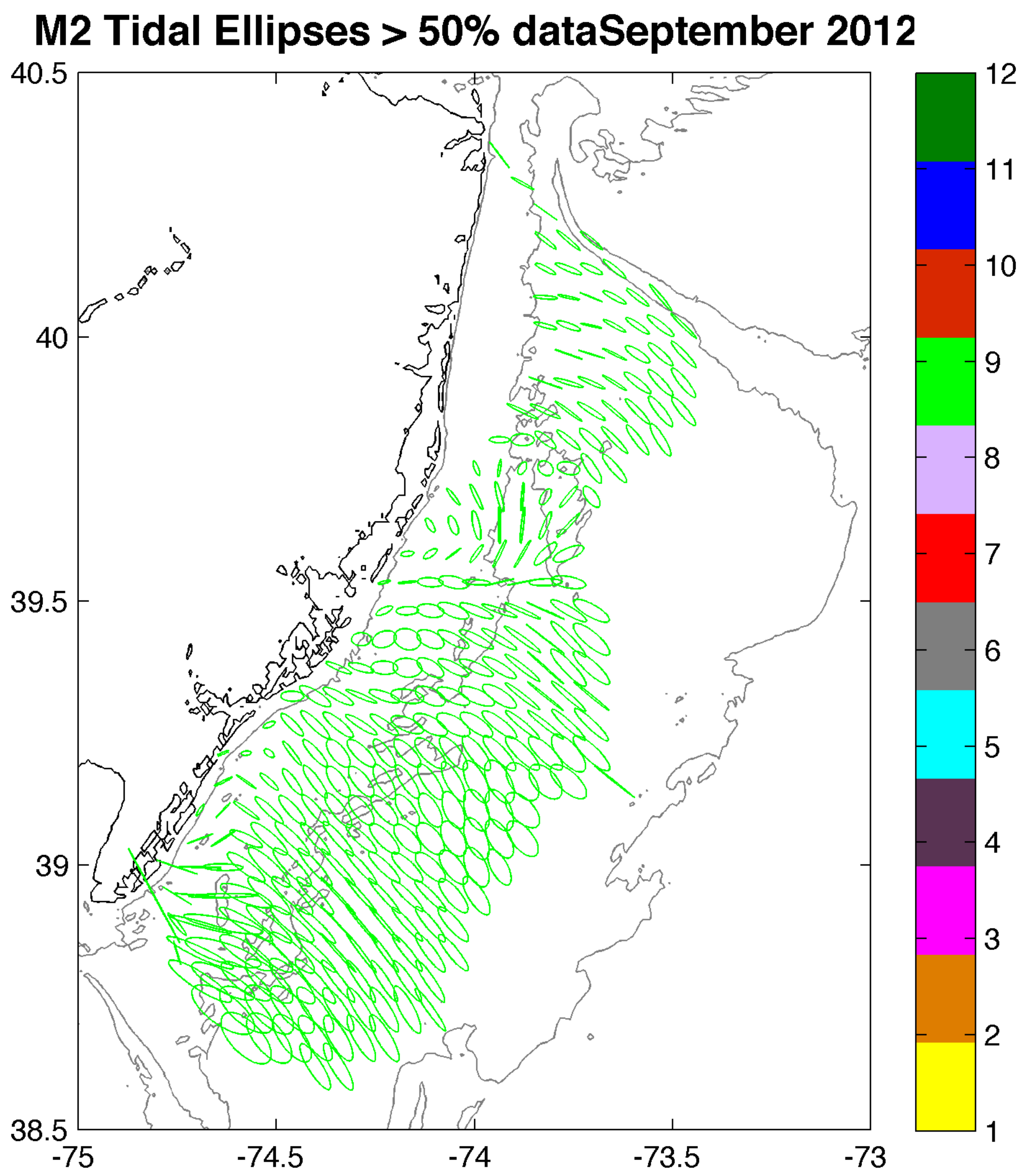
M2 Tidal Ellipses > 50% dataApril 2012
40.5
40
39.5
39
38.5
-75
-74.5
-74
-73.5
-73
12
11
10
9
8
7
6
5
4
3
2
1


M2 Tidal Ellipses > 50% dataMay 2012
40.5
40
39.5
39
38.5
-75
-74.5
-74
-73.5
-73
12
11
10
9
8
7
6
5
4
3
2
1

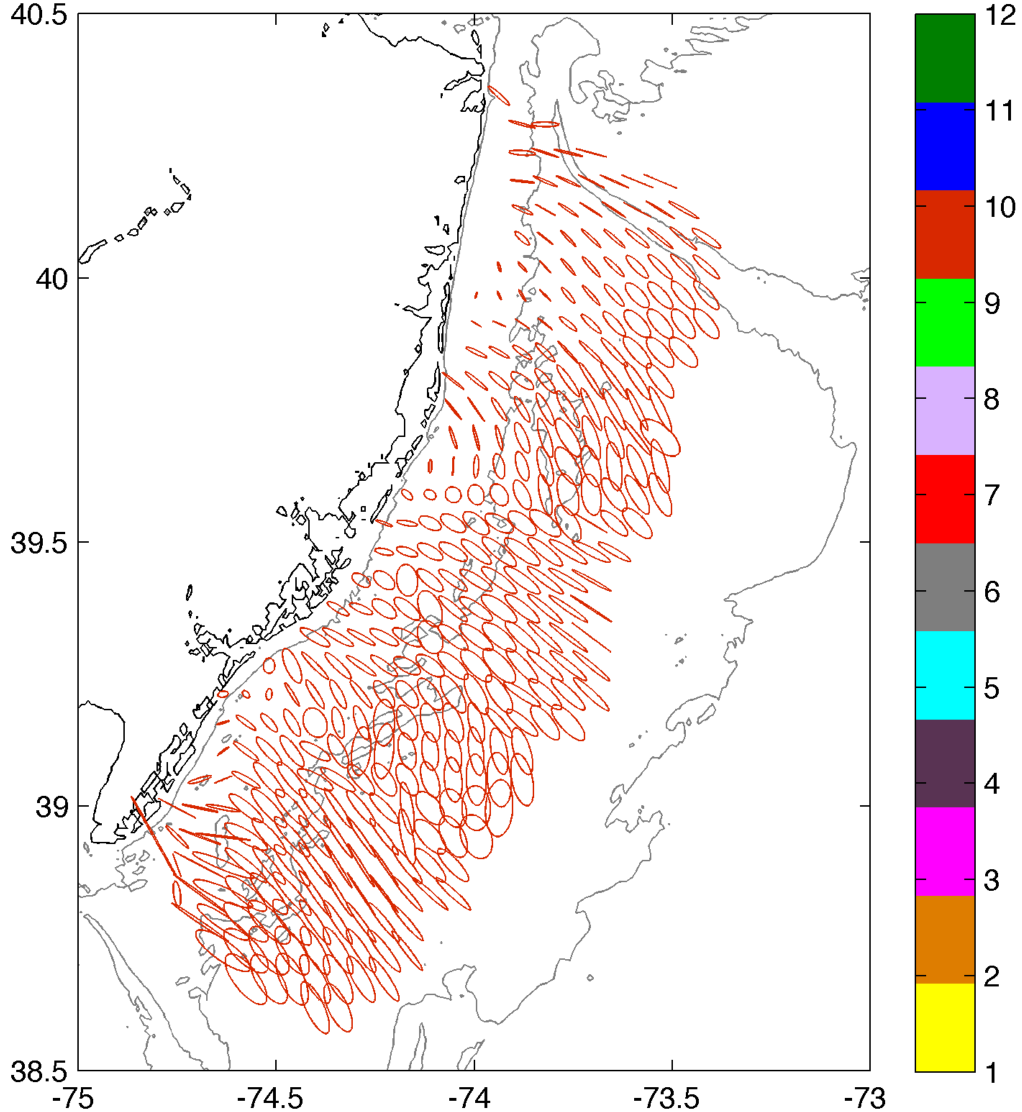

M2 Tidal Ellipses > 50% dataJune 2012
40.5
40
39.5
39
38.5
-75
-74.5
-74
-73.5
-73
12
11
10
9
8
7
6
5
4
3
2
1

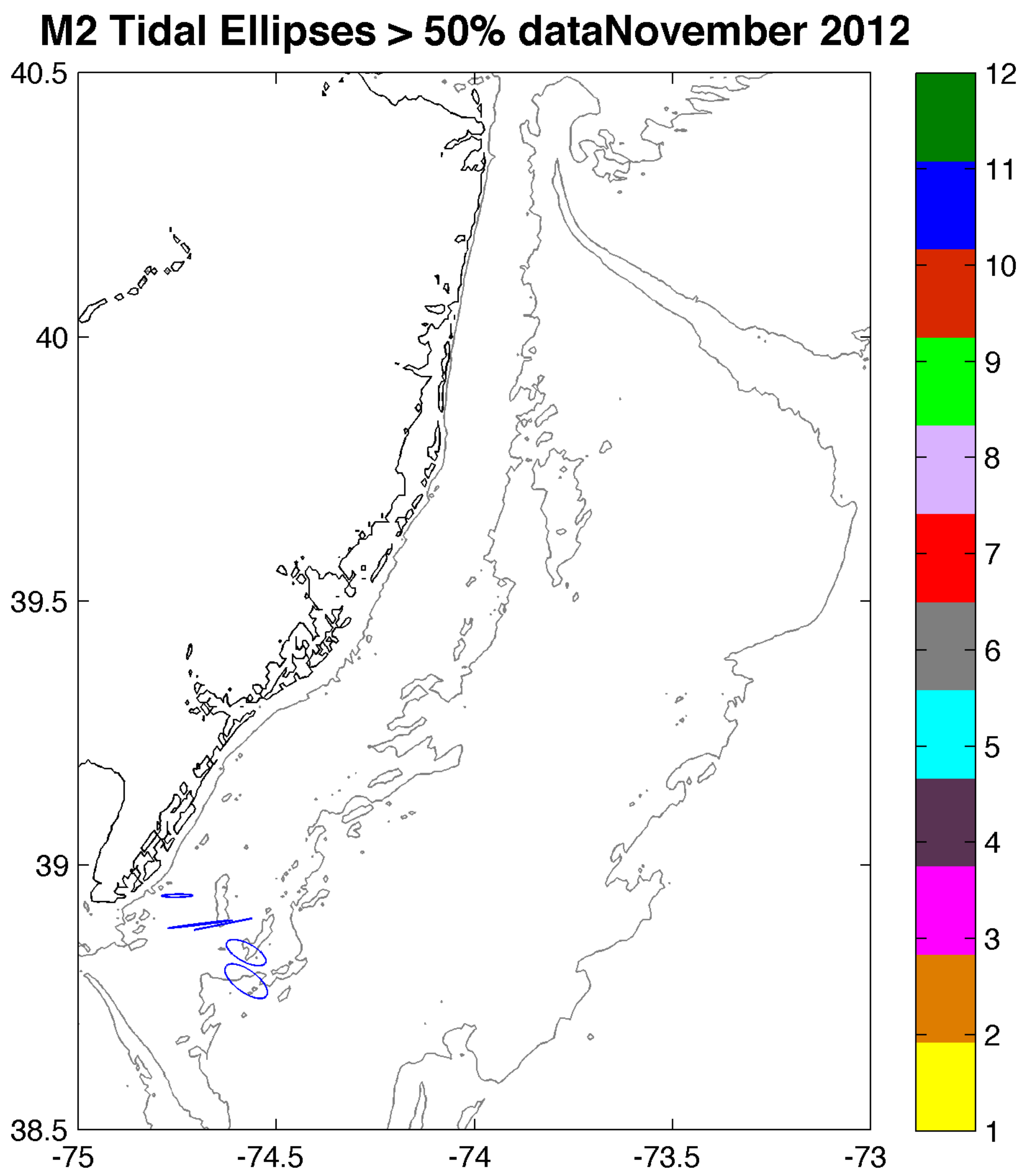

M2 Tidal Ellipses > 50% dataJuly 2012
40.5
40
39.5
39
38.5
-75
-74.5
-74
-73.5
-73
12
11
10
9
8
7
6
5
4
3
2
1

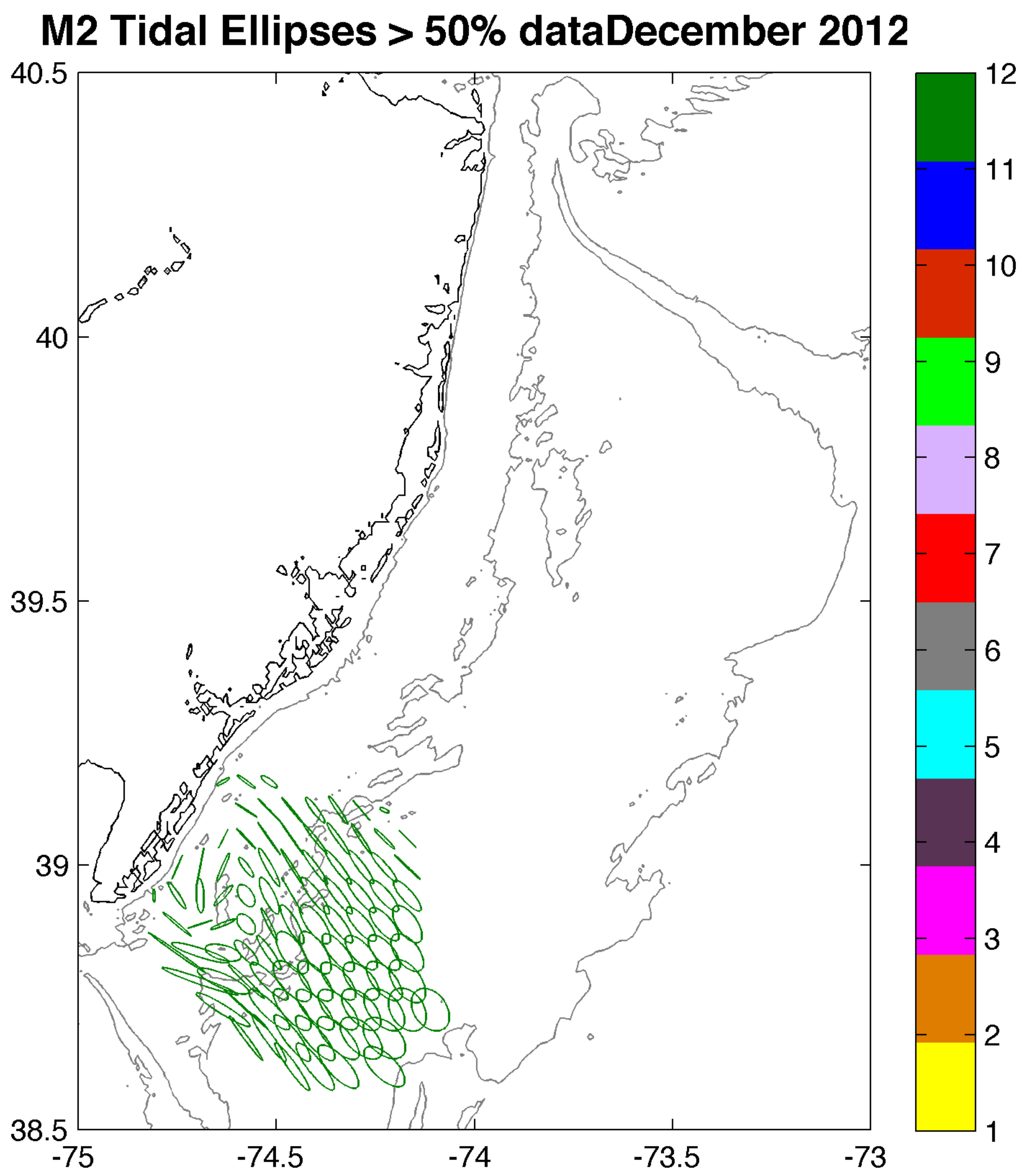

M2 Tidal Ellipses > 50% dataAugust 2012
40.5
40
39.5
39
38.5
-75
-74.5
-74
-73.5
-73
12
11
10
9
8
7
6
5
4
3
2
1


M2 Tidal Ellipses > 50% dataSeptember 2012
40.5
40
39.5
39
38.5
-75
-74.5
-74
-73.5
-73
12
11
10
9
8
7
6
5
4
3
2
1

M2 Tidal Ellipses > 50% dataOctober 2012

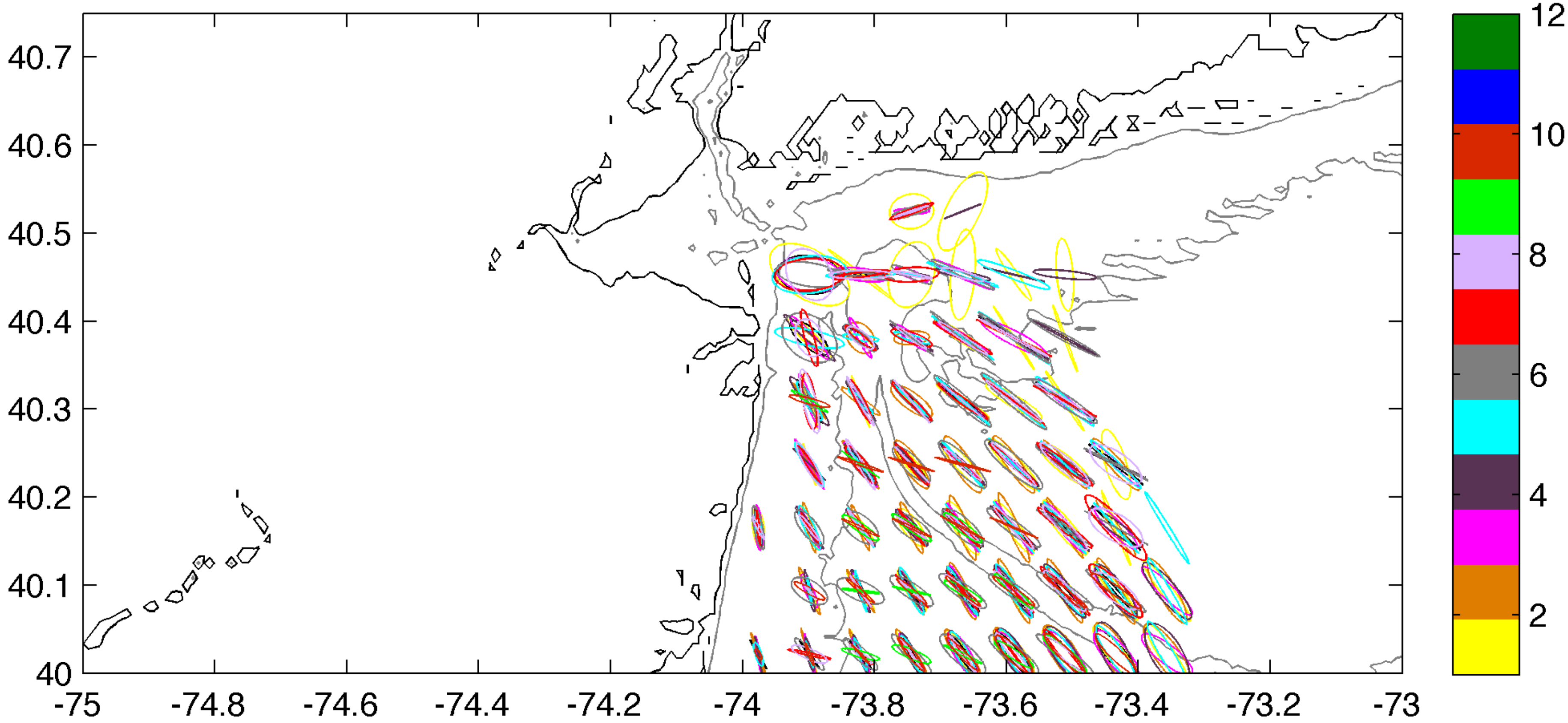



M2 Tidal Ellipses > 50% dataNovember 2012
40.5
40
39.5
39
38.5
-75
-74.5
-74
-73.5
-73
12
11
10
9
8
7
6
5
4
3
2
1

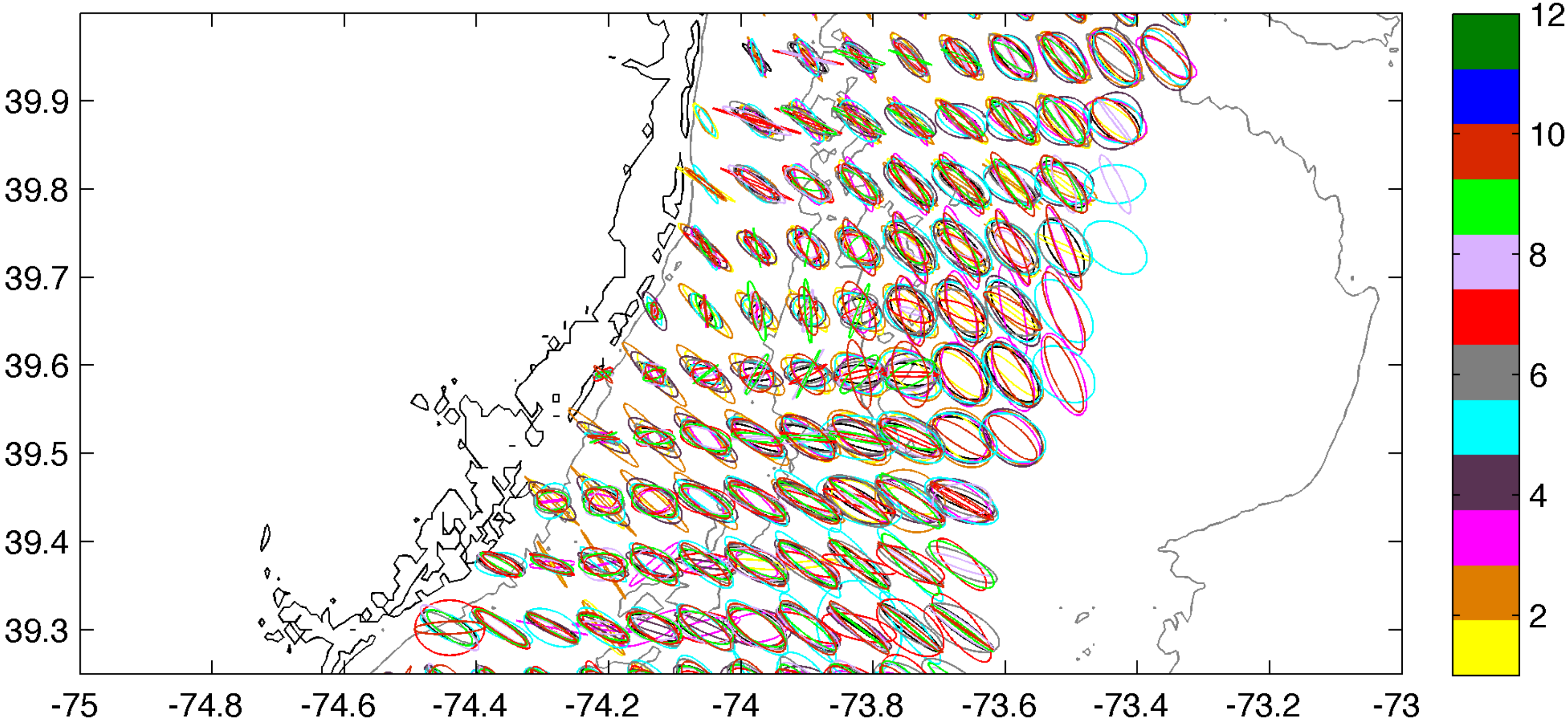


M2 Tidal Ellipses > 50% dataDecember 2012
40.5
40
39.5
39
38.5
-75
-74.5
-74
-73.5
-73
12
11
10
9
8
7
6
5
4
3
2
1

M2 Tidal Ellipses > 50% data 2012



M2 Tidal Ellipses > 50% data 2012



M2 Tidal Ellipses > 50% data 2012