Industry Perspective on the Northeast Gulf of Mexico Current Measurements

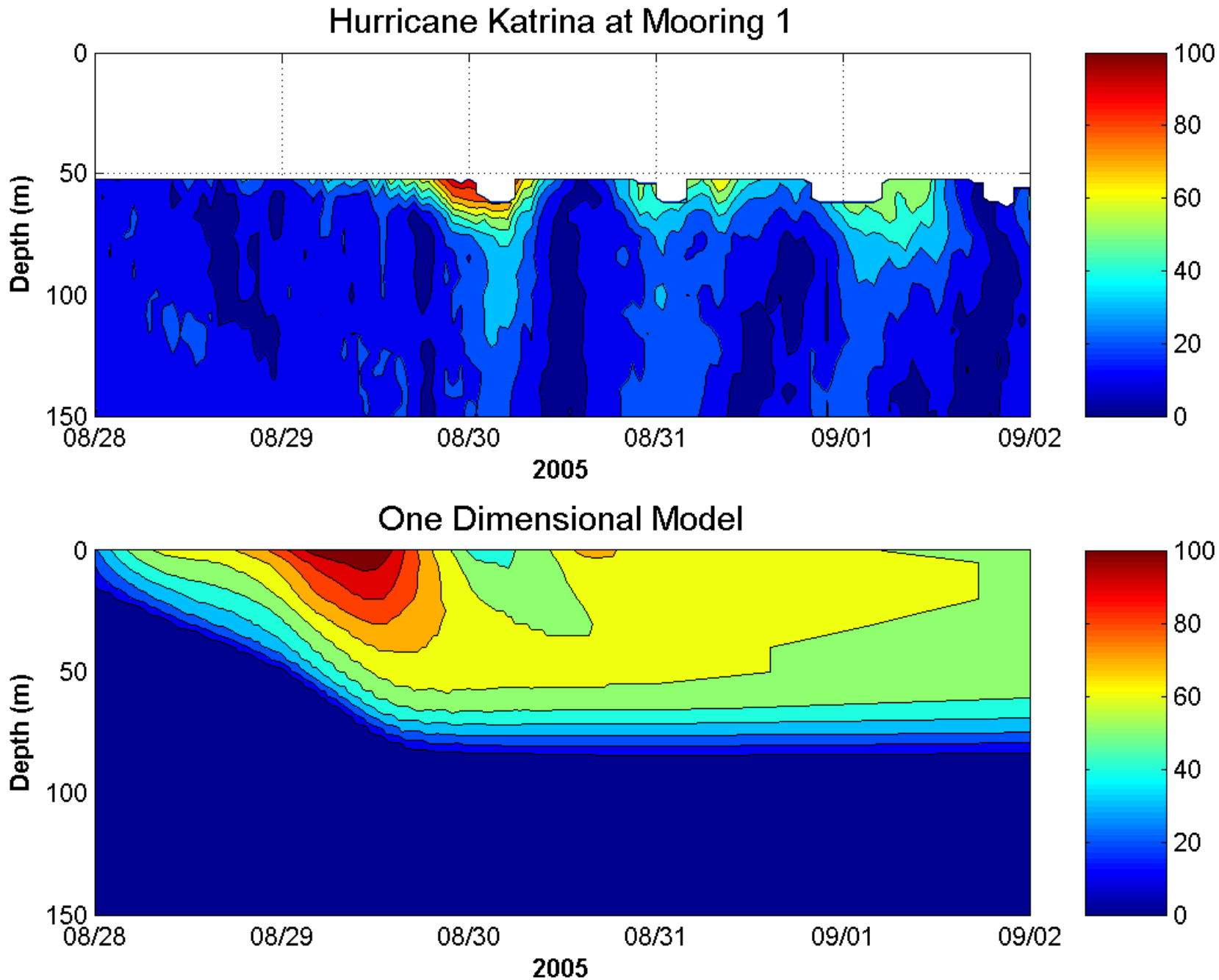
George Forristall

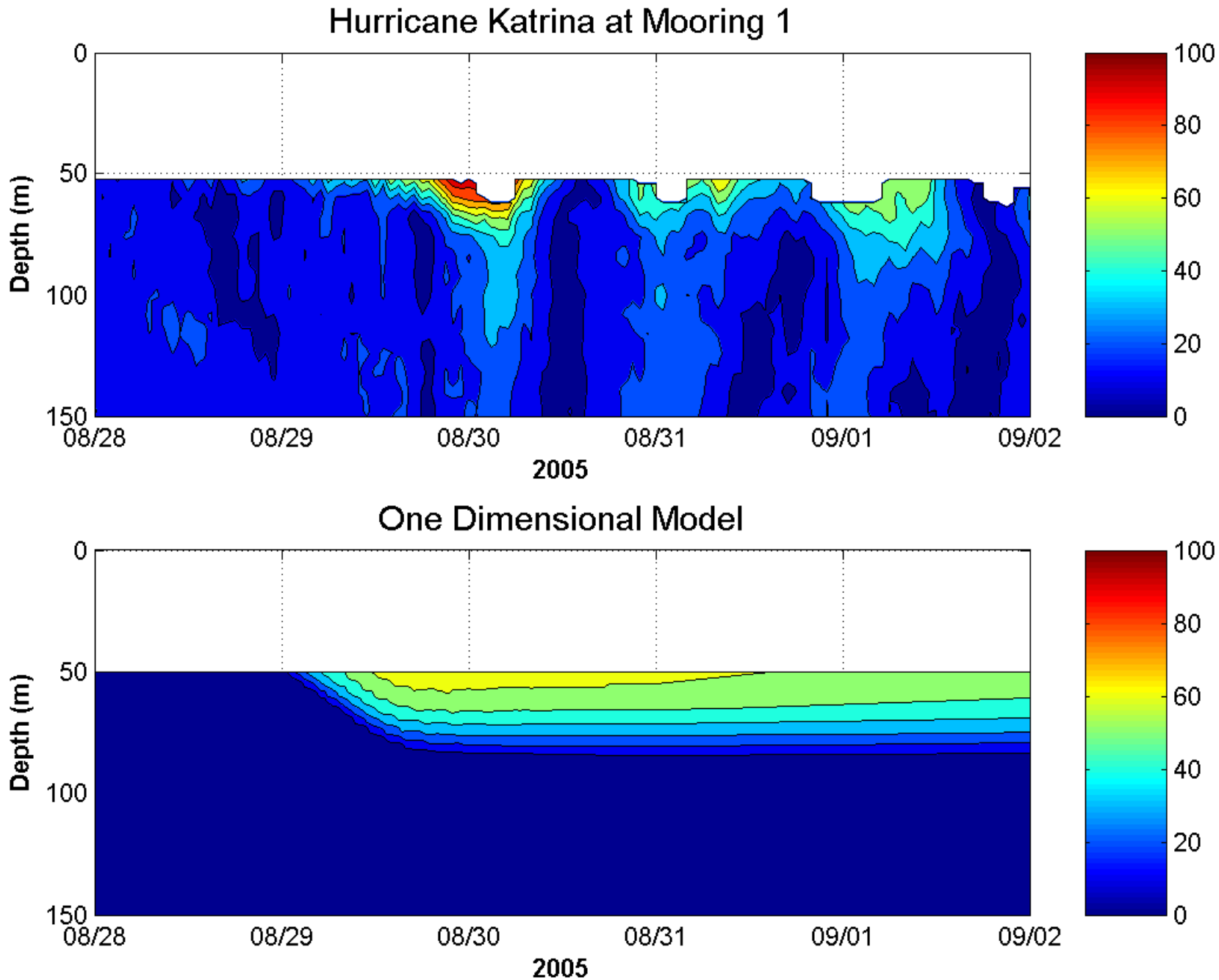
Forristall Ocean Engineering, Inc.

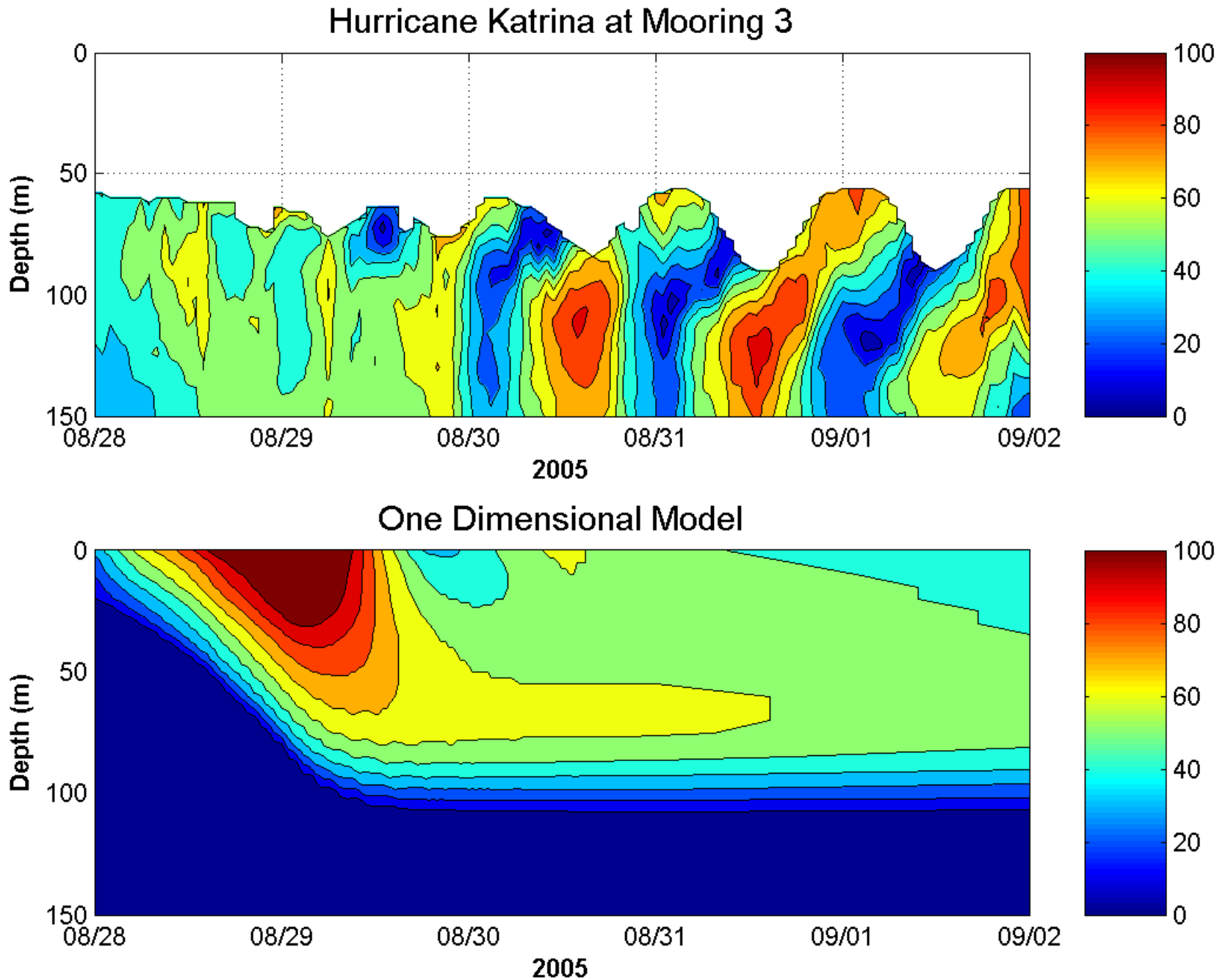
101 Chestnut St.
Camden, ME 04843
207-236-7747
george@forocean.com

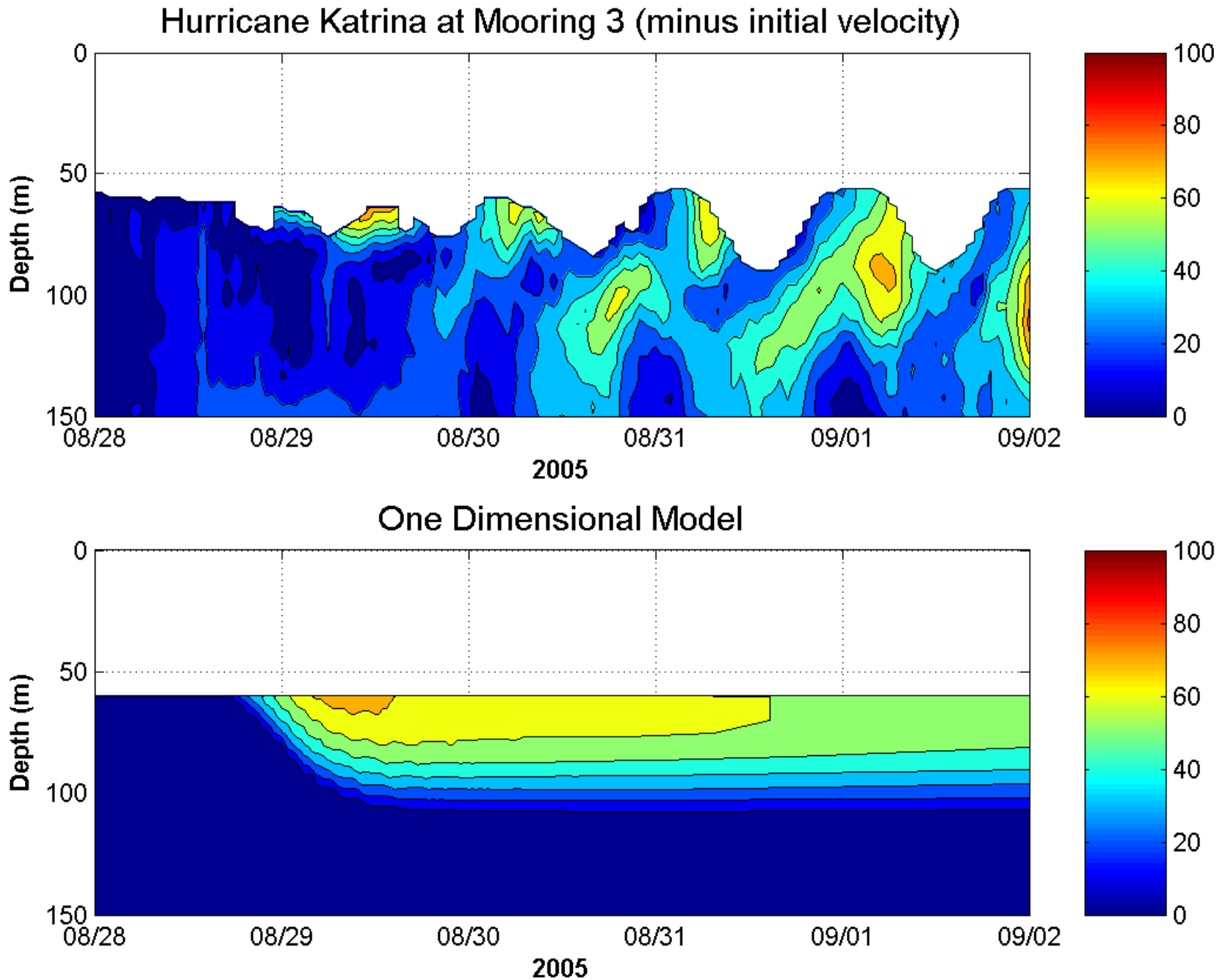
What Interests Industry?

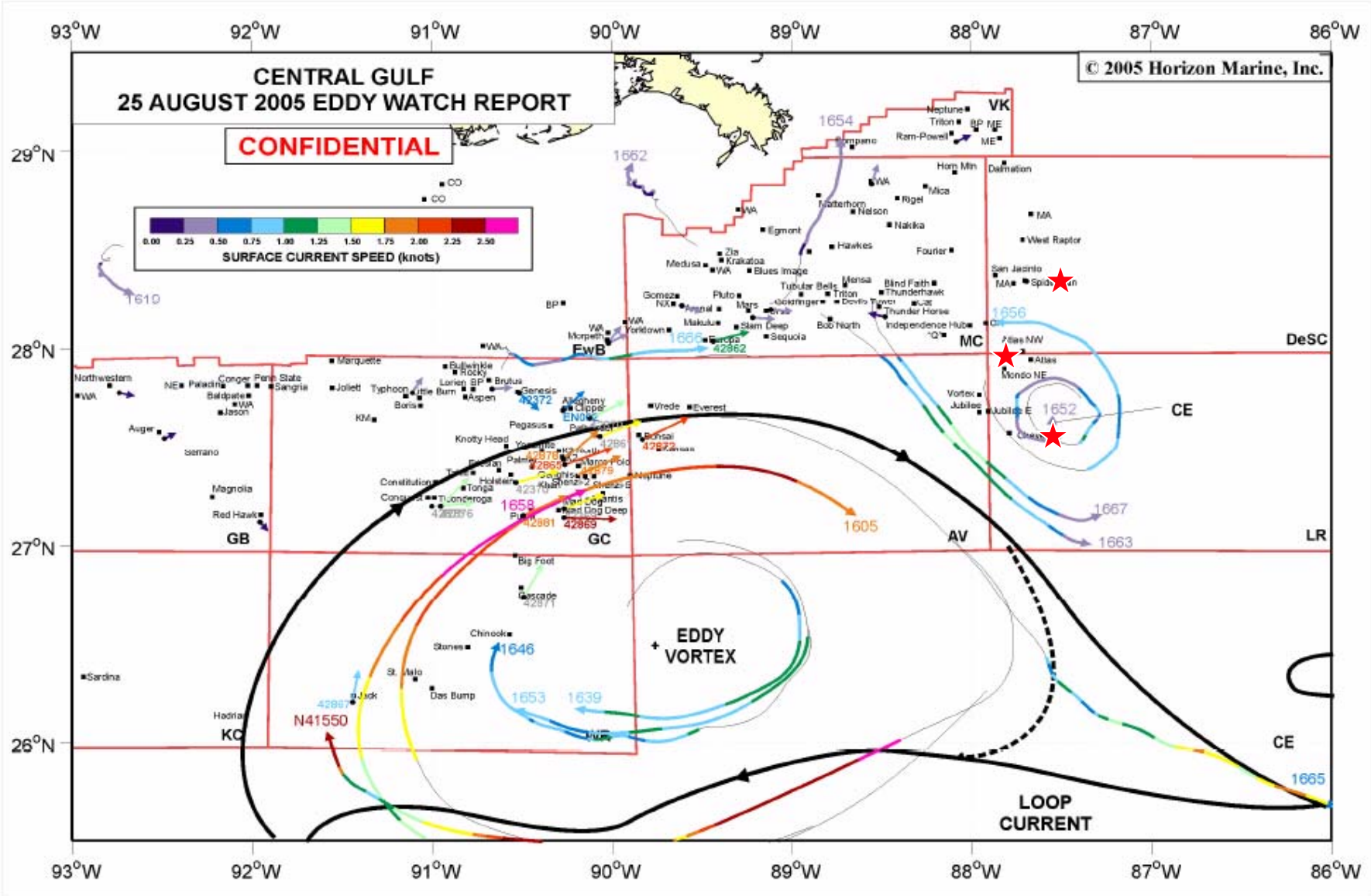
- The Loop Current
- Hurricane-generated currents
- Bottom currents enhanced by topography

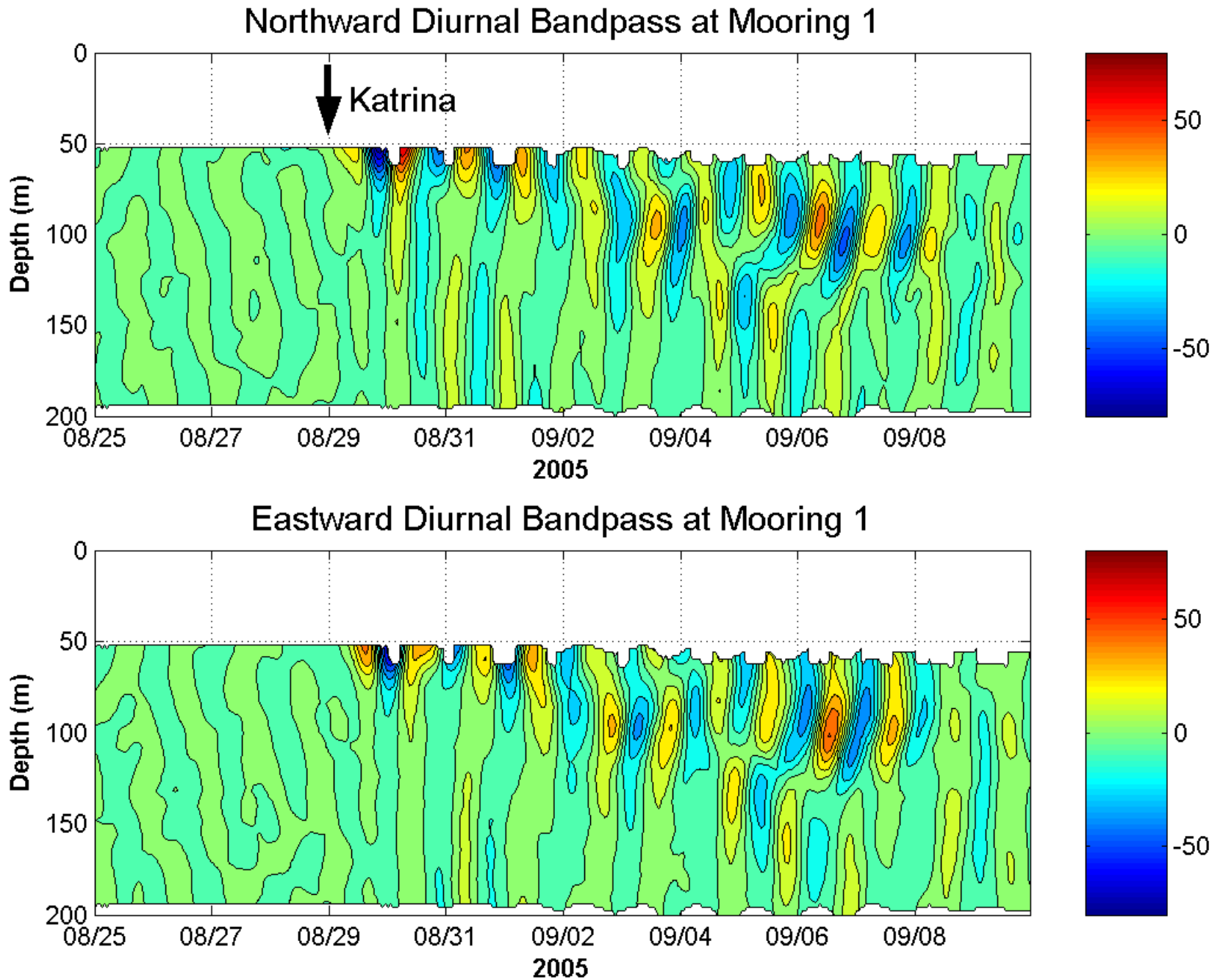

Hurricane Katrina at Mooring 1
Depth (m)
0
50
100
150
08/28
08/29
08/30
08/31
09/01
09/02
2005
100
80
60
40
20
0
One Dimensional Model
Depth (m)
0
50
100
150
08/28
08/29
08/30
08/31
09/01
09/02
2005
100
80
60
40
20
0

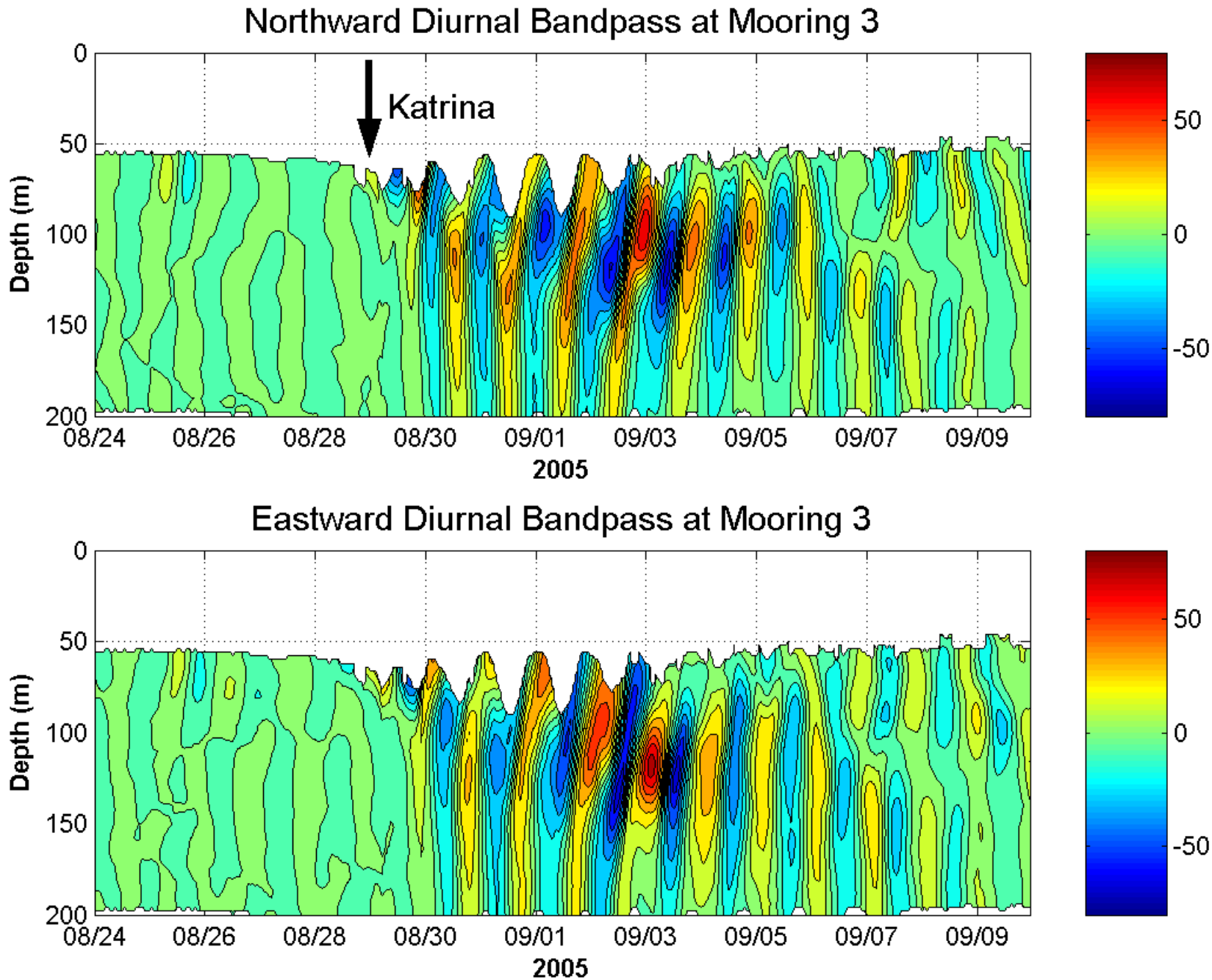

Hurricane Katrina at Mooring 1
Depth (m)
0
50
100
150
08/28
08/29
08/30
08/31
09/01
09/02
2005
100
80
60
40
20
0
One Dimensional Model
Depth (m)
0
50
100
150
08/28
08/29
08/30
08/31
09/01
09/02
2005
100
80
60
40
20
0

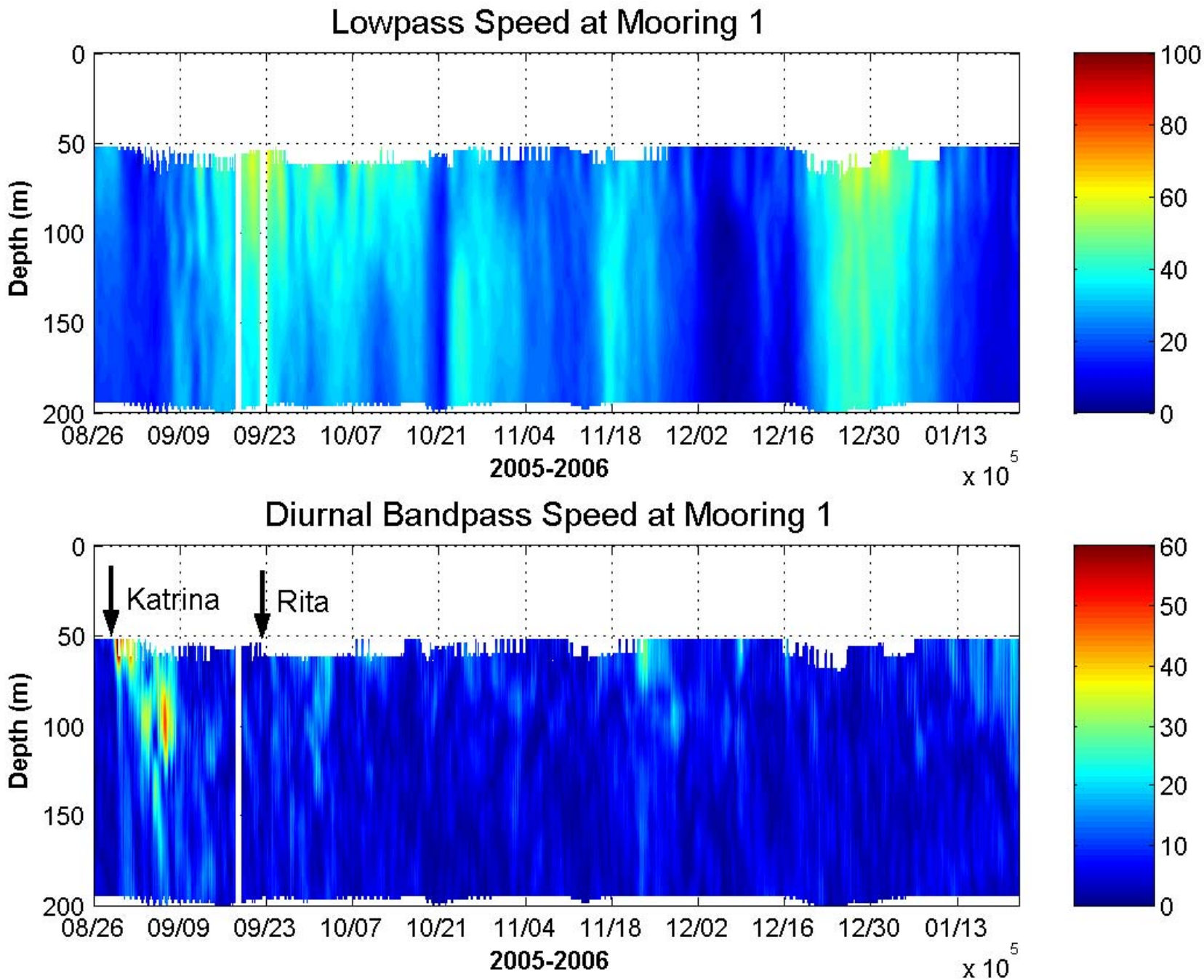

Hurricane Katrina at Mooring 3
Depth (m)
0
50
100
150
08/28
08/29
08/30
08/31
09/01
09/02
2005
100
80
60
40
20
0
One Dimensional Model
Depth (m)
0
50
100
150
08/28
08/29
08/30
08/31
09/01
09/02
2005
100
80
60
40
20
0

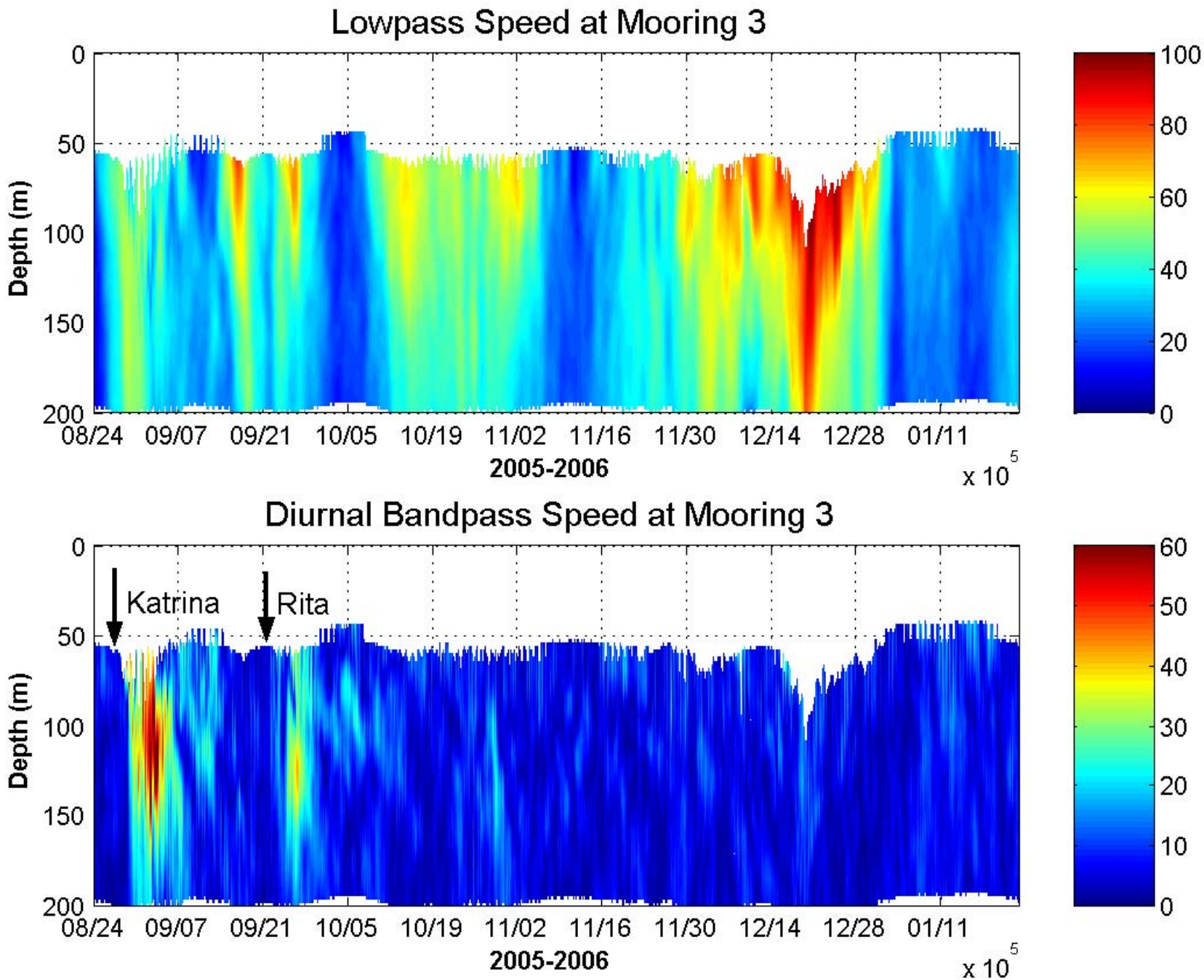

Hurricane Katrina at Mooring 3 (minus initial velocity)
Depth (m)
0
50
100
150
08/28
08/29
08/30
08/31
09/01
09/02
2005
100
80
60
40
20
0
One Dimensional Model
Depth (m)
0
50
100
150
08/28
08/29
08/30
08/31
09/01
09/02
2005
100
80
60
40
20
0


CENTRAL GULF
25 AUGUST 2005 EDDY WATCH REPORT
CONFIDENTIAL
© 2005 Horizon Marine, Inc.
SURFACE CURRENT SPEED (knots)
0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50
93°W
92°W
91°W
90°W
89°W
88°W
87°W
86°W
29°N
28°N
27°N
26°N
VK
MC
DeSC
EwB
GB
GC
AV
LR
KC
CE
EDDY VORTEX
LOOP CURRENT
N41550
1654
1662
1619
1656
1652
1666
1667
1663
1605
1658
1646
1653
1639
1665


Northward Diurnal Bandpass at Mooring 1
Katrina
Depth (m)
0
50
100
150
200
08/25
08/27
08/29
08/31
09/02
09/04
09/06
09/08
2005
50
0
-50
Eastward Diurnal Bandpass at Mooring 1
Depth (m)
0
50
100
150
200
08/25
08/27
08/29
08/31
09/02
09/04
09/06
09/08
2005
50
0
-50


Northward Diurnal Bandpass at Mooring 3
Katrina
Depth (m)
0
50
100
150
200
08/24
08/26
08/28
08/30
09/01
09/03
09/05
09/07
09/09
2005
50
0
-50
Eastward Diurnal Bandpass at Mooring 3
Depth (m)
0
50
100
150
200
08/24
08/26
08/28
08/30
09/01
09/03
09/05
09/07
09/09
2005
50
0
-50


Lowpass Speed at Mooring 1
Depth (m)
0
50
100
150
200
08/26
09/09
09/23
10/07
10/21
11/04
11/18
12/02
12/16
12/30
01/13
2005-2006
x 10^5
100
80
60
40
20
0
Diurnal Bandpass Speed at Mooring 1
Katrina
Rita
Depth (m)
0
50
100
150
200
08/26
09/09
09/23
10/07
10/21
11/04
11/18
12/02
12/16
12/30
01/13
2005-2006
x 10^5
60
50
40
30
20
10
0


Lowpass Speed at Mooring 3
Depth (m)
0
50
100
150
200
08/24
09/07
09/21
10/05
10/19
11/02
11/16
11/30
12/14
12/28
01/11
2005-2006
x 10^5
100
80
60
40
20
0
Diurnal Bandpass Speed at Mooring 3
Katrina
Rita
Depth (m)
0
50
100
150
200
08/24
09/07
09/21
10/05
10/19
11/02
11/16
11/30
12/14
12/28
01/11
2005-2006
x 10^5
60
50
40
30
20
10
0

Further Work

- Extreme value calculations from near-bottom current measurements
- Eddy positions and areas calculated from Eddy Watch charts
- Do intrusions of the Loop Current force deep currents?