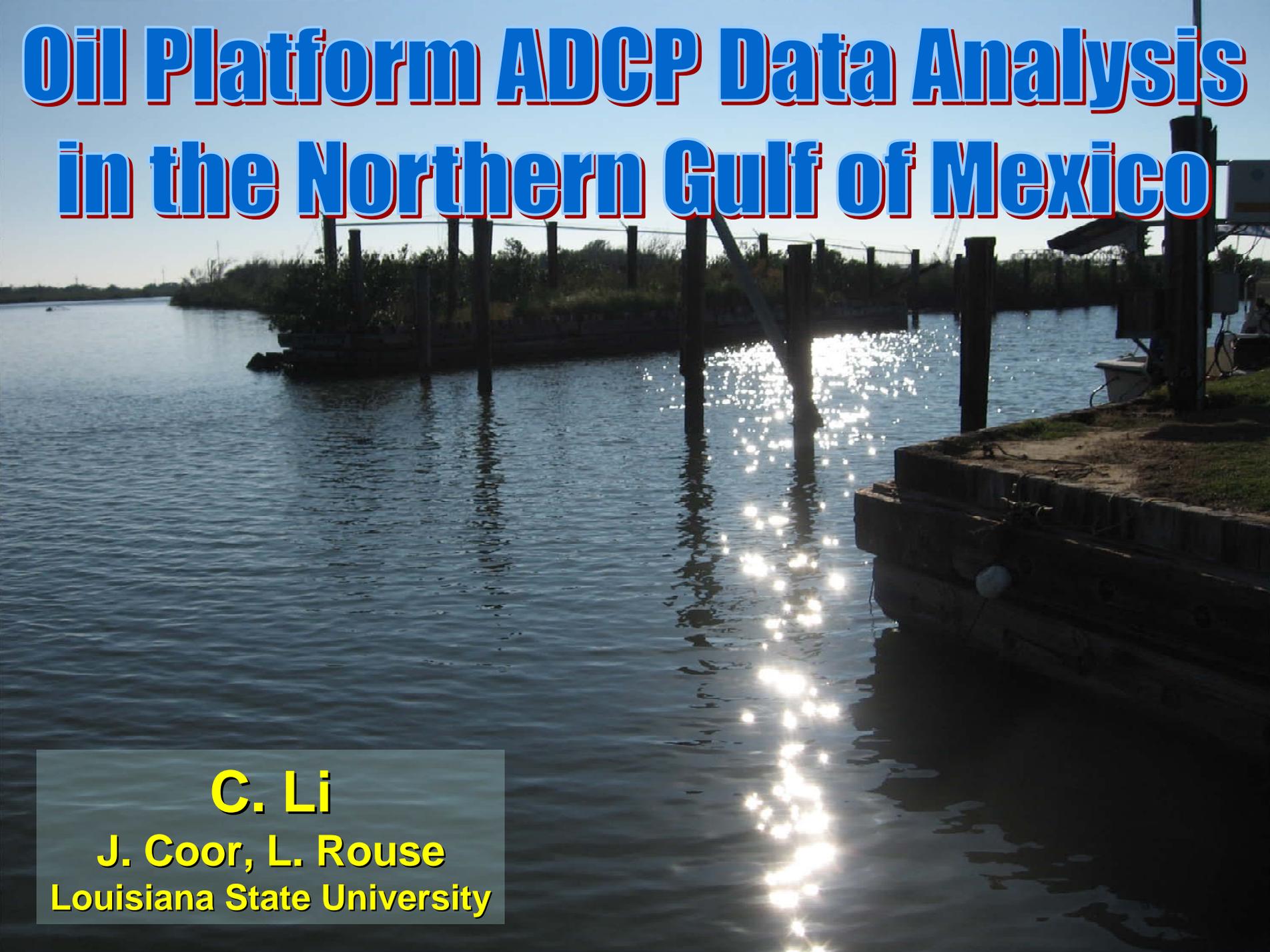


Oil Platform ADCP Data Analysis in the Northern Gulf of Mexico

A photograph of a body of water, likely a bay or inlet, with a pier structure made of wooden pilings extending into the water. The sun is low in the sky, creating a bright, shimmering reflection on the water's surface. The background shows some vegetation and a clear sky.

C. Li

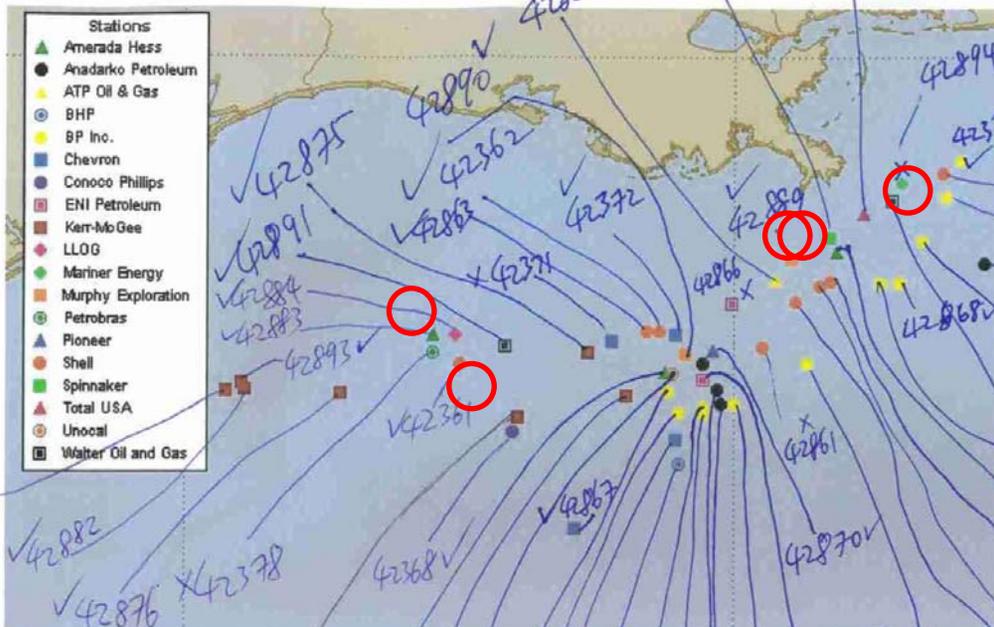
**J. Coor, L. Rouse
Louisiana State University**

21 April 2005 – MMS issued a Notice to Lessees and Operators (NTL) No. 2005-G05 to require oil companies operating on the Outer Continental Shelf region to monitor and report real time velocity profiles using ADCPs based on oil platforms.

Data are recorded in waters with a total depth > 400 m at 10–20 minute intervals from near surface (~ 30 m) to ~ 500 – 1800 m.

In places with depth greater than 1100 m, two ADCPs may be used.

Stations on 19 January 2006



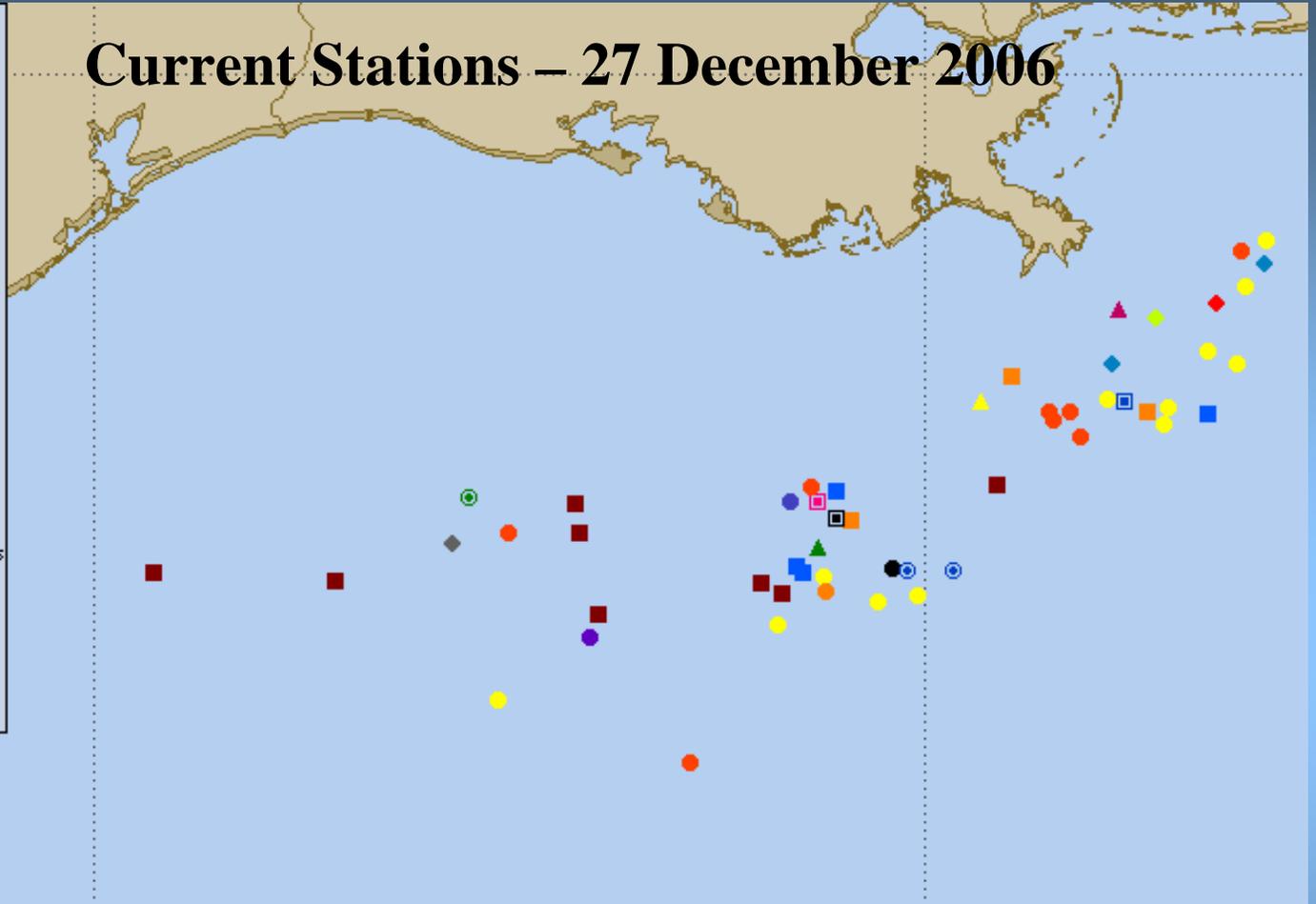
To view MMS ADCP Historical data, click [here](#).

U.S. Dept. of Commerce
 National Oceanic and Atmospheric Administration
 National Weather Service
 National Data Buoy Center
 1100 Balch Blvd.
 Stennis Space Center, MS 39529
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 Page last modified: November 9, 2005

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Current Stations – 27 December 2006

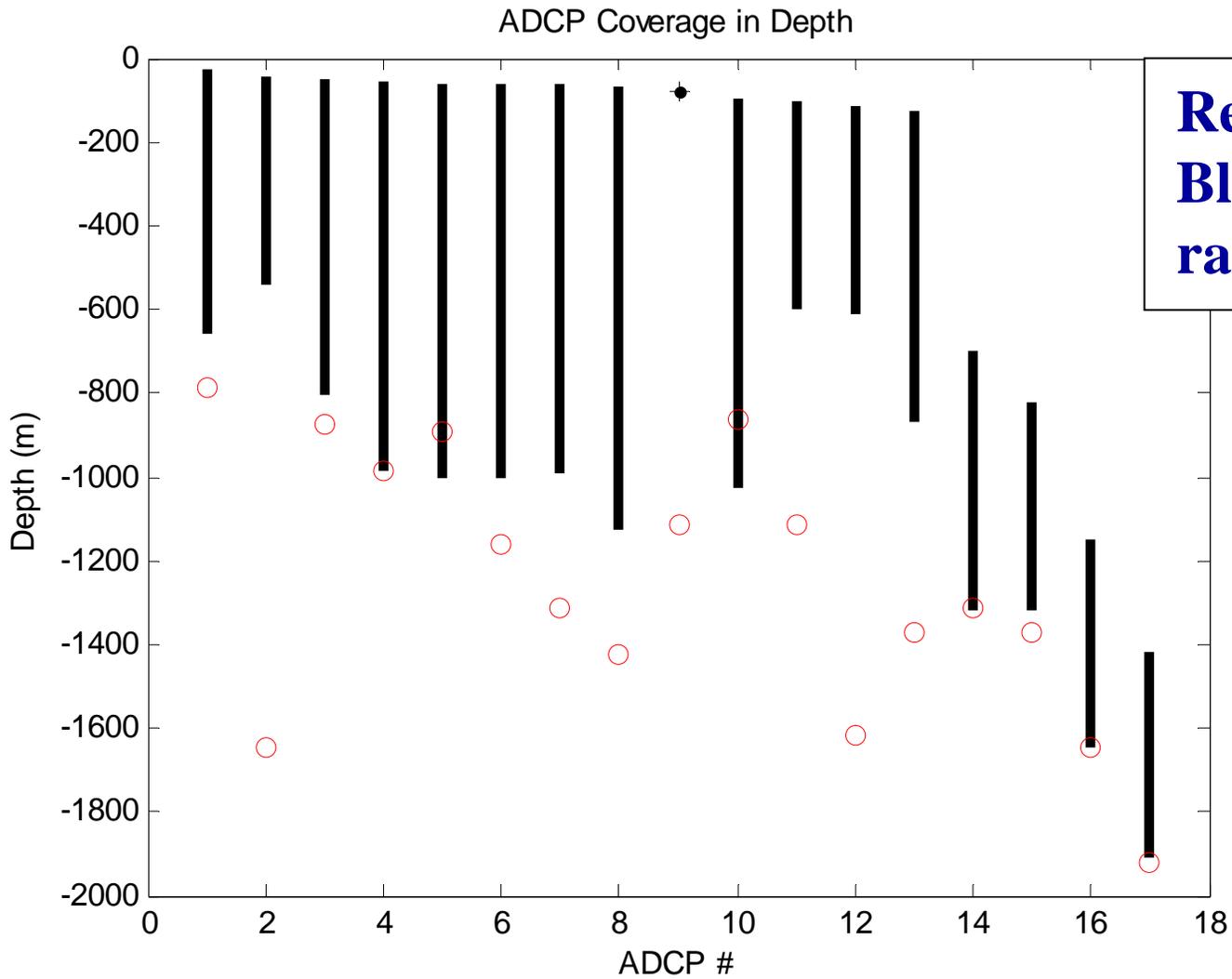
- Station Legend
- ▲ Amerada Hess
 - Anadarko Petroleum
 - ▲ ATP Oil & Gas
 - ⊙ BHP
 - BP Inc.
 - Chevron
 - Conoco Phillips
 - ◻ ENI Petroleum
 - ◆ ExxonMobil
 - Kerr-McGee
 - ◻ Marathon
 - Murphy Exploration
 - ◆ Newfield Exploration
 - Nexen
 - ◆ Noble Energy Inc.
 - ⊙ Petrobras
 - ◆ Remington Oil & Gas
 - Shell
 - ▲ Total USA
 - ◻ Walter Oil and Gas
 - ◻ Williams
 - W&T Offshore



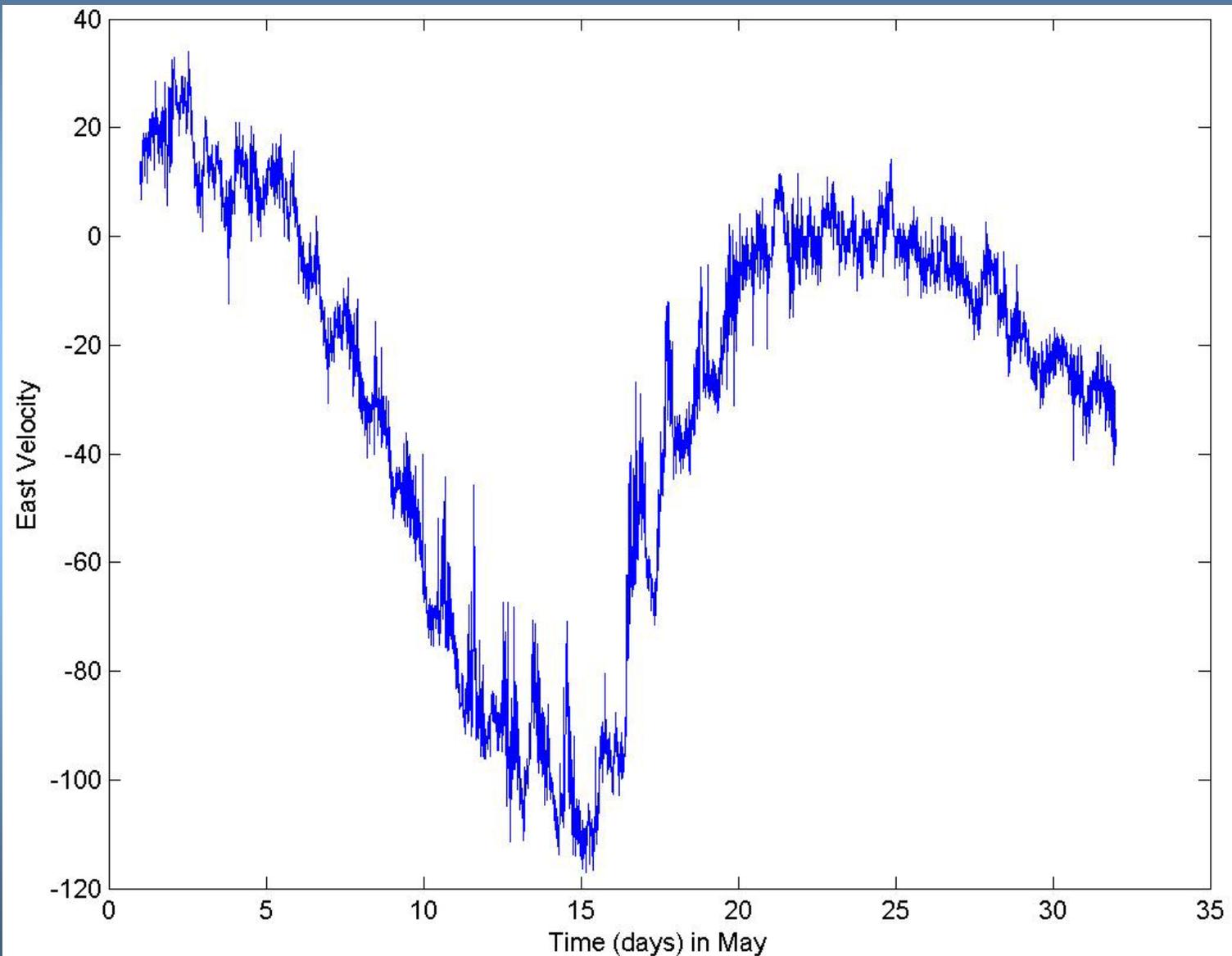
Remote Sensing

Total depth: red circles

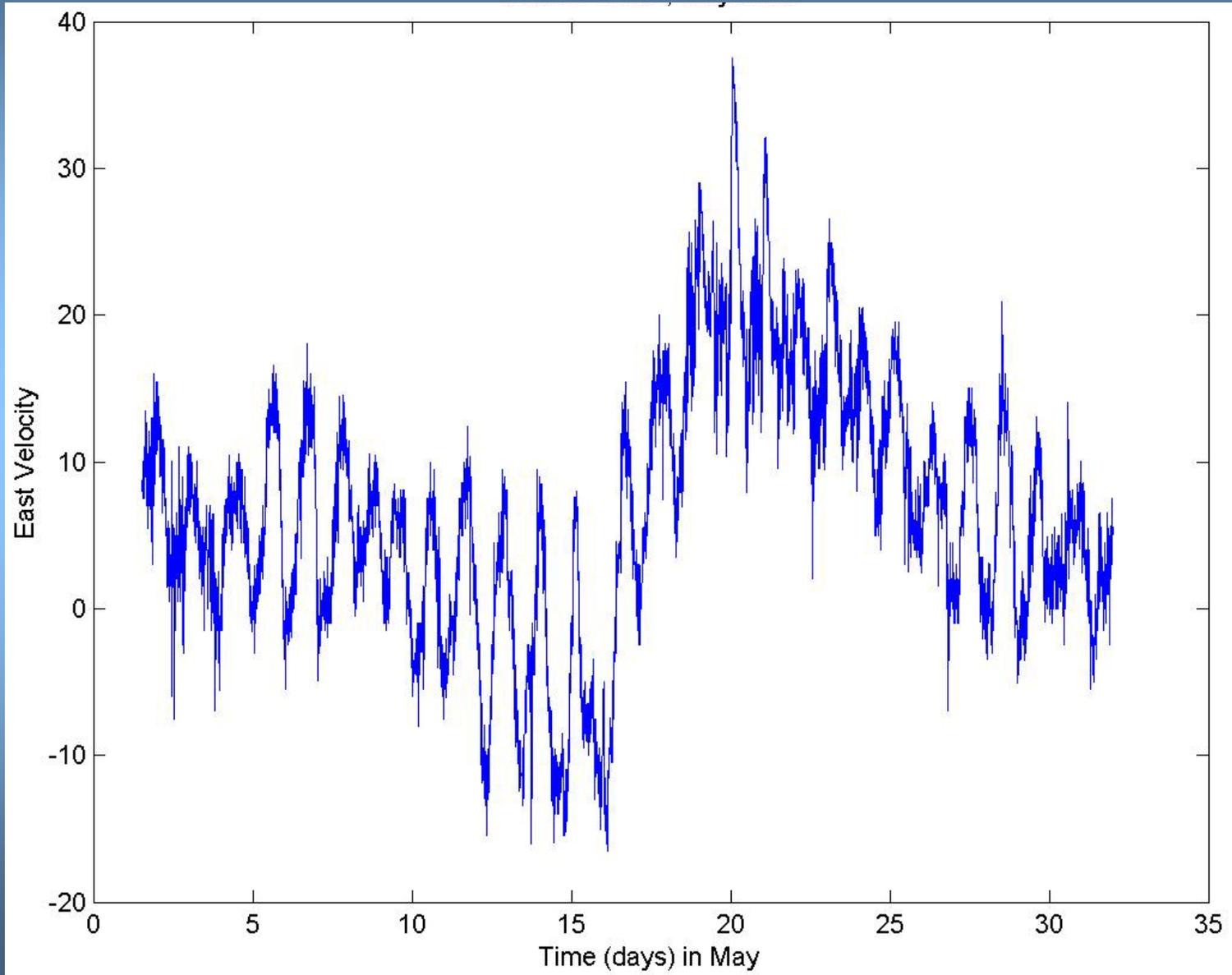
ADCP range: black bars or cross



Examples of time series of velocity: inertial oscillation + large fluctuations

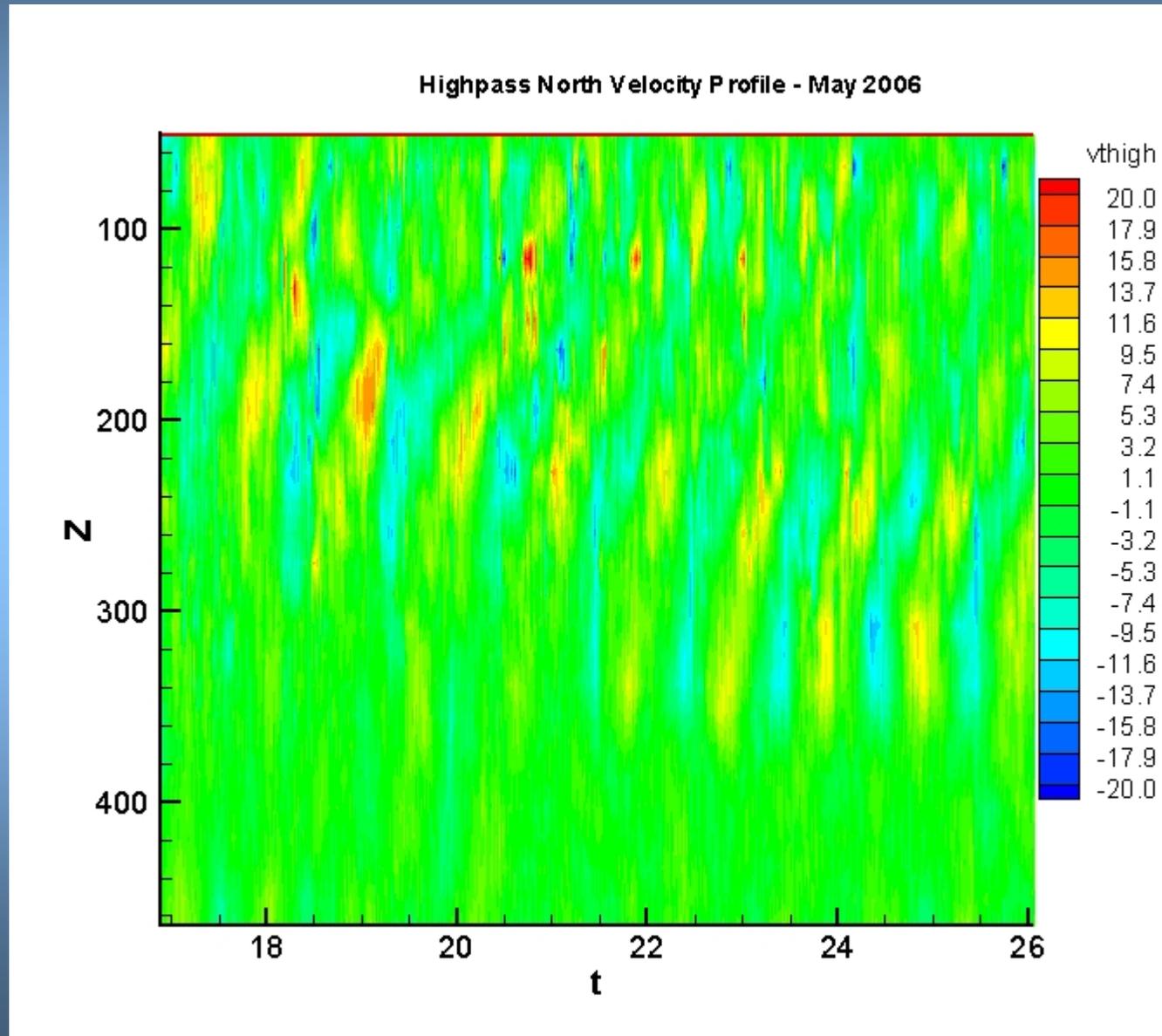


Examples of time series of velocity: inertial oscillation + large fluctuations



Flow Example #1: Migrating Maximum

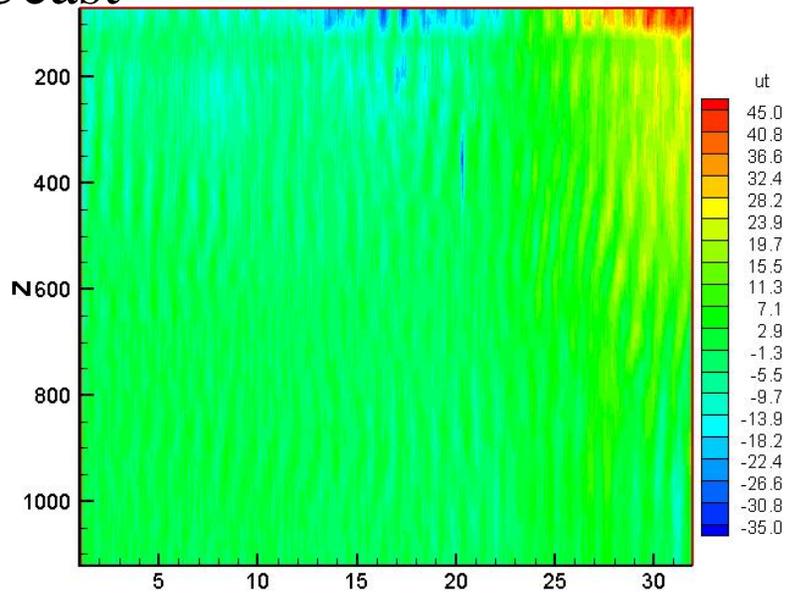
Contour Plot of North Velocity Profile in May 2006



**Flow Example #2:
Surface Intensified**

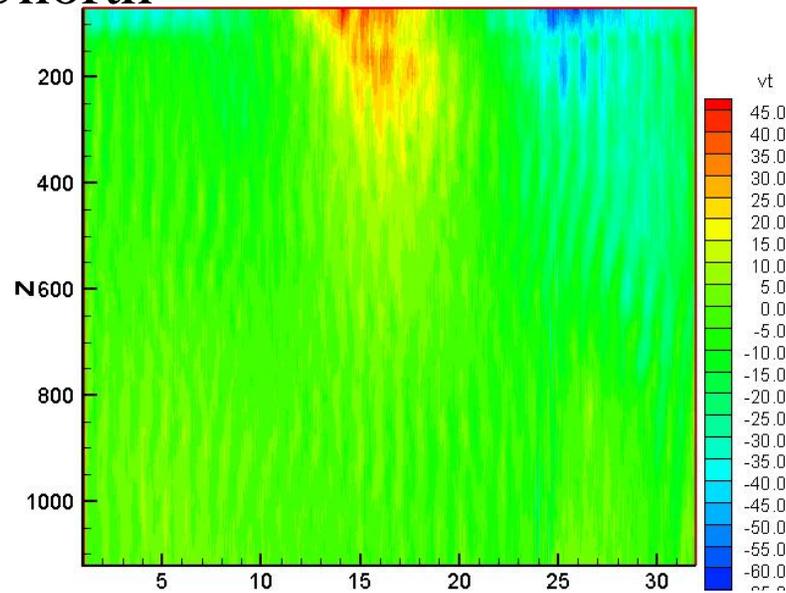
Ueast

East Velocity Profile - May 2006



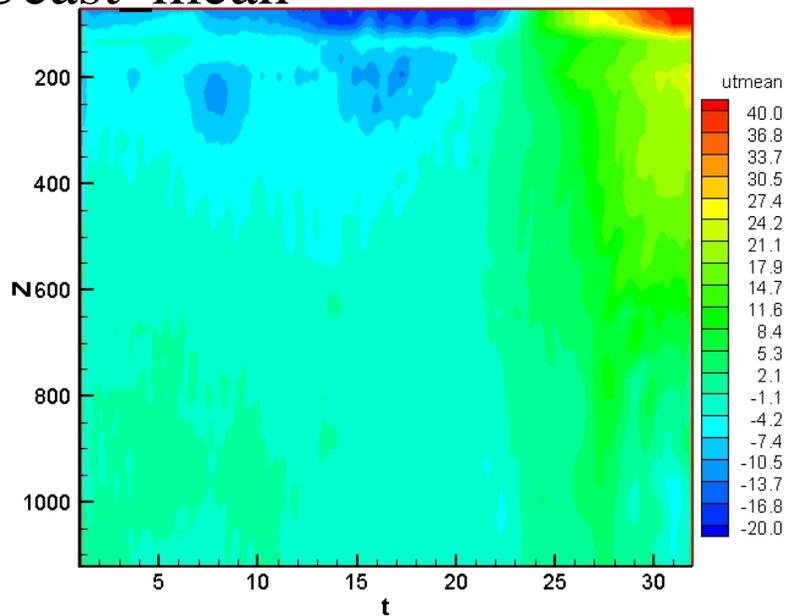
Unorth

North Velocity Profile - May 2006



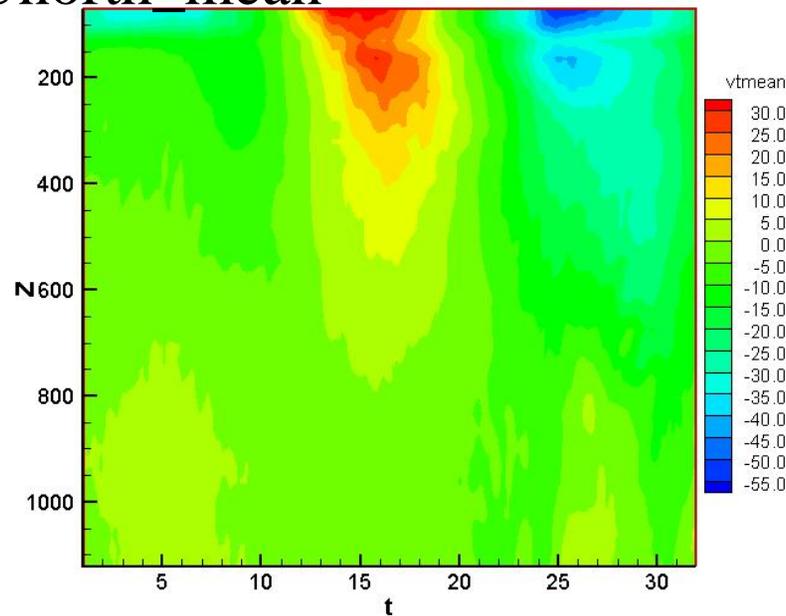
Ueast mean

Mean East Velocity Profile - May 2006

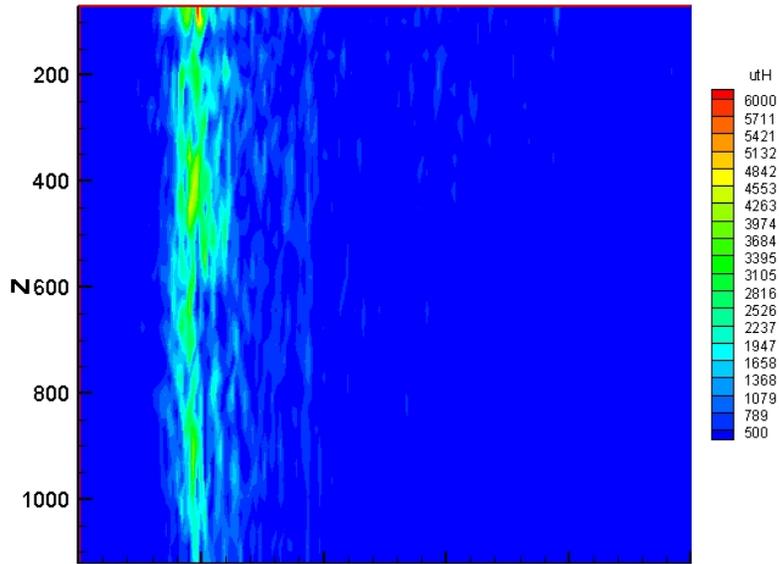


Unorth mean

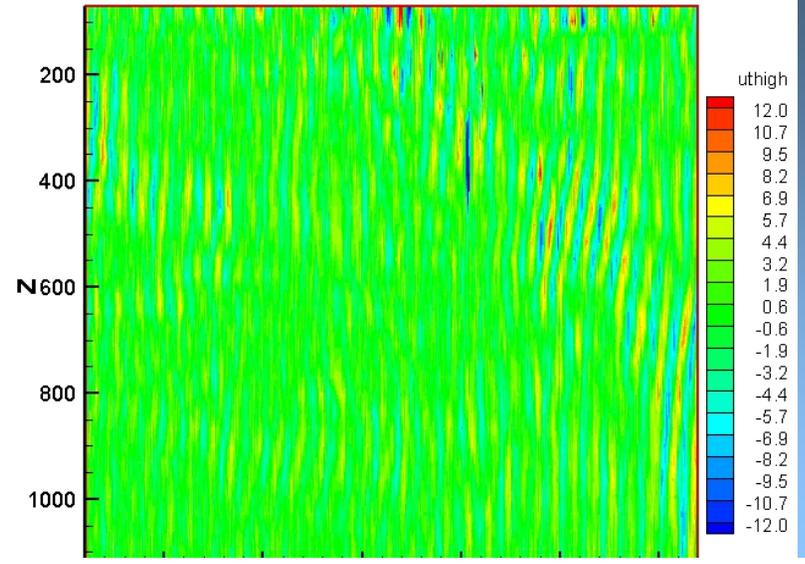
Mean North Velocity Profile - May 2006



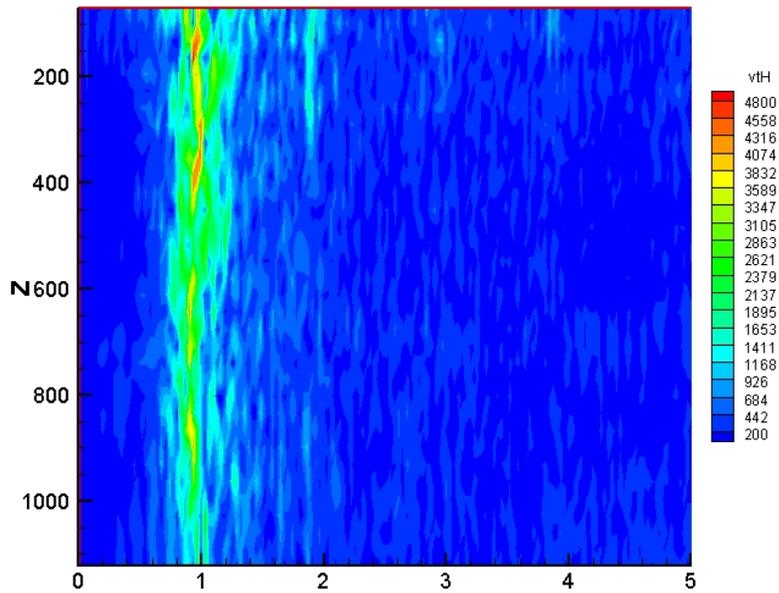
Highpass East Velocity Profile - May 2006



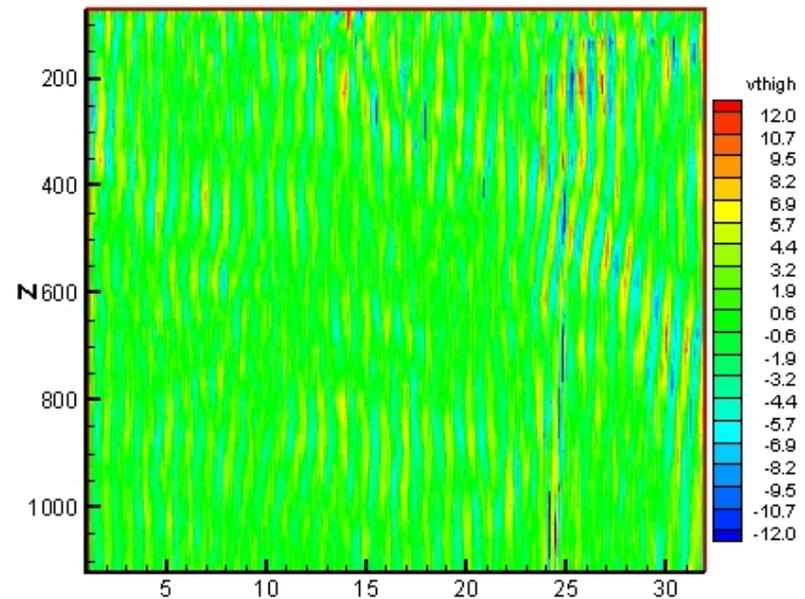
Highpass East Velocity Profile - May 2006



Highpass North Velocity Profile - May 2006

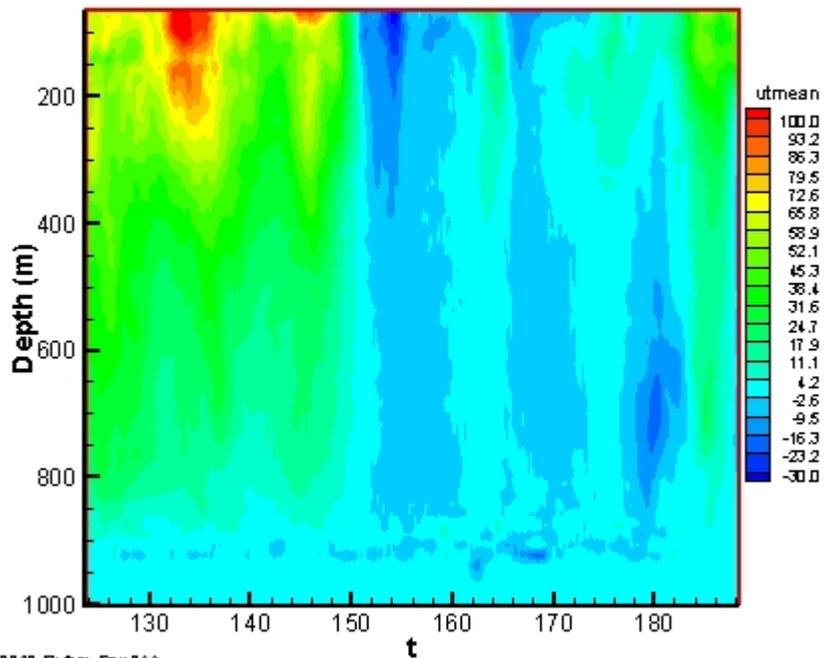


Highpass North Velocity Profile - May 2006

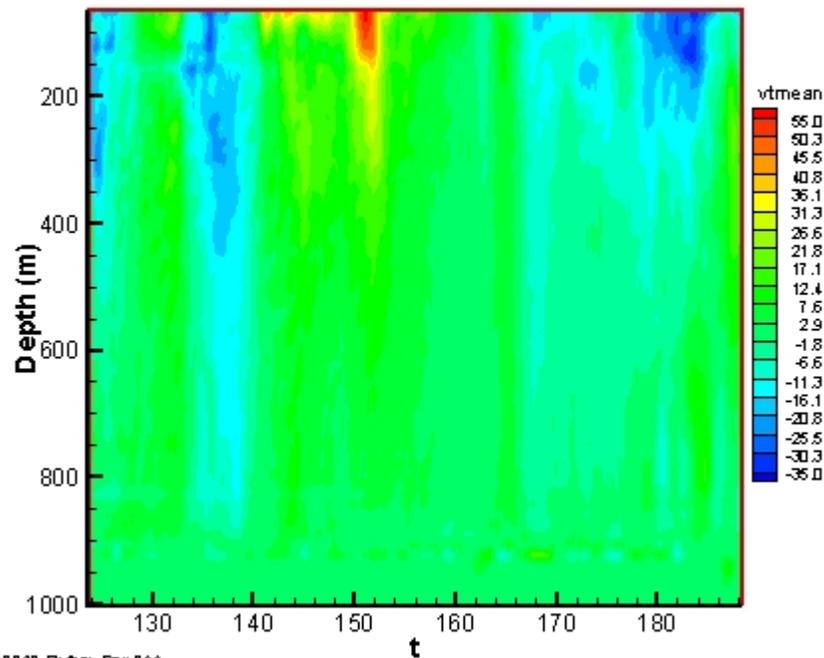


Frequency domain

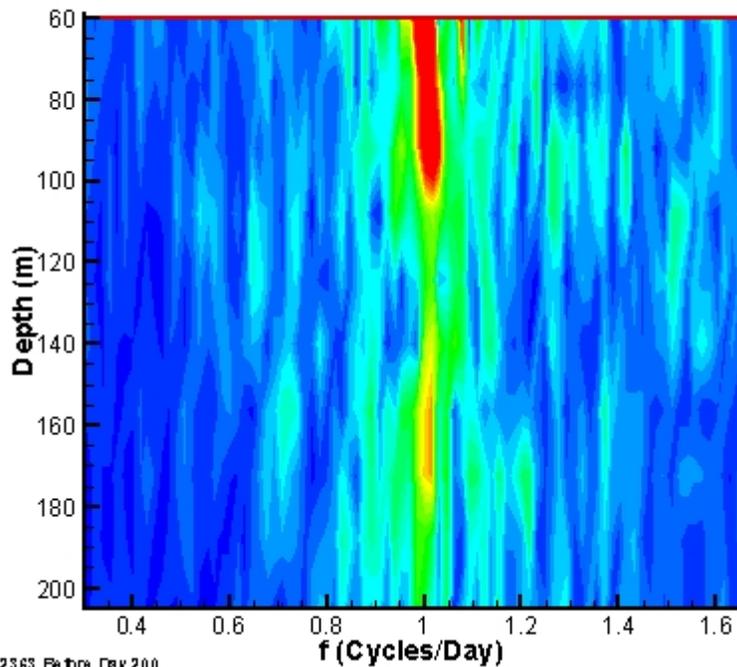
Time domain



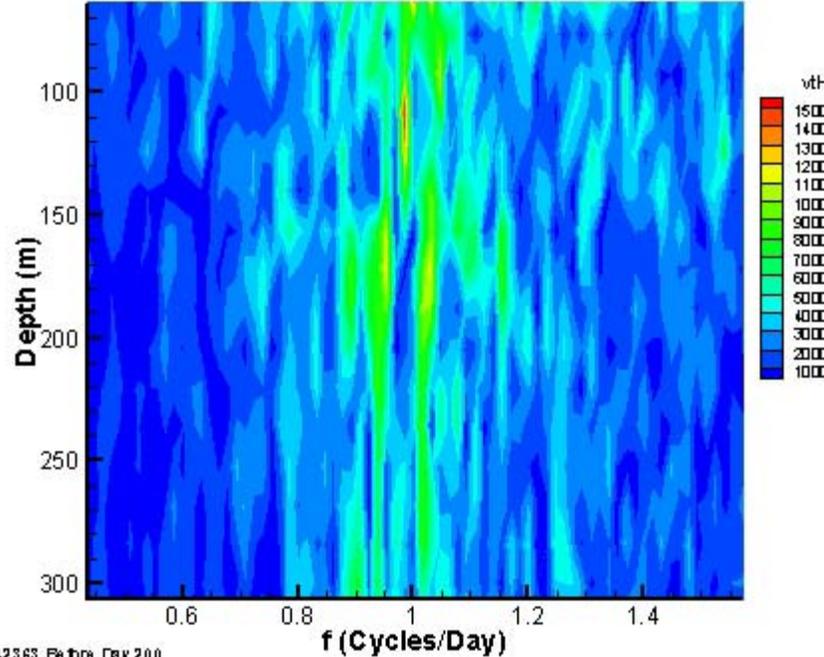
42363 Before Day 200



42363 Before Day 200



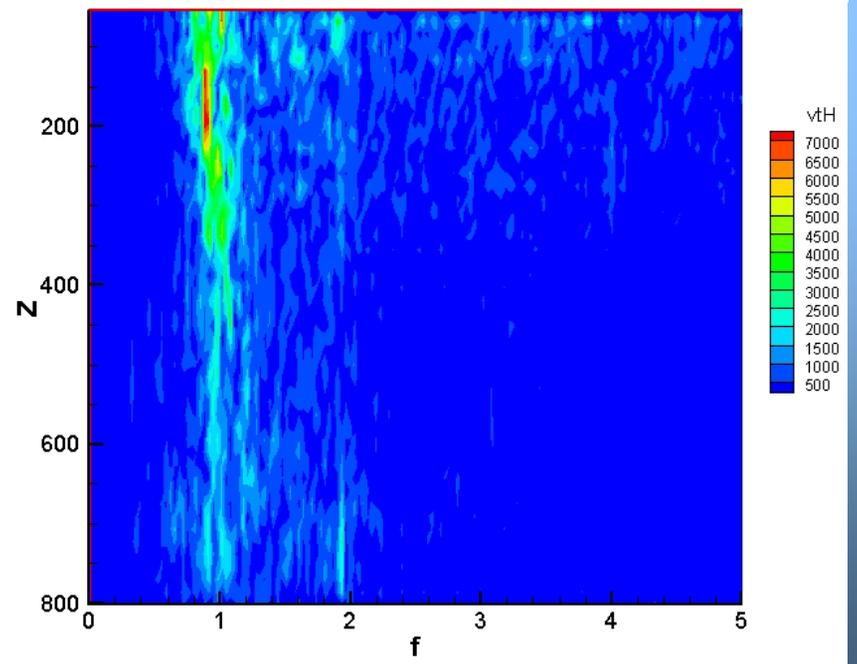
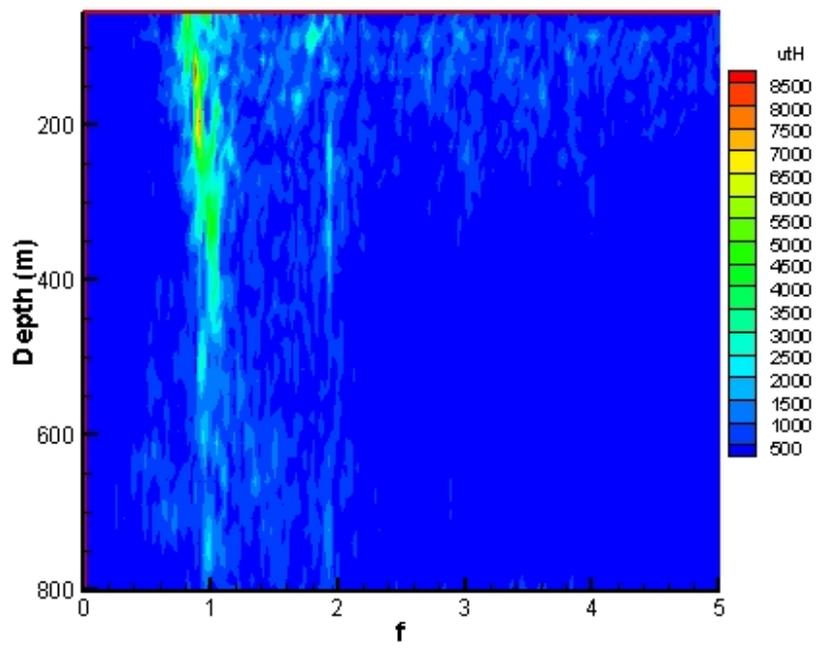
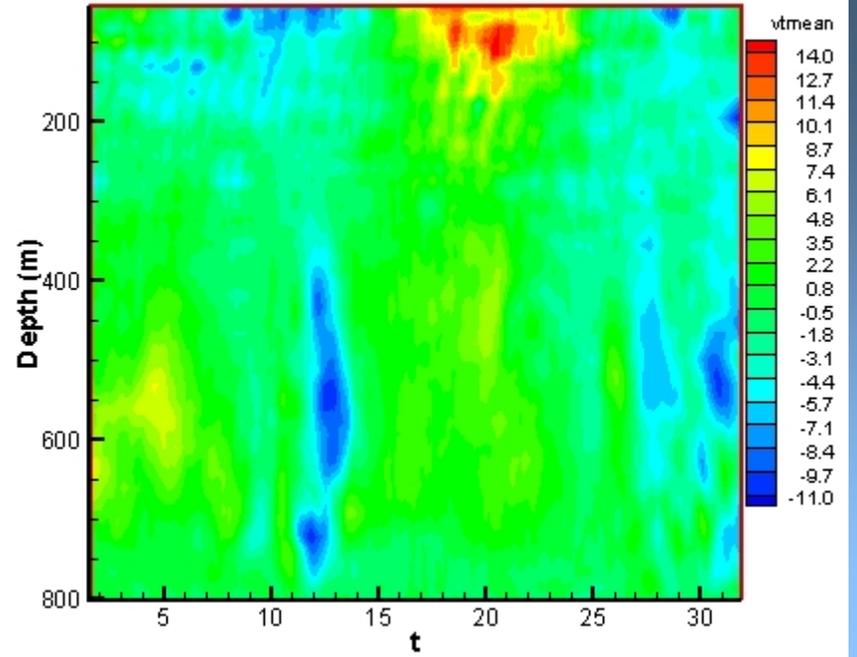
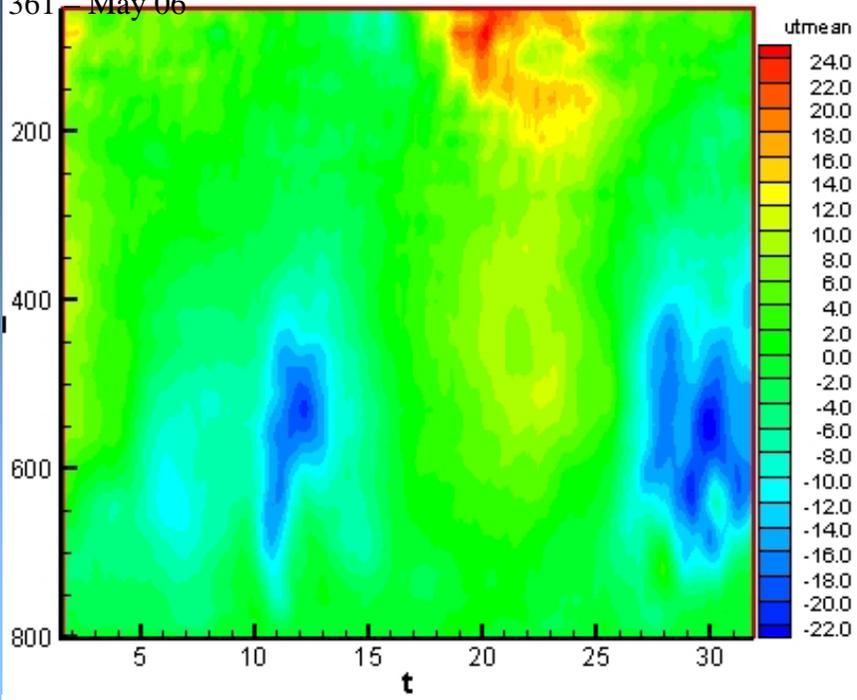
42363 Before Day 200



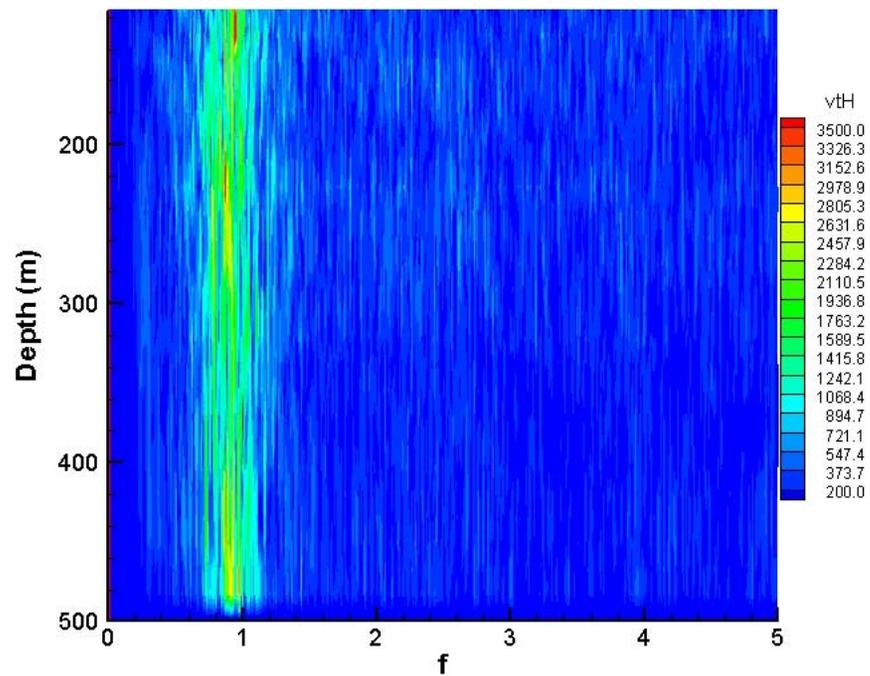
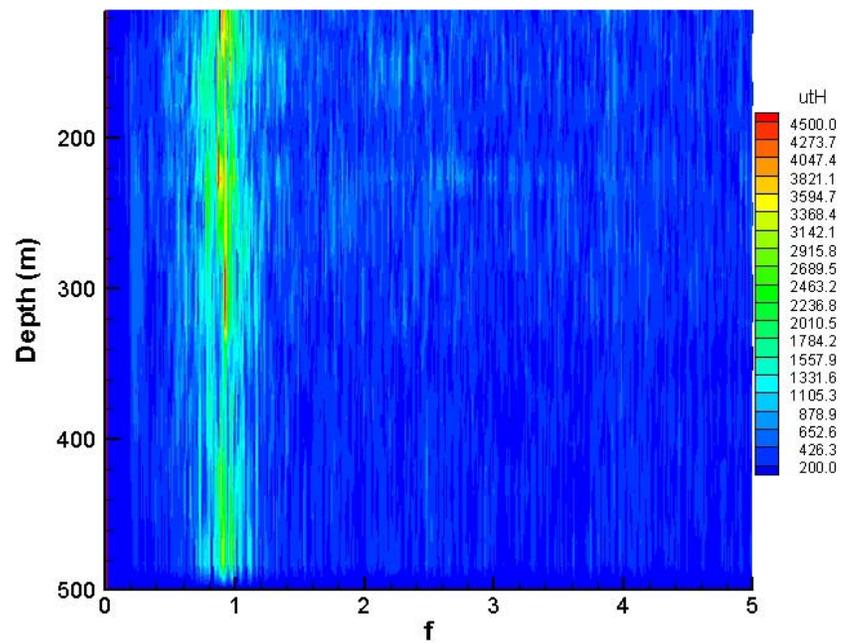
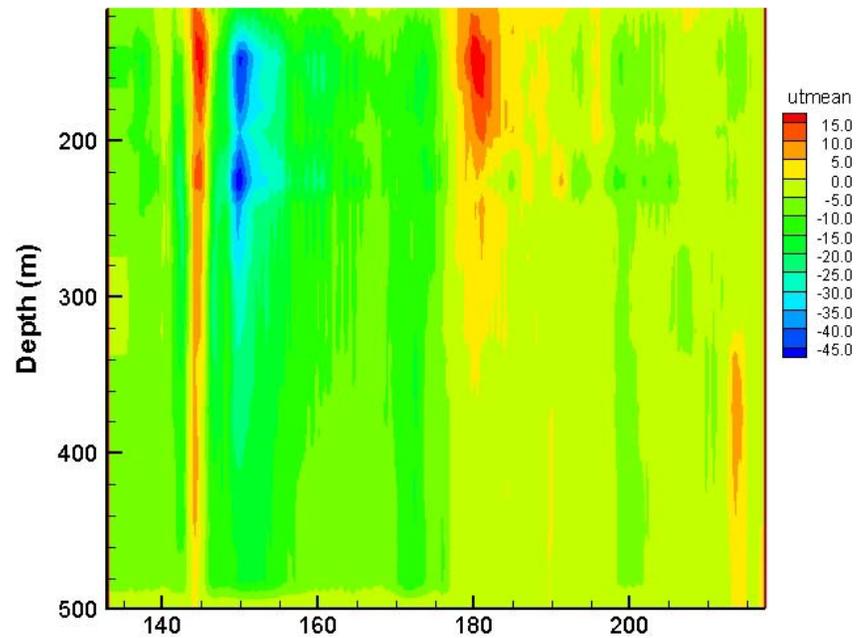
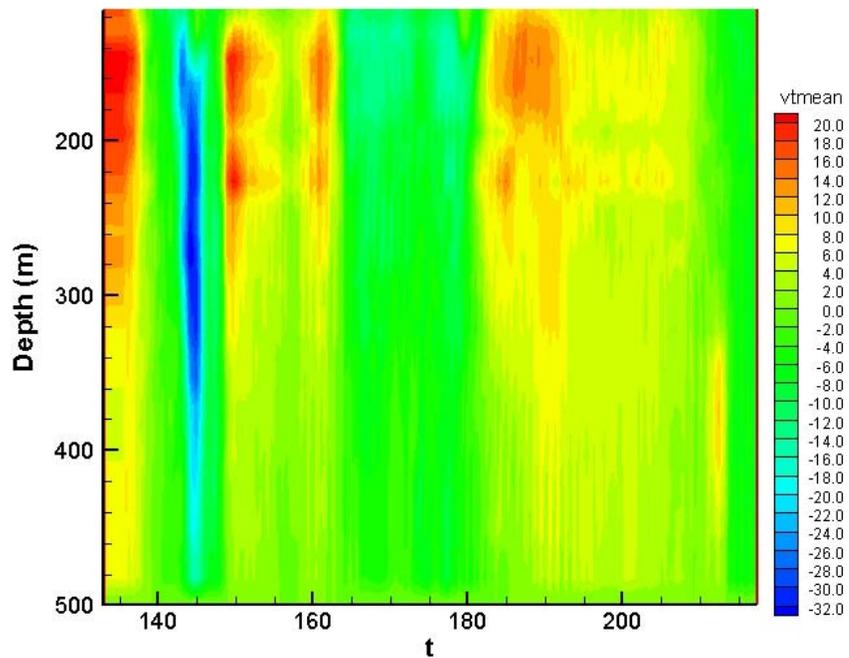
42363 Before Day 200

**Flow Example #3:
Depth Intensified?**

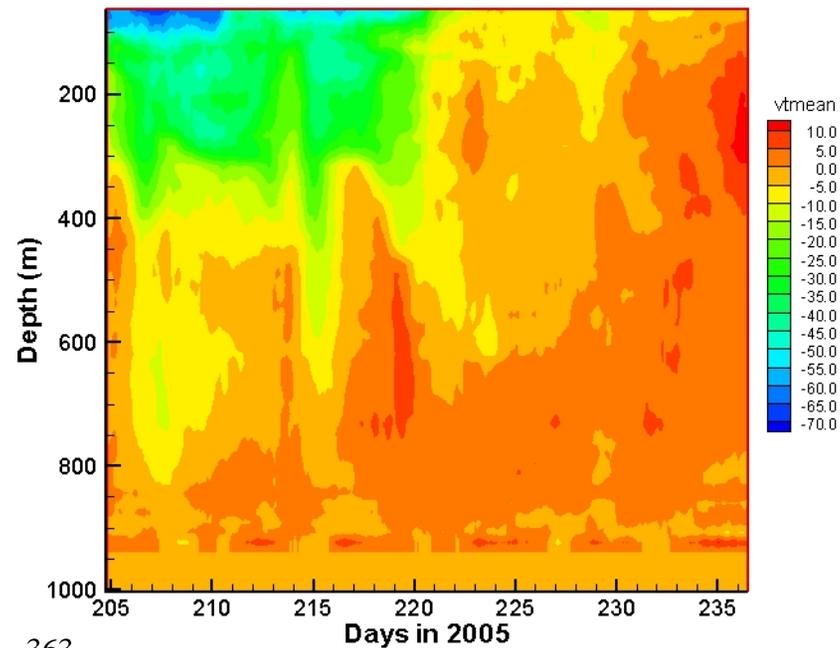
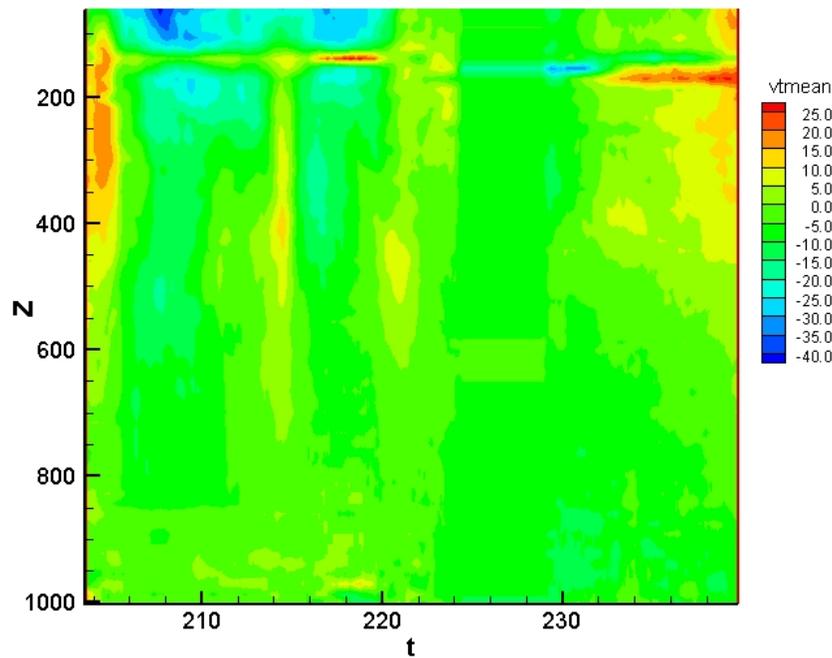
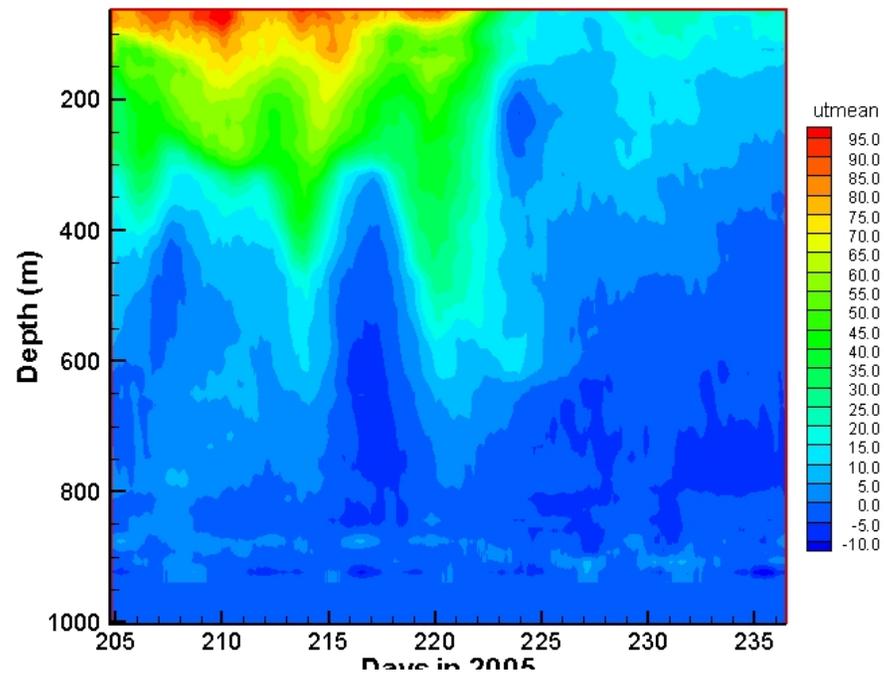
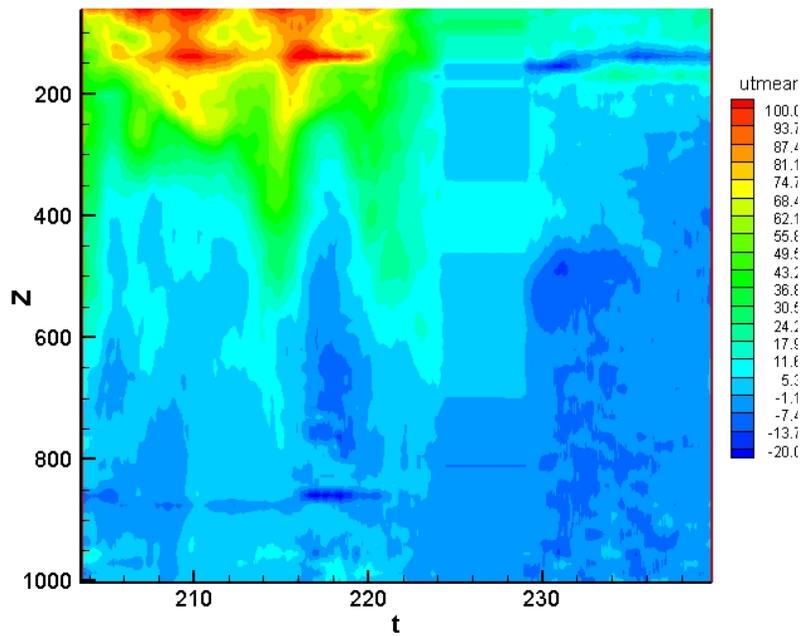
361 May 06



**Flow Example #4:
Strong Subsurface Flows**

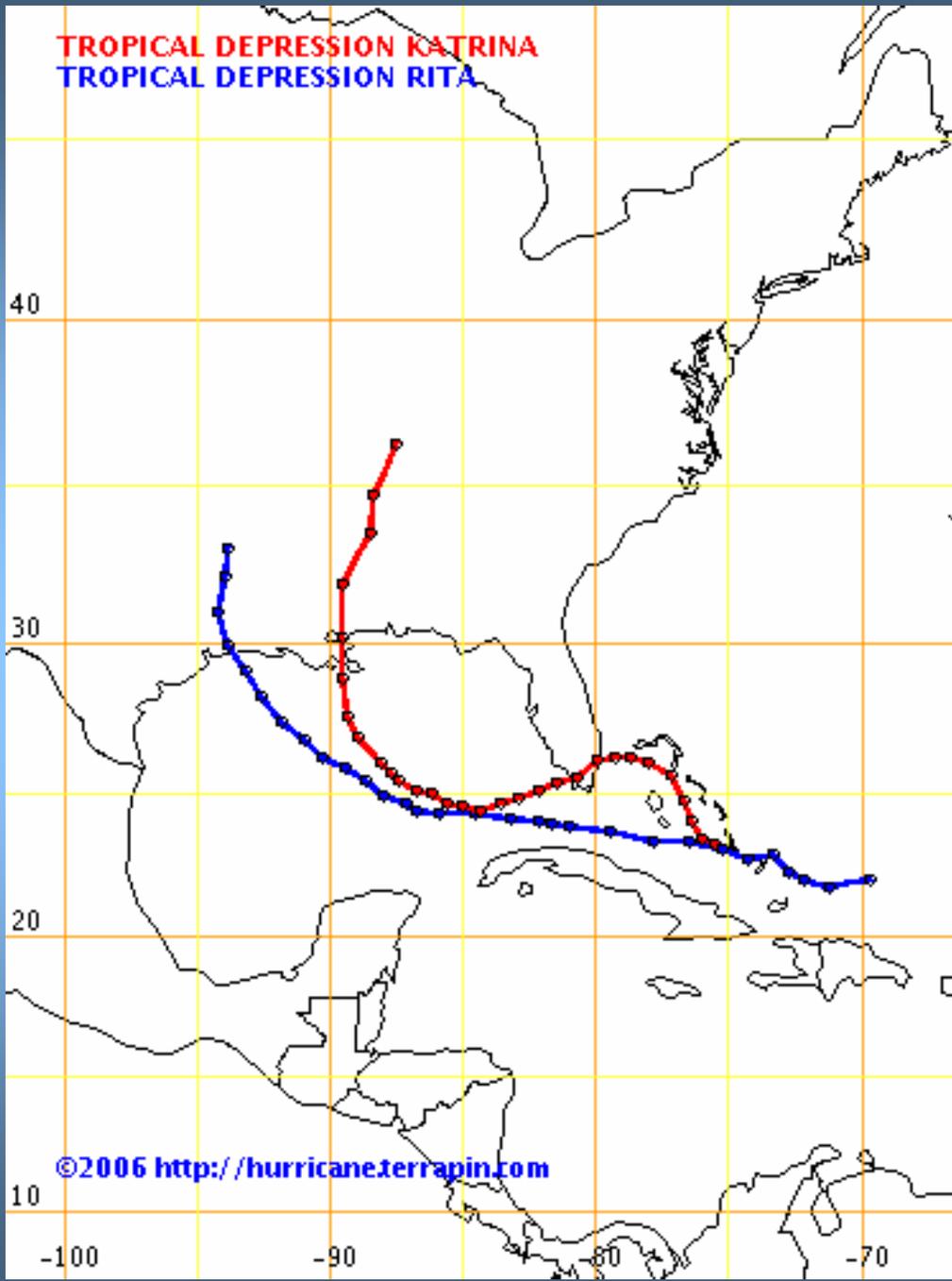


**Flow Example #5:
Strong Surface – Subsurface
Flows and Comparison
Between Adjacent Stations**



**Flow Example #6:
Deepwater Barotropic Flows –
Hurricane Effects**

TROPICAL DEPRESSION KATRINA
TROPICAL DEPRESSION RITA

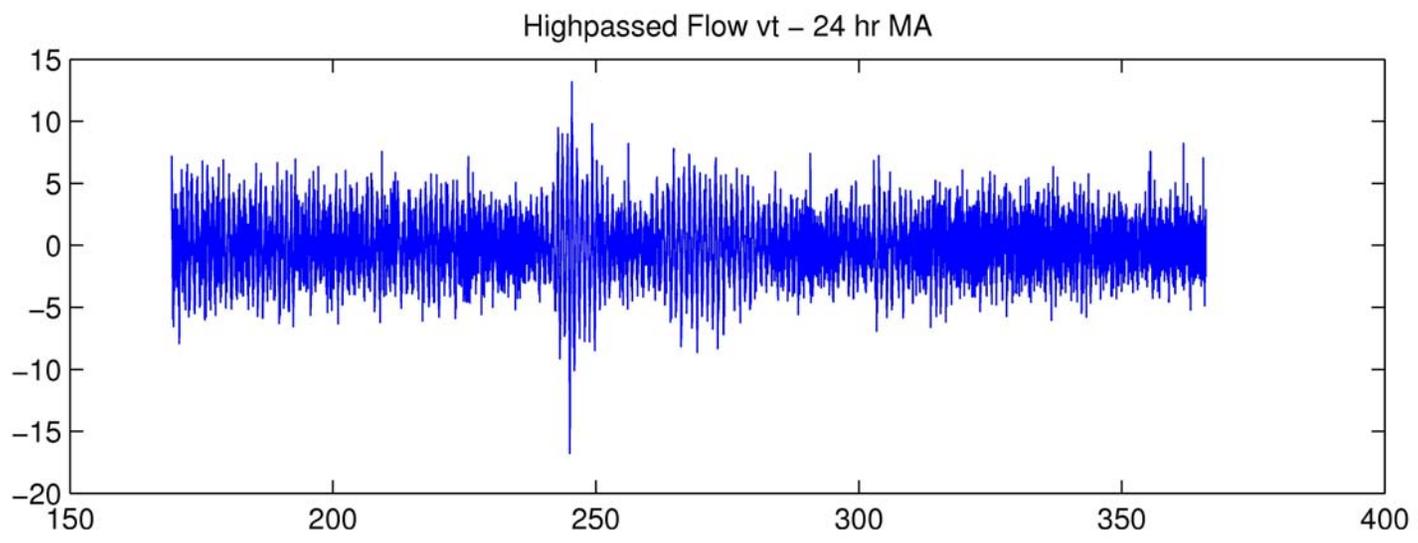
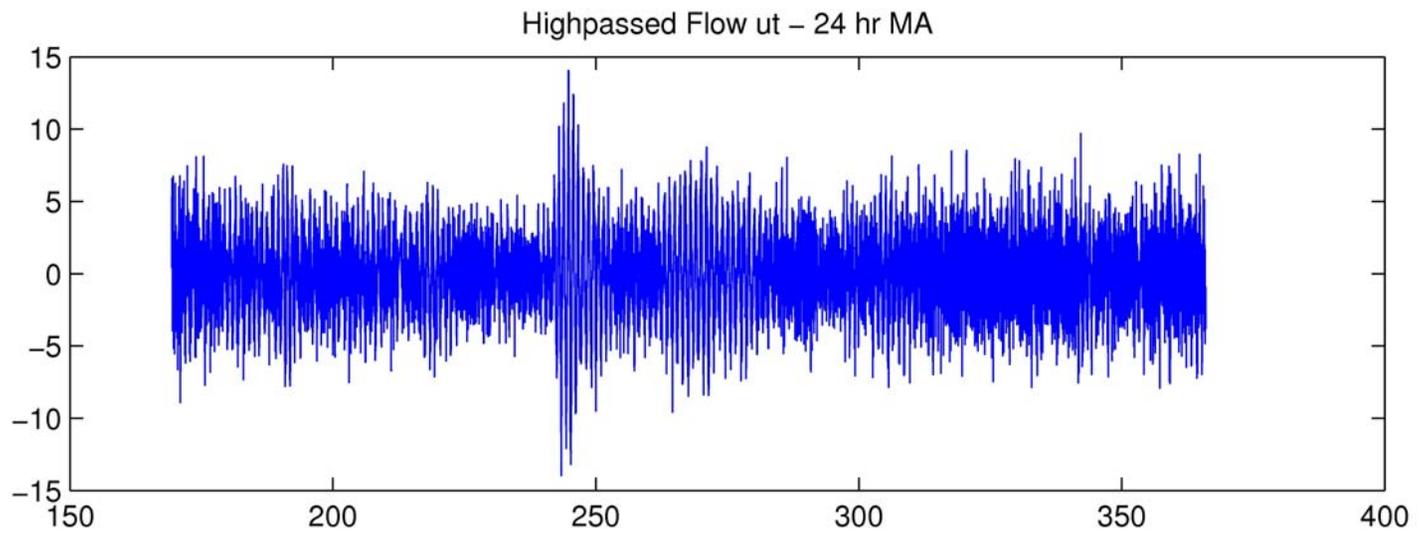


©2006 <http://hurricane.terrapin.com>

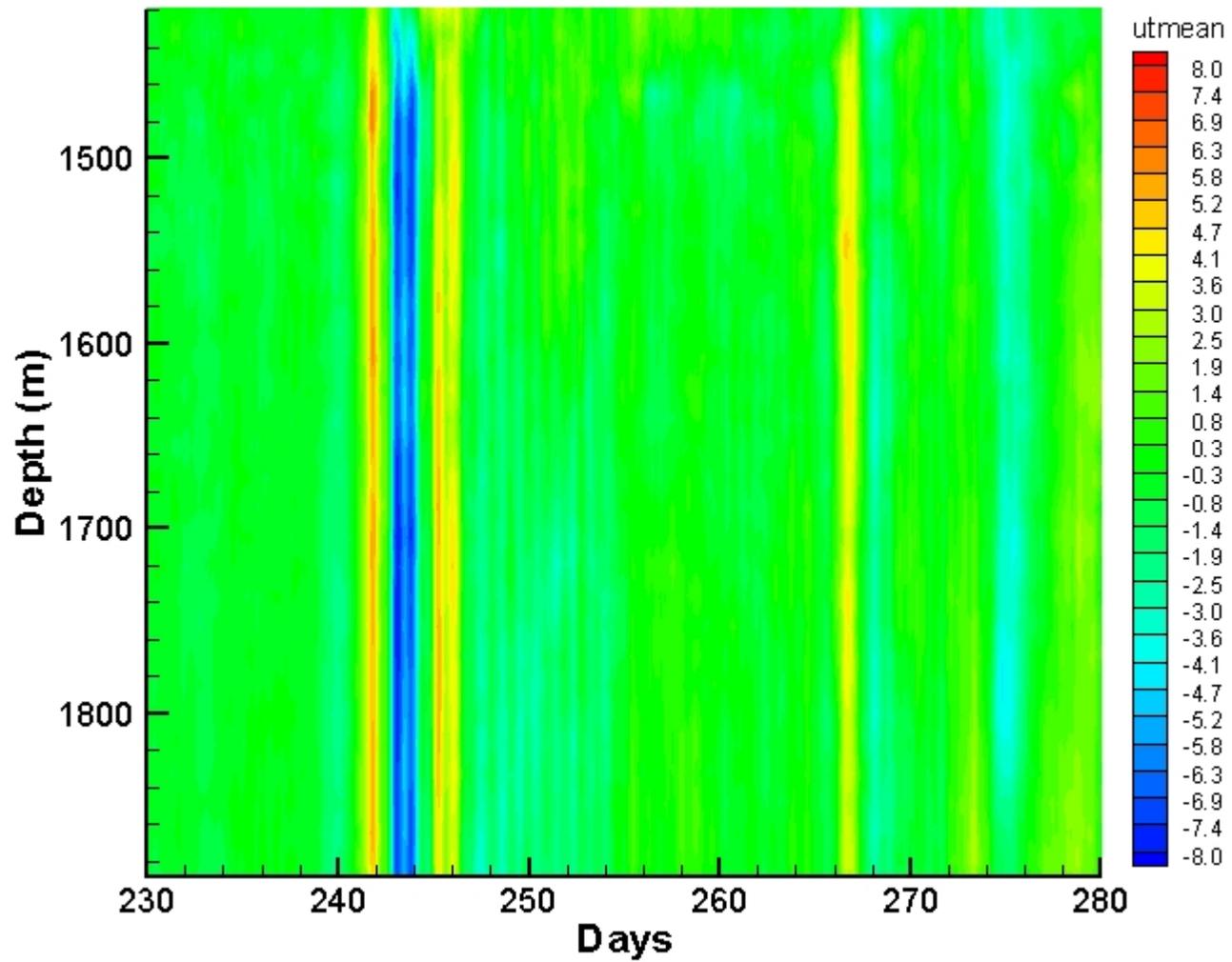
Landing date/time:

KATRINA, 29 August 2005, 5:00AM
RITA, 24 September 2005, 5:00AM

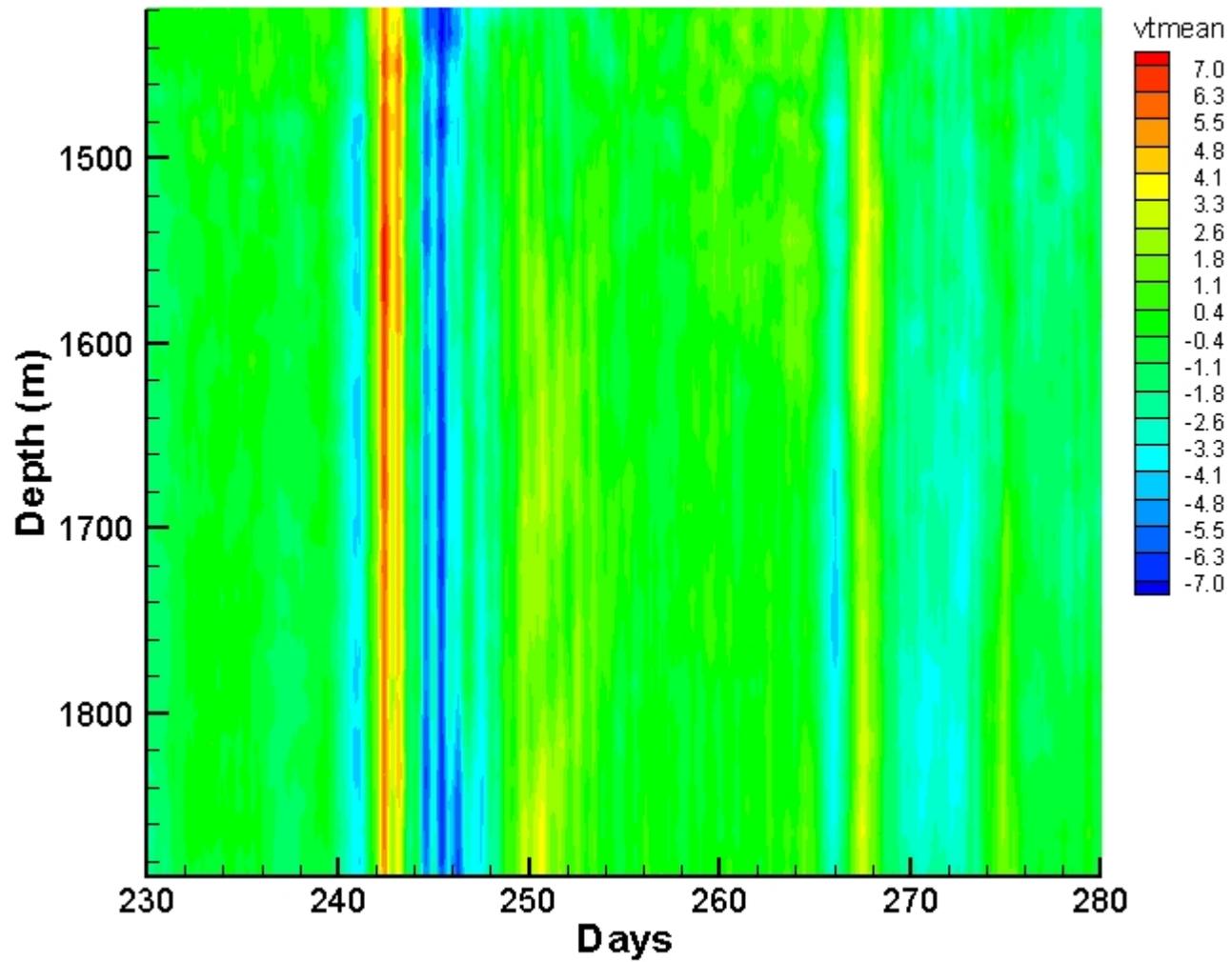
2005 Data Around Time of Hurricanes Katrina/Rita



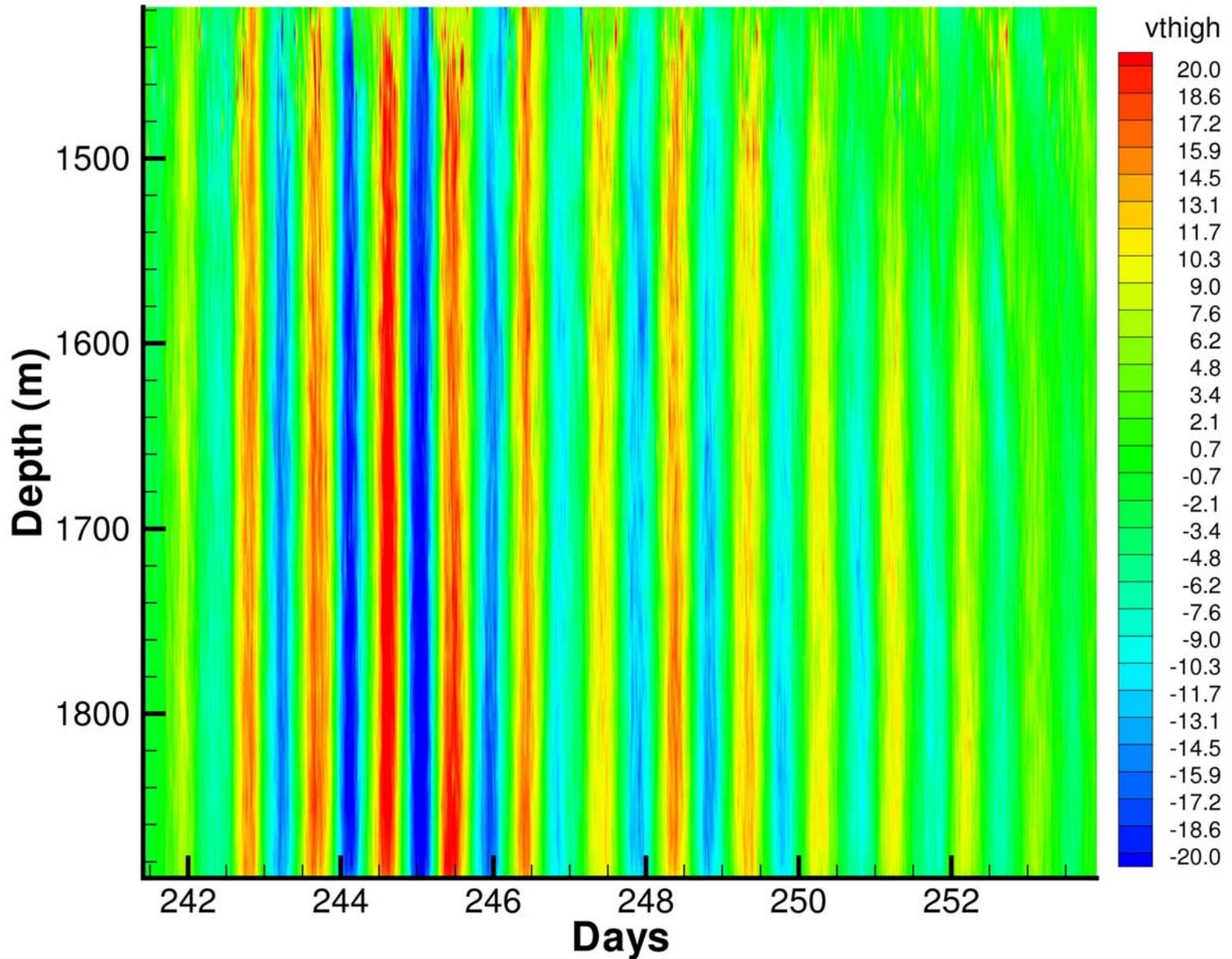
Water ADCP, 2005 During Hurricanes Katrina and Rita



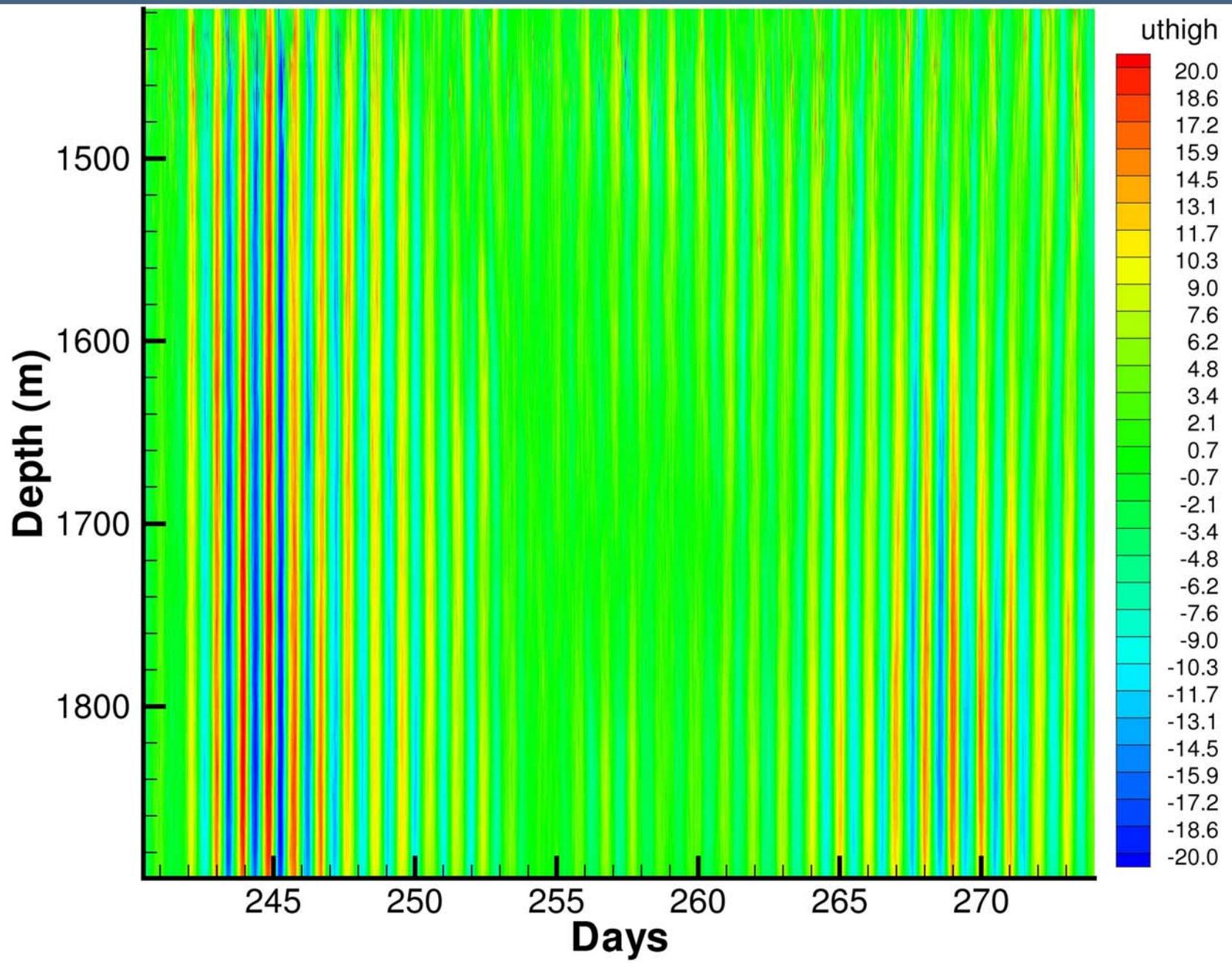
Water ADCP, 2005 During Hurricanes Katrina and Rita



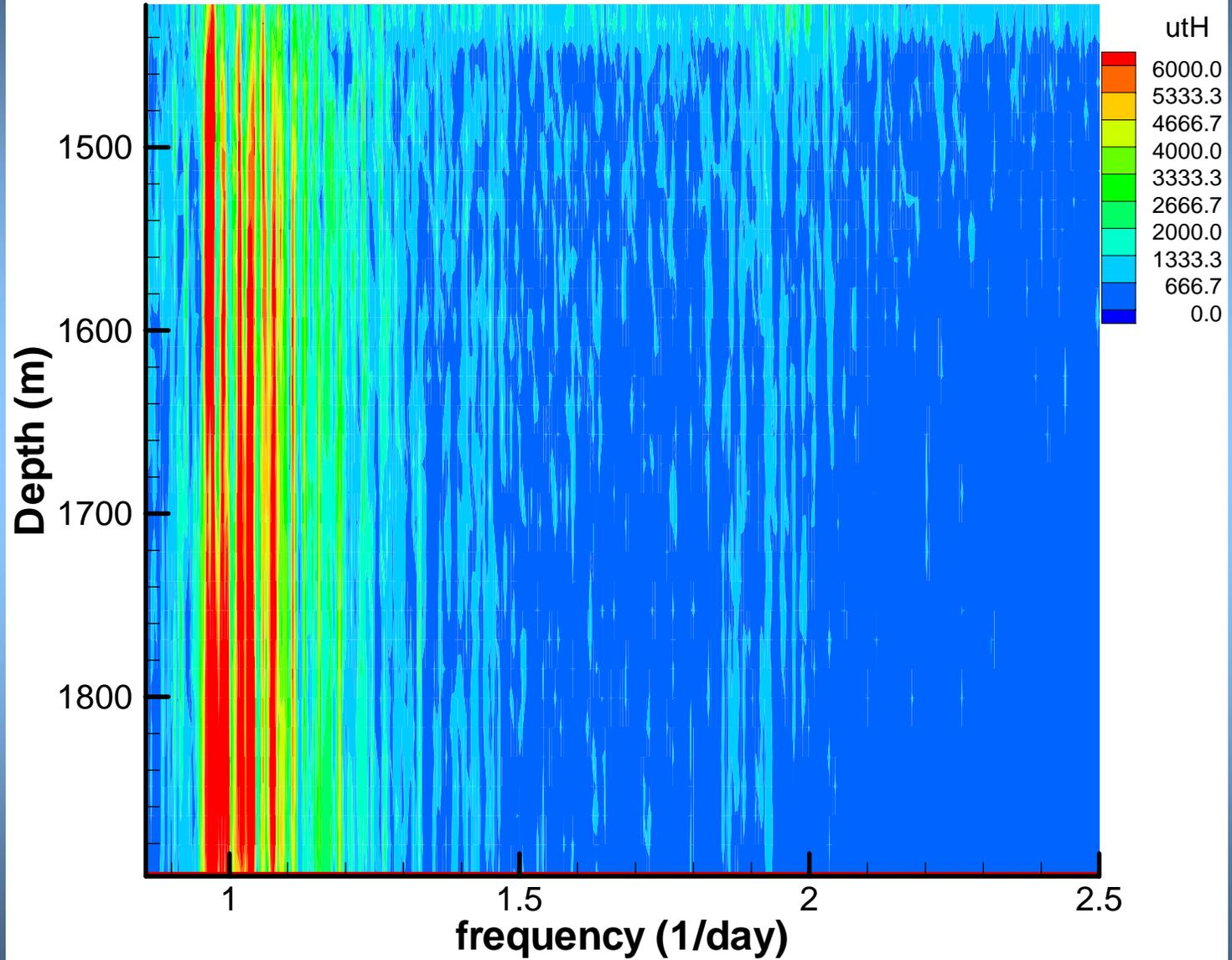
Highpass Filtered Velocity



Highpass Filtered Velocity



Deep Water ADCP, 2005 During Hurricanes Katrina and Rita



Inertial Period at GoM Oil Platforms (hours)

