

Drogue and Transmitter Lifetime Evaluation

Presented by:
Erik Valdes

Drifter Data Assembly Center
NOAA/AOML, Miami, Fl. USA



DBCX XXVI – Oban, Scotland, 27-30 September 2010



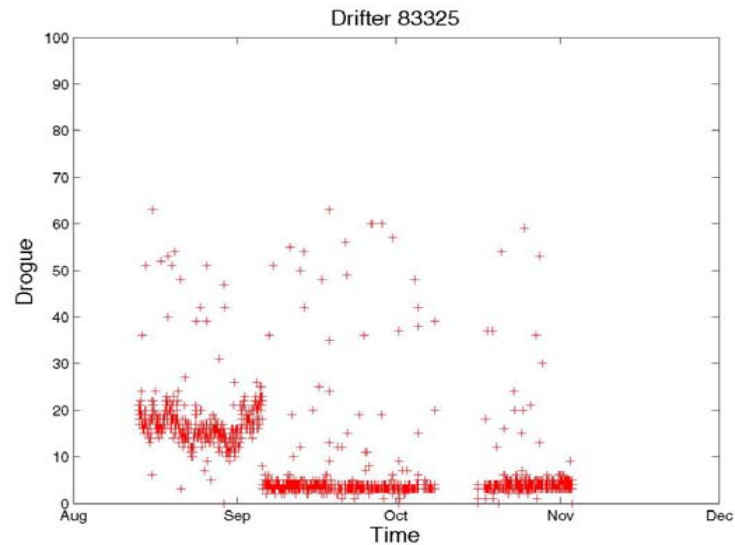
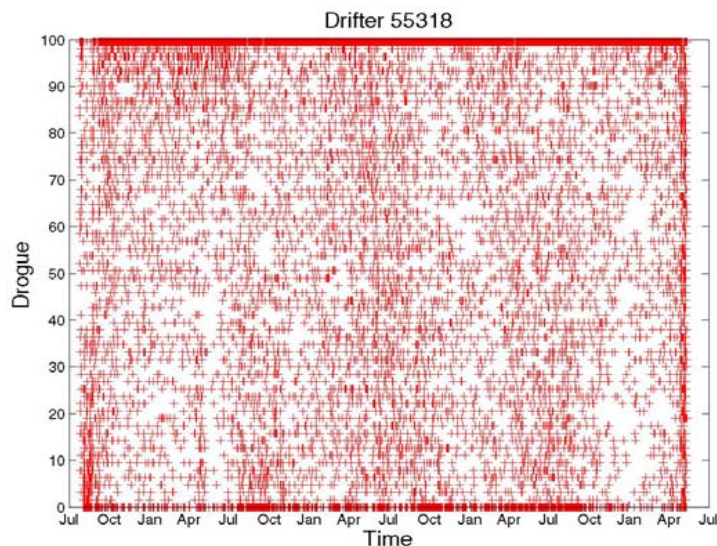
Transmitter and Drogue lifetime Evaluation

- All manufacturers except Pacific Gyre have changed to tether strain by early 2010.
- Early drogue loss seen for Technocean and Clearwater drifters.
- SST sensors and deployment failures for Clearwater drifters
- Delayed transmission with Technocean drifters.



Technocean Drogue

- Able to assess drogue presence more reliably.
- Drogue lifetime appeared to be 297.5 days for the first 50 drifters deployed in 2007.
- Drogue lifetime was 69.6 days for the first 50 drifters deployed in 2009.

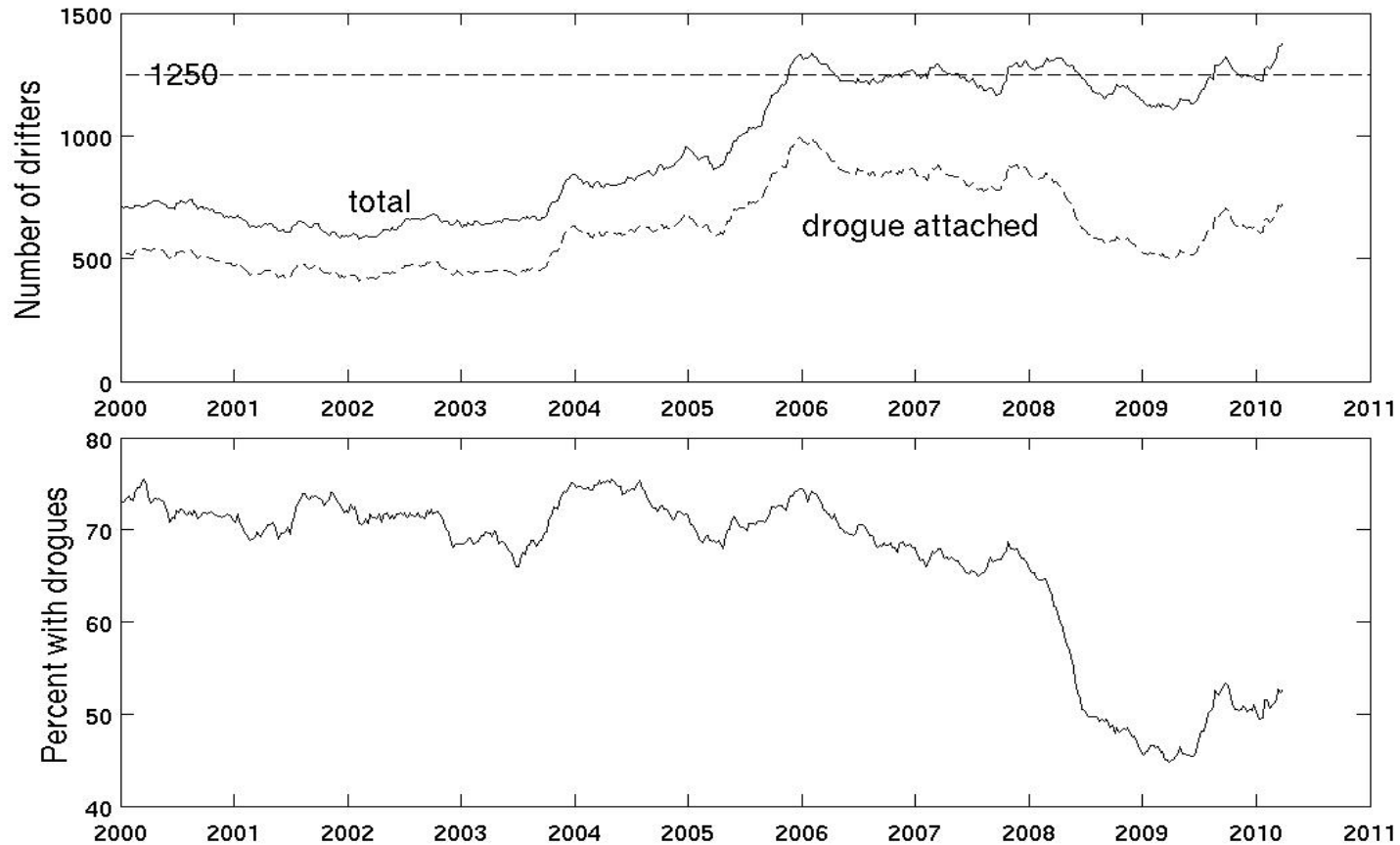


Clearwater Drogue

- First manufacturer to implement tether strain.
- Clear indication when drifter lost drogue.
- Drogue lifetime: 139.9 days for the first 50 drifters deployed in 2007.
- Drogue lifetime: 120.8 days for the first 50 drifters deployed in 2009.
- Drogue lifetimes fall short of the 300 days recommended by the GDP and DBCP.



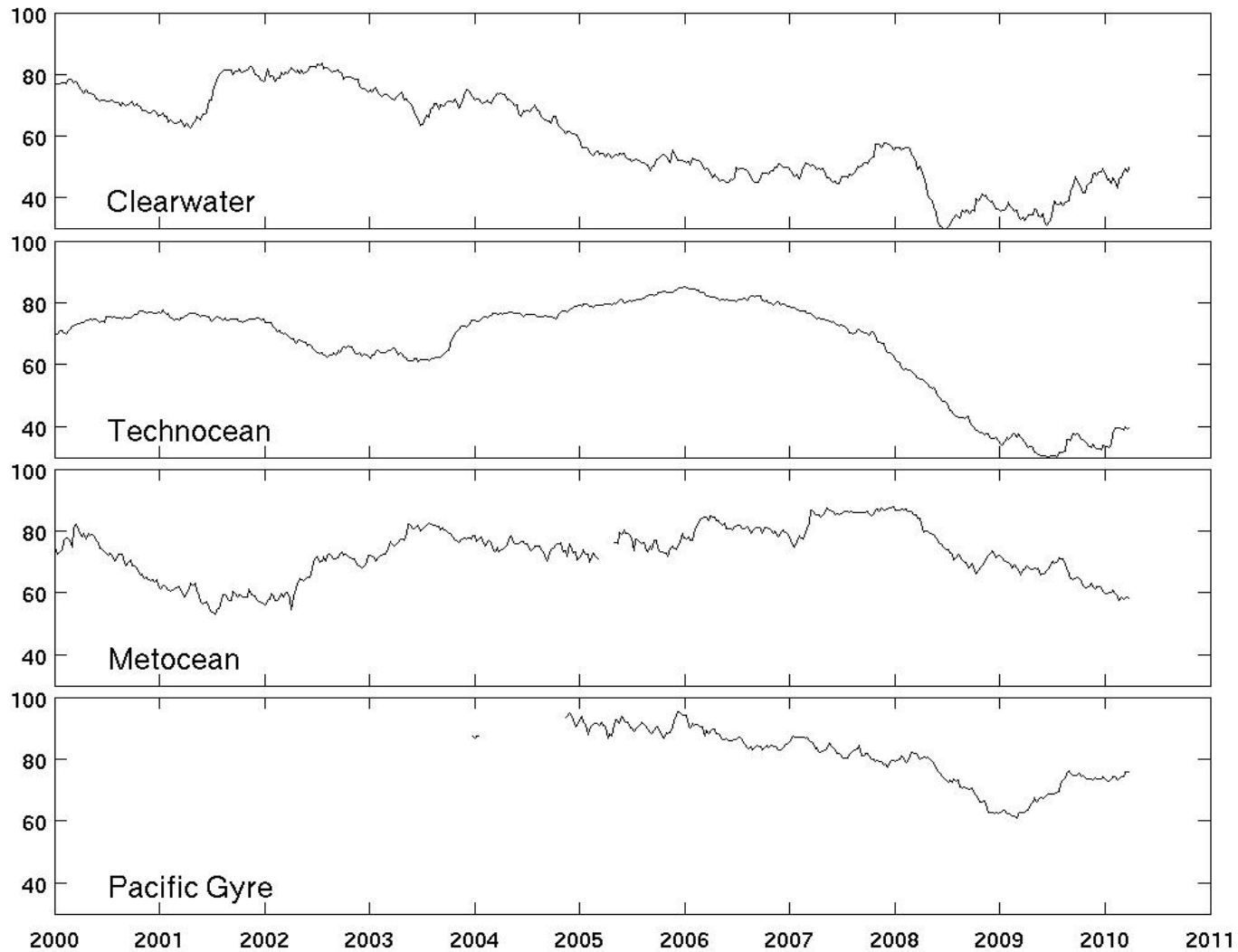
Drogue Attachment



The fraction of drifters identified as “drogue on” fell from around 70% to approximately 50% during this period.



Percentage of drogue attachment by manufacturer



Clearwater SST

- Clearwater SST sensors for a particular batch of drifters had been transmitting bad SST
- 31 out of 219 (14%) deployed declared with bad SST data.
- 20 drifters that failed on deployment in this batch (9%).
- Clearwater responded stating that rough handling is reason for the failures of this batch.



Clearwater deployment failures

- Deployment failures with Clearwater drifters: the number has more than doubled from June 2009 to June 2010.
- The total number of failures is more than double any other manufacturer within the same period.

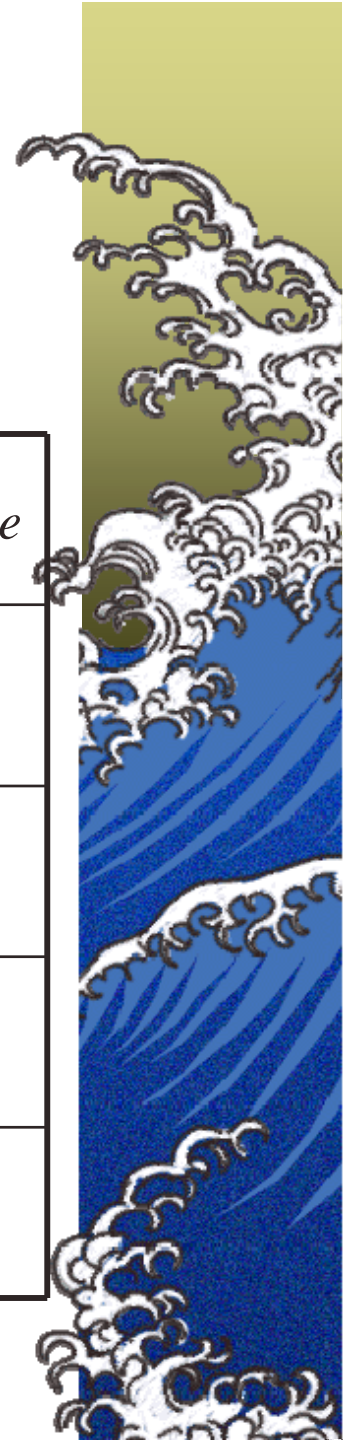


Deployment Failures

July 08 - June 09

July 09 - June 10

<i>Manufacturer</i>	<i>Total</i>	<i>Percentage</i>	<i>Total</i>	<i>Percentage</i>
<i>Clearwater</i>	20	5.9%	45	9.9%
<i>Technocean</i>	7	3.2%	5	1.3%
<i>Metocean</i>	5	2.4%	2	0.9%
<i>Pacific Gyre</i>	12	4.9%	14	5.2%



Technocean Delayed Transmissions

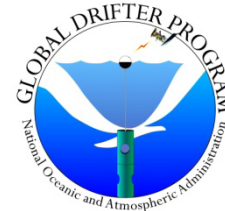
- In 2009 and early 2010 many Technocean drifters had long delays between deployment and first transmissions. Some took weeks.
- Technocean was contacted and determined a problem with magnet attachment.
- Technocean has since modified the attachment method and since then, the number of drifters with delayed transmission has dropped.



Conclusions

- Drogue loss detection has improved drastically, but improvement is needed in drogue lifetimes for Clearwater and Technocean drifters.
- Technocean's delayed transmission issue was raised to the manufacturer and seems to be resolved.
- Deployment failures for Clearwater drifters has risen drastically in last couple of years and needs to be addressed. Individual batches have been stored for too long, but the problem is larger in scope.
- Metocean and Pacific Gyre buoys appear to have good drogue lifetimes. Pacific Gyre submergence sensors still “max out” and the GDP is waiting on strain gauge drifters to be deployed for evaluation.





2010 AOML Data Buoy (ADB) Comparison Study **SVP** and **SVPB** Clusters

Collaborators: **Rick Lumpkin, Mayra Pazos and
Shaun Dolk**

DBCP XXVI – Oban, Scotland, 27-30 September 2010



Global Drifter Program (GDP) Drifter Evaluations

The GDP has continued the comparison study of drifters from different manufacturers, deployed in clusters (at the same time and at the same location), to evaluate :

- How well these drifters' **transmitters** are surviving to the design lifetime of **450** days
- How well we can detect **drogue presence**
- **How long are drogues lasting** compared to the expected lifetime of **300** days

2005 – 8 clusters deployed in the Atlantic

2006 – 8 new clusters deployed in the Atlantic

2008 – 5 clusters deployed in different regions of the world

2010 – 5 clusters of SVPs from 4 manufacturers and
5 clusters of **SVPBs** from 5 manufacturers in
different regions of the world

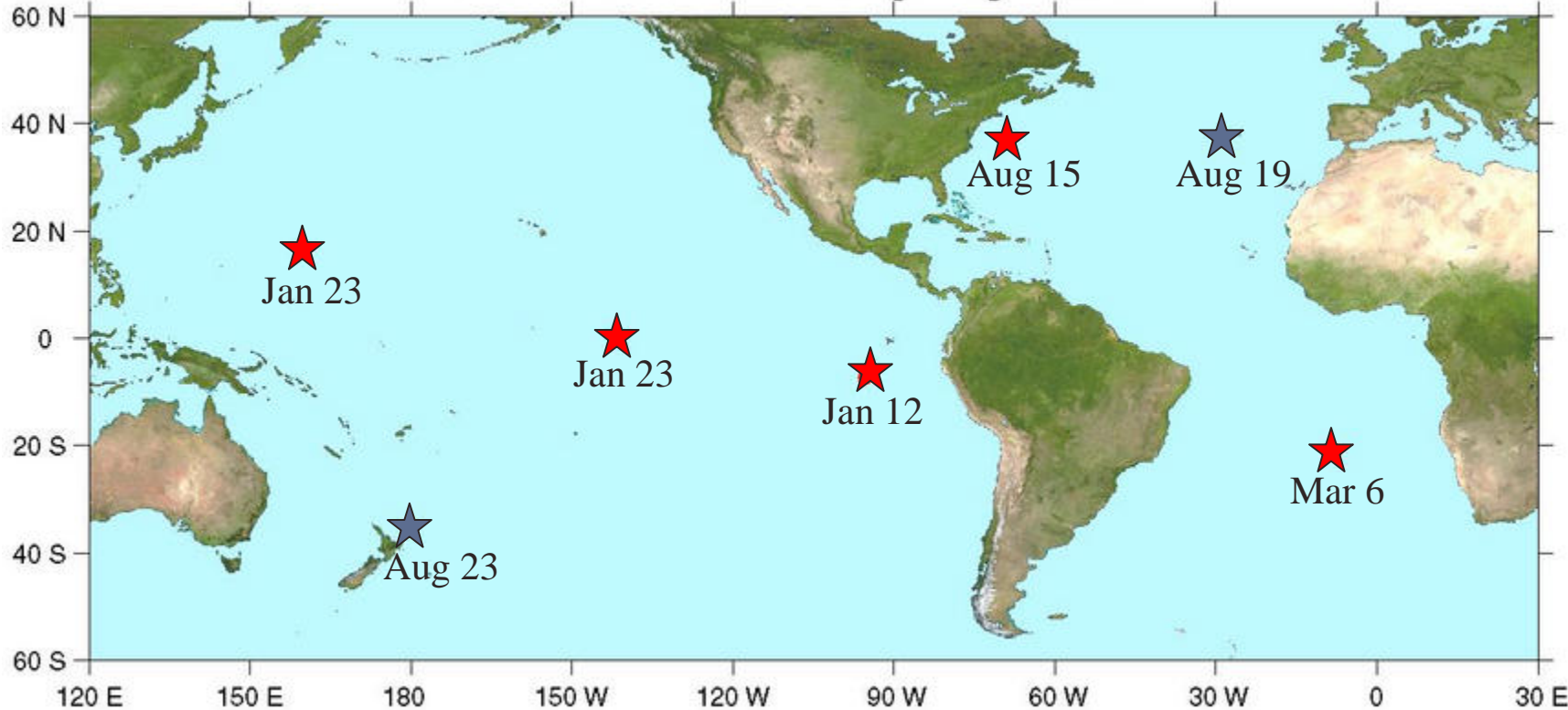


Cluster Deployments

- *Clearwater*
- *Technocean*
- *Metocean*
- *Pacific Gyre*



2010 Cluster Deployments



Deployment Plan and Status:

5 clusters each of 4 SVP drifters from 4 different manufacturers, all deployed.

5 clusters each of 5 SVPB drifters from 5 different manufacturers, only 2 deployed as of September 8, 2010.

SVP Clusters

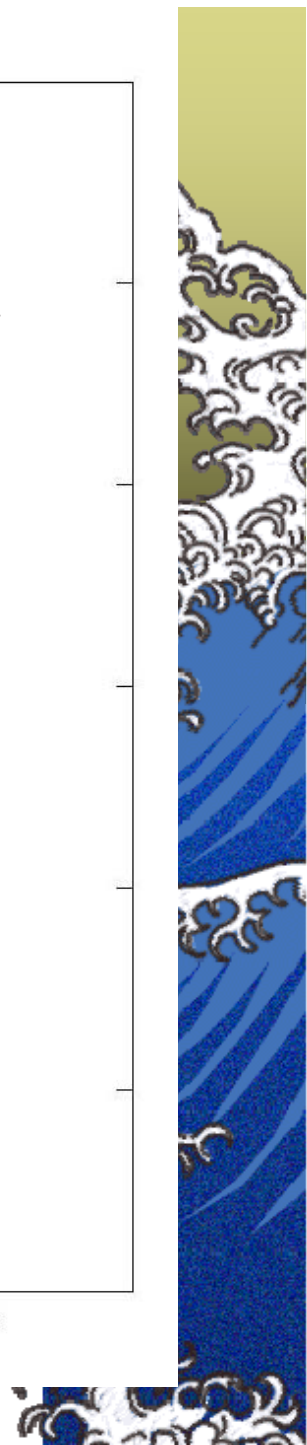
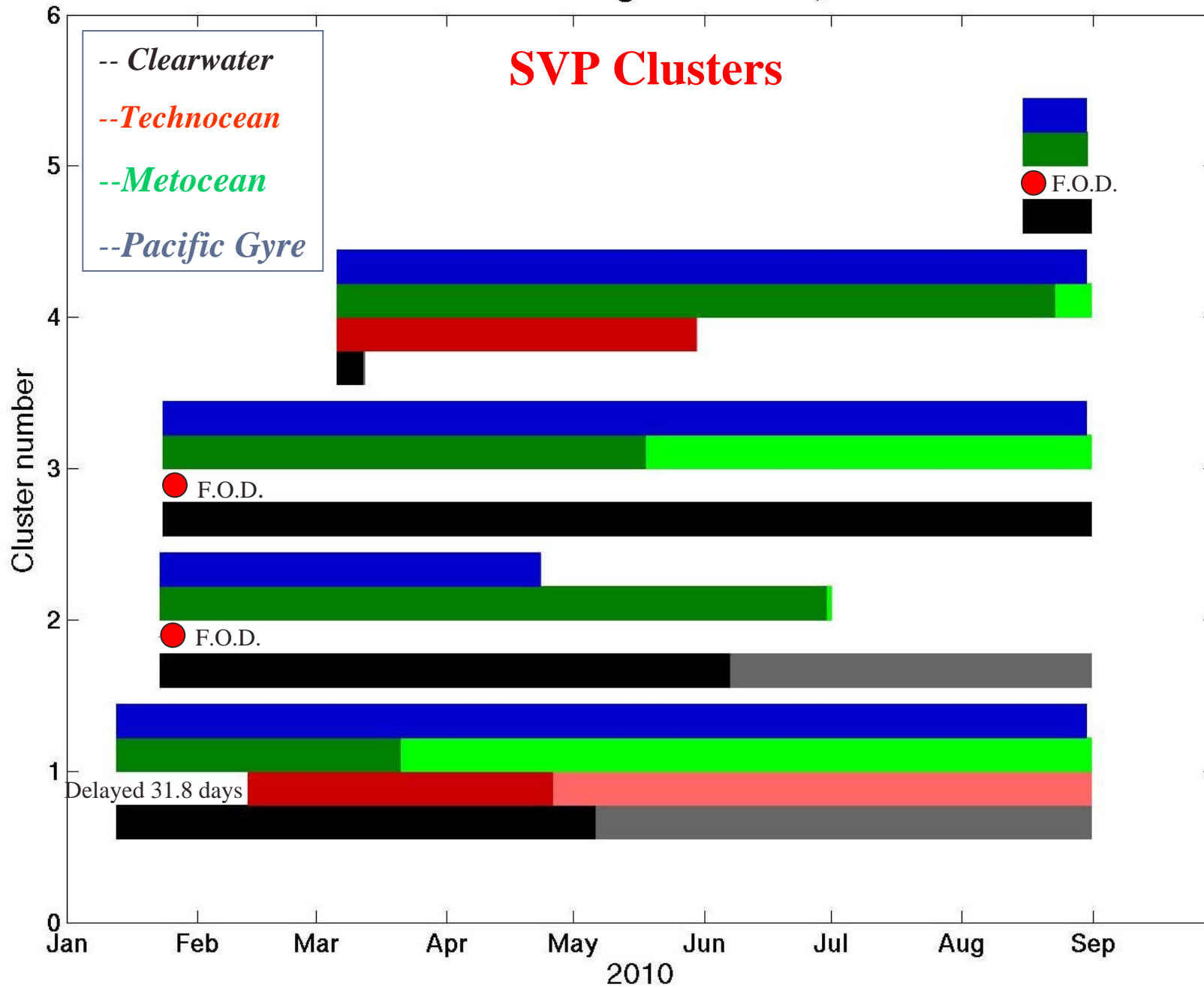
<i>Manufacturers</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Clearwater</i>	231* 113	220* 135	220* 220*	7 7	16* 16*
<i>Technocean</i>	200 72	<i>F.O.D</i>	<i>F.O.D</i>	85 85	<i>F.O.D</i>
<i>Metocean</i>	231* 67	159 159	220* 114	179* 170	16* 16*
<i>Pacific Gyre</i>	231* 231*	90 90	220* 220*	179* 179*	16* 16*
<i>Max. Days Possible</i>	<i>231</i>	<i>220</i>	<i>220</i>	<i>179</i>	<i>16</i>

Top number: Transmitter life, Bottom number: Drogue life

*** Alive, drogue on**

Last updated: August 31, 2010

Transmitter and Drogue lifetimes, ADB2010



SVPB Clusters

<i>Manufacturers</i>	<i>1</i>	<i>2</i>
<i>Clearwater</i>	<i>16 (Delayed 11 days)</i> <i>1</i> <i>Bad SST, bad SLP</i>	<i>21 (delayed 2 days)</i> <i>21</i>
<i>Technocean</i>	<i>27</i> <i>27</i>	<i>23</i> <i>23</i>
<i>Metocean</i>	<i>27</i> <i>27</i>	<i>23</i> <i>23</i>
<i>Pacific Gyre</i>	<i>27</i> <i>27</i>	<i>23</i> <i>23</i>
<i>Marlin-Yug</i>	<i>27</i> <i>27</i>	<i>23</i> <i>23</i>
<i>Max. Days Possible</i>	<i>27</i>	<i>23</i>

Top number: Transmitter life, Bottom number: Drogue life
Last updated: September 15, 2010

