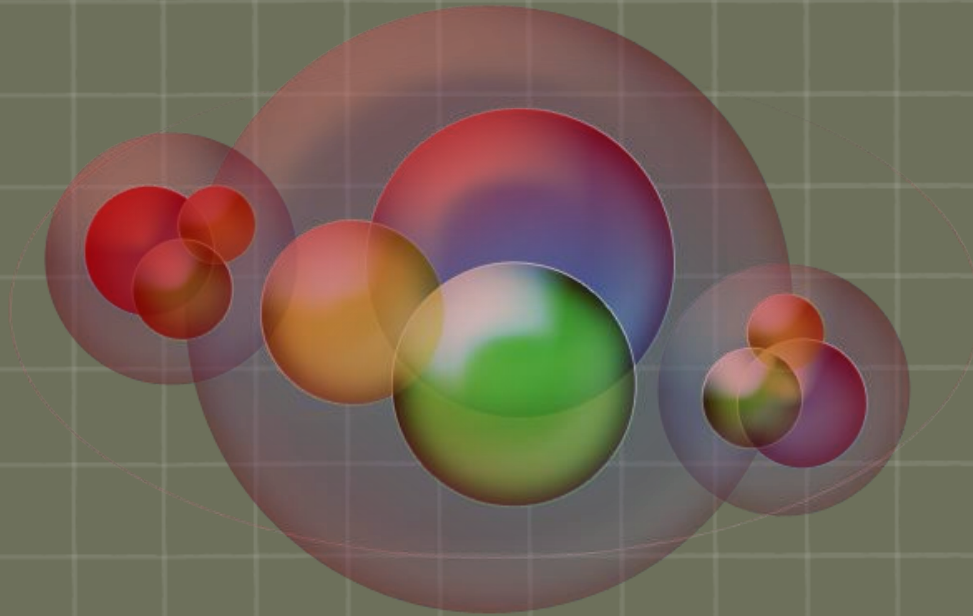


# Identifying Drifter Deployment Values



Presented by:

**Shaun Dolk**

Produced in Collaboration with:

**Dr. Rick Lumpkin**



NOAA/AOML/GDP  
Miami, Florida

# Objectives & Direction

- 🌐 **Review Global Drifter Program Operational Requirements**
  - 🌐 **View Historic Deployment Guide Tools**
- 🌐 **Outline Key Factors Affecting Drifter Values/Lifetimes**
- 🌐 **Establish Drifter Deployment Map Components**
- 🌐 **Display Drifter Deployment Values and Project Future Deployment Necessities**

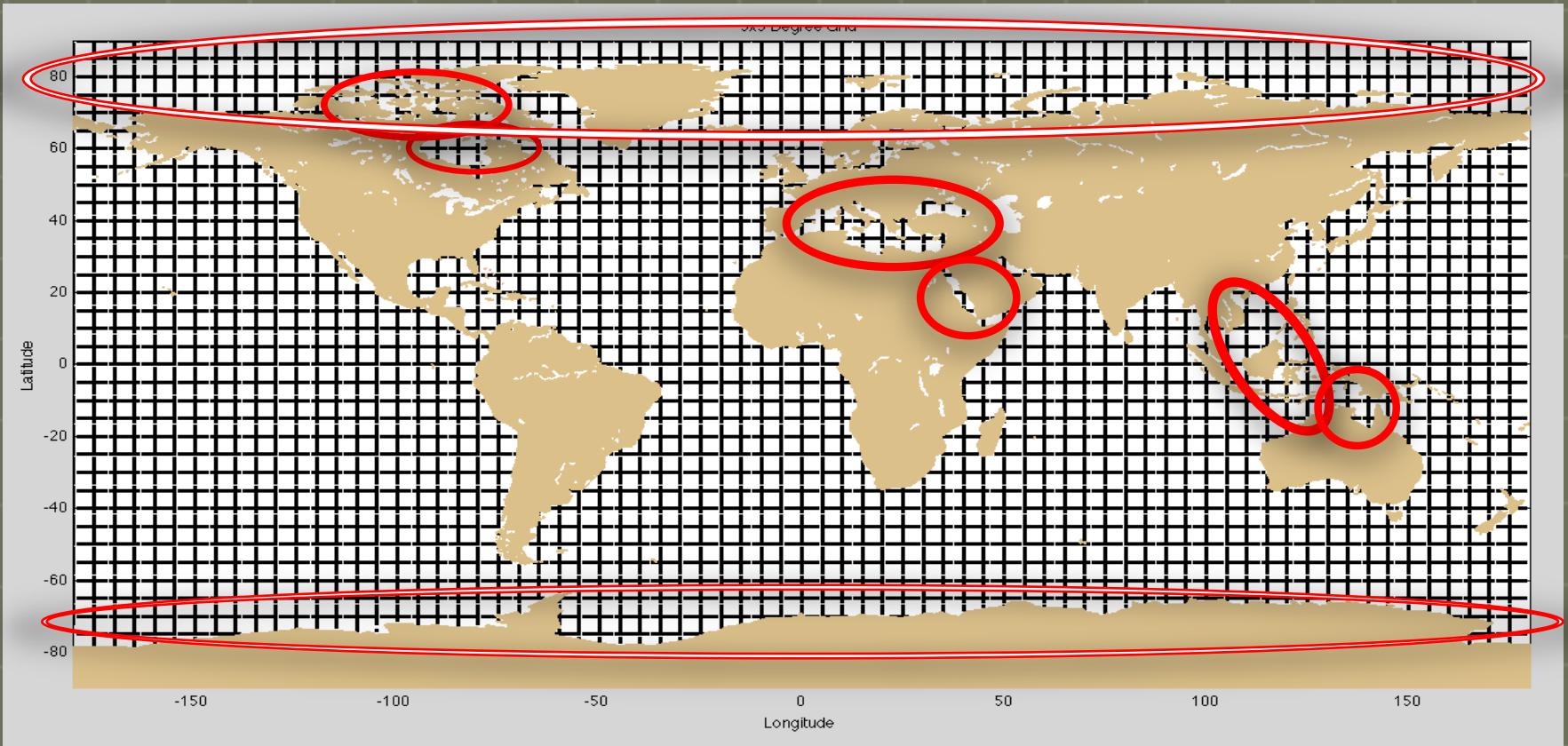
# GDP Operational Requirements

The GDP is the principle component of the Global Surface Drifting Buoy Array, a branch of NOAA's Global Ocean Observing System (GOOS) and a scientific project of the Data Buoy Cooperation Panel (DBCP).

Its objectives are to:

- 1. Maintain a global 5x5 degree array of 1250 satellite-tracked surface drifting buoys to meet the need for an accurate and globally dense set of in-situ observations of mixed layer currents, sea surface temperature, atmospheric pressure, winds and salinity, and**
- 2. Provide** a data processing system for scientific use of these data. These data support short-term (seasonal to interannual) climate predictions as well as climate research and monitoring.

# Maintaining a Global Drifter Array



## 5x5° Grid Across Globe



1 Drifter in Every 5x5° Bin



Exclude Shallow waters (<60 feet)

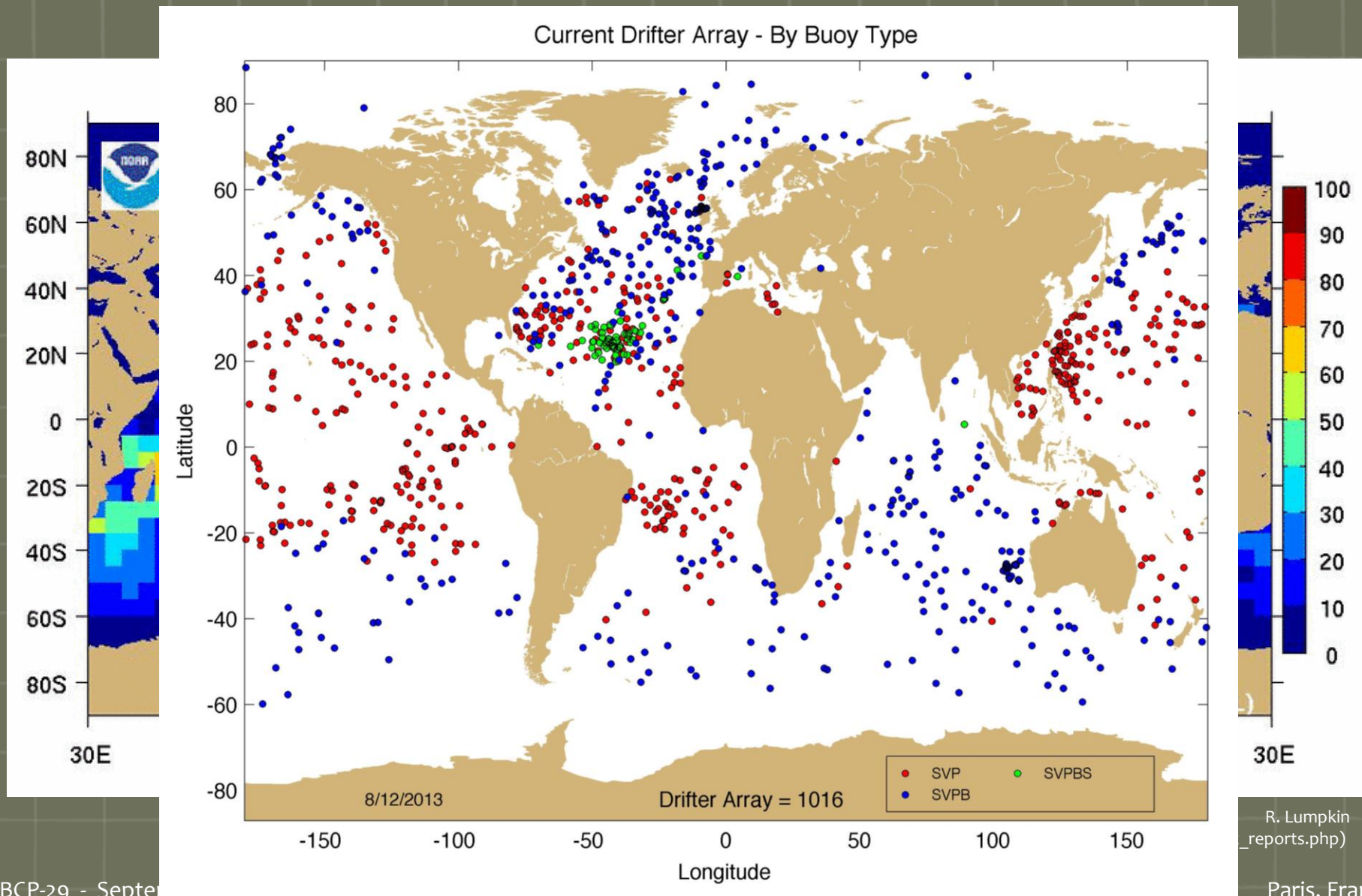


Exclude Closed Basins



~1250 Bins in Open Ocean

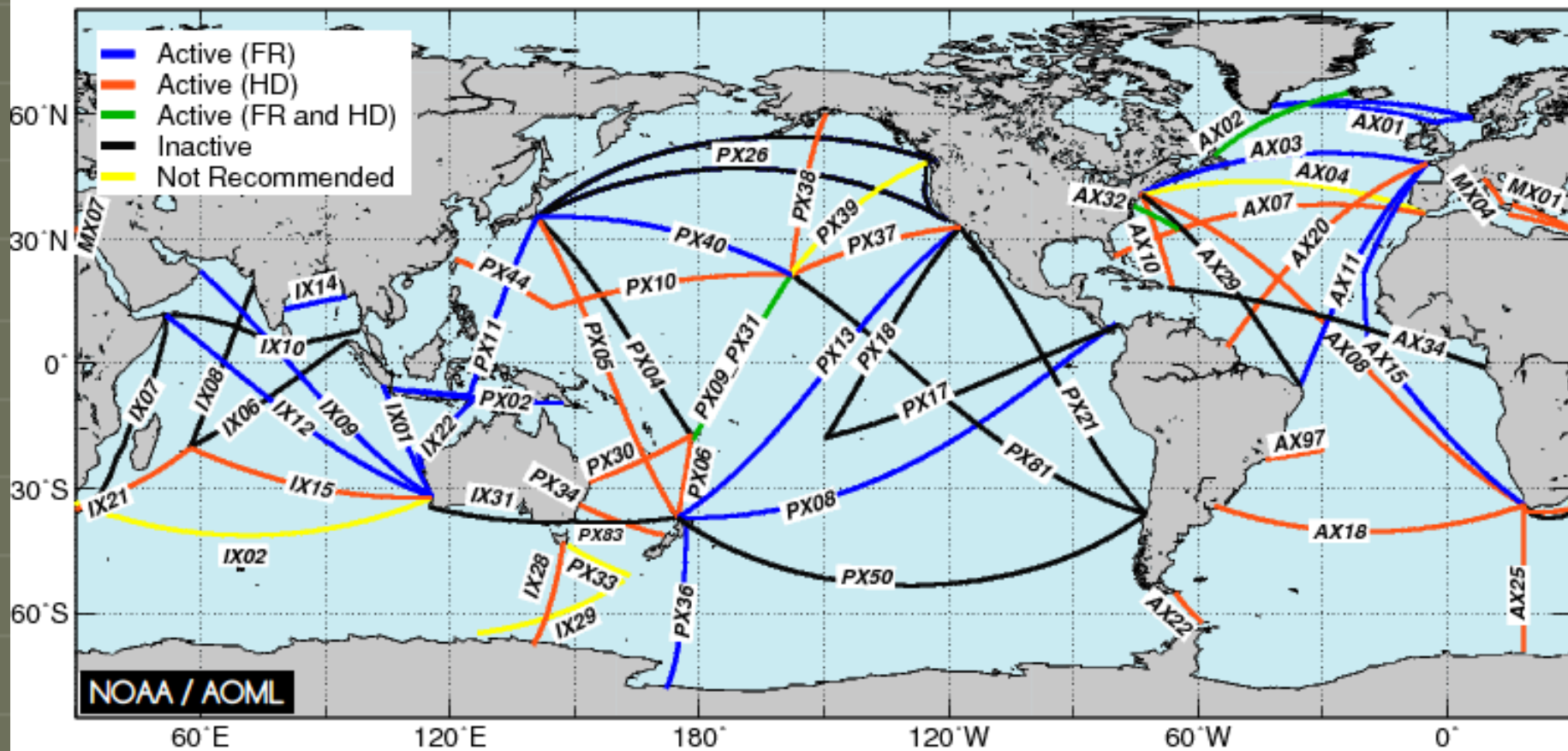
# Historic Deployment Guide Tools



# Historic Deployment Guide Tools

## Valuable Ocean Transects

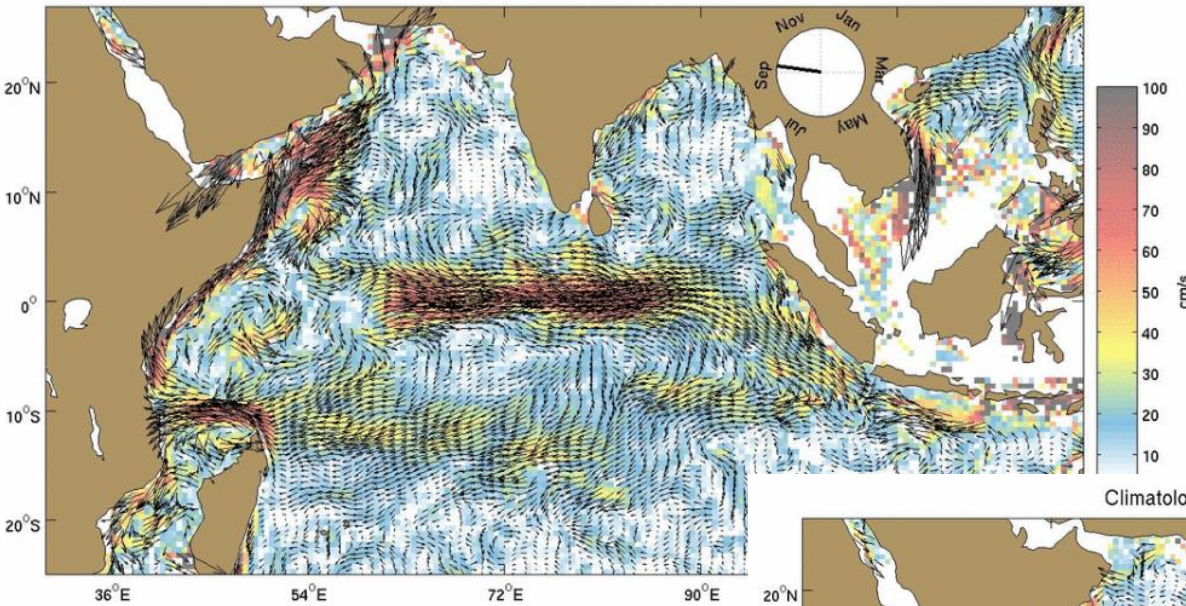
Current Status and Implementation of XBT Transects (2010–2011)



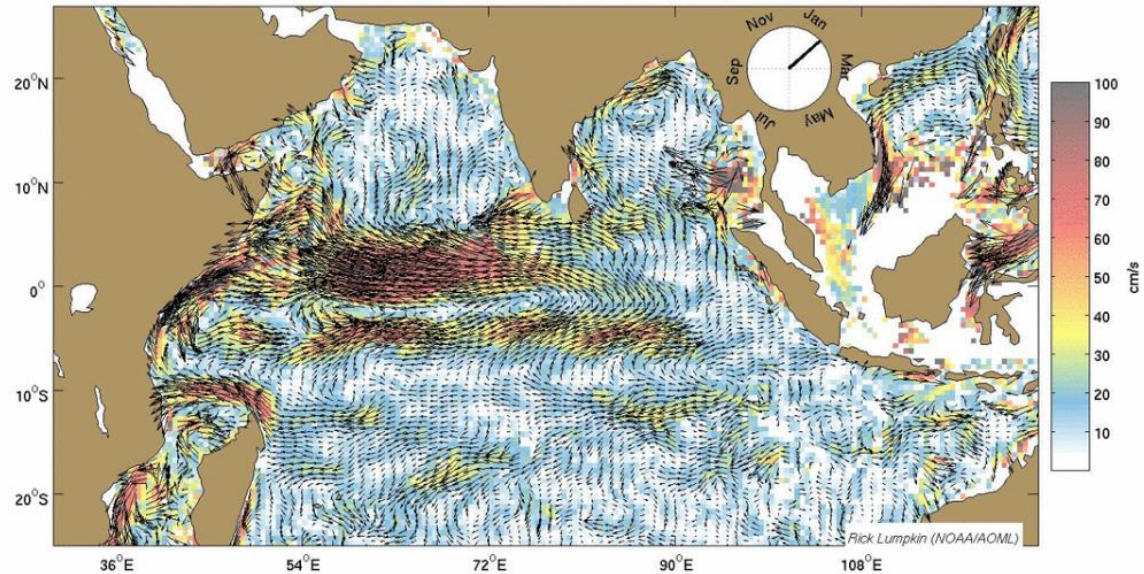
# Historic Deployment Guide Tools

## Climatological Current Animations

Climatological currents (cm/s), 10 October



Climatological currents (cm/s), 19 February



R. Lumpkin  
([http://www.aoml.noaa.gov/phod/dac/dac\\_animations.php](http://www.aoml.noaa.gov/phod/dac/dac_animations.php))

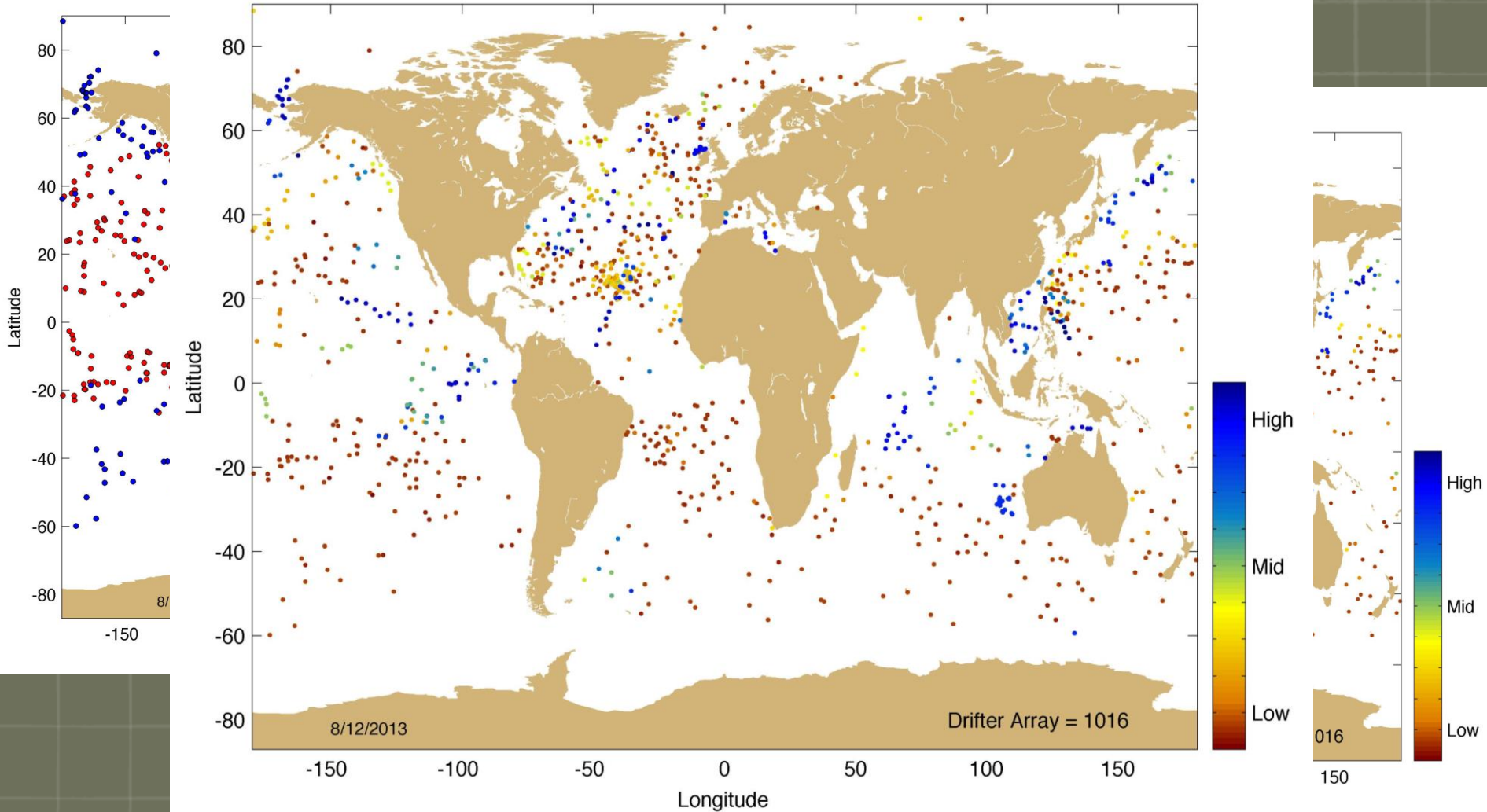
# Key Factors Affecting Drifter Values/Lifetimes

- **Drifter Lifetime (age factor / af)**
  - Expected Lifetime = 450 days
  - Actual Lifetime = 237 day half-life
- **Drogue Lifetime (df)**
  - Expected Lifetime = 350 days
  - Actual Lifetime = 145 day half-life
- **Number of Operational Sensors (ns)**
  - SST (sst factor / sf)
  - Drogue (drogue factor / df)
  - Barometer (barometer factor / bf)
- **Deployment Location/Proximity to Nearby Drifters**



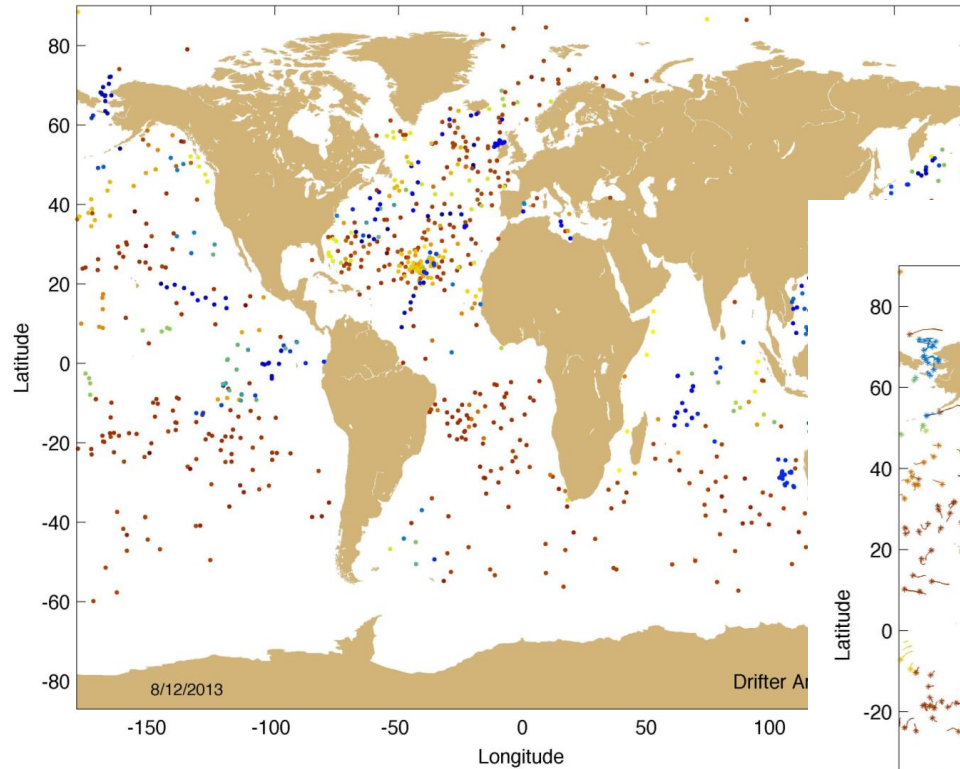
# Drifter Deployment Map Components – Part One

Current Drifter Locations with Values Assigned

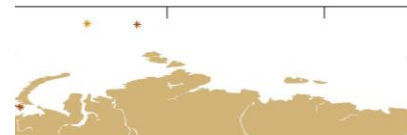


# Drifter Deployment Map Components – Part Two

Current Drifter Locations with Values Assigned

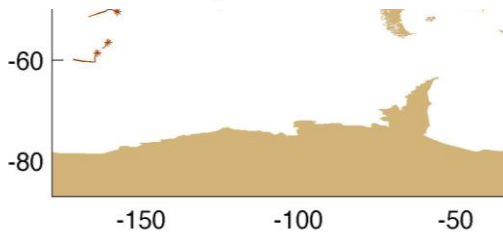
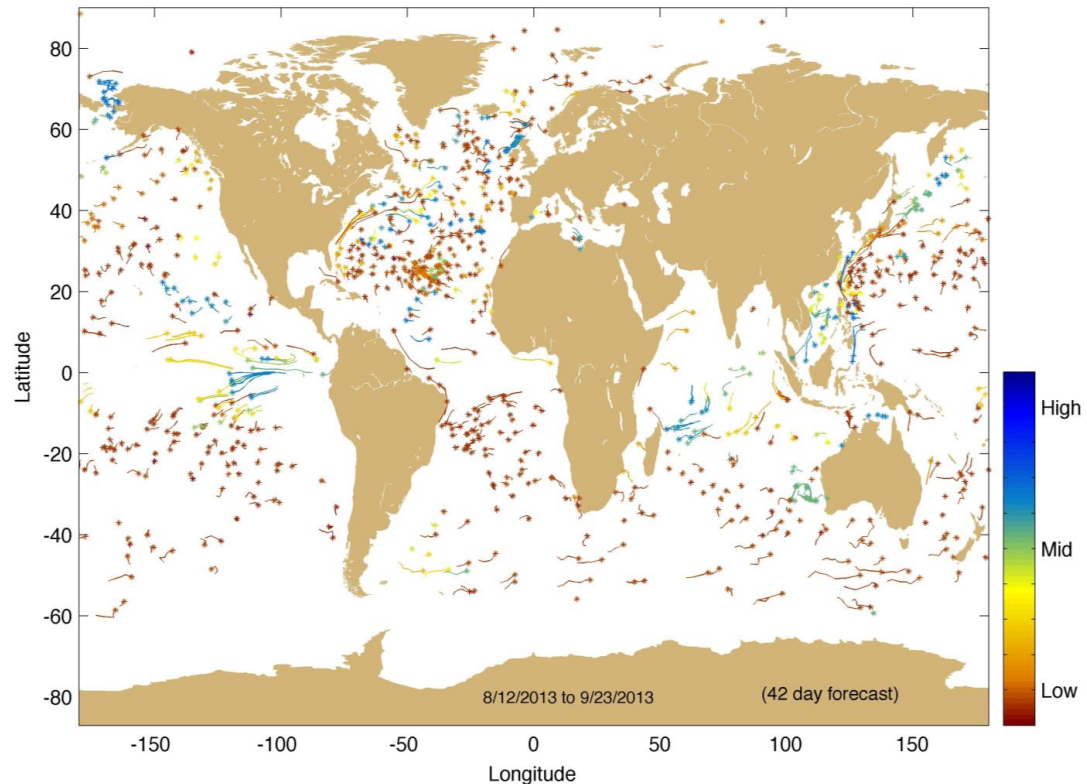


s Assigned



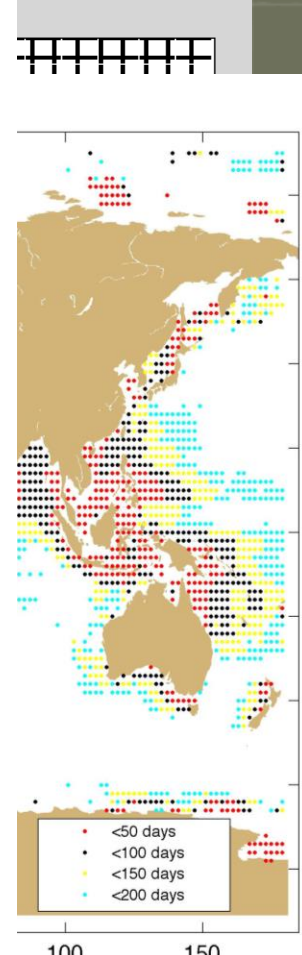
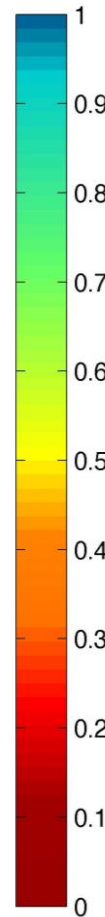
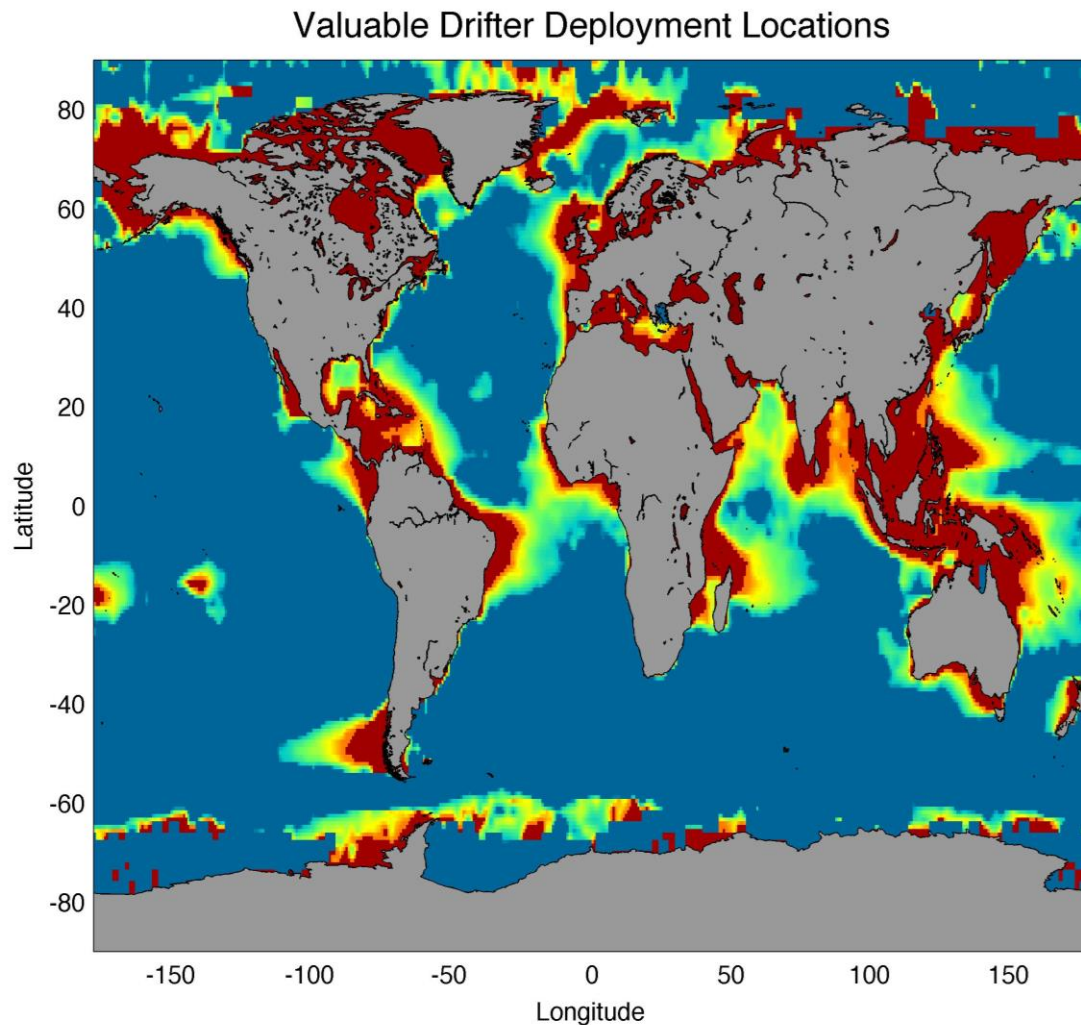
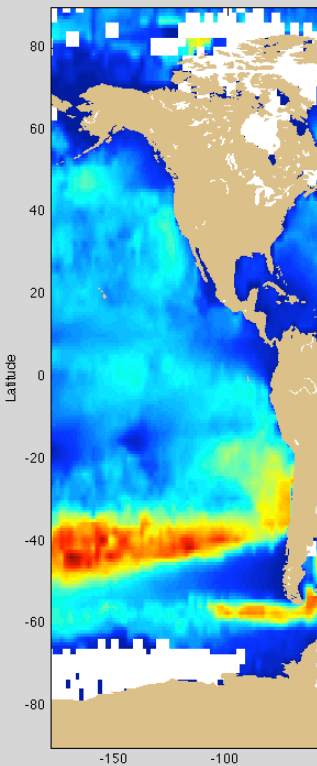
Global

Projected Drifter Locations with Values Assigned



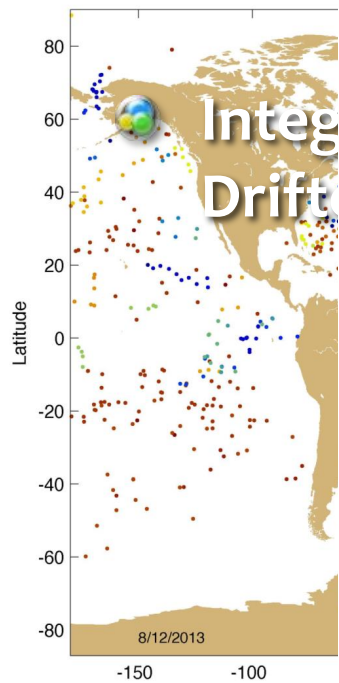
# Drifter Deployment Map Components – Part Three

Dete

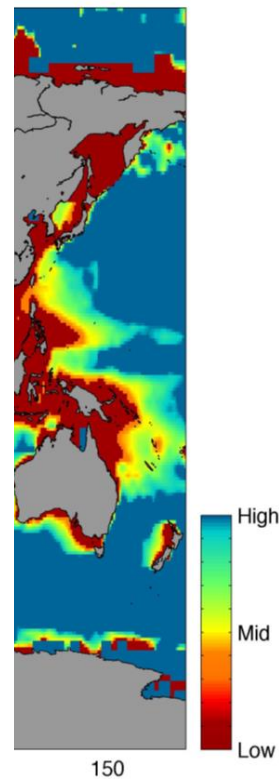
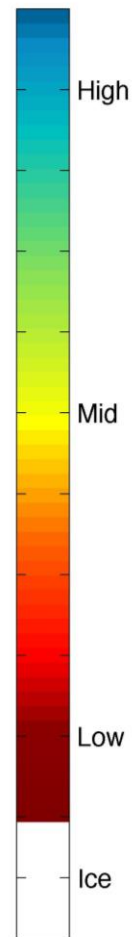
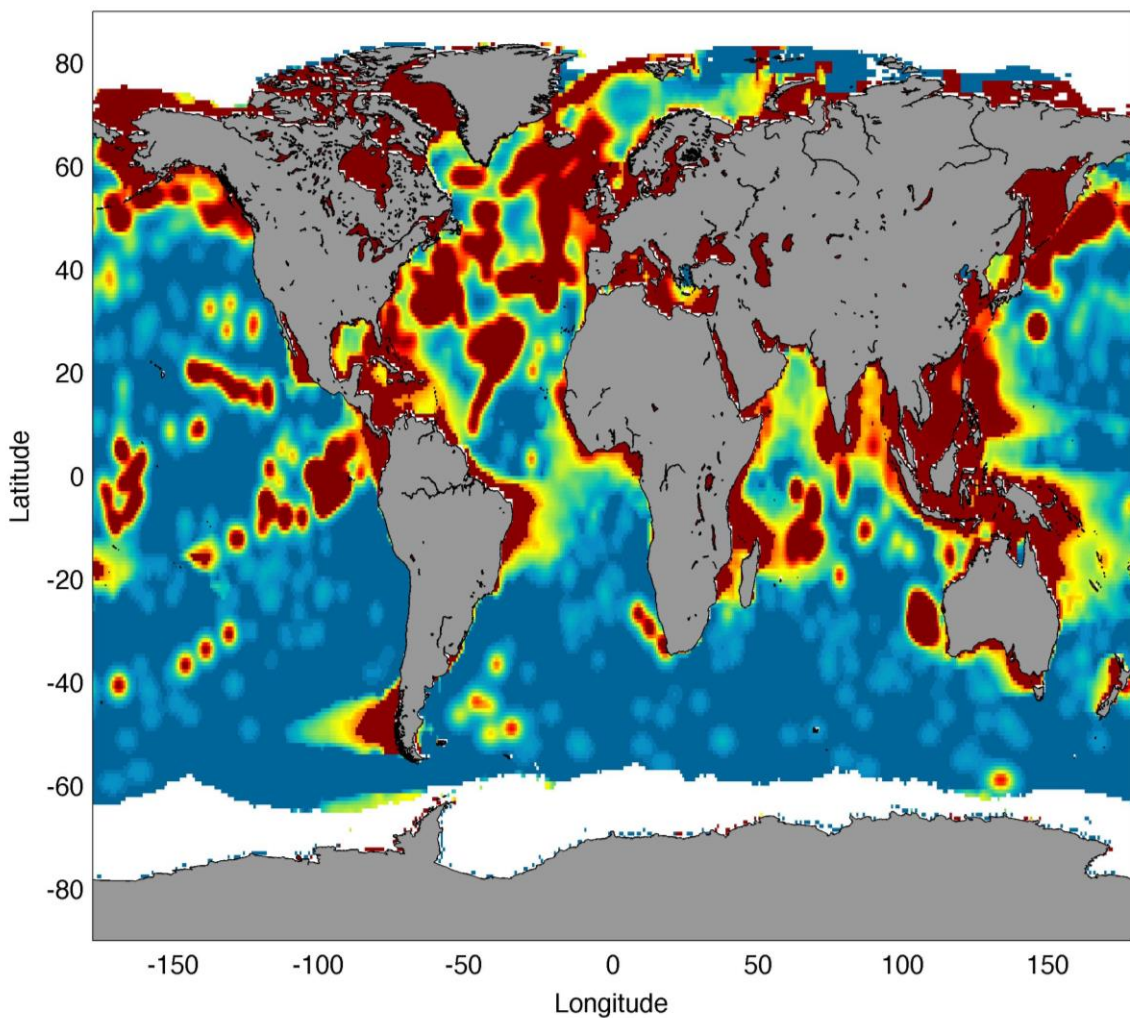


# Current Drifter Deployment Values

Current Drifter Locations with Values Assigned

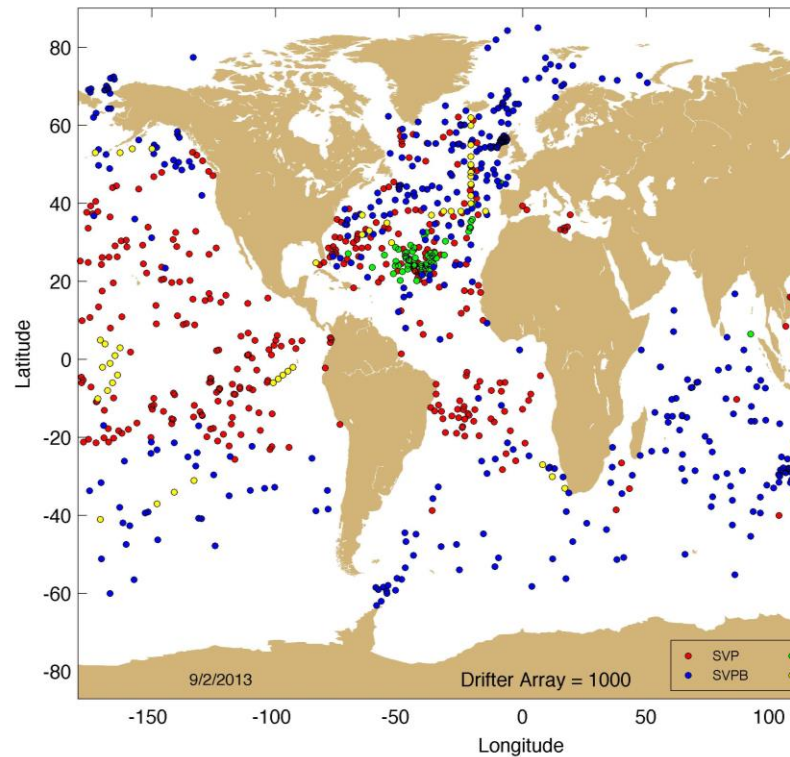


Present Day Deployment Values - Based on Current Drifter Array

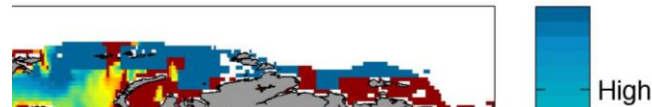


# Projected Drifter Deployment Values

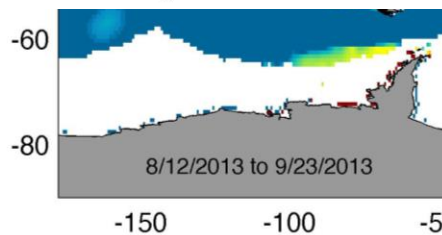
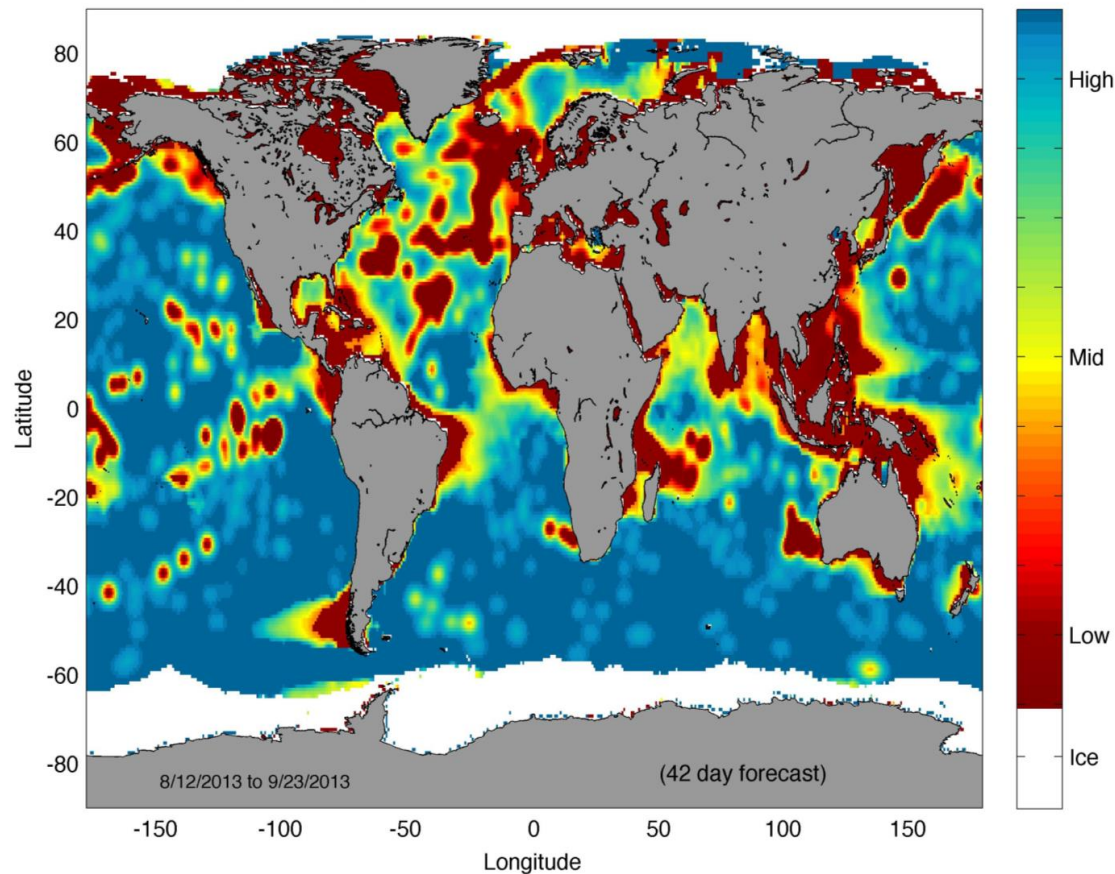
Current Drifter Array - By Buoy Type



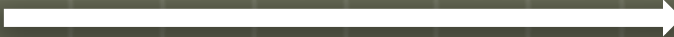

I on Forecasted Drifter Array



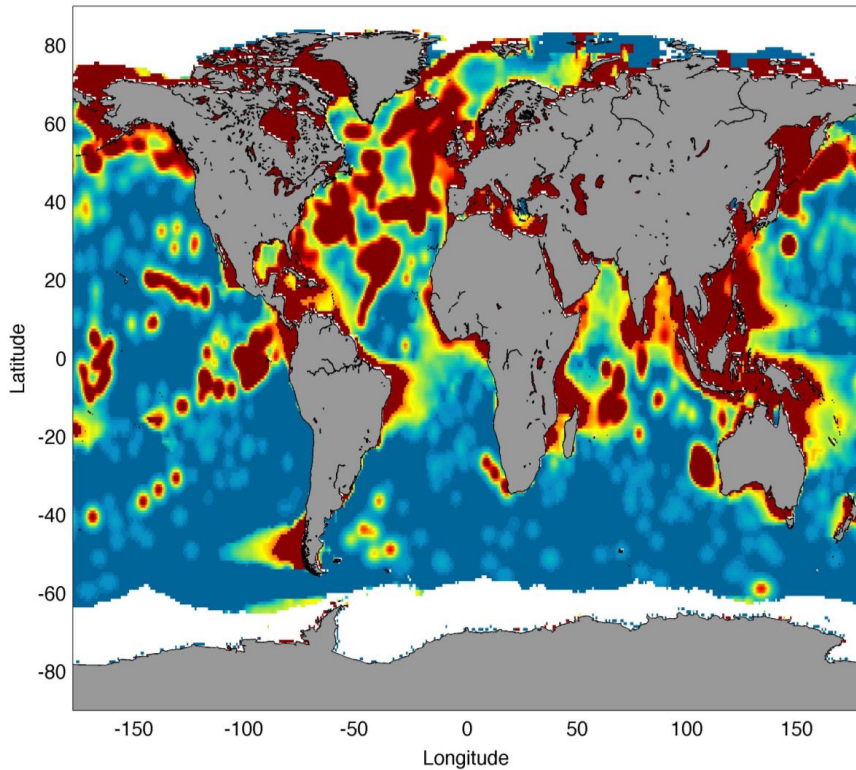
Projected Deployment Values - Based on Forecasted Drifter Array



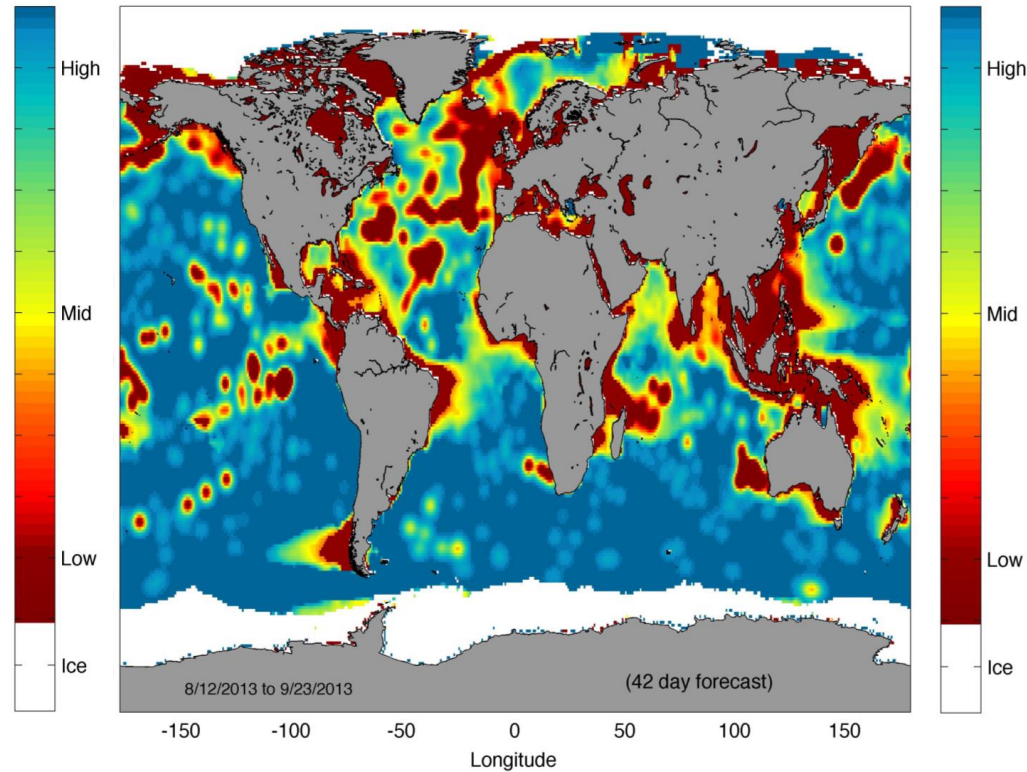
# Drifter Deployment Value Maps

Current Drifter Array  42 Days  Projected Drifter Array

Present Day Deployment Values - Based on Current Drifter Array



Projected Deployment Values - Based on Forecasted Drifter Array



# Value Map Applications – Part One

- 🌐 Select a Desired Ocean Basin
- 🌐 Determine How Many Weeks Until Deployment
  - 🌐 Ideal for Classified Missions -- Where Cruise Tracks are Unavailable

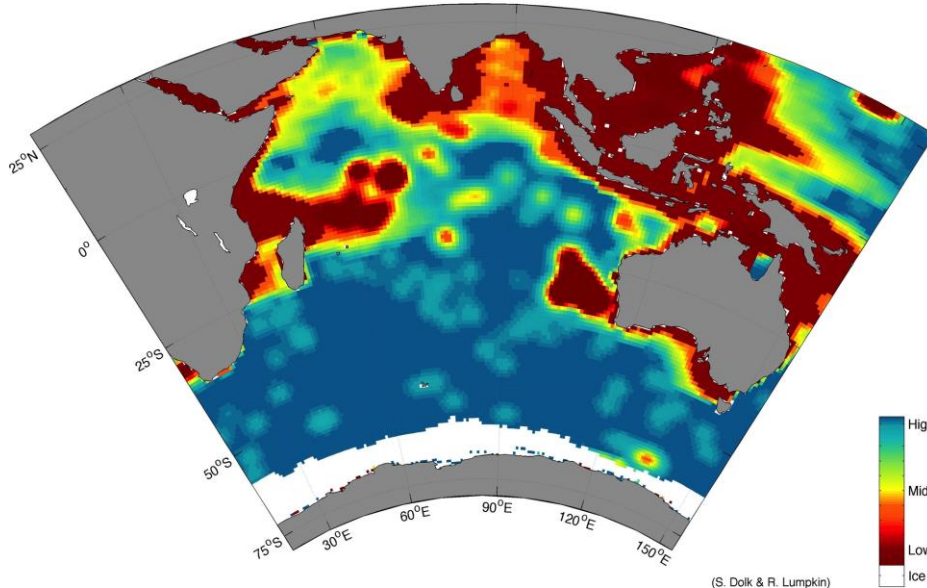
>> IndianOcean

How many weeks forward would you like to forecast (ex., 0,1,...,6)? 4

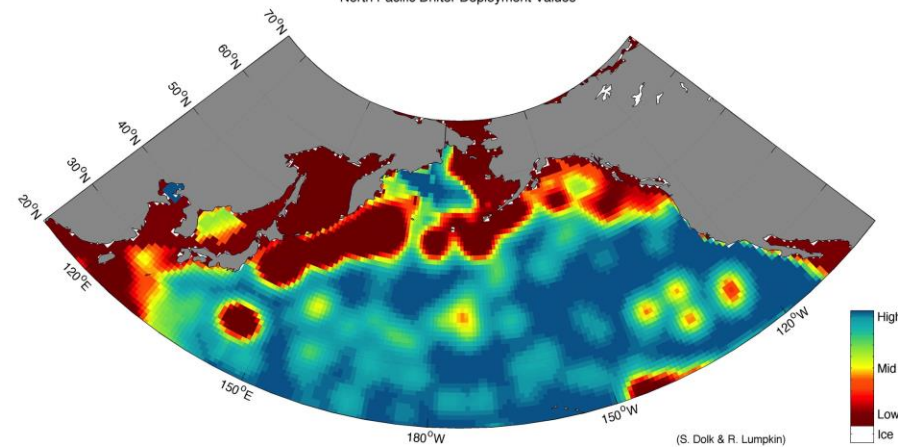
>> NorthPacific

How many weeks forward would you like to forecast (ex., 0,1,...,6)? 2

Indian Ocean Drifter Deployment Values - Week of: 9/9/2013

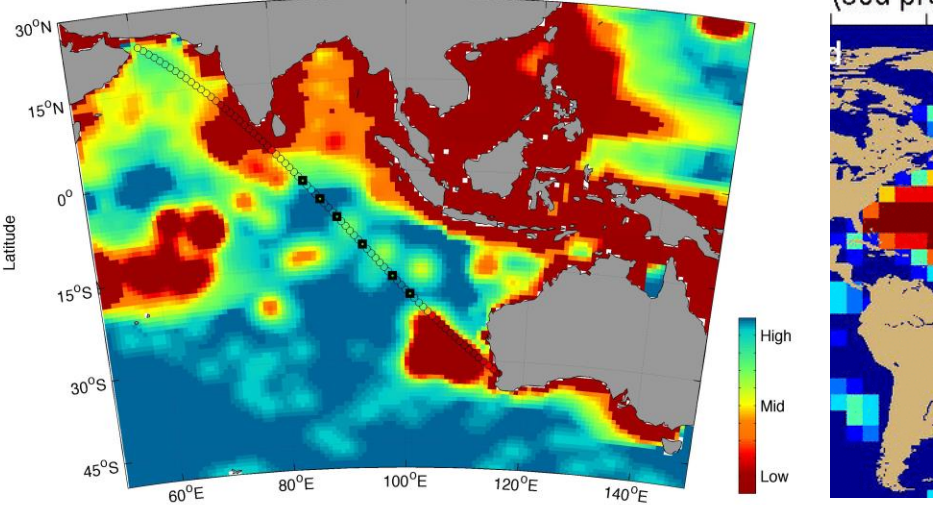


North Pacific Drifter Deployment Values



# Value Map Applications – Part Two

IX9 Deployment Guide - Week of: 9/2/2013

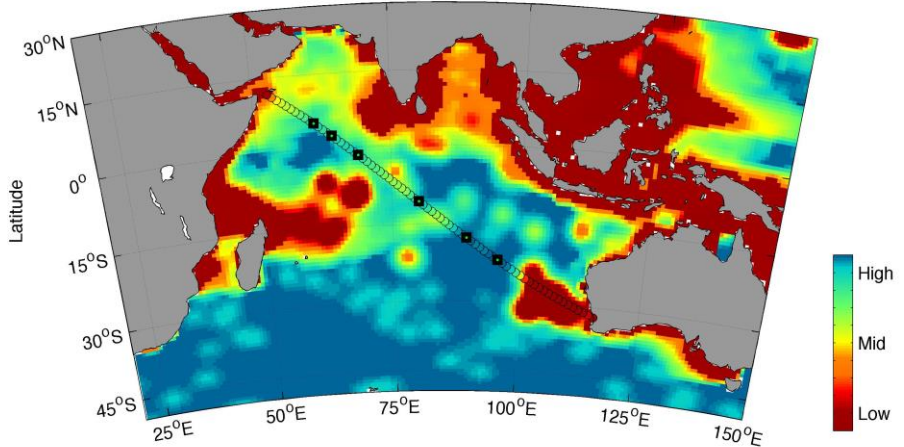


Longitude

|              |       |
|--------------|-------|
| Approx Lon   | 101 E |
| Deployment   | 98 E  |
| Location(s): | 93 E  |
|              | 89 E  |
|              | 87 E  |
|              | 84 E  |

(S. Dolk & R. Lumpkin)

IX12 Deployment Guide - Week of: 9/16/2013

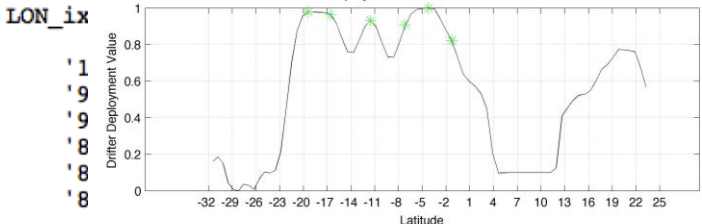


Longitude

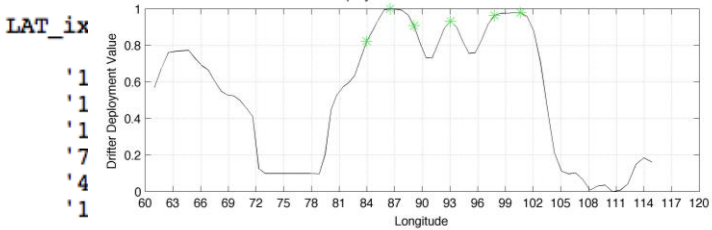
|              |      |
|--------------|------|
| Approx Lon   | 96 E |
| Deployment   | 89 E |
| Location(s): | 80 E |
|              | 69 E |
|              | 64 E |
|              | 61 E |

(S. Dolk & R. Lumpkin)

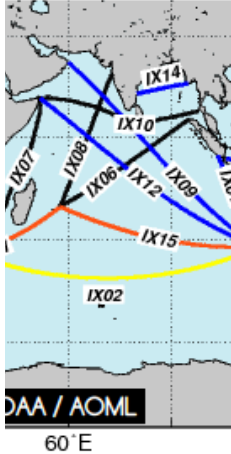
IX9 Lat Deployment Guide - Week of: 9/2/2013



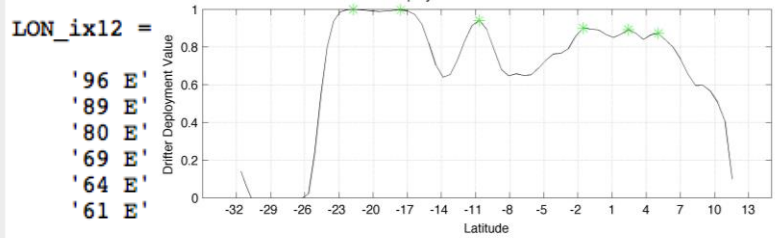
IX9 Lon Deployment Guide - Week of: 9/2/2013



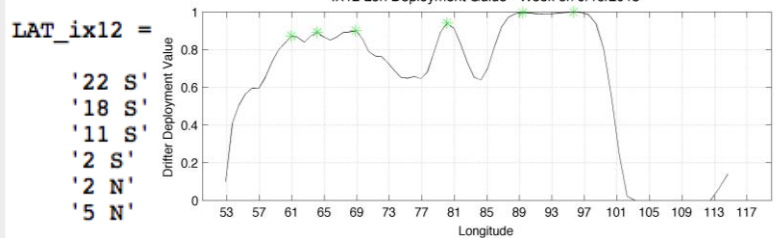
■ Inactive  
■ Not Recommended



IX12 Lat Deployment Guide - Week of: 9/16/2013



IX12 Lon Deployment Guide - Week of: 9/16/2013

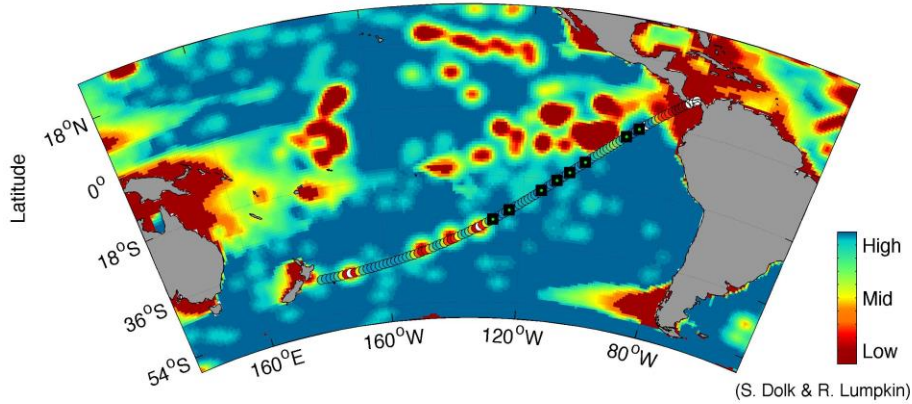


DAA / AOML



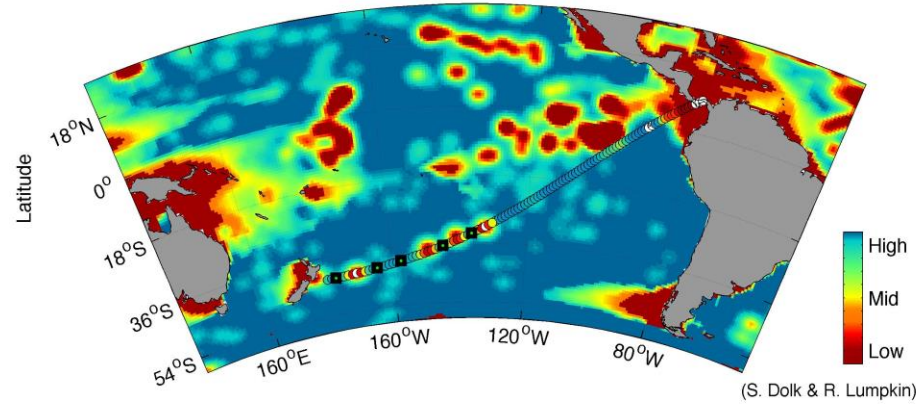
# Value Map Applications – Part Two (cont.)

PX8 Deployment Guide - Week of: 9/2/2013



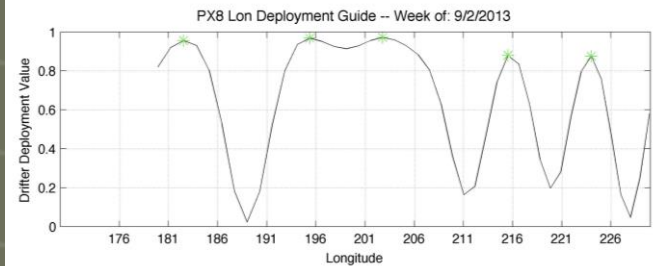
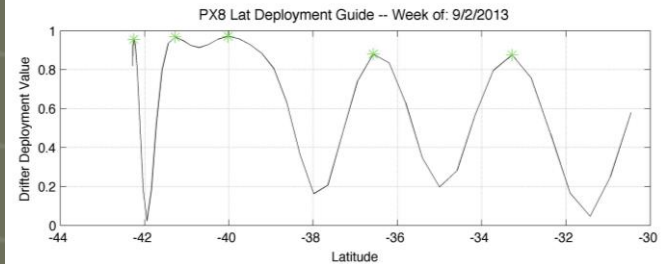
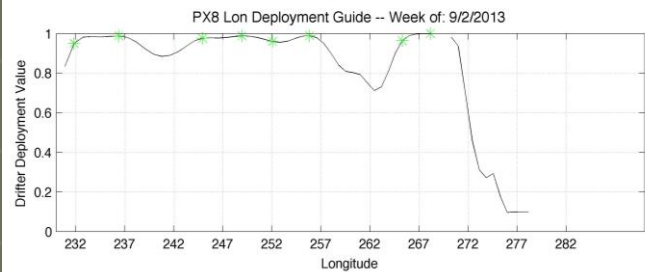
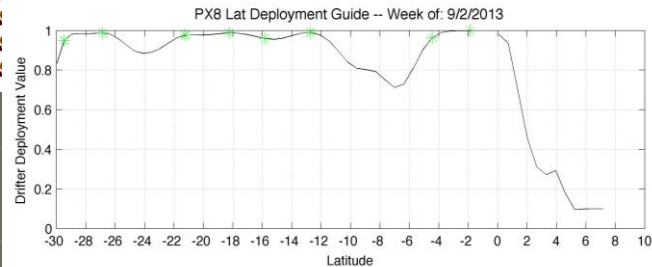
| Longitude               | 92 W  |
|-------------------------|-------|
| Approx Lon              | 95 W  |
| Deployment Location(s): | 104 W |
|                         | 111 W |
|                         | 115 W |
|                         | 124 W |
|                         | 128 W |

PX8 Deployment Guide - Week of: 9/2/2013

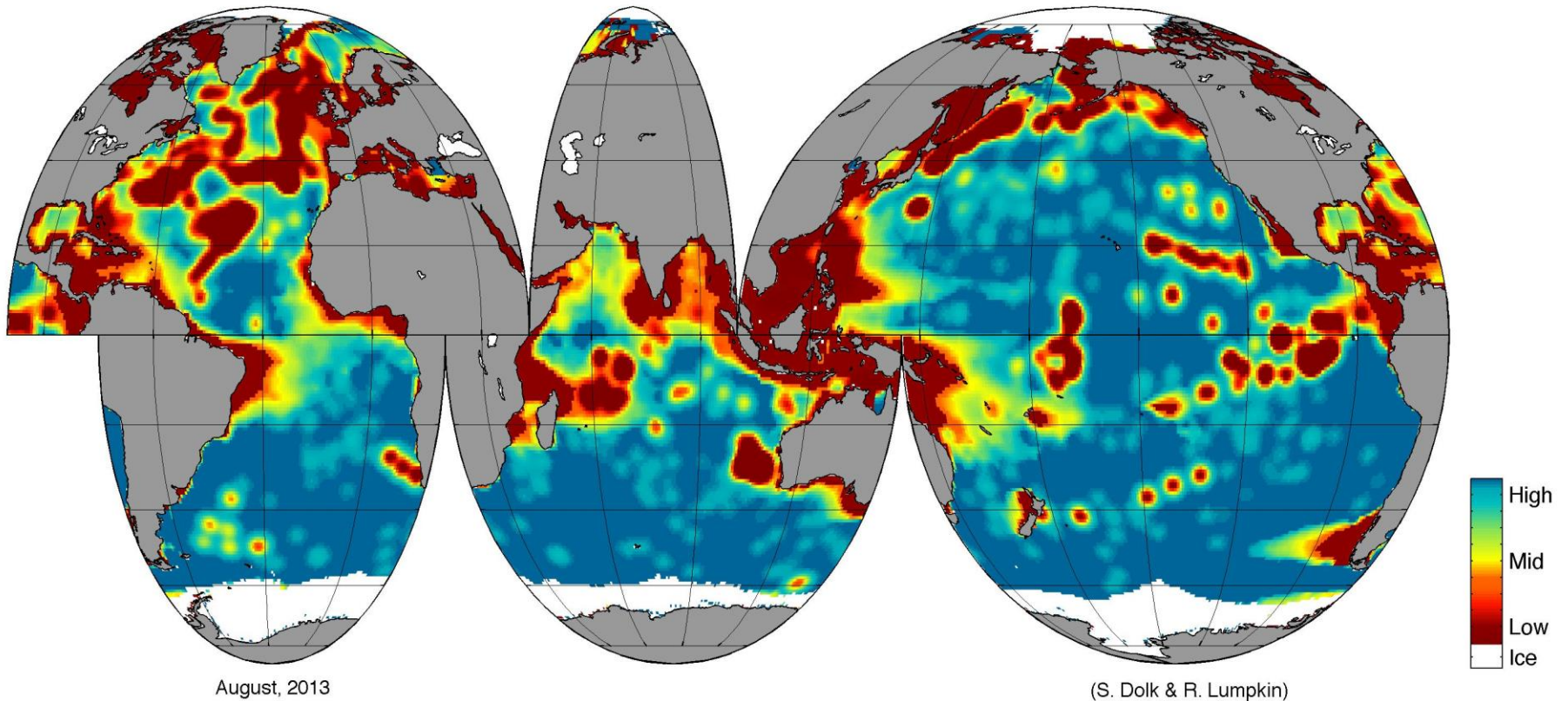


| Longitude               | 136 W |
|-------------------------|-------|
| Approx Lon              | 144 W |
| Deployment Location(s): | 157 W |
|                         | 165 W |
|                         | 177 W |

18 ;  
21 ;  
27 ;  
29 ;



# Thank You



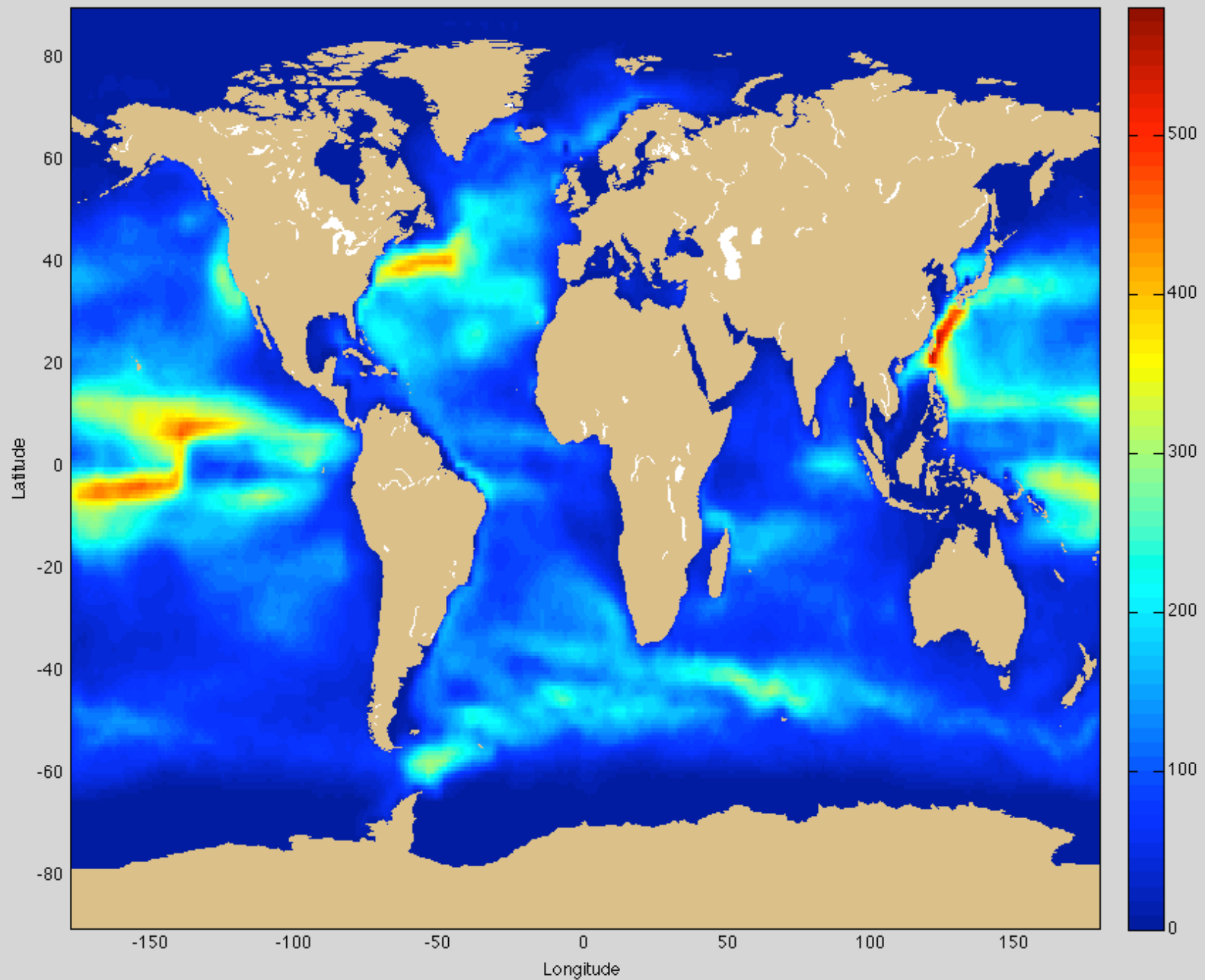
Global Drifter Array - Deployment Values

([http://www.aoml.noaa.gov/phod/dac/doc\\_valuemaps.php](http://www.aoml.noaa.gov/phod/dac/doc_valuemaps.php))





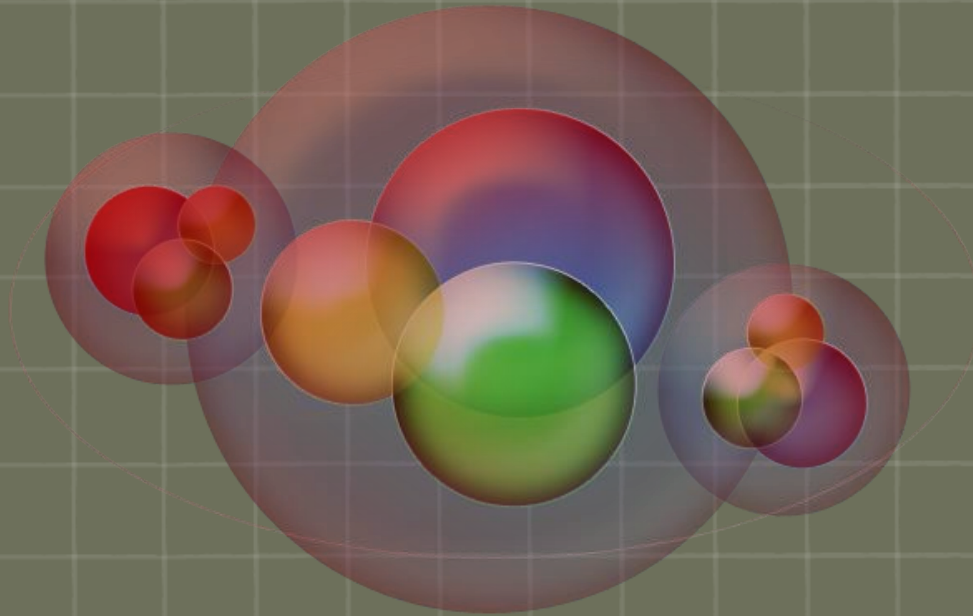
Number of Drifters per Location







# Identifying Drifter Deployment Values



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