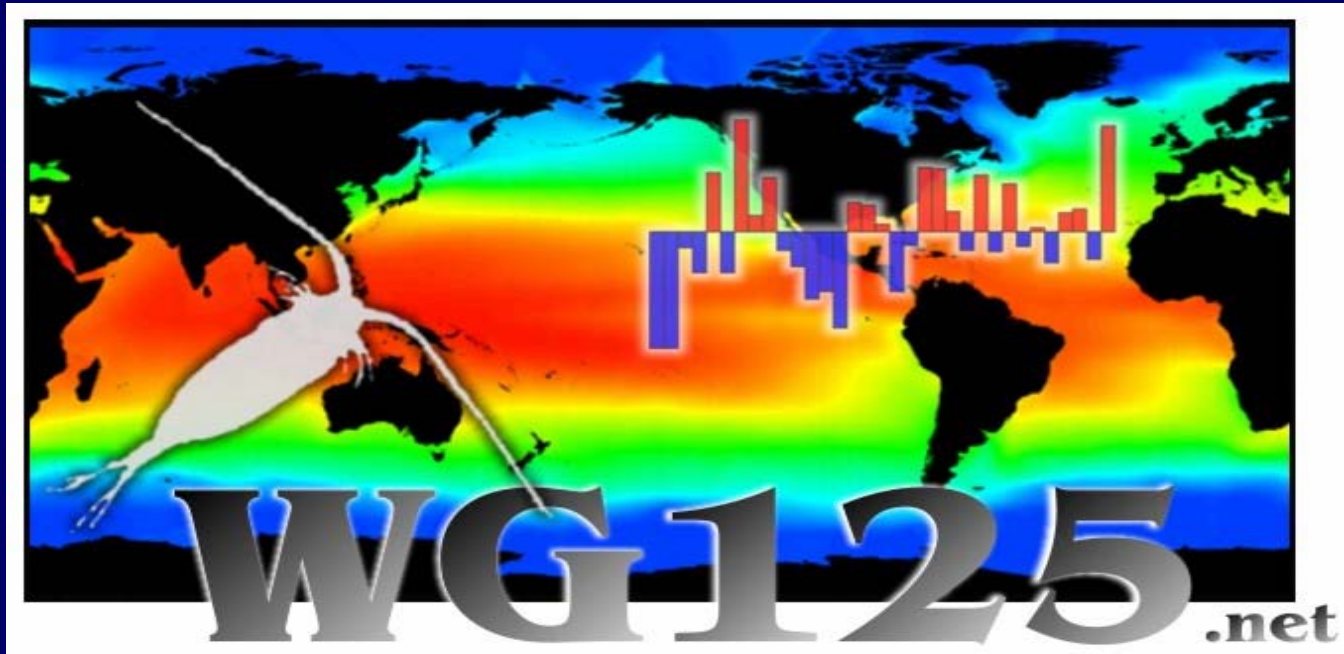
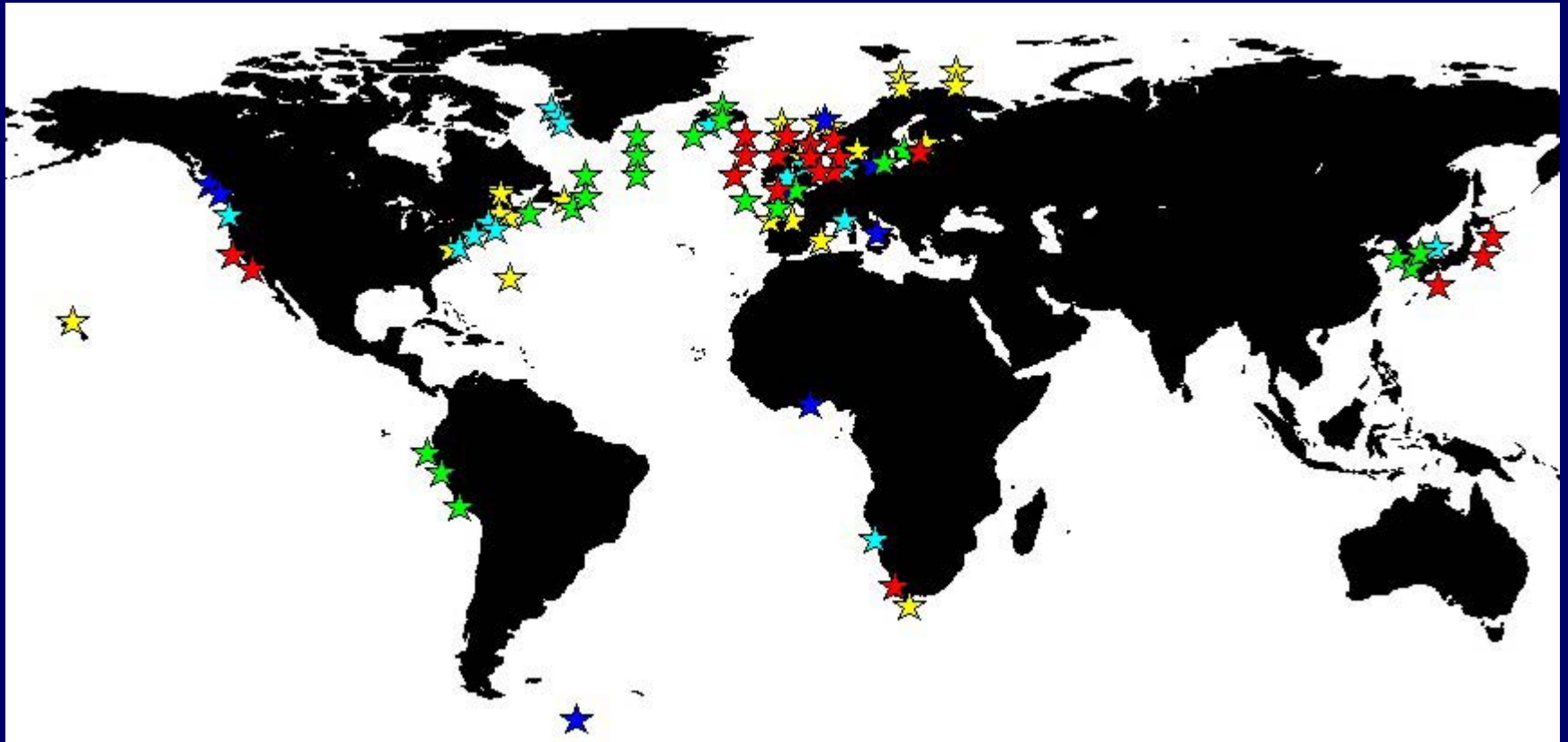


SCOR WG125: A global comparison of zooplankton biomass time series.



Todd D. O'Brien, Dave Mackas, Hans M. Verheye,
and SCOR WG125 contributors

The WG125 Zooplankton Time Series



> 50 years (21 ts)

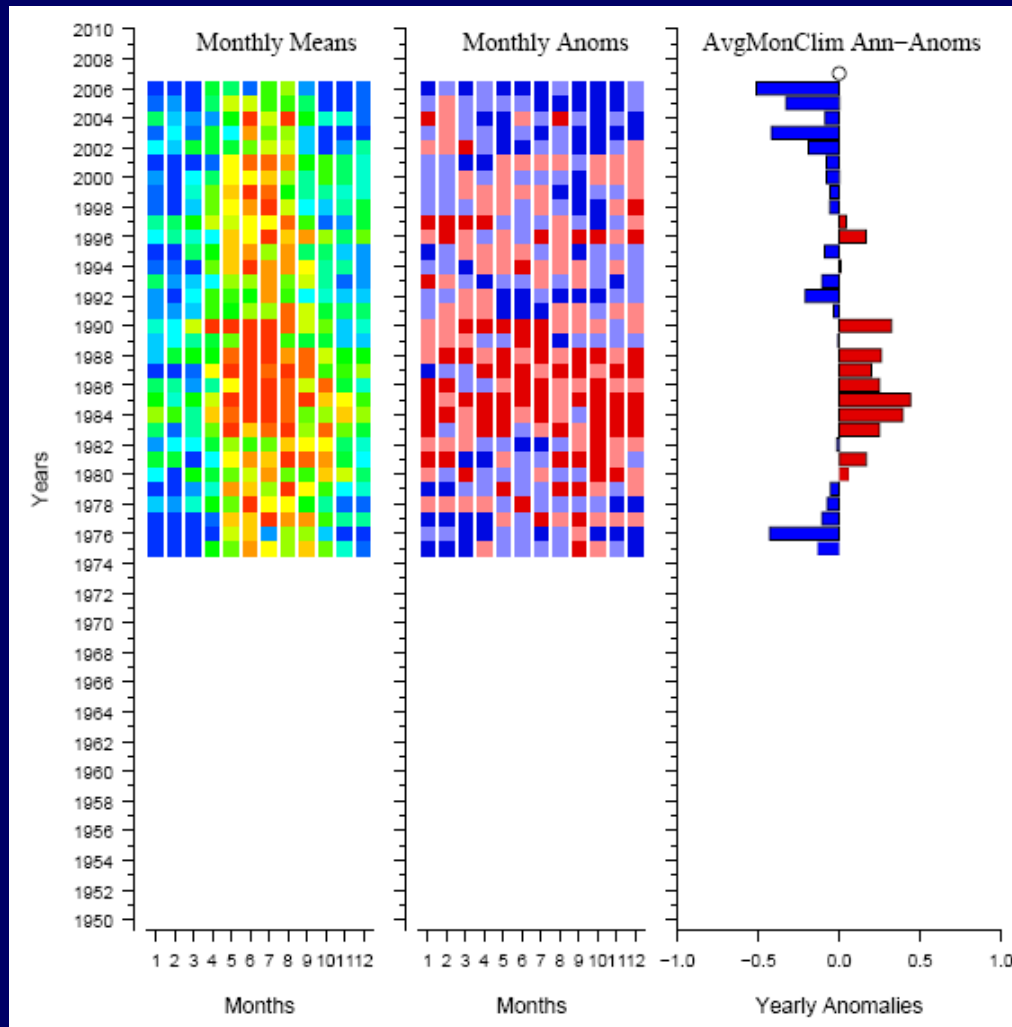
> 40 years (39 ts)

> 30 years (50 ts)

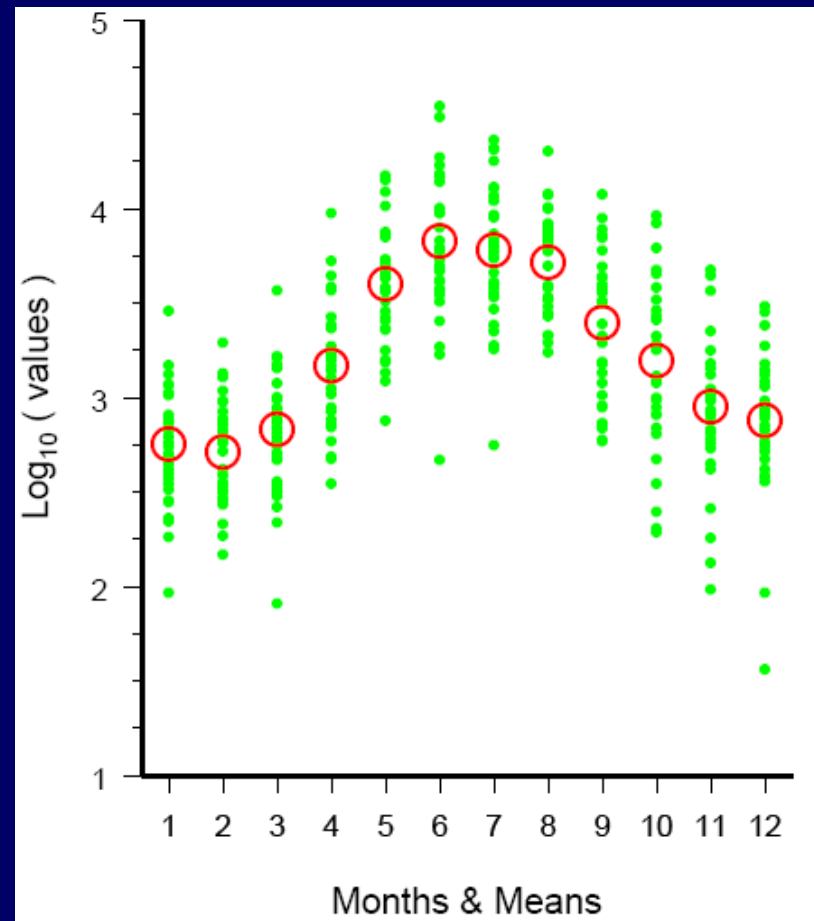
> 20 years (62 ts)

>10 years (100+ ts)

WG125 Annual Anomaly Calculation



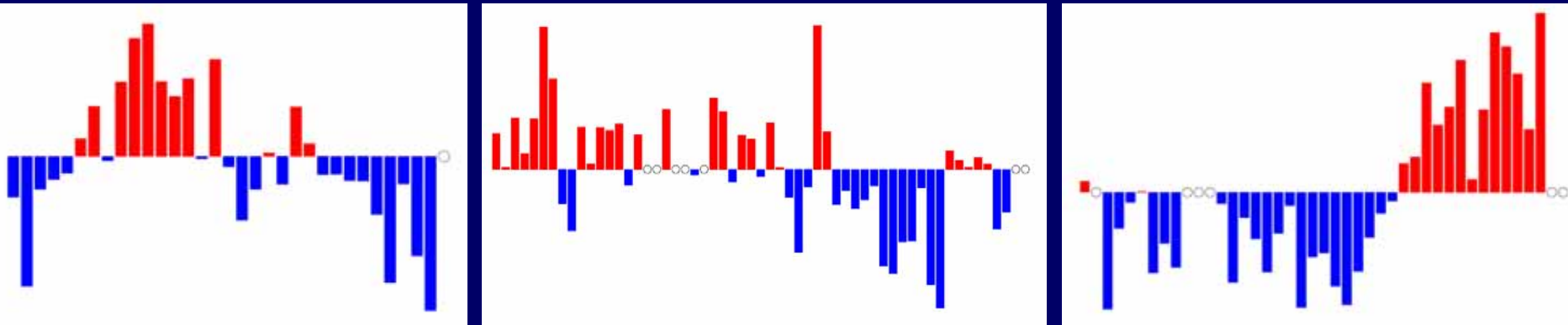
$$At = \log \left(\frac{Bt}{\bar{B}} \right)$$



“Biomass” Time Series

- This “biomass” study also includes “total zooplankton abundance” and “total copepod abundance” time series.
- We are using time series that represent the zooplankton community in bulk, looking at relative change and variation.

Variation in the Biomass Time Series



- Strong low frequency fluctuations were present in most regions.
- Amplitude of Variation: 3 to 5 fold range
- Time scales of variation (~same as physical environment):
 - interannual = 1-3 year duration
 - decadal ‘regimes’ = 5-20 years
 - ‘climate trend’ = “longer”

*Is there global synchrony in
the zooplankton biomass?*

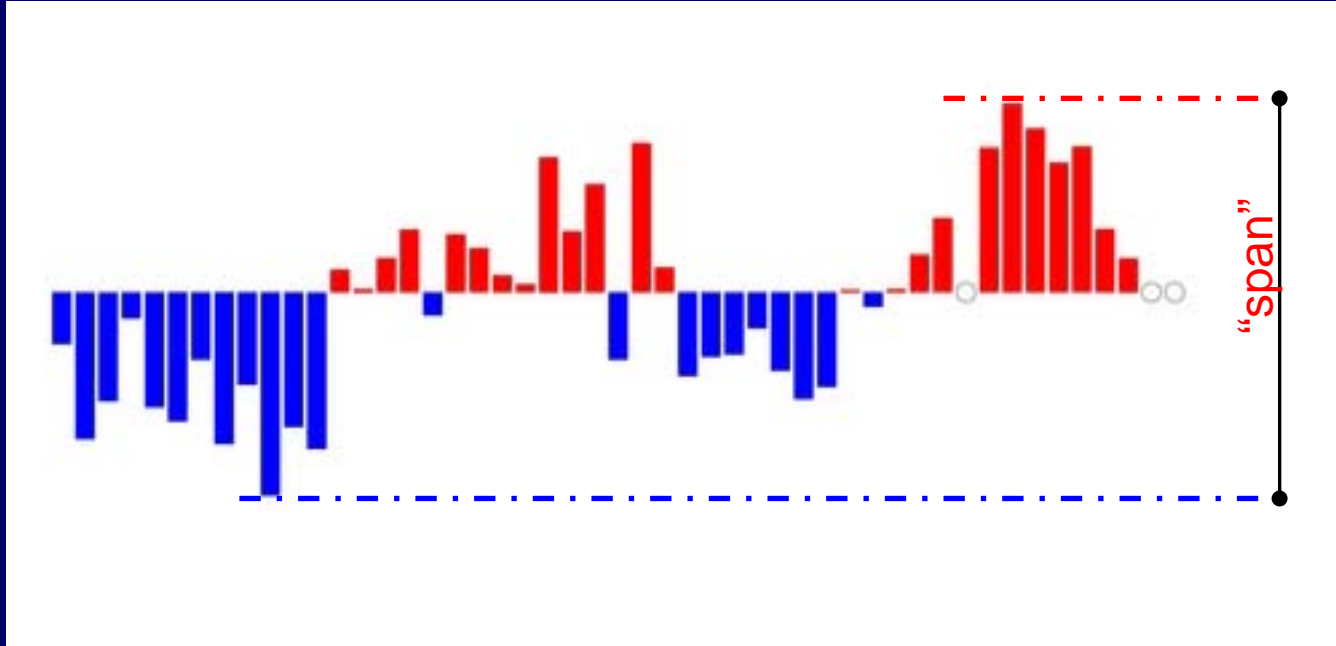
*Is there global synchrony in
the zooplankton biomass?*

Harold Batchelder *et al.*

17:10 pm ... here ... today.

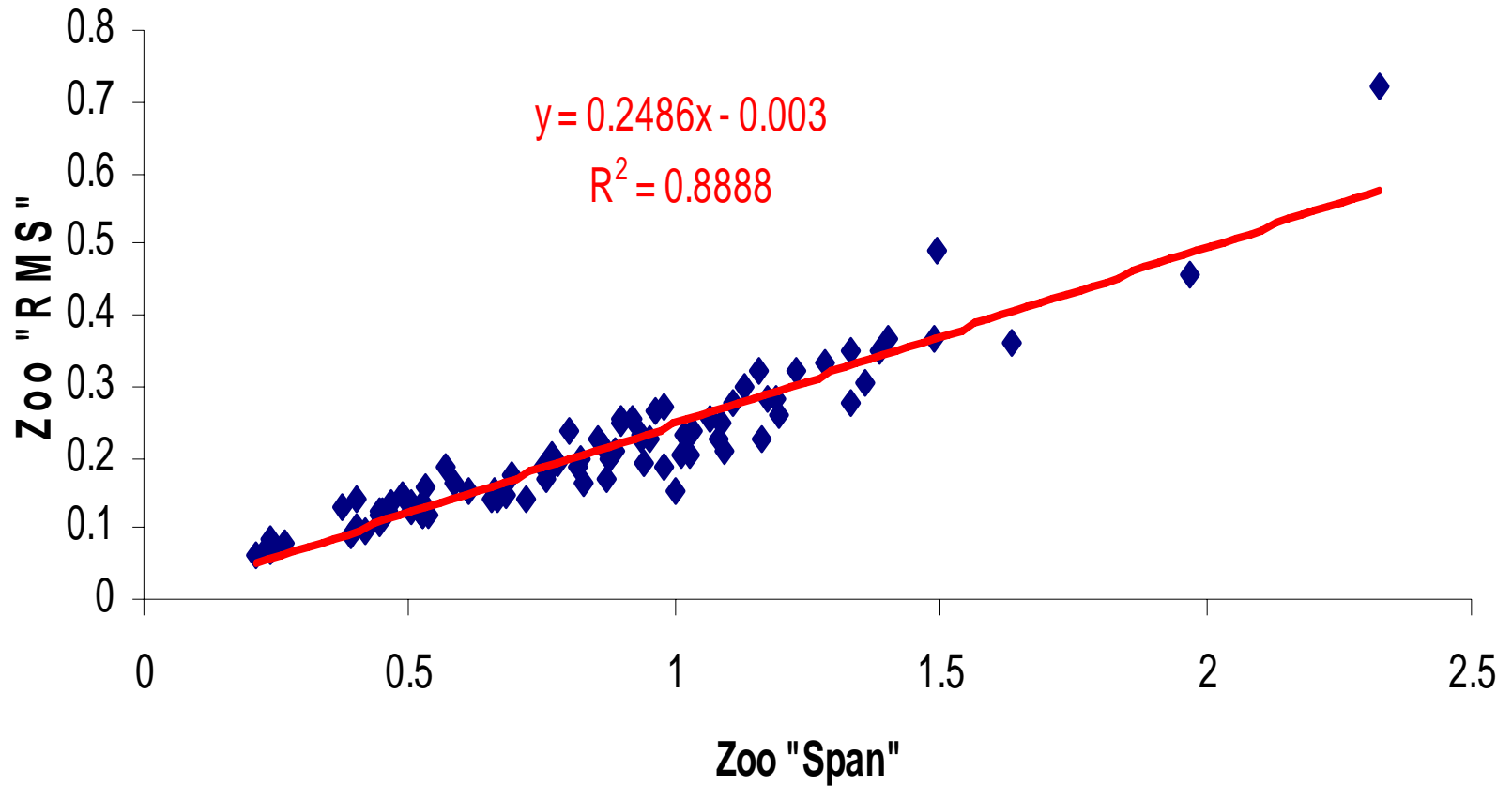
*Are there regional trends in the
amplitude of variability?*

Amplitude of Variability

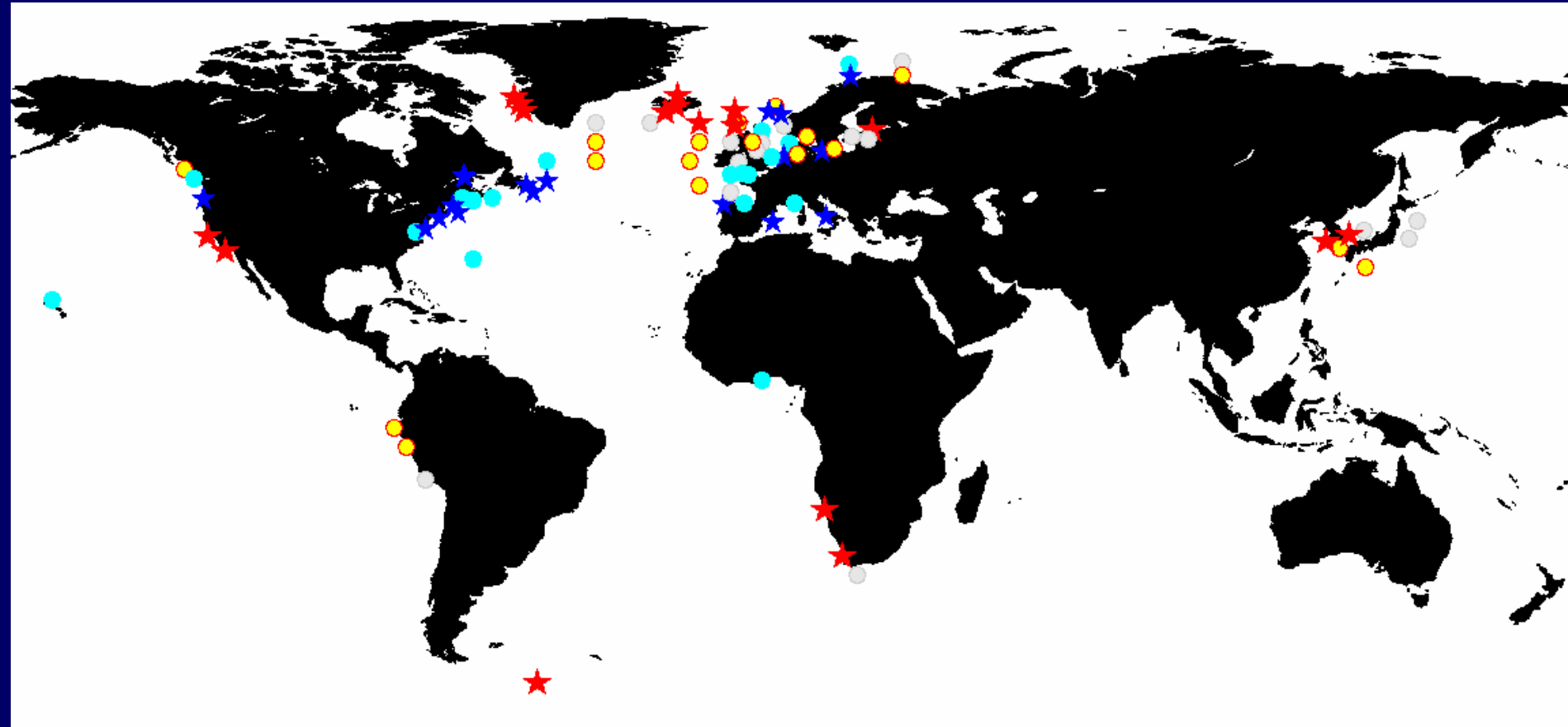


- “span”: *max. anomaly – min. anomaly*
- “rms”: *root mean square of anomalies*

Biomass "span" ~ "rms"

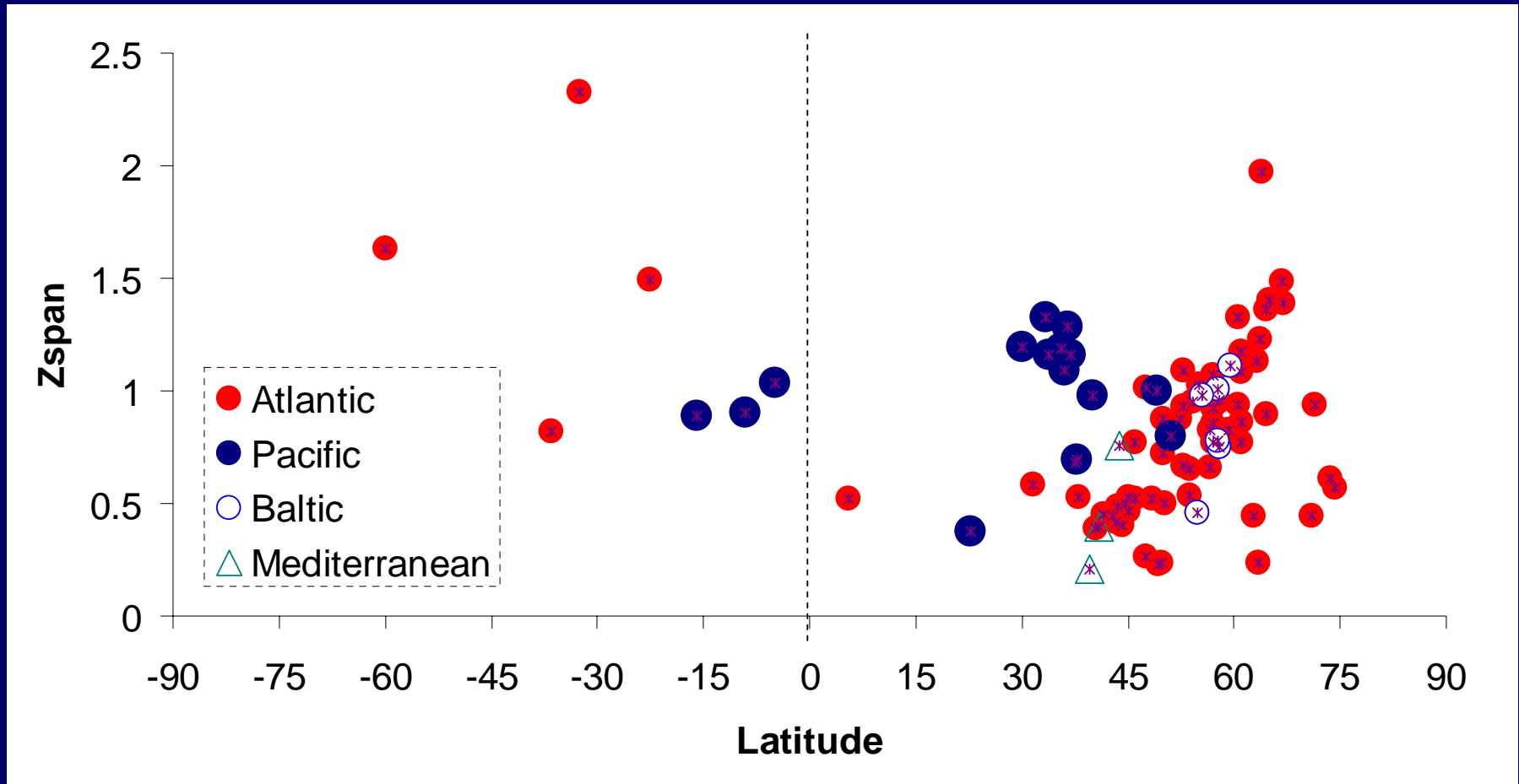


Map of “Biomass Span”



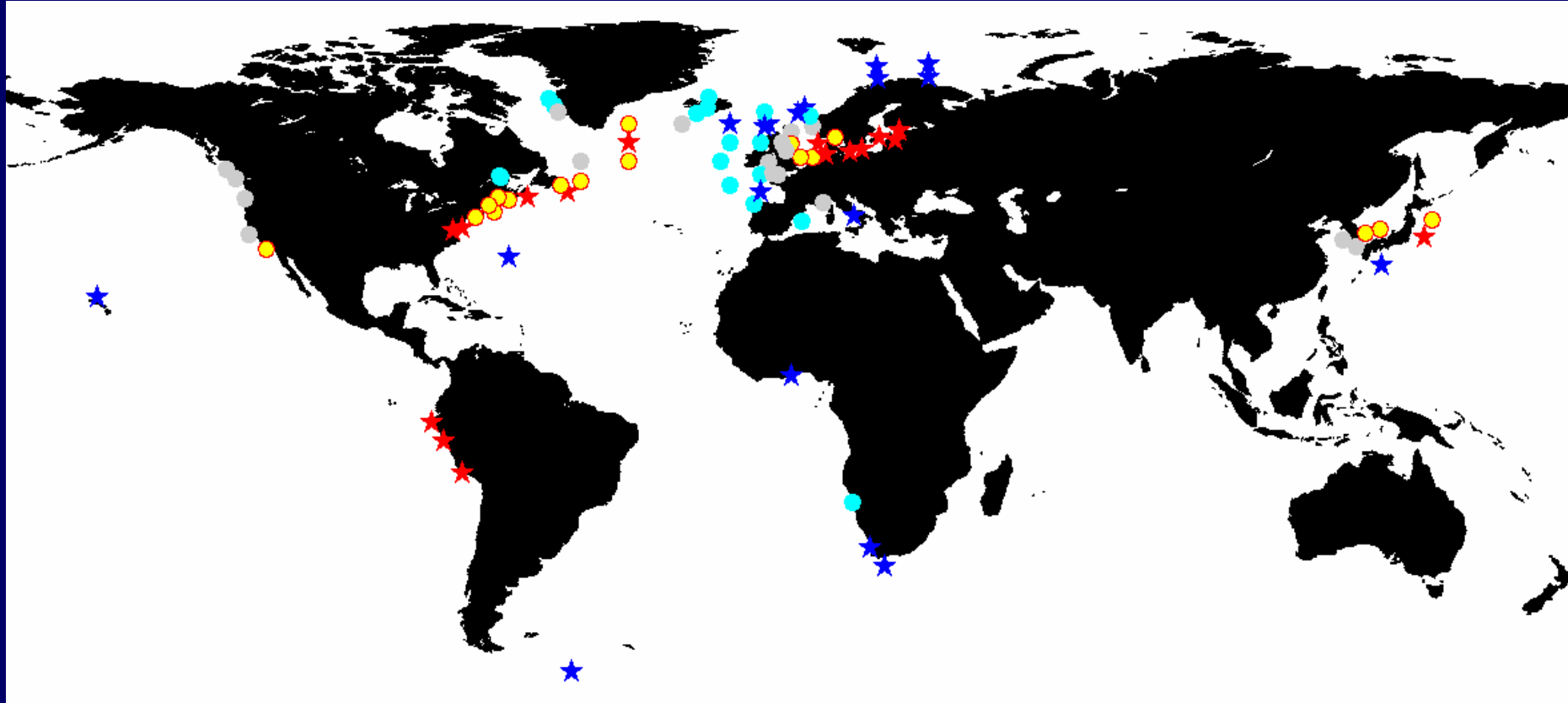
Biomass anomaly “spans” were divided into five *equal-n* rankings:
low (blue star), med-low (light blue circle), moderate (gray circle),
med-high (yellow circle), high (red star).

“Biomass Span” vs. Latitude



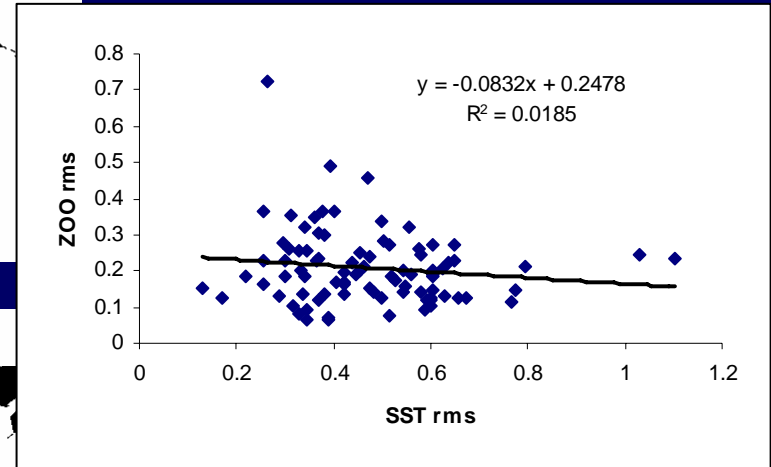
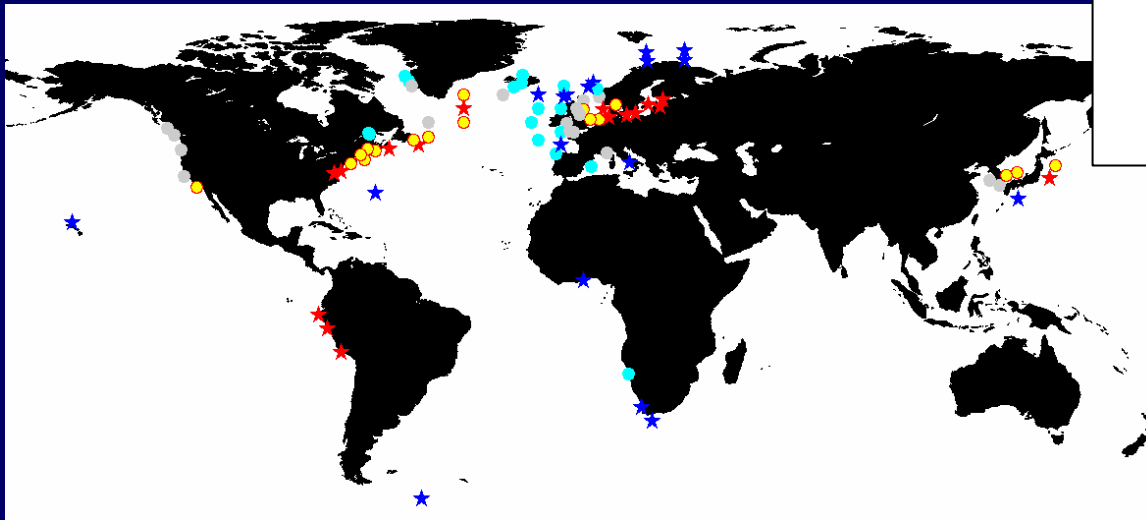
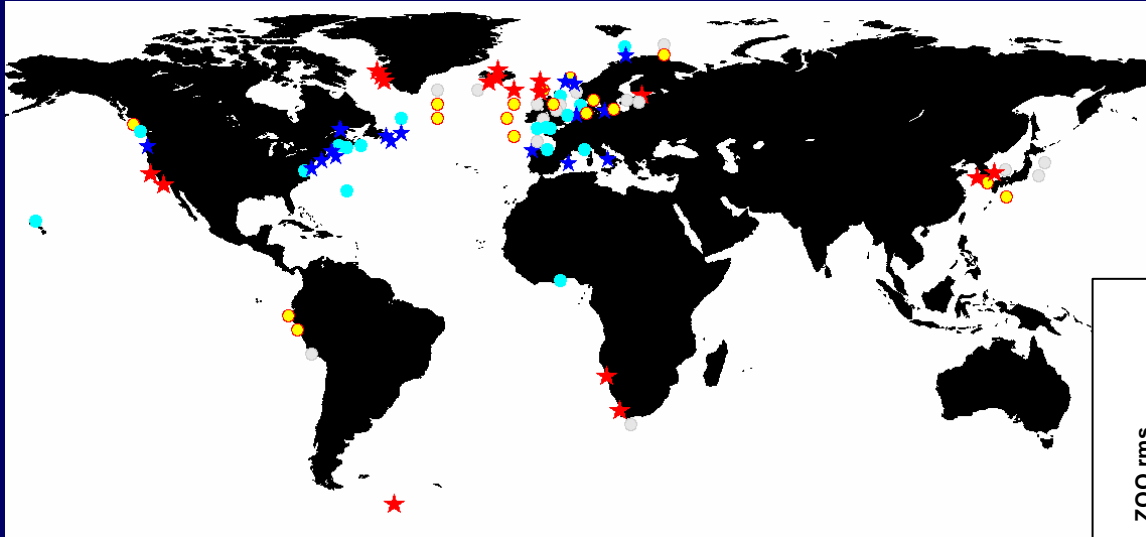
Okay, but why?

Map of same-site “SST Span”



SST anomaly “spans” were divided into five *equal-n* rankings:
low (blue star), med-low (light blue circle), moderate (gray circle),
med-high (yellow circle), high (red star).

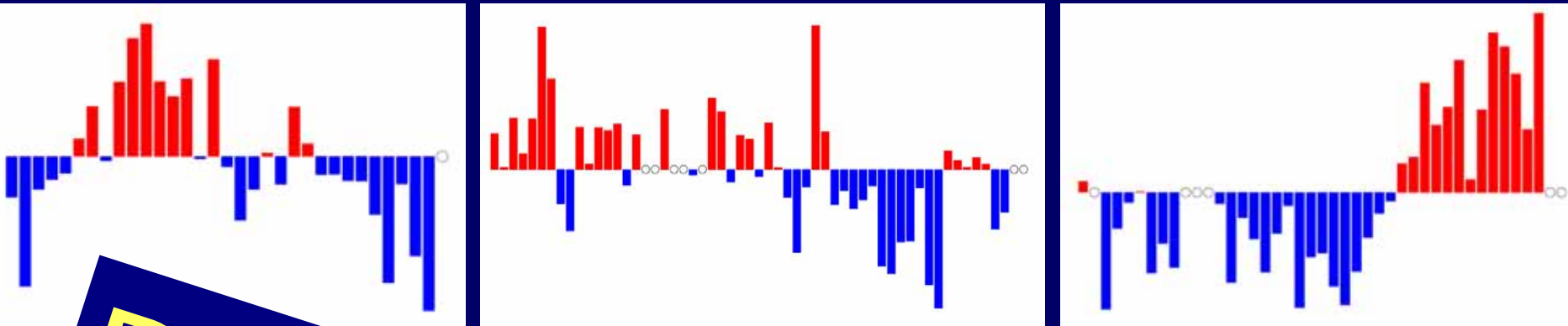
“Biomass Span” vs. “SST Span”?



(back to the drawing board)

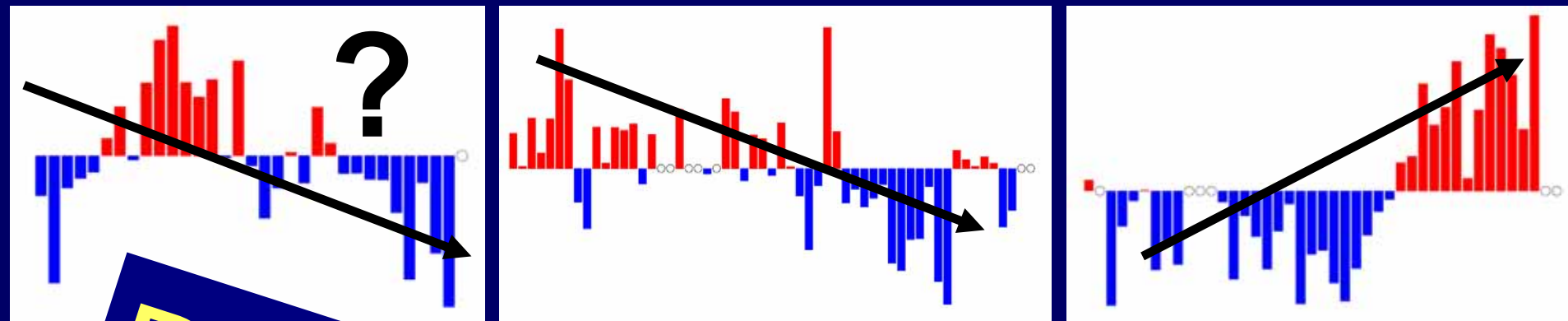
Wait! There's more!

Variation in the Biomass Time Series



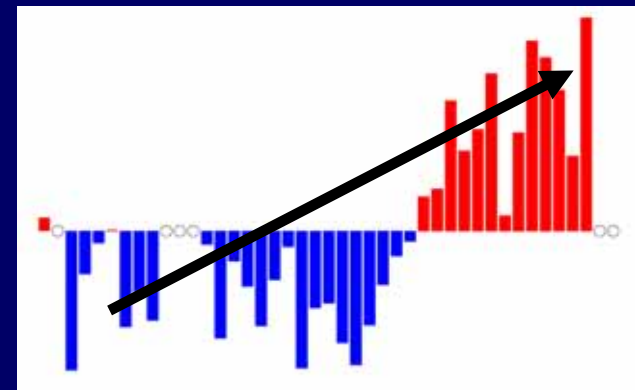
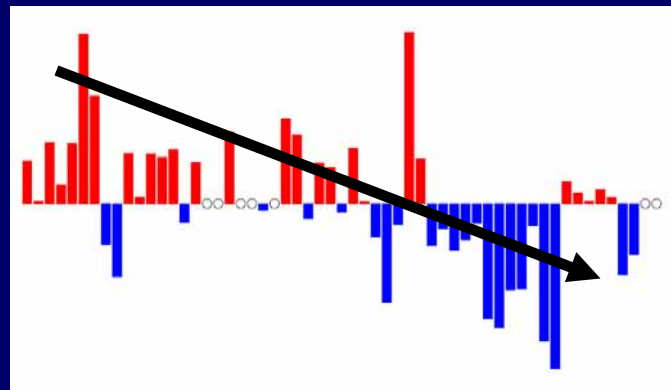
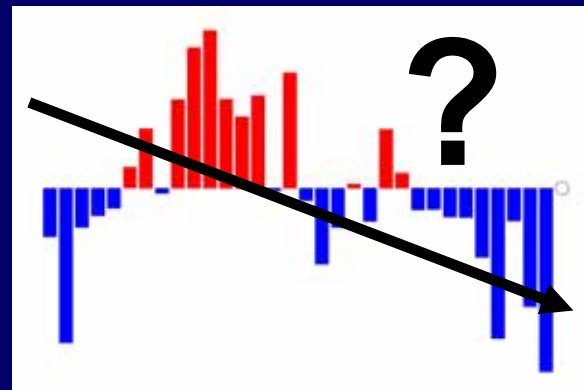
- Remember this slide?
- Frequency fluctuations were present in the time series
 - Amplitude of variation (range)
 - Time scales of variation (duration):
 - interannual = 1-3 year duration
 - decadal 'regimes' = 5-20 years
 - 'climate trend' = 50-100 years and longer

Variation in the Biomass Time Series

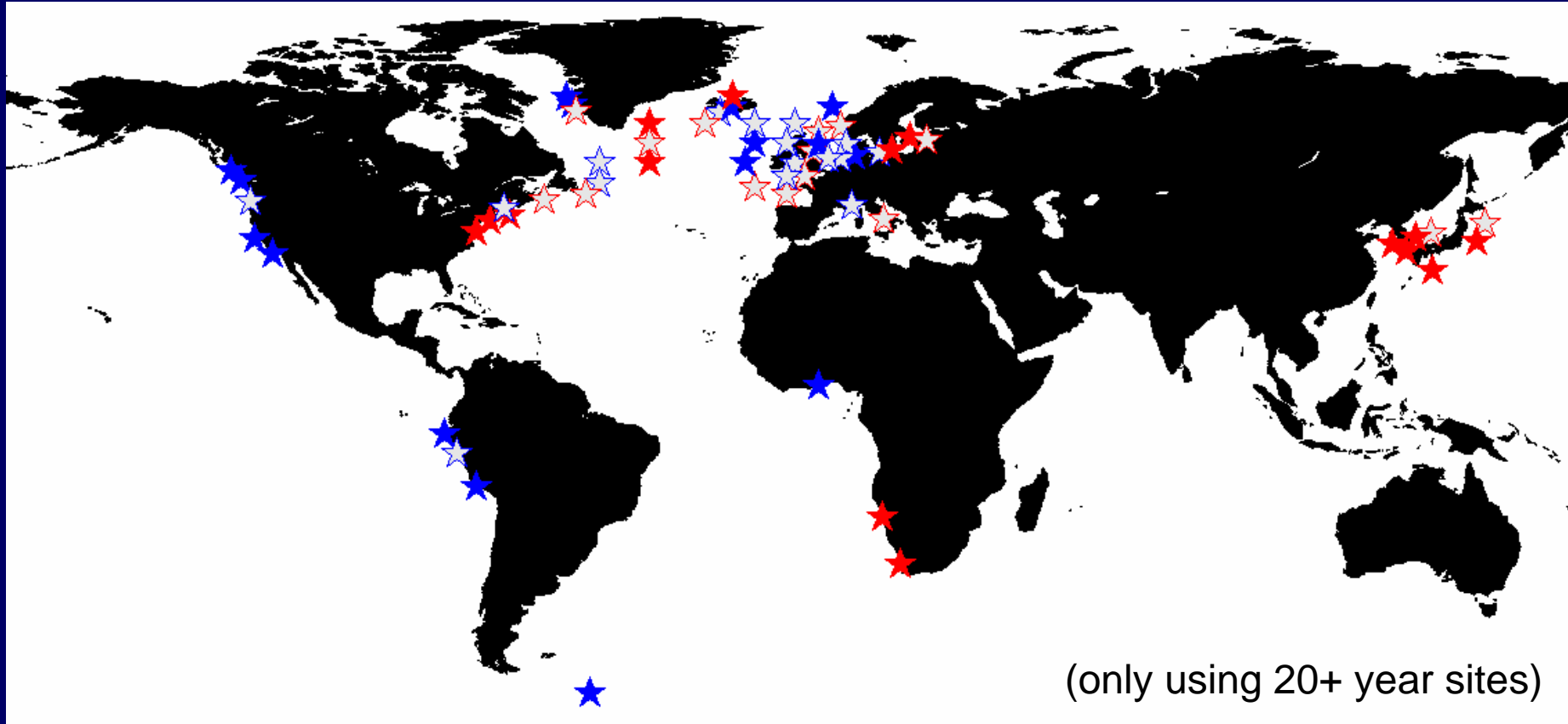


- Remember this slide?
- Frequency fluctuations were present in the
 - Amplitude of variation
 - Time scales of variation
 - interannual = 1-3 year duration
 - decadal 'regimes' = 5-20 years
 - 'climate trend' = 50-100 years and longer

*Are there long-term
upward / downward trends in the
annual anomalies?*

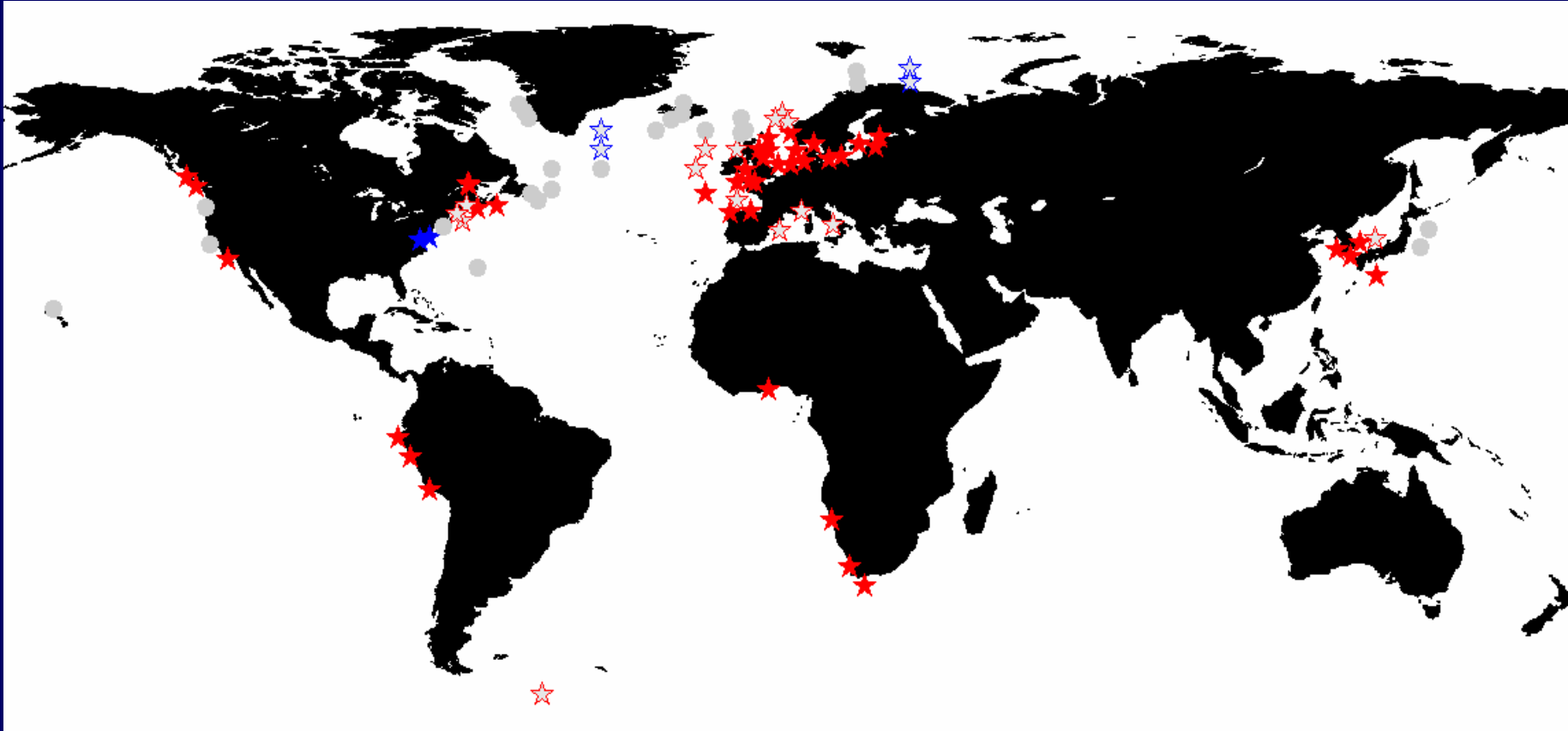


Map of “Biomass Anomalies Slopes”



The slopes of the annual anomalies were plotted as four equal- n rankings: negative (solid blue star), weak-negative (gray-red star), weak-positive (gray-blue star), positive (solid blue star),

Map of “SST Anomalies Slopes”



The slopes of the annual anomalies were plotted as four equal- n rankings: negative (solid blue star), weak-negative (gray-red star), weak-positive (gray-blue star), positive (solid blue star),

Conclusions

- The amplitude of variation is typically larger at higher latitudes and in upwelling regions.
- Net trends are: downward along the eastern margins of both Atlantic/Pacific (except for Benguela); upward along the western margins and in the Benguela and the Baltic.

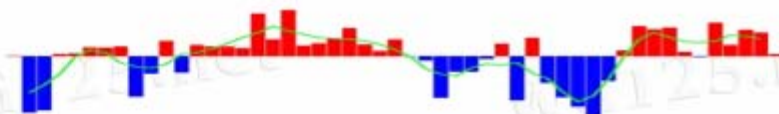
*A special thank you to all of the time series
data contributors ...*

*... and an invitation to potential new data
contributors for this global analysis.*

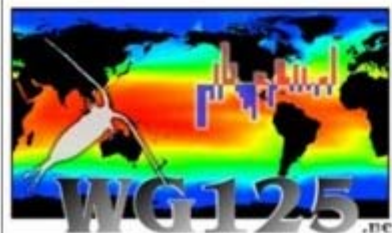
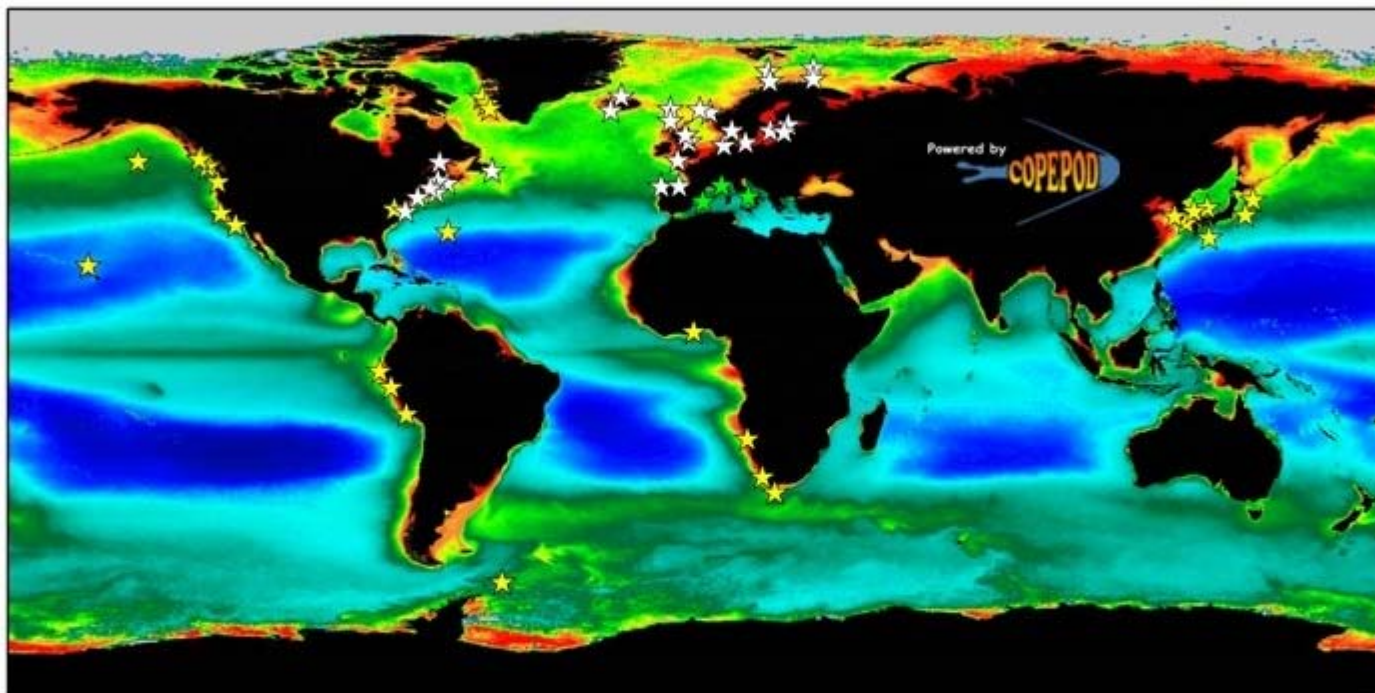
<http://wg125.net>

SCOR WG125

"Global Comparisons of Zooplankton Time Series"



[["Welcome"](#)] [[About WG125](#)] [[The Time-Series](#)] [[Work-in-Progress](#)]



The locations presented in this global map indicate zooplankton time series that are being used in the WG125 global comparison work. If you have or know of additional time series that could be included in this map, please contact us. The white stars in this map indicate time series associated with the separate ICES-WGZE ("Working Group on Zooplankton Ecology") North Atlantic zooplankton monitoring efforts, some of whose data are also included in this global study.

Actual time series data are currently not available on this site. For each time series site, contact information is provided for reaching the investigator(s) directly. In all cases, ownership and acknowledgement of these data belongs to the original investigators and institutions.