

Time-series Break-out I

Future biogeochemical time-series needs and new directions

Existing Core Data and Sample Streams

temperature

salinity

DO

DIC

total alkalinity

pH

NO_2^- , NO_3^-

SRP

silicate

DOC, DON

POC, PON

Chl

bacterial abundance

HPLC pigments

Zooplankton

primary production

bacterial production

C & N flux

Needs at existing TS

1. Move beyond Chl → pigments + visualization and enumeration (VPR)
2. Get more info from samples currently collected
I.e. CHN → $\delta^{13}\text{C}$, $\delta^{15}\text{N}$
DIC & DOC ^{14}C
3. DNA archive
4. FCM - side scatter (evaluation of Δ in coccolithophore size)
5. Certified reference material for more analyses
6. Evaluate current methods

Data wants at existing TS

*** Will require additional ancillary / process studies conducted at TS sites**

1. Grazing or loss terms I.e. Macro & Microzooplankton and viral dynamics
2. Mesopelagic coverage (e.g. VPR, array of traps with gels, radionuclide measurements)
3. Spatial / temporal variability around TS sites - the need to incorporate autonomous platforms use of gliders & floats - better assess scales of variability
4. Moorings

Brainstorm

How can we expand

sites or make sites more cost effective?

1. National analytical centers to enhance processing (ex. PMEL).
2. Use a nested sampling scheme related to the questions being asked.
 - 1st Install profiling moorings to make continuous measurements
 - 2nd follow with periodic comprehensive process studies appropriate for given region

3. Integrate better with other International Time-Series

***focus of an upcoming TS workshop**

- Data coordination / repository
- Training (POGO) / coordinate best practice manual
- Intercalibration / technician exchange
- Technology and instrumentation
- Development / distribution of CRMs

Pressing science issues that could use TS as test beds:

1. The mesopelagic
 - What are the regeneration length scales?
 - Role of chemoautotrophy?
2. Linking dust/Fe deposition with surface production and flux.
3. How do we define the right timescales to assess the natural versus anthropogenic signal?
4. How is community structure changing and how do these community shifts affect flux?
5. What are the drivers of episodic events?

Misc. thoughts.....

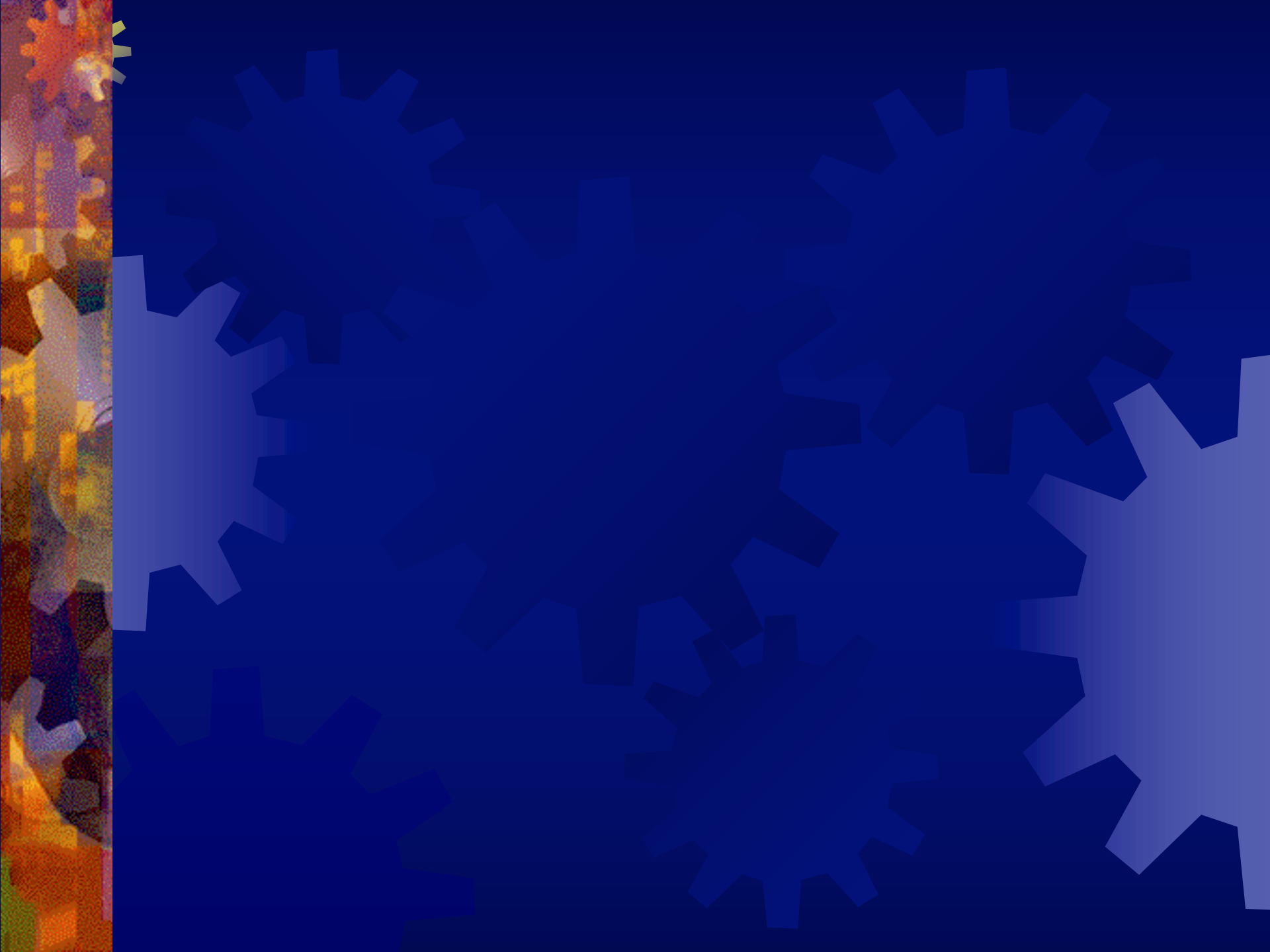
How should future TS be reviewed?

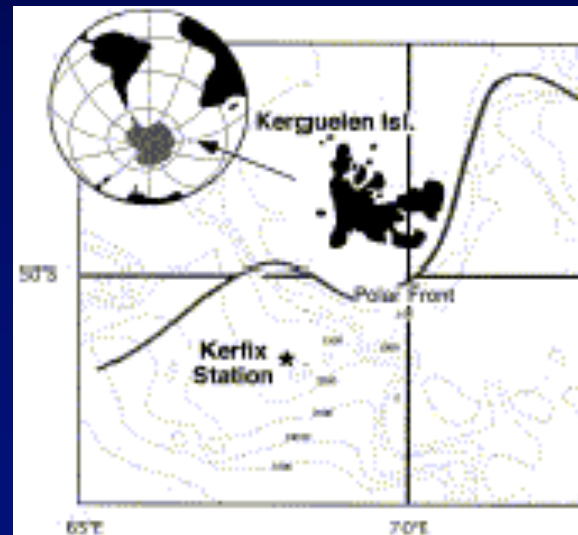
Hypothesis driven science or monitoring?

Importance of having a team leader (a.k.a. special sauce!).

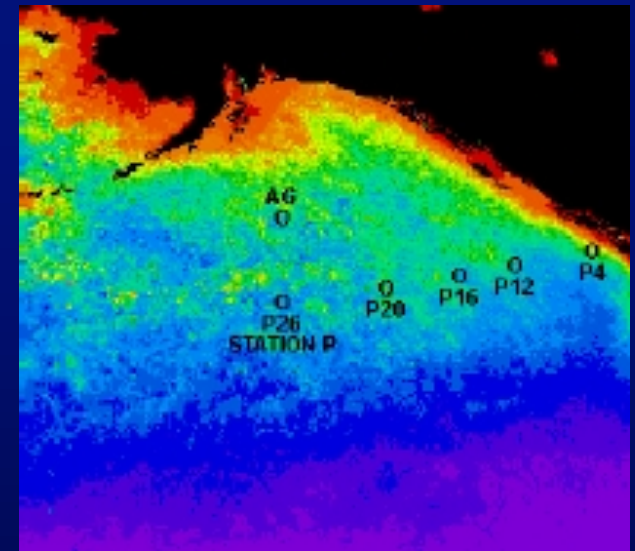
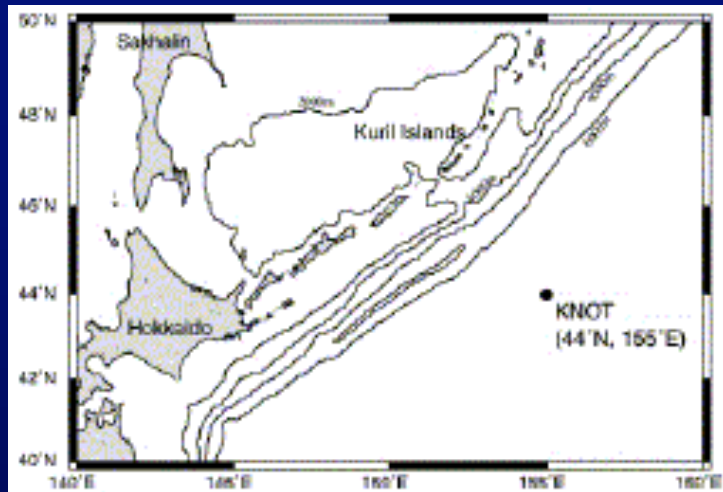
Data management timely delivery of data into public domain

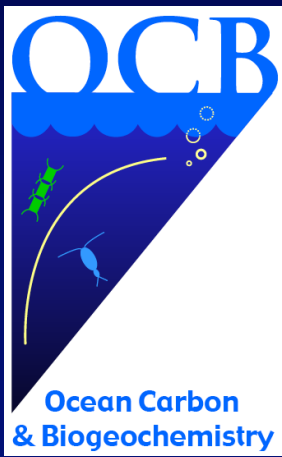
Fund data mining





International Time-Series





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Core measurements at existing TS

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Nested series of measurements

Tier 1 - The basics - instrumented mooring:

I.e. Temp, Sal, DO, pCO₂, total alk, NO₃⁻,
fluor., optics

Tier 2 - Manual sample collection:

DOC, DON, SRP, Si, POC, PON, chl, BA

Tier 3 - Rates

PP, BP, C&N flux