Nutrient fields in the Bering Sea: available data and results

Kirill Kivva
Russian Federal Research Institute of Fisheries and Oceanography (VNIRO)
Introduction

(Danielson et al., 2011; Basyk, 2009; Khen, 2001; Khen et al., 2013; Coachman, 1986; Kinder and Schumacher, 1981; Kinney et al., 2009; Ladd, 2014; Panteleev et al., 2006, 2011; Stabeno et al., 2016; Verkhunov et al., 1995)

Ice margin (IV and V) and summer currents in the Bering Sea
**Data Sources**

- WOD’13 (NODC, USA)
  - Available on-line

- JAMSTEC (R/V Mirai, JPN)
  - Some data received upon request

- BEST/BSIERP (USA)
  - Available upon request

- TINRO-Center (R/V TINRO, R/V Professor Kaganovsky – credits: Dr. Vladimir Matveev, RUS)
  - Available upon request

- Hokkaido U. (R/V Oshoro Maru – credits: Dr. Toru Hirawake, JPN)
  - Example of another existing data

- BASIS (credits: Lisa Eisner, USA)

- CHINARE (CHN)
Approach

- Data collection in ODV (Schlitzer, 2016)
- Geodetic discrete grid creation with package dggridR (Barnes et al., 2017) – Icosahedral Snyder Equal Area Aperture 3 Hexagonal Grid
- Spatio-temporal averaging with Gaussian weighting function and truncation radius of 100 km
- Schematic visualization of data
- Examples of synthesized results
Methods: hexagonal geodetic grid
Mean bathymetry in every grid cell based on GEBCO (0.1° resolution)

Methods: hexagonal grid scheme
Data: spatial data distribution

Number of decades with data (decades with ≥3 stations)

- $N_{dec}$ (DO)
- $N_{dec}$ (Si)
- $N_{dec}$ (N-NO$_3$)
- $N_{dec}$ (P)

Legend:
- 1-(3)
- 3-(7)
- 7-(10)
- 10-(16)
- 16 <
Multiyear mean seasonal cycle of silicate for two cells.
Conclusions

- Synergetic effect of combined data
- Hexagonal grid perform quite well
- Approach for other data analysis