UVic/DFO Progress on the West Coast: Who is doing what?

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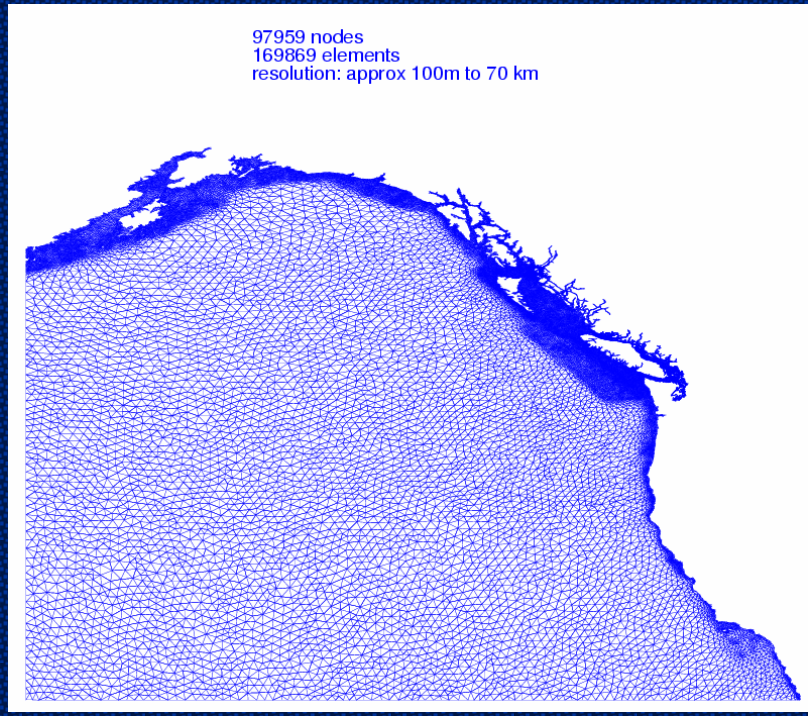
Fisheries and Oceans Canada | Pêches et Océans Canada

I.1.2 Statistics of Observed Variability for Model testing and Improvement



***Foreman*:**

- **Preliminary estimate of mean sea surface topography for the Northeast Pacific using high resolution diagnostic FEM forced by**
  - **Average summer & winter 3D temperature and salinity climatologies**
  - **Long term average NCEP wind stresses**
- **Long term average NCEP atmospheric pressure applied independently**
- **TP altimetry used to compute common reference level for summer & winter**
- **Further details Friday pm in session G06**
- **Primary support: GEOIDE Network of Centres of Excellence**

GEOIDE

Primary Currents

Freeland (*Atmosphere-Ocean*, 2006)

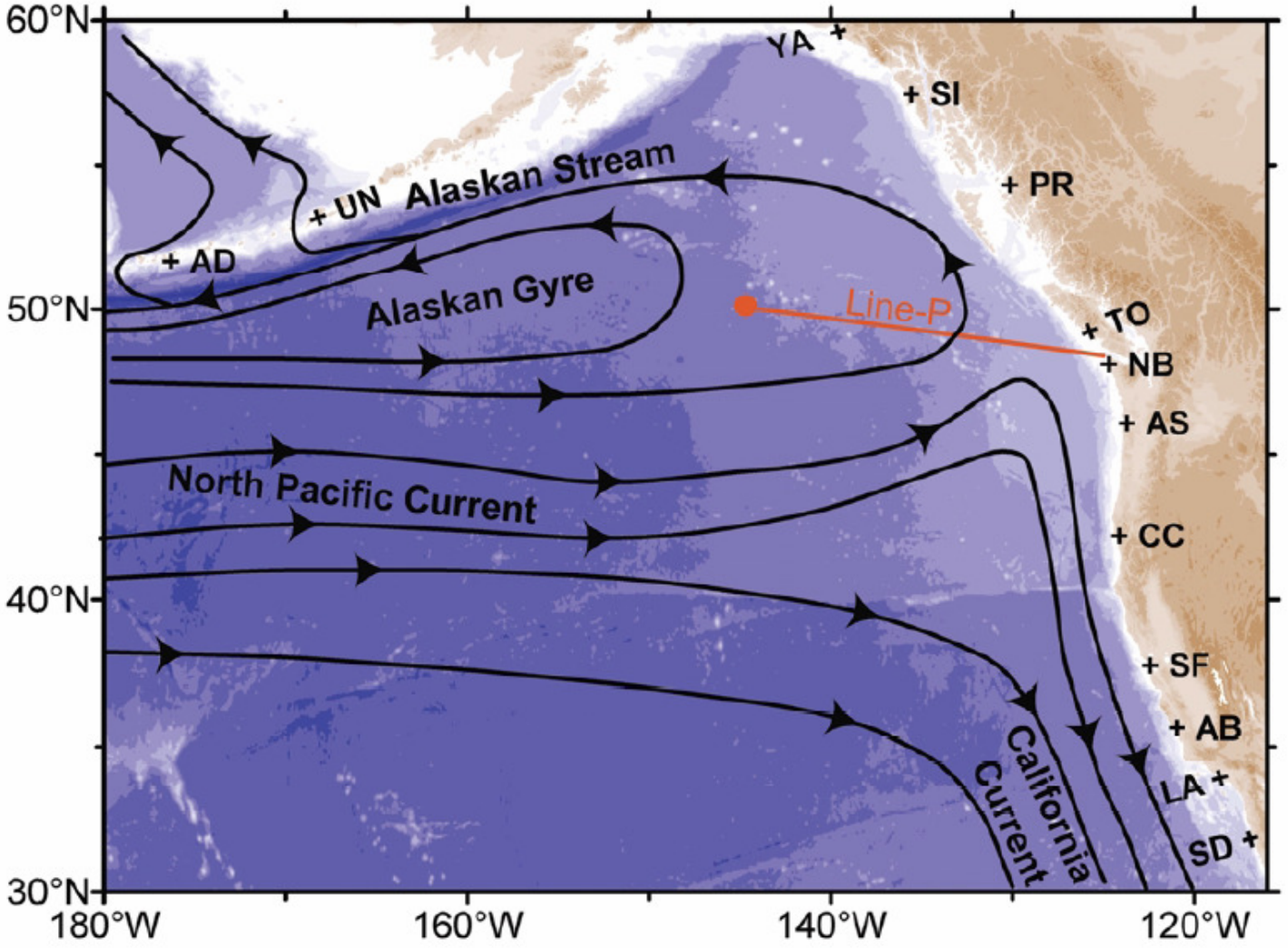
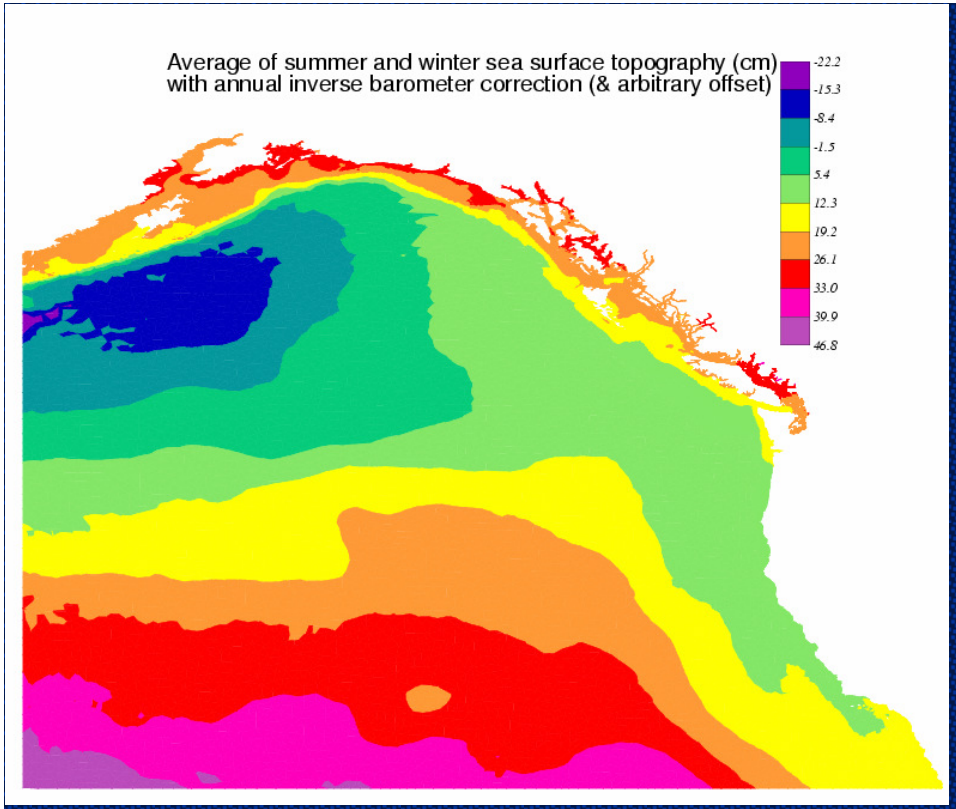
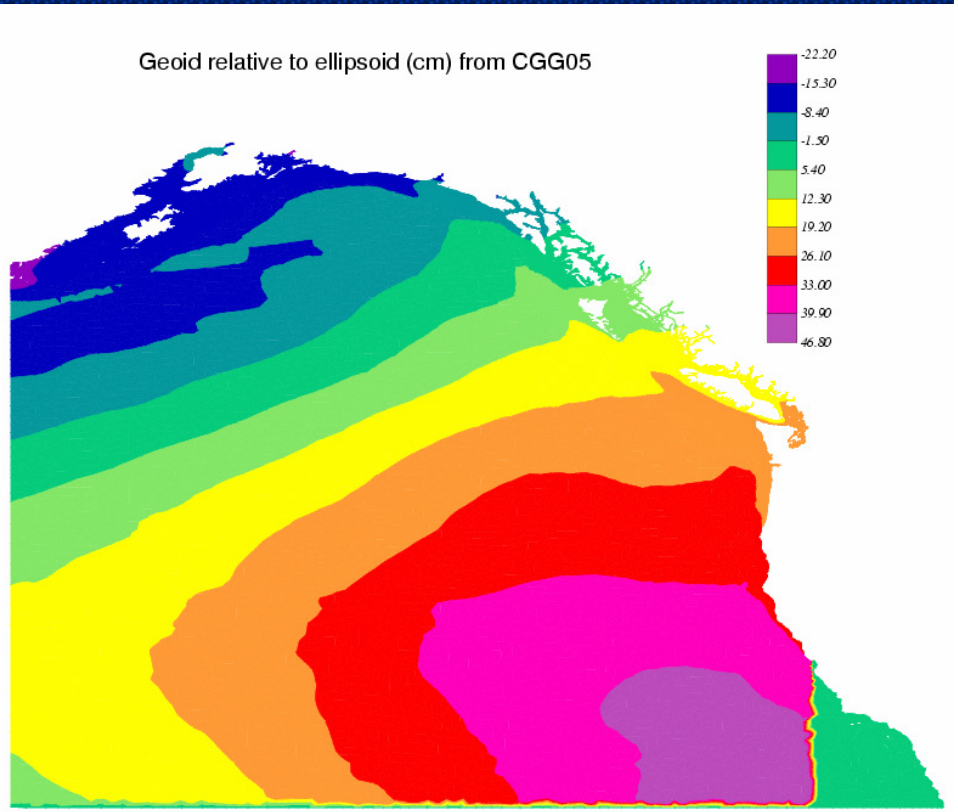


Fig. 1 A schematic presentation of the background flow in the GAk (based on Dodimead et al., 1963). Also indicated are the locations of Line-P and Ocean Station Papa. The area covered by this map will be used in later maps of the observed circulation. The letters and + symbols indicate sea-level observation sites that will be referred to in other parts of the paper.



Sea Surface Topographies: Oceanographic vs Geodetic (NRCan)

Courtesy of Jianliang Huang



- **Basic pattern & range are similar**
- **Major differences:**
  - **model higher along BC, Alaska coasts & lower off WA, OR, CA coasts**
  - **model highest elevation in SW corner vs SE for CGG05**
  - **CGG05 contour slopes suggest North Pacific Current from SW not W**

I.1.2 Statistics of Observed Variability for Model testing and Improvement

- ***Wakamatsu*:**
  - **M. Yaremchuk (Univ. of Hawaii) has provided his simple forward and tangent linear/adjoint models for the North Atlantic (in F77)**
    - **Currently debugging on linux box and creating new configurations/data**
    - **new NE Pacific version will be used to :**

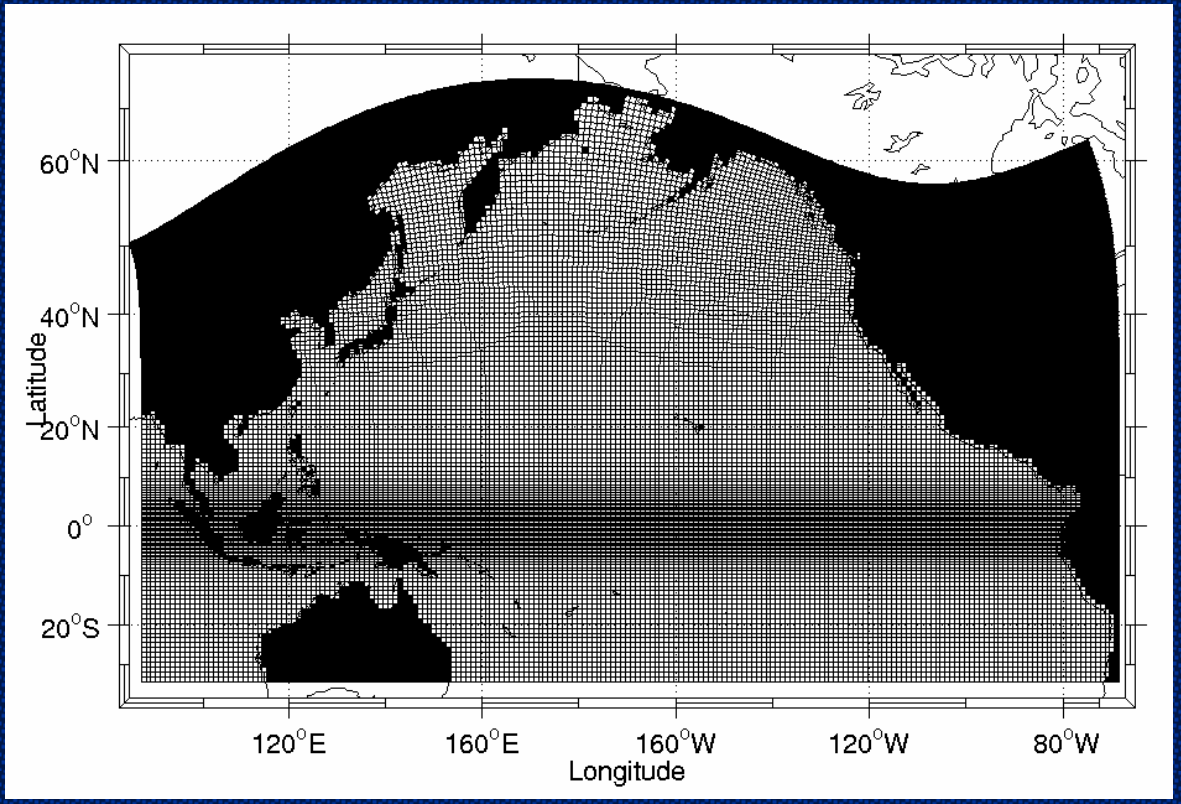
      1. study Eastern Pacific Mode Water formation

      2. estimate seasonal mean ocean state and compare with M. Stacey's POP results

I.1.3 Multivariate Assimilation of Altimeter and Argo Data for Ocean Forecasting

- **1° North Pacific model is in preparation & will be shared with M. Stacey (RMC) and his new colleague (Yunfeng Shao)**

model: NEMO/OPA9
config: DRAKKAR_46
size: (x,y,z)=(203,148,46)



I.1.4 Ocean Reanalysis and Forecasting

- ***Wakamatsu*: North Pacific basin model**
  - **1° model being set up & tested on the IBM multi-processor platform at IOS**
    - **help from Dan Wright, Youyu Lu and Zeliang Wang**
  - **0.25° model to be setup jointly with RMC and run on their HPCVL machine**

- ***Wakamatsu:* collaborative visits in March**
  - **Halifax (Dalhousie & BIO) - Thompson, Wright, Lu, Wang**
  - **St. John's (MUN) - Demirov**
  - **Kingston (RMC) – Stacey, Shao**

- ***Wakamatsu*: paper in preparation**
  - **"On the influence of random wind stress errors on four dimensional mid-latitude ocean inverse problems"**
  - **sensitivity of the prior error covariance matrix to horizontal and temporal de-correlation length scales**

Summary

- Work is progressing well
- Preliminary ocean model estimates of North Pacific sea surface topography
  - Differences vs NRCan's CGG05
  - Invited talk in session G06, Friday pm
- Yaremchuk simple forward/adjoint models currently being re-configured
- North Pacific NEMO/OPA 1° and 0.25° model development & testing has begun
  - in collaboration with Stacey & Shao at RMC

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RMC Report (from Mike Stacey)

1. A research Associate (Dr Yunfeng Shao) began work at RMC on 19 February 2007.

2. Since then the OPA code has been implemented at the High Performance Computing Virtual Laboratory (HPCVL). That is, it has been compiled and a two degree horizontal resolution version of the global model has been successfully run.

3. We are now in the process of implementing a one degree version of OPA for the North Pacific Ocean. It has been compiled and we anticipate/hope to have it running no later than the end of June. We have run into a snag in that one of the input files will not read properly. (The file's structure is the same as for the two degree model, except that it is larger.)

4. Once we have the one degree version running, we will implement the quarter degree version, and begin comparison of the prognostic results with previous work.

5. Implementation of the basic spectral nudging in the OPA North Pacific model.