

# PUGET SOUND MAIN BASIN STRATIFICATION

## A (short) Time Series Comparison of Model Output and In-situ Data

F. Stahr\*, M. Kawase†, A. G. Sprenger\*, C.P. Sarason\* \*Ocean Inquiry Project, †University of Washington, Seattle, WA

### Introduction

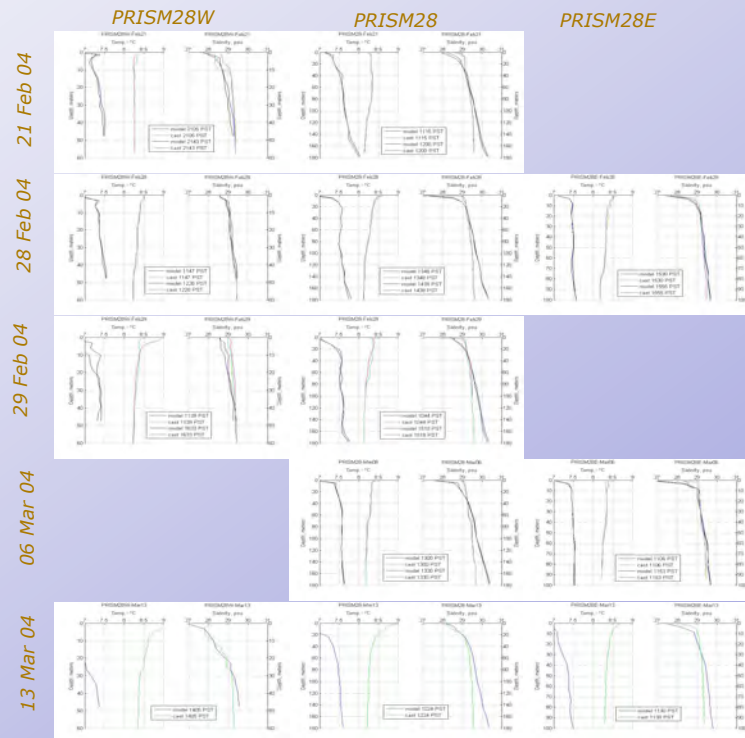
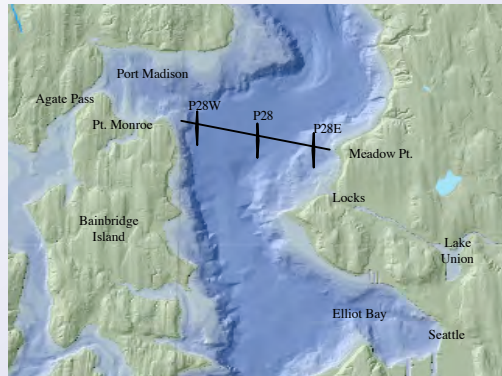
Ocean Inquiry Project is a marine science education and research non-profit whose goal is to teach students estuarine oceanography through experience with real ocean data collection on Puget Sound. Students simultaneously learn and contribute to long-term time-series data bases with research-quality data. The primary recipient of the data is the Puget Sound Marine Environment Modeling (PSMEM) Program, of which OIP is a partner. Mitsuhiro Kawase, PI of PSMEM, runs a numerical model of Puget Sound (POM model) which can be validated by OIP's in-situ data.



The T.V. Charles A. Kane, Seattle Maritime Academy, is OIP's primary vessel of opportunity. Approximately 25 students and 5 scientist/instructors go on each day's cruise. Typically 3 hydrographic stations are occupied, plus one dive site.

### Methods

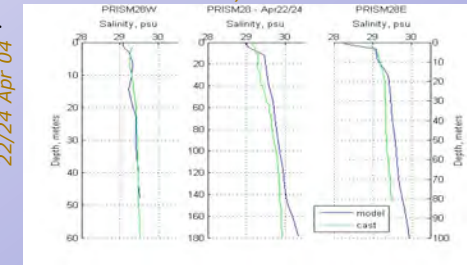
- POM model re-run for 2004 with finer-scale wind input and more complete hydrologic input.
- Model output files of depth, temperature, and salinity for specific dates, times and locations of OIP CTD casts created.
- Overplots of matching data created for Feb 21, 28, 29, Mar 6, 13, & Apr 22/24 (salinity only)



### Results

- Model temperature low by ~1 deg C, and diverging from in-situ profiles over time (model run crashed on ~Apr 23 due to temperature problems)
- Model salinity shows close match at PRISM28E and PRISM28W over many days and whole depth range.
- Model salinity shows consistently steeper stratification than in-situ at PRISM28, with higher bottom salinities and lower surface values.

22/24 Apr 04



### Next Steps

- Re-run model over full 2004 with localized wind forcing and other inputs adjusted
- Compare to in-situ data over more of main basin (e.g., Everett to Commencement Bay).
- Examine time-series at PRISM28 from three sources: model, OIP data, UW-PRISM cruises.
- Establish long-term average stratification mean of temperature, salinity and density at PRISM28

Contact info:

Fritz Stahr - stahr@oceaninquiry.org - President  
Amy Sprenger - asprenger@oceaninquiry.org - Pres

Ocean Inquiry Project is a 501(c)(3) organization and all donations are tax deductible. We are always seeking funds and connections to like-minded organizations. For more information about OIP, please see our web site at: <http://www.oceaninquiry.org/> THANKS FOR YOUR INTEREST!

This work is supported by NOPP grant number N00014-02-1-0502.