

Tacoma Narrows Tidal Project



By Scott J. Amsden
Tacoma Power

Overview

- History
- Measuring the currents
- Computer modeling
- Environmental issues
- Future work

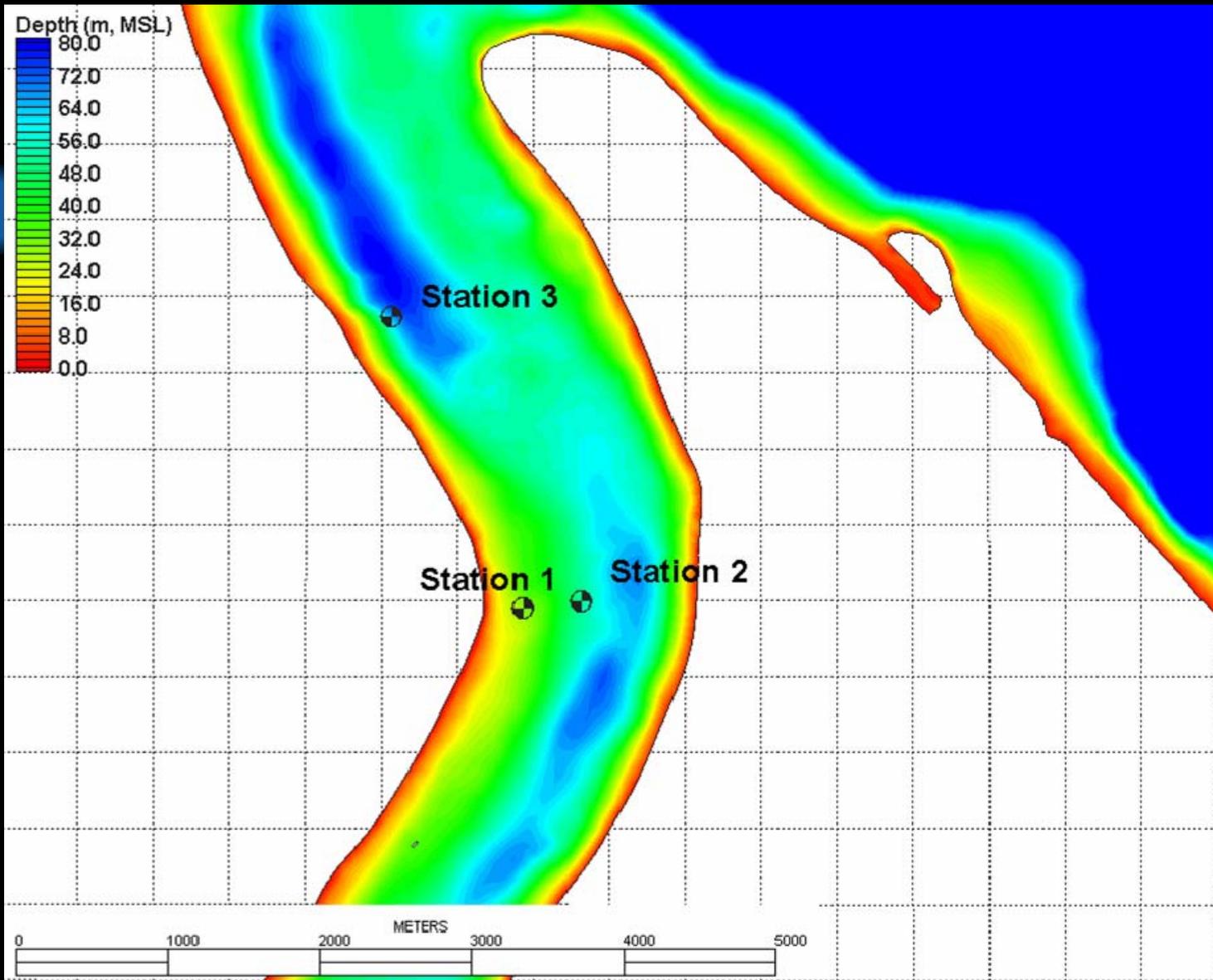
Project history

- Began looking into tidal power in 2005
- Received a FERC preliminary permit in February 2006
- EPRI concept level feasibility study
- Applied for BPA grant funding
- Now conducting phase II feasibility studies

Current Measurements

- Acoustic Doppler Current Profiler
- Deployed May 31, 2007
- First recovery July 2nd
- Second recovery on August 2nd





Recovery of Station 2

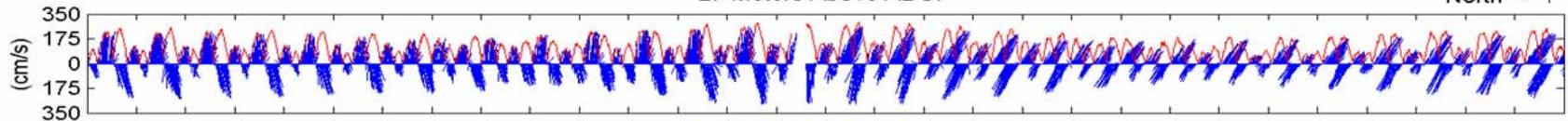


Data downloaded

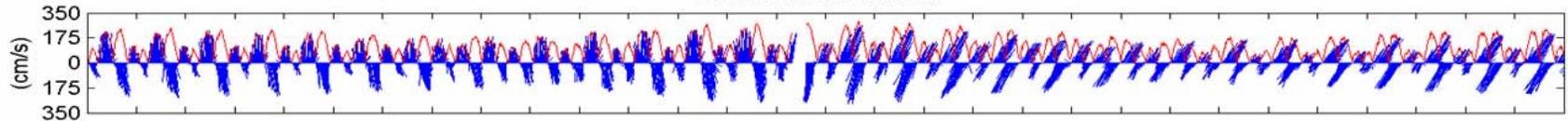
Tacoma Power - Site 2 Current Meter Data: June 2007

27 Meters Above ADCP

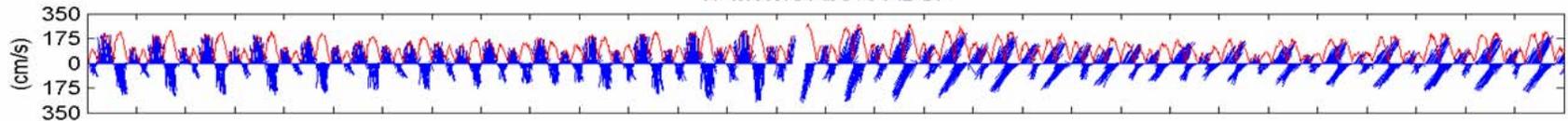
North = ↑



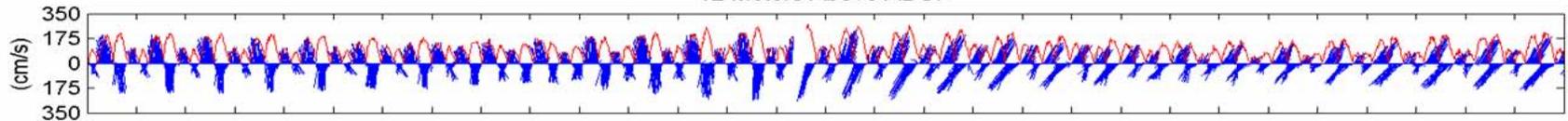
22 Meters Above ADCP



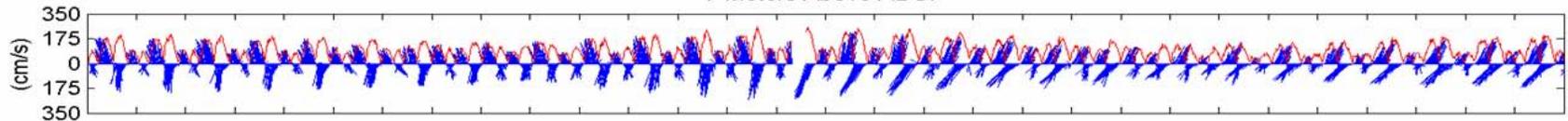
17 Meters Above ADCP



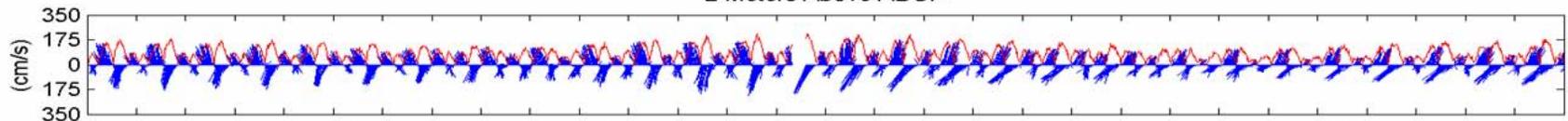
12 Meters Above ADCP



7 Meters Above ADCP



2 Meters Above ADCP



Jun 01

Jun 06

Jun 11

Jun 16

Jun 21

Jun 26

Time (Days)

Computer modeling

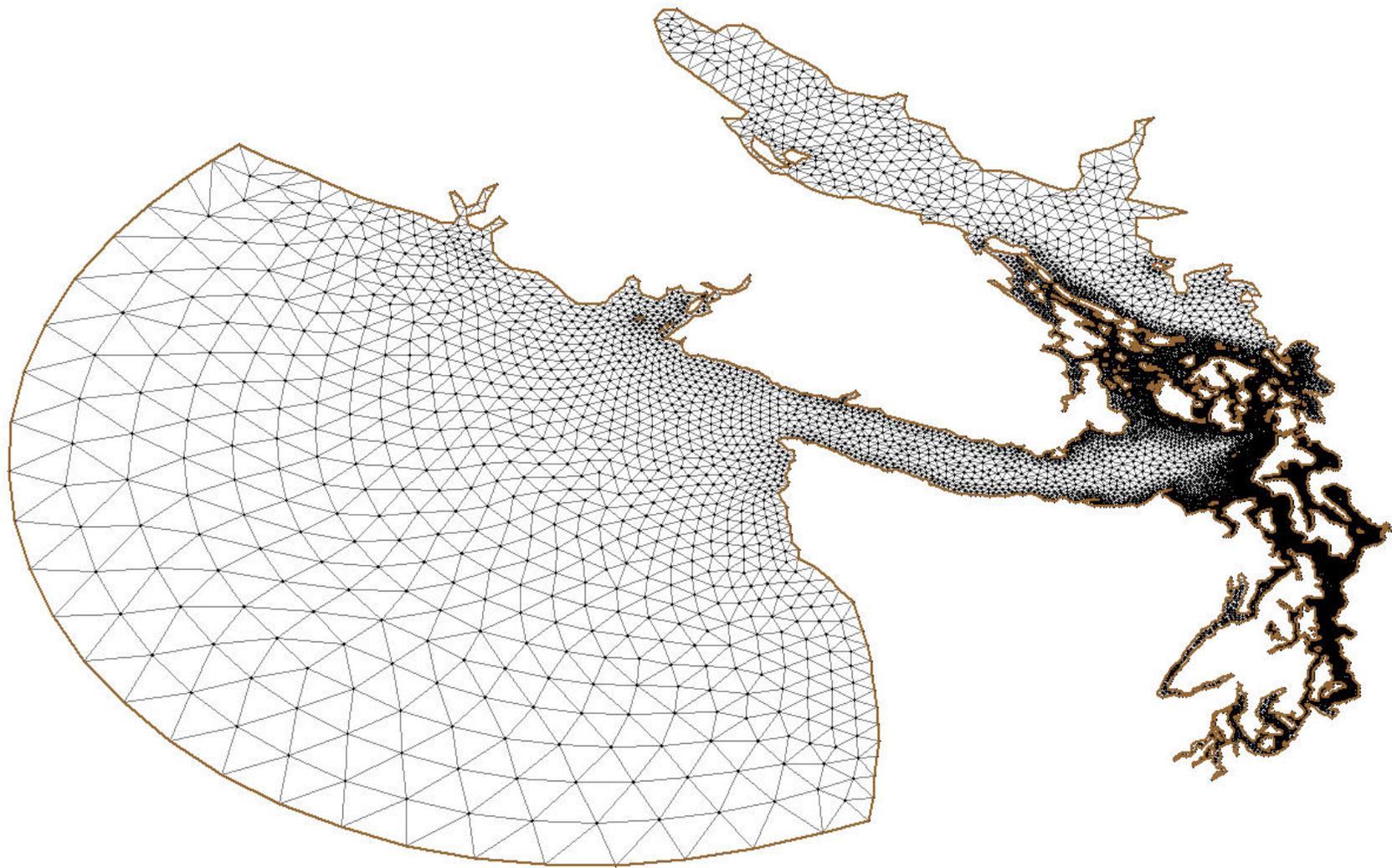
- Name: 3-Dimensional Semi-implicit Eulerian-Lagrangian Finite-element (SELFE)
- Developed by: OGI School of Science & Engineering
- Developed for (funded):
 - ◆ National Oceanic and Atmospheric Administration,
 - ◆ Bonneville Power Administration
 - ◆ National Science Foundation,
 - ◆ U.S. Fish and Wildlife Service,
 - ◆ Texas Water Development Board

Model capabilities

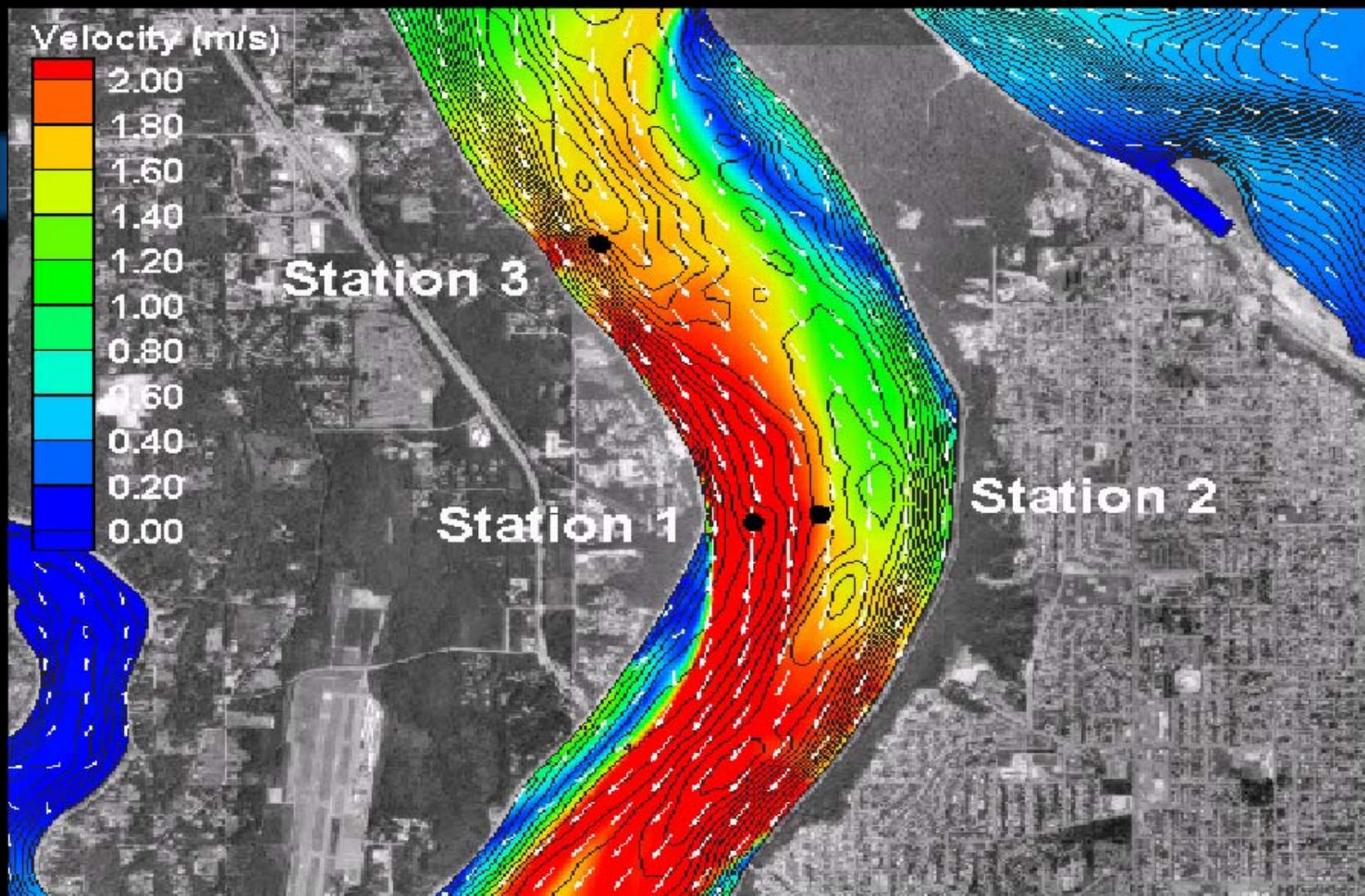
- Models currents
- Models turbine effects
- Predict changes in current speeds
- Predict changes in tidal elevation
- Model scouring effects
- Predict water content changes
 - ◆ Density
 - ◆ Salinity
 - ◆ Dissolved Oxygen

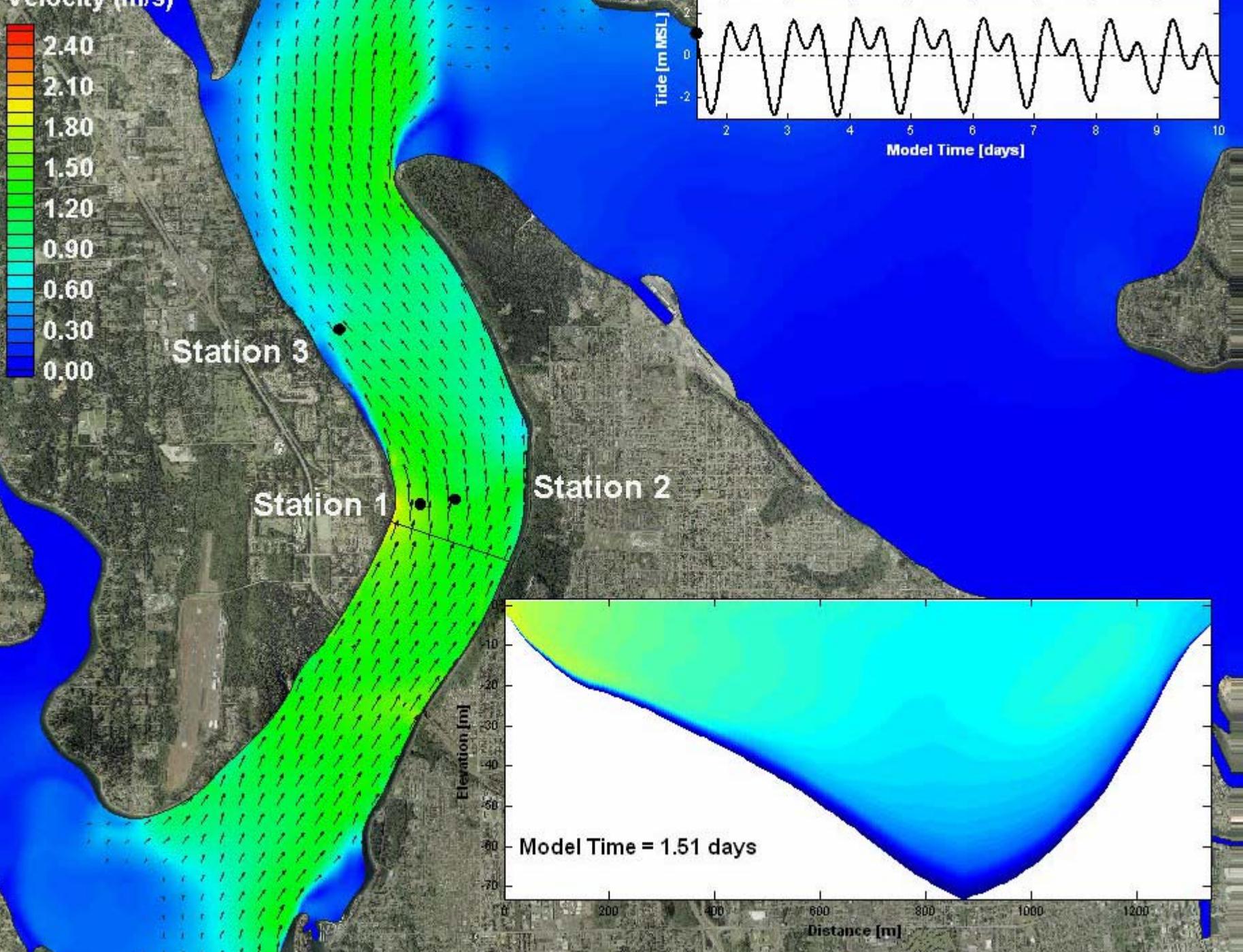
Model limitations

- *Cannot model biologics*
- *Does not model river inflows*









Environmental Issues

- Agency meeting held on August 9th
- Generally agreed that very little is known about the effects of tidal technology
- FERC developing a limited license for pilot projects
 - ◆ Five year
 - ◆ Easily shutdown or removed
 - ◆ Not located in waters with sensitive designations
 - ◆ Project must be 5 MW or less

Future tasks

- First and foremost locate funding
- Get involved with the new FERC licensing process
- Create a pilot installation plan
- Develop a commercial generation plant

Summary

- Project started in 2005
- Concept level feasibility study
- Real world measurements
- Environmental issues
- Goal: Power from the Tacoma Narrows's Tidal currents