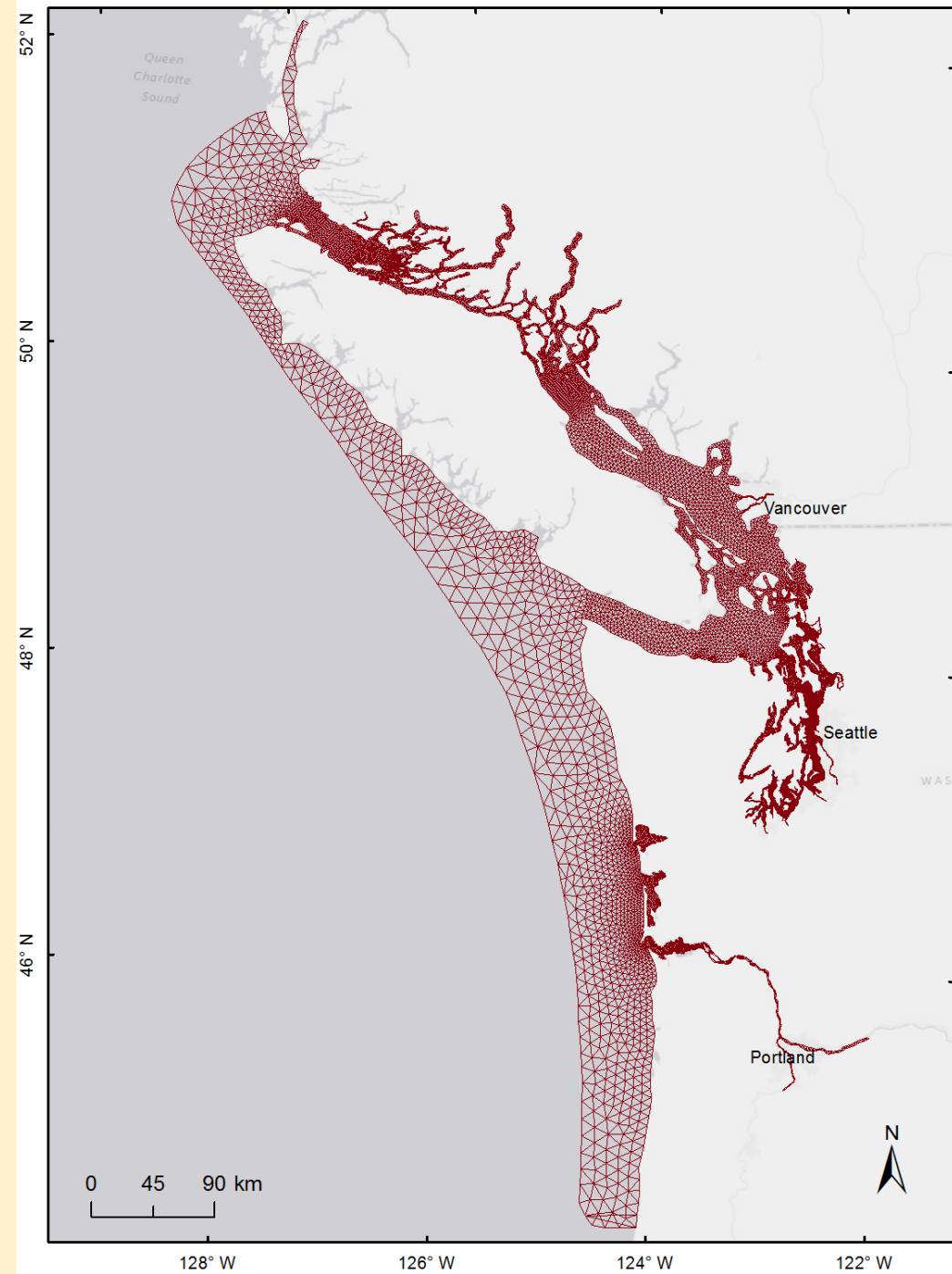


Salish Sea Model

Potential Tool for the Duwamish PLA?



Salish Sea Model Features

- Coupling of FVCOM hydrodynamic model (with unstructured grid) and CE-QUAL-ICM water quality model (e.g., Chesapeake Bay)
 - Coupling of the two models was completed by PNNL
 - Calibrated hydrodynamics and conventional water quality across entire Puget Sound domain
 - Extensive, peer-reviewed documentation
- Unstructured grid supports nesting of finer grids
 - Ideal for handling complexity of Puget Sound inlets, basins, canals, and bays
- SSM does not currently include code for toxics simulation
 - Requires new coupling with ICM-TOXI and/or WASP-TOXI codes

Why consider SSM for Duwamish PLA?

LSPC → SSM → Food Web

Benefits for PLA

Technical

- Straightforward boundary condition assignment in Elliott Bay
- Unstructured grid
 - nesting of fine grids (bays, confluences, outfalls) within Salish Sea grid
 - reduces bathymetry-related modeling challenges

Local Capacity

- Existing team of Ecology modelers familiar with SSM
- Existing PNNL team that can be tapped by Ecology via intergovt agreement

Computing

- WQ/Toxics decoupled from hydrodynamics – efficient calibration runs
- Parallelized code – faster computing
- Access to PNNL super computer for long-running simulations

Big Picture

- Mutual benefits to PLA and Puget Sound program
 - PLA provides impetus and key test bed for adding an SSM toxics module
 - Builds single Duwamish/Elliott Bay tool with temperature, salinity, nutrients, DO, pH and toxics
 - Opens possibilities for climate change, sea level rise, and acidification assessment in Duwamish and Elliott Bay
 - SSM toxics module allows assessment of other toxics concerns around PS
 - Optional direct participation of modelers from other agencies in SSM modeling

Challenges

- Acquiring funding to incorporate toxics code into SSM
- Attaining sufficient in-house capacity and/or funding for PNNL for site-specific application to Duwamish
- Managing a course change with TAC: Revising QAPP
- More transaction cost in transfer to outside consultants
 - SSM is a custom model – not widely used like EFDC

Next steps

- Check-in with EPA Puget Sound program on prospects and timing for funding the code work
- Written proposal for Puget Sound program and TAC
- Present to TAC
- Revise QAPP