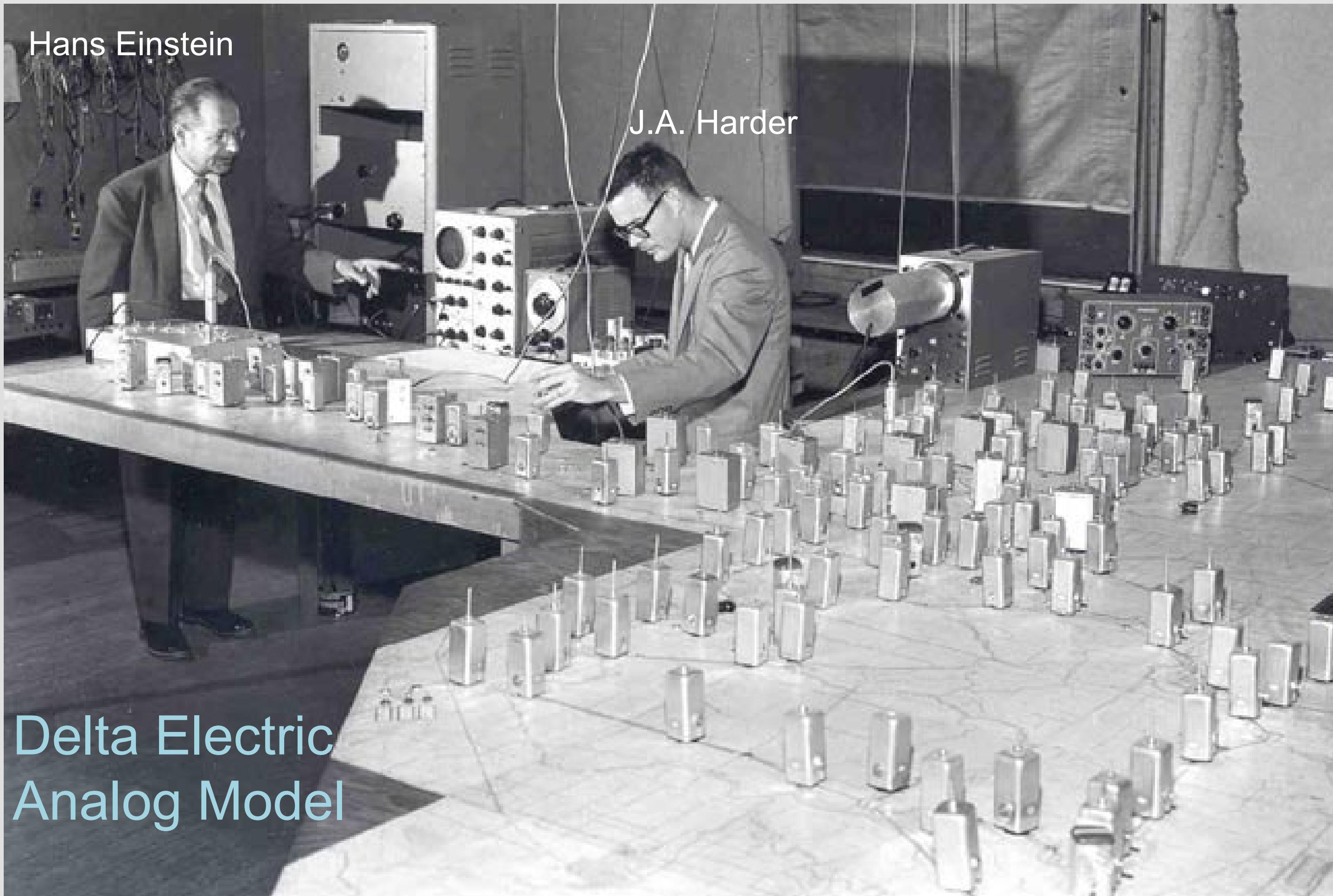


DSM2 Learning Series: Quick Start

June 23, 2023



Origins of Delta Modeling



Welcome: DSM2 Learning Series

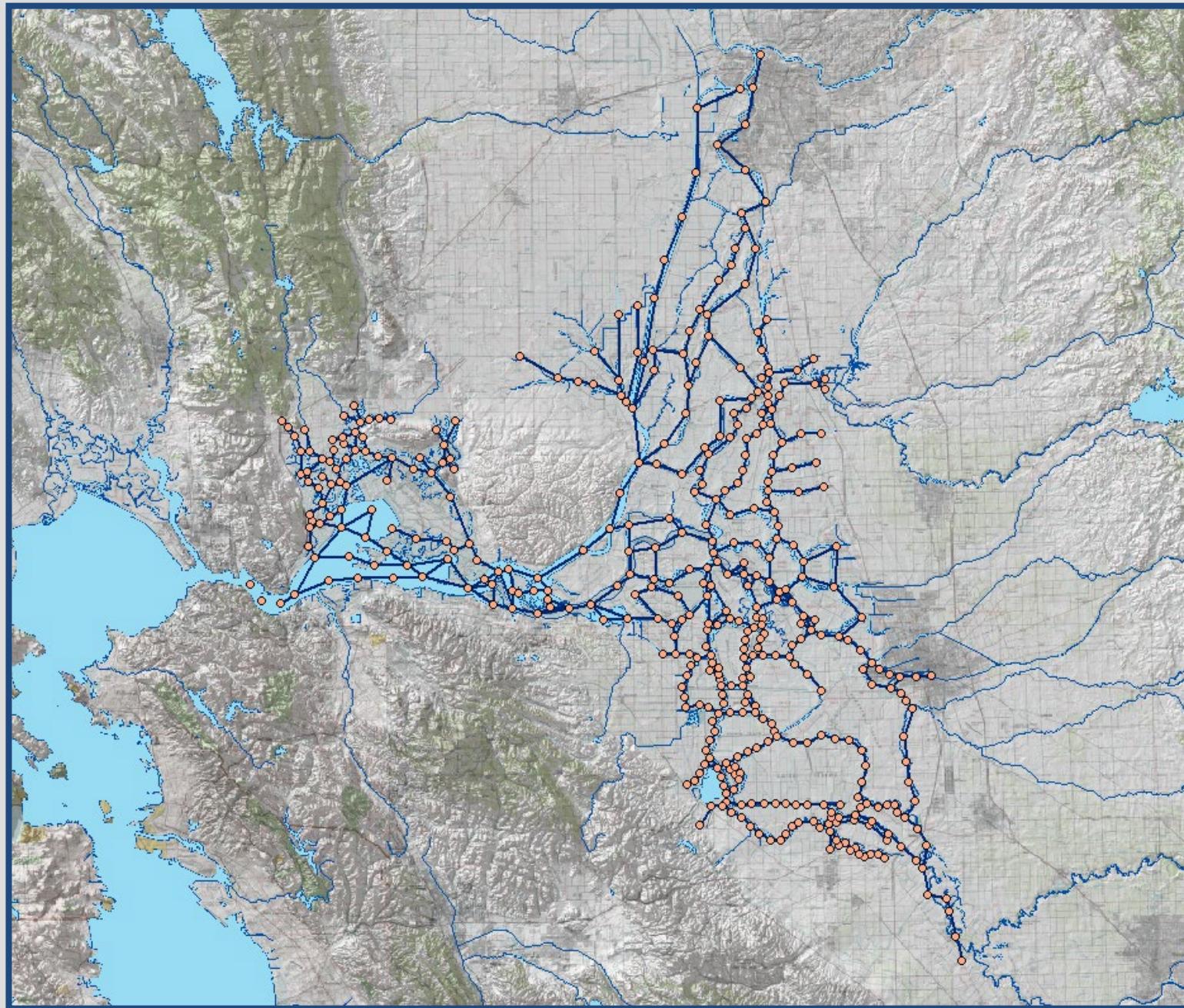


Follow-up survey asks for ideas
for future Learning Series topics

Why is DSM2 still useful?



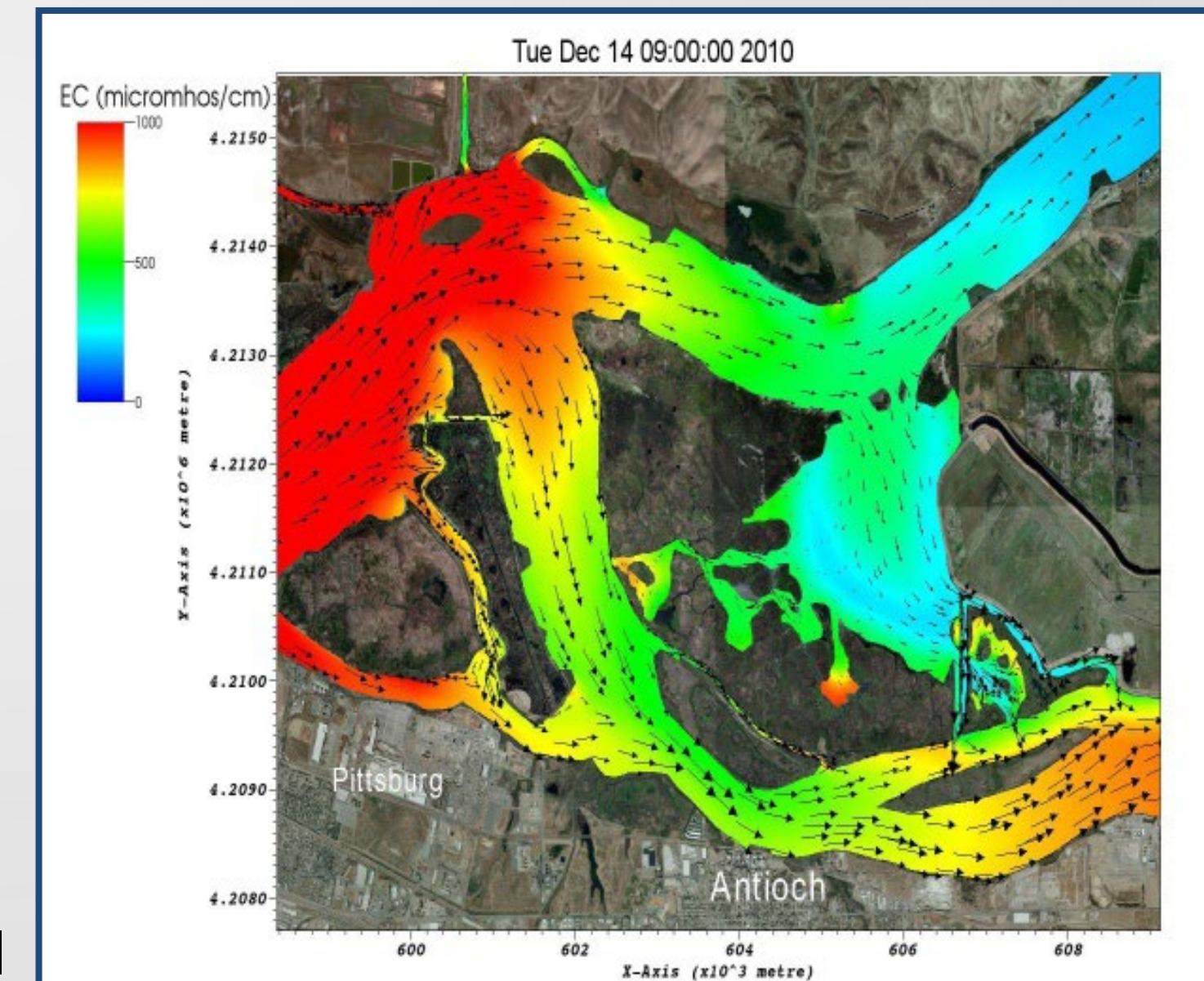
DWR Delta Models



SCHISM
Multi-dimensional model
for detailed studies

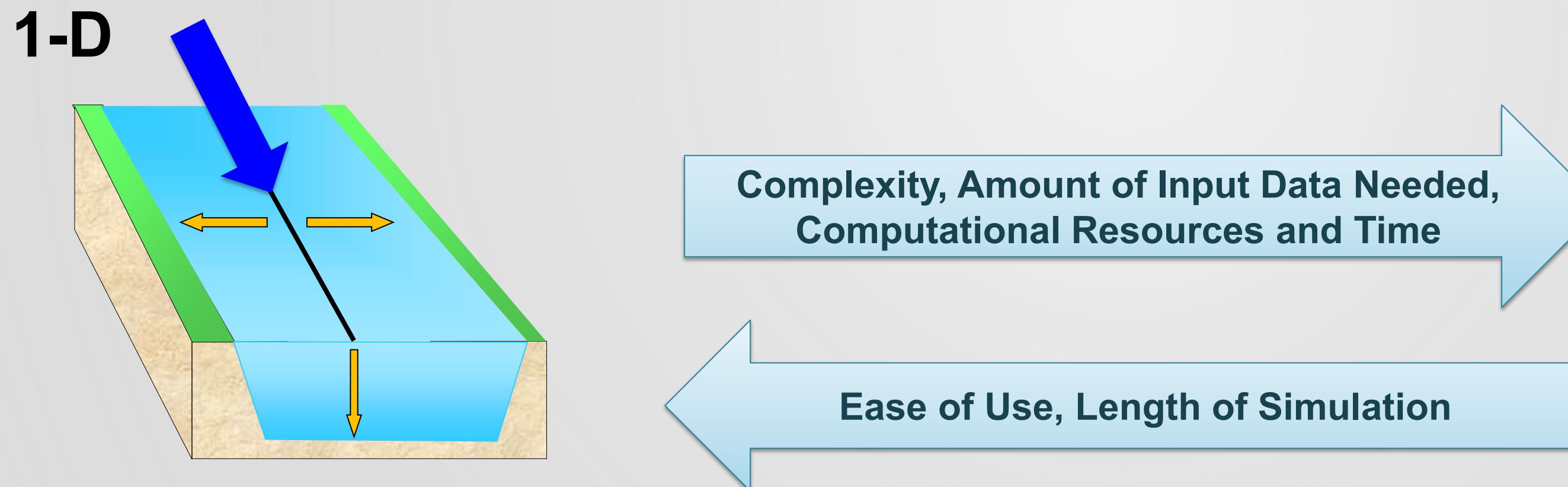
DSM2

One-dimensional model for simulating historical conditions and long-term planning



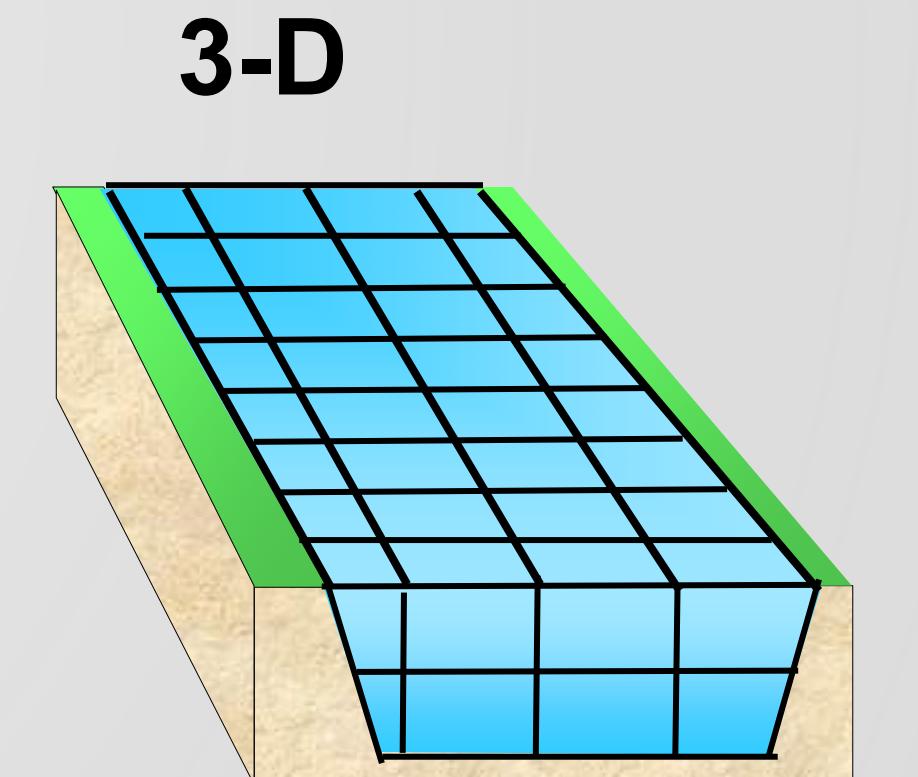
Delta Simulation Model II (DSM2)

- What is DSM2?
 - A 1-dimensional hydrodynamic and water quality model
 - Publicly available
 - Developed and maintained by CA Dept. Water Resources



→ Model values along the length of the channel

→ Characteristics Averaged



Model horizontal, vertical and lateral values

DSM2 official releases: CNRA Open Data

Organization



DEPARTMENT OF WATER RESOURCES
• STATE OF CALIFORNIA •

California Department of Water Resources

DWR manages California's water resources, systems, and infrastructure, including the State Water Project (SWP), in a responsible, sustainable way. [read more](#)

Dataset  **Topics**  **Activity Stream** **Showcases**

Data and Resources

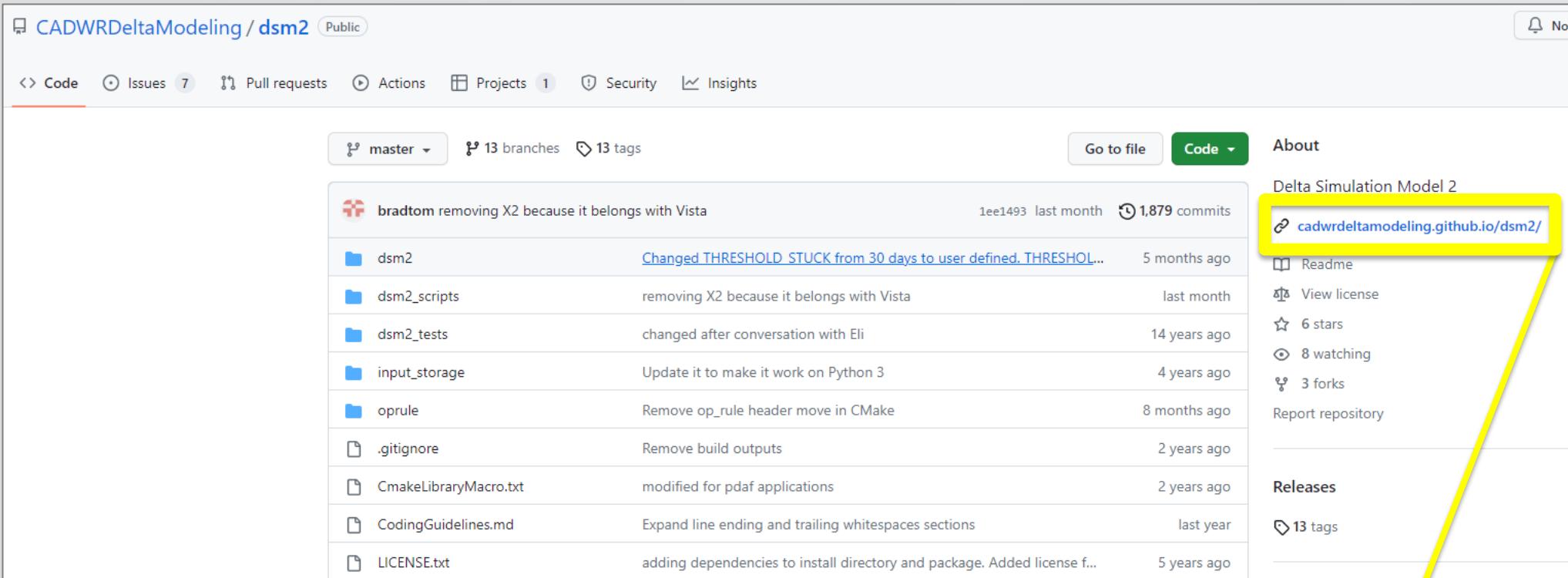
 DSM2 2023.01 Historical Update  Historical update 2023.01 validated with DSM2 v8.2.2	 More Info  Download
 DSM2 2023.01 Historical Update Output DSS output files for 2023.01 Historical Update	 More Info  Download
 DSM2-Hg / Open Water Mercury Program inputs A zip file containing the DSM2-Hg model, and inputs for the Open Water Mercury Program.	 More Info  Download
 DSM2 2022.01 Historical Update  Historical update 2022.01 validated with DSM2 v8.2.2.	 Preview  Go to resource
 DSM2 2022.01 Historical Update Output DSS output files for 2022.01 Historical Update	 More Info  Download
 DSM2 v8.2.2	 Preview  Go to resource



<https://data.cnra.ca.gov/dataset/dsm2>

GitHub

<https://github.com/CADWRDeltaModeling/dsm2>
<https://cadwrdeltamodeling.github.io/dsm2/>



CADWRDeltaModeling / dsm2 Public

Code Issues 7 Pull requests Actions Projects 1 Security Insights

master 13 branches 13 tags Go to file Code

bradtom removing X2 because it belongs with Vista 1ee1493 last month 1,879 commits

dsm2 Changed THRESHOLD_STUCK from 30 days to user defined. THRESHOL... 5 months ago

dsm2_scripts removing X2 because it belongs with Vista last month

dsm2_tests changed after conversation with Eli 14 years ago

input_storage Update it to make it work on Python 3 4 years ago

oprule Remove op_rule header move in CMake 8 months ago

.gitignore Remove build outputs 2 years ago

CmakeLibraryMacro.txt modified for pdaf applications 2 years ago

CodingGuidelines.md Expand line ending and trailing whitespaces sections last year

LICENSE.txt adding dependencies to install directory and package. Added license f... 5 years ago

About

Delta Simulation Model 2

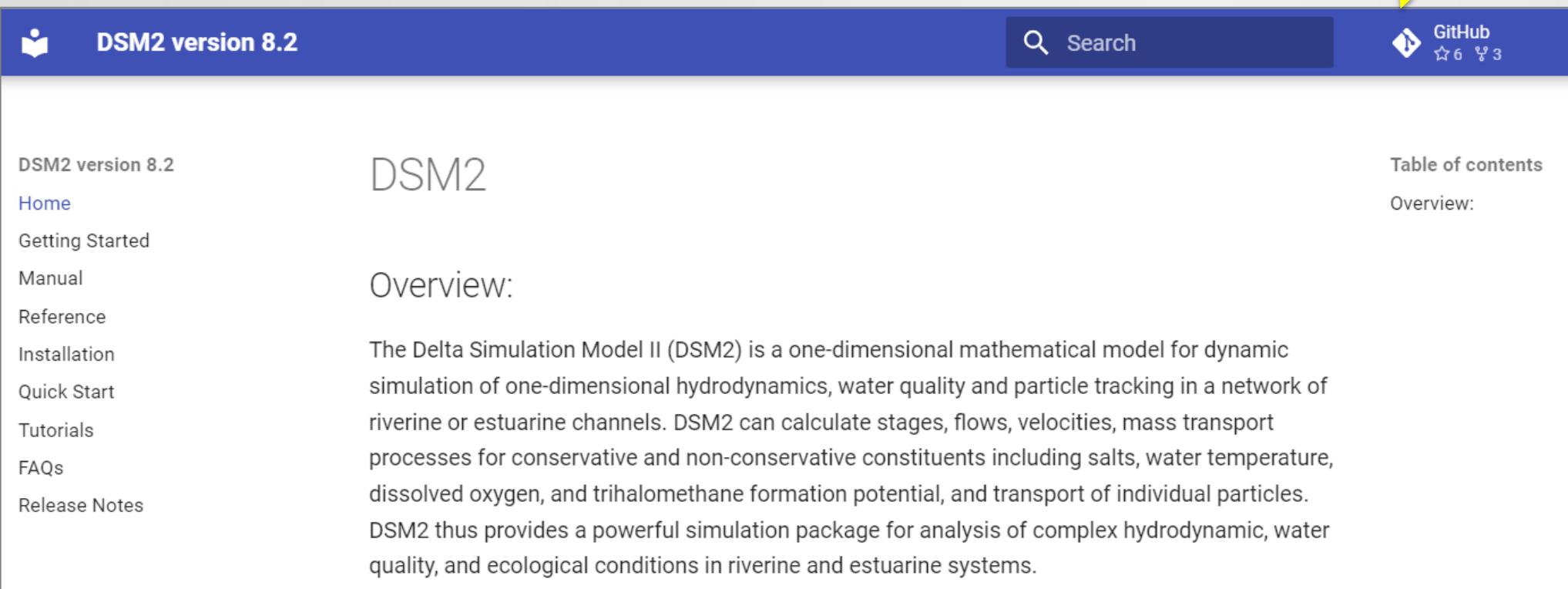
cadwrdeltamodeling.github.io/dsm2/

Readme View license 6 stars 8 watching 3 forks Report repository

Releases 13 tags



DSM2 code

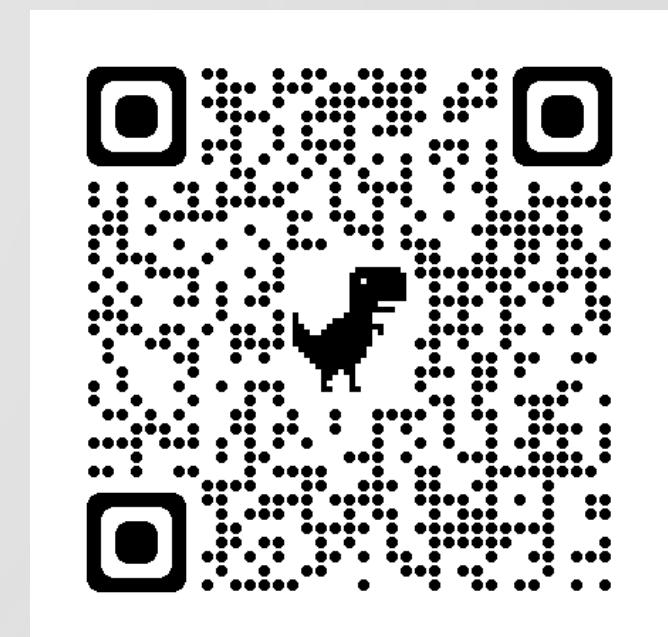


DSM2 version 8.2

DSM2

Overview:

The Delta Simulation Model II (DSM2) is a one-dimensional mathematical model for dynamic simulation of one-dimensional hydrodynamics, water quality and particle tracking in a network of riverine or estuarine channels. DSM2 can calculate stages, flows, velocities, mass transport processes for conservative and non-conservative constituents including salts, water temperature, dissolved oxygen, and trihalomethane formation potential, and transport of individual particles. DSM2 thus provides a powerful simulation package for analysis of complex hydrodynamic, water quality, and ecological conditions in riverine and estuarine systems.



DSM2 documentation

Delta Simulation Model II (DSM2)

- Where has DSM2 been applied in California?

Sacramento- San Joaquin Delta



California Aqueduct



Delta Simulation Model II (DSM2)

- How is DSM2 used?

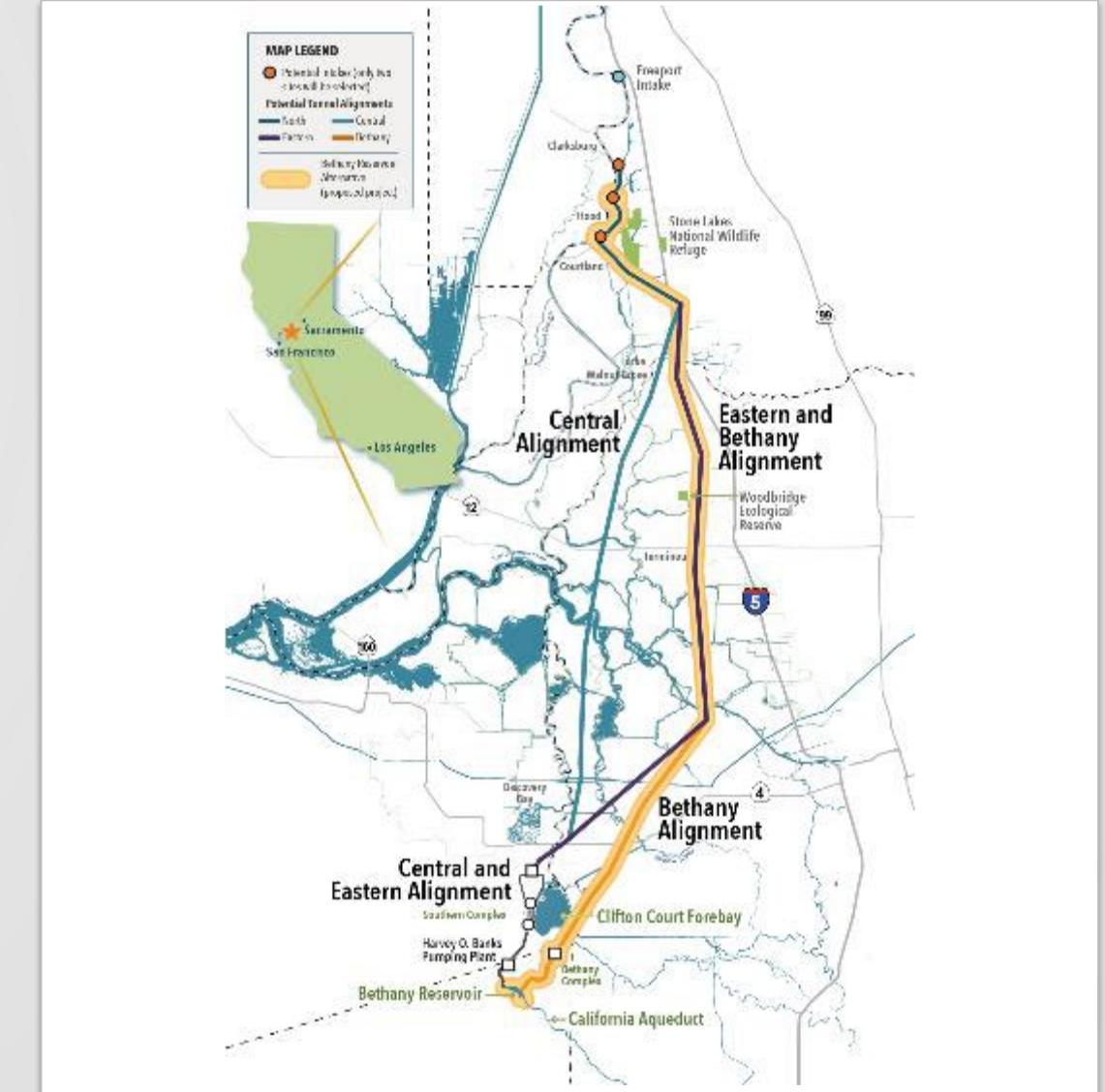
Historical



Real-Time



Planning



e.g. Delta Conveyance,
Climate Change

Delta Simulation Model II (DSM2)

- How is DSM2 used?

Historical

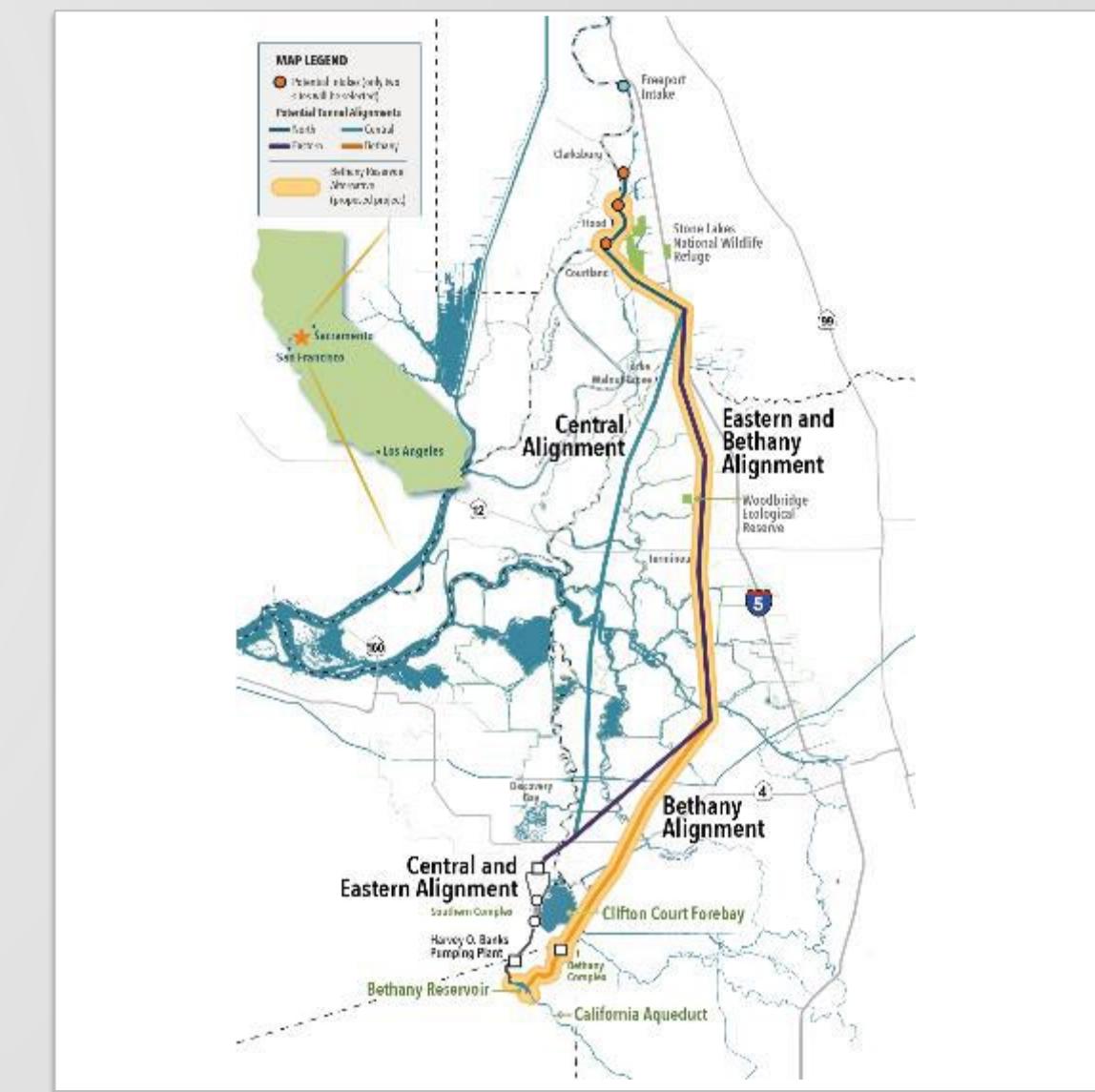


Used for today's class

Real-Time



Planning



e.g. Delta Conveyance,
Climate Change

Delta Simulation Model II (DSM2)

Hydro

Flow, velocity, water levels

Qual

Water Quality Model

- Salinity including chloride, bromide, ...
- Water Temperature
- Dissolved oxygen

GTM

General Transport Model

- Salinity
- Suspended sediment
- Sediment bed
- Mercury
- Modular for easy expansion

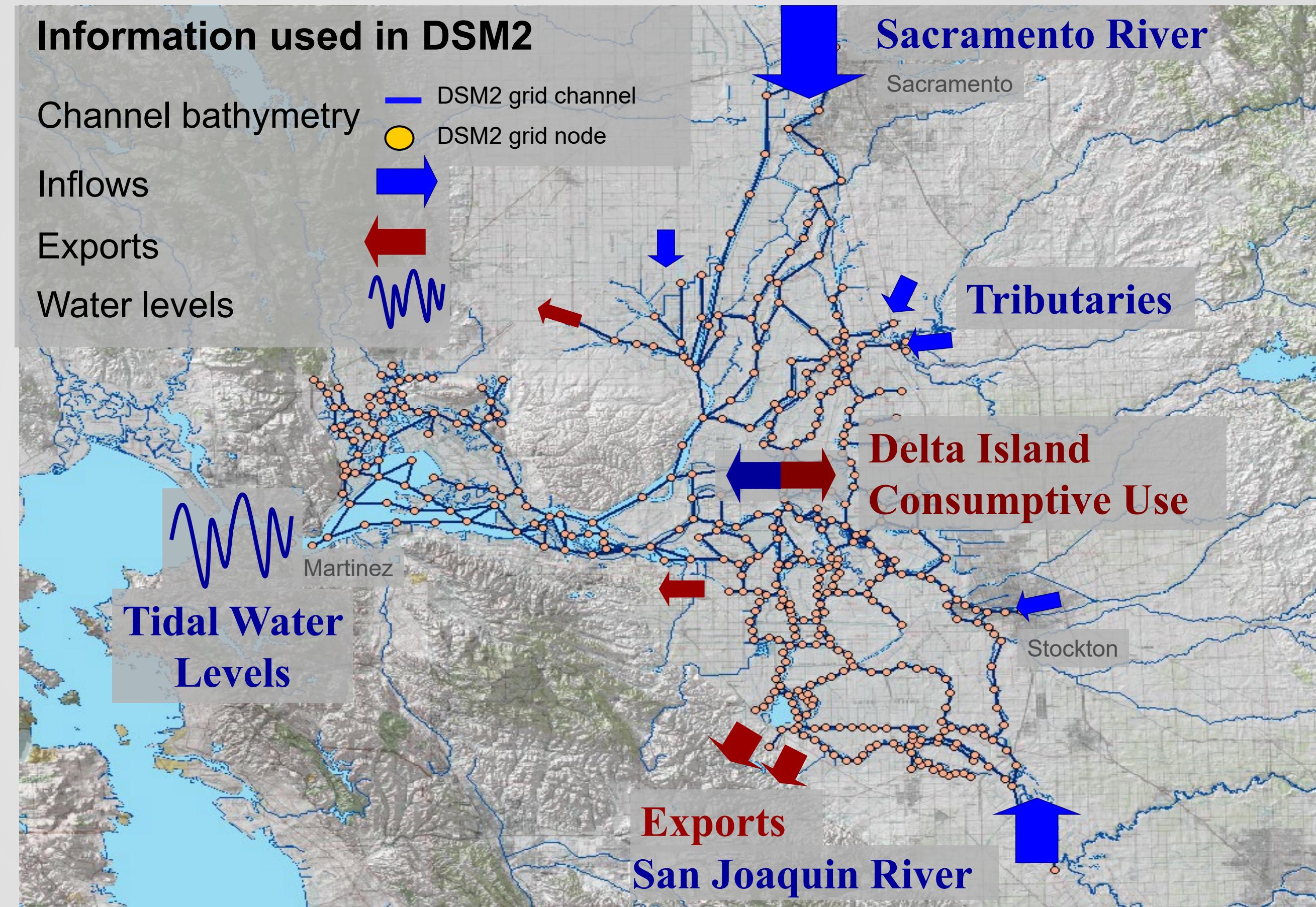
ECO-PTM

Ecological Particle Tracking Model

- Neutrally buoyant particles
- Position oriented particles
- Salmon particles

DSM2 Boundary Conditions

Information
input into DSM2





One Water
in River



DSM2 Learning Series: Quick Start

Skills Learned

- Overview of input & output
- Download and run DSM2 historical simulation
- Simple input changes (scaling flow, increasing barrier width)
- Viewing output in HEC-DSSVue
- Comparing results from two simulations using HEC-DSSVue
- DSM2 Animator

Topics Not Covered

How to

- extending a historical DSM2 simulation to include more recent data
- use CalSim results as input to DSM2 for planning studies
- change channel geometry

Questions?

Please enter questions into the chat



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Jamie Anderson (Jamie.Anderson@water.ca.gov)