Welcome

Workshop on Delta Flow-Salinity Modeling Using Machine Learning
January 27, 2023

Nicky Sandhu
Manager, DWR Delta Modeling Section

CALIFORNIA DEPARTMENT OF WATER RESOURCES

UCDAVIS UNIVERSITY OF CALIFORNIA

What is Machine Learning?

Machine learning (ML) is **an application of artificial intelligence (AI) that enables systems to learn and improve from experience without being explicitly programmed**.

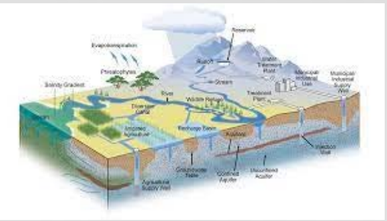
Machine Learning for Water Resources Management

- Trained on field observations or model data
- Runs in a few seconds
- Can be used to explore a wide variety of conditions
- For this workshop, we are applying ML to emulate Delta salinity
- ML has potential for a wide variety of water resources applications

What can ML help with?

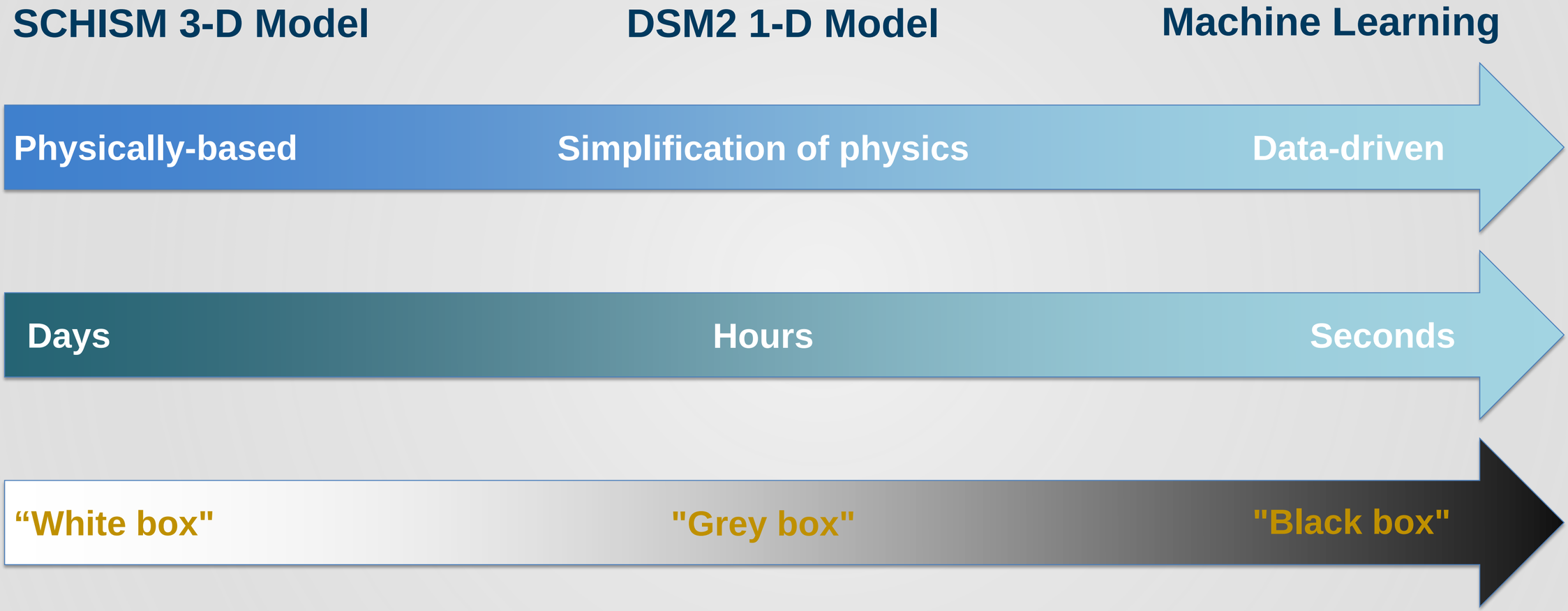
- Leverage large amounts of data
  - Identify patterns and make predictions

- Leverage conceptual models
  - By constraining the machine learning models



- Augment scientific models
  - By detecting the patterns that are unresolved
  - By computing orders of magnitudes faster

Machine Learning compared to other models



*SCHISM and DSM2 are models of Delta flows and water quality

CALIFORNIA DEPARTMENT OF WATER RESOURCES

UCDAVIS UNIVERSITY OF CALIFORNIA

A community of ML users

- Focused on water and environmental issues
  - Collaboration among practitioners
  - Sharing of ideas and techniques
  - Partnerships between disciplines
  - Facilitate engagement through regular meetings