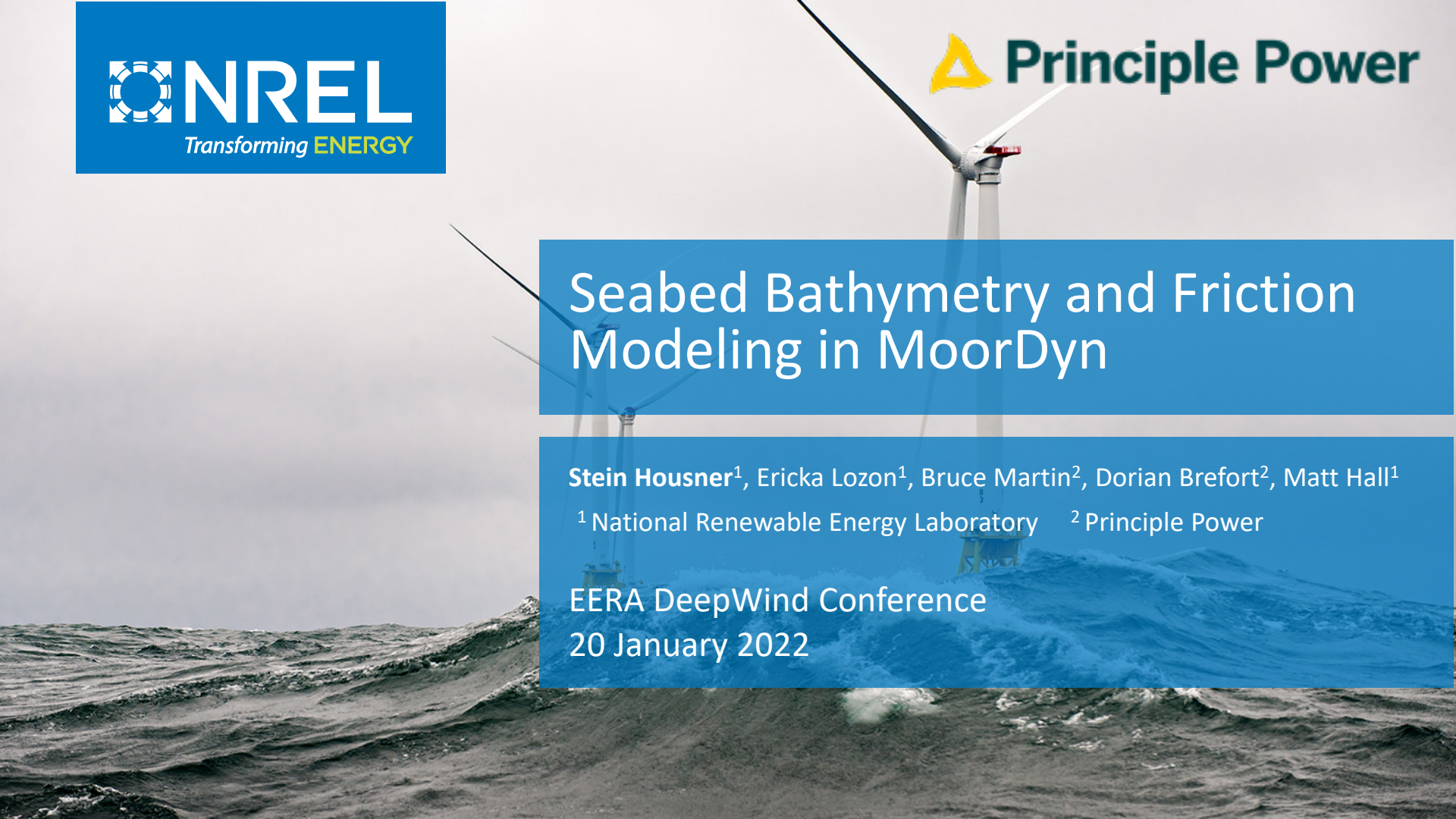


Seabed Bathymetry and Friction Modeling in MoorDyn

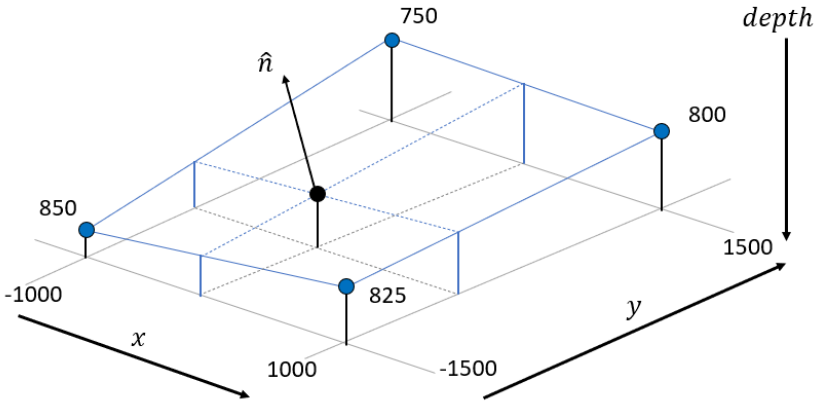
Stein Housner[1], Ericka Lozon[1], Bruce Martin[2], Dorian Brefort[2], Matt Hall[1]

[1] National Renewable Energy Laboratory [2] Principle Power

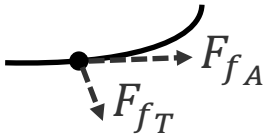
EERA DeepWind Conference
20 January 2022

New Features Implemented into MoorDyn

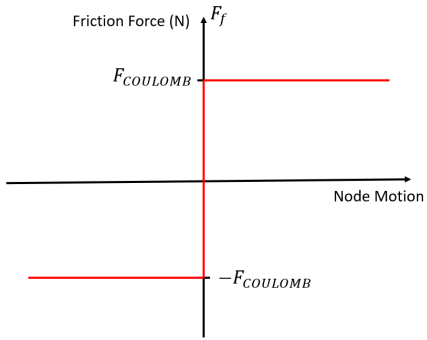
- Seabed Bathymetry
  - Any 3D rectangular discretization
  - Bilinear Interpolation



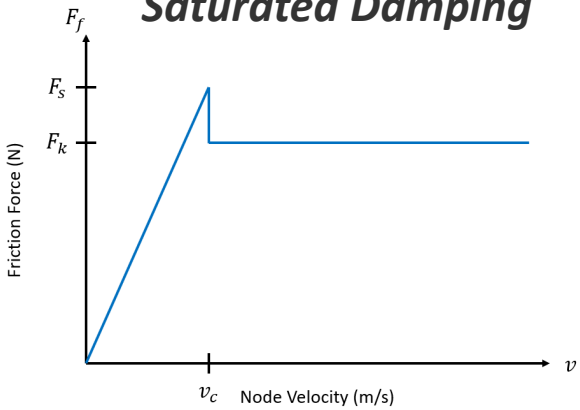
- Seabed Friction
  - Numerical problems with standard Coulombic Model
  - Saturated Damping Model
  - Axial and Transverse Friction



Coulombic

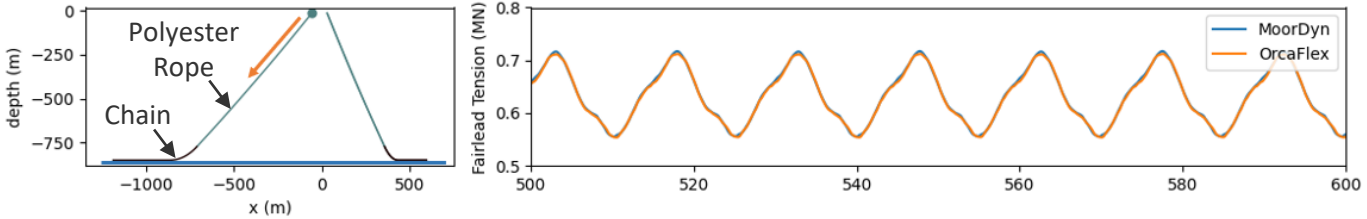


Saturated Damping

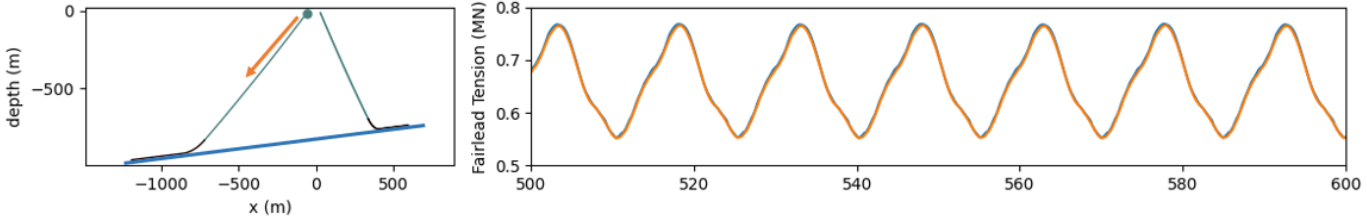


Bathymetry Verification with OrcaFlex

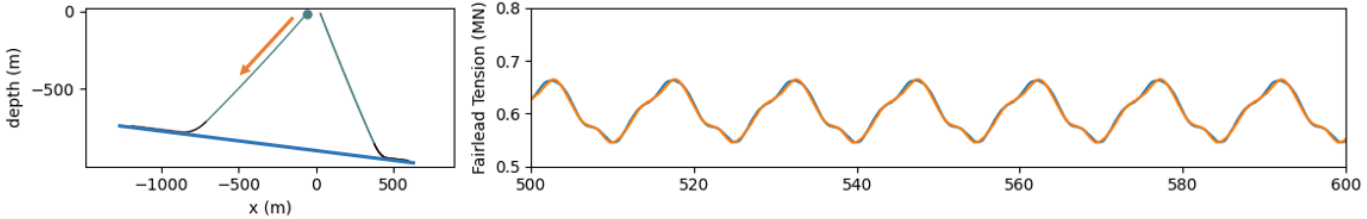
Flat



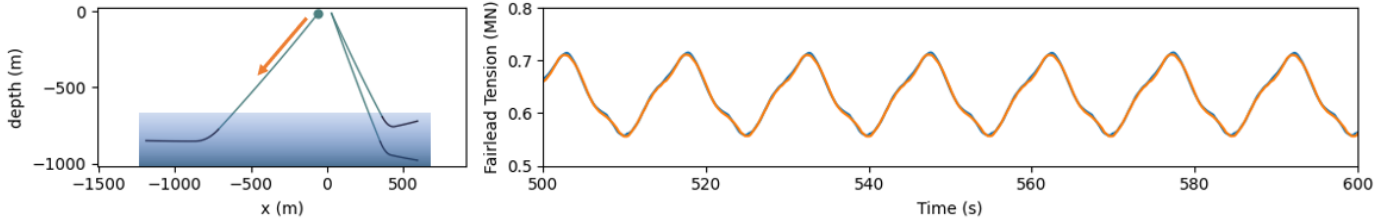
Upslope



Downslope



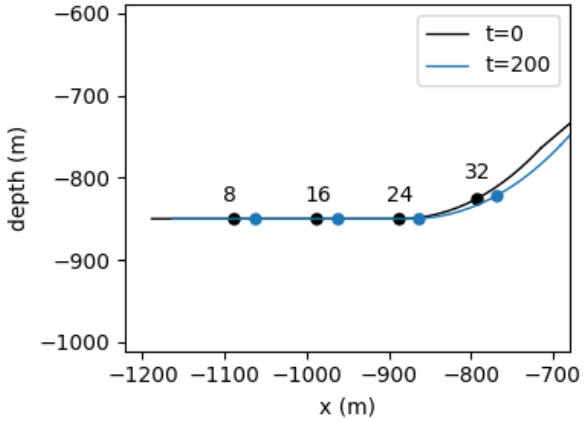
Sideslope

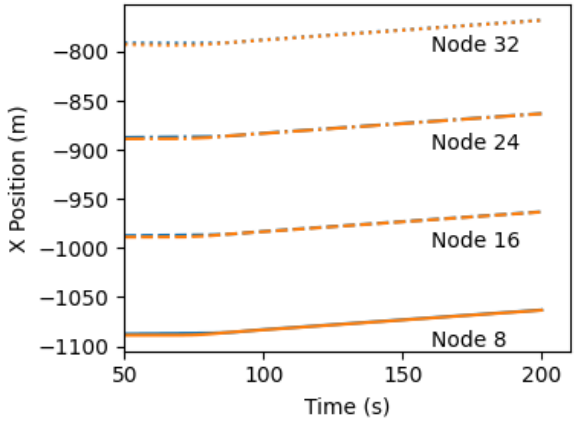


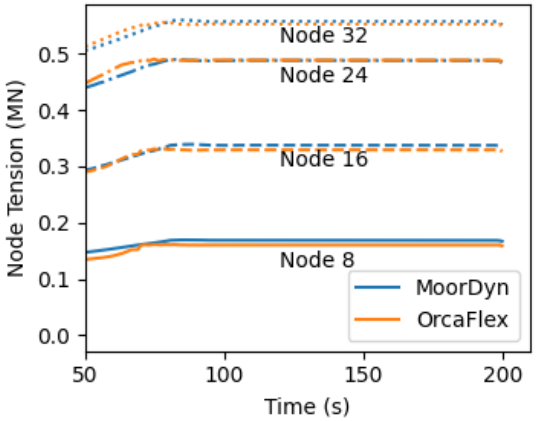
Axial Friction Verification with OrcaFlex

Single mooring anchor failure

- Programmed motion in x-direction
- Anchor failure causes nodes to drag axially across seabed



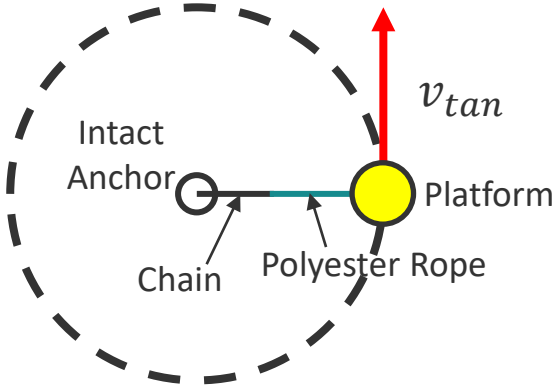


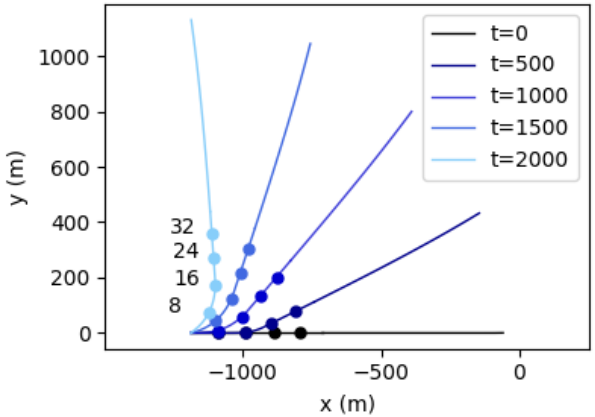


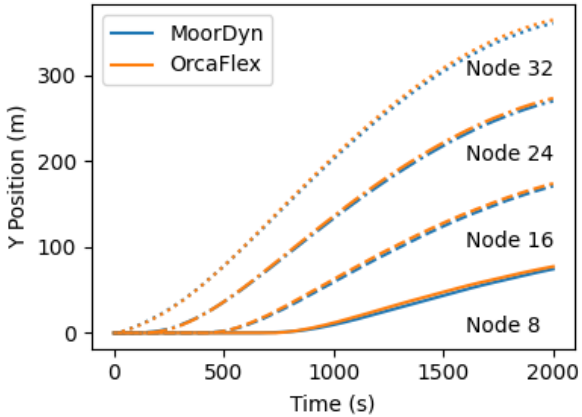
Transverse Friction Verification with OrcaFlex

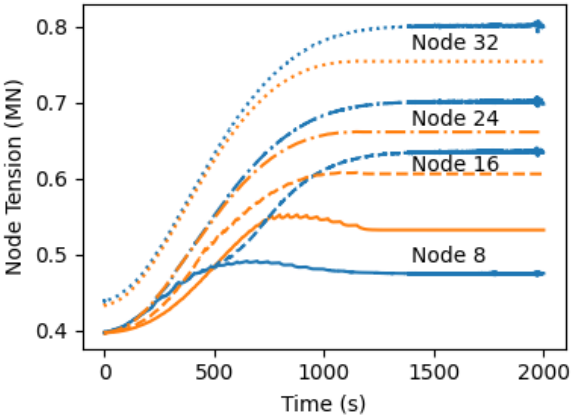
Single mooring circular motion

- Programmed motion in tangential direction
- Circular motion causes nodes to drag transversely across seabed









Thank You

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Full paper to be submitted

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