

# P00547 Oil Spill Movement/Trajectory

Dr. Amy MacFadyen

NOAA Office of Response & Restoration  
Emergency Response Division



# Hindcast Modeling Goals

- Provide an overview of the surface movement throughout the incident
- Determine estimated area of ocean surface oiling during first several days of spill
- Support oil pathway discussions from offshore to shoreline areas



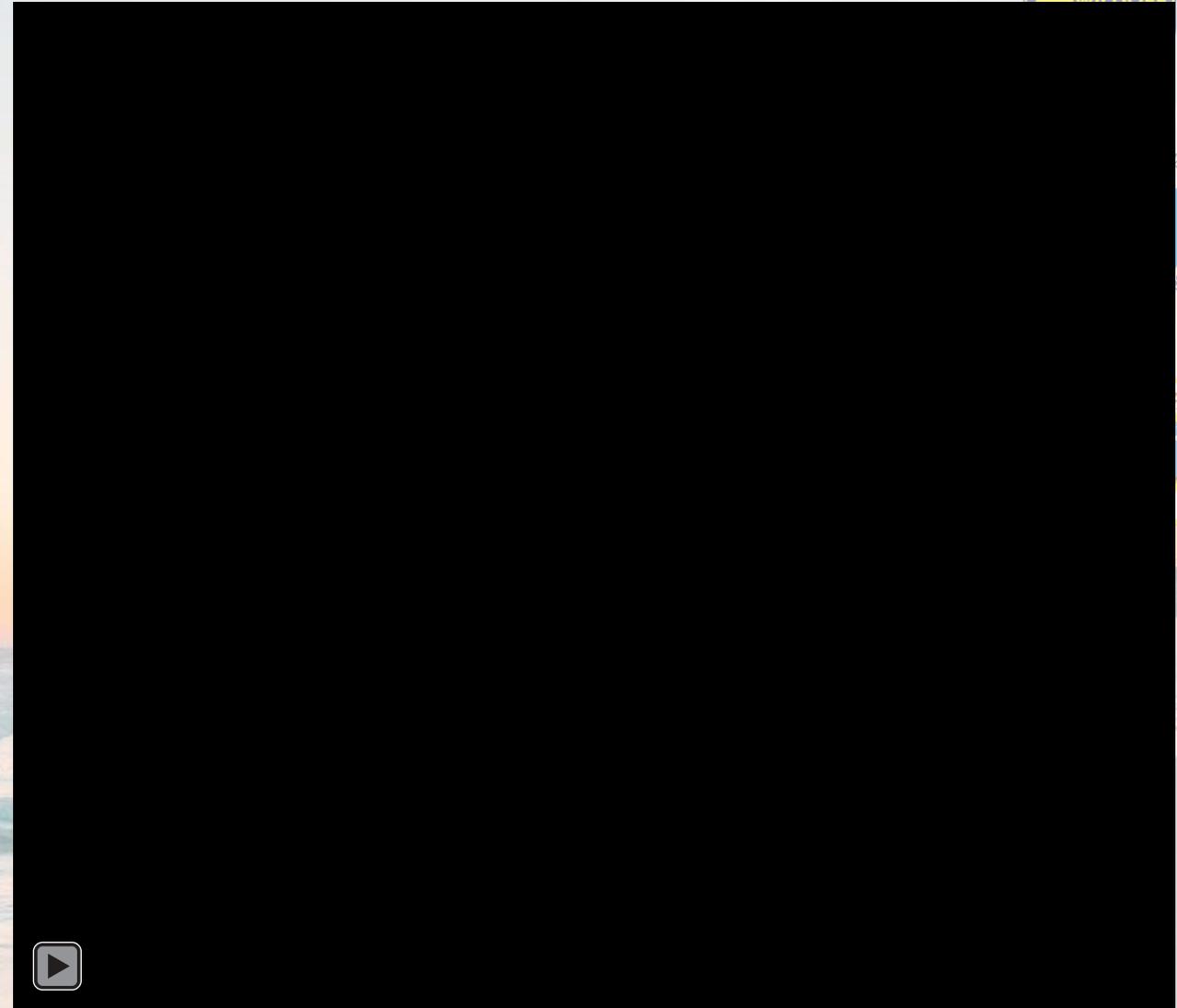
# Important Inputs in Spill Trajectory Hindcasting/Forecasting

- In spill trajectory forecasting, the quality of the inputs is typically the largest factor in the accuracy of the predictions.
- Important Inputs:
  - Spill source information
    - where, when, how much, how fast (release rate)
  - Environmental information
    - regional ocean currents
    - regional meteorology (winds)
- There is uncertainty associated with ALL the model inputs – the following model simulation yields the best match with observed oil movement.



# Hindcast Simulation

- Particles representing oil released at pipeline break location beginning 1 Oct, 16:00
  - *24 hour duration*
  - *constant release rate*
- Total spill volume divided equally amongst particles
  - *no concentrations calculated due to limitations in specifying source (release rate)*
- HF radar derived surface currents and interpolated wind from met buoys used as environmental forcing



# Next steps

- Continue to run additional simulations with differential forcing and make quantitative comparisons with observations to refine predictions
- Water column working group is considering additional modeling to estimate concentrations in the upper water column that organisms could have been exposed to as a result of the spill

