NFO Trajectory Analysis: Tools and Data Gaps

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Guidelines for modeling

What is Modeling?

There are many models, from the very simple to the complex.

What questions are you trying to answer?

You need to know the questions that you are trying to answer in order to select and apply an appropriate model.
The model selected should be as simple as possible to answer the questions at hand.

What processes does the model capture?

What processes are most important in the particular case? A given model only captures some processes -- does it capture the ones relevant to the problem at hand.

What inputs do we need?

All models require a lot of input data:
- Information about the release -- where, when, how much
- Information about the product -- physical and chemical properties
- Information about the environment: Winds, Currents, Water Properties, Sediment Properties...

What is the Uncertainty?

Uncertainty in the results comes from both errors in the model, missing processes, and uncertainty in the inputs.

Processes to Model

Fate and Transport -- primary response question

Where is the oil going to go? How are its properties changing with time? These are interrelated

Impacts to the Environment -- more about injury assessment

Requires much more detail -- both of fate and transport, and presence of biota

Challenges of Non-Floating Oil -- with case studies

- More Sensitive to some physical properties: density, viscosity
- You can't see it! -- calibration is hard
- Mobilization -- not well understood
- Physical Properties less understood -- "slurry oil"