# Unlocking the power of data and online analytics for oil spill prevention and operational decision making



**Research & Innovation Center** 

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#### Background

Researchers at National Energy Technology Laboratory and Pacific Northwest National Laboratory, working with the Bureau of Safety and Environmental Enforcement, have developed a Common Operating Platform,

or COP, to host an integrated suite of online, spatio-temporal data and tools to synthesize information for offshore spill prevention and operational decision making.

**Offshore Common Operating Platform (COP)** 







### Why use a COP?

- Wide spread use online access to data and tools,
- Improved processing power reduce strain on personal computers & saves disk space,
  - Role-based security restrict access to data, tools, and analytical results,
    - Access a wide-range of data from various sources,
      - Enduring access to fully

The **Offshore COP** integrates socio-economic, environmental, and metocean data, along three tools from NETL's Offshore Risk Modeling (ORM) suite (BLOSOM, CSIL, and SWIM) to model potential spills, assess potential impacts and rank and compare various scenarios.

Use this

tool

An integrated suite of online, spatiotemporal data, tools, and models for rapid offshore spill prevention and operational decision making insights









- **Download and save** outputs,
- Enhanced data interaction and visualization - customizable user interface & robust capabilities,
- Prevent 'stale' data & analytics use services to ensure data & tools remains up-to-date & supports rapid, real-time analytics.

## **SWIM**

(Spatially Weighted Impact Model)

| Parameters Review                  |                          |                  |            |            |                          |                   |   |
|------------------------------------|--------------------------|------------------|------------|------------|--------------------------|-------------------|---|
| Simulation Name: SWM+Tizzotain     |                          |                  |            |            |                          |                   |   |
| Summary Results for Modeled Worst. | Case Discharge Scenarios |                  |            |            |                          |                   |   |
| Sector impact indices              |                          |                  | Worst Case | GoM Houst  | aton Dema                |                   |   |
|                                    | Communical Excing        |                  | 100.       | 22         |                          |                   |   |
| Commercial Transport:              |                          |                  | 100        |            | a                        |                   |   |
| Brutoman                           |                          |                  | 100        | \$1<br>\$1 | 3                        |                   |   |
| Public Infastructure               |                          |                  | 100        | 2.3        |                          |                   | J   |
| Cir 8 Ges Industry                 |                          |                  | (00)       | 58         | 9/                       |                   |   |
| Response Preparedness index        |                          |                  | b.         | 32         | 21                       |                   |   |
|                                    | Tuuran                   |                  | 120        | 5.7        | S Consulting Co          | mantener          | 1.50 - 17 . THUNA PROFILM                     |
| Weighted Impact Criteria           | Worst Case               | GoM Houston Demo | Worst      | Best       | Rank (Impacts) range 1-7 | Weight (0 - 100%) | Sliders for Impact Wts.<br>Use Impact Sliders |
| Controercial Referg                | 7.81                     | 3.45             | 100        |            | 3                        | 75.61             |   |
| Commercial Transport               | 14.62                    | 0.48             | dar        | 0          |                          | 37.04             |   |
| Environment                        | 1136                     | 9.43             | 100        | 0          | 1                        | 12.76             |   |

### **BLOSOM**

(Blowout and Spill Occurrence Model)



**CSIL** (Cumulative Spatial Impacts Layers)



A open-source 4D fate and transport model for simulating blowouts, surface, and other spill types.

A spatio-temporal tool that rapidly quantifies and qualifies potential impacts for a range of socioeconomic, environmental, and preparedness variables.



A decision support tool that uses spatial and attribute relationships and user-determined weights to compare, evaluate, and rank different scenarios.

#### **Future Development:**

Additional data for all U.S. offshore waters and infrastructure life span and integrity, as well as additional tools from the ORM, including the Subsurface Trend Analysis and Variable Grid Method, are being added to the Offshore COP. These enhancements will enable users to preform analyses within the Offshore COP that will help:















Acknowledgment: This technical effort was preformed in support of the BSEE Common Operating Platform was developed under Interagency Agreement E14PG00045 with the Department of Energy (DOE) and the Bureau of Safety and Environmental Enforcement (BSEE), U.S. Department of the Interior, Washington, D.C.

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