

## Introduction

- Frequently happened oil spills
- Catastrophic environmental effects
- Enormous economic loss



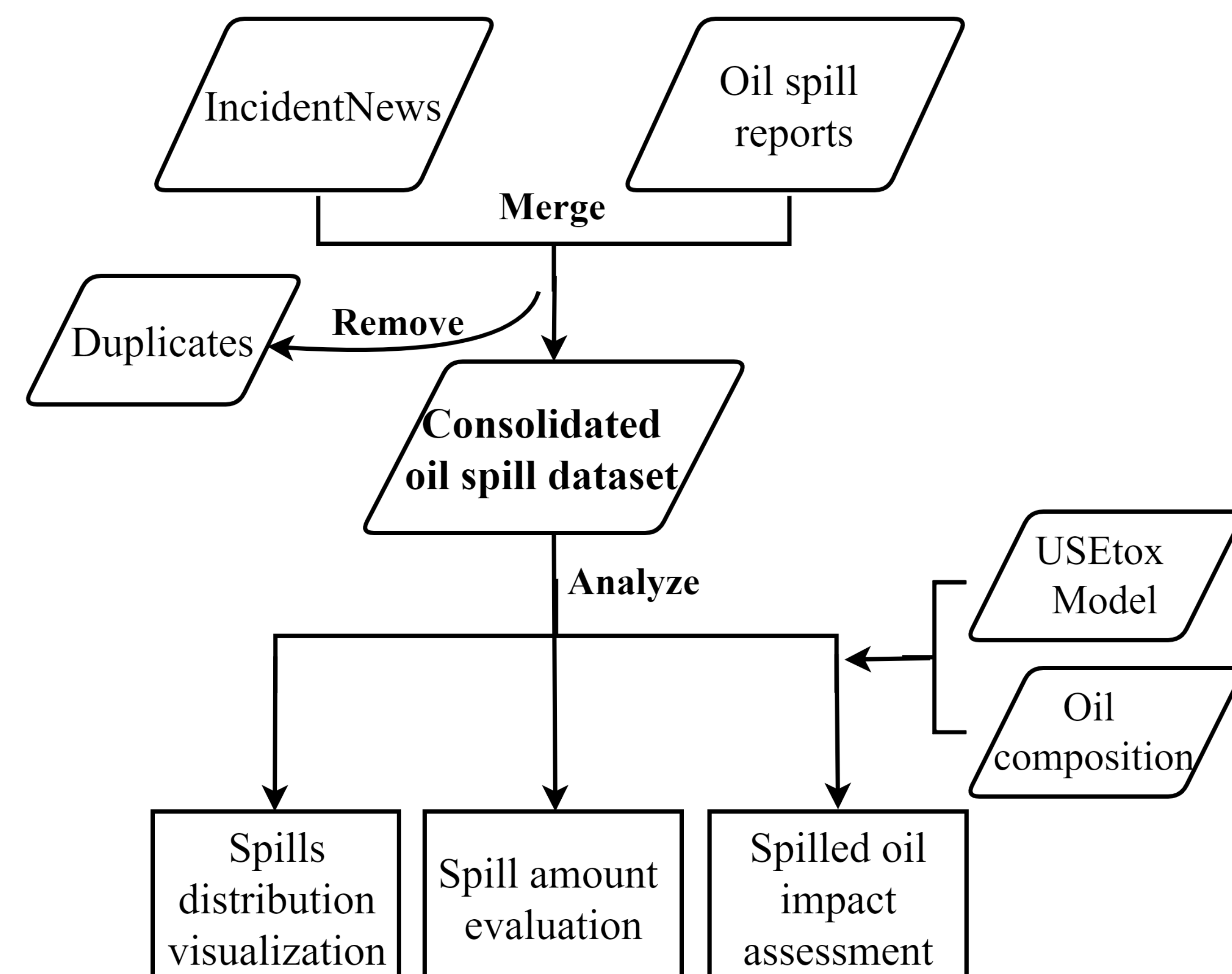
## Research gaps

- Only large oil spills such as Deepwater Horizon Oil Spill are widely studied. The impacts of multiple smaller oil spills are still unknown.

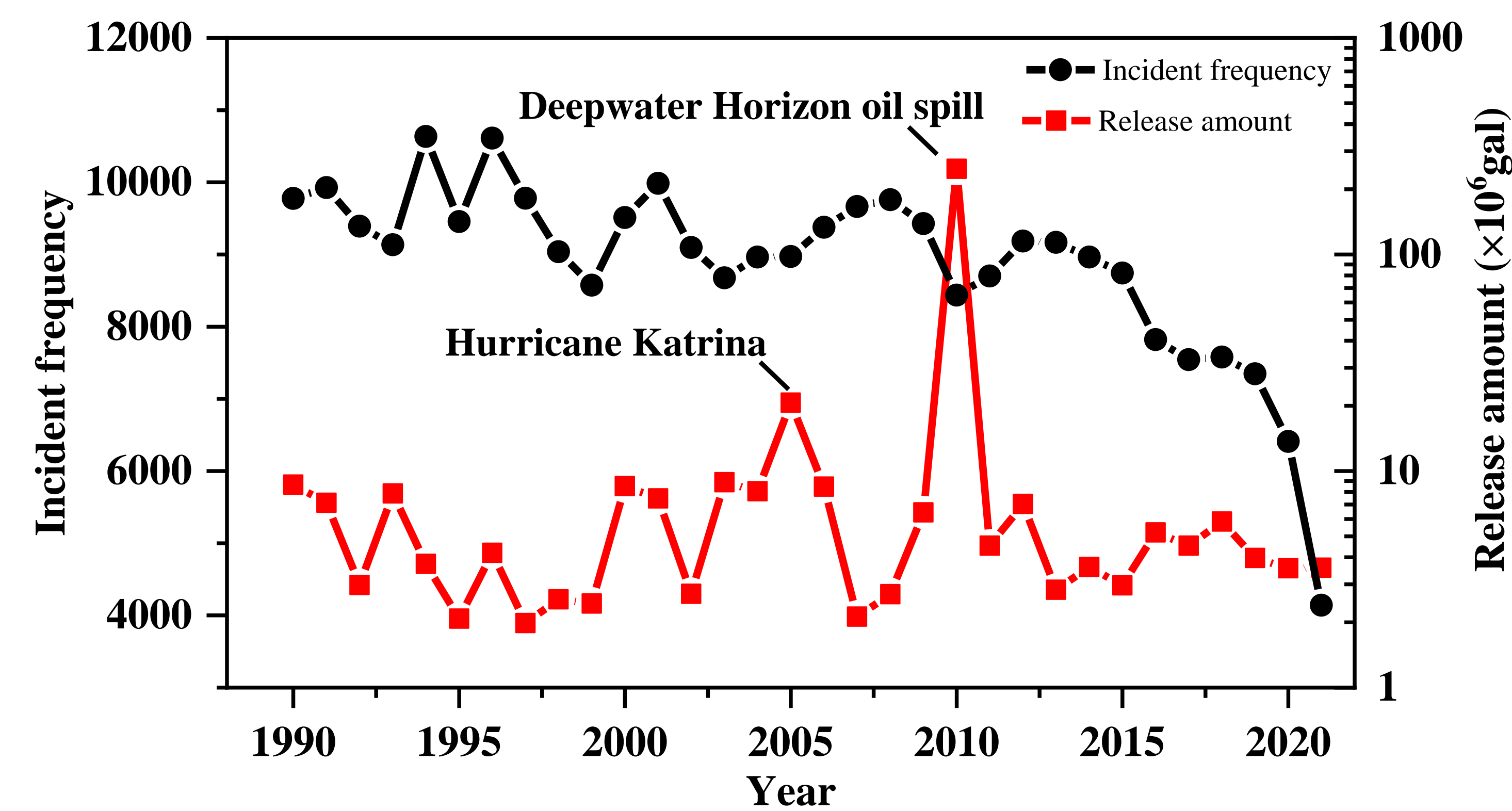
## Research questions

- When, where, and how frequently do oil spills happened?
- How much oil has been spilled?
- How much impact does the spilled oil have?

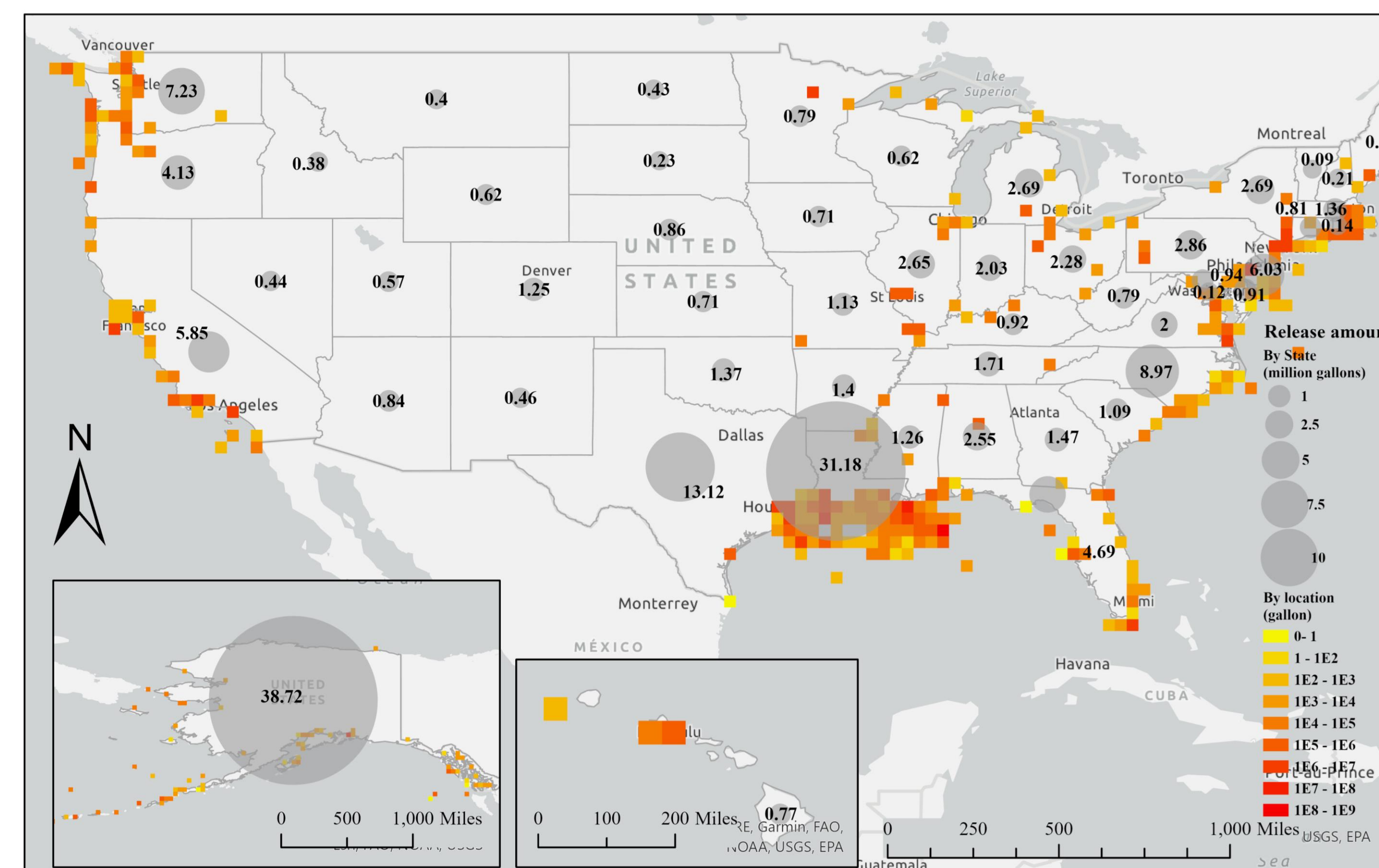
## Data & Method



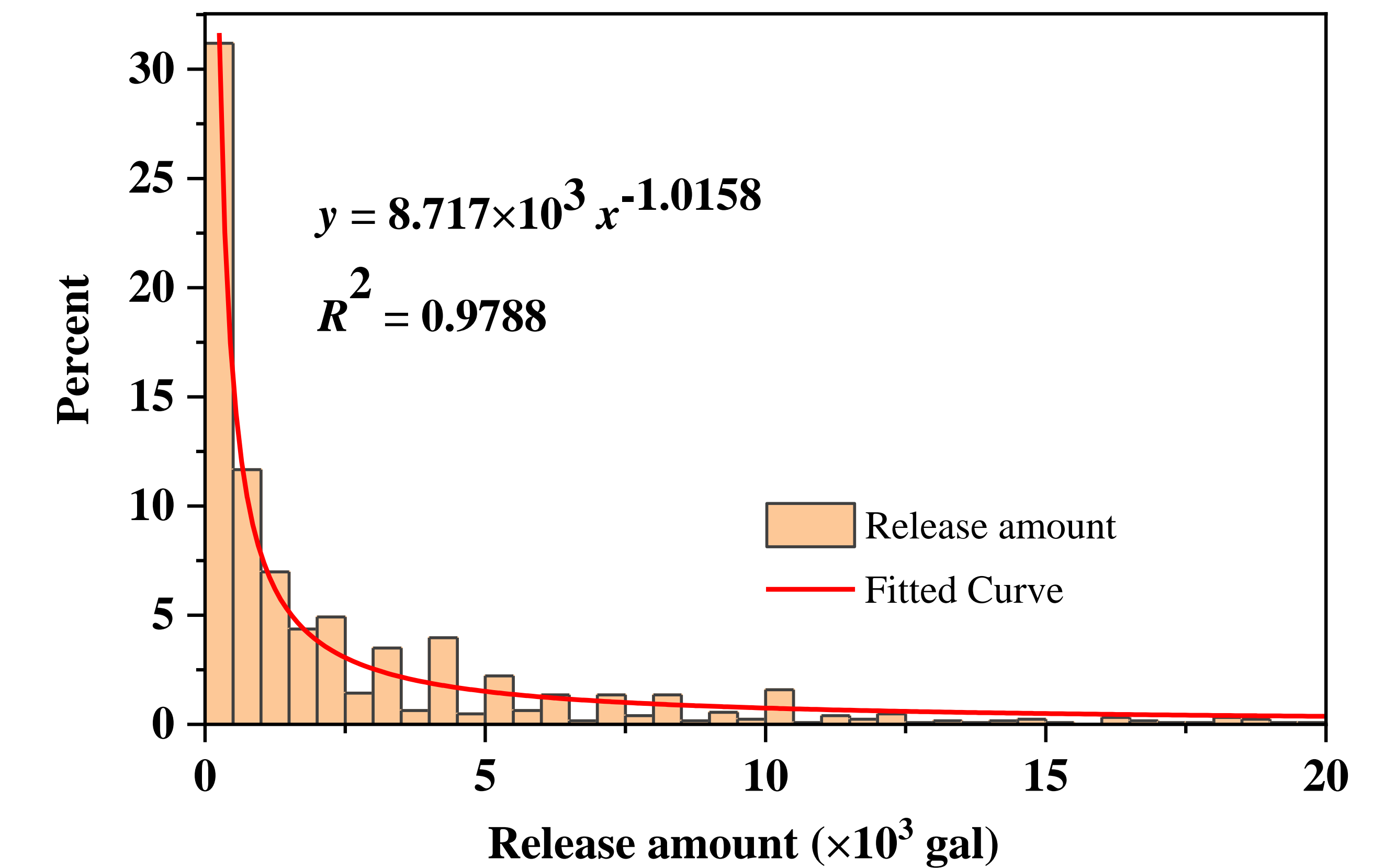
## Result



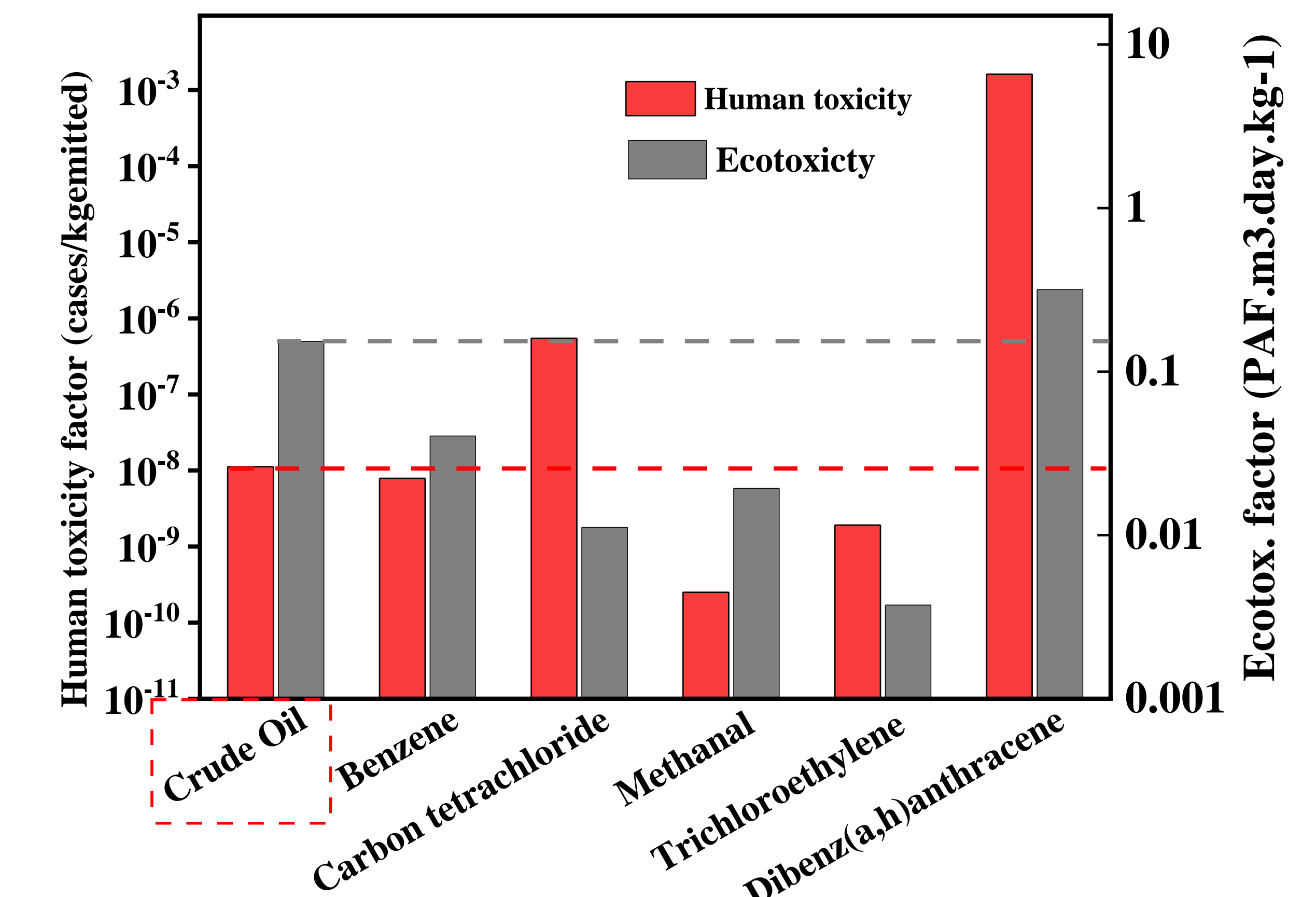
- Oil spills are decline in recent years.
- Yearly release amounts are dominated by extreme events.



- Offshore waters and coastal states contribute most of oil spills and release amounts due to intense offshore oil drilling and transits.



- Power law distribution between spill frequency and release amounts



- Human toxicity of crude oil (characterized by USEtox Model) is similar with benzene in seawater.

## Conclusion

- Total amount of spilled oil is approximately 480 million gallons (three Deepwater Horizon spills).
- Spilled oil has considerable impacts on human health and marine ecosystem