Aiding in the response to the largest marine oil spill disaster ever recorded in history: Flow rate estimation of the amount of oil discharged during the 2010 Deepwater Horizon accident in the Golf of Mexico using statistical correlation algorithms.

Juan C. Lasheras[*†1], Juan C. Del Alamo[1], Alberto Aliseda[2], Oscar Flores[2], and James Riley[2]

[1]University of California San Diego – La Jolla, CA 92093-0411, United States
[2]University of Washington – Seattle, WA 98195, United States

Abstract

The largest marine oil spill in history was caused by an April 20th, 2010 explosion on the *Deepwater Horizon* oil drilling platform located in the Gulf of Mexico approximately 41 miles (66 km) off the coast of Louisiana. The *Deepwater Horizon* sank on April 22, 2010, in water approximately 5,000 feet (1,500 m) deep beginning the uncontrolled discharge for 89 days of an unknown amount of oil. Soon after the accident, the National Incident Command (NIC) chartered the Flow Rate Technical Group (FRTG) to provide scientifically-based information on the discharge rate of oil from the well to assist in the containment efforts and in the allocation of the necessary resources to minimize the environmental impact of the disaster. Using statistical correlation algorithms to analyze video images recorded by remotely controlled underwater vehicles, the FRTG team composed of several former collaborators of Emil Hopfinger, worked for over two months during the disaster to provide the US government with the most accurate estimating of the flow rate of the oil being discharged as well as its dissolution and dispersion in the water column and the amount reaching the surface. In this talk, we will provide a detailed history of the disaster and discuss the methodology used by our group, which included using several models developed by Emil and his former students.

[*]Speaker
[†]Corresponding author: lasheras@ucsd.edu