



ITOPF recent activities and R&D Award update

ITAC

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WHAT IS ITOPF?



- Not-for-profit organisation established in 1968
- Main role: objective advice on effective response to marine spills of oil & HNS
- Based in London but provide a global service
- Primarily funded by the shipping industry (via P&I Clubs)

ITOPF'S CORE FUNCTIONS

SPILL RESPONSE



DAMAGE ASSESSMENT & CLAIMS ANALYSIS



CONTINGENCY PLANNING & ADVISORY



TRAINING & EDUCATION

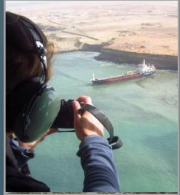


INFORMATION SERVICES

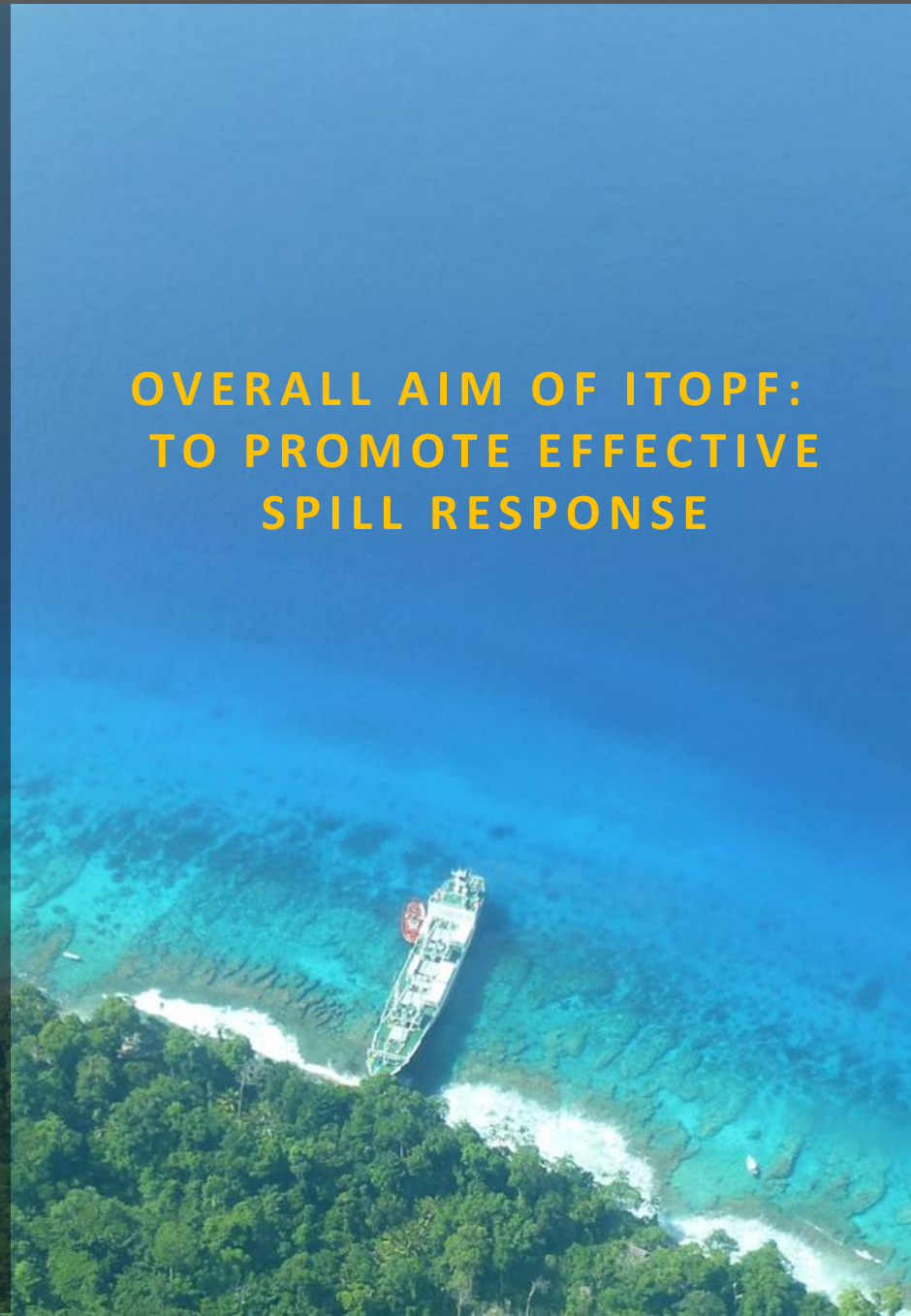


SPILL RESPONSE ROLE

- Provide technical advice to government, responders & victims
- Promote effective response techniques, joint assessments & cooperation
- Monitor spill response & investigate damage to resources
- Help to design & implement post-spill studies / restoration
- ➔ Provide technical assessments of claims for compensation



**OVERALL AIM OF ITOPF:
TO PROMOTE EFFECTIVE
SPILL RESPONSE**



INCIDENTS ATTENDED BY ITOPF IN LAST 12 MONTHS



Date: 13/09/2017
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Source: US National Park Service

DAWN KANCHIPURAM, Chennai, India

- Observations on site would suggest ~250-300 m³ of IFO 180 spilled
- ITOPF stayed for 10 weeks
- Shoreline clean-up – State Government – no clear responsibility/ leadership
- Lack of preparedness at State Level resulting in mass clean-up
- Government requesting shipowner assistance
- Alleged loss of market confidence led to 112,000 claims from fishing community.



LADY TUNA, Cesme, Turkey

- Spilled 100-150 MT of IFO 380
- Shoreline contamination was approx. 15 km.
- High touristic coastline with numerous pontoons and amenity man-made structures.
- Main clean up finished in 3 months after but due to high level of tourism, standby team still working to clean small patches of oil that occasionally remobilised throughout summer from said structures.
- Poor governmental coordination
- Difficulty to agree on end points
- Presence of sunken oil



AGIA ZONI II, Athens, Greece



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SPILL RESPONSE



DAMAGE ASSESSMENT & CLAIMS ANALYSIS



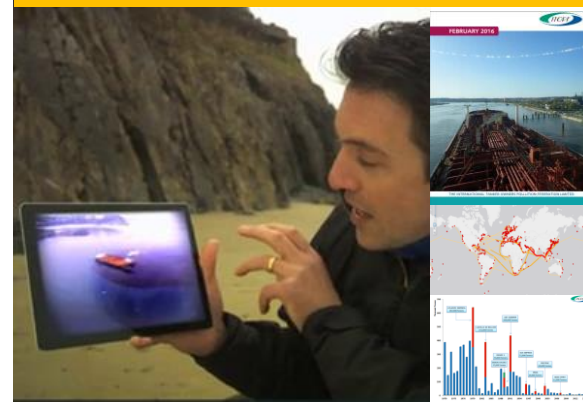
CONTINGENCY PLANNING & ADVISORY



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ITOPF R&D AWARD

ENCOURAGE ORGANISATIONS WORLDWIDE TO PROVIDE INNOVATIVE BUT REALISTIC SOLUTIONS TO SOME OF THE CHALLENGES FACED IN SPILL RESPONSE AND ENVIRONMENTAL MONITORING

- Each year up to **£50,000** available to fund R&D projects
- To date £300,000 have been used to fund research
- Deadline for 2018 ITOPF R&D Award: **30th November 2017**
<http://www.itopf.com/in-action/r-d-award/application-process/>



> 2012 - FishHealth

Development of a methodology for an assessment of fish health and research into the impact of chemically dispersed oil on marine fish.



[READ MORE](#)

> 2013 - SLAM

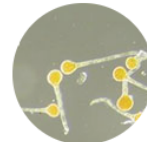
Development of a novel 'back-pack' system to track rehabilitated oiled birds without compromising their well-being.



[READ MORE](#)

> 2014 - FAMERR

Determination of realistic spill profiles for chemicals to improve decision-making for spills in different geographic areas and seasons.



[READ MORE](#)

> 2015 - University of Washington

Study to identify and assess emerging risks from marine transportation.



[READ MORE](#)

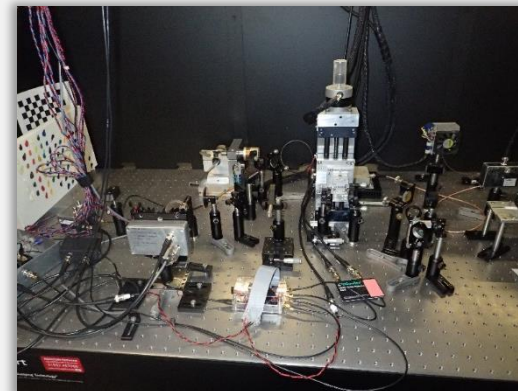
> 2016 - Rosdam

A feasibility study to investigate the detection capability of hyperspectral imaging technology (HSI) for oil spillages in ice-affected waters



> 2017 - Virtual Reality Lab, Shanghai

"Real Spill Response Game", an exercise platform designed to improve preparedness and training for oil spills



WHO CAN QUALIFY?

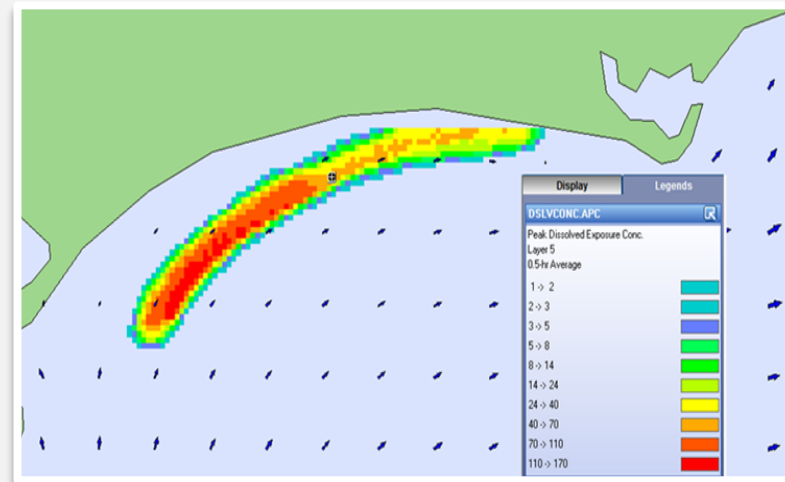
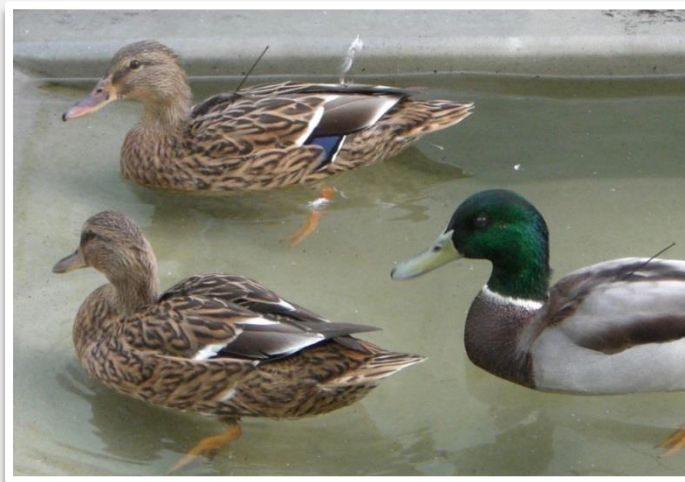
Any R&D establishment or other organisation worldwide funding a candidate (individual or project team) to undertake research.

WHAT CAN THE AWARD FINANCE?

A full breakdown of the cost of the project must be included: researchers' **salaries**; time to be spent on the project by the permanent staff, including **overhead** and management costs, but excluding profit; **project equipment**/hardware costs, eg materials, laboratory costs, equipment hire; any required **travel expenses** and **consumable items**, at cost.

The ITOPF R&D Award is not intended to finance investment, nor depreciation of research equipment.

ITOPF R&D AWARD - Committee



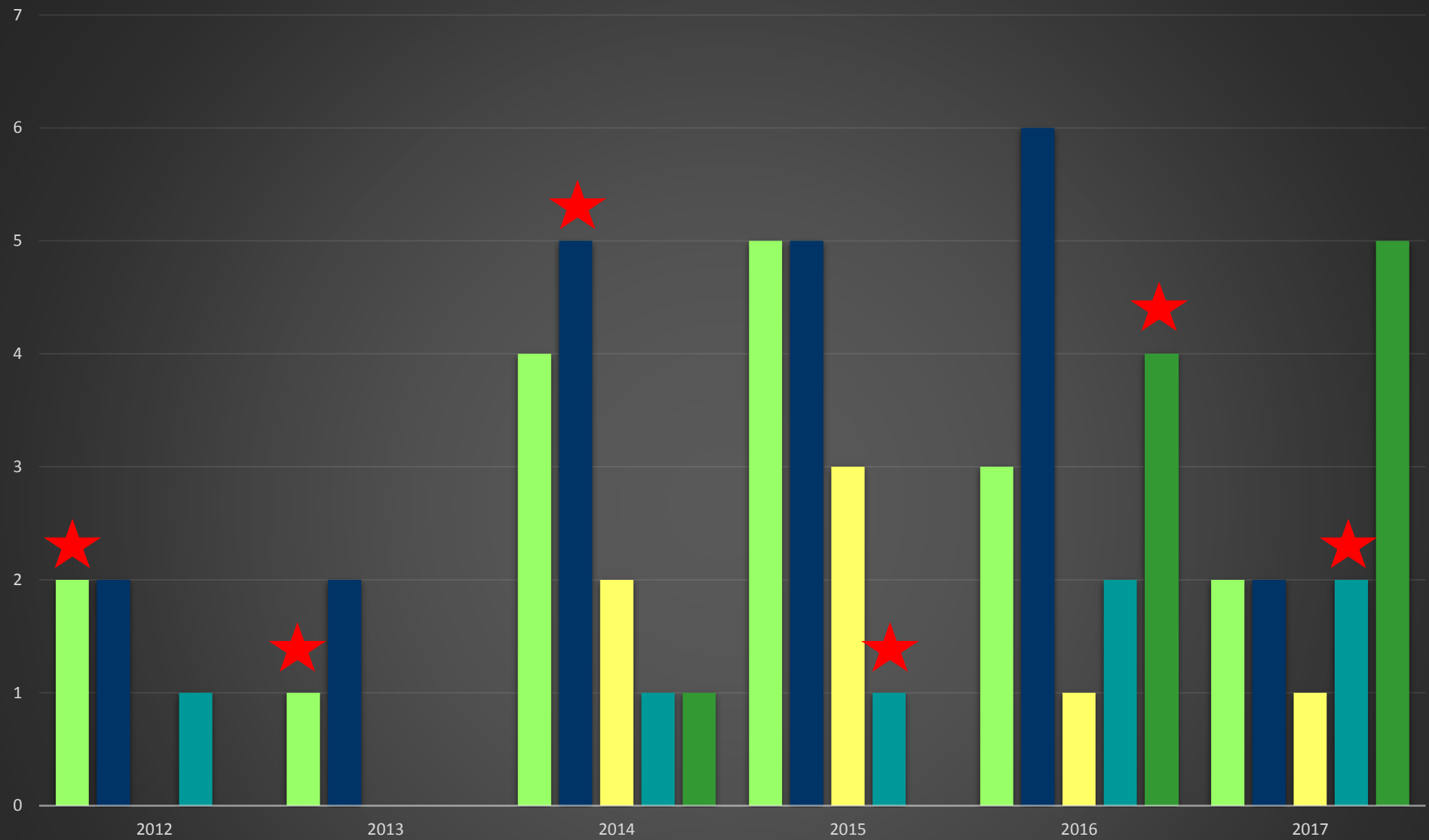
ITOPF R&D Award Committee consists of:

- 3 members of ITOPF staff (Committee chair is our Technical Director)
- 2 well-respected external and independent members of the scientific community

Assessment of the project following 5 criteria:

- Relevance of the proposed research to the marine environment
- Relevance to the shipping
- Amount of R&D within the project
- Originality
- Experience of the institution/Confidence that the project will be achieved in the said time

FIELD OF APPLICATIONS



Wildlife, mitigation, rehabilitation

Chemistry of oil and chemicals

Technology and new products

Modelling, tracking

Risk in maritime transport



3-year project (PhD)

4 research institutes

Co-funded by Total Fluides



PROJECT

- A methodology for an assessment of fish health (cardiac pumping capacity, swimming capacity, hypoxia tolerance, thermal susceptibility) , to provide information on the impact of chemically dispersed oil on marine fish
- The project addresses factors that may have operational relevance during the response to an oil spill e.g. seafood quality and the impacts of dispersant use on finfish populations

Outcome: two publications and one additional on-going PhD focussing on behaviour of juvenile seabass after exposure to dispersed oil

RESULTS

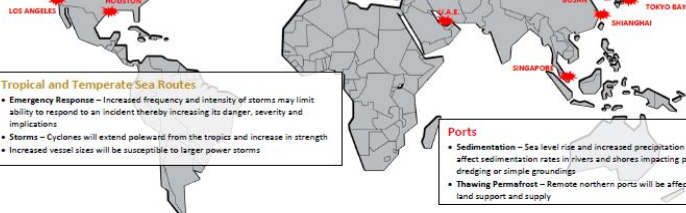
- Seabass have the capacity to detect and avoid the water soluble fraction of oil
- Exposure (48 h) to dispersant alone has no effect on fish ability to cope with simulated environmental challenges
- Exposure (48 h) to both oil and dispersant-treated oil temporarily impacted this coping ability
- Post-exposure (6 weeks), tissues [PAH] and fish performance return back to control level
- Long term post-exposure monitoring (1.5 year) of the juvenile seabass populations reveals no delayed effect on fish coping performance, growth and survival.

2015 R&D AWARD WINNER: EMERGRISKS

ENVIRONMENT

Arctic Sea Routes

- Emergency Response - Thawing permafrost will affect shipping infrastructure, search and rescue and oil spill response capability
- Storms - Decreased ice increases fetch so nearshore storm surges and waves increase
- Increased temperature gradient across the seas will also increase storm strength



Tropical and Temperate Sea Routes

- Emergency Response - Increased frequency and intensity of storms may limit ability to respond to an incident thereby increasing its danger, severity and implications
- Storms - Cyclones will extend poleward from the tropics and increase in strength
- Increased vessel sizes will be susceptible to larger power storms

Ports

- Sedimentation - Sea level rise and increased precipitation intensity will affect sedimentation rates in rivers and shores impacting port traffic for dredging or simple groundings
- Thawing Permafrost - Remote northern ports will be affected by unreliable land support and supply

1 year project

University of Washington, School of Marine and Environmental Affairs

PROJECT

- Identify emerging risks from marine transportation and response challenges they represent.
- As shipping routes and products change, new risks are emerging. The challenge facing spill preparedness and response organizations is to understand how to best prepare for efficient and effective response to these emerging risks.

Outcome: three Master's thesis, final report available online, and brochure summarising the keys results distributed to shipowners

RESULTS

- (i) Developing technology (LNG propulsion, compromised cybersecurity, ...)
- (ii) Changing trade (Arctic trade route, mega-containerships, ...)
- (iii) Changing environment (increasing storm intensity, permafrost, ...)

Timescales for Environment Drivers of Change		
Changing Environment Pressures	0 Years	20+ Years
Increased use of Arctic Trade Routes	[Red arrow pointing from 0 to 20+ Years]	
Introduction of Mega-Containership	[Red arrow pointing from 0 to 20+ Years]	
Increased Usage of Bulk Carriers to Transport Hazardous Material	[Red arrow pointing from 0 to 20+ Years]	

2017 R&D AWARD WINNER - REAL SPILL RESPONSE GAME



2-year project

Shanghai Maritime University, team of 6 including 4 master s students

PROJECT

- Online interactive tool to facilitate oil spill response exercise.
- Accessible by multiple trainees at the same time.
- Seven roles to choose from, the actions are prompted by the training tool, based on the information input by the trainer.
- Players actions influence the development of the scenario, and players can communicate with each other and the trainer.
- The actions taken will be recorded and the players will receive a feedback at the end of the 'game'.

AIMS

The system focuses on crisis management ability rather than technical skill and operational activity during emergency response.

RSRG aims to improve and test three types of essential crisis management ability.

- 1) Situational awareness
- 2) Decision making
- 3) Coordination

The goals of RSRG are:

- to build a virtual but realistic environment
- to provide various emergency response positions with role playing game
- to monitor actions of all participants and to evaluate performance for after action review in an easy and more objective way

OTHERS ITOFP R&D AWARD WINNERS



2013: SLAM
1 year project (Postdoc)

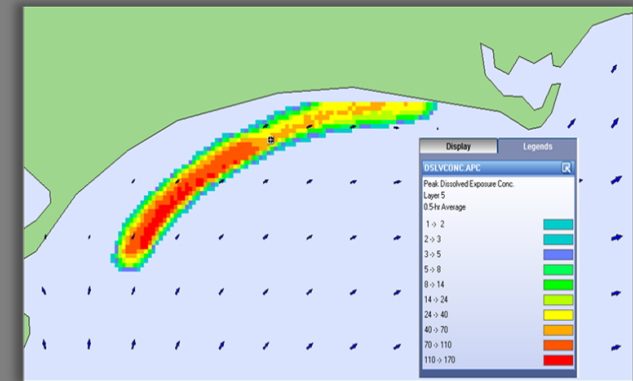


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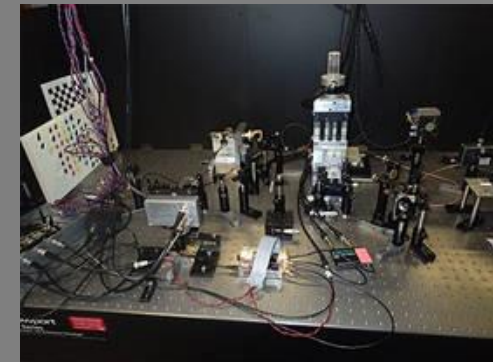
2014: FAMERR
2 year project

Provide better advice regarding monitoring and impact assessment during marine incidents and how this may be influenced by local conditions.

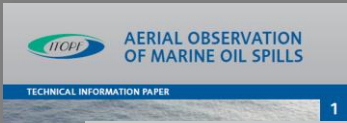
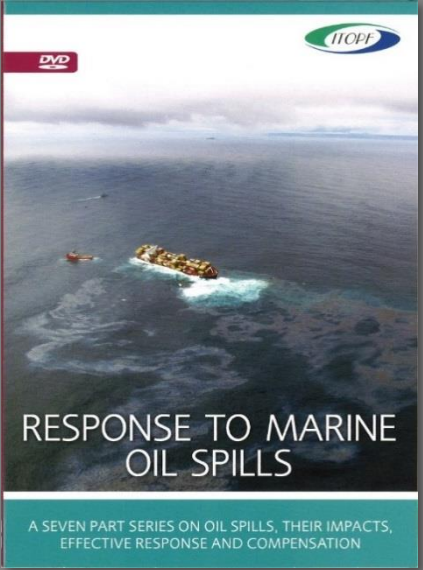
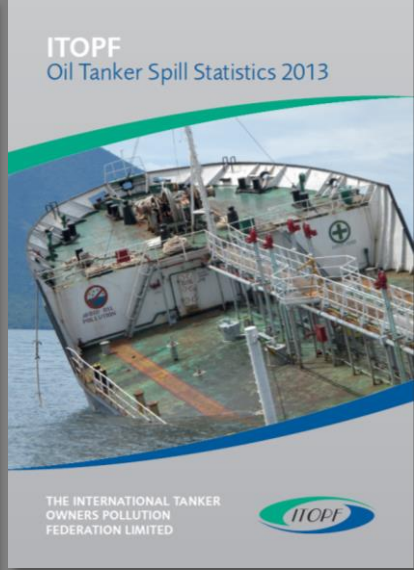


2016: ROSDAM
1 year project (Postdoc)

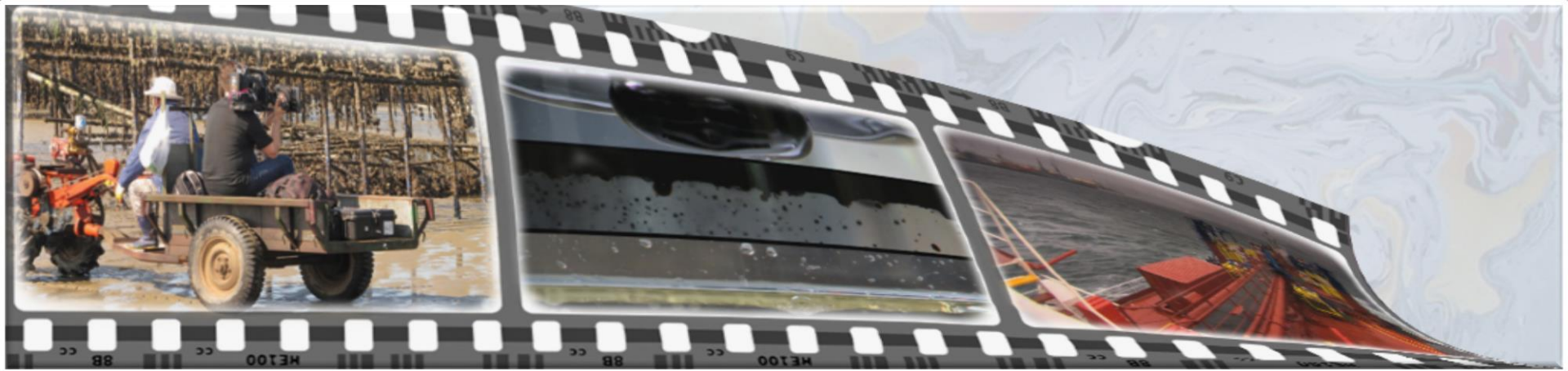
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MORE INFORMATION

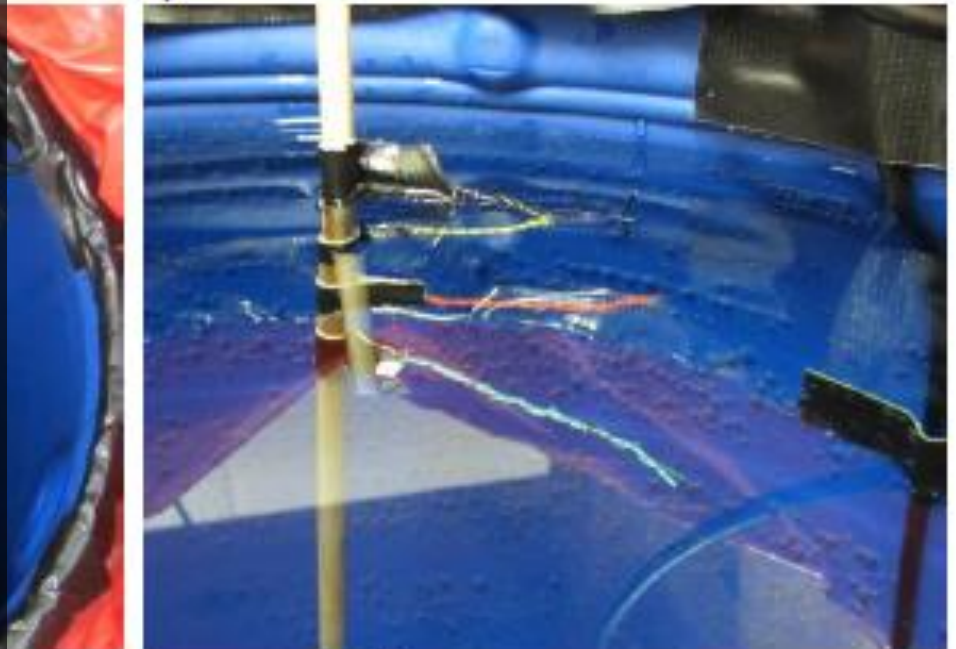
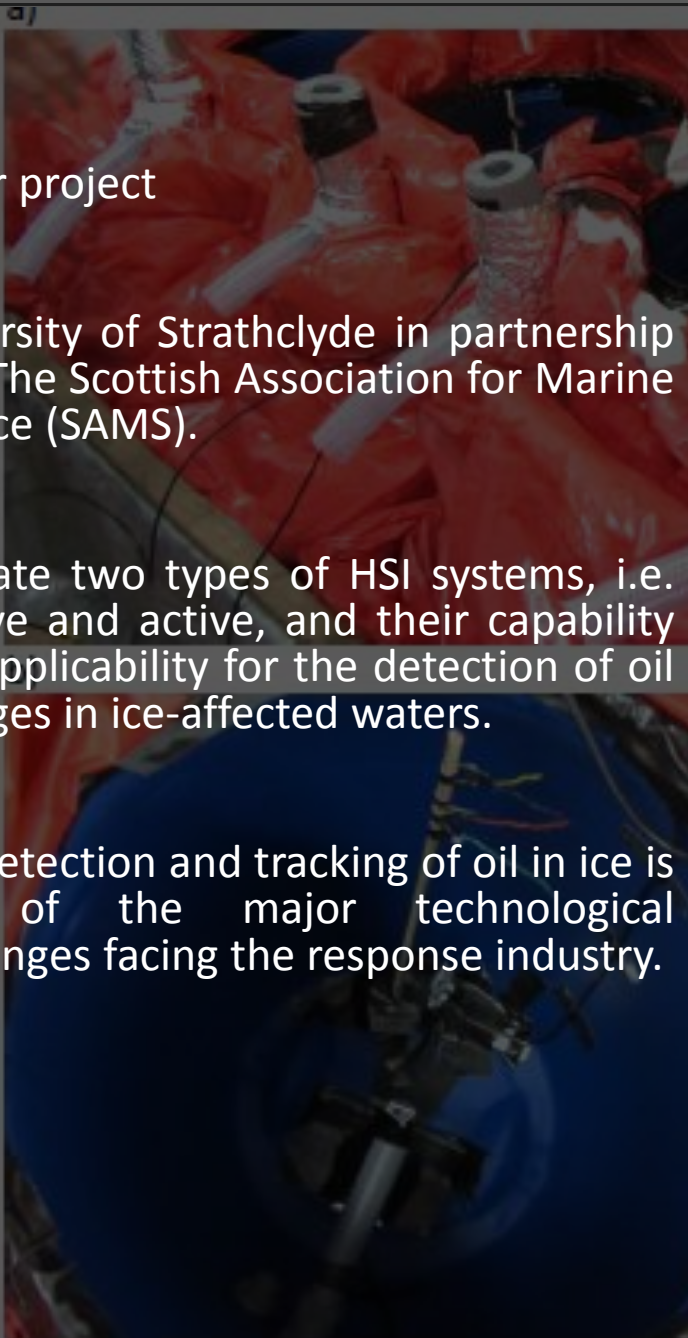


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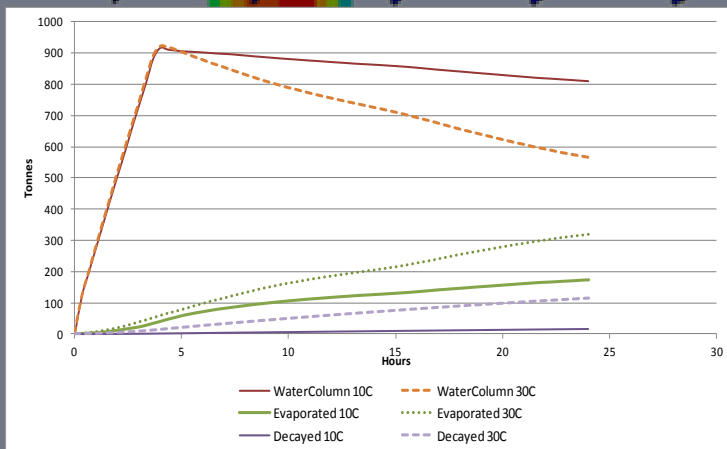


2016 R&D Award winner: ROSDAM

- 1 year project
- University of Strathclyde in partnership with The Scottish Association for Marine Science (SAMS).
- Evaluate two types of HSI systems, i.e. passive and active, and their capability and applicability for the detection of oil spillages in ice-affected waters.
- The detection and tracking of oil in ice is one of the major technological challenges facing the response industry.



- 2 year project
- To provide better advice regarding monitoring and impact assessment during marine incidents and how this may be influenced by local conditions.
- Determine realistic spill profiles for two chemicals, aniline and butyl acrylate, so as to improve decision-making for spills in different geographic areas and seasons.



2013 R&D Award winner: SLAM

- 1 year project (post-doctoral)
- Development of a novel 'back-pack' system to track rehabilitated oiled birds without compromising their well-being.
- To date, there is still the need to determine the real success of efforts to rehabilitate oiled birds and to minimize impacts to their populations.
- Fabrication of silicone-based harness based on 3D design and printing technology to ensure the system is specifically adapted to most seabird species despite their differences in morphology, behaviour and lifestyles.
- Assessment of the reaction of captive and wild birds (guillemots and lesser black backed gulls) to this attachment system (harness plus electronic devices used to monitor animals such as GPS, VHF transmitters...).

