ITOPF's Spill Response During the Pandemic

COVID-19: A POSITIVE EXPERIENCE?

Richard H. Johnson, Technical Director

Petroleum Association of Japan Symposium

22 Feb 2022


Challenge: Providing a safe working environment

ITOPF Emergency Response During COVID-19

Border closures

Flight options – commercial and private charter.

Response arrangements under COVID-19

Support & medical care in-country

In-country travel options

Additional risk assessments

Appropriate PPE

Buddy system on site

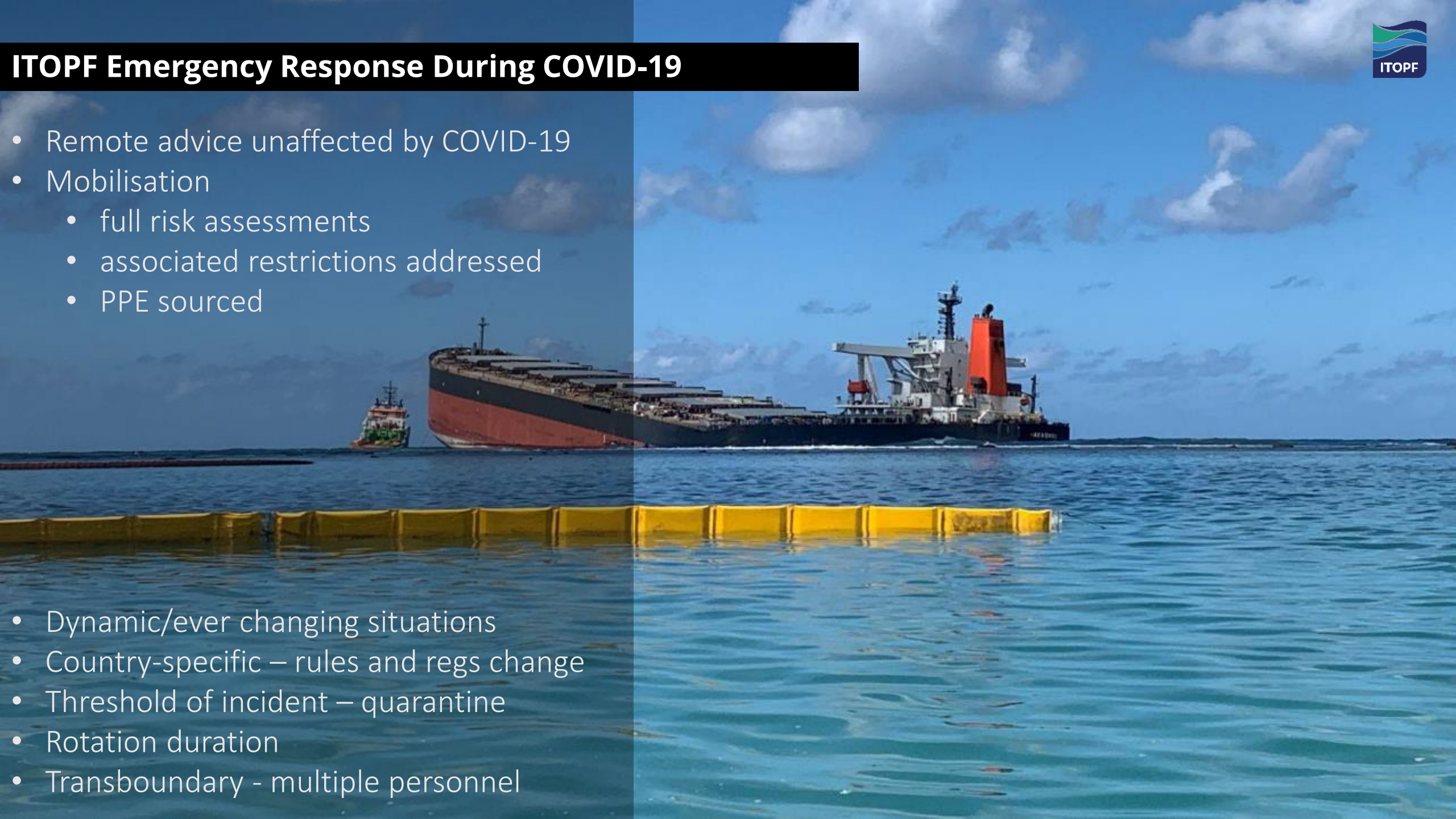
Technical advisors in good health

Awareness of quarantine rules in UK and abroad

Remote working in hotel on arrival

ITOPF Emergency Response During COVID-19

- Remote advice unaffected by COVID-19
- Mobilisation
  - full risk assessments
  - associated restrictions addressed
  - PPE sourced

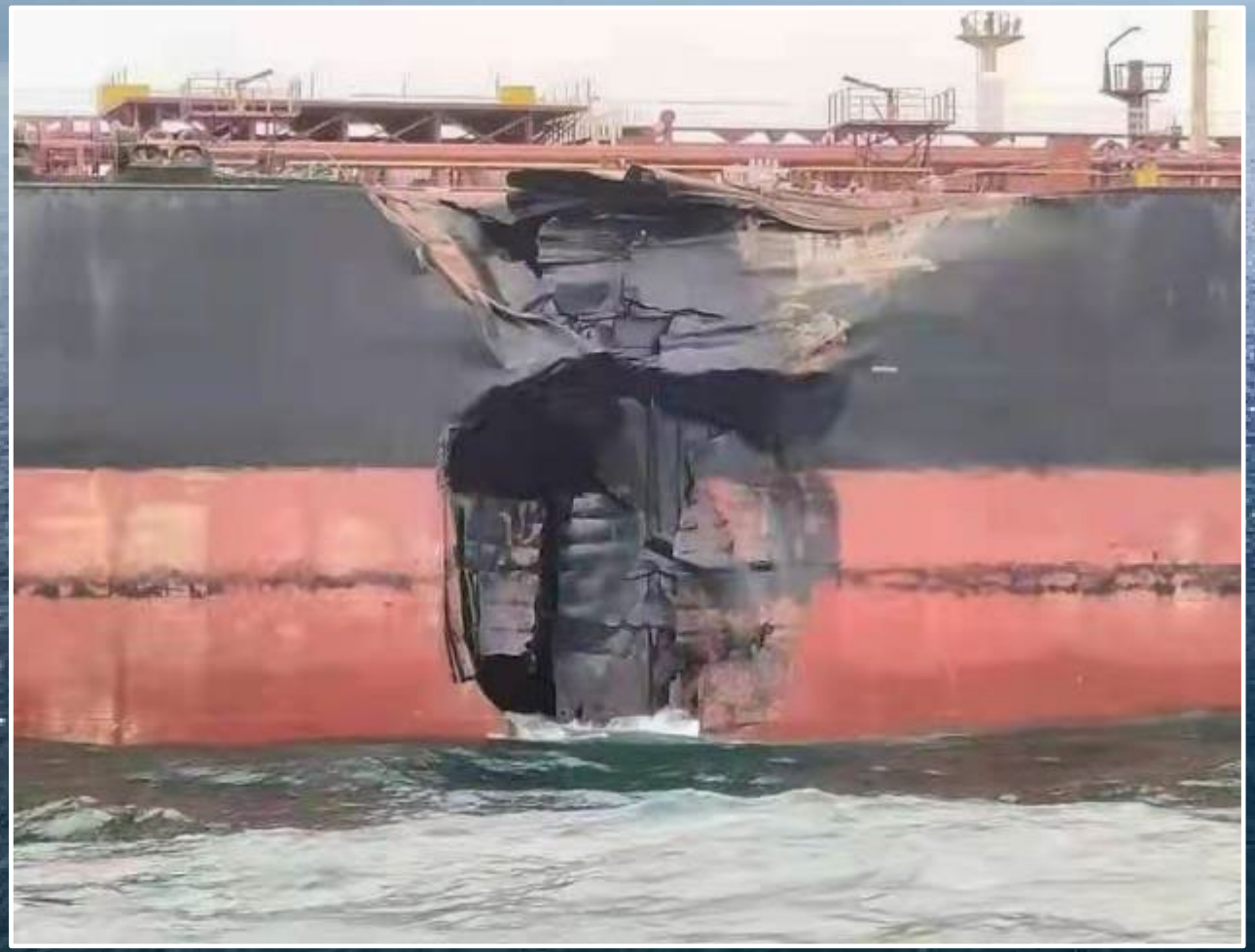


- Dynamic/ever changing situations
- Country-specific – rules and regs change
- Threshold of incident – quarantine
- Rotation duration
- Transboundary - multiple personnel

SPILL
RESPONSE

ITOPF Remote Advice in COVID-19 Era (Jan 2020- present)

- 83 Remote Advice/Information Cases



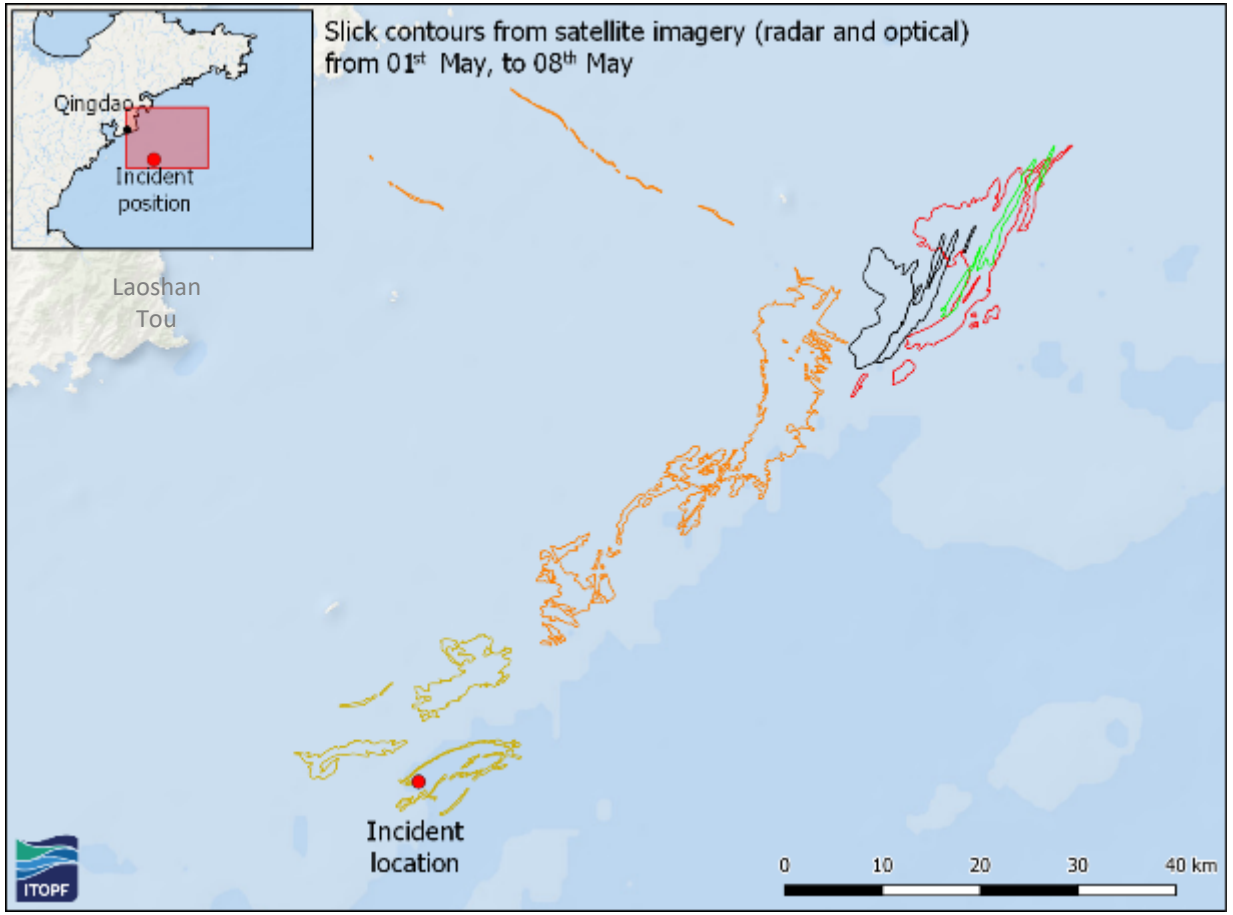
A SYMPHONY c/w SEA JUSTICE, Qingdao, PR China, 27th April 2021

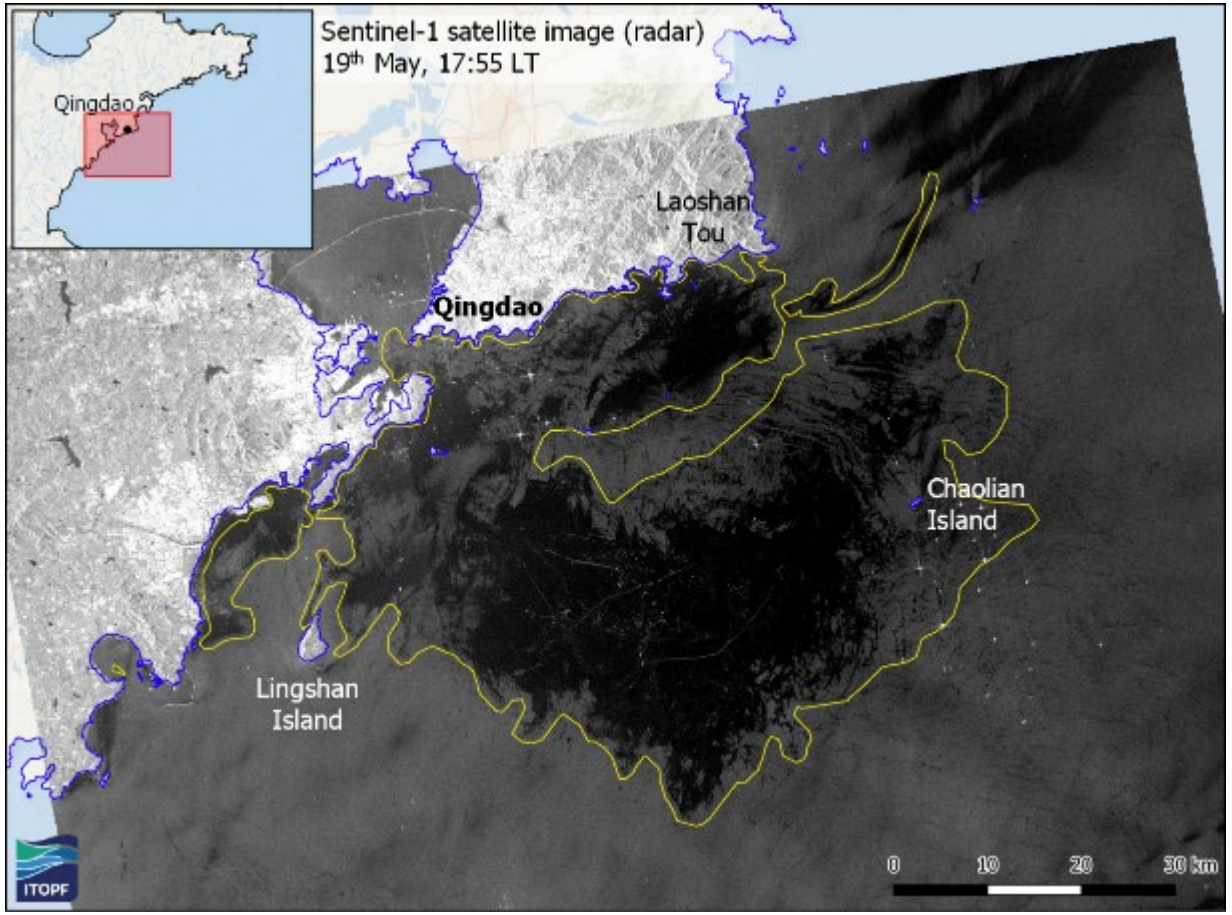
- Suezmax – 150,000 DWT
- 9,500 MT (one tank)
- Oil type – unknown
- 1200 + fishing vessels at sea (>7 weeks +)
- 32 SPRO's
- **Covid restrictions – no ITOPF entry**
- ITOPF heavily involved remotely
- CLC limit – circa US$ 74 million
- Environmental damage?
- Fisheries?

A SYMPHONY – Remote Advice

Remote Sensing (MMM group)

- Assisted with satellite imagery interpretation
- Instructed surveyors to ground truthing where the images indicated shoreline oiling.

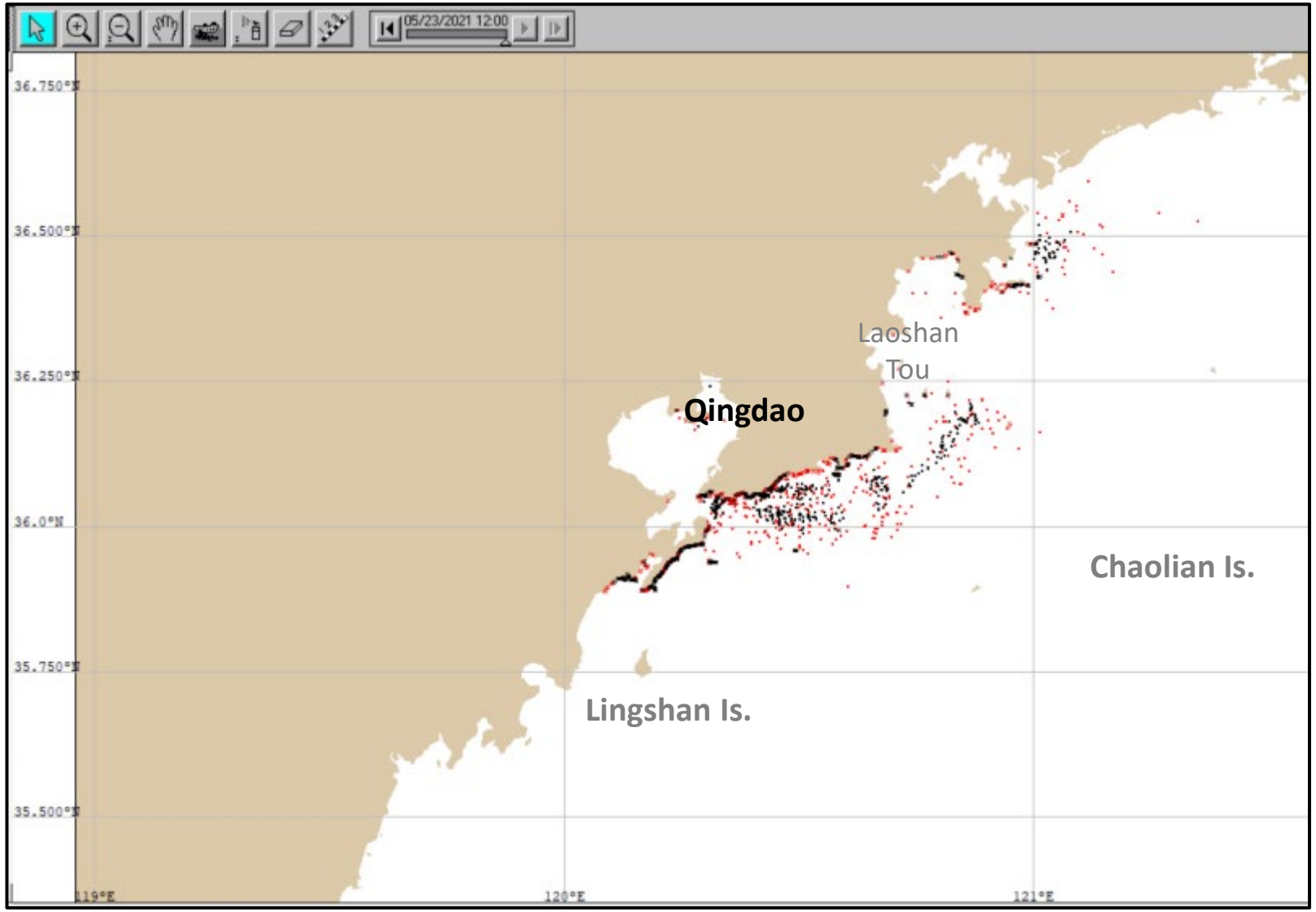




A SYMPHONY – Remote Advice

Remote Modelling

- Provided Gnome outputs to assist planning
- Aerial surveillance recommended by ITOPF



A SYMPHONY – at sea pollution /response

- Dispersant mis-use

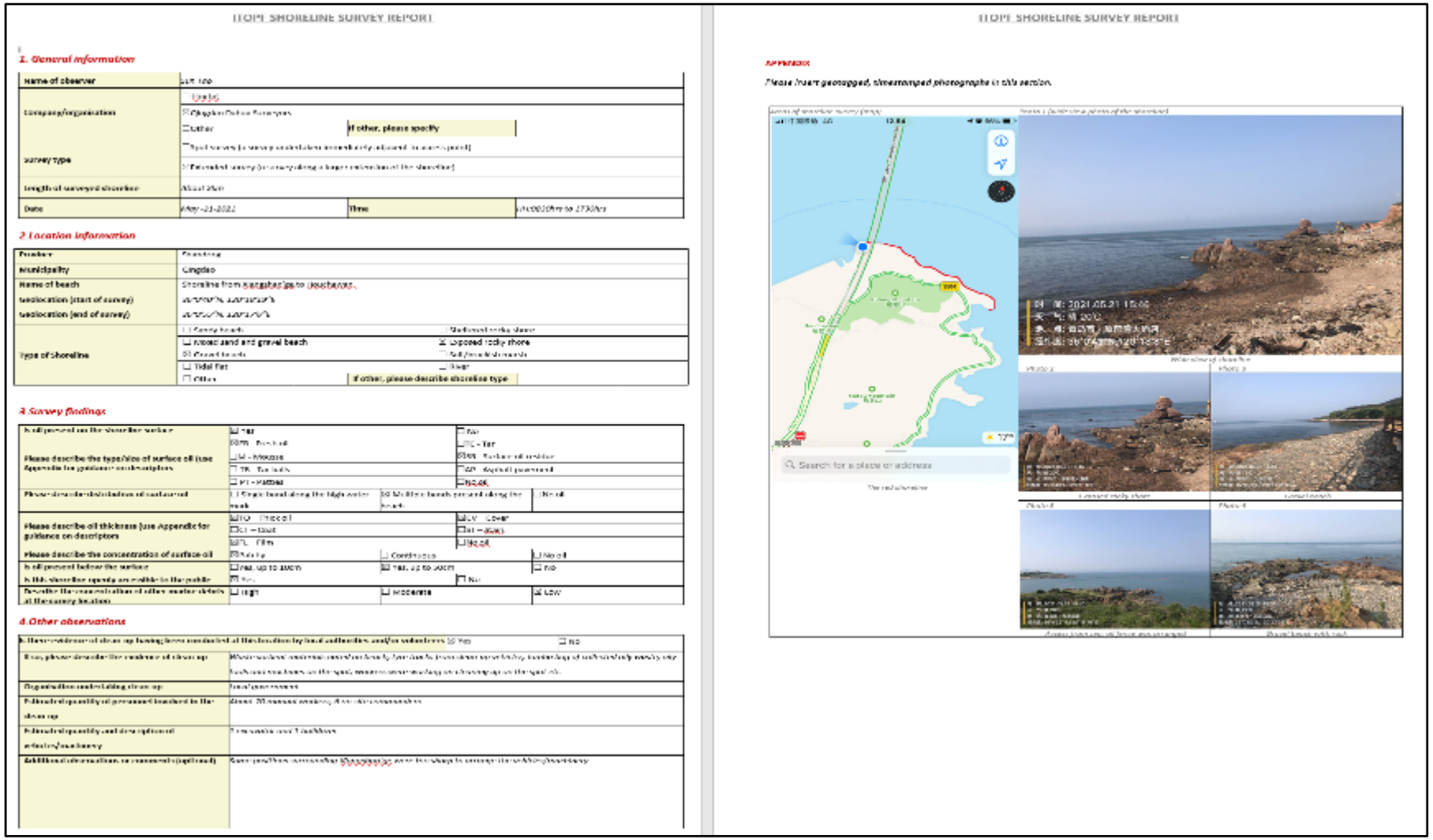
- Adsorbent mis-use

ITOPF provided advice through correspondents/surveyors to MSA

A SYMPHONY – Remote Advice

Remote Surveying (MMM)

- ITOPF's templates provided to shoreline surveyors


ITOPF SHORELINE SURVEY REPORT

1. General information

Name of observer			
Company/organization	☑		
	☐ Other	If other, please specify	
Survey type			
Length of surveyed shoreline			
Date		Time	

2 Location information

Province	
Municipality	Qingdao
Name of beach	
Geolocation (start of survey)	
Geolocation (end of survey)	
Type of shoreline	☐ ☑ ☐ ☑ ☐ ☐
	If other, please describe shoreline type

3 Survey findings

Is oil present on the shoreline surface	☑	☐	
Please describe the type/size of surface oil (use Appendix for guidance on descriptors	☐ ☑ ☐ ☐ ☐ ☐	☐ ☐ ☑ ☐ ☐ ☐	
Please describe the location of surface oil	☐	☐	☐
Please describe oil thickness (use Appendix for guidance on descriptors	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	
Please describe the concentration of surface oil	☐	☐	☐
Is oil present below the surface	☐	☐	☐
Is this shoreline openly accessible to the public	☐	☐	
Describe the accumulation of other marine debris at the survey location	☐	☐	☑

4 Other observations

Is there evidence of clean up having been conducted at the location by local authorities and/or volunteers	☐ ☐
If so, please describe the evidence of clean up	
Organization conducting clean up	
Estimated quantity of personnel involved in the clean up	
Estimated quantity and description of materials/machinery	
Additional information, or comments (optional)	

ITOPF SHORELINE SURVEY REPORT

APPENDIX

Please insert geotagged, timestamped photographs in this section.

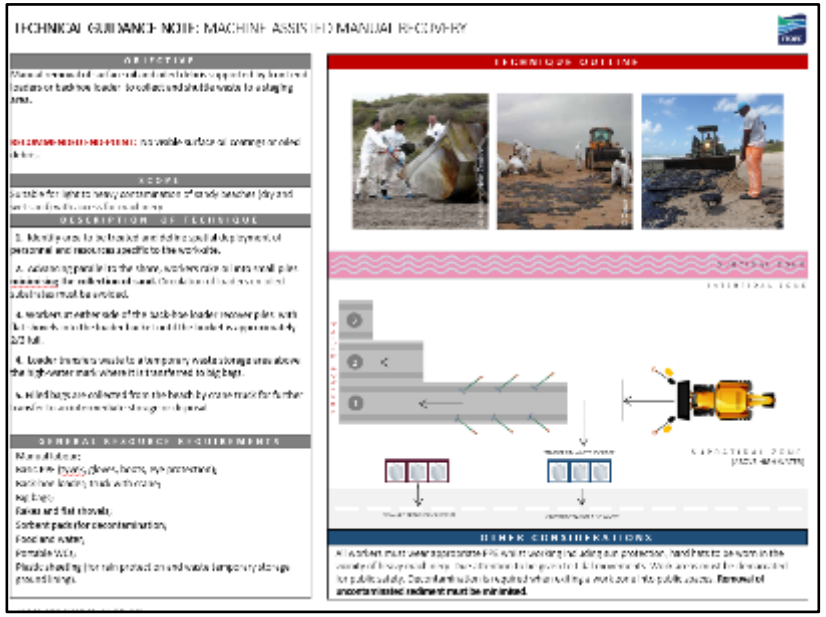
ITOPF History

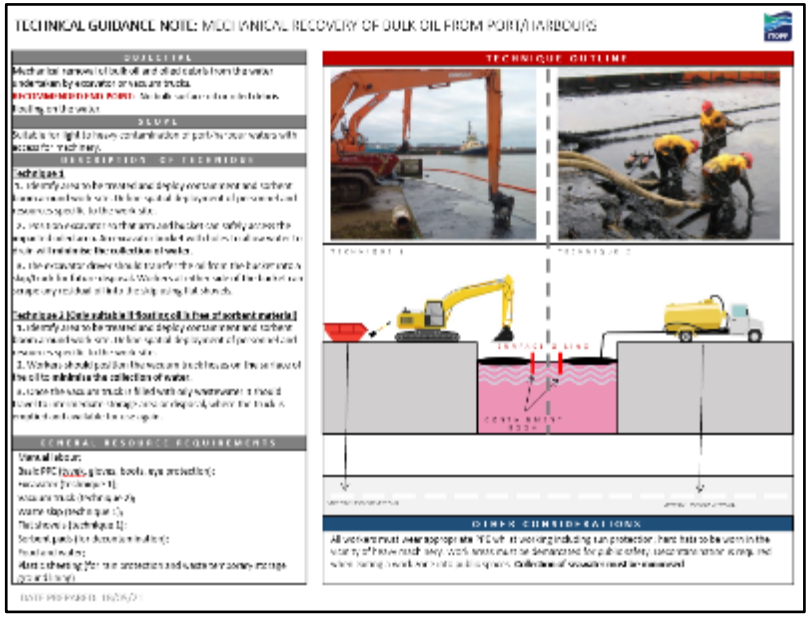
- Built on apps/platform used in previous incidents
- Ever – evolving/improving
- Long distances – multiple surveyors, not just ITOPF
- How to share information

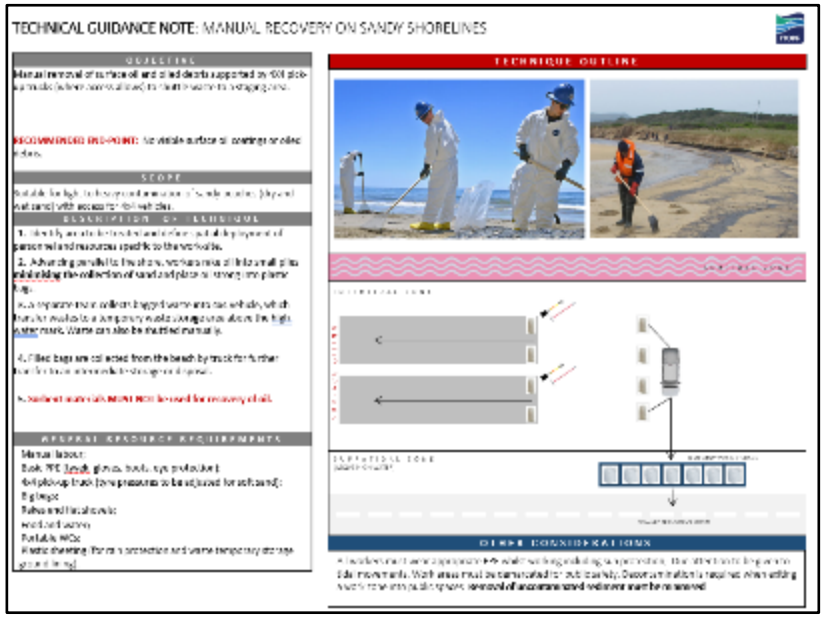
A SYMPHONY – Remote Advice

Remote Clean-up Advice

- ITOPF **technical guidance notes** provided to response teams
- Completed **ITOPF survey reports**
  - confirmed contamination
  - showed techniques used







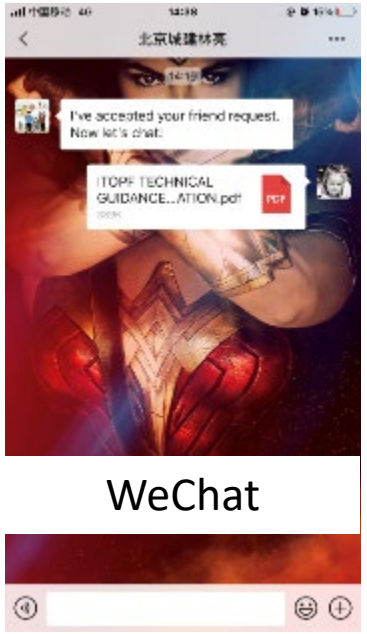
- approx. 70 km contaminated shoreline
- manual and mechanical clean-up methodologies
- Clean-up appeared to be mostly technically reasonable

A SYMPHONY – Remote Advice

Remote Mapping (MMM)

- Use of GIS platform to assist planning/monitoring

A SYMPHONY – shoreline pollution /response



WeChat

ITOPF Spills Attended in COVID-19 Era (Jan 2020- present)

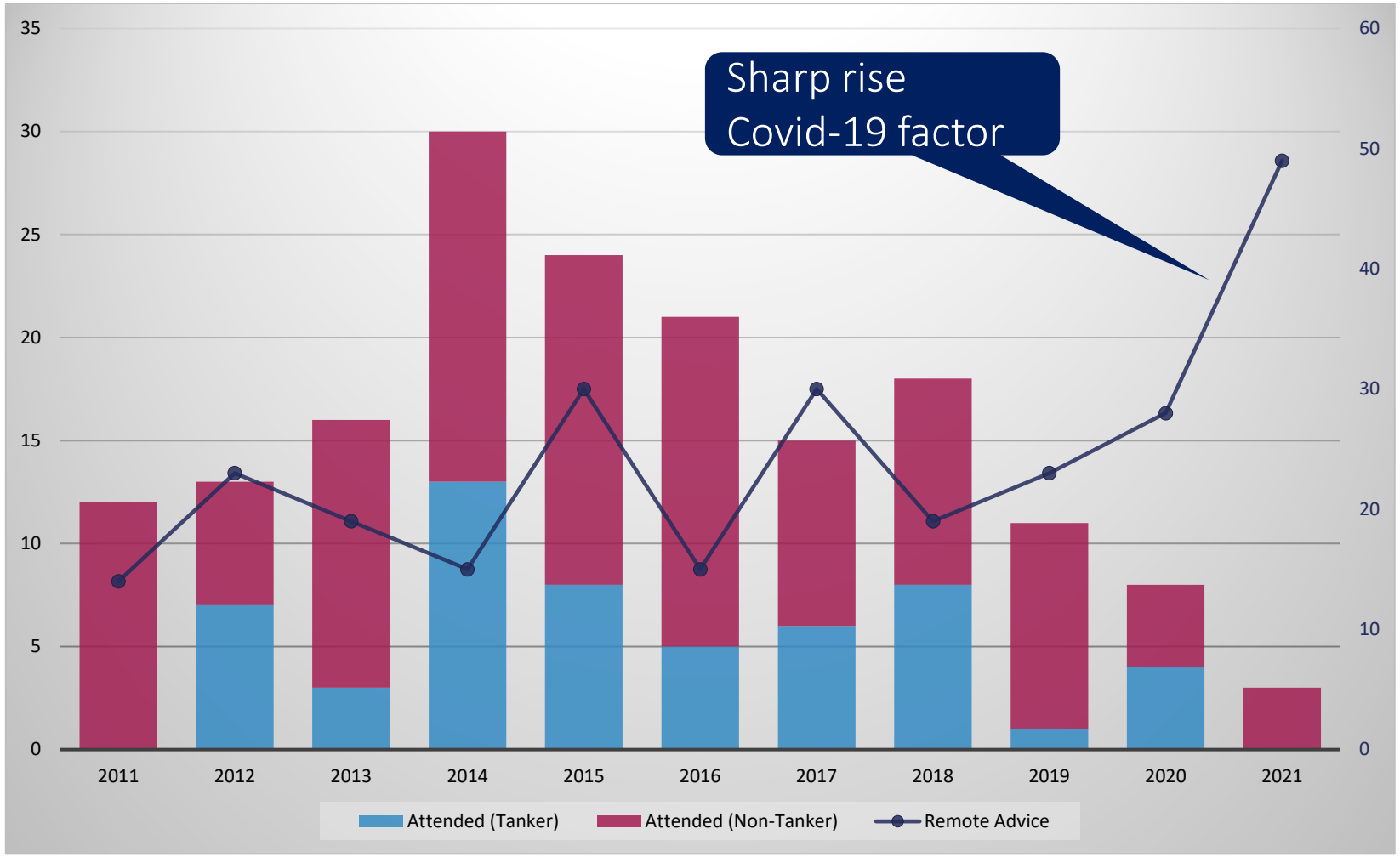
		Date of incident	Name of ship	Location	Nature of incident	GT	DWT	Product spilt	Volume spilt
		10 Oct '17	MSC SUSANNA	Durban, South Africa	Lost containers	107,849	117,095	Nurdles	49.5 MT
		08 Sept '19	GOLDEN RAY	Brunswick River, Georgia, USA	Grounding	71,178	20,995	Bunker/cargo	unknown
		04 Jan '20	STONE I*	Enstead Oil Terminal, Denmark	Other	23,248	37,889	LSVGO	Unknown
		26 Feb '20	STELLAR BANNER	Maranhão State, Brazil	Grounding	151,596	300,660	VLSFO	Unknown
		23 Mar '20	KAAMI	Isle of Skye, Scotland, UK	Grounding	2,715	4,293	MGO	<63 MT
		25 Jul '20	WAKASHIO	Off Pointe D'Esny, Mauritius	Grounding	101,932	203,130	VLSFO	1,000 MT
		03 Sep '20	NEW DIAMOND*	South coast of Sri Lanka	Explosion/fire	160,079	299,986	VLSFO, LSMGO	Unknown
		18 Aug '20	South Africa incident	West & Eastern Cape South Africa	Lost containers			Nurdles	7 containers – 175 MT
		12 Feb '21	AM GHENT	Port of Gibraltar	Bunkering ops	51,265	93,168	VLSFO	0.85MT
		20 May'21	X-PRESS PEARL	Nr Colombo, Sri Lanka	Fire and sinking	31,629	36,150	DG, Nurdles, Oil	unknown
		28 Aug '21	SEABIRD	Myrtoan Sea, Greece	Sinking	4,337	7,650	VLSFO	unknown
		15 Jan'21	MARE DORICUM	Callao, Peru	Discharge ops	81,499	158,319	Buzios crude oil	1,000 MT

SPILL RESPONSE

ITOPF Spills Attended in COVID-19 Era (Jan 2020- present)

SPILL
RESPONSE

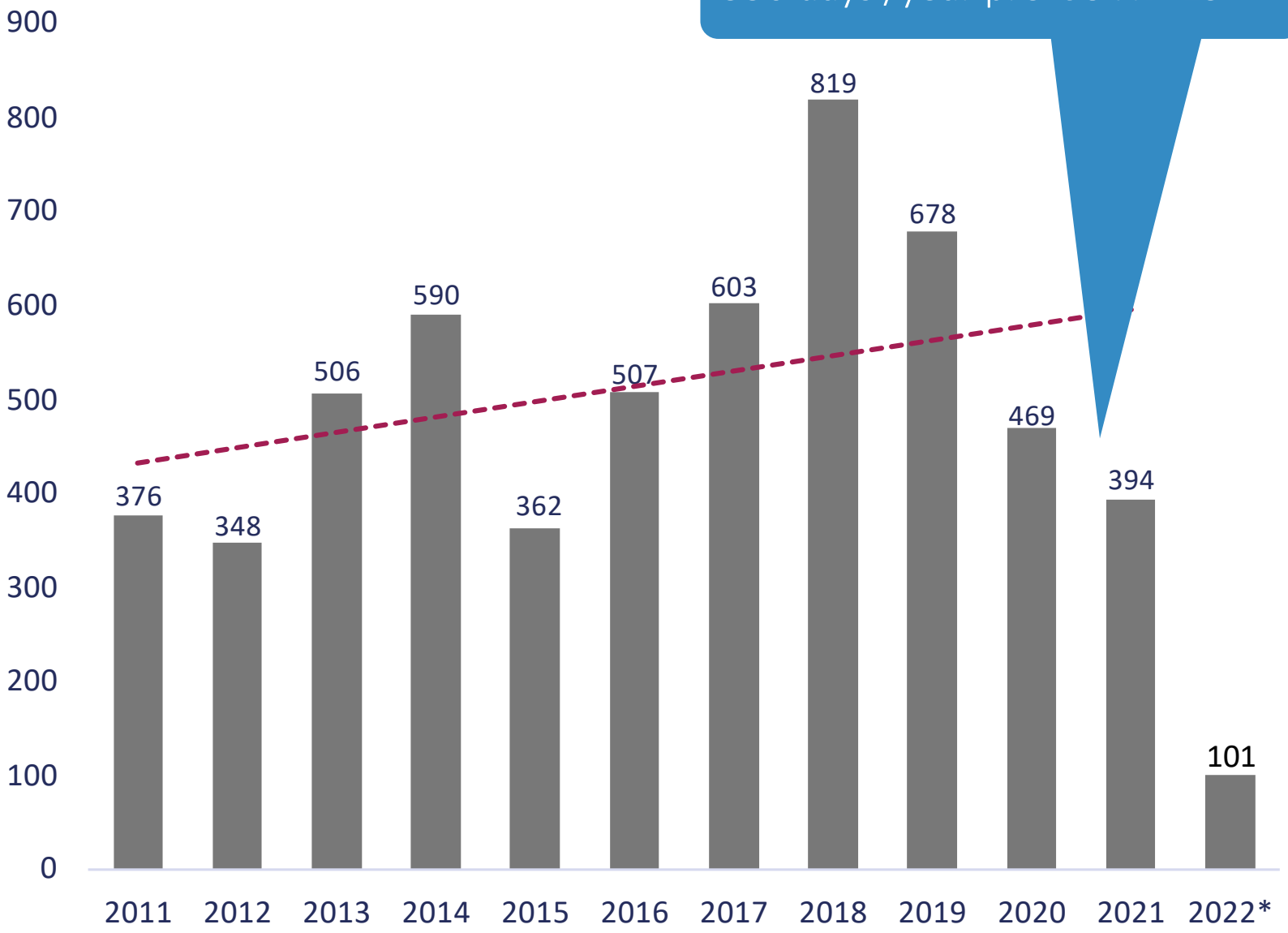
ITOPF On-site attendance and Remote advice cases (2010-2021)



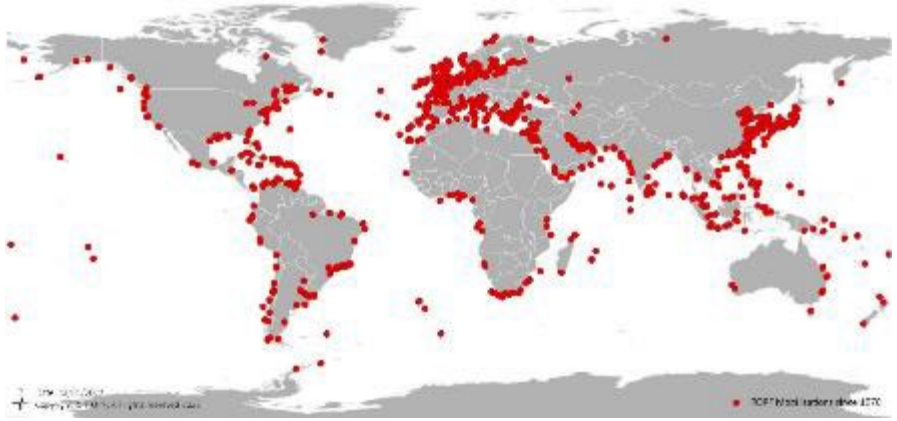
ITOPF

ITOPF
SPILL-DAYS

550 days /year pre-COVID-19



10 Years



> 825 incidents

in **100** countries

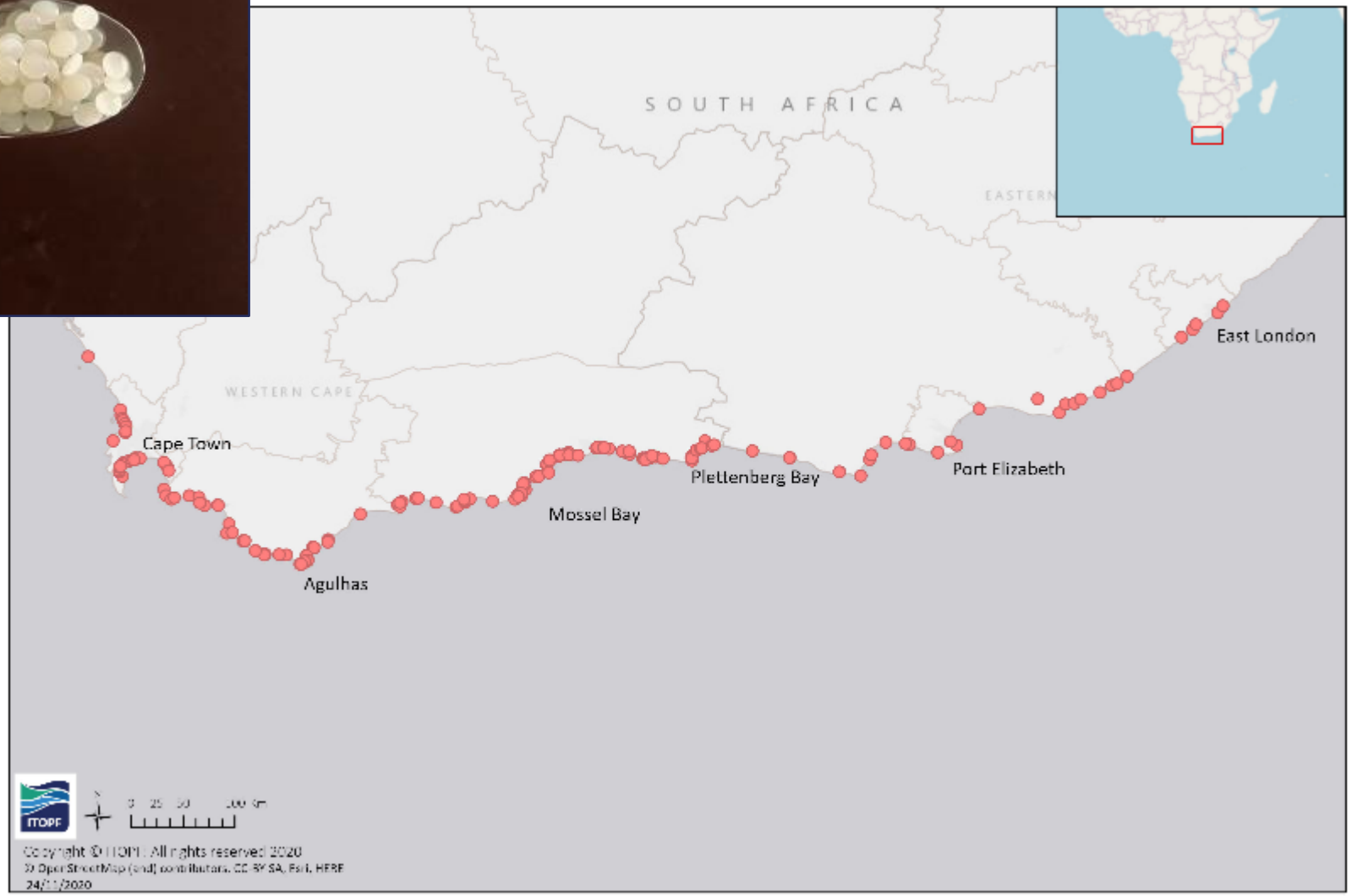
Avg. **20** spills/yr

ITOPF Spills Attended in COVID-19 Era (Jan 2020- present)

ITOPF Spills Attended in COVID-19 Era (Jan 2020- present)

- 18th August 2020
- 34 nm off South Africa
- 31 containers were lost overboard
- Seven contained nurdles
- Each container ≈25 MT of nurdles
- Several breached.
- 5th Oct. initial stranding
- 4th Nov. clean-up commence
- Clean- up continues

- 2000km of coastline



WAKASHIO
CASE STUDY

- Capesize Bulk carrier
  - 101,932 GT
  - 203,130 DWT
- In ballast
- *En route* - Singapore to Brazil
- Oil onboard:
  - 90 MT lube oil
  - 207 MT Low Sulphur Marine Gas Oil (LSMGO)
  - **3,894 MT Very Low Sulphur Fuel Oil (VLSFO)**

GROUNDING AT POINTE D'ESNY

25 JULY 2020

GROUNDING AT POINTE D'ESNY

25 JULY 2020

Source: MPF/PHS

GROUNDING AT POINTE D'ESNY

25 JULY 2020

Source: MPF/PHS

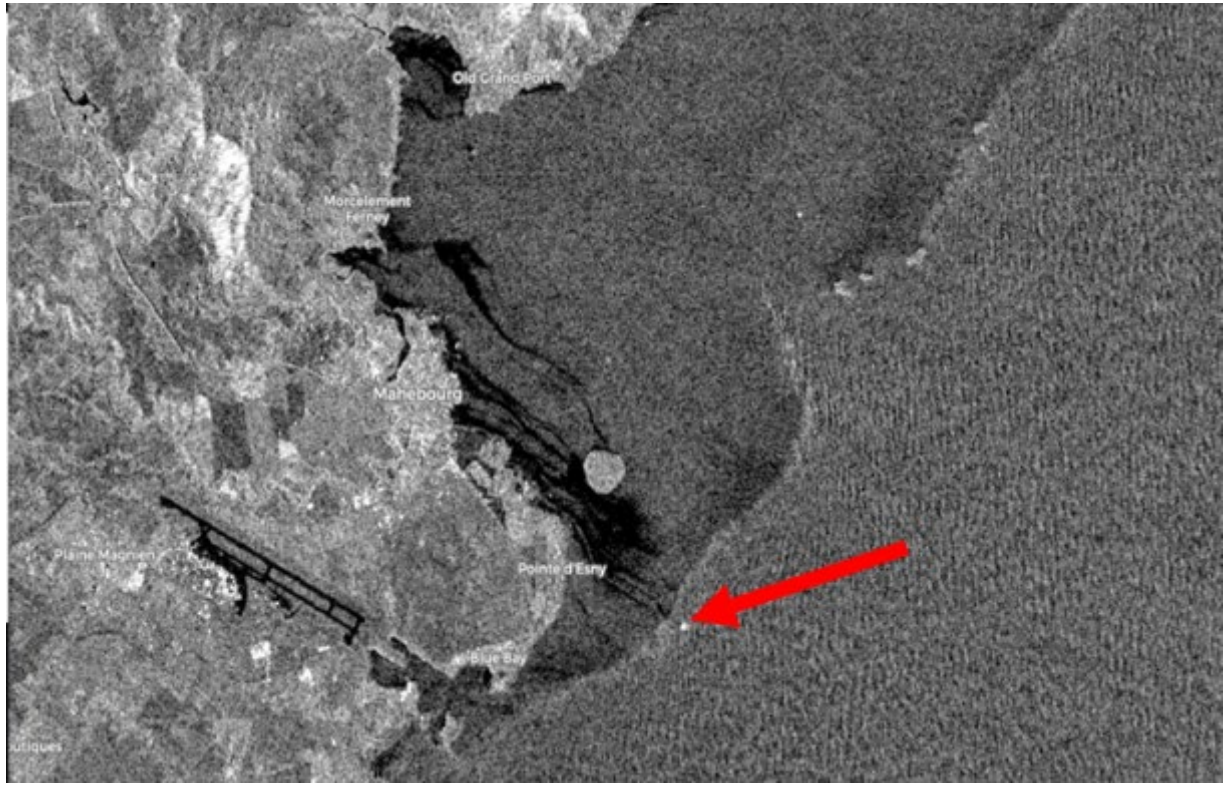
GROUNDING AT POINTE D'ESNY

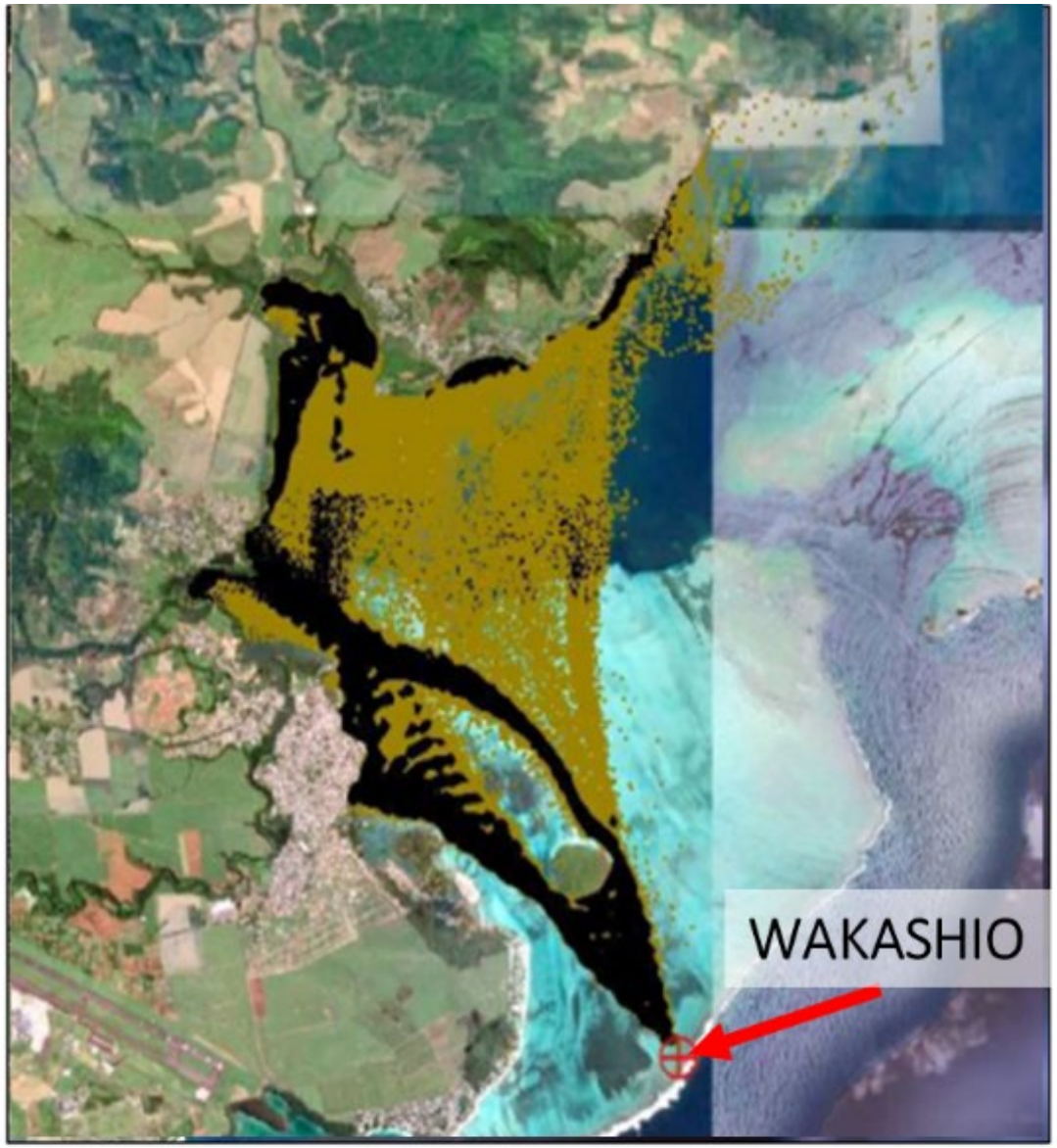
25 JULY 2020

Source: MPF/PHS

ITOPF

REMOTE SENSING
AND MODELLING





8:30am on August 6th to 8:30am on August 25th
Maximum concentration of floating oil

Project: R0079 - Mauritius Ship Spill

Scenario: Surface release of very low Sulphur Fuel Oil after a ship ran aground

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree
Date created: 25/08/2020

Legend
Spill location

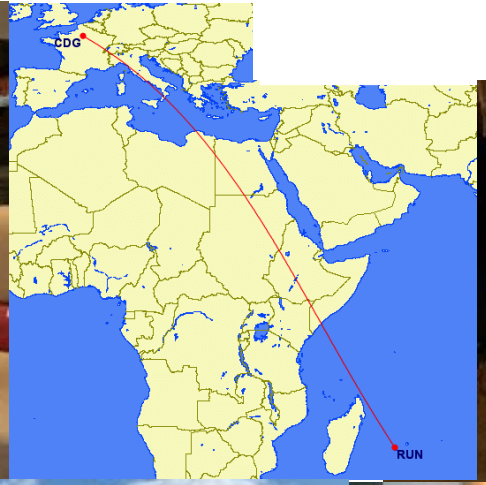
Maximum floating oil concentration [g/m²]
0.004 - 0.3
0.3 - 5
5 - 50
50 - 200
> 200

rps

ITOPF

COVID-19. Travel to Site

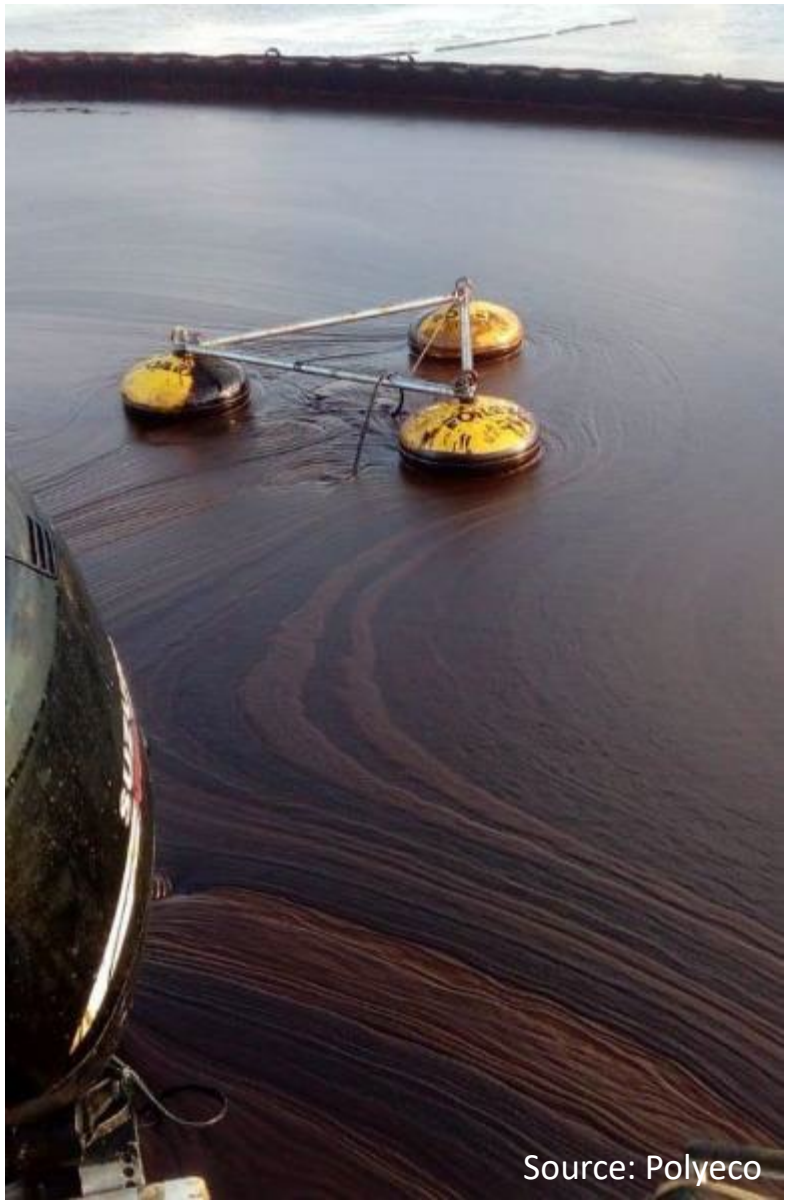
- Initial remote advice on grounding and response options
- Provided regular modelling and satellite imagery
- Mobilised 11th August
  - Borders closed
  - No commercial flights
  - Via Paris and Reunion
  - PCR
  - Chartered flight
  - Airport opened specifically
- COVID-19 Delayed permissions



INITIAL RESPONSE AT SEA


Source: MPF/PHS


Source: AFP


Source: Polyeco


Source: Polyeco


Source: Polyeco

ROLE OF ITOPF

- Initial remote advice
- Provided regular modelling & satellite imagery
- Mobilised –delay due to COVID & permissions
- Aerial surveillance
- Shoreline surveys
- Objective technical advice
  - in command centre & NCC (National Crisis Centre)
  - P&I, stakeholders, IMO interaction
- Significant international involvement
- ITOPF drafted detailed response plan
- Divided sites between contractors

  -Le Floch & Polyeco - Local workforce (~500 people)
- Five months on-site
- Claims/damage analysis ongoing

SHORELINE SEGMENTATION


SHORELINE
CONTAMINATION
ITOPF

SHORELINE CONTAMINATION

VLSFO
BEHAVIOUR

- Viscosity: 34 cSt at 50°C when fresh
- Low viscosity maintained for months
- Less sticky than conventional fuels
- Permeated deep into sandy sediment
- Infiltrated mangrove mud via animal burrows and root network

SHORELINE
CLEANUP TECHNIQUES

- Manual collection
- High volume low pressure flushing
- Hot water high pressure washing






Image Sources: Various NGOs, by Social Media

SHORELINE
CLEANUP TECHNIQUES

- Manual collection
- High volume low pressure flushing
- Hot water high pressure washing

KEY ISSUES

- Remobilisation
- Improvised boom
- Boom failure
- Coral damage
- Waste collection
- COVID

COVID-19. Limitations on-site

CHANGING REGULATIONS

- Border closed to foreigners and returning residents in Aug
- In isolation until results of 1st **PCR test** returned negative
- Accompanied by **Health Inspectors** during daily activities
- Rules on **social distancing & PPE**: mask, gloves, Tyvek suit
- In **quarantine** hotel until results of 14-day PCR test
- Regulations changed in late August to mandatory 8-day quarantine
- Country opened in September- mandatory in-room isolation for 8 days (still in quarantine for 14)
- In November **- 14 day in room isolation** due to a local case of Covid
- ***Covid +ve:*** *Communal ward in govt centre pending two –ve results, beyond 14 days, antibody test required.*

ITOPF

X-PRESS PEARL

CASE STUDY

Overview

X-PRESS PEARL, Colombo, Sri Lanka

- **Journey:** Hazira, India to Colombo, Sri Lanka
- **Incident**: Nitric acid fire
- **Date:** 20th May 2021
- **Location:** 10 km from shore, Port of Colombo.
- **No. of containers:** 1,486
- **Container contents:** 81 DG – 15 products, (nitric acid, sodium hydroxide, methanol), plastic nurdles, machinery, h' hold goods, food.
- **Containers with plastics (nurdles):** 422
- **Containers overboard:** unknown
- **Oil on board:** 255 M^3 VLSFO & 50 M^3 MGO

- **Immediate pollution:** fire, smoke, fumes, containers in water, plastics stranding in hrs
- **Oil:** No immediate release. Then slight sheen. Bunkers transferred/burned in fire of 800-900 °C

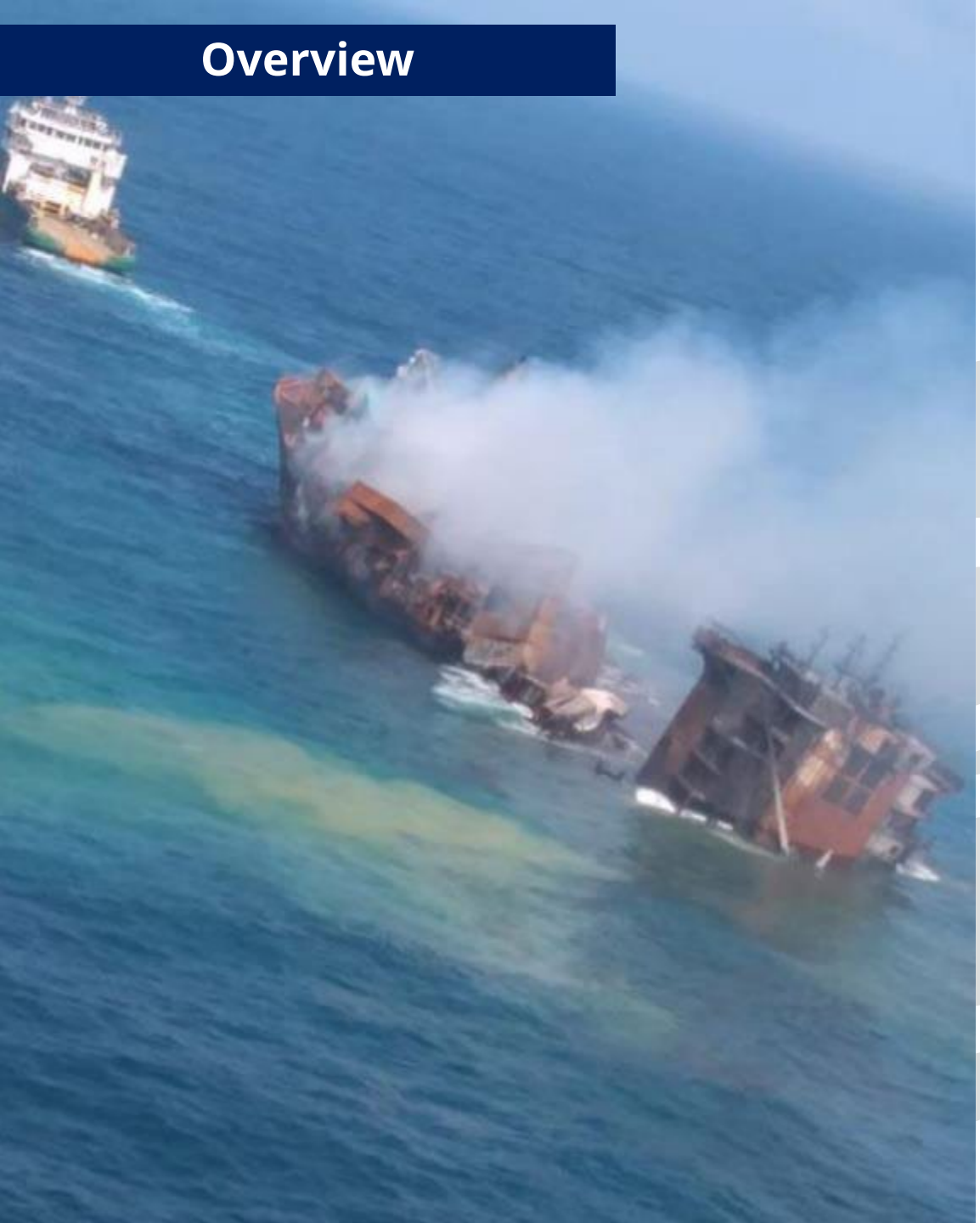
Overview

X-PRESS PEARL, Colombo, Sri Lanka

ITOPF logistics:

- Notified by Sri Lanka Coastguard
- In contact with P&I club very early
- Heavily involved remotely
- NEW DIAMOND experience
- Covid restrictions – complete Lockdown
  - Reassurance needed/met that we could survey/join meetings (otherwise no better than working remotely)
  - No commercial flights (1st June changed)
  - No quarantine needed
  - UK Red List, so hotel quarantine on return – mitigated
  - Self isolation in country (+ve exposure)
  - Risk assessments
  - Remain on site (Nine months continuous. Two people)
  - Extended (Two month stays)

Overview



X-PRESS PEARL, Colombo, Sri Lanka

ITOPF immediate actions:

- Cargo manifest – identified DG
- Characterised, provided info on fate and behaviour
- Modelled – aerial plume, trajectories of DG, potential oil, containers

ITOPF arrival

- **Date:** 2nd June 2021 (COVID-19 effects)

Initial Players/actors

- **Authorities:** Attorney General, Sri Lanka Navy and Coast Guard, India assistance. MEPA, NARA
- **Shipside:** Club and correspondent
- **Salvage:** Smit initially (sank 20m), Resolve for caretaking/containers (Monsoon). Wreck removal….
- **Clean up contractors: ITOPF** facilitated OSRL thru club

Overview

X-PRESS PEARL, Colombo, Sri Lanka

Other parties/issues

- Govt requested international assistance - urgent
  - But unclear what was needed
- British High Commission asked ITOPF for assistance
  - UK MCA, CEFAS
- UNEP involvement, EU task force (Cedre/ISPRA)
- EMSA

- Numerous contractors/manufacturers in contact
- ITOPF assisted drawing up plans and requirements

Nurdle Spill....

What are Nurdles?

- Pre-production resin pellets
- Raw building blocks of all plastic products
- Different polymers, shapes, sizes and colours
- Typically:
  - less than 5mm in diameter
  - 0.024-0.025 g in weight

Transportation

1 x Nurdle =
~0.025g

1 x Bag = 25kg

1 Bag = ~1,000,000 Nurdles

1 x Container = ~980 Bags

1 x Container = ~25MT

1 x Container = **~1,000,000,000 Nurdles**

Nurdle Spill….

- A lot of material moved in early stages
- 1000+ military personnel involved at height

Extent of contamination

Extent of contamination

Shoreline clean-up methods

Nurdlebergs

Shoreline clean-up methods

Shoreline clean-up methods

Manual recovery options….Trommels and Sieves

Shoreline clean-up methods

Nurdle Spill....

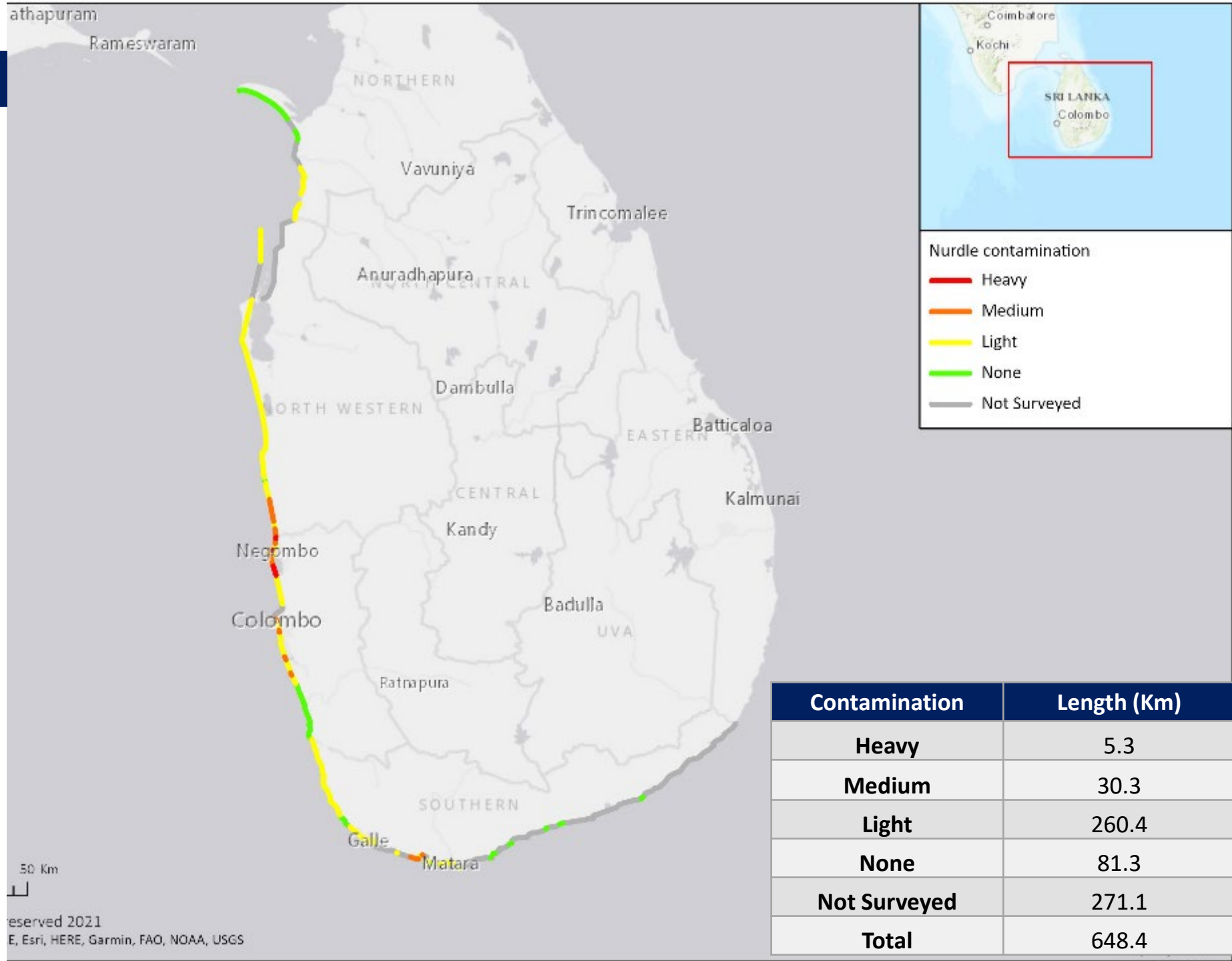
BEFORE

- Shoreline at Sarakkuwa

AFTER

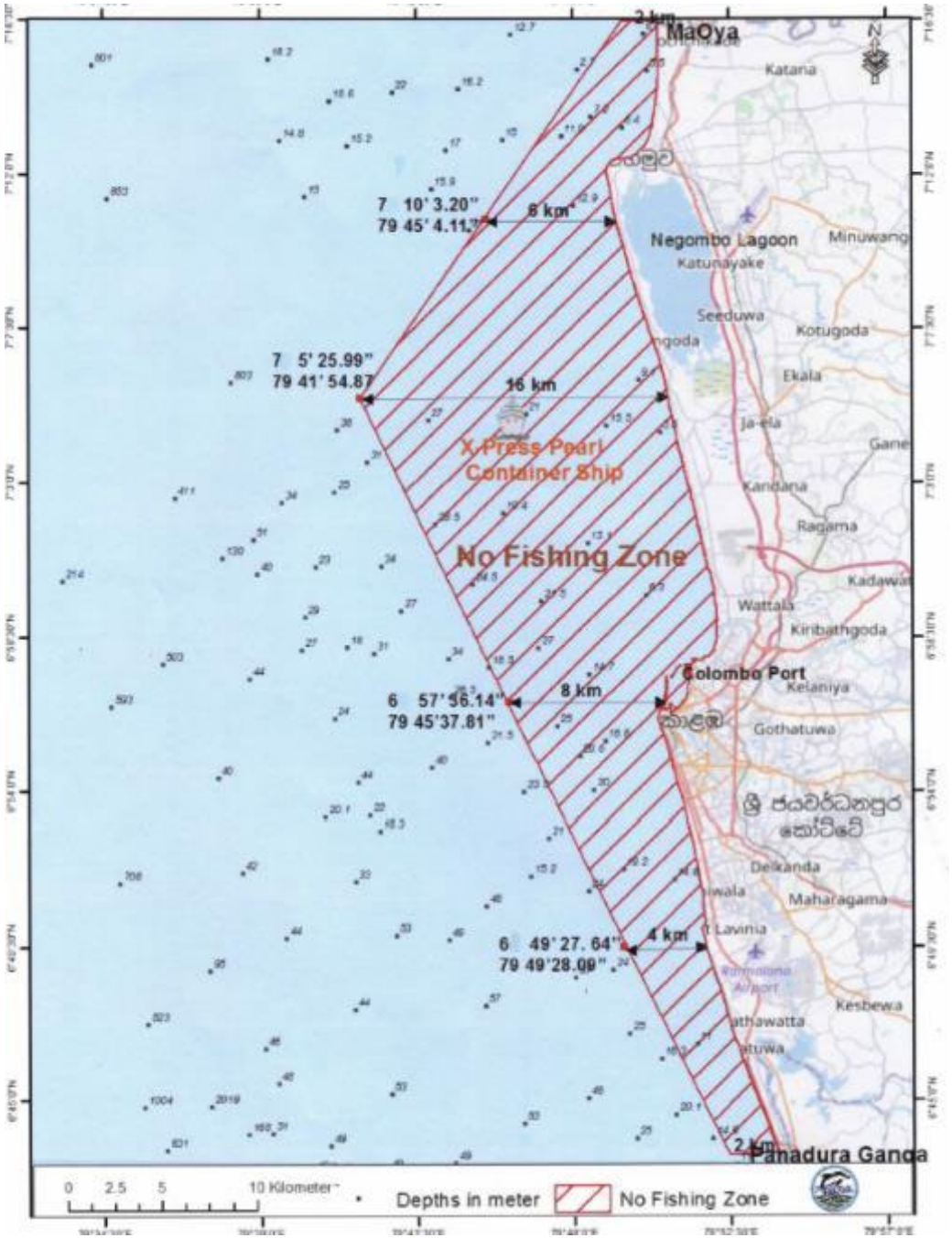
Extent of Contamination

- 300 km shoreline contamination
- Burned debris & nurdles



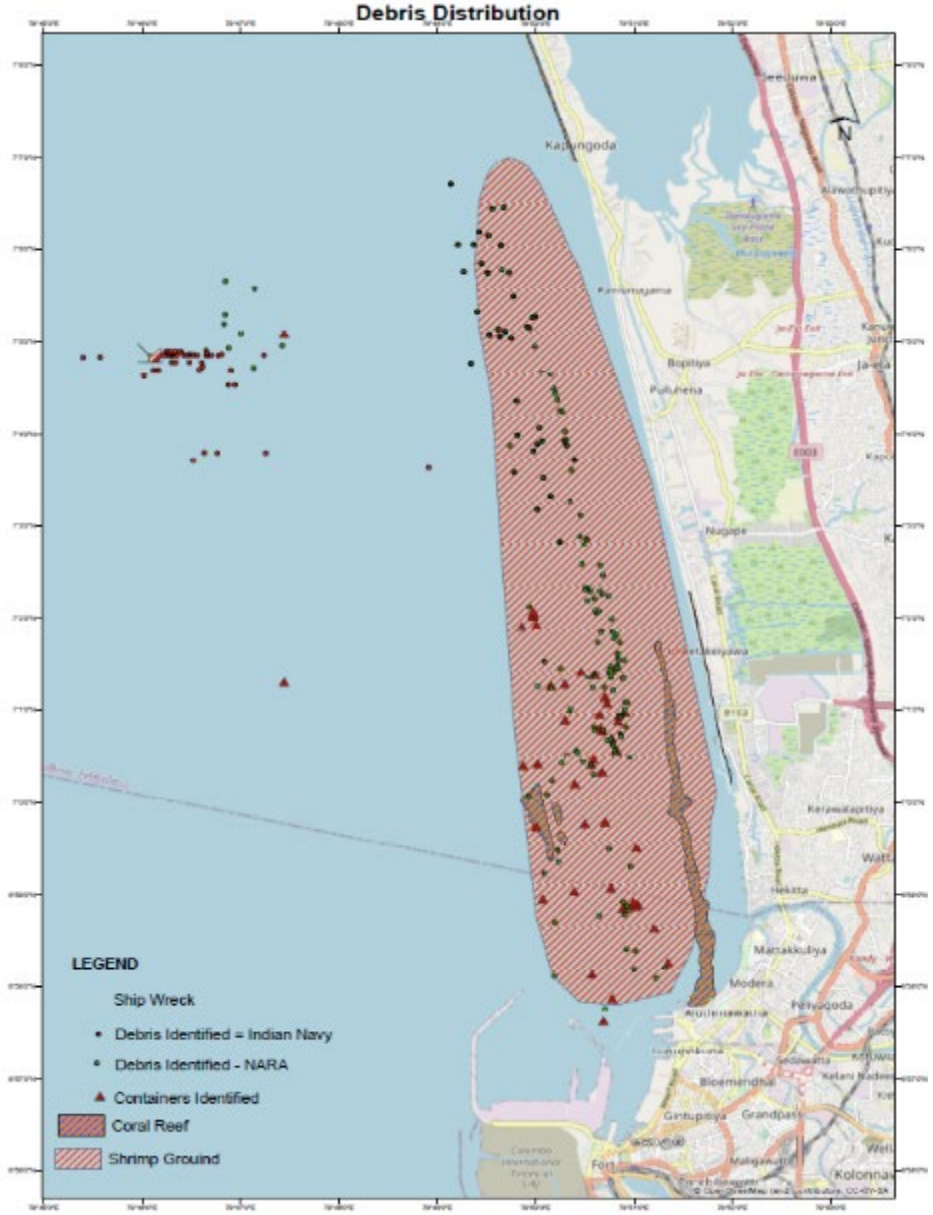
Contamination	Length (Km)
Heavy	5.3
Medium	30.3
Light	260.4
None	81.3
Not Surveyed	271.1
Total	648.4

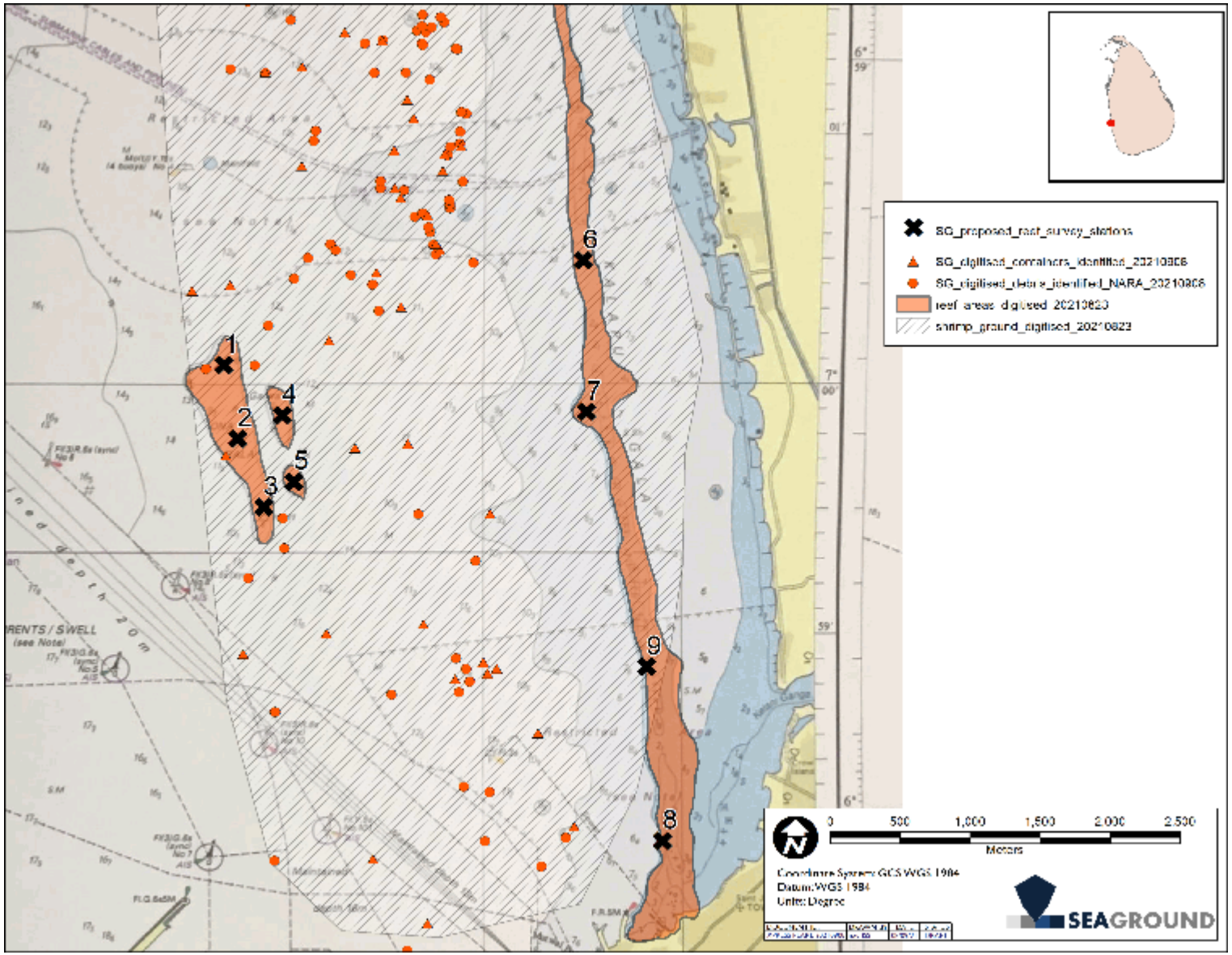
Fisheries


MaOya
Katana
Negombo Lagoon
Katunayake
Seeduwa
Kotugoda
Ekala
Ja-ela
Kandana
Ragama
Wattala
Kiribathgoda
Kadawata
Colombo Port
Kelaniya
Gothatuwa
Delkanda
Maharagama
Lavinia
Kesbewa
Panadura Ganga
7 10' 3.20"
79 45' 4.11"
8 km
7 5' 25.99"
79 41' 54.87"
16 km
X-Press Pearl
Container Ship
No Fishing Zone
6 57' 56.14"
79 45'37.81"
8 km
6 49' 27. 64"
79 49'28.09"
4 km
0 2.5 5 10 Kilometer
Depths in meter
No Fishing Zone

Salvage - containers

Reef assessment

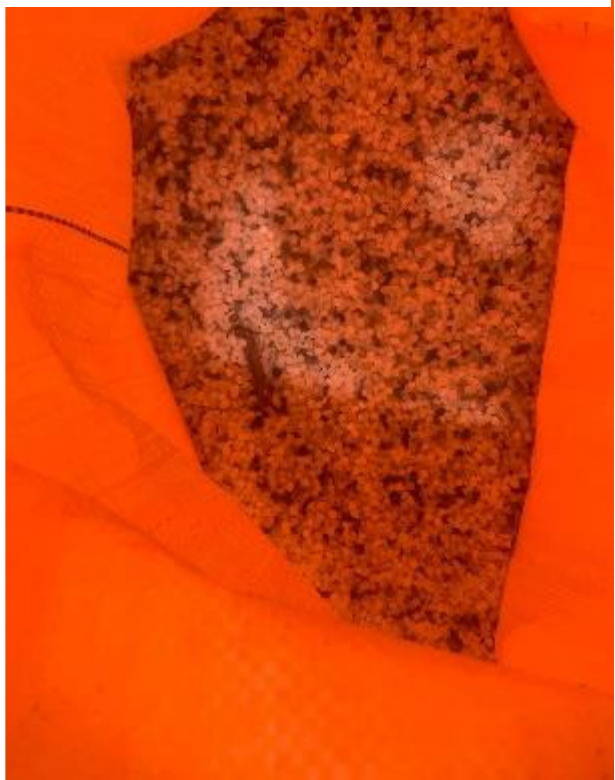




Environmental Damage

Waste Management

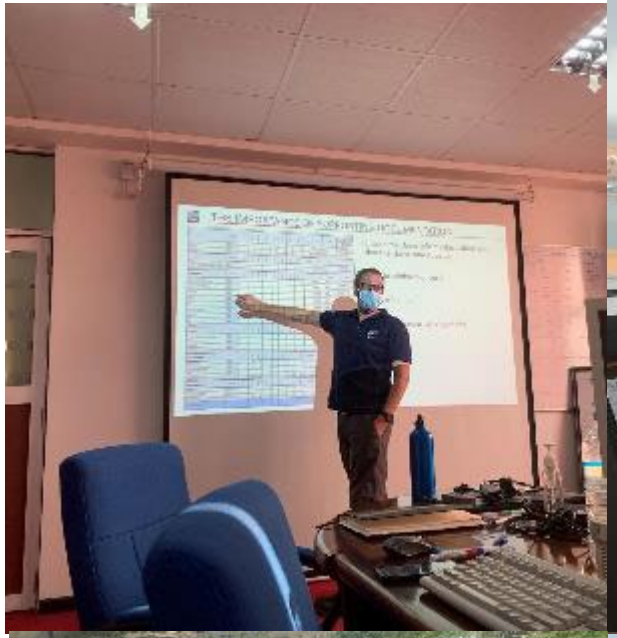
- 2,000+ x 1 tonne big bags of nurdles/sand

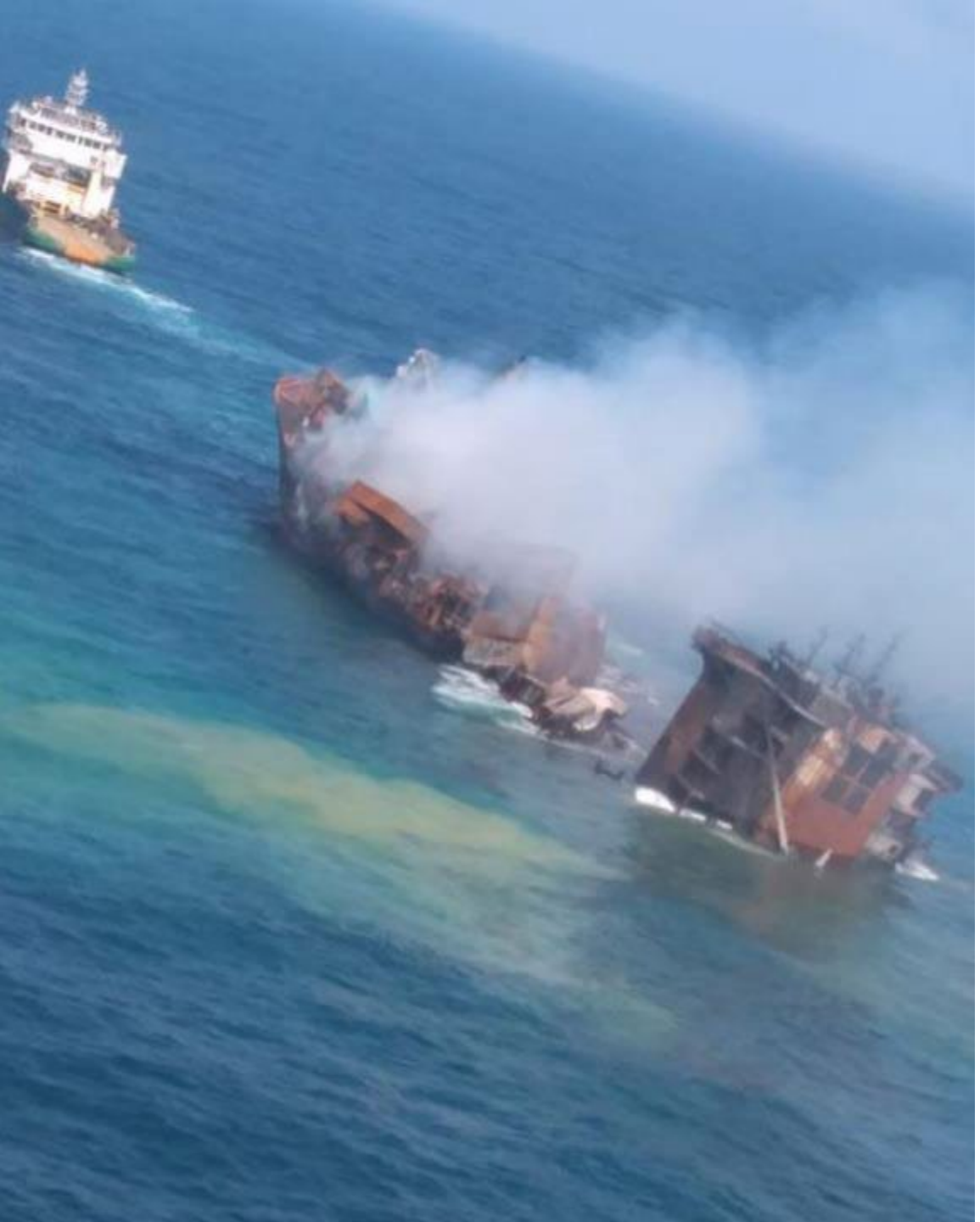


ROLE OF ITOPF

- Initial remote advice on HNS and oil
- Modelling and continued satellite imagery support
- Mobilised on 1st June

  (COVID restrictions – bio-bubble)
- Objective technical advice
- Work closely with MEPA, lead agency
- Joint aerial surveillance for oil monitoring
- Designed and implemented a shoreline contamination survey
- Designed shoreline clean-up plans
- Waste
- Advised authorities on submission of claims
- Regular contact with P&I Club
- Fisheries Advice
- Environmental Monitoring Advice





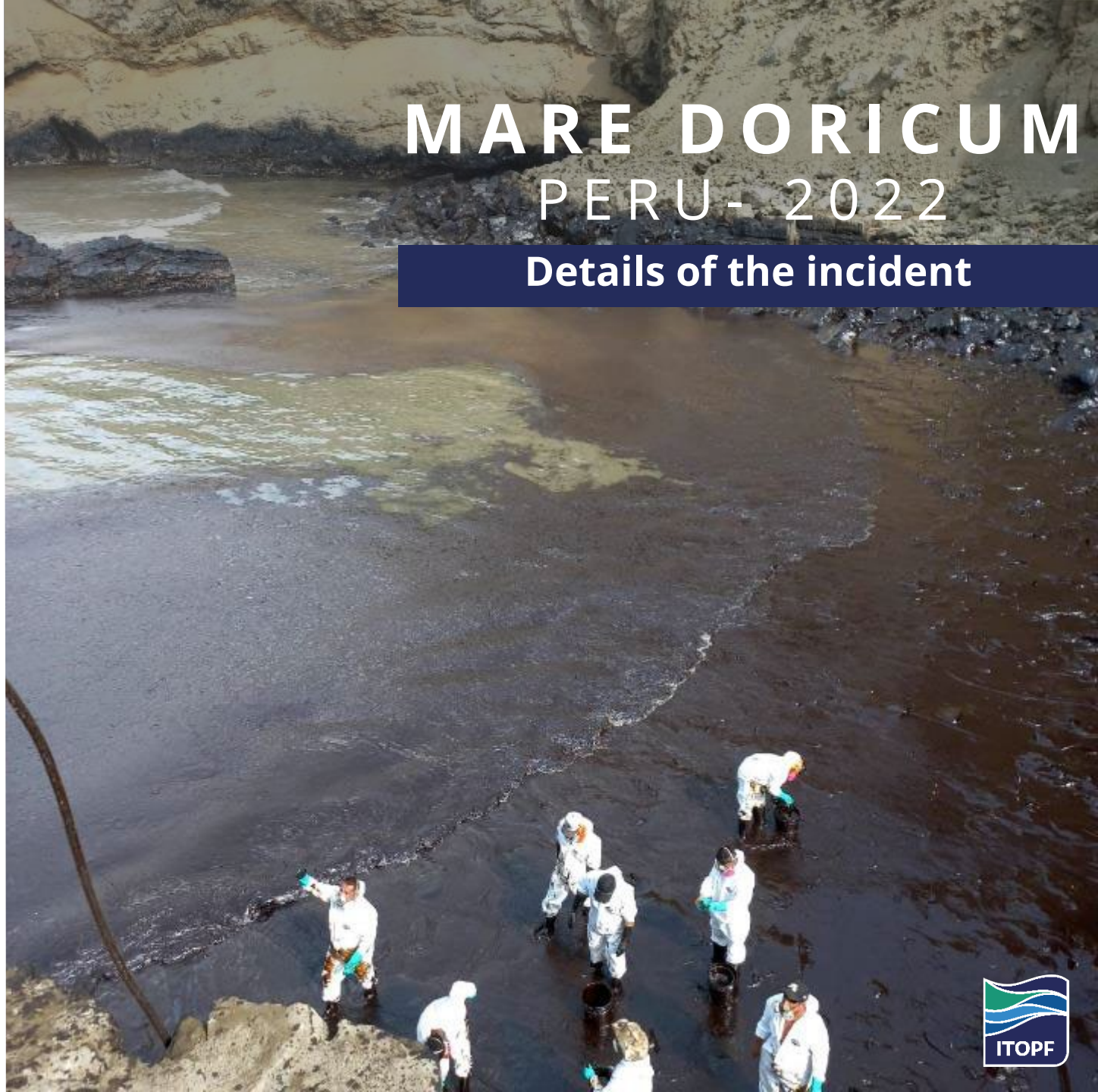
KEY ISSUES

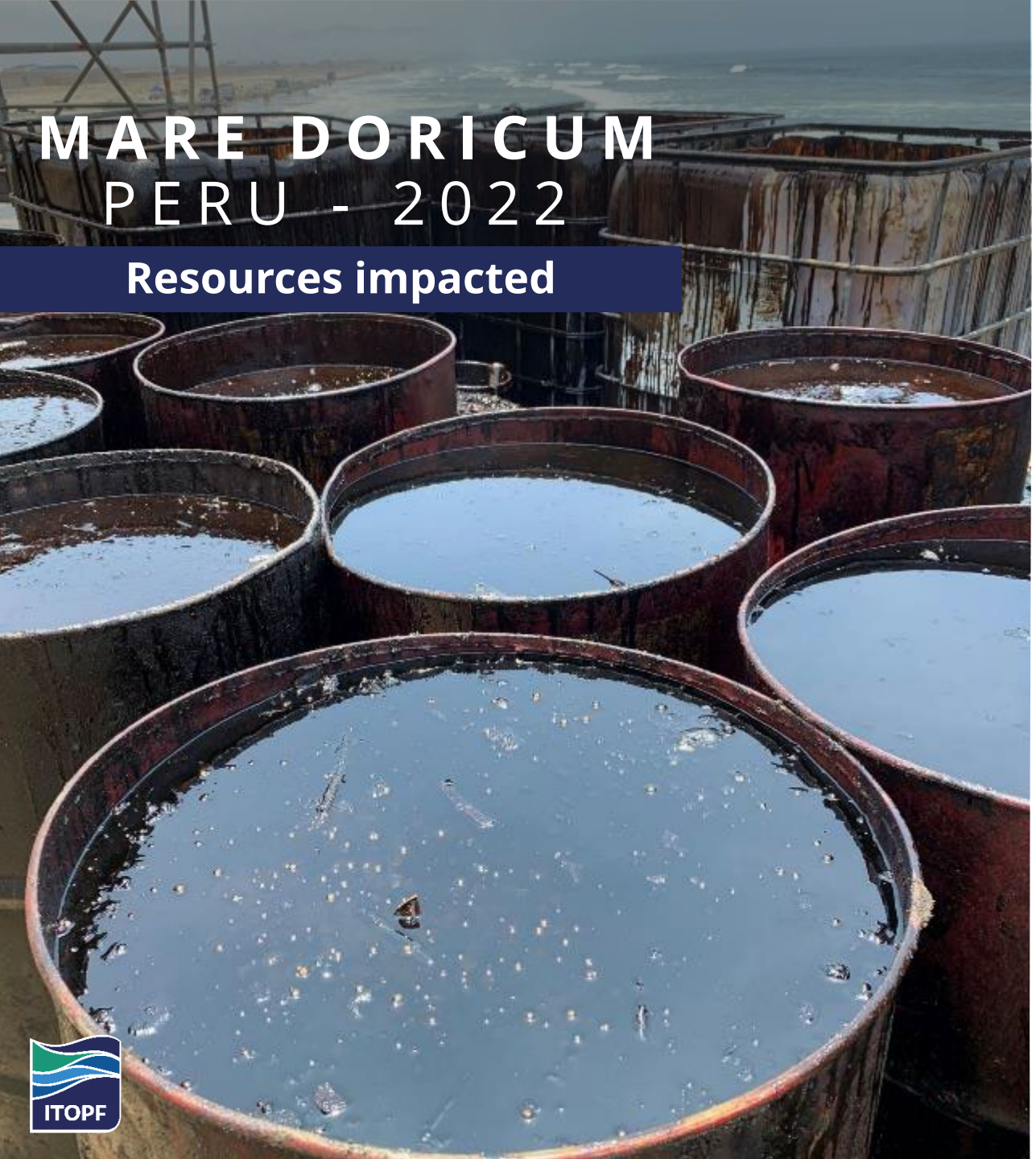
- Politicised – affects decision making / operations
- Media interest
- Govt/Contractor led response?
- Nurdles – dispersion/remobilisation
  – long response
- Toxicity? – unburnt/burnt - PAH's, dioxins?
- Waste Not resolved (2000+ big bags – 1,100 MT+ solid)
- Fisheries ban - extensive area, now much reduced
- Environmental damage
- Claims: US$ xx million (clean-up)
  US$ xx million (17,000 fishermen)
  US$??? (environment)
- COVID-19
- Ongoing ITOPF rotations

MARE DORICUM
PERU- 2022
Details of the incident

- Date: 15th January 2022
- Location: Port of El Callao, Peru
- Product spilled: Buzios crude oil (28,2° API)
- Amount spilled: approx. 1,450 t (official data)
- Circumstances of the incident: during discharging operations. Cause and responsibility under investigation.

Name	MARE DORICUM
Type of vessel	Oil Tanker
IMO	9446374
Gross tonnage	81,499
Deadweight	158,319
Flag	Italy
Year Built	2009





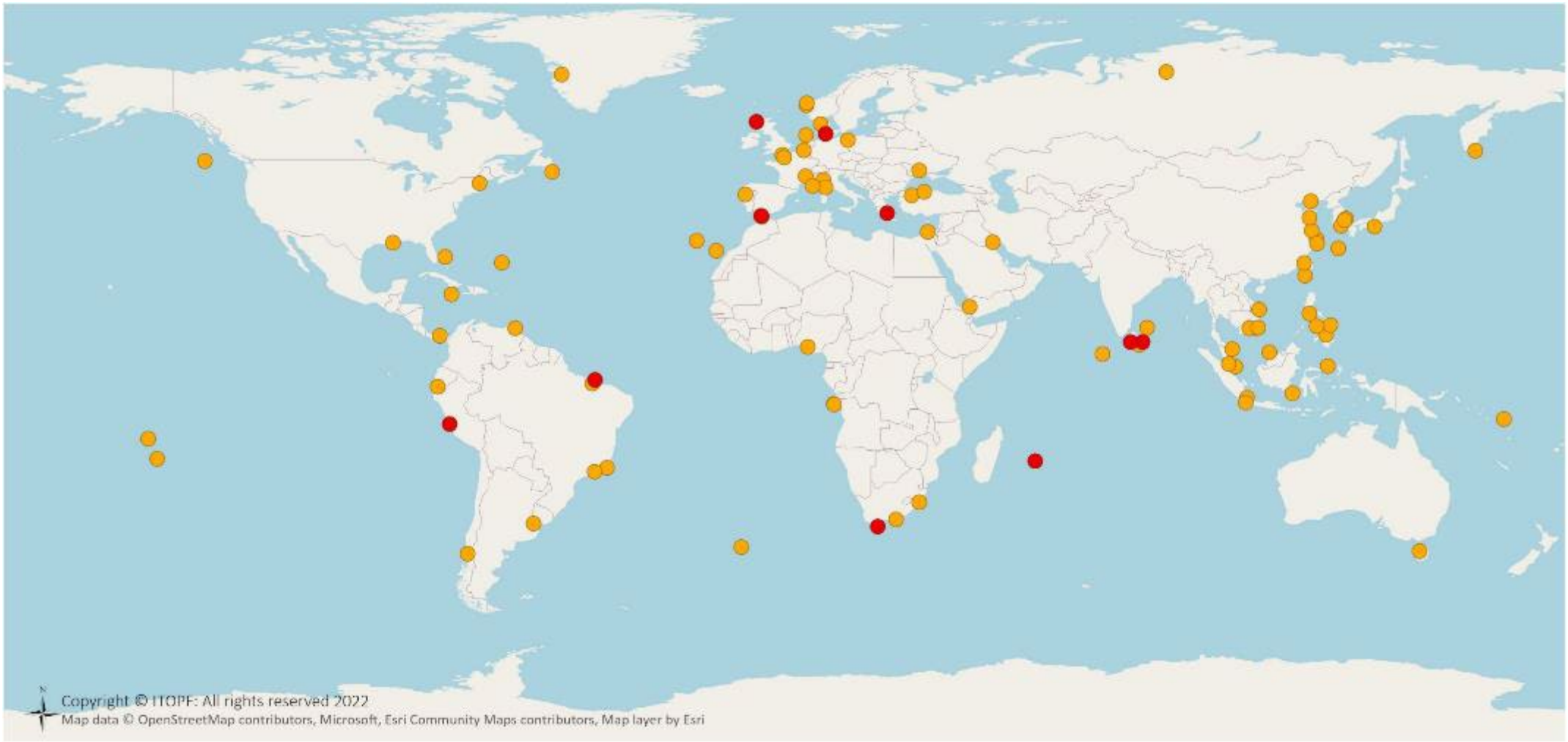
MARE DORICUM
PERU - 2022

Resources impacted

- Responsibility is still under investigation – liability remains unclear
- Approximately 50 km of shoreline impacted, including islets and islands that belong to a UNESCO site
- Large stretches of inaccessible areas with floating emulsified oil
- More than 35 contractor companies on site
- Hundreds of fishermen and restaurant owners affected

SPILL RESPONSE

ITOPF Spills in COVID-19 Era (Jan 2020- present)



ITOPF

ITOPF's Spill Response During the Pandemic

COVID-19: A POSITIVE EXPERIENCE?

Richard H. Johnson, Technical Director

Petroleum Association of Japan Symposium

22 Feb 2022