

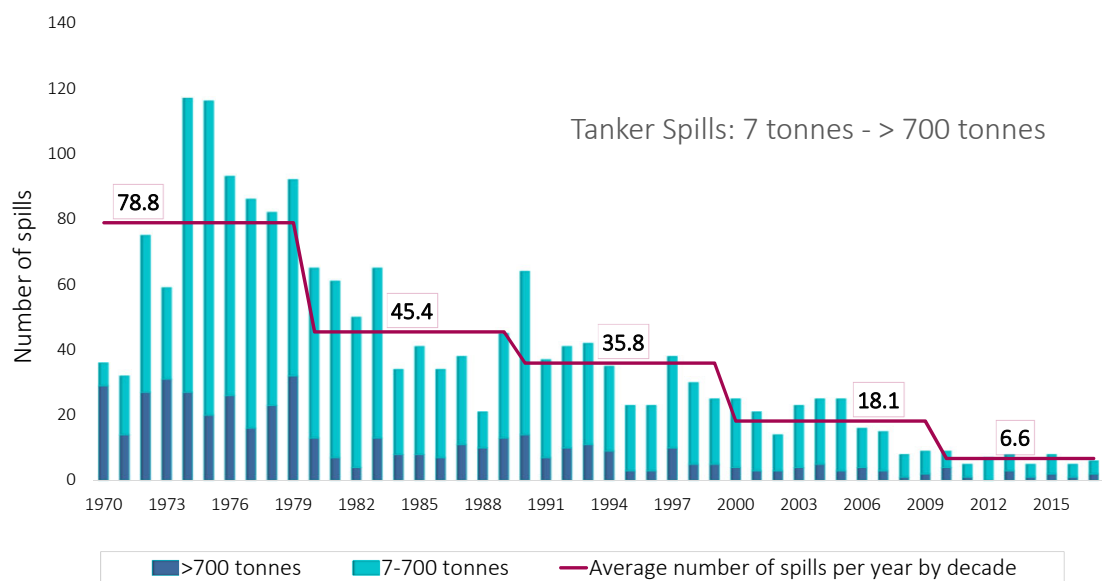


SANCHI: The ITOPF Perspective

Alex Hunt, Technical Team Manager



TANKER SPILLS





RECENT SPILLS



SANCHI INCIDENT



- EN ROUTE - IRAN TO SOUTH KOREA
- CARGO - 111,388 MT CONDENSATE
- COLLISION WITH CF CRYSTAL
- ROUGHLY 160 NM OFF SHANGHAI
- BREACH OF CARGO TANK & EXPLOSION



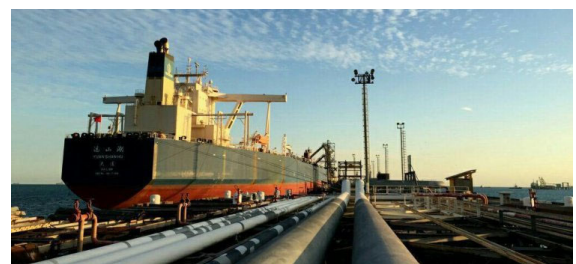
SANCHI INCIDENT



CARGO ONBOARD



Source: NIOC



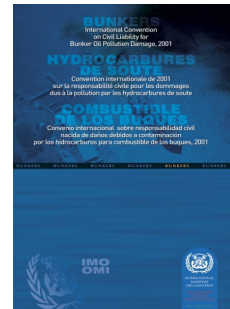
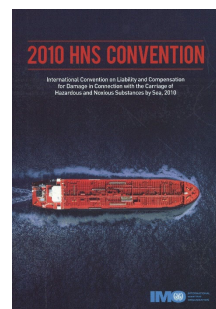
- CONDENSATE FROM SOUTH PARS GAS FIELD
- TWO PRODUCTS: PHASE 19 AND PHASE 12
- SPECIFIC GRAVITY: 0.7286 & 0.7338
- VAPOUR PRESSURE: 11.8 PSI (GULFAKS CRUDE: 6 PSI)
- DISTILLATION: 50% AT 123°C / 90% AT 270°C
- BOTH CLASSED AS NON-PERSISTENT (FUND CRITERIA)

WHAT IS CONDENSATE?



- LOW-DENSITY VOLATILE LIQUID HYDROCARBONS OCCURRING WITH NATURAL GAS
- EXTRACTED ALONGSIDE CRUDE OIL OR SEPARATED FROM NATURAL GAS
- LOW VISCOSITY – CONSISTENCY OF WATER – AND LIGHT IN COLOUR
- HIGH VALUE ‘CRUDE’ OILS – ‘NATURAL GASOLINE’ – LESS REFINING NEEDED
- USED IN PETROCHEMICAL INDUSTRY AND TO DILUTE HEAVY CRUDE OILS
- PRODUCED WORLDWIDE – RUSSIA, MIDDLE EAST, USA, AUSTRALIA, NORTH SEA

CONVENTIONS



CARRIAGE

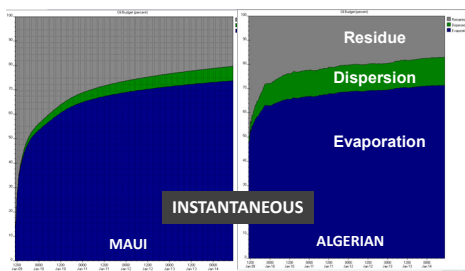
- MARPOL ANNEX I – CARRIED IN CRUDE OIL TANKERS

COMPENSATION

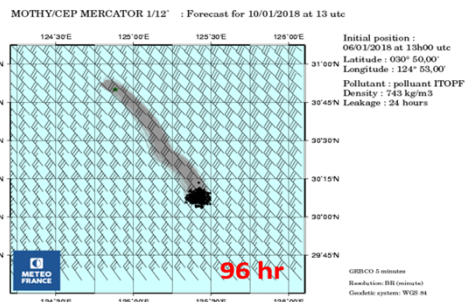
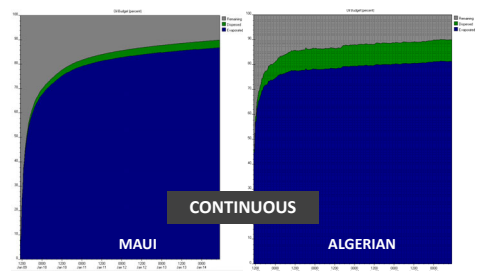
- NON-PERSISTENT OIL – CLC AND FUND CONVENTIONS DO NOT APPLY
- CONDENSATE WOULD BE COVERED BY HNS CONVENTION WHEN IN FORCE
- BUNKER SPILLS COVERED BY BUNKERS CONVENTION (IN CONTRACTING STATES)



PREDICTED FATE



- 'WEATHERING' MODEL RUN TO PREDICT FATE (ADIOS2)
- USED LOCAL WEATHER CONDITIONS, AMBIENT SEA STATE
- SURROGATE OILS USED WITH SIMILAR SPECIFICATIONS:
 - MAUI CONDENSATE (MATCHED °API)
 - ALGERIAN CONDENSATE CITGO (MATCHED DISTILLATION)
- INSTANTANEOUS AND CONTINUOUS RELEASE SCENARIOS
- RESULTS: 70-85% EVAPORATION ≤15% DISPERSION IN 5 DAYS
- TRAJECTORY MODELLING ALSO CARRIED OUT USING MOTHY



ACTUAL FATE

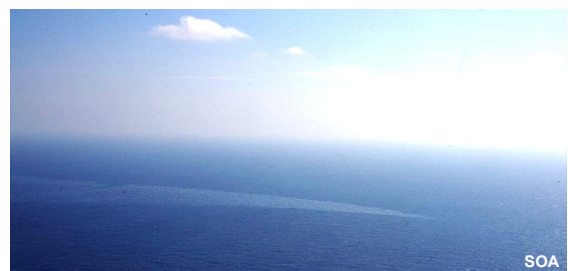




INITIAL RESPONSE



- RESPONSE LED BY CHINA (MOT, MSA, CRS)
- FOCUS ON SAR FOR CREW AND FIRE FIGHTING
- PATROL VESSELS ON SITE FOR ALL THREE COUNTRIES
- SHANGHAI SALVAGE AND NIPPON SALVAGE ON SITE
- AERIAL SURVEILLANCE: SOA, JCG AND KCG
- EXCLUSION ZONE IN PLACE AROUND CASUALTY





SINKING



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- VIOLENT EXPLOSION AT AROUND NOON 14TH JANUARY
- VESSEL ENGULFED IN FLAMES - RESPONSE PULLED BACK
- SANCHI EVENTUALLY SANK ~16:45 TO DEPTH OF 110 M
- FIRE CONTINUED BURNING TILL MORNING OF 15TH JANUARY



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FUEL OIL SPILL



SOA



GSC



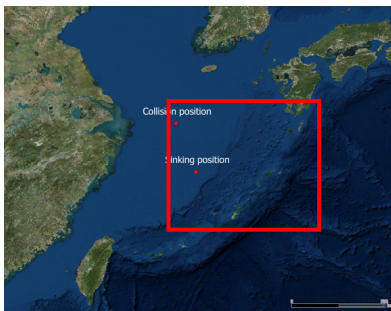
OIL SPILL RESPONSE



- LED BY MSA, OBSERVED BY JCG, KCG
- NUMEROUS VESSELS INVOLVED (>60?)
- CHEMICAL/ MECHANICAL DISPERSION

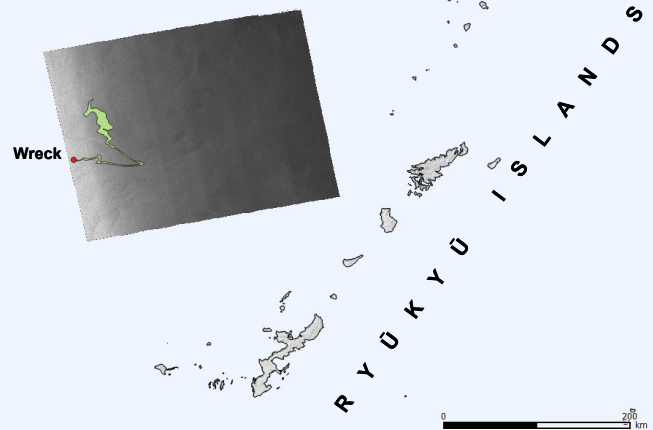


TRACKING THE SPILL



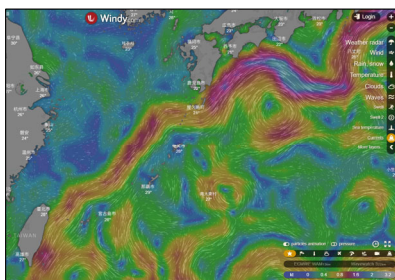
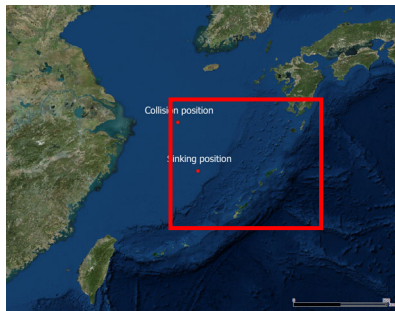
COSMO-SkyMed
SAR (Synthetic Aperture Radar)
2018-01-17
21:11

Interpretation in GIS





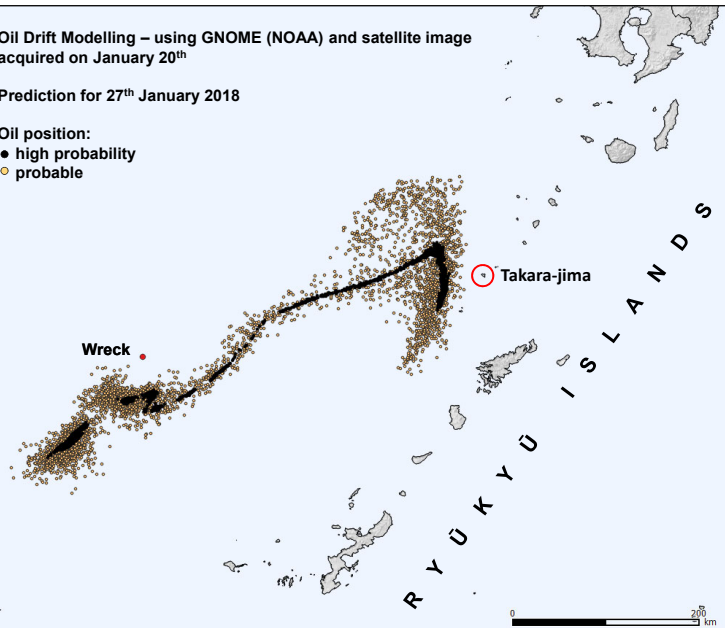
FORECASTING



Oil Drift Modelling – using GNOME (NOAA) and satellite image acquired on January 20th

Prediction for 27th January 2018

Oil position:
● high probability
● probable

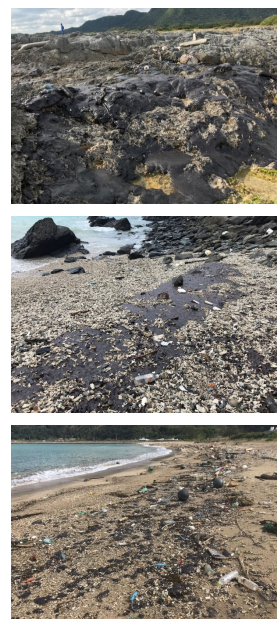
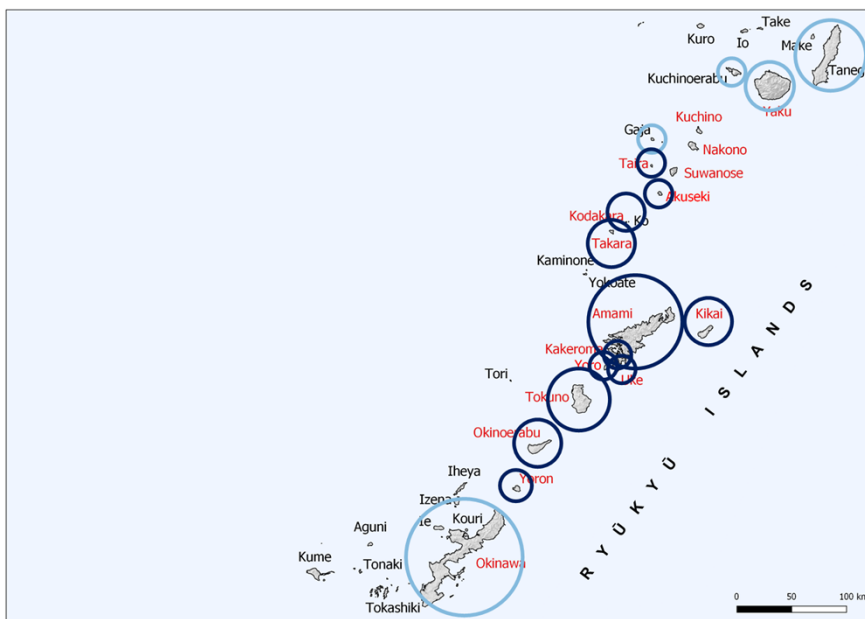


SHORELINE IMPACTS

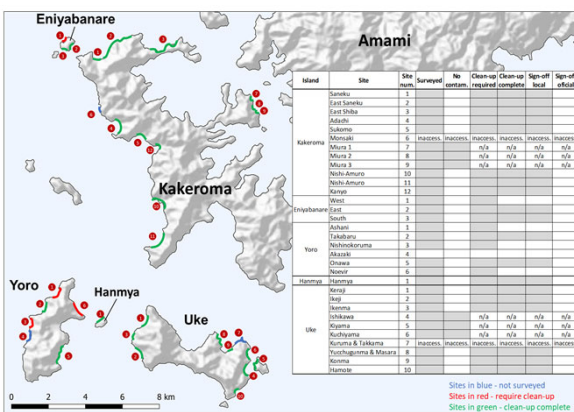




SHORELINE IMPACTS



SHORELINE SURVEYS



10	ODANA	16.03.18
PRIORITY STATUS: HIGH		
SPATIAL EXTENT OF DAMAGE:	DESCRIPTION OF DAMAGE:	RECOMMENDED METHOD & ENDPOINT:
Public beach with occasional boulders, concrete structures and extension of the beach shown. The use of a remote excavator is recommended for the removal of debris. The use of a remote excavator is recommended for the removal of debris. The use of a remote excavator is recommended for the removal of debris.	Manual removal of surface of debris. Items to be manually excavated to search for buried oil. If buried oil is found at high concentration (i.e. as a continuous band), further manual removal is recommended. The use of a remote excavator is recommended for the removal of debris. The use of a remote excavator is recommended for the removal of debris. The use of a remote excavator is recommended for the removal of debris.	Number of workers: 5-10 Number of containers: 1-2 Basic PPE (gloves, boots, etc.) Gloves, boots, rakes, shovels Cotton bags Heavy duty bags Big bags Plastic sheeting/tarpaulins Brushes Sufficient pads for decontamination Wash and water White mesh sleeves/screens Solid drums
KEY CONSIDERATIONS:	HEALTH & SAFETY:	WASTE MANAGEMENT:
	All workers must wear appropriate PPE whilst working; hard hats to be worn in the vicinity of heavy machinery. Due attention to be given to tidal movements. Work areas must be demarcated as such for public safety. Decontamination is required when putting a work zone into public spaces.	All waste to be suitably segregated according to waste type. Temporary storage areas at the back of beaches must be protected with plastic sheeting to protect surface and prevent ingress of rainwater. Consideration must be given to access of waste-trucks and the reach of their cranes. Removal of uncontaminated sediment must be restricted.
ITOPF		



PRIORITISATION



CLEAN-UP



- LED BY JCG & LOCAL AUTHORITIES
- P&I CLUB APPOINTED CONTRACTORS
- GUIDED & OVERSEEN BY ITOPF + SURVEYORS
- CLEAN-UP WELL-ORGANISED + EFFICIENT
- OPERATIONS CONTINUED UNTIL JUNE



ITOPF



VOLUNTEERS



CLEAN-UP ISSUES





CLEAN-UP ISSUES



RECOMMENDATIONS





CONDENSATE RESPONSE?



- SIMILAR RESPONSE TO OTHER NON-PERSISTENT OILS
- PRIORITY: RISK OF FIRE, EXPLOSIONS, EXPOSURE TO VAPOURS
- SHORT TERM PRESENCE IN MARINE ENVIRONMENT – CLEAN-UP?
- LACK OF CLEAN-UP TECHNIQUES WITH TECHNICAL MERIT
- SOME STRATEGIES ACTUALLY INCREASE RISK - CONTAINMENT



ENVIRONMENTAL EFFECTS?



- SAMPLING & ANALYSIS BY SOA IN CHINA & MOE IN JAPAN
- DETAILS OF ANALYSIS, RESULTS AND CONCLUSIONS UNCLEAR
- PRELIMINARY REPORTS SUGGEST LIMITED (IF ANY) IMPACTS

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LESSONS LEARNED?



- MAJOR INCIDENTS STILL HAPPENING
- TRANSBOUNDARY SPILLS MORE COMPLEX
- SHARING INFO + JOINT PLANNING NEEDED
- MULTIPLE ISLANDS = DIFFICULT LOGISTICS
- COOPERATION => EFFECTIVE RESPONSE
- FAIRLY MINOR ENVIRONMENTAL IMPACTS