EMSA - Risk Assessment workshop

CIRCUMPOLAR OIL SPILL RESPONSE VIABILITY ANALYSIS

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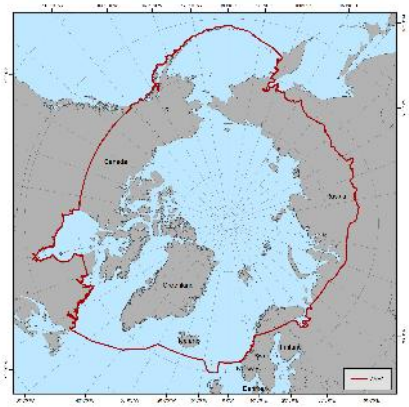
14 March 2018

Project commissioned by the EPPR Working Group co-sponsored by Norway, the United States and Denmark. Conducted by DNV GL and Nuka Research and Planning Group, LLC under contract to the Norwegian Coastal Administration and U.S. Bureau of Safety and Environmental Enforcement.

Project report prepared for the AC Fairbanks Ministerial in May 2017, available at: https://oaarchive.arctic-council.org/handle/11374/1928

1. WHAT: Circumpolar Oil Spill Response Viability Analysis

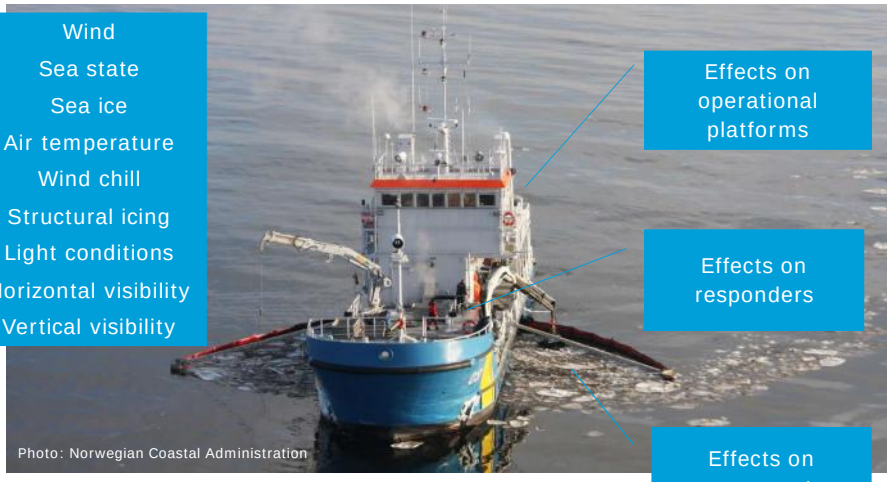
- Scope of work:
  - Assess the ability of oil spill response systems to operate in the Arctic marine environment.
  - Estimate percentage of time conditions for Oil Spill Response are:
    - Favourable
    - Marginal
    - Not favourable
- Purpose/Relevance:
  - Local and regional preparedness planning
  - Long term response planning and decision support during incidents and response operations



Study Area:
- Marine waters within AMAP-area.

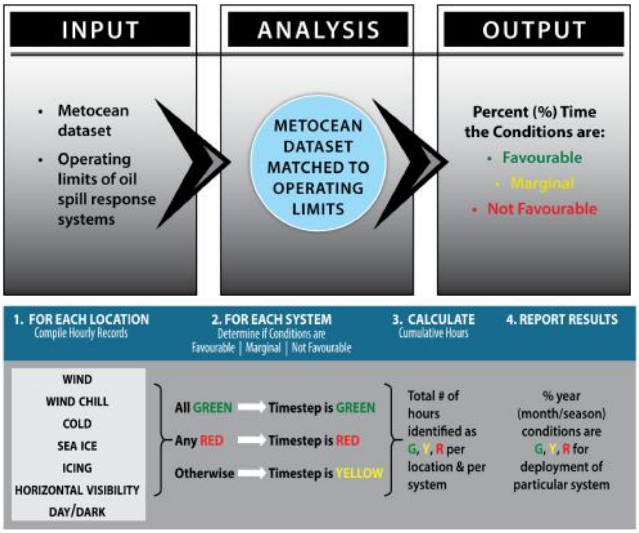
Effects of Arctic metocean conditions on Oil Spill Response

- Wind
- Sea state
- Sea ice
- Air temperature
- Wind chill
- Structural icing
- Light conditions
- Horizontal visibility
- Vertical visibility

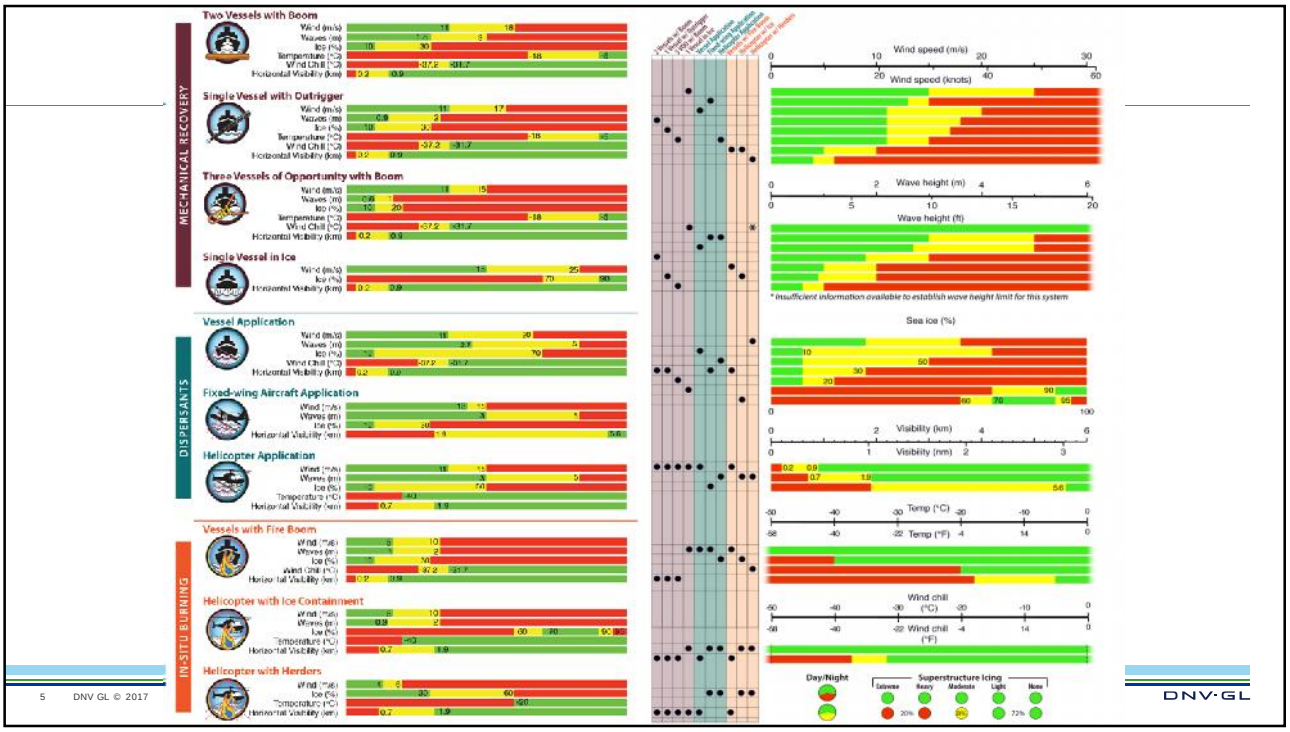


- Effects on operational platforms
- Effects on responders
- Effects on response systems

2. HOW: Methodology



Response Viability categories	
G	Generally favourable conditions in which the tactic could be expected to be deployed safely and operate as intended.
Y	Conditions are marginal, such that the tactic could be deployed but operations may be challenged or compromised.
R	Conditions are not favourable, so the tactic would typically not be used due to the impact of metocean conditions on safety or equipment function.



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3. Challenges and Limitations

- The study does not:
  - describe likelihood or potential consequences for spills and response.
  - consider response effectiveness.
  - consider issues related to various types of spills.
  - consider additional factors such as logistics and training.
  - provide a comprehensive overview of Arctic oil spill response options or implementation.

- Uncertainties in the methodology and input parameters:
  - Uneven documentation of response limits.
  - Quality of modelled metocean data.
  - Relies on historic conditions to inform future decisions.

- Challenge:
  - To allow full use of results in an analogue report format

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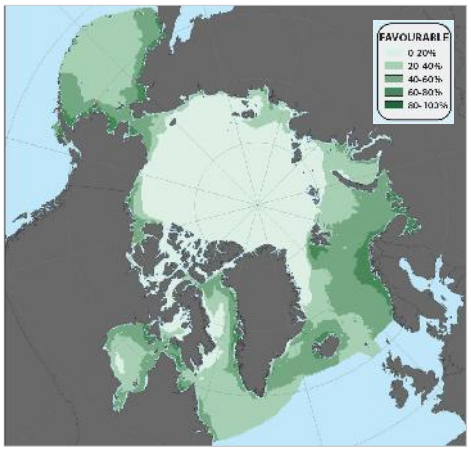
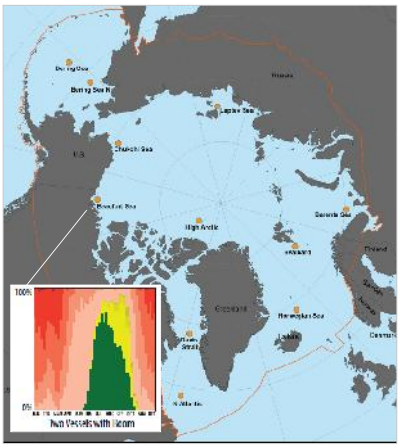
4. OUTCOMES: Geospatial Analysis and Location Specific Analysis



120 maps presenting the geographical distribution of:

- 3 viability categories for each system (% of time, 5 increment scale)
- Whole study area, 4 seasons (January, April, July, October)
- Also used for the Response Viability Index



Site specific studies 11 selected locations:

- Across time and for each system and metocean parameter
- Also used for the sensitivity analysis

Key findings

- Arctic conditions are found likely to challenge marine oil spill response operations within the study area
- The response viability varies considerably with system applied, season and location
- Optimization of response strategies and response systems to the local conditions can have a significant importance for the ability to deploy a response (several other factors should also be considered)
- The data created in the study allows for in-depth studies to identify operational windows for different systems, or identify the system or systems that are most likely to be viable for a particular location

About DNV GL

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About Nuka Research and Planning Group, LLC

Nuka Research and Planning Group, LLC is an environmental consulting firm offering a range of services to support policy development, planning, training, outreach and facilitation for international clients in industry, government, and non-profit sectors.

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OIL SPILL RESPONSE VIABILITY ANALYSIS IN NORWEGIAN WATERS

Synnøve Lunde

14 March 2018

1. WHAT: From ANALOG to DIGITAL Viability Analysis report

Similar analysis recently conducted for Norwegian waters for NCA, and integrated in a web-based application.

Enables interactive use and access to the full results of such analysis

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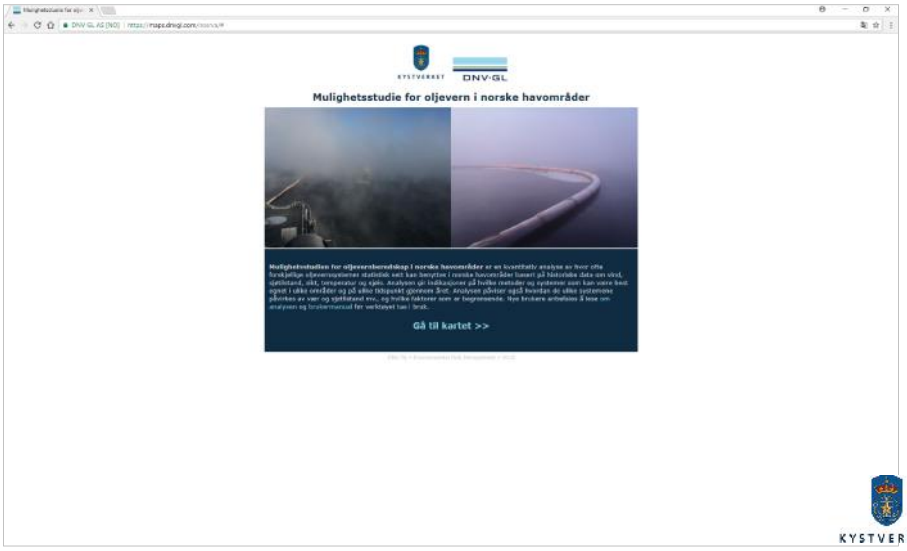
2. HOW: Web based planning tool



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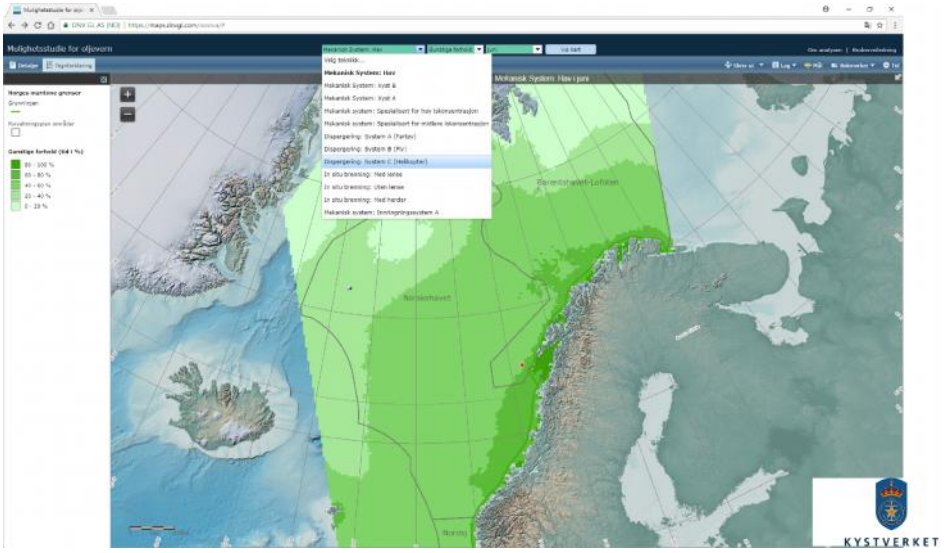
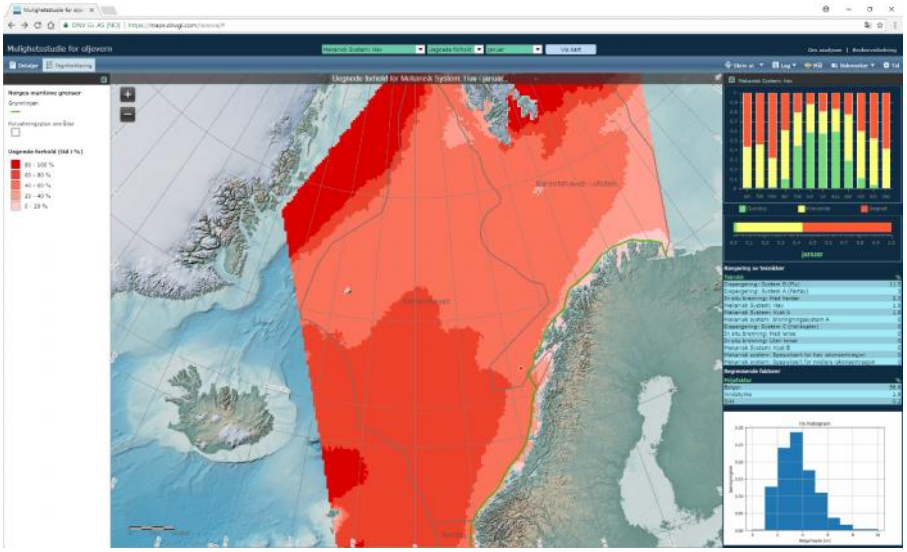
Choosing type of system, category and month



Pop-up menu



4. OUTCOMES: Added value of digital web-based tool

- Full access to the results of analysis
  - Area maps fully scalable for all systems and months (also with time-laps function)
  - Drill-down function for every grid cell within the AMAP area (and aggregation to user defined areas):
    - Viability category in %
    - Ranking of systems
    - Ranking the limiting factors
    - How is the systems current limits compared to the statistical conditions

- In practical use:
  - Map-functions (zoom, thumbnails, layers, measurements, coordinates etc.)
  - Print, data export, integration with other systems etc.
  - Special studies (sensitivities, optimization, historical, prognosis etc.)

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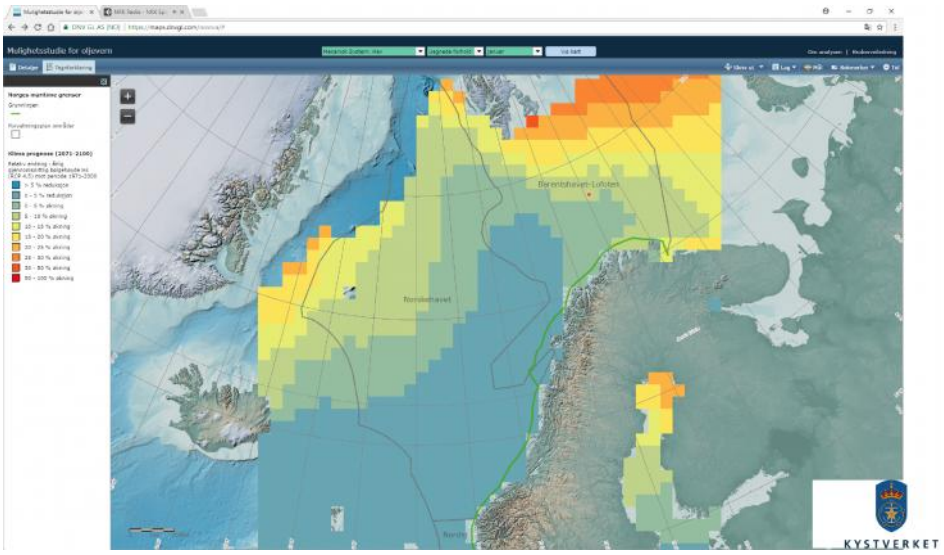
Impact of climate change



Thank you for your attention.

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