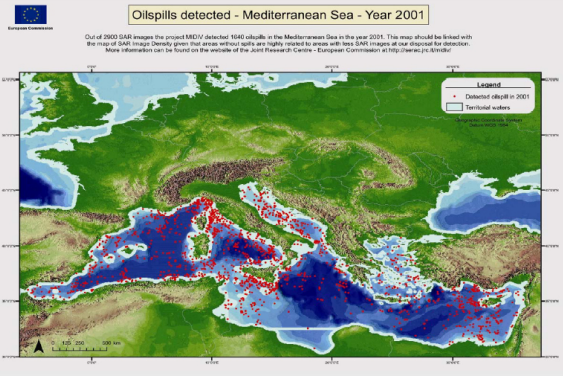
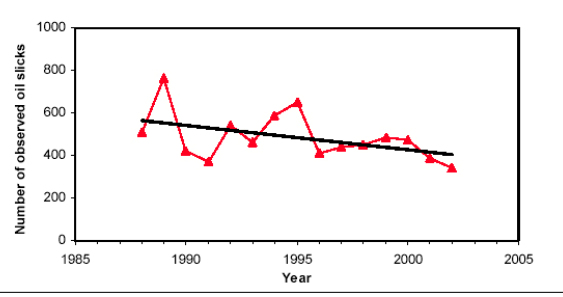


Indicator	
19	Amount of oil pollution.
Measurement	
19.2	Number of oil slicks from aerial surveillance.
What should the measurement tell us?	
<p>Shipping and oil transportation in particular, is a major source of oil pollution in sea areas, either during operations or from accidents. Operational discharges by ships are prohibited in the North Sea, Baltic Sea, Black Sea and the Mediterranean – all International Maritime Organisation (IMO) ‘special areas’. Oil tankers are permitted to discharge oil or mixtures at the rate of 30 litres per nautical mile although in ‘special areas’, the oil content in discharges must be less than 15 parts per million (ppm). Studies have shown that a visible trace of oil on the sea surface is an indication that the oil content in the effluent exceeds 15 ppm. These illicit discharges are the greatest source of marine pollution from ships.</p> <p>Aerial surveillance is used to assess the location and extent of oil contamination and to verify predictions of the movement and fate of oil slicks at sea. Observations by aerial surveillance concern all type of oil spills and, in particular, oil spills of less than 7 tonnes (legal or illegal), which are usually not taken into account in the reporting of accidental oil spills. Observation can be undertaken visually or with the use of remote sensing systems.</p> <p>The indicator should give us information of how many oil slicks are identified by aircraft every year and the corresponding trend.</p> <p>Obtaining data sets containing location and co-ordinates for each reported oil slick will help us to identify the hot-spots (ship traffic lanes, oil rig positions, shipwrecks and other locations with frequent oil slicks observed in the past).</p>	
Parameters	
(i)	Annual number of oil slicks observed by aerial surveillance.
Coverage	
Spatial	Temporal
Territorial sea and Exclusive Economic Zone (EEZ) (local and regional calculations only territorial sea).	Annually over at least the last ten years ⁽¹⁾ .
International waters for European calculations.	

Data sources		
<p>Data on the number of reported oil slicks from aerial surveillance can be obtained from the competent national or regional authorities responsible for oil slick monitoring and aerial surveillance. Information comes from regional councils or the spiller of the oil.</p> <p>Some data is referenced to latitude and longitude and so could be GIS compatible. Other location data is just descriptive.</p> <p>Under the Bonn Agreement, North Sea states execute surveillance as an aid to detecting and combating pollution and to prevent violations of anti-pollution regulations. The HELCOM Convention established aerial surveillance over the Baltic for the same objective. France and Italy operate aerial surveillance planes in their Mediterranean areas of responsibility. Greece and Turkey are in the process of purchasing such planes. In the framework of the Barcelona convention the Regional Marine Pollution Emergency Response Centre for the Mediterranean (REMPEC) intends to develop plans for aerial surveillance in the Mediterranean.</p> <p>For some areas, aerial surveillance is not carried out evenly and regularly and, therefore, there are no reliable data for those areas. Only those countries participating in aerial surveillance activities under the Bonn Agreement or the HELCOM Convention can provide data.</p> <p>Under the OSPAR Commission, data and information from contracting parties is collected on an annual basis for the preparation of the reports.</p> <p>In addition to the information provided by the contracting states that have implemented the Helsinki Convention/HELCOM Recommendations and OSPAR Commission nationally (legally as well as practically), data can also be provided from various monitoring programmes carried out within the framework of the European Environmental Agency indicators and its data sets.</p>		
Methodology		
	Steps	Products
1	Delimit the extent of your reference region.	Limits of your reference region.
2	Obtain the annual data for the number of reported oil slicks from aerial surveillance, from competent national/regional authorities responsible for monitoring the oil slicks.	List of all current oil slicks reported at national/regional level.
3	Obtain data sets containing location and co-ordinates from the European Environment Agency, HELCOM, and/or OSPAR Commission data sets of reported oil slicks ⁽²⁾ .	Complete list of all current and historic oil slicks reported at national/regional level.
4	For your reference region, overlay EEA data with the national/regional data and identify the total number of annual oil slicks observed by aerial surveillance.	<u>Total annual number of oil slicks reported by aerial surveillance within your reference region (Graph 1).</u>

5	Reference the product of step 4 to latitude and longitude and represent the occurrence of these oil slicks for your reference region.	<u>Number of oil slicks within your reference region (Map 1).</u>																																		
Presentation of the data																																				
Map 1	Annual map on the basis of observed oil slicks from aerial surveillance.	 <p>Oilspills detected - Mediterranean Sea - Year 2001</p> <p>Out of 2001 SAR images the ground MEOI detected 1600 slicks in the Mediterranean Sea in the year 2001. This map should be linked with the map of SAR Image Density given that areas without oil slicks are highly reached by areas with less SAR images at our disposal for detection. More information can be found on the website of the Joint Research Centre - European Commission at http://maris.jrc.it/</p>																																		
Graph 1	Bar chart showing the trend on the number of observed oil slicks reported by aerial surveillance.	 <table border="1"> <caption>Approximate data from Graph 1: Number of observed oil slicks (1985-2005)</caption> <thead> <tr> <th>Year</th> <th>Number of observed oil slicks</th> </tr> </thead> <tbody> <tr><td>1987</td><td>500</td></tr> <tr><td>1988</td><td>750</td></tr> <tr><td>1989</td><td>400</td></tr> <tr><td>1990</td><td>350</td></tr> <tr><td>1991</td><td>550</td></tr> <tr><td>1992</td><td>450</td></tr> <tr><td>1993</td><td>600</td></tr> <tr><td>1994</td><td>400</td></tr> <tr><td>1995</td><td>650</td></tr> <tr><td>1996</td><td>400</td></tr> <tr><td>1997</td><td>450</td></tr> <tr><td>1998</td><td>500</td></tr> <tr><td>1999</td><td>450</td></tr> <tr><td>2000</td><td>400</td></tr> <tr><td>2001</td><td>350</td></tr> <tr><td>2002</td><td>300</td></tr> </tbody> </table>	Year	Number of observed oil slicks	1987	500	1988	750	1989	400	1990	350	1991	550	1992	450	1993	600	1994	400	1995	650	1996	400	1997	450	1998	500	1999	450	2000	400	2001	350	2002	300
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Adding value to the data																																				
<p>From the resulting map it is interesting to identify the location of the oil slick hot-spots (high oil slicks occurrence) caused by maritime transport, refineries or offshore installations.</p>																																				
<p>It is important to represent the ratio of the number of slicks per flight hour, in order to provide an indication of the relationship between the effort required to detect oil spills and its results.</p>																																				
Aggregation and disaggregation																																				

Notes

- (1) Long term data will help identify long-term trends in accidental oil spills overall, as well as the relative significance of larger spills.
- (2) Check which of the data from international conventions comes from member states data sources and which from international plans.