

Use of ERS-SAR for detection of threats to the Frisian Islands of the German North Sea Coast

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Abstract

Information contained in SAR images of nearshore zones and on intertidal flats seems to be not yet fully exploited. In particular anomalies and pollution might be better located. Their management and if appropriate cleaning operations can be better planned and carried through. Two examples will be presented. The first deals with oil pollution of the German North Sea islands in the tourist season 1996. The second one shows the occurrence of large areas of oxygen depleted zones (black areas) in the East Frisian Wadden Sea. In the 1st event oil patches arrived at the islands on 14th June. The questions were whether this was a single event or more pollution must be expected and whether the source of the oil can be located. On the 17th June ERS-2 spotted additional oil West of the North Frisian coast which was on its way towards the beaches. The detected oil was already aged and therefore it will normally not float at the surface. Mechanisms are discussed explaining the observability in SAR-scenes. In the second event oxygen depleted areas occurred in a relative narrow area between the barrier islands and the coast of Lower Saxony. Aircraft surveillance showed that they are concentrated on the dry falling mud flats near to the low water line of the natural drainage gullies. ERS-2 SAR scenes before and after the occurrence of the oxygen depleted areas were analysed. Possible differences in the signature of oxygen-rich and oxygen depleted regions will be discussed.

Keywords: coastal oceanography, SAR, surface features, slicks, pollution