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## 7.16 *Sea regions*

### **Definition:**

(INSPIRE, 2007) Physical conditions of seas and saline water bodies divided into regions and sub-regions with common characteristics.

### **Description:**

A historical version of the theme definition is found in the INSPIRE IMS paper:

- Seas and saline water bodies divided into regions and sub-regions. Each region with common characteristics, concerning water flow/ circulation, adjacent river catchments, bio-chemical or temperature of water, based on scientific criteria. Detailed information at regional level exist. (INSPIRE IMS, 2003)

Both 'Oceanographic geographical features' and 'Sea-regions' are concerned with physical conditions of marine water-masses. (This is a similar overlap to that which exists for themes 7.13 "Atmospheric Conditions" and 7.14 "Meteorological geographical features".) To resolve the ambiguity, we consider the multi-level approach to data needs assessment applied in ETC. Data at local or regional level are often needed for management and policy implementation, while lower resolution ('smaller scale') data are often required for reporting and policy development/evaluation. The latter includes summaries and integrated data products.

**We regard the "Sea regions" theme as focussing on the local/regional level coastal zone.**

Whereas 7.15 'Oceanographic geographical features' focuses on physical conditions and general circulation of offshore oceanic waters, the 'Sea regions' theme is concerned with marine features of the coastal zone – regions defined as 'transitional waters' and 'coastal waters' in the Water Framework Directive:

- transitional waters: bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows
- coastal waters: surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters

The World Meteorological Organisation also has a geometry-based sea region classification, dividing the ocean into Marsden Squares.

Both biotic and physical parameters and indicators are important in the classification and delineation of sea regions. Physical data requirements for important indicators defined in the WFD and the Integrated Coastal Zone Management policy are outlined in the ETC paper. These include:

- nutrients (nitrate, phosphate and nitrogen: phosphorus ratio) by regional sea and water body type
- concentrations of hazardous substances and pollutants (incl. heavy metals, persistent organic pollutants)
- productivity indicators (incl. surface chlorophyll-a)
- biological classification of waters
- water masses/layers characterised by bulk temperature and salinity properties
- polar area features (incl. pack ice)
- wind (climatological and meteorological)

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- benthic parameters (sediment, benthic communities/habitats)
- sea level
- chemical species and concentrations
- physical characteristics (incl. temperature, salinity)
- currents (including surface currents)
- tidal zones
- waves

### **Scope, use examples:**

Water Framework Directive: The WFD classes of surface saline water bodies, transitional waters, coastal waters to some extent coincide with sea regions, but have boundaries based on administrative/ reporting criteria, not scientific definitions. (INSPIRE IMS, 2003)

The Integrated Coastal Zone Management (ICZM) policy is an EU integrated strategy for coastal zone management. Key areas of action for ICZM are environmental impact assessment, coastal land planning, habitat management and pollution control. The Working Group on Indicators and Data has determined a set of indicators of sustainable development of the coastal zone, including sea-level rise and extreme weather conditions.

### **Important feature types and attributes:**

- point measurements of physico-chemical properties
- biological surveys
- meteorological and climate measurements (time-varying)
- tidal timeseries and currents

### **Links and overlaps with other themes:**

Potential overlap with:

- Oceanographic geographical features
- Meteorological geographical features, Atmospheric conditions (e.g. very similar spatial object types, and also physical links through the boundary layer, and common observational regimes)

### **Reference documents:**

ICZM policy documents (see DG-ENV <http://europa.eu.int/comm/environment/iczm/home.htm>)

Water Framework Directive policy documents (see DG-ENV [http://europa.eu.int/comm/environment/water/water-framework/index\\_en.html](http://europa.eu.int/comm/environment/water/water-framework/index_en.html))

IHO S-57, S-100 data models: [http://www.iho.int/PUBLICATIONS/Publications\\_E.htm#S57](http://www.iho.int/PUBLICATIONS/Publications_E.htm#S57),  
[http://www.iho.int/COMMITTEES/CHRIS/TSMAD/S-100\\_Info\\_Paper.pdf](http://www.iho.int/COMMITTEES/CHRIS/TSMAD/S-100_Info_Paper.pdf)

EUSEASED online metadatabase on seabed sediment samples and core as well as on seismic profiles ([http://www.eu-seased.net/welcome\\_flash.html](http://www.eu-seased.net/welcome_flash.html))

EUROSION project: <http://www.euroSION.org>

From the reference material submitted by SDICs and LMOs, the following may be relevant to this theme:

IHO Presentation Library for ECDIS (Publication S-52, Appendix 2, Annex A)

Norwegian feature catalogue and standards