S-411

Ice Information Product Specification DCEG

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IHO

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Contents

Document History

Changes to this Specification are coordinated by WMO/IOC Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM). New editions will be made available via the IHO web site.

Table 1

Version Number	Date	Approved By	Purpose
1.2.0	xx January 2025	WMO	Draft 1. Version number in line with the PS

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1 Overview

1.1 Preface

The “Data Classification and Encoding Guide” has been developed to provide consistent, standardized instructions for encoding S-411 data.

The purpose of the Data Classification and Encoding Guide is to facilitate S-411 encoding to meet JCOMM — ETSI standards for the proper display of Ice Information in an ECDIS. The document describes how to encode ice information considered relevant to be displayed on an ECDIS. The content of an Ice Information product is at the discretion of the producing authority provided that the conventions described within this document are followed. A “producing authority” is a Hydrographic Office (HO) or an organization authorized by a government, HO or other relevant government institution to produce Ice Information product.

The entire S-411 Standard, including the S-411 ENC Product Specification, is available at the following web site, https://iho.int/.

1.2 S-101 Annex A — Data Classification and Encoding Guide — Metadata

NOTE	This information uniquely identifies this Annex to the Product Specification and provides information about its creation and maintenance.
Title	The World Meteorological Organization Ice Information Product Specification, Annex A – Data Classification and Encoding Guide
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Maintenance	Changes to S-411 Annex A; Data Classification and Encoding Guide are coordinated by the JCOMM — ETSI Project Team, and must be made available via the IHO web site.

1.3 Terms, definitions and abbreviations

1.3.1 Terms and definitions

See S-411 Product Specification Main document, clause 1.3.2.

1.3.2 Abbreviated terms

For a list of abbreviations, see the Ice Information Product Specification, Clause 1.3.3.

1.4 Use of language

Within this document:

- “Must” indicates a mandatory requirement.

- “Should” indicates an optional requirement, that is the recommended process to be followed, but is not mandatory.
- “May” means “allowed to” or “could possibly” and is not mandatory.

1.5 Maintenance

Changes to the Data Classification and Encoding Guide must occur in accordance with the S-411 Ice Information Product Specification clause 1.6.

2 General

2.1 Introduction

This S-411 Data Classification and Encoding Guide (DCEG) contains rules and guidance for converting data describing the real world into data products that conform to the S-411 specification.

The S-411 specification contains an application schema (UML model) describing the conceptual domain model in terms of classes and a Feature Catalogue (see S-411 Annex B) that specifies the data model, i.e., specifies the data model types corresponding to the various classes in the application schema.

To simplify the DCEG text, the various data model types will be provided without the suffixes “class”, “type” or “instance”; e.g. the term “feature” should be understood as “feature class” or “feature type” or “feature instance” as best fits the immediate context in which it is used (and where there might be confusion, it is written out in full as feature class/type/instance).The model defines real world entities as a combination of descriptive and spatial characteristics (S-411 Product Specification clause 6).

This clause of the DCEG contains general information needed to understand the encoding rules and describes fundamental common rules and constraints. It also describes datasets and metadata. The data model object types used within S-411 and their encoding rules and guidelines are defined in detail in subsequent clauses of this document.

Within this document the features and attributes appear in **bold text** or *italic text*, to distinguish them from surrounding words.

2.2 Descriptive characteristics

2.2.1 Feature

A feature contains descriptive attributes that characterize real world entities.

The word ‘feature’ as used in the ISO 191xx series and in S-100 based product specifications has two distinct but related senses – ‘feature type’ and ‘feature instance’. A feature instance is a single occurrence of the feature and is represented as an object in a dataset.

The location of a feature instance on the Earth’s surface is indicated by a relationship to one or more spatial primitive instances.

S-411 only makes use of the **Geographic (Geo) feature type** which carries the descriptive characteristics of a real-world entity.

2.2.2 Geographic feature class

Geographic (Geo) feature types carry the descriptive characteristics of a real world entity which is provided by a spatial primitive instance.

2.2.3 Meta feature class

Meta feature type contains information about other features.

2.2.4 Charted background feature

The data product would mostly be visualized as an overlay of an ENC or other GIS applications. Consequently, all necessary descriptive and spatial characteristics to provide a charted background should be provided by the underlying application.

2.3 Spatial characteristics

2.3.1 Spatial primitives

The allowable geometric primitive for each feature type is defined in the Feature Catalogue. Allowable geometric primitives are point, curve and surface. Each spatial value must be referenced by at least one feature instance.

Within this document, allowable primitives are included in the description of each feature type. For easy reference, Table 2-1 below summarises the allowable geometric primitives for each feature. In the Table, abbreviations are as follows: point (P), curve © and surface (S).

Table — Features and their spatial primitives

Feature	P	C	S
Geographic Features			
Floeberg	P		
Grounded Hummock	P		
Ice Compacting	P		
Ice Divergence	P		
Ice Drift	P		
Ice Edge		C	
Ice Fracture		C	
Ice Keel/Bummock	P		
Ice Lead		C	
Ice Rafting	P		
Ice Ridge/Hummock	P		
Ice Shear	P		
Ice Thickness	P		
Iceberg	P		
Iceberg Area			S
Iceberg Limit		C	
Jammed Brash Barrier	P		
Lake Ice			S
Limit of All Known Ice		C	
Limit of Open Water		C	
Line of Ice Crack		C	
Line of Ice Fracture		C	

Feature	P	C	S
Line of Ice Lead		C	
Line of Ice Ridge		C	
Sea Ice			S
Seperate Giant Floe **(TBC)**	P		
Snow Cover	P		
Stage of Melt	P		
Strips and Patches	P		

3 Geo Features

3.1 Sea Ice

Table 3-1

IHO Definition: **SEA ICE** is an area at sea that is covered, in whole or in part, with ice.				
S-101 Geo Feature: Military Practice Area (MIPARE)				
Primitives: Point, Surface				
S-411 Attribute	**S-57 Acronym**	**Allowable Encoding Value**	*Type	Multiplicity*
Total Concentration	(ICEACT)		EN	0,0
Partial Concentration	(ICEAPC)		EN	0,0

4 Geo Feature Attribute and Enumerate Descriptions

5 General

5.1 Introduction

6 Geo Features

6.1 Sea Ice

6.2 Sea Ice

Table 6-1

IHO Definition : Sea Ice is an area at sea that is covered, in whole or in part, with ice.
S-411 Geo Feature: Sea Ice
Primitives: surface

Table 6-2

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Total Concentration	(ICEACT)		EN	0,1
Partial Concentration	(ICEAPC)		EN	0,3
Ice Stage of Development	(ICESOD)		EN	0,5
Floe Sizes	(ICEFLZ)		EN	0,3
Concentration of Strips and Patches	(ICESPC)		EN	0,1
Level Ice	(ICELVL)		EN	0,1
Compacting Strength	(ICECST)		EN	0,1
Ice Fracture Type	(ICEFTY)		EN	0,1
Ice Drift Speed	(ICEDSP)		RE	0,1
Ice Drift Direction	(ICEDDR)		EN	0,1
Ice Ridge Concentration	(ICERCN)		EN	0,3
Ice Ridge Frequency	(ICERFQ)		IN	0,1
Ice Ridge Mean Height	(ICERMH)		IN	0,1
Ice Ridge Maximum Height	(ICERXH)		IN	0,1
Ice Ridge Classification	(ICERDV)		EN	0,1
Ice Keel Concentration	(ICEKCN)		EN	0,1
Ice Average Thickness	(ICETCK)		IN	0,1
Maximum Ice Thickness	(ICEMAX)		IN	0,1
Mimimum Ice Thickness	(ICEMIN)		IN	0,1
Ice Thickness Type	(ICETTY)		EN	0,1
Melt Stage	(ICEMLT)		EN	0,1
Snow Cover Concentration	(ICESCN)		EN	0,1
Snow Depth	(ICESCT)		IN	0,1
Direction of Sastrugi	(ICEDOS)		EN	0,1
Ice Lead Status	(ICELST)		EN	0,1
Frequency of Leads or Fractures	(ICELFQ)		IN	0,1
Orientation of Leads or Fractures	(ICELOR)		EN	0,1
Ice Lead (or Fracture or Crack) Width	(ICELWD)		IN	0,1
Combination Ice Stage of Development and Floe Size for the 1st partial concentration	()		C	0,3
Combination Ice Stage of Development and Floe Size for the 2nd partial concentration	()		C	0,3
Combination Ice Stage of Development and Floe Size for the 3rd partial concentration	()		C	0,3

Ice Breccia for the first partial concentration	()		C	0,3
Ice Breccia for the second partial concentration	()		C	0,3
Ice Breccia for the third partial concentration	()		C	0,3
Snow cover	(IA_SNG)		EN	0,1
Stage of Melting	(IA_MLT)		EN	0,1
Contamination	(IA_PLG)		EN	0,1
Hills Concentration	(IA_HLG)		EN	0,1
Fractures Concentration	(IA_ DUG)		EN	0,1

6.3 Lake Ice

6.4 Lake Ice

Table 6-3

IHO Definition : Lake Ice is an area on a lake that is covered, in whole or in part, with ice.
S-411 Geo Feature: Lake Ice
Primitives: surface

Table 6-4

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Total Concentration	(ICEACT)		EN	0,1
Partial Concentration	(ICEAPC)		EN	0,3
Lake Ice Stage of Development	(ICELSO)		EN	0,5
Floe Sizes	(ICEFLZ)		EN	0,3
Concentration of Strips and Patches	(ICESPC)		EN	0,1
Level Ice	(ICELVL)		EN	0,1
Compacting Strength	(ICECST)		EN	0,1
Ice Fracture Type	(ICEFTY)		EN	0,1
Ice Drift Speed	(ICEDSP)		RE	0,1
Ice Drift Direction	(ICEDDR)		EN	0,1
Ice Ridge Concentration	(ICERCN)		EN	0,3
Ice Ridge Frequency	(ICERFQ)		IN	0,1
Ice Ridge Mean Height	(ICERMH)		IN	0,1
Ice Ridge Maximum Height	(ICERXH)		IN	0,1
Ice Ridge Classification	(ICERDV)		EN	0,1

Ice Keel Concentration	(ICEKCN)		EN	0,1
Ice Average Thickness	(ICETCK)		IN	0,1
Maximum Ice Thickness	(ICEMAX)		IN	0,1
Mimimum Ice Thickness	(ICEMIN)		IN	0,1
Ice Thickness Type	(ICETTY)		EN	0,1
Melt Stage	(ICEMLT)		EN	0,1
Snow Cover Concentration	(ICESCN)		EN	0,1
Snow Depth	(ICESCT)		IN	0,1
Direction of Sastrugi	(ICEDOS)		EN	0,1
Ice Lead Status	(ICELST)		EN	0,1
Frequency of Leads or Fractures	(ICELFQ)		IN	0,1
Orientation of Leads or Fractures	(ICELOR)		EN	0,1
Ice Lead (or Fracture or Crack) Width	(ICELWD)		IN	0,1

6.5 Iceberg Area

6.6 Iceberg Area

Table 6-5

IHO Definition : An Iceberg Area is an area at sea in which icebergs, bergy bits, or growlers are present.
S-411 Geo Feature: Iceberg Area
Primitives: surface

Table 6-6

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Number of Icebergs in Area	(ICEBNM)		IN	0,1
Iceberg Size	(ICEBSZ)		EN	0,1
Iceberg Concentration	(IA_BCN)		EN	0,1
Prevailing Iceberg Form	(IA_BFM)		EN	0,1
Maximum Height of Above Water Part (iceberg/ grounded hummock)	(IA_BUH)		IN	0,1

6.7 Ice Edge

6.8 Ice Edge

Table 6-7

IHO Definition : The demarcation at any given time between the open sea and sea ice of any kind and in any concentration, whether fast or drifting.
S-411 Geo Feature: Ice Edge
Primitives: curve

Table 6-8

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity

6.9 Iceberg Limit

6.10 Iceberg Limit

Table 6-9

IHO Definition : Limit of all known Icebergs.
S-411 Geo Feature: Iceberg Limit
Primitives: curve

Table 6-10

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity

6.11 Limit of Open Water

6.12 Limit of Open Water

Table 6-11

IHO Definition : The demarcation at any given time between sea ice and freely navigable water, in which sea ice is present in concentrations less than 1/10.
S-411 Geo Feature: Limit of Open Water
Primitives: curve

Table 6-12

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity

6.13 Limit of all Known Ice

6.14 Limit of All Known Ice

Table 6-13

IHO Definition : The limit of all known ice, including both sea ice of any kind and icebergs.
S-411 Geo Feature: Limit of All Known Ice
Primitives: curve

Table 6-14

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity

6.15 Line of Ice Ridge

6.16 Line of Ice Ridge

Table 6-15

IHO Definition : Line of Ice Ridge is a line or wall of broken ice forced up by pressure processes.
S-411 Geo Feature: Line of Ice Ridge
Primitives: curve

Table 6-16

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Ice Ridge Classification	(ICERDV)		EN	0,1
Ice Ridge Mean Height	(ICERMH)		IN	0,1
Ice Ridge Maximum Height	(ICERXH)		IN	0,1

6.17 Line of Ice Lead

6.18 Line of Ice Lead

Table 6-17

IHO Definition : Line of Ice Lead identifies any passage-way(s) through ice which is (are) navigable by surface vessels.
S-411 Geo Feature: Line of Ice Lead
Primitives: curve

Table 6-18

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Ice Stage of Development	(ICESOD)		EN	0,5
Number of Ice Objects	(IA_OBN)		IN	0,1
Average Width of Ice Lead (or Fracture or Crack)	(ICEDVW)		IN	0,1
Minimum Width of Ice Lead (or Fracture or Crack)	(IA_ DMW)		IN	0,1
Maximum Width of Ice Lead (or Fracture or Crack)	(IA_ DXW)		IN	0,1

6.19 Line of Ice Fracture

6.20 Line of Ice Fracture

Table 6-19

IHO Definition : Any break or rupture through the ice cover, or through the single floe, resulting from deformation processes. Length may vary from a few meters to a few kilometers.
S-411 Geo Feature: Line of Ice Fracture
Primitives: curve

Table 6-20

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Ice Stage of Development	(ICESOD)		EN	0,5
Number of Ice Objects	(IA_OBN)		IN	0,1
Average Width of Ice Lead (or Fracture or Crack)	(ICEDVW)		IN	0,1
Minimum Width of Ice Lead (or Fracture or Crack)	(IA_ DMW)		IN	0,1
Maximum Width of Ice Lead (or Fracture or Crack)	(IA_ DXW)		IN	0,1

6.21 Line of Ice Crack

6.22 Line of Ice Crack

Table 6-21

IHO Definition : Line of Ice Crack identifies any ice breakup, but no passage-way(s) for surface vessels.
S-411 Geo Feature: Line of Ice Crack

Primitives: curve

Table 6-22

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Ice Stage of Development	(ICESOD)		EN	0,5
Number of Ice Objects	(IA_OBN)		IN	0,1
Average Width of Ice Lead (or Fracture or Crack)	(ICEDVW)		IN	0,1
Minimum Width of Ice Lead (or Fracture or Crack)	(IA_ DMW)		IN	0,1
Maximum Width of Ice Lead (or Fracture or Crack)	(IA_ DXW)		IN	0,1

6.23 Ice Compacting

6.24 Ice Compacting

Table 6-23

IHO Definition : Pieces of ice are said to be compacting when they are subjected to a converging motion, which increases ice concentration and/or produces stresses which may result in ice deformation.
S-411 Geo Feature: Ice Compacting
Primitives: point

Table 6-24

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Compacting Strength	(ICECST)		EN	0,1

6.25 Ice Lead

6.26 Ice Lead

Table 6-25

IHO Definition : Ice Lead identifies any fracture(s) or passage-way(s) through ice which is (are) navigable by surface vessels.
S-411 Geo Feature: Ice Lead
Primitives: point

Table 6-26

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity

Ice Location Information	(ICELOC)		EN	0,1
Ice Lead Status	(ICELST)		EN	0,1
Ice Lead (or Fracture or Crack) Width	(ICELWD)		IN	0,1

6.27 Iceberg

6.28 Iceberg

Table 6-27

IHO Definition : An Iceberg is a massive piece of ice, greatly varying in shape and showing more than 5 meters above the sea surface which has broken away from a glacier, and which may be afloat or grounded. This Object Class also includes smaller forms of glacial ice, known as “Bergy Bits” and “Growlers”, which are defined by their size Attribute. ICEBRG can indicate the location of a single iceberg or, if the attribute IA_OBN is specified and is greater than 1, multiple icebergs in the vicinity of a point.
S-411 Geo Feature: Iceberg
Primitives: point

Table 6-28

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Iceberg Size	(ICEBSZ)		EN	0,1
Ice Drift Speed	(ICEDSP)		RE	0,1
Ice Drift Direction	(ICEDDR)		EN	0,1
Number of Ice Objects	(IA_ OBN)		IN	0,1
Prevailing Iceberg Form	(IA_BFM)		EN	0,1
Maximum Height of Above Water Part (iceberg/ grounded hummock)	(IA_BUH)		IN	0,1

6.29 Floaberg

6.30 Floeberg

Table 6-29

IHO Definition : A Floeberg is a massive piece of sea ice composed of a hummock or a group of hummocks, frozen together and separated from any ice surroundings. They typically protrude up to 5 meters above the sea surface.
S-411 Geo Feature: Floeberg
Primitives: point

Table 6-30

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Ice Drift Speed	(ICEDSP)		RE	0,1
Ice Drift Direction	(ICEDDR)		EN	0,1

6.31 Ice Thickness

6.32 Ice Thickness

Table 6-31

IHO Definition : Ice Thickness provides a measure or estimate of ice thickness.
S-411 Geo Feature: Ice Thickness
Primitives: point

Table 6-32

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Ice Average Thickness	(ICETCK)		IN	0,1
Maximum Ice Thickness	(ICEMAX)		IN	0,1
Mimimum Ice Thickness	(ICEMIN)		IN	0,1
Ice Thickness Type	(ICETTY)		EN	0,1

6.33 Ice Shear

6.34 Ice Shear

Table 6-33

IHO Definition : An area of drift ice is subject to shear when the ice motion varies significantly in the direction normal to the motion, subjecting the ice to rotational forces.
S-411 Geo Feature: Ice Shear
Primitives: point

Table 6-34

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity

6.35 Ice Divergence

6.36 Ice Divergence

Table 6-35

IHO Definition : Ice fields or floes in an area are subject to diverging or dispersive motion, thus reducing ice concentration and/or relieving stresses in the ice.
S-411 Geo Feature: Ice Divergence
Primitives: point

Table 6-36

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity

6.37 Ice Ridge or Hummock

6.38 Ice Ridge/Hummock

Table 6-37

IHO Definition : An Ice Ridge is a line or wall of broken ice forced up by pressure. A Hummock is a hillock of broken ice which has been forced upward by pressure.
S-411 Geo Feature: Ice Ridge/Hummock
Primitives: point

Table 6-38

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Ice Ridge Concentration	(ICERCN)		EN	0,1
Ice Ridge Frequency	(ICERFQ)		IN	0,3
Ice Ridge Mean Height	(ICERMH)		IN	0,1
Ice Ridge Maximum Height	(ICERXH)		IN	0,1
Ice Ridge Classification	(ICERDV)		EN	0,1

6.39 Ice keel or Bummock

6.40 Ice Keel/Bummock

Table 6-39

IHO Definition : From a submariner’s point of view, a Keel is a downward projecting ridge on the underside of the ice canopy — the counterpart of a Ridge. A Bummock is the counterpart of a hummock on the underside of the ice canopy.
S-411 Geo Feature: Ice Keel/Bummock

Primitives: point

Table 6-40

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Ice Keel Concentration	(ICEKCN)		EN	0,1
Ice Keel Frequency	(ICEKFQ)		IN	0,1
Ice Keel Mean Depth	(ICEKMD)		IN	0,1
Ice Keel Maximum Depth	(ICEKXD)		IN	0,1

6.41 Ice Drift

6.42 Ice Drift

Table 6-41

IHO Definition : Motion of an ice field or floe as a result of forces such as wind and currents.
S-411 Geo Feature: Ice Drift
Primitives: point

Table 6-42

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Ice Drift Speed	(ICEDSP)		RE	0,1
Ice Drift Direction	(ICEDDR)		EN	0,1

6.43 Ice Fracture

6.44 Ice Fracture

Table 6-43

IHO Definition : Any break or rupture through the ice pack, or a single floe, resulting from deformation processes. Length may vary from a few metres to many kilometres.
S-411 Geo Feature: Ice Fracture
Primitives: point

Table 6-44

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Ice Fracture Type	(ICEFTY)		EN	0,1
Ice Location Information	(ICELOC)		EN	0,1

Number of Ice Objects	(IA_OBN)		IN	0,1
Ice Stage of Development	(ICESOD)		EN	0,1
Average Width of Ice Lead (or Fracture or Crack)	(ICEDVW)		IN	0,5
Minimum Width of Ice Lead (or Fracture or Crack)	(IA_ DMW)		IN	0,1
Maximum Width of Ice Lead (or Fracture or Crack)	(IA_ DXW)		IN	0,1

6.45 Ice Rafting

6.46 Ice Rafting

Table 6-45

IHO Definition : Pressure processes whereby one piece of ice overrides another.
S-411 Geo Feature: Ice Rafting
Primitives: point

Table 6-46

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Ice Rafting Concentration	(ICEFCN)		EN	0,1

6.47 Jammed Brash Barrier

6.48 Jammed Brash Barrier

Table 6-47

IHO Definition : A strip or narrow belt of new, young or brash ice (usually 100-500 metres wide) formed at the edge of either drift or fast ice.
S-411 Geo Feature: Jammed Brash Barrier
Primitives: point

Table 6-48

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity

6.49 Stage of Ice melt

6.50 Stage of Melt

Table 6-49

IHO Definition : A description of the stage of melt of the ice; i.e. whether it has formed puddles on the surface and whether these have frozen.
S-411 Geo Feature: Stage of Melt
Primitives: point

Table 6-50

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Melt Stage	(ICEMLT)		EN	0,1

6.51 Snow Cover

6.52 Snow Cover

Table 6-51

IHO Definition : A description of the amount of snow covering the ice.
S-411 Geo Feature: Snow Cover
Primitives: point

Table 6-52

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Snow Cover Concentration	(ICESCN)		EN	0,1
Snow Depth	(ICESCT)		IN	0,1
Direction of Sastrugi	(ICEDOS)		EN	0,1

6.53 Strips and Patches

6.54 Strips and Patches

Table 6-53

IHO Definition : A strip is a long narrow area of floating ice, about 1 kilometre or less in width, usually composed of small fragments detached from the main mass of ice, and run together under the influence of wind, swell or current. If the area of ice becomes more rounded in shape, it is referred to as a patch.
S-411 Geo Feature: Strips and Patches
Primitives: point

Table 6-54

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Concentration of Strips and Patches	(ICESPC)		EN	0,1

6.55 Grounded Hummock

6.56 Grounded Hummock

Table 6-55

IHO Definition : Grounded Hummock identifies a hummock formation which is stranded.
S-411 Geo Feature: Grounded Hummock
Primitives: point

Table 6-56

S-411Attribute	Acronym	Allowable Encoding Value	Type	Multiplicity
Maximum Height of Above Water Part (iceberg/ grounded hummock)	(IA_ BUH)		IN	0,1