S-412 Data Classification and Encoding Guide (DCEG)

# Section A - DCEG – Feature Types and Information Types

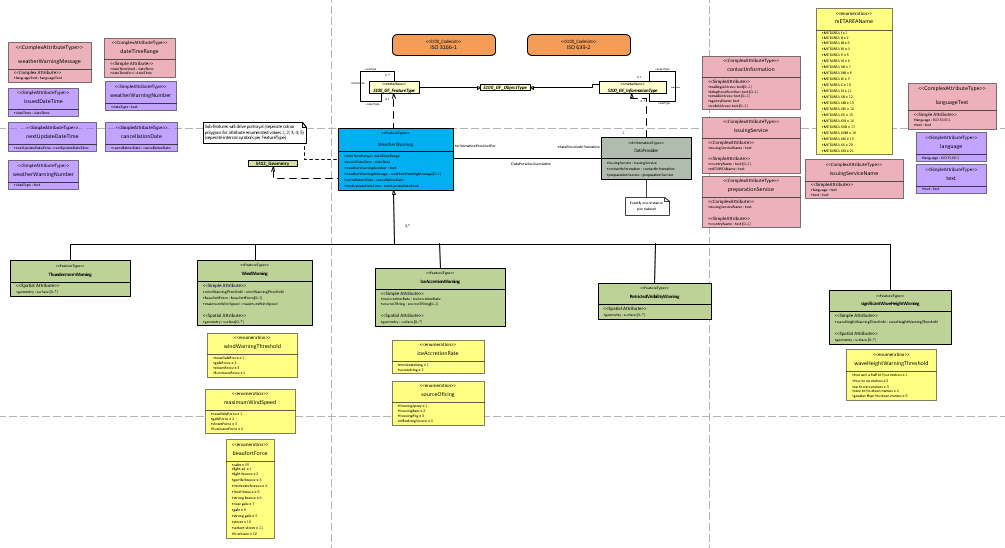
Section A contains a complete list of all allowable features and their attributes within an S-412 compliant data set. This list has been defined within the IHO Registry WMO Weather Domain and is visualised in the S-412 Application Schema (UML diagram) in Figure A.1.. Listings for each allowable attribute (and subsequent dataType) and any associations between feature or information types are provided for each feature. Additionally, specific restrictions and/or use cases for each feature are outlined in each feature’s remarks section.

As described in Section 4 of the S-412 product specification, real world meteorological and oceanographic elements are realised through both InformationType and FeatureType classes (features), complex and primitive data types (complex and simple attributes), code lists, and associations. Additional feature constraints, behaviours, relationships or use cases are provided in each feature’s remarks section.

In addition to S-100 Edition 5.2.0, the below tables should be referenced to identify the labels used in this Annex. The abbreviations listed below represent S-100 dataTypes that are used in S-412.

| Data Types | Abbreviation | |
| --- | --- | --- |
| Real | | (S\*) RE |
| Date Time | | (S) DT |
| Integer | | (S) IN |
| Enumerated | | (S) EN |
| Text | | (S) TE |
| Boolean | | (S) BO |
| Complex | | C\* |
| Uniform Resource Name | | URN |
| Code List Types | Abbreviation | |
| Open Enumeration | | (CL\*) OE |
| \*  S = Simple  C = Complex  CL = Code List | |  |

Additional information, including descriptions and definitions of all attributes listed in this Section and defined within the IHO Registry WMO Weather domain can be found in Section B. ISO specific data types are specified in the appropriate ISO document.



**Figure A.1. -** S-412 Application Schema

| **Feature Number** | **Feature Name** | **Camel Case Identifier** |
| --- | --- | --- |
| A.01 | Data Provider | dataProvider |
| A.02 | Ice Accretion Warning | iceAccretionWarning |
| A.03 | Restricted Visibility Warning | restrictedVisibilityWarning |
| A.04 | Significant Wave Height Warning | significantWaveHeightWarning |
| A.05 | Thunderstorm Warning | thunderstormWarning |
| A.06 | Weather Warning | weatherWarning |
| A.07 | Wind Warning | windWarning |

## A.01 Data Provider

| **Description:** Data Provider is an Information Type that contains an association to Weather Warning called DataProviderAssociation. |
| --- |
| **Definition:** An organization or entity providing a data in an official capacity. |
| **Camel Case:** dataProvider |
| **Spatial Primitives:** None |

| **Attribute Name** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| --- | --- | --- | --- |
| contactInformation |  | C | 1 |
| mailingAddress | Maximum of 300 Characters | (S) TE | 0,1 |
| telephoneNumber | Maximum of 300 Characters | (S) TE | 0,\* |
| emailAddress | Maximum of 300 Characters | (S) TE | 0,\* |
| agencyName | Maximum of 300 Characters | (S) TE | 1 |
| webAddress | Maximum of 300 Characters | (S) TE | 0,\* |
| issuingService |  | C | 1 |
| countryName | Maximum of 300 Characters | (S) TE | 0,1 |
| issuingServiceName |  | C | 1 |
| languageText |  | C | 1 |
| mETAREAName | 1: METAREA I  2: METAREA II  3: METAREA III  4: METAREA IV  5: METAREA V  6: METAREA VI  7: METAREA VII  8: METAREA VIII  9: METAREA IX  10: METAREA X  11: METAREA XI  12: METAREA XII  13: METAREA XIII  14: METAREA XIV  15: METAREA XV  16: METAREA XVI  17: METAREA XVII  18: METAREA XVIII  19: METAREA XIX  20: METAREA XX  21: METAREA XXI | (S) EN | 1 |
| preparationService |  | C | 1 |
| countryName | Maximum of 300 Characters | (S) TE | 1 |
| issuingServiceName |  | C | 1 |
| languageText |  | C | 1 |

| **Inherited Attribute Names** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| --- | --- | --- | --- |
| NONE |  |  |  |

| **Associations** | | |
| --- | --- | --- |
| DataProviderAssociation | Label: Data Provider  Role: dataProviderInformation  Multiplicity: 1  Ordered: False | Label: Weather Warning  Role: informationProvidedFor  Multiplicity: 1  Ordered: False |

| **Additional References :**  **Remarks:**   * Exactly one instance of this Information Type per dataset |
| --- |

## A.02 Ice Accretion Warning

| **Description:**  Ice AccretionWarning is a Feature Type that is a subType of the Weather Warning abstract Feature Type. All attributes within and associations to/from Weather Warning are inherited by Ice Accretion Warning. |
| --- |
| **Definition:** A product issued by a weather forecast agency when ice accumulation rates pose a hazard to vessels. |
| **Feature Type:** Geographic |
| **Camel Case:** iceAccretionWarning |
| **Spatial Primitives:** Surface |

| **Attribute Name** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| --- | --- | --- | --- |
| iceAccretionRate | 1: moderate icing  2: severe icing | (S) EN | 1 |
| sourceOfIcing | 1: freezing spray  2: freezing rain  3: freezing fog  4: other icing source | (S) EN | 0,\* |

| **Inherited Attribute Names** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| --- | --- | --- | --- |
| cancellationDate | YYYYMMDDTHHMMSS | (S) DT | 1 |
| dateTimeRange |  | C | 1 |
| dateTimeStart | YYYYMMDDTHHMMSS | (S) DT | 1 |
| dateTimeEnd | YYYYMMDDTHHMMSS | (S) DT | 1 |
| issuedDateTime | YYYYMMDDTHHMMSS | (S) DT | 1 |
| nextUpdateDateTime | YYYYMMDDTHHMMSS | (S) DT | 1 |
| weatherWarningMessage | Maximum of 300 Characters | C | 0,\* |
| languageText |  | C | 1 |
| weatherWarningNumber | Maximum of 300 Characters | (S) TE | 1 |

| **Associations** | | |
| --- | --- | --- |
| DataProviderAssociation | Label: DataProvider  Role: dataProviderInformation  Multiplicity: 1  Ordered: False | Label: Weather Warning  Role: informationProvidedFor  Multiplicity: 1  Ordered: False |

| **Additional References:**   * WMO-No. 471, Annex 2.B, Multilingual List of Terms used in Weather and Sea Bulletins * WMO-No. 558, Appendix I.2, Multilingual List of terms used in Weather and Sea Bulletins * {Is a reference needed for ice accumulation thresholds?}   **Remarks:** |
| --- |

## 

## A.03 Restricted Visibility Warning

| **Description:**  Restricted Visibility Warning is a Feature Type that is a subType of the Weather Warning abstract Feature Type. All attributes within and associations to/from Weather Warning are inherited by Restricted Visibility Warning. |
| --- |
| **Definition:** A product issued by a weather forecast agency when horizontal visibility is degraded to less than 0.5 nautical mile by fog, smoke, dust, haze, heavy precipitation, or any other phenomena. |
| **Feature Type:** Geographic |
| **Camel Case:** restrictedVisibilityWarning |
| **Spatial Primitives:** Surface |

| **Inherited Attribute Names** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| --- | --- | --- | --- |
| cancellationDate | YYYYMMDDTHHMMSS | (S) DT | 1 |
| dateTimeRange |  | C | 1 |
| dateTimeStart | YYYYMMDDTHHMMSS | (S) DT | 1 |
| dateTimeEnd | YYYYMMDDTHHMMSS | (S) DT | 1 |
| issuedDateTime | YYYYMMDDTHHMMSS | (S) DT | 1 |
| nextUpdateDateTime | YYYYMMDDTHHMMSS | (S) DT | 1 |
| weatherWarningMessage | Maximum of 300 Characters | C | 0,\* |
| languageText |  | C | 1 |
| weatherWarningNumber | Maximum of 300 Characters | (S) TE | 1 |



| **Associations** | | |
| --- | --- | --- |
| DataProviderAssociation | Label: DataProvider  Role: dataProviderInformation  Multiplicity: 1  Ordered: False | Label: Weather Warning  Role: informationProvidedFor  Multiplicity: 1  Ordered: False |

| **Additional References:**   * WMO-No. 471, Annex 2.B, Multilingual List of Terms used in Weather and Sea Bulletins * WMO-No. 558, Appendix I.2, Multilingual List of terms used in Weather and Sea Bulletins, {also in forecast/warning section about restricted visibility?}   **Remarks:** |
| --- |

## A.04 Significant Wave Height Warning

| **Description:** Significant Wave Height Warning is a Feature Type that is a subType of the Weather Warning abstract Feature Type. All attributes within and associations to/from Weather Warning are inherited by Significant Wave Height Warning. |
| --- |
| **Definition:** A product issued by a weather forecast agency when sea state conditions pose a hazard or are life-threatening. |
| **Feature Type:** Geographic |
| **Camel Case:** significantWaveHeightWarning |
| **Spatial Primitives:** Surface |

| **Attribute Name** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| --- | --- | --- | --- |
| waveHeightWarningThreshold | 1: two and a half to four metres  2: four to six metres  3: six to nine metres  4: nine to fourteen metres  5: greater than fourteen metres | (S) EN | 1 |

| **Inherited Attribute Names** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| --- | --- | --- | --- |
| cancellationDate | YYYYMMDDTHHMMSS | (S) DT | 1 |
| dateTimeRange |  | C | 1 |
| dateTimeStart | YYYYMMDDTHHMMSS | (S) DT | 1 |
| dateTimeEnd | YYYYMMDDTHHMMSS | (S) DT | 1 |
| issuedDateTime | YYYYMMDDTHHMMSS | (S) DT | 1 |
| nextUpdateDateTime | YYYYMMDDTHHMMSS | (S) DT | 1 |
| weatherWarningMessage | Maximum of 300 Characters | C | 0,\* |
| languageText |  | C | 1 |
| weatherWarningNumber | Maximum of 300 Characters | (S) TE | 1 |

| **Associations** | | |
| --- | --- | --- |
| DataProviderAssociation | Label: DataProvider  Role: dataProviderInformation  Multiplicity: 1  Ordered: False | Label: Weather Warning  Role: informationProvidedFor  Multiplicity: 1  Ordered: False |

| **Additional References:**   * WMO-No. 182, International Meteorological Vocabulary * {May want reference about significant wave height definition or WMO 558 }   **Remarks:** |
| --- |

## A.05 Thunderstorm Warning

| **Description:**  Thunderstorm Warning is a Feature Type that is a subType of the Weather Warning abstract Feature Type. All attributes within and associations to/from Weather Warning are inherited by Thunderstorm Warning. |
| --- |
| **Definition:** A product issued by a weather forecast agency when an area of thunderstorms or squalls poses a hazard. Conditions could include strong winds, locally higher waves, potentially heavy precipitation, hail, and dangerous lightning strikes. |
| **Feature Type:** Geographic |
| **Camel Case:** thunderstormWarning |
| **Spatial Primitives:** Surface |

| **Inherited Attribute Names** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| --- | --- | --- | --- |
| cancellationDate | YYYYMMDDTHHMMSS | (S) DT | 1 |
| dateTimeRange |  | C | 1 |
| dateTimeStart | YYYYMMDDTHHMMSS | (S) DT | 1 |
| dateTimeEnd | YYYYMMDDTHHMMSS | (S) DT | 1 |
| issuedDateTime | YYYYMMDDTHHMMSS | (S) DT | 1 |
| nextUpdateDateTime | YYYYMMDDTHHMMSS | (S) DT | 1 |
| weatherWarningMessage | Maximum of 300 Characters | C | 0,\* |
| languageText |  | C | 1 |
| weatherWarningNumber | Maximum of 300 Characters | (S) TE | 1 |



| **Associations** | | |
| --- | --- | --- |
| DataProviderAssociation | Label: DataProvider  Role: dataProviderInformation  Multiplicity: 1  Ordered: False | Label: Weather Warning  Role: informationProvidedFor  Multiplicity: 1  Ordered: False |

| **Additional References:**  **Remarks:** |
| --- |

## A.06 Weather Warning

| **Description:**  Weather Warning is the base Abstract Feature Type for all categories of weather warning Feature Types for S-412. All attributes and associations to and from Weather Warning are inherited by all weather warning SubTypes. |
| --- |
| **Definition:** A product issued by a weather forecasting agency when a specific weather scenario or event threatens people or property. |
| **Camel Case:**  weatherWarning |
| **Spatial Primitives:**  None |

| **Attribute Name** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| --- | --- | --- | --- |
| cancellationDate | YYYYMMDDTHHMMSS | (S) DT | 1 |
| dateTimeRange |  | C | 1 |
| dateTimeStart | YYYYMMDDTHHMMSS | (S) DT | 1 |
| dateTimeEnd | YYYYMMDDTHHMMSS | (S) DT | 1 |
| issuedDateTime | YYYYMMDDTHHMMSS | (S) DT | 1 |
| nextUpdateDateTime | YYYYMMDDTHHMMSS | (S) DT | 1 |
| weatherWarningMessage | Maximum of 300 Characters | C | 0,\* |
| languageText |  | C | 1 |
| weatherWarningNumber | Maximum of 300 Characters | (S) TE | 1 |

| **Associations** | | |
| --- | --- | --- |
| DataProviderAssociation | Label: DataProvider  Role: dataProviderInformation  Multiplicity: 1  Ordered: False | Label: Weather Warning  Role: informationProvidedFor  Multiplicity: 1  Ordered: False |

| **Additional References :**  **Remarks:** |
| --- |

## A.07 Wind Warning

| **Description:** Wind Warning is a Feature Type that is a subType of the Weather Warning abstract Feature Type. All attributes within and associations to/from Weather Warning are inherited by Wind Warning. |
| --- |
| **Definition:** A product issued by a weather forecasting agency when high wind speeds pose a hazard or are life-threatening. |
| **Feature Type:** Geographic |
| **Camel Case:** windWarning |
| **Spatial Primitives:** Surface |

| **Attribute Name** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| --- | --- | --- | --- |
| beaufortForce | 1: light air  2: light breeze  3: gentle breeze  4: moderate breeze  5: fresh breeze  6: strong breeze  7: near gale  8: gale  9: strong gale  10: storm  11: violent storm  12: hurricane force | (S) EN | 0,1 |
| windWarningThreshold | 1: near gale force  2: gale force  3: storm force  4: hurricane force | (S) EN | 1 |
| maximumWindSpeed |  | C | 0,1 |
| languageText |  | C | 1 |

| **Inherited Attribute Names** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| --- | --- | --- | --- |
| cancellationDate | YYYYMMDDTHHMMSS | (S) DT | 1 |
| dateTimeRange |  | C | 1 |
| dateTimeStart | YYYYMMDDTHHMMSS | (S) DT | 1 |
| dateTimeEnd | YYYYMMDDTHHMMSS | (S) DT | 1 |
| issuedDateTime | YYYYMMDDTHHMMSS | (S) DT | 1 |
| nextUpdateDateTime | YYYYMMDDTHHMMSS | (S) DT | 1 |
| weatherWarningMessage | Maximum of 300 Characters | C | 0,\* |
| languageText |  | C | 1 |
| weatherWarningNumber | Maximum of 300 Characters | (S) TE | 1 |

| **Associations** | | |
| --- | --- | --- |
| DataProviderAssociation | Label: DataProvider  Role: dataProviderInformation  Multiplicity: 1  Ordered: False | Label: Weather Warning  Role: informationProvidedFor  Multiplicity: 1  Ordered: False |

| **Additional References:**   * **WMO-No. 471, Annex 2.B, Multilingual List of Terms used in Weather and Sea Bulletins** * **WMO-No. 558, Appendix I.2, Multilingual List of terms used in Weather and Sea Bulletins** * Manual on Codes, Volume I.1-International Codes, WMO Technical Regulations, Annex II, Part A, Alphanumeric Codes, Section E Beaufort Wind Scale, pp A-379   **Remarks:** |
| --- |

# Section B – DCEG – Attributes

Section B contains a list of all attributes defined within the IHO Registry that are used by the S-412 Marine Weather Warnings Product SpecificationWMO Weather Domain. Each attribute description follows the basic format, providing details about the data type, allowable encoding values, camel case, etc.

| **Attribute Number** | **Register**  **Dictionary** | **Attribute Name** | **Camel Case** |
| --- | --- | --- | --- |
| B.01 | WxFCD | Agency Name | agencyName |
| B.02 | WxFCD | Beaufort Force | beaufortForce |
| B.03 | IHO WWNWS | Cancellation Date | cancellationDate |
| B.04 | WxFCD | Contact Information | contactInformation |
| B.05 | IHO Hydro | Country Name | countryName |
| B.06 | WxFCD | Date Time End | dateTimeEnd |
| B.07 | WxFCD | Date Time Range | dateTimeRange |
| B.08 | WxFCD | Date Time Start | dateTimeStart |
| B.09 | IHO Hydro | Email Address | emailAddress |
| B.10 | WxFCD | Ice Accretion Rate | iceAccretionRate |
| B.11 | WxFCD | Issued Date Time | issuedDateTime |
| B.12 | WxFCD | Issuing Service | issuingService |
| B.13 | WxFCD | Issuing Service Name | issuingServiceName |
| B.14 | IHO Hydro | Language | language |
| B.15 | WxFCD | Language Text | languageText |
| B.16 | WxFCD | Mailing Address | mailingAddress |
| B.17 | WxFCD | Maximum Wind Speed | maximumWindSpeed |
| B.18 | WxFCD | METAREA Name | mETAREAName |
| B.19 | WxFCD | Next Update Date Time | nextUpdateDateTime |
| B.20 | WxFCD | Preparation Service | preparationService |
| B.21 | WxFCD | Source of Icing | sourceOfIcing |
| B.22 | IHO Hydro | Telephone Number | telephoneNumber |
| B.23 | IHO Hydro | Text | text |
| B.24 | WxFCD | Wave Height Warning Threshold | waveHeightWarningThreshold |
| B.25 | WxFCD | Weather Warning Message | weatherWarningMessage |
| B.26 | WxFCD | Weather Warning Number | weatherWarningNumber |
| B.27 | IHO Hydro | Web Address | webAddress |
| B.28 | WxFCD | Wind Warning Threshold | windWarningThreshold |

## B.01 Agency Name

| Definition:  The name of an agency, entity or organization.  Reference:  S-412 WMO Weather Product Specification  Item Type:  Simple Attribute (data type: text)  Camel Case:  agencyName  Length:  Maximum of 300 characters.  Remarks: |
| --- |

## B.02 Beaufort Force

| Definition:  Wind force scale, originally based on the state of the sea, expressed in numbers from 0 to 12.  Item Type:  Simple Attribute (data type: Enumeration)  Reference:  WMO-No. 182, B0620  Camel Case:  beaufortForce   1. **light air**   Definition: Wind with a speed between 1 and 3 knots (Beaufort scale wind force 1). (WMO-No. 182, L0500)  Camel Case: lightAir   1. **light breeze**   Definition: Wind with a speed between 4 and 6 knots (Beaufort scale wind force 2). (WMO-No. 182, L0510)  Camel Case: lightBreeze   1. **gentle breeze**   Definition: Wind with a speed between 7 and 10 knots (Beaufort scale wind force 3). (WMO-No. 182, G0200)  Camel Case: gentleBreeze   1. **moderate breeze**   Definition: Wind with a speed between 11 and 16 knots (Beaufort scale wind force 4). (WMO-No. 182, M1680)  Camel Case: moderateBreeze   1. **fresh breeze**   Definition: Wind with a speed between 17 and 21 knots (Beaufort scale wind force 5). (WMO-No. 182, F1200)  Camel Case: freshBreeze   1. **strong breeze**   Definition: Wind with a speed between 22 and 27 knots (Beaufort scale wind force 6). (WMO-No. 182, S3120)  Camel Case: strongBreeze   1. **near gale**   Definition: Wind with a speed between 28 and 33 knots (Beaufort scale wind force 7). (WMO-No. 182, N0150)  Camel Case: nearGale   1. **gale**   Definition: Wind with a speed between 34 and 40 knots (Beaufort scale wind force 8). (WMO-No. 182, G0010)  Camel Case: gale   1. **strong gale**   Definition: Wind with a speed between 41 and 47 knots (Beaufort scale wind force 9). (WMO-No. 182, S3130)  Camel Case: strongGale   1. **storm**   Definition: Wind with a speed between 48 and 55 knots (Beaufort scale wind force 10). (WMO-No. 182, S2950 (2))  Camel Case: storm   1. **violent storm**   Definition: Wind with a speed between 56 and 63 knots (Beaufort scale wind force 11). (WMO-No. 182, V0340)  Camel Case: violentStorm   1. **hurricane force**   Definition: Wind with a speed 64 knots and above (Beaufort scale wind force 12). (WMO-No. 182, H0860 (1))  Camel Case: hurricaneForce  99) **calm wind**  Definition: Absence of air motion or wind with a speed of less than 1 knot (Beaufort scale wind force 0). (WMO-No. 182, C0030)  Camel Case: calmWind  Remarks: |
| --- |

## B.03 Cancellation Date

| Definition:  Date and time of cancelling a notice or warning.  Reference:  IHO WWNWS-SC  Item Type:  Simple Attribute (data type: dateTime)  Camel Case:  cancellationDate  Unit:  Years, months, days, hours, minutes, seconds  Resolution:  1 second  Format:  YYYYMMDDTHHMMSS, where Y is year, M is month, D is day, H is hour, M is minute, and S is second  Remarks:  None |
| --- |

## B.04 Contact Information

| Definition:  Information about where inquiries can be sent.  Reference:  S-412 WMO Weather Product Specification  Item Type:  Complex Attribute  Camel Case:  contactInformation  Sub-Attributes:  agencyName  emailAddress  mailingAddress  telephoneNumber  webAddress  Remarks: |
| --- |

## B.05 Country Name

| Definition:  The name of a nation.  Reference:  American Heritage Dictionary of the English Language  Item Type:  Simple Attribute (data type: text)  Camel Case:  countryName  Remarks:  Length:  Maximum of 150 characters. |
| --- |

## B.06 Date Time End

| Definition:  The end of a time range, expressed in Universal Time Coordinated (UTC).  Reference:  S-57: IHO Transfer Standard for Digital Hydrographic Data, Appendix A, Chapter 2 (2.219 TIMEND)  Item Type:  Simple Attribute (data type: dateTime)  Camel Case:  dateTimeEnd  Unit:  Years, months, days, hours, minutes, seconds  Resolution:  1 second  Format:  YYYYMMDDTHHMMSS, where Y is year, M is month, D is day, H is hour, M is minute, and S is second  Remarks:  19850412T183059 denotes 18 hours, 30 minutes, and 59 seconds on 12 April 1985. |
| --- |

## B.07 Date Time Range

| Definition:  The range of time a feature is valid for.  Reference:  S-412 WMO Weather Product Specification  Item Type:  Complex Attribute  Camel Case:  dateTimeRange  Sub-Attributes:  dateTimeStart  dateTimeEnd  Remarks: |
| --- |

## B.08 Date Time Start

| Definition:  The beginning of a time range, expressed in Universal Time Coordinated (UTC).  Reference:  S-57: IHO Transfer Standard for Digital Hydrographic Data, Appendix A, Chapter 2 (2.220 TIMSTA)  Item Type:  Simple Attribute (data type: dateTime)  Camel Case:  dateTimeStart  Unit:  Years, months, days, hours, minutes, seconds  Resolution:  1 second  Format:  YYYYMMDDTHHMMSS, where Y is year, M is month, D is day, H is hour, M is minute, and S is second  Remarks:  19850412T183059 denotes 18 hours, 30 minutes, and 59 seconds on 12 April 1985. |
| --- |

## B.09 Email Address

| Definition:  Identifies an email box to which email messages are delivered.  Reference:  IHO Registry, Hydro Domain, https://en.wikipedia.org/wiki/Email\_address  Item Type:  Simple Attribute (data type: text)  Camel Case:  emailAddress  Remarks: |
| --- |

## B.10 Ice Accretion Rate

| Definition:  Represents the ice accretion warning that has been exceeded or forecast to be exceeded based on ice accumulation rates.  Reference:  WMO-No.558  Item Type:  Simple Attribute (data type: Enumeration)  Camel Case:  iceAccretionRate   1. **moderate icing**   Definition: Ice accumulation rates between 0.7 and 2 centimetres per hour are forecast or occurring.  Camel Case: moderateIcing   1. **severe icing**   Definition: Ice accumulation rates greater than 2 centimetres per hour are forecast or occurring.  Camel Case: severeIcing  Remarks: |
| --- |

## B.11 Issued Date Time

| Definition:  The time, expressed in Universal Time Coordinated (UTC) at which an object and its attributes are issued from an agency.  Reference:  NWSI 10-303, 5.8  Item Type:  Simple Attribute (data type: dateTime)  Camel Case:  issuedDateTime  Unit:  Years, months, days, hours, minutes, seconds  Resolution:  1 second  Format:  YYYYMMDDTHHMMSS, where Y is year, M is month, D is day, H is hour, M is minute, and S is second  Remarks:  19850412T183059 denotes 18 hours, 30 minutes, and 59 seconds on 12 April 1985. |
| --- |

## 

## B.12 Issuing Service

| Definition:  The number of the METAREA, name of the Nation, and the National Meteorological and Hydrological Service (NMHS) or National Authority that broadcast the warning.  Reference:  S-412 WMO Weather Product Specification  Item Type:  Complex Attribute  Camel Case:  issuingService  Sub-Attributes:  countryName  issuingServiceName  mETAREAName  Remarks: |
| --- |

## B.13 Issuing Service Name

| Definition:  The identifier that indicates which organization issued meteorological and oceanographic data.  Reference:  S-412 WMO Weather Product Specification  Item Type:  Complex Attribute  Camel Case:  issuingServiceName  Sub-Attributes:  language  text  Remarks: |
| --- |

## B.14 Language

| Definition:  The method of human communication, either spoken or written, consisting of the use of words in a structured and conventional way.  Reference:  Edition 1.0.0, Clause 27.113, S-101 IHO Electronic Navigational Chart Product Specification  Item Type:  Simple Attribute (data type: language codelist)  Camel Case:  language  Remarks:  The language is encoded by a 3 character code following ISO 639-2/T. |
| --- |

## B. 15 Language Text

| Definition:  A combination of written text and language indication.  Reference:  S-412 WMO Weather Product Specification  Item Type:  Complex Attribute  Camel Case:  languageText  Sub-Attributes:  language  text  Remarks: |
| --- |

## B.16 Mailing Address

| Definition:  The physical address a parcel may be sent to.  Reference:  S-412 WMO Weather Product Specification  Item Type:  Simple Attribute (data type: text)  Camel Case:  mailingAddress  Remarks: |
| --- |

## B.17 Maximum Wind Speed

| Definition:  When applied to a warning or forecast polygon, refers to the maximum wind speed or range of wind speeds found within the contour of the polygon.  Reference:  S-412 WMO Weather Product Specification  Item Type:  Complex Attribute  Camel Case:  maximumWindSpeed  Sub-Attributes:  language  text  Remarks: |
| --- |

## B.18 METAREA Name

| Definition:  A name referencing a defined geographical area of the ocean used to coordinate the transmission of meteorological information and services to mariners.  Item Type:  Simple Attribute (data type: Enumeration)  Reference:  WWMIWS ([*https://wwmiws.wmo.int/index.php*](https://wwmiws.wmo.int/index.php))  Camel Case:  mETAREAName   1. **metarea i**   Definition: The North Atlantic Ocean east of 35°W, from 48°27'N to 75°N including the North Sea and Baltic Sea sub-areas.  Camel Case: mETAREAI   1. **metarea ii**   Definition: Atlantic waters east of 35°W, from 7°N to 48°27'N, and east of 20°W from 7°N to 6°S, including the Strait of Gibraltar.  Camel Case: mETAREAII   1. **metarea iii**   Definition: The Mediterranean and Black Seas, east of the Strait of Gibraltar.  Camel Case: mETAREAIII   1. **metarea iv**   Definition: The western part of the North Atlantic Ocean east of the North American coast to 35°W, from 7°N to 67°N, including the Gulf of Mexico, the Caribbean Sea and the sea area between 7°N and the South American coastline at 4°30'N, and Hudson Bay and Approaches.  Camel Case: mETAREAIV   1. **metarea v**   Definition: Atlantic waters west of 20°W from 35°50'S to 7°N, narrowing in the coastal strips at the extremities to the Uruguay/Brazil frontier in 33°45'S and the Guyane/Brazil frontier at 4°30'N.  Camel Case: mETAREAV   1. **metarea vi**   Definition: The South Atlantic and Southern Oceans south of 35°50'S, and from 20°W to the longitude of Cape Horn, 67°16'W, including the coastal strip to the Uruguay/Brazil frontier at 33°45S.  Camel Case: mETAREAVI   1. **metarea vii**   Definition: The South Atlantic and Southern Oceans south of 6°S from 20°W to the coast of Africa, thence southward to the Cape of Good Hope and the South Indian and Southern Oceans south of 10°30'S from the Cape to 55°E, thence south of 30°S to 80°E.  Camel Case: mETAREAVII   1. **metarea viii**   Definition: The area of the Indian Ocean enclosed by lines from the India/Pakistan frontier at 23°45'N 68°E to 12°N 63°E, thence to Cape Gardafui and the east African coast southward to the Equator, thence to 95°E, to 6°N, thence north east to the Myanmar/Thailand frontier at 10°N 98°30'E. The east African coast from the Equator southward to 10°30'S, thence to 55°E, to 30°S, to 95°E, to the Equator and to the east African coast.  Camel Case: mETAREAVIII   1. **metarea ix**   Definition: The Red Sea, Gulf of Aden, Arabian Sea and Persian Gulf, north of Area VIII.  Camel Case: mETAREAIX   1. **metarea x**   Definition: The South Indian and Southern Oceans east of 80°E and south of 30°S, to 95°E, to 12°S, to 127°E and thence to the Timor Sea, South Pacific and Southern Oceans south of 10°S to 141°E, to the Equator, to 170°E, to 29°S, thence southwestward to 45°S at 160°E and then to the meridian at 160°E.  Camel Case: mETAREAX   1. **metarea xi**   Definition: The Indian Ocean, China Sea and North Pacific Ocean north of Area X and on the Equator to longitude 180°, eastward of Area VIII and the Asian continent, to the North Korea/Russian Federation frontier at 42°30'N 130°E, and thence to 135°E, north east to 45°N 138°E, to 45°N longitude 180°.  Camel Case: mETAREAXI   1. **metarea xii**   Definition: The eastern part of the Pacific Ocean, west of the North and South American coasts and east of 120°W, from 3°24'S to the Equator, thence to 180°, to 50°N thence northwestward to 53°N 172°E, northeastward following the marine frontier between the United States and Russian Federation waters to 67°N.  Camel Case: mETAREAXII   1. **metarea xiii**   Definition: Sea areas enclosed north of the line starting 42°30'N 130°E, and thence to 135°E, northeast to 45°N 138°20'E, to 45°N longitude 180°, then to 50°N, then northwest to 53°N 172°E, and then following the international dateline to 67°N, and then west to the Russian Federation coastline.  Camel Case: mETAREAXIII   1. **metarea xiv**   Definition: The South Pacific and Southern Oceans south of the Equator, bounded by Area X to the west, Area XII to the north and Area XV to the east.  Camel Case: mETAREAXIV   1. **metarea xv**   Definition: The South Pacific and Southern Oceans south of 18°21'S following the coast of Chile to the longitude of Cape Horn in 67°16'W, and 120°W.  Camel Case: mETAREAXV   1. **metarea xvi**   Definition: The South Pacific Ocean between 18°21'S and 3°24'S bounded by the coast of Peru and 120°W.  Camel Case: mETAREAXVI   1. **metarea xvii**   Definition: The Arctic Ocean bounded by 67°N and 168°58'W to 90°N 168°58'W, 90°N 120°W, southward to the Canadian coastline along the 120°W meridian.  Camel Case: mETAREAXVII   1. **metarea xviii**   Definition: The Arctic Ocean bounded by a position on the Canadian coastline at the 120°W meridian to 90°N 120°W, 90°N 35°W, 67°N 35°W.  Camel Case: mETAREAXVIII   1. **metarea xix**   Definition: From a position on the Norwegian coastline at 65°N to 65°N 5°W, 75°N 5°W, westward to a position on the Greenland coastline; from the border between Norway and Russia (Inland) to 69°47'68"N 30°49'16"E, 69°58'48"N 31°06'24"E, 70°22'N 31°43'E, 71°N 30°E; from this coordinate (71°N 30°E) further north along the 30°E meridian to: 90°N 30°E, 90°N 35°W, southward to the Greenland coastline along the 35°W meridian.  Camel Case: mETAREAXIX   1. **metearea xx**   Definition: From the border between Norway and Russia (Inland) to 69°47'68''N 30°49'16''E, 69°58'48''N 31°6'24''E, 70°22'N 31°43'E, 71°N 30°E; from this coordinate (71°N 30°E) further north along the 30°E meridian to 90°N 30°E, 90°N 125°E, south­ward to the Russian Federation coastline along the 125°E meridian.  Camel Case: mETAREAXX   1. **metarea xxi**   Definition: From a position on the Russian Federation coastline at the 125°E meridian northward along the 125°E meridian to 90°N then to 168°58'W, southward along the 168°58'W meridian to the 67°N parallel, westward along the 67°N parallel to a position on the Russian Federation coastline.  Camel Case: mETAREAXXI  Remarks: |
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## B.19 Next Update Date Time

| Definition:  The time, expressed in Universal Time Coordinated (UTC) an object and its attributes are scheduled to be updated.  Reference:  S-412 WMO Weather Product Specification  Item Type:  Simple Attribute (data type: dateTime)  Camel Case:  nextUpdateDateTime  Remarks: |
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## B.20 Preparation Service

| Definition:  The name of the Nation and National Meteorological and Hydrological Service (NMHS) or National Authority that prepared the warning and transferred it to the relevant Issuing Service for broadcast if not the same.  Reference:  S-412 WMO Weather Product Specification  Item Type:  Complex Attribute  Camel Case:  preparationService  Sub-Attributes:  countryName  issuingServiceName  Remarks: |
| --- |

## B.21 Source of Icing

| Definition:  The type of weather phenomenon causing hazardous ice accretion.  Reference:  S-412 WMO Weather Product Specification  Item Type:  Simple Attribute (data type: Enumeration)  Camel Case:  sourceOfIcing   1. **freezing spray**   Definition: Water droplets transported through air at below freezing temperatures.  Camel Case: freezingSpray   1. **freezing rain**   Definition: Precipitation drops freezing on impact to form a coating of clear ice (glaze) on the ground and on exposed objects.  Camel Case: freezingRain   1. **freezing fog**   Definition: Tiny, supercooled liquid water droplets in fog can freeze instantly on exposed surfaces when surface temps are at or below freezing.  Camel Case: freezingFog   1. **other icing source**   Definition: Source of icing is unknown or is different from other types of icing sources.  Camel Case: otherIcingSource  Remarks: |
| --- |

## B.22 Telephone number

| Definition:  The telephone number of an entity.  Reference:  IHO S-121 Project Team  Item Type:  Simple Attribute (data type: text)  Camel Case:  telephoneNumber  Length:  Maximum of 30 characters.  Remarks: |
| --- |

## B.23 Text

| Definition:  A non-formatted digital text string.  Reference:  Edition 1.0.0, Page 27.170, S-101 IHO Electronic Navigation Product Specification  Item Type:  Simple Attribute (data type: text)  Camel Case:  text  Length:  Maximum of 300 characters.  Remarks:  Should be used, for example, to hold the information that is for short cautionary or explanatory notes. Therefore, text populated in text must not exceed 300 characters. Text may be in English, or in a national language. No formatting of text is possible within text. If formatted text, or text strings exceeding 300 characters, is required, then an alternate concept should be used. |
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## B.24 Wave Height Warning Threshold

| Definition:  Represents the wave height warning that has been exceeded or forecast to be exceeded based on predetermined bins of significant wave height values.  Reference:  S-412 WMO Weather Product Specification  Item Type:  Simple Attribute (data type: Enumeration)  Camel Case:  waveHeightWarningThreshold   1. **two and a half to four metres**   Definition: Significant wave heights between 2.5 and 4 metres (8-13 ft) are forecast or occurring.  Camel Case: twoAndAHalfToFourMetres   1. **four to six metres**   Definition: Significant wave heights between 4 and 6 metres (13-20 ft) are forecast or occurring.  Camel Case: fourToSixMetres   1. **six to nine metres**   Definition: Significant wave heights between 6 and 9 metres (20-30 ft) are forecast or occurring.  Camel Case: sixToNineMetres   1. **nine to fourteen metres**   Definition: Significant wave heights between 9 and 14 metres (30-45 ft) are forecast or occurring.  Camel Case: nineToFourteenMetres   1. **greater than fourteen metres**   Definition: Significant wave heights greater than 14 metres (>45 ft) are forecast or occurring.  Camel Case: greaterThanFourteenMetres  Remarks: |
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## B.25 Weather Warning Message

| Definition:  Text message associated with a weather warning polygon.  Reference:  S-412 WMO Weather Warning Product Specification  Item Type:  Complex Attribute  Camel Case:  weatherWarningMessage  Sub-Attributes:  languageText  Remarks: |
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## B.26 Weather Warning Number

| Definition:  Identification number given to a specific weather warning.  Reference:  S-412 WMO Weather Product Specification  Item Type:  Simple Attribute (data type: Text)  Camel Case:  weatherWarningNumber  Length:  Maximum of 300 characters.  Remarks: |
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## B.27 Web Address

| Definition:  A reference to a web resource that specifies its location on a computer network and a mechanism for retrieving it.  Reference:  https://en.wikipedia.org/wiki/URL  Item Type:  Simple Attribute (data type: Text)  Camel Case:  webAddress  Remarks: |
| --- |

## B.28 Wind Warning Threshold

| Definition:  Represents the wind warning that has been exceeded or forecast to be exceeded.  Reference:  WMO-No.558  Item Type:  Simple Attribute (data type: Enumeration)  Camel Case:  windWarningThreshold   1. **near gale force**   Definition: Wind speeds between 28 and 33 knots (Beaufort scale wind force 7) are forecast or occurring.  Camel Case: nearGaleForce   1. **gale force**   Definition: Wind speeds between 34 and 47 knots (Beaufort scale wind force 8 or 9) are forecast or occurring.  Camel Case: galeForce   1. **storm force**   Definition: Wind speeds between 48 and 63 knots (Beaufort scale wind force 10 or 11) are forecast or occurring.  Camel Case: stormForce   1. **hurricane force**   Definition: Sustained wind speeds 64 knots or higher (Beaufort scale wind force 12) are forecast or occurring.  Camel Case: hurricaneForce  Remarks: |
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# Section C – DCEG – Associations

## C. 1 Association Names

### C. 1.1 Data Provider Association

| Definition: An association that binds information about the data provider to features.  Camel Case: dataProviderAssociation | | | |
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| **Role Type** | **Role** | **Associated With** | **Multiplicity** |
| Association | dataProviderInformation | **d**ataProvider | 1 |
| informationProvidedFor | weatherWarning | 1 |
| Remarks:   * Only one dataProvider feature per dataset | | | |

## C.2 Association Roles

### C. 2.1 Data Provider Information

| Definition: A pointer to an object that provides information about the data providers for the particular object.  Camel Case: dataProviderInformation |
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### C. 2.2 Information Provided For

| Definition: A pointer to a specific feature(s) for which further information is required. (S-101)  Camel Case: informationProvidedFor |
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