Abstract
This document describes an extensive collection of sub daily to monthly surface and sea
level pressure observations taken over land and ocean from the beginning of barometric
observations to the present. The format is designed to allow traceability of observations
from their original source archive to the ISPD and to permit direct feedback from data
assimilation to the original source archives. A single ISPDB HDF5 file contains thirteen
tables and fifteen subgroups/directories.

All unit specifications should be Udunits compliant

I. Common Fields
The following fields are present in every table except dataset index table.
1. Observation (Station) ID
   Length 13
   Character
   This field is designated for an identifier that represents a fixed station for land data.
   It represents a marine call sign or other marine identifier when present.
   Missing: 9 x 12

2. Timestamp
   Length 12
   Character
   This field describes the year, month, day, hour, and minute of the observation in the
   form YYYYMMDDHH.

3. Unique Observation Number Code
   Length 7
   Character
   Minimum:0000001
   Maximum:9999999
   A unique number assigned to each observation at the same observation time (year,
   month, day, hour, minute). Combining with Year, month, day, hour, minute forms a
   unique ID of each observation. E.g., the second observation in the Data Bank for
   February 2 1895 1201 GMT has field 9 = 0000002, and a unique observation code
   of 1895020212010000002. **Table 1 lists current know non-unique ID
   assignments. By combining these with latitude and longitude they become unique
   also.
Table 1. Non-unique ID stamps.

There are a total of 14528 Observations in the ISPD2 that have non-unique ids.

Same measurements twice:
18740729[00-23]
18740730[00-23]
18740731[00-23]

And from 1952-2006 some of the Tropical Cyclone Data (UONC=8xxxxxx has non-unique IDs
19520612[12,18] - 20060831[00,06,12,18]

II. Root Group /
Root group contains three groups: data, supplemental data table of original source and it is denoted by “/”.

III. Data Group /Data
Data group/directory contains the following subgroups: assimilation feedback, observations, and spatial temporal location.

Observations Subgroup /Data/Observations
Observations subgroup contains two tables: observation types and observations and original observations subgroup.

Observation Types Table /Data/Observations/ObservationTypes
All values correspond to the observation indicated by the Unique Observation Number Code.

1. Observation ID Type
   Integer
   This field shows the type of station ID in Unique Observation Number Code.
   1   WMO
   2   WBAN
   3   Air Force
   4   COOP
   5   Call Signs
   6   Unknown or other – IDs assigned by source
   7   Ship, Ocean Station Vessel (OSV), or ice station call sign
   8   Generic ID (e.g., SHIP, BUOY, RIGG, PLAT)
   9   WMO 5-digit buoy number
   10  Other buoy number (e.g., Argos or national buoy number)
   11  Coastal-Marine Automated Network (C-MAN) ID (US NDBC operated)
   12  Station name or number
   13  Oceanographic platform/cruise number
   14  FISDing vessel pseudo-ID
   15  National ship number
16  Composite information from early ship data
32  Air Force - WBAN
Missing: -9
2. **NCEP Observation Type Code**
   Integer
   This field is designated for NCEP observation type code. Numbers above 193 are unique to ISPD.
   - 120 Radiosonde Observation Data
   - 132 Dropsonde Observation
   - 180 Marine Observation Data
   - 181 Station Observation Data
   - 183 Station Observation only reporting sea level pressure
   - 193 Digitized Measured SEA-LEVEL PRESSURE BOGUS
   - 3x0 Synoptic (0,6,12,18UTC) Central Pressure from a tropical cyclone best track dataset
   - 3x1-3x5 Synoptic (0,6,12,18UTC) Central Pressure for a category 1-5 tropical cyclone from a tropical cyclone best track dataset
   - 4x0 Non-synoptic Central Pressure from a tropical cyclone best track dataset
   - 5x0 Bogus Central pressure for a tropical depression derived from tropical cyclone best track wind dataset.
   - 5x1-585 Bogus Central Pressure for a category 1-5 tropical cyclone derived from a tropical cyclone best track wind dataset.

   Second digits of the NCEP observation type code for tropical cyclones are designated for the regional codes based on the basin/sub-basins classifications by National Climatic Data Center Global Tropical Cyclone Stewardship.

   1. Eastern North Pacific (sub-basin: Central Pacific)
   2. Eastern North Pacific
   3. North Atlantic
   4. North Indian
   5. South Indian
   6. South Pacific (sub-basin: Eastern Australia)
   7. South Pacific
   8. West Pacific
   9. South Indian (sub-basin: Western Australia)

   Missing: -99

3. **International Surface Pressure Data Bank Collection ID**
   Length 6
   Character
   Data Identification assigned for the ISPD
   Missing: -99999
   Bold indicates planned used.
   See complete dataset index in Excel format.
<table>
<thead>
<tr>
<th>ISPD ID</th>
<th>Name</th>
<th>Description</th>
<th>PERIOD</th>
<th>NISPD Ref</th>
<th>NCAR Ref</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>0100</td>
<td>ICOADS Release 2.1</td>
<td>Global Marine Surface Observations</td>
<td>1784-2005</td>
<td>1170</td>
<td>DS540.0</td>
<td><a href="mailto:Scott.Woodruff@noaa.gov">Scott.Woodruff@noaa.gov</a></td>
</tr>
<tr>
<td>0104</td>
<td>ICOADS Release 2.4</td>
<td>Global Marine Surface Observations</td>
<td>1784-2007</td>
<td>1170</td>
<td>DS540.0</td>
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<td>Global Marine Surface Observations</td>
<td>1784-2007</td>
<td>1170</td>
<td>DS540.0</td>
<td><a href="mailto:Scott.Woodruff@noaa.gov">Scott.Woodruff@noaa.gov</a></td>
</tr>
<tr>
<td>0200</td>
<td>ICOADS Auxiliary Kobe</td>
<td>Global Marine Surface Observations</td>
<td>1889-1943</td>
<td></td>
<td>DS530.0</td>
<td><a href="mailto:worley@ucar.edu">worley@ucar.edu</a></td>
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<tr>
<td>0300</td>
<td>ICOADS Auxiliary Whaling</td>
<td>Global Marine Surface Observations</td>
<td>1950-1984</td>
<td></td>
<td>DS.530.0</td>
<td><a href="mailto:Worley@ucar.edu">Worley@ucar.edu</a></td>
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<tr>
<td>0400</td>
<td>ICOADS Auxiliary Russian</td>
<td>Global Marine Surface Observations</td>
<td>1950-2000</td>
<td></td>
<td>DS.530.0</td>
<td><a href="mailto:Worley@ucar.edu">Worley@ucar.edu</a></td>
</tr>
<tr>
<td>0500</td>
<td>ICOADS Auxiliary Russian</td>
<td>Global Marine Surface Observations</td>
<td>1889-2000</td>
<td></td>
<td>DS.530.0</td>
<td><a href="mailto:Worley@ucar.edu">Worley@ucar.edu</a></td>
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<tr>
<td>0700</td>
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<td>Global Marine Surface Observations</td>
<td>1872-1876</td>
<td></td>
<td>DS.530.0</td>
<td><a href="mailto:Worley@ucar.edu">Worley@ucar.edu</a></td>
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<tr>
<td>1000</td>
<td>Federal Climate Complex Integrated Surface Database</td>
<td>Global Land Surface Observations</td>
<td>1901-2008</td>
<td></td>
<td>DS463.3</td>
<td><a href="mailto:Neal.Lott@noaa.gov">Neal.Lott@noaa.gov</a></td>
</tr>
<tr>
<td></td>
<td>CDMP SAO/1001 Forms</td>
<td>US Land Surface Observations</td>
<td>1928-1948</td>
<td><a href="mailto:Neal.Lott@noaa.gov">Neal.Lott@noaa.gov</a></td>
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<tr>
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<tr>
<td>1003</td>
<td>Russian Empire Stations</td>
<td>Russian Land Surface Observations</td>
<td>1849-2000</td>
<td>td9290c</td>
<td><a href="mailto:Pasha.Groisman@noaa.gov">Pasha.Groisman@noaa.gov</a></td>
<td></td>
</tr>
<tr>
<td>1004</td>
<td>Air Weather Service TD13</td>
<td>Global Land Surface Observations</td>
<td>1901-1973</td>
<td>td13</td>
<td>DS467.0</td>
<td><a href="mailto:worley@ucar.edu">worley@ucar.edu</a></td>
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<tr>
<td>1005</td>
<td>Hadley Center</td>
<td>Individual Stations from Hadley Center</td>
<td>1833-present</td>
<td></td>
<td></td>
<td><a href="mailto:Rob.allan@metoffice.gov.uk">Rob.allan@metoffice.gov.uk</a>, Gibraltar</td>
</tr>
<tr>
<td>1006</td>
<td>CDMP-International</td>
<td>Chile, Mexico, Uruguay</td>
<td>1800s-1980</td>
<td></td>
<td></td>
<td><a href="mailto:Tom.Ross@noaa.gov">Tom.Ross@noaa.gov</a></td>
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<tr>
<td>1007</td>
<td>READER Antarctic &amp; Southern Hemisphere</td>
<td>20 Stations via British Antarctic Survey</td>
<td>1947-2007</td>
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<td><a href="http://www.antarctica.ac.uk">www.antarctica.ac.uk</a>,</td>
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<tr>
<td>1010</td>
<td>DATSAV</td>
<td>US Air Force Compilation</td>
<td>1967-1980</td>
<td>Td965</td>
<td>Ds463.0</td>
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<td>1011</td>
<td>KNMI</td>
<td>KNMI stations</td>
<td>1911-2006</td>
<td></td>
<td></td>
<td><a href="mailto:Theo.Brandsma@knmi.nl">Theo.Brandsma@knmi.nl</a></td>
</tr>
<tr>
<td>1012</td>
<td>CMDP Forts</td>
<td>US Army Signal Service and other 19th Century Voluntary Observations</td>
<td>1841-1893</td>
<td></td>
<td></td>
<td>Karen Adsager <a href="mailto:andsager@sws.uiuc.edu">andsager@sws.uiuc.edu</a></td>
</tr>
<tr>
<td>2000</td>
<td>NCEP-NCAR BUFR Archive</td>
<td>Global Observations</td>
<td>1948-2003</td>
<td>6148_99</td>
<td>ds090.0</td>
<td><a href="mailto:Robert.Kistler@noaa.gov">Robert.Kistler@noaa.gov</a>, <a href="mailto:worley@ucar.edu">worley@ucar.edu</a></td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td>Region/Scope</td>
<td>Start Year</td>
<td>End Year</td>
<td>Contact Information</td>
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<td>WASA Stations Observations Sea Level Pressure</td>
<td>Northern Europe, Greenland</td>
<td>1871-1996</td>
<td>9941_99</td>
<td>Torben Schmith <a href="mailto:ts@dmi.dk">ts@dmi.dk</a></td>
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<tr>
<td>3004</td>
<td>Environmental Canada Pressure Observations</td>
<td>Canadian Stations</td>
<td>1842-2004</td>
<td></td>
<td><a href="mailto:Xiaolan.Wang@ec.gc.ca">Xiaolan.Wang@ec.gc.ca</a></td>
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<tr>
<td>3005</td>
<td>West African Synoptic observations</td>
<td>11 West African Land Surface</td>
<td>1850-1980</td>
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<td><a href="mailto:Tom.Peterson@noaa.gov">Tom.Peterson@noaa.gov</a></td>
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<td>3006</td>
<td>The Australian Bureau of Meteorology Station Pressure Dataset</td>
<td>50 Australian Land stations</td>
<td>1900-1956</td>
<td></td>
<td>David Jone <a href="mailto:D.Jones@bom.gov.au">D.Jones@bom.gov.au</a></td>
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<td>3007</td>
<td>Northern Italian Pressure Observations</td>
<td></td>
<td>1878-1940</td>
<td></td>
<td><a href="mailto:Maurizio.maqueri@unmi.it">Maurizio.maqueri@unmi.it</a></td>
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<tr>
<td>3008</td>
<td>Brazil Surface Observations</td>
<td></td>
<td>1951-1980</td>
<td>ds486.0</td>
<td><a href="mailto:dattore@ucar.edu">dattore@ucar.edu</a></td>
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<tr>
<td>3009</td>
<td>Spanish Hourly Pressure Observations from EMULATE</td>
<td>4 Hourly Spanish Land Stations</td>
<td>1850-2003</td>
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<td><a href="mailto:Manola.brunet@urv.net">Manola.brunet@urv.net</a></td>
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<tr>
<td>3010</td>
<td>German DWD Web Archive</td>
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<td>1876-2000</td>
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<td><a href="http://www.dwd.de">www.dwd.de</a></td>
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<td>3011</td>
<td>Austria Emulate Stations</td>
<td></td>
<td>1872-2002</td>
<td></td>
<td><a href="mailto:Rob.allan@metoffice.gov.ul">Rob.allan@metoffice.gov.ul</a></td>
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<td>3012</td>
<td>Switzerland Emulate Stations</td>
<td></td>
<td>1900-1973</td>
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<td><a href="mailto:Rob.allan@metoffice.gov.ul">Rob.allan@metoffice.gov.ul</a></td>
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</tr>
<tr>
<td>3013</td>
<td>South Africa South African Weather Service Stations</td>
<td></td>
<td>1850-2003</td>
<td></td>
<td>Andries.kruger@weathersa</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Country/Region</td>
<td>Stations/Observations</td>
<td>Time Period</td>
<td>Contact Email</td>
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<td>3014</td>
<td>Norway</td>
<td>22 Stations</td>
<td>1863-2007</td>
<td><a href="mailto:Oyvind.nordli@met.no">Oyvind.nordli@met.no</a></td>
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</tr>
<tr>
<td>3015</td>
<td>Croatia, Meteorological and Hydrological Service</td>
<td>4 Croatian Land Stations</td>
<td>1858-2005</td>
<td>Lidja.Srnc<a href="mailto:srnc@cirrus.dhz.hr">srnc@cirrus.dhz.hr</a></td>
<td></td>
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<tr>
<td></td>
<td>Service Stations</td>
<td></td>
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<td>3016</td>
<td>Portugal</td>
<td>Portuguese SIGN stations</td>
<td>1860-2006</td>
<td>Maria Antónia Valente<a href="mailto:mavalente@fc.ul.pt">mavalente@fc.ul.pt</a></td>
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<tr>
<td>4000</td>
<td>Hong Kong, Hourly Pressure Observations</td>
<td>Hong Kong Observatory</td>
<td>1885-1939</td>
<td>H Y Mok<a href="mailto:hymok@hko.gov">hymok@hko.gov</a></td>
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<tr>
<td>4001</td>
<td>Jakarta/Batavia Pressure Observations</td>
<td>Dutch Royal Observatory</td>
<td>1866-1944</td>
<td>Philip Woodworth<a href="mailto:plw@pol.ac.uk">plw@pol.ac.uk</a></td>
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<tr>
<td>4002</td>
<td>Liverpool</td>
<td>Proudman Ocean. Lab stations</td>
<td>1768-1793</td>
<td>Frank Le Blancq<a href="mailto:eblancq.f@jerseymet.gov">eblancq.f@jerseymet.gov</a></td>
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</tr>
<tr>
<td>4003</td>
<td>Jersey Channel Island Pressure Observations</td>
<td>4 Channel Island Stations</td>
<td>1864-1913</td>
<td><a href="mailto:Tom.ross@noaa.gov">Tom.ross@noaa.gov</a></td>
<td></td>
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<tr>
<td>4004</td>
<td>CMDP-USNO</td>
<td>US Naval Observatory at Washington</td>
<td>1841-1913</td>
<td><a href="mailto:Gil.Compo@noaa.gov">Gil.Compo@noaa.gov</a></td>
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<tr>
<td>5002</td>
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<td>Monthly Weather Review Supplemental No. 41</td>
<td>1929-1930</td>
<td><a href="mailto:Rob.Allan@metoffice.gov.uk">Rob.Allan@metoffice.gov.uk</a></td>
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<tr>
<td>500x</td>
<td>Antarctic Expedition keyed by Hadley Centre</td>
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<tr>
<td>010000-019999</td>
<td>NCAR Upper Air Stations</td>
<td></td>
<td></td>
<td>Joey Comeaux<a href="mailto:joey@ucar.edu">joey@ucar.edu</a></td>
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<tr>
<td>8000</td>
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<td>US Hurricane Re-analysis Dataset</td>
<td>1848-present</td>
<td><a href="mailto:Chris.Landsea@noaa.gov">Chris.Landsea@noaa.gov</a></td>
<td></td>
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<tr>
<td>8001</td>
<td>International Best Track Archive for Climate Stewardship (IBTrACS)</td>
<td>National Climatic Data Center</td>
<td>1848-present</td>
<td><a href="mailto:Michael.kruk@noaa.gov">Michael.kruk@noaa.gov</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. **Observed Sea Level Pressure**
   Float
   The atmospheric sea level pressure observation (hectopascals)
   Min: 860.00
   Max: 1090.00
   Missing: 9999.99

2. **Observation Error in the Observed Sea Level Pressure**
   Float
   Observation Error in the observed sea level pressure specified for Twentieth Century Reanalysis Project.
   Min: 0.00
   Max: 20.00
   Missing: -9.99

3. **QC flag for the Observed Sea Level Pressure**
   Integer
   The quality flag code for the observed sea level pressure from source was evaluated based on the following criteria and assigned binary values.
   (Note the 20CR did not use these QC flags in any decision making)
   Missing: 9

The original coding scheme and binary values we assigned are below.

<table>
<thead>
<tr>
<th>ISD Data Set</th>
<th>ISPD</th>
<th>Original Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Summary</td>
<td>Value</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>Passing gross limits check</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>Passed all quality control checks</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>Suspect</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>Erroneous</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>Passed gross limits check, from TD3280 or NISPD ASOS/AWOS</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>Passed all quality control checks, from TD3280 or NISPD ASOS/AWOS</td>
</tr>
<tr>
<td>0</td>
<td>6</td>
<td>Suspect, from TD3280 or NISPD ASOS/AWOS</td>
</tr>
<tr>
<td>0</td>
<td>7</td>
<td>Erroneous, from TD3280 or NISPD ASOS/AWOS</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
<td>Passed gross limits check if element is present</td>
</tr>
</tbody>
</table>

**ICOADS Data Set**
No ICOADS QC flags were used.

**Russian Data Set**
Russian data set originally had four QC flags. We are using flag 1 and flag 3 to assign
binary values. If an observation data for a given station passes flag 1 test, then flag 3 was evaluated. In this flag 3-evaluation procedure, if blank or N were present, then, the GSCN criterion was applied.

Flag 1: Data measurement flag

<table>
<thead>
<tr>
<th>ISPD</th>
<th>Original</th>
<th>Summary</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>blank = measured value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>U = suspect</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Flag 3: Confidence level/status flag

<table>
<thead>
<tr>
<th>ISPD</th>
<th>Original</th>
<th>Summary</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0 = observed data has passed all original system checks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>blank = unknown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>B = value failed QC checks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>C = scale corrected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>D = derived value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>E = edited value passed all original checks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>H = homologous value, rigorously tested</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>I = interpolated value, not verified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>M = missing value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>N = not tested but within observed climatological boundaries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Q = questionable (actually wrong)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>R = record-breaking value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>S = Suspect value (outside climatological boundaries, not verified)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>T = tested value, manually checked but not perfectly homologous</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>U = value suspect</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These flags are a result of GSCN version 1.0 (and next steps) quality control routines and replace “blank” and “N” flags when needed.

1    X - exceeds known world extreme or impossible value
1    O - Outlier .GE. 6 bi-weight standard deviations from the bi-weighted mean values
1    5 - Outlier .GE. 5 bi-weight standard deviations from the bi-weighted mean values
0    4 - Outlier .GE. 4 bi-weight standard deviations from the bi-weighted mean values
0    3 - Outlier .GE. 3 bi-weight standard deviations from the bi-weighted mean values
1    K - Value occurs 10 or more days in a row (0.0 cloudiness characteristics excluded)
4. **Observed Surface Pressure**

   Float
   The atmospheric surface pressure observation at the indicated elevation (hectopascals)
   Min: 400.00
   Max: 1090.00
   Missing: 9999.99

5. **Observation Error in Observed Surface Pressure**

   Float
   Observation Error in the observed surface pressure (from NCEP if available otherwise assigned by ISPD)
   Min: 0.00
   Max: 20.00
   Missing: -9.99

6. **QC flag for the Observed Surface Pressure**

   Integer
   The quality flag code for the observed surface pressure from source was evaluated based on the following criteria and assigned binary values.
   (Note the 20CR did not use these QC flags in any decision making)
   Missing: 9

   The original coding scheme and binary values we assigned are below.

<table>
<thead>
<tr>
<th>ISPD Data Set</th>
<th>ISPD Summary</th>
<th>Original Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Passing gross limits check</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>Passed all quality control checks</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>Suspect</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>Erroneous</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>Passed gross limits check, from TD3280 or NISPD ASOS/AWOS</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>Passed all quality control checks, from TD3280 or NISPD ASOS/AWOS</td>
</tr>
<tr>
<td>0</td>
<td>6</td>
<td>Suspect, from TD3280 or NISPD ASOS/AWOS</td>
</tr>
<tr>
<td>0</td>
<td>7</td>
<td>Erroneous, from TD3280 or NISPD ASOS/AWOS</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
<td>Passed gross limits check if element is present</td>
</tr>
</tbody>
</table>

   **Russian Data Set**
   Russian data set originally had four QC flags. We are using flag 1 and flag 3 to assign binary values. If an observation data for a given station passes flag 1 test, then flag 3 was evaluated. In this flag 3-evaluation procedure, if blank or N were present, then, the GSCN criterion was applied.
### Flag 1: Data measurement flag

<table>
<thead>
<tr>
<th>ISPD</th>
<th>Original Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>blank = measured value</td>
</tr>
<tr>
<td>1</td>
<td>D = derived value</td>
</tr>
<tr>
<td>1</td>
<td>U = suspect</td>
</tr>
</tbody>
</table>

### Flag 3: Confidence level/status flag

<table>
<thead>
<tr>
<th>ISPD</th>
<th>Original Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0 = observed data has passed all original system checks</td>
</tr>
<tr>
<td>0</td>
<td>blank = unknown</td>
</tr>
<tr>
<td>1</td>
<td>B = value failed QC checks</td>
</tr>
<tr>
<td>0</td>
<td>C = scale corrected</td>
</tr>
<tr>
<td>1</td>
<td>D = derived value</td>
</tr>
<tr>
<td>0</td>
<td>E = edited value passed all original checks</td>
</tr>
<tr>
<td>0</td>
<td>H = homologous value, rigorously tested</td>
</tr>
<tr>
<td>1</td>
<td>I = interpolated value, not verified</td>
</tr>
<tr>
<td>1</td>
<td>M = missing value</td>
</tr>
<tr>
<td>0</td>
<td>N = not tested but within observed climatological boundaries</td>
</tr>
<tr>
<td>1</td>
<td>Q = questionable (actually wrong)</td>
</tr>
<tr>
<td>0</td>
<td>R = record-breaking value</td>
</tr>
<tr>
<td>1</td>
<td>S = Suspect value (outside climatological boundaries, not verified)</td>
</tr>
<tr>
<td>0</td>
<td>T = tested value, manually checked but not perfectly homologous</td>
</tr>
<tr>
<td>1</td>
<td>U = value suspect</td>
</tr>
</tbody>
</table>

These flags are a result of GSCN version 1.0 (and next steps) quality control routines and replace “blank” and “N” flags when needed.

| 1 | X - exceeds known world extreme or impossible value |
| 1 | O - Outlier \( \geq 6 \) bi-weight standard deviations from the bi-weighted mean values |
| 1 | 5 - Outlier \( \geq 5 \) bi-weight standard deviations from the bi-weighted mean values |
| 0 | 4 - Outlier \( \geq 4 \) bi-weight standard deviations from the bi-weighted mean values |
| 0 | 3 - Outlier \( \geq 3 \) bi-weight standard deviations from the bi-weighted mean values |
| 1 | K - Value occurs 10 or more days in a row (0.0 cloudiness characteristics excluded) |
**Original Observations Subgroup**
/Data/Observations/OriginalObservations

Original Observations subgroup contains original observations table.

**Original Observations Table**
/Data/Observations/OriginalObservations/OriginalObservations

1. **Original Observed Sea Level Pressure**
   Length 9
   Character
   The original atmospheric sea level pressure in original units indicated in Observed Sea Level Pressure field in the Observations table.
   Missing: 999999999

2. **Units of Original Observed Sea Level Pressure**
   Length 8
   Character
   Units of original observed sea level pressure. Should be Udunits compliant.

3. **Original Observed Surface Pressure**
   Length 9
   Character
   The original atmospheric surface pressure in original units indicated in Observed Surface Pressure field in the Observations table.
   Missing: 999999999

4. **Units of Original Observed Surface Level Pressure**
   Length 8
   Character
   The original atmospheric surface pressure in original units. Should be Udunits compliant.
   Missing: 999999999
Spatial Temporal Location Subgroup  /Data/SpatialTemporalLocation
Spatial Temporal Location subgroup contains spatial temporal location table and original spatial temporal location subgroup.

Spatial Temporal Location Table
/Data/SpatialTemporalLocation/SpatialTemporalLocation

1. **Observation ID**
   Length 13
   Character
   Observation ID assigned by the source.

2. **Year**
   Integer
   Year (GMT) of the observation record

3. **Month**
   Integer
   Month (GMT) of the observation record
   Missing: -9

4. **Day**
   Integer
   Day (GMT) of the observation record
   Missing: -9

5. **Hour**
   Integer
   Hour (GMT) of the observation record
   Missing: -9

6. **Minute**
   Integer
   Minute (GMT) of the observation record
   Missing: -9

7. **Time in Second after 1600**
   Integer
   Time elapsed in second from 1600 A.D. until the observation timestamp
8. **Time Code**
   Length 3
   Character
   3 digit code describing how the time was determined
   001 From source
   005 converted to GMT using time zones
   007 converted to GMT using longitude
   200 daily average from (11)=n values at X,X,…GMT indicated in field 10.
   300 monthly average from (11) values at Y,Y,…GMT each day, indicated in field 10.

9. **Number of observations used per day if the observation is an average**
   Integer
   Range: 01 to 24

10. **Hours of the day in GMT of the observations**
    Variable-length based on field 9.
    Character
    Hours (GMT) of the day of the observations if observation averaged, otherwise redundant with field 5.

11. **Latitude**
    Float
    The latitude coordinate of a geophysical observation (-90.00 – 90.00)
    Min: -90.00
    Max: 90.00

12. **Longitude**
    Float
    The longitude coordinate of a geophysical observation (000.00 – 359.99)
    Min: 0.00
    Max: 359.99

13. **Elevation**
    Integer
    The elevation of a geophysical point observation relative to Mean Sea Level (meters)
    Min: -400
    Max: 8850
    Missing: 9999

**Original Spatial Temporal Location Subgroup**
/Data/SpatialTemporalLocation/OriginalSpatialTemporalLocation
Original Spatial Temporal Location subgroup contains original temporal location table.
Original Spatial Temporal Location Table
/Data/SpatialTemporalLocation/OriginalSpatialTemporalLocation/OriginalSpatialTemporalLocation

1. **Original latitude**
   Length 8
   Character
   The original latitude in original units indicated in latitude field in the Spatial Temporal Location table.

2. **Original Longitude**
   Length 8
   Character
   The original longitude in original units indicated in longitude field in the Spatial Temporal Location table.

3. **Original Elevation**
   Length 6
   Character
   The original elevation in original units indicated in elevation field in the Spatial Temporal Location table.

4. **Unit of Original Elevation**
   Length 8
   Character
   Units of original elevation. Should be Udunits compliant.

**Assimilation Feedback Subgroup**  /Data/AssimilationFeedback
Assimilation Feedback Subgroup contains Assimilation Feedback table.
**Assimilation Feedback Table**

/Data/AssimilationFeedback/AssimilationFeedback

1. **Modified Observed Pressure after Vertically Interpolating to Model Surface**
   - **Double**
   - This field is designated for the Observed Pressure with orography adjustment (hectopascals).
   - Min: 400.00
   - Max: 1090.00
   - Missing: 9999.99

2. **Error in Observed Pressure vertically Interpolated to Model Surface**
   - **Float**
   - This field is designated for the Error in the Observed Pressure with orography adjustment.
   - Min: 0.00
   - Max: 20.00
   - Missing: -9.99

3. **Bias**
   - **Float**
   - This field is allocated for difference between observation and first guess averaged over past sixty days.

4. **Status Flag for Observed Surface Pressure**
   - **Unsigned Integer**
   - This field shows which observation was interpolated.
   - 0: interpolation using sea level pressure
   - 1: interpolation using surface pressure
   - 2: no interpolation performed
   - 9: missing

5. **Assimilation indicator**
   - **Unsigned Integer**
   - Missing 9
   - This field indicates whether the observation was assimilated
   - 0: the observation was not assimilated
   - 1: the observation was assimilated
6. **Usability Check for Reanalysis**
   Unsigned Integer
   This field is designated for the 20\textsuperscript{th} Century Reanalysis usage check. Observations passing quality control may still not be assimilated in regions of dense observations.
   
   - 0 not usable
   - 1 usable
   - 9 missing

   Data may not have been used because:
   1. It failed gross check.
   2. It was thinned.

7. **QC Background check flag indicator**
   Unsigned Integer
   Missing 9
   The field indicates whether the observation failed a check against the ensemble background
   
   - 0 the observation is within the ensemble spread plus observation error limits
   - 1 the observation is outside of the ensemble spread plus observation error limits

8. **Buddy flag indicator**
   Unsigned Integer
   Missing 9
   The field indicates whether the observation significantly improves the fit of the first guess to the neighboring observations up to distance XXXX away.
   
   - 0 improves the fit to the neighbors
   - 1 degrades the fit to the neighbors

9. **Quality Control Indicator**
   Unsigned Integer
   Missing 9
   This field indicates whether the observation was rejected.
   
   - 1 the observation was rejected
   - 0 the observation was accepted

10. **Ensemble Mean First Guess Pressure**
    Float
    This field is designated for the Ensemble Mean First Guess Pressure at the observation location (hectopascals).
    
    Min: 400.00
    Max: 1090.00
    Missing: 9999.99
11. **Standard Deviation of Ensemble Guess Pressure**
   Float
   This field is designated for the Standard Deviation of the Ensemble First Guess Pressure at the observation location.
   Min: 0.00
   Max: 20.00
   Missing: -9.99

12. **Ensemble Mean First Guess Pressure minus Modified Observation Pressure**
    Float
    This field is designated for the Ensemble Mean Guess Pressure minus Modified Observation Pressure minus Ensemble at the observation location.
    Min: -99.99
    Max: 100.00
    Missing: 999.99

13. **Ensemble Mean Analysis Pressure**
    Float
    This field is designated for the Ensemble Mean Analysis Pressure at the observation location (hectopascals).
    Min: 400.00
    Max: 1090.00
    Missing: 9999.99

14. **Standard Deviation of Ensemble Analysis Pressure**
    Float
    This field is designated for the Standard Deviation of the Ensemble Analysis Pressure at the observation location.
    Min: 00.00
    Max: 20.00
    Missing: -9.99
    Rejected by 20CR QC system: 9.9e+31

15. **Ensemble Mean Analysis Pressure minus Modified Observation Pressure**
    This field is designated for the Ensemble Mean Analysis Pressure minus Modified Observation Pressure at the observation location.
    Min: -99.00
    Max: 100.00
    Missing: 999.99
    Rejected by 20CR QC system: 9.95e+15

16. **Elevation of the Model Surface**
    Integer
    The elevation of a geophysical point observation, vertically interpolated to the model surface.
IV. Supplemental Data Group  /SupplementalData
Supplemental group contains Corrections, Misc, and Tracking subgroups.

Corrections Subgroup  /SupplementalData/Corrections
Corrections subgroup contains Corrections and Pressure Instrument tables.

Corrections Table   /SupplementalData/Corrections/Corrections

1. Description of Gravity correction made by source
   Length 30
   Character
   Description of the method used for the gravity correction made by source

2. Description of Gravity correction made by ISPD
   Length 30
   Character
   Description of the method used for the gravity correction made by ISPD

3. Observed Temperature of the attached thermometer in K
   Length 6
   Character
   Observed temperature of the attached thermometer in K

4. Original Temperature of the attached thermometer
   Length 9
   Character
   The original temperature of the attached thermometer in the original unit

5. Units of the Original Temperature of the attached thermometer
   Length 9
   Character
   Units of the original temperature of the attached thermometer

6. Description of Temperature correction made by source
   Length 30
   Character
   Description of the method used for the temperature correction made by source

7. Description of Temperature correction made by ISPD
   Length 30
   Character
   Description of the method used for the temperature correction made by ISPD
8. **Description of Homogenization correction made by source**
   Length 30
   Character
   Description of the method used for the homogenization correction made by source

9. **Description of Homogenization correction made by ISPD**
   Length 30
   Character
   Description of the method used for the homogenization correction made by ISPD

**Pressure Instrument Table**
/SupplementalData/Corrections/PressureInstrument

1. **Pressure Instrument Identifier**
   Unsigned Integer
   This field shows a type of instrument used for a given observation from source record or station library table. (Reserved for future use)
   Missing: 99

**Misc Subgroup**   /SupplementalData/Misc

**ICOADS Subgroup**   /SupplementalData/Misc/ICOADS
ICOADS subgroup contains Pressure Bias table.

**PressureBias Table**   /SupplementalData/Misc/ICOADS/PressureBias

1. **Pressure Bias for the marine data**
   Unsigned Integer
   This field indicates questionable sea level pressure data:
   0  questionable sea level pressure: level 0: individual platform
   1  questionable sea level pressure: level 1: deck
   2  questionable sea level pressure: level 2: deck
   (See ICOADS LMR6/LMRFR6 Document Release 2.4 for details)
   Missing: 9

**TropicalStorms Subgroup**   /SupplementalData/Misc/TropicalStorms
TropicalStorms subgroup contains TropicalStorms and Variances table.
Quality Control
/SupplementalData/Misc/TropicalStorms/QualityControl
1. Wind Quality
   Integer
   This field is designated for the quality assessment of the MSW.
   0 = OK
   1 = Missing
   2 = Questionable – Value
   3 = Questionable – 6 hour change

2. Pressure Quality
   Integer
   This field is designated for the quality assessment of the MCP.
   0 = OK
   1 = Missing
   2 = Questionable – Value
   3 = Questionable – 6 hour change

Storm ID
/SupplementalData/Misc/TropicalStorms/StormID
1. Storm ID
   Length 13
   Character
   This field is designated for the original storm identification names in the original NetCDF files, assigned by IBTrACS.

TropicalStorms
/SupplementalData/Misc/TropicalStorms/TropicalStorms
1. Storm Direction
   Integer
   This field is designated for the wind directions (0-359 degrees.)
   Missing: -9

2. Translation Speed in meters/second
   Float
   This field is designated for the translation speed in meters/second.
   Missing: -0.99

3. Translation Speed in miles/hour
   Integer
   This field is designated for the translation speed in miles/hour.
   Missing: -9
4. **Translation Speed in knots**  
   Integer  
   This field is designated for the translation speed in knots.  
   Missing: -9

5. **Wind Speed in meters/second**  
   Float  
   This field is designated for the wind speed in meters/second.  
   Missing: -0.99

6. **Wind Speed in miles/hour**  
   Integer  
   This field is designated for the wind speed in miles/hour.  
   Missing: -99

7. **Wind Speed in knots**  
   Integer  
   This field is designated for the wind speed in knots.

   For HURDAT data  
   Maximum sustained (1 minute) surface (10m) wind speed in knots (these are to the nearest 10 knots for 1851 to 1885 and to the nearest 5 kt for 1886 onward).

   For Joint Typhoon Warning Center data  
   Maximum sustained (1 minute average) surface (10m) wind speed in knots.  
   Missing: -99

**Variances**  
/SupplementalData/Misc/TropicalStorms/Variances

1. **Variance in the position amongst the Tropical Cyclone Centers**  
   Integer  
   This field is designated for the variance in the position amongst the tropical cyclone centers.  
   Missing: -99

2. **Variance in the wind amongst the Tropical Cyclone Centers**  
   Integer  
   This field is designated for the variance in the wind amongst the tropical cyclone centers.  
   Missing: -999

3. **Variance in the pressure amongst the Tropical Cyclone Centers**  
   Integer  
   This field is designated for the variance in the pressure amongst the tropical cyclone centers.  
   Missing: -999
Tracking Subgroup /SupplementalData/Tracking
Tracking subgroup contains Tracking table.

Tracking Table /SupplementalData/Tracking/Tracking

1. **Name of ships or stations**
   - Length 30
   - Character
   - Name of Ships or Stations from source record or station library table
   - Missing: -9 x 29

   For ICOADS data in IMMA format, ID Indicator and Identification/Call Sign information will be used for this field.

2. **Name of station library**
   - Length 3
   - Character
   - Name of station library used for station position, if different from source.
     - 000 From Source
     - 001 Joey Comeaux Library
     - 002 TD-13 library
     - 003 NCEP Library 1
     - 004 NCEP Library 2
     - 005 NISPD Global Station List
     - 006 Mode Location for month from source
     - 010 EMULATE

   Missing: 999
ICOADS Subgroup /SupplementalData/Tracking/ICOADS
ICOADS subgroup contains Tracking ICOADS table.

Tracking ICOADS Table
/SupplementalData/Tracking/ICOADS/TrackingICOADS
1. Source ID for Marine Data
   Integer
   Source Identification for the Marine Data
   Missing: -99

The following description came from ICOADS document. See http://icoads.noaa.gov/e-doc/lmr.
Table 7 lists current source ID assignments. Each SID may contain a single deck or a mixture of decks, but each SID is generally constrained to a single input format. This helps to identify the format of data stored in the LMR supplemental and error attachments (see sec. 5)
   [NOTE: For UK MDB data, e.g., both DCK and SID are required to determine the supplemental format. To accommodate additional SIDs, the true value and coded ranges were increased to 0:254 and 1:255 (see Table 1 for additional information).

Table 7. Source ID assignments.

<table>
<thead>
<tr>
<th>SID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Atlas</td>
</tr>
<tr>
<td>2</td>
<td>HSST Pacific</td>
</tr>
<tr>
<td>3</td>
<td>HSST Indian</td>
</tr>
<tr>
<td>4</td>
<td>HSST Atlantic</td>
</tr>
<tr>
<td>5</td>
<td>Old TDF-11 Supplement B</td>
</tr>
<tr>
<td>6</td>
<td>Old TDF-11 Supplement C</td>
</tr>
<tr>
<td>7</td>
<td>Monterey Telecommunications</td>
</tr>
<tr>
<td>8</td>
<td>Ocean Station Vessels (OSV)</td>
</tr>
<tr>
<td>9</td>
<td>OSV Supplement</td>
</tr>
<tr>
<td>10</td>
<td>MSQ 486 and 105 Omissions</td>
</tr>
<tr>
<td>11</td>
<td>National Oceanographic Data Center (NODC) Surface</td>
</tr>
<tr>
<td>12</td>
<td>NODC Surface Supplement</td>
</tr>
<tr>
<td>13</td>
<td>&quot;Eltanin&quot;</td>
</tr>
<tr>
<td>14</td>
<td>Japanese</td>
</tr>
<tr>
<td>15</td>
<td>South African Whaling</td>
</tr>
<tr>
<td>16</td>
<td>Australian</td>
</tr>
<tr>
<td>17</td>
<td>International Maritime Meteorological (IMM) Data</td>
</tr>
<tr>
<td>18</td>
<td>'70s Decade</td>
</tr>
<tr>
<td>19</td>
<td>IMM '70s</td>
</tr>
</tbody>
</table>
20 OSV Z ('70s)
21 Australian ('70s)
22 NCDC: 1980-84 Annual Receipts
23 '70s Mislocated Data
24 Buoy Data
25 NCDC: 1980-84 Annual Receipts (delayed data)
26 NCDC: 1980-84 Annual Receipts (corrections; 1975)
27 NCDC: 1985 Receipts (annual + delayed)
28 NCDC: 1985 Receipts (duplicates)
30 NCDC: 1980-84 Period of Record
31 Corrected Canadian Data
32 NCDC: Annual Receipts (starting in 1986)
33 NCDC: Annual Receipts (duplicates; starting in 1986)
34 NCDC: 1986 Receipts (delayed)
35 NCDC: 1987 Receipts (delayed)
36 NCDC: 1988 Receipts (delayed)
37 NCDC: 1989 Receipts (delayed)
38 NCDC: 1990 Receipts (delayed)
39 NCDC: 1991 Receipts (delayed)
40 NCDC: 1992 Receipts (delayed)
41 NCDC: 1993 Receipts (delayed)
42 NCDC: 1994 Receipts (delayed)
43 NCDC: 1995 Receipts (delayed)
44 NCDC: 1996 Receipts (delayed)
45 NCDC: 1997 Receipts (delayed)
46 International Maritime Met. (IMM) Tape Archive (1982-): ebcdic
47 International Maritime Met. (IMM) Tape Archive (1982-): ascii
48 NODC/OCL 1994 World Ocean Atlas (WOA94; Mar. 93 NODC archive data)
49 NODC/OCL 1994 World Ocean Atlas (WOA94; non-NODC archive)
50 US National Data Buoy Center (NDBC) Data
51 Russian AARI North Pole (NP) Stations (revised; from EWG CD-ROM)
52 Russian AARI North Pole (NP) Stations (earlier; from Polar Science Cntr)
53 First GARP Global Experiment (FGGE) Level IIb: Surface Marine Data
54 FGGE Level IIb: Oceanographic Data
55 FGGE Level IIb: Drifting Buoy Data
56 Russian S.O. Makarov Collection
57 Russian Marine Meteorological Data Set (MORMET) (rec'd at NCAR)
58 French International Maritime Met. (IMM) Uncorrected (1954-88)
59 UK IMM Corrections (1982-89)
60 French International Maritime Met. (IMM) Corrected (1954-88)
61 Canadian Integrated Science Data Management (ISDM; formerly MEDS) Buoys
62 ISDM (formerly MEDS) World Ocean Circulation Experiment (WOCE) Buoys
63 Canadian ISDM (formerly MEDS) Buoys (July 2005 archive extended Dec. 2008)
64 Russian Research Vessel (R/V) Digitization: Marine Surface
65 Russian Research Vessel (R/V) Digitization: Marine Actinometric
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>Pacific Marine Environmental Lab. (PMEL) TOGA/TAO Buoys</td>
</tr>
<tr>
<td>29</td>
<td>PMEL (Daily) Equatorial Moorings and Island Stations</td>
</tr>
<tr>
<td>30</td>
<td>Arctic Drift Stations</td>
</tr>
<tr>
<td>31</td>
<td>US Maury Collection</td>
</tr>
<tr>
<td>32</td>
<td>Inter-American Tropical Tuna Comm. (IATTC) Porpoise Obs. Logs</td>
</tr>
<tr>
<td>33</td>
<td>IATTC Fishing Logs</td>
</tr>
<tr>
<td>34</td>
<td>IMM Tape Archive from WMO Global Collecting Centre (GCC) (1994 format)</td>
</tr>
<tr>
<td>35</td>
<td>NCDC Marine Obs. Processing System (MOPS): Pre-MOPS (TD-9973)</td>
</tr>
<tr>
<td>36</td>
<td>NCDC MOPS: Duplicate File (TD-9974)</td>
</tr>
<tr>
<td>37</td>
<td>NCDC MOPS: Original Observations (TD-9980)</td>
</tr>
<tr>
<td>38</td>
<td>NCDC MOPS: Supplementary or Correction Data</td>
</tr>
<tr>
<td>40</td>
<td>NCDC: US-keyed Logbook Data Reconversion (TD-9972; keyed during 1996-97)</td>
</tr>
<tr>
<td>41</td>
<td>US Air Force Global Weather Central (GWC): DATSAV2 format</td>
</tr>
<tr>
<td>42</td>
<td>US Navy FNMOC Monterey Telecom: NCAR: Kunia (OPCON) format</td>
</tr>
<tr>
<td>43</td>
<td>US Navy FNMOC Monterey Telecom: NCAR: NEDN format</td>
</tr>
<tr>
<td>44</td>
<td>US Navy FNMOC Monterey Telecom: NCAR: Surface Ship (SPOT) format</td>
</tr>
<tr>
<td>45</td>
<td>US Navy FNMOC Monterey Telecom: NCDC: Surface Ship (SPOT) format (TD-9769)</td>
</tr>
<tr>
<td>46</td>
<td>US Merchant Marine Collection (1912-46): Full Quality Control (QC)</td>
</tr>
<tr>
<td>47</td>
<td>US Merchant Marine Collection (1912-46): Partial QC</td>
</tr>
<tr>
<td>48</td>
<td>Pacific Marine Environ. Lab. (PMEL) TOGA/TAO Buoys: RAM Data</td>
</tr>
<tr>
<td>49</td>
<td>Pacific Marine Environ. Lab. (PMEL) TOGA/TAO Buoys: SPOT Data</td>
</tr>
<tr>
<td>50</td>
<td>NODC/OCL 1998 World Ocean Database (WOD98; Mar. 94 NODC archive data)</td>
</tr>
<tr>
<td>51</td>
<td>NODC/OCL 1998 World Ocean Database (WOD98; non-NODC archive)</td>
</tr>
<tr>
<td>52</td>
<td>UK Met. Ofc. (MetO) Main Marine Data Bank (MDB): Flatfile 1 (no cardimage)</td>
</tr>
<tr>
<td>53</td>
<td>MetO MDB: Flatfile 1A (Flatfile plus cardimage data)</td>
</tr>
<tr>
<td>54</td>
<td>MetO MDB: Flatfile 1B (no Flatfile match; data derived from cardimage)</td>
</tr>
<tr>
<td>55</td>
<td>MetO Historical Metforms (1935-39): Flatfile 1C (data from cardimage)</td>
</tr>
<tr>
<td>56</td>
<td>MetO GTS Receipts (primarily SHIP code; from MDB format)</td>
</tr>
<tr>
<td>57</td>
<td>Japanese Kobe Collection Data (IMMT format; 2003 Edition)</td>
</tr>
<tr>
<td>58</td>
<td>Norwegian Logbook Collection</td>
</tr>
<tr>
<td>59</td>
<td>Japanese Kobe Collection Data (IMMT format; 1998 Edition)</td>
</tr>
<tr>
<td>60</td>
<td>US Merchant Marine Collection (1912-46): Full QC (CLICOM system)</td>
</tr>
<tr>
<td>61</td>
<td>Japanese Kobe Collection Data (IMMT format; 2001 Edition)</td>
</tr>
<tr>
<td>62</td>
<td>NCEP BUFR GTS: Operational Tanks: Converted from Original Message</td>
</tr>
<tr>
<td>63</td>
<td>NCEP BUFR GTS: Operational Tanks: Converted from BUFR</td>
</tr>
<tr>
<td>64</td>
<td>NCEP BUFR GTS: Dumped Data: Converted from Original Message</td>
</tr>
<tr>
<td>65</td>
<td>NCEP BUFR GTS: Dumped Data: Converted from BUFR</td>
</tr>
<tr>
<td>66</td>
<td>UK Met. Office VOSClim GTS BUFR Data</td>
</tr>
<tr>
<td>67</td>
<td>Shipboard Environmental (Data) Acquisition System (SEAS)</td>
</tr>
<tr>
<td>68</td>
<td>IMM Tape Archive from WMO GCC (IMMT-2 format or IMMT-3 format)</td>
</tr>
<tr>
<td>69</td>
<td>International Marine (US-keyed ship data)</td>
</tr>
<tr>
<td>70</td>
<td>NCDC GTS</td>
</tr>
<tr>
<td>71</td>
<td>Japanese Whaling Ship Data (CDMP digitization)</td>
</tr>
<tr>
<td>72</td>
<td>Japanese Whaling Ship Data (MIT digitization)</td>
</tr>
</tbody>
</table>

28
PMEL TAO/TRITON and PIRATA Research Archive Hourly Average Data
PMEL TAO/TRITON and PIRATA Research Archive 10-Minute Average Data
JAMSTEC TRITON Hourly Average Data
PMEL TAO/TRITON and PIRATA Research Archive Hourly Average SLP Data
US National Data Buoy Center (NDBC) Data (obtained from NCDC 2005-2007)
US NDBC data (NODC f291 archive version translated by NCDC 2008)
Climatological Database for the World's Oceans (CLIWOC; Release 2.0)
US Marine Meteorological Journals Collection (1878-94)
Royal Navy Ship's Logs 1938-47 (keyed by 2007)
Antarctic Expeditions: Print./Published (held at Met Office)
Byrd Antarctic Expedition (keyed by Hollings Scholars)
Research Vessel (R/V) Data Quality-Evaluated by FSU/COAPS: WOCE ver.3.0
Research Vessel (R/V) Data Quality-Evaluated by FSU/COAPS: SAMOS
Research Vessel (R/V) Data Quality-Evaluated by FSU/COAPS: Other
Climatological Database for the World's Oceans (CLIWOC; Release 2.1)
Deutscher Wetterdienst (DWD) Marine Meteorological Archive: Compo Subset
DWD Marine Meteorological Archive: Newly Digitized Data
DWD Marine Meteorological Archive: HISTOR Data
NODC/OCL 2005 World Ocean Database (WOD05) updated through 13 Dec. 2007
ACRE Data: Challenger Expedition
German Deep Drifter Data (via ISDM; originally from IfM/Univ. Kiel)

* SID 22 was assigned to "Islas Orcadas" for Release 1, but the data were never translated.
# Input for Release 1a but not output.
& Tentative assignment for a source ID not yet obtained or not yet in use.

--------
2. **Deck ID for Marine Data**
   Integer
   Missing: -99
   Deck Identification for the Marine Data
   The following description came from ICOADS document. See http://icoads.noaa.gov/e-doc/lmr

   Table 6a. Deck assignments ("deck" originally referred to a punched card deck). See Tables 6b and 6c for details about deck ranges 201-255, and 876-882 and 883.

<table>
<thead>
<tr>
<th>Deck</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>*001</td>
<td>US Navy Fleet Numerical Met. and Oceanography Cntr. (FNMOC) Data</td>
</tr>
<tr>
<td>110</td>
<td>US Navy Marine</td>
</tr>
<tr>
<td>116</td>
<td>US Merchant Marine</td>
</tr>
<tr>
<td>117</td>
<td>US Navy Hourlies</td>
</tr>
<tr>
<td>118</td>
<td>Japanese Ships No. 1 (Kobe Collection Data keyed in 1961)</td>
</tr>
<tr>
<td>119</td>
<td>Japanese Ships No. 2 (Kobe Collection Data keyed in 1961)</td>
</tr>
<tr>
<td>128</td>
<td>International Marine (US- or foreign-keyed ship data)</td>
</tr>
<tr>
<td>143</td>
<td>Pacific Marine Environmental Laboratory (PMEL) Buoys</td>
</tr>
<tr>
<td>144</td>
<td>TAO/TRITON and PIRATA Buoys (from PMEL and JAMSTEC)</td>
</tr>
<tr>
<td>145</td>
<td>PMEL (Daily) Equatorial Moorings and Island Stations</td>
</tr>
<tr>
<td>150</td>
<td>Pacific (US Responsibility) HSST Netherlands Receipts</td>
</tr>
<tr>
<td>151</td>
<td>Pacific (US Responsibility) HSST German Receipts</td>
</tr>
<tr>
<td>152</td>
<td>Pacific (US Responsibility) HSST UK Receipts</td>
</tr>
<tr>
<td>155</td>
<td>Indian (Netherlands Responsibility) HSST</td>
</tr>
<tr>
<td>156</td>
<td>Atlantic (German Responsibility) HSST</td>
</tr>
<tr>
<td>184</td>
<td>Great Britain Marine (194 extension)</td>
</tr>
<tr>
<td>185</td>
<td>USSR Marine IGY</td>
</tr>
<tr>
<td>186</td>
<td>USSR Ice Stations</td>
</tr>
<tr>
<td>187</td>
<td>Japanese Whaling Fleet</td>
</tr>
<tr>
<td>188</td>
<td>Norwegian Antarctic Whaling Factory Ships</td>
</tr>
<tr>
<td>189</td>
<td>Netherlands Marine</td>
</tr>
<tr>
<td>192</td>
<td>Deutsche Seewarte Marine</td>
</tr>
<tr>
<td>193</td>
<td>Netherlands Marine</td>
</tr>
<tr>
<td>194</td>
<td>Great Britain Marine</td>
</tr>
<tr>
<td>195</td>
<td>US Navy Ships Logs</td>
</tr>
<tr>
<td>196</td>
<td>Deutsche Seewarte Marine (192 extension)</td>
</tr>
<tr>
<td>197</td>
<td>Danish (and Other) Marine (Polar)</td>
</tr>
<tr>
<td>201-255</td>
<td>UK Met. Office (MetO) Main Marine Data Bank (MDB) (see Table 6b)</td>
</tr>
<tr>
<td>281</td>
<td>US Navy Monthly Aerological Record (MAR)</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>#500</td>
<td>Gulf Offshore Weather Observing Network (GOWON) (plat data)</td>
</tr>
<tr>
<td>555</td>
<td>US Navy Fleet Num. Met. and Oceano. Center (FNMOC; Monterey) Telecom.</td>
</tr>
<tr>
<td>666</td>
<td>Tuna Boats</td>
</tr>
<tr>
<td>667</td>
<td>Inter-American Tropical Tuna Commission (IATTC)</td>
</tr>
<tr>
<td>700</td>
<td>UK Met. Office VOSClim GTS BUFR Data</td>
</tr>
<tr>
<td>701</td>
<td>US Maury Collection</td>
</tr>
<tr>
<td>702</td>
<td>Norwegian Logbook Collection</td>
</tr>
<tr>
<td>704</td>
<td>US Marine Meteorological Journals Collection (1878-94)</td>
</tr>
<tr>
<td>705</td>
<td>US Merchant Marine Collection (1912-46) (500 series)</td>
</tr>
<tr>
<td>706</td>
<td>US Merchant Marine Collection (1912-46) (600 series)</td>
</tr>
<tr>
<td>707</td>
<td>US Merchant Marine Collection (1912-46) (700 series)</td>
</tr>
<tr>
<td>714</td>
<td>Canadian Integrated Science Data Mgmt. (ISDM; formerly MEDS) Buoys</td>
</tr>
<tr>
<td>715</td>
<td>German Deep Drifter Data (via ISDM; originally from IfM/Univ. Kiel)</td>
</tr>
<tr>
<td>720</td>
<td>Deutscher Wetterdienst (DWD) Marine Meteorological Archive</td>
</tr>
<tr>
<td>730</td>
<td>Climatological Database for the World's Oceans (CLIWOC)</td>
</tr>
<tr>
<td>731</td>
<td>Russian S.O. Makarov Collection</td>
</tr>
<tr>
<td>732</td>
<td>Russian Marine Met. Data Set (MORMET) (received at NCAR)</td>
</tr>
<tr>
<td>733</td>
<td>Russian AARI North Pole (NP) Stations</td>
</tr>
<tr>
<td>734</td>
<td>Arctic Drift Stations</td>
</tr>
<tr>
<td>735</td>
<td>Russian Research Vessel (R/V) Digitization</td>
</tr>
<tr>
<td>736</td>
<td>Byrd Antarctic Expedition (keyed by Hollings Scholars)</td>
</tr>
<tr>
<td>740</td>
<td>Research Vessel (R/V) Data Quality-Evaluated by FSU/COAPS</td>
</tr>
<tr>
<td>749</td>
<td>First GARP Global Experiment (FGGE) Level IIb</td>
</tr>
<tr>
<td>761</td>
<td>Japanese Whaling Ship Data (CDMP/MIT digitization)</td>
</tr>
<tr>
<td>762</td>
<td>Japanese Kobe Collection Data (keyed after decks 118-119)</td>
</tr>
<tr>
<td>780</td>
<td>NODC/OCL World Ocean Database (WOD) (and formerly Atlas, WOA)</td>
</tr>
<tr>
<td>792</td>
<td>US Natl. Cntrs. for Environ. Pred. (NCEP) BUFR GTS: Ship Data</td>
</tr>
<tr>
<td>793</td>
<td>NCEP BUFR GTS: Buoy Data (transmitted in FM 13 &quot;SHIP&quot; code)</td>
</tr>
<tr>
<td>794</td>
<td>NCEP BUFR GTS: Buoy Data (transmitted in FM 18 &quot;BUOY&quot; code)</td>
</tr>
<tr>
<td>795</td>
<td>NCEP BUFR GTS: Coastal-Marine Automated Network (C-MAN code) Data</td>
</tr>
<tr>
<td>796</td>
<td>NCEP BUFR GTS: Miscellaneous (OSV, plat, and rig) Data</td>
</tr>
<tr>
<td>797</td>
<td>NCEP BUFR GTS: CREX code</td>
</tr>
<tr>
<td>849</td>
<td>First GARP Global Experiment (FGGE)</td>
</tr>
<tr>
<td>850</td>
<td>German FGGE</td>
</tr>
<tr>
<td>874</td>
<td>Shipboard Environmental (Data) Acquisition System (SEAS)</td>
</tr>
<tr>
<td>876-#882</td>
<td>US National Data Buoy Center (NDBC) Data (see Table 6c)</td>
</tr>
<tr>
<td>883</td>
<td>US National Data Buoy Center (NDBC) Data (see Table 6c)</td>
</tr>
<tr>
<td>888</td>
<td>US Air Force Global Weather Central (GWC)</td>
</tr>
<tr>
<td>889</td>
<td>Autodin (US Dept. of Defense Automated Digital Network)</td>
</tr>
<tr>
<td>#890</td>
<td>US National Meteorological Center (NMC, now NCEP) Data (obsolete)</td>
</tr>
<tr>
<td>891</td>
<td>US National Oceanographic Data Center (NODC) Surface Data</td>
</tr>
<tr>
<td>892</td>
<td>US Natl. Cntrs. for Environ. Pred. (NCEP) Ship Data</td>
</tr>
<tr>
<td>893</td>
<td>NCEP Moored Buoy Data</td>
</tr>
<tr>
<td>#894</td>
<td>NCEP Drifting Buoy Data</td>
</tr>
<tr>
<td>#895</td>
<td>NCEP Coastal-Marine Automated Network (C-MAN) Data</td>
</tr>
<tr>
<td>896</td>
<td>NCEP Miscellaneous (OSV, plat, and rig) Data</td>
</tr>
</tbody>
</table>
"Eltanin"
Japanese
South African Whaling
Australian
FOSDIC Reconstructions (card images from 16mm film)
Great Britain Marine (184 extension)
International Maritime Meteorological (IMM) Data
International Marine (US- or foreign-keyed ship data)**
Same as 927 including Ocean Station Vessels (OSV)
NCDC GTS: Ship Data
NCDC GTS: Buoy Data (transmitted in FM 13 "SHIP" code)
NCDC GTS: Buoy Data (transmitted in FM 18 "BUOY" code)
NCDC GTS: Coastal-Marine Automated Network (C-MAN code) Data
NCDC GTS: Miscellaneous (OSV, plat, and rig) Data
NCDC GTS: CREX code
US Air Force Environ. Technical Applications Center (ETAC)

* Unofficial deck number for real-time data processing.
& Tentative assignment for a deck not yet obtained or not yet in use.
# Input for Release 1a but not output.
** A mixture of US- and foreign-keyed data exists in deck 927 prior to 1980; starting about 1980 deck 927 is believed to contain only US-recruited ships. Country code (C1, field 47) should ordinarily be set for foreign-keyed data.

Table 6b. UK Met. Office (MetO) Main Marine Data Bank (MDB) deck assignments (equivalent to MDB series numbers). Assignments falling in the range 201-255 that do not appear below (e.g., 243-253) are not yet assigned. Approximate time periods are also given from MDB documentation.

<table>
<thead>
<tr>
<th>Deck</th>
<th>Description</th>
<th>Approx. period</th>
</tr>
</thead>
<tbody>
<tr>
<td>201</td>
<td>All Ships (1930 code)</td>
<td>1850-1920</td>
</tr>
<tr>
<td>202</td>
<td>All Ships (1921 code)</td>
<td>1921-1929</td>
</tr>
<tr>
<td>203</td>
<td>Selected Ships (1930 code)</td>
<td>1920-1939</td>
</tr>
<tr>
<td>204</td>
<td>British Navy (HM) Ships (1930 code)</td>
<td>1930-1948</td>
</tr>
<tr>
<td>205</td>
<td>Scottish Fishery Cruisers MARIDS (1930 code)</td>
<td>1946-1956</td>
</tr>
<tr>
<td>206</td>
<td>Ocean Weather Stations (OWS) (1930 code)</td>
<td>1947-1949</td>
</tr>
<tr>
<td>207</td>
<td>Selected Ships (1930 code)</td>
<td>1945-1948</td>
</tr>
<tr>
<td>208</td>
<td>Light Vessels</td>
<td>1949-1956</td>
</tr>
<tr>
<td>209</td>
<td>Selected Ships (including some foreign ships)</td>
<td>1951-1956</td>
</tr>
<tr>
<td>210</td>
<td>OWS (including Dutch &quot;J&quot;)</td>
<td>1950-1956</td>
</tr>
<tr>
<td>211</td>
<td>Scottish Fishery Cruisers MARIDS</td>
<td>1956-1961</td>
</tr>
<tr>
<td>212</td>
<td>Light Vessels</td>
<td>1956-1961</td>
</tr>
<tr>
<td>213</td>
<td>Selected Ships</td>
<td>1956-1961</td>
</tr>
</tbody>
</table>
Table 6c. Deck assignments for early US National Data Buoy Center (NDBC) data (decks 876-882). Initially, separate deck numbers 876-880 were assigned to indicate hull design, etc.* At a later date, this convention was abandoned, such that decks 882 and 883 were used for all moored buoy data subsequently received by NCDC from NDBC. Approximate (output) time periods are also given: for Release 1b, only deck numbers 876-882 were output; for Release 1a (1980-) only deck number 883 was output.

* Believed to be derived from the same original German punched cards as deck 192 (Table 6a).
** 1 Jan 1982-26 Jun 1998 (missing: Apr-Jun 82; Mar, Jun, Sep 85; Sep 88). Some non-SHIP (e.g., BUOY) data may also be included in earlier years. & Tentative assignment for a deck not yet obtained or not yet in use.

<table>
<thead>
<tr>
<th>Deck</th>
<th>Description</th>
<th>Approx. period</th>
</tr>
</thead>
<tbody>
<tr>
<td>876</td>
<td>NDBC Data (High Capability Buoy; HCB)</td>
<td>1972-77</td>
</tr>
<tr>
<td>877</td>
<td>NDBC Data (Limited Capability Buoy; LCB)</td>
<td>1973-76</td>
</tr>
</tbody>
</table>
878  NDBC Data (Prototype Environmental Buoy; PEB)  1974-78
879  NDBC Data (5-meter Continental Shelf Buoys)  1974-78
880  NDBC Data (10-meter Continental Shelf Buoys)  1976-78
881  NDBC Data (Offshore Platforms)  1976-77
882  NDBC Data  1978-79

* Hull design information is based on informal NCDC documentation (NCDC, 1972a and 1972b) and D. Gilhousen (NDBC) personal correspondence (13 Dec. 1995).

3.  **Platform Type for Marine Data**

   Integer
   The Type of Observing Platform for the Marine Data
   Missing: -9

   The following description came from ICOADS document. See http://icoads.noaa.gov/e-doc/lmr.

   The type of observing platform:
   0 = US Navy or "deck" log, or unknown
   1 = merchant ship or foreign military
   2 = ocean station vessel--off station or station proximity unknown
   3 = ocean station vessel--on station
   4 = lightship
   5 = ship
   6 = moored buoy
   7 = drifting buoy
   8 = ice buoy [NOTE: currently unused]
   9 = ice station (manned, including ships overwintering in ice)
   10 = oceanographic station data (bottle and low-resolution CTD/XCTD data)
   11 = mechanical/digital/micro bathythermograph (MBT)
   12 = expendable bathythermograph (XBT)
   13 = Coastal-Marine Automated Network (C-MAN) (NDBC operated)
   14 = other coastal/island station
   15 = fixed ocean platform (plat, rig)
   16 = tide gauge
   17 = high-resolution Conductivity-Temp.-Depth (CTD)/Expendable CTD (XCTD)
   18 = profiling float
   19 = undulating oceanographic recorder
   20 = autonomous pinnaped bathythermograph
   21 = glider

   [NOTE: PT settings 0-4 are derived from "OSV or Ship Indicator" in NCDC (1968); PT settings 0-1 are very poorly documented and probably should be regarded as equivalent to ship data (PT=5).]
**LAND Subgroup** /SupplementalData/Tracking/Land
Land subgroup contains Tracking Land table.

**Table** /SupplementalData/Tracking/Land/TrackingLand

1. **Source flag for Land Station Data**
   
   Length 1  
   Character  
   Missing: 9

The following description came from ISD document. See http://www1.ncdc.noaa.gov/pub/data/ish/ish-format-document.pdf

For ISD observations (ISPD ID 1000), this code corresponds to

---

GEOPHYSICAL-POINT-OBSERVATION data source flag (positions 28-28 of ISD record). The flag of a GEOPHYSICAL-POINT-OBSERVATION showing the source or combination of sources used in creating the observation.  

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DATSAV3 observation, candidate for merge with TD3280 (not yet merged, failed element checks)</td>
</tr>
<tr>
<td>2</td>
<td>TD3280 observation, candidate for merge with DATSAV3 (not yet merged, failed element checks)</td>
</tr>
<tr>
<td>3</td>
<td>DATSAV3/TD3280 merged observation</td>
</tr>
<tr>
<td>4</td>
<td>DATSAV3 observation</td>
</tr>
<tr>
<td>5</td>
<td>TD3280 observation</td>
</tr>
<tr>
<td>6</td>
<td>ASOS/AWOS observation from NISPD</td>
</tr>
<tr>
<td>7</td>
<td>ASOS/AWOS observation merged with DATSAV3</td>
</tr>
<tr>
<td>A</td>
<td>DATSAV3/TD3240 merged observation, candidate for merge with TD3280 (not yet merged, failed element checks)</td>
</tr>
<tr>
<td>B</td>
<td>TD3280/TD3240 merged observation, candidate for merge with DATSAV3 (not yet merged, failed element checks)</td>
</tr>
<tr>
<td>C</td>
<td>DATSAV3/TD3280/TD3240 merged observation</td>
</tr>
<tr>
<td>D</td>
<td>DATSAV3/TD3240 merged observation</td>
</tr>
<tr>
<td>E</td>
<td>TD3280/TD3240 merged observation</td>
</tr>
<tr>
<td>9</td>
<td>Missing</td>
</tr>
</tbody>
</table>

---
2. **Report type code**
   Length 5
   Character
   Missing: 99999

For ISD observations (ISPD ID 1000), this code corresponds to
   GEOPHYSICAL-REPORT-TYPE code (positions 42-46 of ISD record).
   The code that denotes the type of geophysical surface observation
   DOM: A specific domain comprised of the characters in the ASCII character set.
   FM-12 = SYNOP Report of surface observation from a fixed land station
   FM-13 = SHIP Report of surface observation from a sea station
   FM-14 = SYNOP MOBIL Report of surface observation from a mobile land station
   FM-15 = METAR Aviation routine weather report
   FM-16 = SPECI Aviation selected special weather report
   FM-18 = BUOY Report of a buoy observation
   SAO = Airways report (includes record specials)
   AOSP = Airways special report (excluding record specials)
   AERO = Aerological report
   AUTO = Report from an automatic station
   SY-AE = Synoptic and aero merged report
   SY-SA = Synoptic and airways merged report
   SY-MT = Synoptic and METAR merged report
   SY-AU = Synoptic and auto merged report
   SA-AU = Airways and auto merged report
   S-S-A = Synoptic, airways, and auto merged report
   BOGUS = Bogus report
   SMARS = Supplementary airways station report
   SOD = Summary of day report from U.S. ASOS or AWOS station
   

3. **Quality Control Indicators for sea level pressure value (sea level pressure field in Observations table) from source**
   Length 5
   Character
   Missing: 99999

For ISD observations (ISPD ID 1000), this code corresponds to
   For Russian Empire observations (ISPD 1003) this code corresponds to
4. **Quality Control Indicators for surface pressure value (surface pressure field in Observations table) from source**

   Length 5
   Character
   Missing: 99999

**V. Table of Original Sources group /TableOfOrigialSources**

Table of Original Sources group contains Dataset Index table

**Dataset Index table /TableOfOriginalSources/DatasetIndex**

Dataset Index table contains a list of sources for the International Surface Pressure Data Bank Collection ID field in the Observation Types table.

**ISPD Format Version**

Length 3
Dataset String
Version of ISPD HDF5 format that data adhere to
-i.e. 0.1 for version 0.1

**References**

Data Documentation for Dataset 9290c, The Synoptic Climatology Network. C. The Former USSR (draft), National Climatic Data Center: version 1.0, February 28, 2005

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Long Marine Reports/Fixed-length (LMR6/LMRF6), December 8, 2008
http://icoads.noaa.gov/e-doc/lmr

The International Maritime Meteorological Archive (IMMA) Format, Supplement C, March 14, 2007

Federal Climate Complex Data Documentation For Integrated Surface Hourly Data, National Climatic Data Center, June 21, 2004

Original HURDAT format Document, Atlantic Oceanographic and Meteorology Laboratory
http://www.aoml.noaa.gov/hrd/data_sub/hurdat.html

National Climatic Data Center Global Tropical Cyclone Stewardship, Michael C. Kruk, Kenneth Knapp, David Levinson, National Climatic Data Center
http://www.ncdc.noaa.gov/oa/ibtracs/

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The documents for the original data we included may become obsolete in the future. Please refer to the links below for the most recent documents.