Crowdsourced Bathymetry File Formats for Submission to the IHO Data Center for Digital Bathymetry

GeoJSON Format - Required Fields Only

Format Version 3.0
Last Update: April 7, 2022

```json
{
  "type": "FeatureCollection",
  "crs": {
    "horizontal":          {
      "type": "EPSG",
      "value": 4326
    },
    "vertical": "Transducer"
  },
  "properties": {
    "providerContactPoint": {
      "orgName": "Example Cruises Inc",
      "email": "support@example.com",
      "logger": "Rose Point ECS",
      "loggerVersion": "1.0"
    },
    "convention": "GeoJSON CSB 3.0",
    "dataLicense": "CC0 1.0",
    "platform": {
      "uniqueID": "EXAMPLE-f8c469f8-df38-11e5-b86d-9a79f06e9478",
      "correctors": {
        "positionReferencePoint": "GNSS"
      }
    }
  },
  "features": [
    {
      "type": "Feature",
      "geometry": {
        "type": "Point",
        "coordinates": [
            -119.37249833123325,
            72.09587373217158
        ]
      },
      "properties": {
        "depth": 108.9,
```

```
        "time": "2015-08-06T22:00:00.000Z"
      }
    }
  ]
}
```

XYZ Format - Required Fields Only

Format Version 3.0
Last Update: April 7, 2022

Metadata for inclusion in post to DCDB API:

```
{
  "crs": {
   "horizontal": {
    "type": "EPSG",
    "value":    4326
   },
   "vertical": "Transducer"
  },
  "providerContactPoint": {
    "orgName": "Example Cruises Inc",
    "email": "support@example.com",
    "logger": "Rose Point ECS",
    "loggerVersion": "1.0"
  },
  "convention": "XYZ CSB 3.0",
  "dataLicense": "CC0 1.0",
  "platform": {
    "uniqueID": "EXAMPLE-f8c469f8-df38-11e5-b86d-9a79f06e9478",
    "correctors": {
       "positionReferencePoint": "GNSS"
    }
  }
}
```

Contents of file (LON,LAT,DEPTH,TIME):

```
LON,LAT,DEPTH,TIME
-119.372498, 72.095873, 108.9, 2015-08-06T22:00:00.000Z
```

Alternative file format (LAT,LON,DEPTH,TIME):

```
LAT,LON,DEPTH,TIME
72.095873, -119.372498, 108.9, 2015-08-06T22:00:00.000Z
```

GeoJSON Format - Includes Suggested Metadata

Format Version 3.0
Last Update: April 7, 2022

```json
{
  "type": "FeatureCollection",
  "crs": {
      "horizontal": {
        "type": "EPSG",
        "value": 8252
    },
      "vertical": "Transducer"
  },
  "properties": {
      "providerContactPoint": {
        "orgName": "Example Cruises Inc",
        "email": "support@example.com",
        "logger": "Rose Point ECS",
        "loggerVersion": "1.0"
    },
      "convention": "GeoJSON CSB 3.0",
      "dataLicense": "CC0 1.0",
      "platform": {
        "uniqueID": "EXAMPLE-f8c469f8-df38-11e5-b86d-9a79f06e9478",
        "type": "Ship",
        "name": "USCGC Healy",
        "length": 128,
        "IDType": "IMO",
        "IDNumber": 9083380,
        "sensors": [
          {
            "type": "Sounder",
            "make": "Kongsberg Maritime",
            "model": "EM122",
            "position": [-18.404, -1.909, 8.919],
            "draft": 8.321,
            "frequency": 12000,
            "transducer": "EM122-CentreBeam"
        },
          {
            "type": "GNSS",
            "make": "Kongsberg Maritime",
            "model": "Seapath 330+",
            "position": [0, 0, 0]
        },
          {
```

```
          "type": "MotionSensor",
          "make": "Kongsberg Maritime",
          "model": "Seapath 330+",
          "position": [0, 0, 0]
        }
      ],
      "correctors": {
        "positionReferencePoint": "GNSS",
        "soundSpeedDocumented": true,
        "positionOffsetsDocumented": true,
        "dataProcessed": true,
        "motionOffsetsApplied": true,
        "draftApplied": true
      }
    },
    "algorithms": [
      {
        "name": "deduplicate",
        "Params": ""
      }
    ]
  },
  "lineage": [
    {
      "type": "CRSTransformation",
      "timestamp": "2021-11-22T16:10:09.346821",
      "detail": {
        "origin": "EPSG:4326",
        "destination": "EPSG:8252",
        "method": "GeoTrans"
      }
    },
    {
      "type": "TimeInterpolation",
      "timestamp": "2021-11-22T16:10:09.346821",
      "detail": {
        "source": "SystemTime | ZDA | RMC | ...",
        "method": "Midway | ElapsedTime | DataSource | NTP | PTP | ...",
        "comment": "Millisecond elapsed time on first character of strings used for interpolation"
      }
    },
    {
      "type": "algorithm",
      "timestamp": "2021-11-22T16:10:09.346821",
      "detail": {
        "name": "deduplicate",
        "parameters": "",
        "comment": "Selected 11281 non-duplicate depths from 35744 in input."
```

```
      }
    },
    {
      "type": "GNSSProcessing",
      "timestamp": "2021-11-22T16:10:09.346821",
      "detail": {
        "algorithm": "RTKLib | CSRS-PPP | ...",
        "version": "1.2.0",
        "comment": "Base stations from New Hampshire CORS at NHUN
https://www.unh.edu/facilities/gis-cors"
      }
    },
    {
      "type": "SoundSpeedCorrection",
      "timestamp": "2021-11-22T16:10:09.346821",
      "detail": {
        "Source":  "Model | Profile | GeometricMean | Fixed | CarterTable | MatthewTable | WOA13 |
...",
        "algorithm": "CIDCO-Ocean | Raytraced | ...",
        "version": "1.1.0",
        "comment": "Solutions from 25 profiles, 15 used, 10 duplicate."
      }
    },
    {
      "type": "VerticalReduction",
      "timestamp": "2021-11-22T16:10:09.346821",
      "detail": {
        "reference": "ChartDatum | Ellipsoid",
        "method": "ObservedWL | PredictedWL | ModelledWL | EllipsoidReduction | ...",
        "model": "CANNORTH2016v1HyVSEP_NAD83v6_CD | StationReference | VDatum | VORF | ...",
        "comment": "Water levels from NOAA gauge
https://tidesandcurrents.noaa.gov/stationhome.html?id=8419870"
      }
    },
    {
      "type": "CRS",
      "timestamp": "2021-11-22T16:10:09.346821",
      "detail": {
        "type": "EPSG",
        "value": 8252,
        "comment": "Transformed with GeoTrans v 3.23"
      }
    }
  ],
  "features": [
    {
      "type": "Feature",
      "geometry": {
```

```
            "type": "Point",
            "coordinates": [
              -119.372498,
              72.095873
            ]
          },
          "properties": {
            "depth": 108.9,
            "time": "2015-08-06T22:00:00.000Z"
          }
        }
      }
    ]
}
```

XYZ Format - Includes Suggested Metadata

Format Version 3.0
Last Update: April 7, 2022

Metadata for inclusion in post to DCDB API:

```
{
  "crs": {
    "horizontal": {
      "type": "EPSG",
      "value": 8252
    },
    "vertical":   "Transducer"
  },
  "providerContactPoint": {
    "orgName": "Example Cruises Inc",
    "email": "support@example.com",
    "logger": "Rose Point ECS",
    "loggerVersion": "1.0"
  },
  "convention": "XYZ CSB 3.0",
  "dataLicense": "CC0 1.0",
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    "uniqueID": "EXAMPLE-f8c469f8-df38-11e5-b86d-9a79f06e9478",
    "type": "Ship",
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    "length": 128,
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  "algorithms": [
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      "params": ""
    }
  ],
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      "timestamp": "2021-11-22T16:10:09.346821",
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```json
      "detail": {
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      "detail": {
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        "algorithm": "CIDCO-Ocean | Raytraced | ...",
        "version": "1.1.0",
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https://tidesandcurrents.noaa.gov/stationhome.html?id=8419870"
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    },
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      "detail": {
        "type": "EPSG",
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  ]
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