



Raw Multibeam Format HYD of Bathymetry Group at Alfred Wegener Institute for Polar and Marine Research

(Version 08/2011, two pages, by Ralf Krockner)

The format was used to store multibeam data of sonar systems ATLAS Hydrosweep DS-1 and DS-2, installed on board R/V Polarstern, with fixed number of 59 preformed beams. It was also used for multibeam data from Seabeam system previously installed on R/V Polarstern with fixed number of 16 preformed beams, where 43 (= 59 – 16) beams are unused and set to zero.

A Hyd-file includes a sequence of records of the same type where every record contains data of one ping. No further header or closing records are defined. Files are written in binary format. The byte order is Big-Endian. The types of variables in following table are defined in C/C++ notation: i2 = short, i4 = int, f4 = float.

Table 1: Byte sequence of a Hyd record

Field content	Type
record length ⁽¹⁾	i4
day	i2
month	i2
year	i2
hour	i2
minute	i2
second	i2
latitude	f4
longitude	f4
gyro	f4
number of starboard beams ⁽²⁾	i2
number of port beams ⁽²⁾	i2
lateral distance ⁽³⁾	59 x i2
depth	59 x i2
empty (pack-bytes) ⁽⁴⁾	<i>variable</i>
record length ⁽¹⁾	i4

⁽¹⁾ the 4 byte integer at the beginning and end of the record are not taken into account for record length definition.

⁽²⁾ the number of starboard and port beams is always 29. A smaller number defines outer beams to be invalid.

⁽³⁾ negative to port

⁽⁴⁾ number of pack-bytes amounts to: record_length – 264

Records may have different length depending on operating systems or used software package (e.g. CARIS).

The files extension is 'hyd'. The file name usually contains the date of measuring and the status by means of applied processing steps. The date is coded as *yymmdd* followed by underline character '_' and three characters defining the status of navigational correction, sounding correction and outlier decimation:

- First status character: Navigation correction applied: n
Not applied: x
- Second status character: Normalization to sound speed of 1500 m/s applied: s
Not applied: x
- Third status character: Depth editing applied using Caris HDCS: h
Applied by automatic spike filter using geometric and statistical methods of program 'deserter': d
Manual editing using graphical interface of program 'profile': p
Not applied: x

Example of file name: 900314_nsd.hyd

For AWI bathymetry group special import and export wizards for Caris hdcS running on SUN SOLARIS X-Windows environment were written (awitoHDCS and hdcSToAWI respectively). So, results of editing with Caris can be written back to original Hyd format, where the depth value of beams detected to be invalid are set to 0.

Hyd format can be read by programs written at AWI by staff of bathymetry working group. No further product published is able to handle this format.
