Version February 27, 2003

ODF[1] Format Description (MLI)

ODF FORMAT DESCRIPTION

ODF (Ocean Data Format) is an ASCII text format used for the primary storage of physical, biological, and chemical data series by the Bedford Institute of Oceanography (BIO). The data management section of the Maurice Lamontagne Institute (MLI) adopted the ODF format in 1999. It consists of a set of header blocks preceded by the header name and containing a number of fields that are of the form keyword=value. Header fields may be strings or numeric. All data records are numeric with the exception of time (code SYTM), which is a character string of the form 'dd-mon-yyyy hh:mm:ss.ss'. A number of MATLAB scripts (from BIO and MLI) are available to support the ODF format.

The primary item in an ODF file is an EVENT, which is a single data series. Examples of an EVENT are a current meter time series, a CTD profile, a Batfish tow—any data series that can be defined by its space/time coordinates and having a number of observations.

ODF uses a file naming convention (called an Event_specification) based on the event type. There are fields within ODF that support these file naming conventions and, while not compulsory, their use is encouraged as a means of managing a large number of ODF files. See the file ODF File Specification or Filename (MLI) for specific details.

All data parameters in an ODF file must have a valid parameter code. These codes were initially based on the GF3 code list (four first letters) but have been extended to include other data types specific to BIO and/or MLI. See the file ODF parameter codes for more details. Default units are associated with specific codes. For example, PRES (pressure) is always expressed in decibars and the SYTM time variable is always in GMT (Greenwich Mean Time).

HEADER BLOCK DESCRIPTION

A description of the ODF header block follows. Note that some header blocks are compulsory (e.g., EVENT_HEADER, PARAMETER_HEADER), others are optional (e.g., METEO_HEADER, POLYNOMIAL_CAL_HEADER). If a specific header block is present, all fields within the block are mandatory; however, the field may be left blank if it is a string.

Block name: ODF_HEADER (obligatory: one block/file)
Identifies the data file as being in ODF_ASCII format.

Field	Type	Description
FILE_SPECIFICATION	string	describes the full event specification (filename)

[1] Refer to URL : http://www.mar.dfo-mpo.gc.ca/science/ocean/home.html

Block name: CRUISE_HEADER (obligatory: one block/file)
Defines the cruise or experiment common to one or more events.
All fields are mandatory. Any individual field may be blank.

Field	Type	Description
COUNTRY_INSTITUTE_CODE	number	1830 (MLI), 1810 (BIO)
CRUISE NUMBER	string	cruise number: YYYYnnn
ORGANIZATION	string	division and/or section
CHIEF_SCIENTIST	string	chief scientist or data producer
START_DATE	string (SYTM)	start date of cruise
END_DATE	string (SYTM)	end date of cruise
PLATFORM	string	ship name or platform type (e.g. helicopter)
CRUISE_NAME	string	cruise name
CRUISE_DESCRIPTION	string	cruise description

Block name: EVENT_HEADER (obligatory: one block/file)
Contains event or station-specific information

Field	Type	Description
DATA_TYPE	string	data type (see list in ODF File Specification or Filename (MLI))
EVENT_NUMBER	string	event number (see list in ODF File Specification or Filename (MLI))
EVENT_QUALIFIER1	string	qualifier1 (see list in ODF File Specification or Filename (MLI))
EVENT_QUALIFIER2	string	qualifier 2 (see list in ODF File Specification or Filename (MLI))
CREATION_DATE	string (SYTM)	file creation date
ORIG_CREATION_DATE	string (SYTM)	creation date of source file
START_DATE_TIME	string (SYTM)	event start time (GMT)
END_DATE_TIME	string (SYTM)	event end time (GMT) (null value =’17-NOV-1858 00:00:00.00’)
INITIAL_LATITUDE	number	event initial latitude (positive north)
INITIAL_LONGITUDE	number	event initial longitude (positive east)
END_LATITUDE	number	event final latitude (positive north, null value=-99.0)
END_LONGITUDE	number	event final longitude (positive east, null value=-999.9)
MIN_DEPTH	number	minimum sample depth (m)
MAX_DEPTH	number	maximum sample depth (m)
SAMPLING_INTERVAL	number	sampling interval (sec, null value=-99.0)
SOUNDING	number	seafloor depth (m, null value=-99.0)
DEPTH_OFF_BOTTOM	number	sounding - max_depth (m, null value=-99.0)
EVENT_COMMENTS	string	event comments (repeat field if necessary)

Block name: METEO_HEADER (optional: 1 block/file)
Meteorological conditions during the event

Field	Type	Description
AIR_TEMPERATURE	number	air temperature (C)
ATMOSPHERIC_PRESSURE	number	atmospheric pressure (hpa)
WIND_SPEED	number	wind speed (m/s)
WIND_DIRECTION	number	wind direction (degrees true north degrees)
SEA_STATE	number	sea state (0->9, WMO code table 3700)
CLOUD_COVER	number	cloud cover (0->9, WMO code table 2700)
ICE_THICKNESS	number	ice thickness (m)
METEO_COMMENTS	string	meteo comments (repeat field if necessary)

Block name: INSTRUMENT_HEADER (optional: 1 block/file)

Describes the instrument used to collect the data.

Field	Type	Description
INST_TYPE	string	instrument name
MODEL	string	instrument model
SERIAL_NUMBER	string	instrument serial number
DESCRIPTION	string	names of source files

Block name: QUALITY_HEADER (optional: 1 block/file)

List of tests performed and comments on data quality

Field	Type	Description
QUALITY_DATE	string	quality control date
QUALITY_TESTS	string	test names (repeat field if necessary)
QUALITY_COMMENTS	string	comments on data quality (repeat field if necessary)

Block name: GENERAL_CAL_HEADER (optional: multiple blocks/file)

A calibration block is added any time a raw channel is converted into a real parameter using a calibration equation. One parameter can have more than one calibration header.

Field	Type	Description
PARAMETER_CODE	string	parameter code (see ODF parametre code)
CALIBRATION_TYPE	string	calibration type (see Etalonnage_ODF)
CALIBRATION_DATE	string (SYTM)	sensor calibration date
APPLICATION_DATE	string (SYTM)	calibration application date
NUMBER_COEFFICIENTS	number	number of coefficients
COEFFICIENTS	number	list of coefficients
CALIBRATION_EQUATION	string	calibration equation
CALIBRATION_COMMENTS	string	calibration comments

Block name: POLYNOMIAL_CAL_HEADER (optional: multiple blocks/file)

A calibration block is added any time a raw channel is converted into a real parameter using a polynomial equation of order NUMBER_COEFFICIENTS-1. One parameter can have more than one calibration header.

Field	Type	Description
PARAMETER_CODE	string	parameter code (see ODF parameter codes)
CALIBRATION_DATE	string (SYTM)	sensor calibration date
APPLICATION_DATE	string (SYTM)	calibration application date
NUMBER_COEFFICIENTS	number	number of coefficients
COEFFICIENTS	number	list of coefficients starting with the zero order

Block name: COMPASS_CAL_HEADER (optional: multiple blocks/file)

A compass calibration header is included when corrections are applied to a direction parameter.

Field	Type	Description
PARAMETER_CODE	string	parameter code (see ODF parameter codes)
CALIBRATION_DATE	string (SYTM)	sensor calibration date
APPLICATION_DATE	string (SYTM)	calibration application date
DIRECTIONS	number	4 values/line, calibration reference directions
CORRECTIONS	number	4 values/line, corrections corresponding to direction list

Block name: HISTORY_HEADER (optional: multiple blocs/files)

Any treatment done to the data set is described in a history header.

Field	Type	Description
CREATION_DATE	string (SYTM)	treatment date
PROCESS	string	treatment description (repeat field if necessary)

Block name: PARAMETER_HEADER (obligatory: 1 block/parameter)

Description of the parameters of the data set. The data records appear in the same order as the parameter headers.

Field	Type	Description
TYPE	string	number precision (SING or DOUB)
NAME	string	parameter name
UNITS	string	parameter units
CODE	string	parameter code (see ODF parameter codes)
NULL_VALUE	number	null (missing) value (usually –99.0)
PRINT_FIELD_WIDTH	number	total field width for the parameter
PRINT_DECIMAL_PLACES	number	number of decimal places for the parameter
ANGLE_OF_SECTION	number	angle of section for current components. An angle of section of 0 means the V component is positive north, and the U component is positive east.
MAGNETIC_VARIATION	number	correction applied to magnetic direction to convert to true degrees
DEPTH	number	parameter sample depth (m, =0 in profile mode)
MINIMUM_VALUE	number	minimum value in data series
MAXIMUM_VALUE	number	maximum value in data series
NUMBER_VALID	number	number of valid observations in data series
NUMBER_NULL	number	number of null values in data series

Block name: RECORD_HEADER (obligatory: 1 block/file)
Counts of the multiple header blocks and data cycles.

Field	Type	Description
NUM_CALIBRATION	number	number of calibration blocks (GENERAL and POLYNOMIAL) in file
NUM_SWING	number	number of compass swing blocks in file
NUM_HISTORY	number	number of history blocks in file
NUM_CYCLE	number	number of data records in file
NUM_PARAM	number	number of parameter blocks in file

Block name: --DATA-- (obligatory: 1 block/file)
The data records are preceded by a -- DATA -- line to indicate that the data cycles follow.
The data records appear in the same order as the parameter headers.

Field	Type	Description
no field	number	numeric value for each parameter except for time
no field	string (SYTM)	only for the time channel: 'dd-mon-yyyy hh:mm:ss.ss'