

How to Use this Guide

The purpose of this document is to provide guidance in populating ODM 1.1.1 template.

How to use this guide:

1. Populate metadata and data values
2. Delete first column and 2nd, 3rd, 4th, and 5th rows so that only column headers and
3. Export each sheet as a separate CSV file
4. Upload each CSV file using CUAHSI's Cloud HydroServer

Color Key

Mandatory

Mandatory fields must contain a value. If information is unavailable, populate with "Unkn

Optional

Optional fields may be left blank.

Mandatory if

These fields are mandatory if a condition of the value of the field is met

Controlled Vocabulary

Controlled vocabulary terms for ODM 1.1.1 can be found here: <http://his.cuahs.org>

Note: All controlled vocabulary fields are mandatory although "Unknown" is a valid value

For more information about the ODM: <http://dx.doi.org/10.1029/2008>

s for uploading data using CUAHSI's ODM Uploader for Azure.

your metadata and data values remain

noun" as applicable.

si.org/mastercvreg/cv11.aspx
e for some.

7WR006392

Table Name	Table
<i>Variables</i>	The Variables table lists the full descriptive information about what variables r
<i>Methods</i>	The Methods table lists the methods used to collect the data and any addition
<i>Sites</i>	The Sites table provides information giving the spatial location at which data v
<i>Sources</i>	The Sources table lists the original sources of the data, providing information necessary. This table is mandatory .
<i>Samples</i>	The Samples table gives information about physical samples analyzed in a lab
<i>LabMethods</i>	The LabMethods table contains descriptions of the laboratory methods used t
<i>Quality Control</i>	The QualityControlLevels table contains the quality control levels that are use
<i>DataValues</i>	The DataValues table contains the actual data values and keys to metadata t
<i>Categories</i>	The Categories table defines the categories for categorical variables. This tab " Categorical. " Multiple entries for each VariableCode, with different DataVal
<i>DerivedFrom</i>	The DerivedFrom table contains the linkage between derived data values and
<i>GroupDescriptions</i>	The GroupDescriptions table lists the descriptions for each of the groups of d: Groups table is used.
<i>Groups</i>	The Groups table lists the groups of data values that have been created and t
<i>Qualifiers</i>	The Qualifiers table contains data qualifying comments that accompany the d

Description

have been measured. This table is **mandatory**.

al information about the method. This table is **mandatory**.

values have been collected. This table is **mandatory**.

sufficient to retrieve and reconstruct the data value from the original data files if

boratory. This table is **optional**.

o analyze physical samples for specific constituents. This table is **optional**.

d for versioning data within the database. This table is **mandatory**.

ables. This table is **mandatory**.

le is **mandatory when variables exist that have DataType specified as**
ues provide the mapping from DataValue to category description.

l the data values that they were derived from. This table is **optional**.

ata values that have been formed. This table is **optional and only required if the**

he data values that are within each group. This table is **optional**.

ata. This table is **optional**.

Field
Data Type
Constraint

Description

Default Value

VariableCode

Text (50)

Mandatory; Unique; Allows only characters in the range of A-Z (case sensitive), 0-9, ".", "-", and "_"

Code used by the organization that collects the data to identify the variable.

There is no default value

Sap Flow: sapflow.xlsx

Ground temperature: groundtreetemp.xlsx

Tree bole temperature: groundtreetemp.xlsx

Air temperature: airtemp.xlsx

Voltage from ERI data: ERI.zip

Current from ERI data: ERI.zip

Soil moisture: soilmoisture.xlsx

VariableName	Speciation	VariableUnitsName
Text (255)	Text (255)	Text (255)
Mandatory; Foreign Key	Mandatory; Foreign Key	Mandatory; Foreign Key
Full text name of the variable that was measured, observed, modeled, etc. This should be from the Variable Name controlled vocabulary.	Text code used to identify how the data value is expressed (i.e., total phosphorus concentration expressed as P). This should be from the Speciation controlled vocabulary.	Full text of name of units of the data values associated with a variable. This should be from the Units controlled vocabulary.
There is no default value	Not Applicable	There is no default value
Sap Flow	Not Applicable	centimeters per hour
Temperature, sensor	Not Applicable	degree celsius
Temperature, sensor	Not Applicable	degree celsius
Temperature, sensor	Not Applicable	degree celsius
Voltage	Not Applicable	millivolts
Electric Current	Not Applicable	milliamperes
Water Content	Not Applicable	percent

SampleMedium	ValueType	IsRegular
Text (255)	Text (255)	Boolean
Mandatory; Foreign Key	Mandatory; Foreign Key	Mandatory
The medium in which the sample or observation was taken or made. This should be from the SampleMedium controlled vocabulary.	Text value indicating what type of data value is being recorded. This should be from the ValueType controlled vocabulary.	Value indicates whether the data values are from a regularly sampled time series.
Unknown	Unknown	0
Tree	Field Observation	1
Soil	Field Observation	1
Tree	Field Observation	1
Air	Field Observation	1
Soil	Field Observation	1
Soil	Field Observation	1
Soil	Field Observation	1

TimeSupport

Real

Mandatory

Numerical value that indicates the time support (or temporal footprint) of the data values. 0 is used to indicate data values that are instantaneous. Other values indicate the time over which the data values are implicitly or explicitly averaged or aggregated.

0 (Assumes instantaneous samples where no other information is available)

0
0
0
0
1
1
0

TimeUnitsName	DataType	GeneralCategory	NoDataValue
Text (255)	Text (255)	Text (255)	Real
Mandatory; Foreign Key	Mandatory; Foreign Key	Mandatory; Foreign Key	Mandatory
Full text of name of units of the time support. If TimeSupport is 0, indicating an instantaneous observation, a unit needs to still be given for completeness, although it is somewhat arbitrary. This should be from the Units controlled vocabulary.	Text value that identifies the data values as one of several types from the DataType controlled vocabulary.	General category of the data values from the GeneralCategory controlled vocabulary.	Numeric value used to encode no data values for this variable.
"hours"	Unknown	Unknown	-9999
hour	Continuous	Hydrology	-9999
hour	Continuous	Hydrology	-9999
hour	Continuous	Hydrology	-9999
hour	Continuous	Hydrology	-9999
hour	Sporadic	Hydrology	-9999
hour	Sporadic	Hydrology	-9999
hour	Continuous	Hydrology	-9999

Field	MethodCode
DataType	Text (50)
Constraint	Mandatory; Unique; Allows only characters in the range of A-Z (case sensit
Description	Code used by the organization that collects the data to identify the method used for measurement.
Default Value	There is no default value
	Sap Flux
	Ground temperature
	Tree bole temperature
	Air temperature
	Voltage from ERI data
	Current from ERI data
	Soil moisture

MethodDescription	MethodLink
Text (Unlimited)	Text (500)
Mandatory	Optional
Text description of each method.	Link to additional reference material on the method.
There is no default value	NULL
Measure of sap flow within tree xylem	Burgess et al.
Temperature within the soil measured by type T thermocouples	
Temperature within tree bole measured by type T thermocouples	
Temperature in air with Hobo Pendant	
Voltage measured between two electrodes using an IRIS Instruments electrical resistivity tool	
Current driven between two electrodes using an IRIS Instruments electrical resistivity tool	
Measured with a Decagon EC-5	

2001

mna 2005

mna 2005

Field
Data Type
Constraint

Description
Default Value

SiteCode

Text (255)

Mandatory; Unique; Allows only characters in the range of A-Z (case sensitive), 0-9, and ".", "-", and " "

Code used by organization that collects the data to identify the site.

There is no default value

Robotree

SiteName

Text (255)

Mandatory; Cannot contain tab, line feed, or carriage return characters

Full name of the sampling site.

There is no default value

Ponderosa pine on the south-facing slope in Lower Gordon Gulch, Boulder Creek

Latitude	Longitude	LatLongDatumSRSName
Real	Real	Text
Mandatory; >=-90 AND <=90	Mandatory; >=-180 and <=180	Mandatory; Foreign Key
Latitude in decimal degrees.	Longitude in decimal degrees. East positive, West negative.	Full text name of the spatial reference system of the latitude and longitude coordinates in the SpatialReferences table. This should be from the SpatialReferences controlled vocabulary.
N/A	N/A	Unknown
40.012858	-105.462143	Unknown

Elevation_m	VerticalDatum	LocalX	LocalY	LocalProjectionSRSNam
Real	Text (255)	Real	Real	Text
Optional	Optional; Foreign Key	Optional	Optional	Optional; Foreign Key
Elevation of the sampling location in meters.	Vertical datum of the elevation. This should be from the VerticalDatum controlled vocabulary.	Local projection X coordinate.	Local projection Y coordinate.	Full text name of the spatial reference system of the local coordinates in the SpatialReferences table. This field is optional and is only necessary if local coordinates are given. This should be from the SpatialReferences controlled vocabulary.
NULL ~2500	NULL Unknown	NULL NULL	NULL NULL	NULL NULL

PosAccuracy_m State

Real	Text (255)
Optional	Optional; Cannot contain tab, line feed, or carriage return characters

Value giving the accuracy with which the positional information is specified in meters.

Name of state in which the monitoring site is located.

NULL	NULL
NULL	Colorado

County	Comments
Text (255) Optional; Cannot contain tab, line feed, or carriage return characters	Text (Unlimited) Optional
Name of county in which monitoring site is located.	Comments related to the site.
NULL Boulder	NULL NULL

SiteType

Text

The type of site. This should be from the SiteType controlled vocabulary.

Subsurface

Field
Data Type
Constraint

Description
Default Value

SourceCode

Text (50)

Mandatory; Unique; Allows only characters in the range of A-Z (case sensitive), 0-9, ".", "-", and "_"

Code used to identify the organization that created the data.

There is no default value

Singha Lab at CSM, Barnard Lab at CU

Organization	SourceDescription
Text (255) Mandatory; Cannot contain tab, line feed, or carriage return characters	Text (Unlimited) Mandatory
Name of the organization that collected the data. This should be the agency or organization that collected the data, even if it came out of a database consolidated from many sources such as STORET.	Full text description of the source of the data.
There is no default value Colorado School of Mines, University of Colorado-Boulder	There is no default va Two Colorado univers

SourceLink	ContactName
Text (500)	Text (255)
Optional	Mandatory; Cannot contain tab, line feed, or carriage return characters
Link that can be pointed at the original data file and/or associated metadata stored in the digital library or URL of data source.	Name of the contact person for the data source.
NULL	Unknown
ities	Kamini Singha

Phone

Text (255)

Mandatory; Cannot contain tab, line feed, or carriage return characters

Phone number for the contact person.

Unknown

303-273-3822

Email

Text (255)

Mandatory; Cannot contain tab, line feed, or carriage return characters

Email addresss for the contact person.

Unknown

ksingha@mines.edu

Address

Text (255)

Mandatory; Cannot contain tab, line feed, or carriage return characters

Street address for the contact person.

Unknown

1516 Illinois Street

City

Text (255)

Mandatory; Cannot contain tab, line feed, or carriage return characters

City in which the contact person is located.

Unknown

Golden

State

Text (255)

Mandatory; Cannot contain tab, line feed, or carriage return characters

State in which the contact person is located. Use two letter abbreviations for US.
For other countries give the full country name.

Unknown

CO

ZipCode	Citation
Text (255) Mandatory; Cannot contain tab, line feed, or carriage return characters	Text (Unlimited) Mandatory
US Zip Code or country postal code.	Text string that give the citation to be used when the data from each source are referenced.
Unknown	Unknown 80401

TopicCategory

Text (255)

Mandatory; Foreign Key

Topic category keyword
that gives the broad
ISO19115

environment

Title	Abstract
Text (255) Mandatory; Cannot contain, tab, line feed, or carriage return characters	Text (unlimited) Mandatory
Title of data from a specific data source.	Abstract of data from a specific data source.
Data from Rachel Feist's thesis	Unknown

ProfileVersion	MetadataLink
Text (255)	Text (500)
Mandatory; Cannot contain tab, line feed, or carriage return characters	Optional
Name of metadata profile used by data source.	Link to additional metadata reference material.
Unknown	

Field	QualityControlLevelCode
Data Type	Text (50)
Constraint	Mandatory; Cannot contain tab, line feed, or carriage return characters
Description	Code used to identify the level of quality control to which data values have been
Default Value	There is no default value.

0
0
0
0
0
0
0

These are the default values included in the ODM 1.1.1

QualityControlLevelDefinition

-9999 Unknown

0 Raw data

1 Quality controlled data

2 Derived products

3 Interpreted products

4 Knowledge products

Definition	Explanation
Text (50)	Text (Unlimited)
Mandatory; Cannot contain tab, line feed, or carriage return characters	Mandatory
Definition of Quality Control Level.	Explanation of Quality Control Level.
There is no default value.	There is no default value.
Raw Data	Sap Flow
Raw Data	Ground temperature
Raw Data	Tree bole temperature
Raw Data	Air temperature
Raw Data	Voltage from ERI data
Raw Data	Current from ERI data
Raw Data	Soil moisture

Explanation

The quality control level is unknown

Raw and unprocessed data and data products that have not undergone quality control. Depending on the variable, data type, and data transmission system, raw data may be available within seconds or minutes after the measurements have been made. Examples include real time precipitation, streamflow and water quality measurements.

Quality controlled data that have passed quality assurance procedures such as routine estimation of timing and sensor calibration or visual inspection and removal of obvious errors. An example is USGS published streamflow records following parsing through USGS quality control procedures.

Derived products that require scientific and technical interpretation and may include multiple-sensor data. An example is basin average precipitation derived from rain gages using an interpolation procedure.

Interpreted products that require researcher driven analysis and interpretation, model-based interpretation using other data and/or strong prior assumptions. An example is basin average precipitation derived from the combination of rain gages and radar return data.

Knowledge products that require researcher driven scientific interpretation and multidisciplinary data integration and include model-based interpretation using other data and/or strong prior assumptions. An example is percentages of old or new water in a hydrograph inferred from an isotope analysis.

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