Life08 ENV/IT/000399

Site description MD Schemata

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Environment Agency Austria

Life08 ENV/IT/0003999

Site description
Metadata Schemata

Guideline

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These are Dublin Core metadata elements. See for more details and examples http://www.dublincore.org/

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Abbreviations

CB	Coordinating Beneficiary	**SC**	Steering Committee
AB	Associated beneficiary	**AC**	Advisory Committee
AR	Action responsible	**QA/QC C**	Quality Assurance and Control Committee
MD	MetaData		

Version	Date	Author	Task
0.1	2011-11-08	Peterseil	Take the final documentation of the field description from the LTER Europe homepage. There the preliminary version of the EnvEurope site description metadata schemata was published for the metadata collection.

Content

1   Introduction

In order to enable data discovery, interpretation and, if applicable, data analysis, information about the "how, where, when, what, who ..." needs to be captured in an accessible and understandable manner. If adequate metadata is available, this data can be reused after years or decades, either on its own or in combination with data from other sources (Karasti & Baker 2008, Karasti et al. 2007).

To get a fast overview about the participating sites in a network there is a strong need for metadata about the inner structure, administration, data management and observations taken at the site or platform (Adamescu et al. 2007, 2010). The LTER InfoBase therefore has been designed as a tri-component system by ALTER-Net providing site level metadata which describe the LTER Sites and LTSER Platforms as a whole (Adamescu et al. 2010, Vadineanu et al. 2006) and which form the site network of ALTER-Net and LTER Europe (see Haberl et al. 2006, Mirtl & Krauze 2007). The InfoBase metadata collection manages metadata at a different scale compared to other initiatives. For example EML (Ecological Markup Language, described by Michener et al. 1997) captures metadata at the level of an individual dataset or data table whereas the LTER InfoBase addresses the site as a whole (Adamescu et al. 2010).

In the context of several projects, strategic processes and networks (EnvEurope, EXPEER, ESFRI, ILTER) a range of such parameters have emerged, which are of high interest as basis or judging the power and potential of our distributed research infrastructure. The collated data will be centrally used to update all related site databases (e.g. ILTER), saving you from reporting the same information twice. Another purpose is to repeat the 2009 analysis of coverage of our network with respect to environmental and socio-ecological zones and work on proposals for a re-design (key task of LIFE+ EnvEurope).

For the LTER Europe Factsheets all information collected in earlier years was collected to produce a central documentation of your sites and platforms for multiple uses. These LTER Site Fact Sheets are pre-filled with all data already reported as basis for checking, updating and completing site metadata.

The inquiry has 3 levels of documentation details, but we ask you to provide as complete information as possible:

> level 1: minimum documentation (15 minutes for first report; 5 minutes for update)

> level 2: basic documentation (about 1 hour)

> level 3: full documentation (about 2 hours)

This document describes the elements for the reporting of the site description in EnvEurope. It is the basis for the collection of metadata about the sites used to provide information on the network of sites in EnvEurope and the related network activities, e.g. LTER Europe. The metadata schemata is based on the initial metadata schemata of LTER Europe and adapted to the needs of EnvEurope after discussions within the project.

2   References

The site description metadata schemata format adopts the best practise examples from LTER Europe and the ILTER network. These examples are adapted to the needs of the EnvEurope project based on internal discussions starting with the A1 Technical Meeting in Budapest in 03/2011.

The current metadata schemata for the site description refers to the following references:

- Specification of the LTER Europe InfoBase (Field Description)
- Specification of the ILTER Site database

3   Terms and definitions

For the purposes of this metadata specification the following definitions and terms apply.

3.1   Community or LTER-Europe Community

Community composed by all Long Term Ecological Research sites. It focuses on different types of ecosystems marine, lacustrine, river and terrestrial. The mission of Long Term community is: to track and understand the effects of global, regional and local changes on socio-ecological systems and their feedbacks to environment and society; to provide recommendations and support for solving current and future environmental problems (http://www.lter-europe.net/).

3.2   LTER Site

LTER Site: ('traditional' LTER site; Long-Term Ecosystem Research): LTER-facility of limited size (up to 10 km²) and comprising mainly one habitat type and form of land use. Activities concentrate on small-scale ecosystem processes and structures (biogeochemistry, selected taxonomic groups, primary production, disturbances etc.). There are often unique long-term datasets associated with LTER sites. For further details see http://www.lter-europe.net/sites-platforms.

3.3   LTSER Platform

LTSER Platform (Long-Term Socio-Ecological Research): Modular LTER-facility consisting of sites which are located in an area with defined boundaries. Besides this physical component, LTSER-Platforms provide multiple services like the networking of client groups (e.g. research, local stakeholders), data management, communication and representation (management component). The elements of LTSER Platforms represent the main habitats, land use forms and practices relevant for the broader region (up to 10000 km²) and cover all scales and levels relevant for LTSER (from local to landscape). LTSER-Platforms should represent economic and social units or coincide/overlap with such units where adequate information on land use history, economy and demography is available to allow for socio-ecological research. For further details see http://www.lter-europe.net/sites-platforms.

3.4   Site description

Metadata about the LTER Site or LTSER Plattform or in other hand information for the identification of these LTER Sites and LTSER Platforms. This information are used to search, locate and discovery a LTER Site or LTSER Platform. See also Metadata.

3.5   Metadata

Data about the LTER Site or LTSER Plattform or in other hand information for the identification of these LTER Sites and LTSER Platforms. This information are used to search, locate and discovery a LTER Site or LTSER Platform. See also Site description.

4   Data specification

This section describes the metadata fields used in the questionnaire. The questionnaire is organised according to different topics, e.g. "Site characteristics", for which a series of information has to be given. The START page in the questionnaire gives instructions how to use the questionnaire including the explanation on the mandatory and optional fields. In addition name of the site/platform and name of the parent platform has to be given on the first page.

The questionnaire is organised according to the following topics:

A. Start
> The Start section contains name details about LTER Site or LTSER Platform. Name and management details, like site coordinator need to be specified first. Please use the link to navigate to the page.

B. Contact information
> The Contact_information section contains contact details about persons or organisations relevant at the site. At least the contact details for the SITE COORDINATOR or PLATFORM MANAGER and deputy must be specified. Please use the link to navigate to the page.

C. Site characteristics
> The Site_characteristics section contains the basic information about the environmental characteristics, location, status & description, design and management & protection status. This information contains the metadata level first compilation. Please use the link to navigate to the page.

D. Infrastructure
> The Infrastructure section describes attributes about the access and infrastructure of the site. Please use the link to navigate to the page.

E. Networks
> The Network section describes the networks in which the site is listed. Please use the link to navigate to the page.

F. Research topics
> The Research_topic section describes the main research topics addressed at the site level. Please use the link to navigate to the page.

G. Parameter groups
> The Parameter_Group describes the observed parameter on the level of parameter groups. This page is mandatory. Please use the link to navigate to the page.

H. Site description text
> The Site_description section allows to give a short description of the site, ist characteristics and background in a unstructured text which could be used at the LTER Europe website. This is recommended. Please use the link to navigate to the page.

I. Data management
> The Data_Management section describes the data management enviroment and the data policy for data sharing. Please use the link to navigate to the page.

J. Habitat characteristics
> The Habitat_characteristics section contains information about the existing habitats according to the EUNIS classification at least on the level of EUNIS level I the main habitats should be recorded. Please use the link to navigate to the page.

APPENDIX	in addition appendices are provided about the with the original information contained in the LTER InfoBase. In order to harmonise the data this information is only provided for checking. **This information does not need to be provided anymore.**
Appendix Data management	The appendix Data Management contains the original values of the data management section. This was restructured in order to harmonise the contents. Please use the information only to fill the section Data_Management.
Appendix Research Infrastructure	The appendix Research Infrastructure contains the original values of the site infrastructure section. This was restructured in order to harmonise the contents. Please use the information only to fill the section Infrastructure.
Appendix Observed Parameter	The appendix Site Parameters contains the original values of the observed parameters at the site level section. This was restructured in order to harmonise the contents. Please use the information only to fill the section Parameter_groups.

All proposed elements are defined in form of table with following information:

- The **name of data element**
- A short description and d**efinition** of the data element
- **DataType**: The data type of the metadata element
- **Status:** Obligation/condition for the data element
- **Reference**: A description of the **reference lists** used for the metadata element
- An **example** from EnvEurope domain

4.1 Reference lists

The reference list (except for the species) is provided directly in the LTER Europe Factsheet file. They provide the general codes. If codes are missing the user can add additional ones at the end of the list. There a grey shaded area can be found where additional codes can be added. These additional codes can then also be used in the drop down list for the reporting. The entries of the reference list with a limited number of entries are provided with the description of the metadata element.

4.2 A. Start

This section contains the description of the metadata items in the START page of the LTER Europe Fact Sheet. The "START" page of the questionnaire allows the user to enter name and basic information about the LTER Site or LTSER Platform. In addition it gives some basic instructions about the use and the content of the questionnaire.

4.3 A.1 METADATA RECORD FOR THE SITE

Site name: short name of the site (maximum 64 characters)

```
DataType:    text (max. 64 characters)
Status:      manadatory
Example:     Zöbelboden_MasterSite
```

Long name: name of the LTER Site or LTSER Platform

```
DataType:    text (max. 255 characters)
```

```
Status:      manadatory
Example:     Zöbelboden_MasterSite
```

Parent site name: name of the parent LTSER Platform. Please check and refer to the specified name in the respective metadata questionnaire.

```
DataType:    text (max. 64 characters)
Status:      conditional (if LTER Site is part of LTSER Platform -->
manadatory)
Example:     LTSER Eisenwurzen
```

4.3.1   A.2 SITE COORDINATOR

Site coordinator: name of the site coordinator (select from the list). If the actor is not already listed in the drop down list, please enter first the contact information for the respective contact in the page Contact information.

```
DataType:    LOV (--> Contact information)
Status:      manadatory
Example:     Dirnböck, Thomas
```

Funded by: name of the funding organisation for the LTER Site or LTSER Platform

```
DataType:    text (max. 255 characters)
Status:      optional
Example:     Umweltbundesamt GmbH
```

Year of establishment: year when the site was established

```
DataType:    Date (year YYYY)
Status:      mandatory
Example:     1992
```

Year of abandonement: year when the site was abandoned. leave blank, if the site is still running

```
DataType:    Date (year YYYY)
Status:      mandatory
Example:
```

Note: additional notes for the site coordinator

```
DataType:    Text (max. 255 characters)
Status:      mandatory
Example:
```

4.3.2   A.3 METADATA ENTRY

Metadata creator: name of the person who creates, changes or updates the metadata record

```
DataType:    Text (max. 255 characters)
Status:      mandatory
Example:     Peterseil, Johannes
```

Metadata creation date: date of the creation, change or update of the metadata record

```
DataType:    Date (date as DD.MM.YYYY)
Status:      mandatory
Example:     28.06.2011
```

4.4　B. Contact information

This section contains the description of the metadata items contained in the page CONTACT INFORMATION of the LTER Europe Fact Sheet. This meta-information section consists of the contact information about the persons listed in the LTER InfoBase. This includes persons as well as institutions.

Name: full name displayed for the actor; automatic generated display name which is used in the reference lists for the person

```
DataType:    automatic generated
Status:      automatic generated
Example:     Peterseil, Johannes
```

ActorClass:　　Classification of the actor.

```
DataType:      LOV (Reference list)
Reference:     Actor              - physical person
               Organisation_Unit  - juridical person
Status:        mandatory
Example:       Actor
```

Title:　　academic title; in the case of an institution it is left blank

```
DataType:      text (max. 20 characters)
Status:        optional
Example:       Dr.
```

First Name:　first name; in the case of an institution it is left blank

```
DataType:      text
Status:        mandatory
Example:       Johannes
```

Last Name:　last name; in the case of an institution the name of the organisation is listed here

```
DataType:      text
Status:        mandatory
Example:       Peterseil
```

e-mail:　　contact information e-mail adress

```
DataType:      text
Status:        optional
Example:       Johannes.Peterseil@umweltbundesamt.at
```

Phone:　phone number

```
DataType:      text
Status:        optional
Example:       +43-31304-0
```

Street:　Contact address - street

```
DataType:      text
Status:        optional
Example:       Spittelauer Lände 5
```

Postal code:　Contact address – postal code

```
DataType:        text
Status:          optional
Example:         1090
```

City*:   Contact address - city

```
DataType:        text
Status:          optional
Example:         Vienna
```

Country: Country in which the actor is situated

```
DataType:          reference list
Reference:         _unknown
                   Austria
                   Belarus
                   Belgium
                   Bulgaria
                   Croatia
                   Czech Republic
                   Denmark
                   Estonia
                   Finland
                   France
                   Germany
                   Greece
                   Hungary
                   Ireland
                   Israel
                   Italy
                   Latvia
                   Lithuania
                   Luxembourg
                   Netherlands
                   Norway
                   Poland
                   Portugal
                   Romania
                   Russian Federation
                   Slovakia
                   Slovenia
                   Spain
                   Sweden
                   Switzerland
                   UK
                   Ukraine

Status:            optional
Example:           Austria
```

Employee of: name of the institution or organisation the actor is mainly working

```
DataType:        Text (max. 255 characters)
Status:          optional
Example:         Federal Environment Agency
```

Website: link to web site

```
DataType:        Text
Status:          optional
```

```
Example:              http://www.umweltbundesamt.at/
```

Note: additional remarks about the contact person

```
DataType:         text
Status:           optional
Example:          ---
```

EntryNr: internal record ID for already existing records in the database. automatic generated by the database. It is blanc in case of newly generated records.

```
DataType:         text
Status:           optional
Example:          ---
```

4.5   C. Site characteristics

This section contains the description of the basic metadata elements for the site or platform according to its characteristics, location, status and management. For each site or platform, one metadata form has to be filled. Where the site is part of a platform, please indicate the name of the platform in the field "Parent Site Name"

4.5.1   C.1 GENERAL SITE/PLATFORM META INFORMATION

LTER_EU_Site_Code: Code according to the site list of LTER Europe. The code consists of the prefix "LTER_EU_", the country code (e.g. AT), and a serial number within the country.

```
DataType:         Text
Status:           centrally assigned during the upload process
Example:          LTER_EU_AT_006
```

Site name, Long name, Parent site name: this information is taken from the A. Start page.

Description: Short textual description of the site or platform.

```
DataType:         Text (max. 255 characters)
Status:           optional
Example:          ...
```

Desc_Website: Indicates the web site, where more information can be found about the site or platform.

```
DataType:         Text
Status:           optional
Example:
```
http://www.umweltbundesamt.at/en/umweltschutz/oekosystem/im/zoebelboden_standort/

Country: Country in which the site or platform is situated

```
DataType:         LOV (reference list)
Reference:        _unknown
                  Austria
                  Belarus
                  Belgium
                  Bulgaria
```

```
                    Croatia
                    Czech Republic
                    Denmark
                    Estonia
                    Finland
                    France
                    Germany
                    Greece
                    Hungary
                    Ireland
                    Israel
                    Italy
                    Latvia
                    Lithuania
                    Luxembourg
                    Netherlands
                    Norway
                    Poland
                    Portugal
                    Romania
                    Russian Federation
                    Slovakia
                    Slovenia
                    Spain
                    Sweden
                    Switzerland
                    UK
                    Ukraine

Status:          mandatory
Example:         Austria
```

Site_Type: Type of the site of platform according to their inner heterogeneity. *Simple sites* are classical LTER sites measuring ecosystem processes in one or a very limited number of habitats. *Complex sites* are classical LTSER sites investigating processes and fluxes on a landscape or regional level or form the bracket over a number of LTER or simple sites.

```
DataType:        reference list
Reference:       LTSER Platform - observation region with up to 10.000km²
                 LTER Site - observation site with up to 10.000ha
                     Complex Site … more ecosystem types observed,
                     Simple Site ... one ecosystem type observed),
                 Plot - observation plot within a site
Status:          mandatory
Example:         Simple Site
```

Size_ha: Size of the site or platform in hectare

```
DataType:        Number (Double); used without millennia separator
Status:          optional
Example:         5000
```

Num_of_items: If the metadata entry reflects a group of observation entities, e.g. plots etc., the number of items can be given. By default the value is one if only the site is described.

```
DataType:        Number (Integer)
Status:          optional
Example:         1
```

Biogeographic Region: Bio-geographic region according to the classification of Europe according to bio-geographic regions (EEA, XXXX).

```
Usage:          reference list
Reference:      _unknown
                Alpine
                Anatolian
                Arctic
                Atlantic
                Black Sea
                Boreal
                Boreonemoral
                Continental
                Macronesia
                Mediterranean
                Pannonian
                Steppic


Status:         mandatory
Example:        Alpine
```

Environmental Zone: Environmental zone according to the classification of Europe of Metzger et al. 2005.

```
DataType:       reference list
Reference:      _unknown
                Alpine North
                Alpine South
                Anatolian
                Atlantic Central
                Atlantic North
                Boreal
                Continental
                Lusitanian
                Mediterranean Mountain
                Mediterranean North
                Mediterranean South
                Nemoral
                Pannonian
Status:         optional
Example:        AlpineSouth (ALS)
```

Altitude [m a.s.l.] - minimum: Minimum altitude in m a.s.l. of the site or platform

```
DataType:       Number (Double)
Status:         optional
Example:        700
```

Altitude [m a.s.l.] - maximum: Maximum altitude in m a.s.l. of the site or platform

```
DataType:       Number (Double)
Status:         optional
Example:        950
```

Altitude [m a.s.l.] - average: Average altitude in m a.s.l. of the site or platform

```
DataType:       Number (Double)
Status:         mandatory
Example:        850
```

Precipiation [mm] - minimum: Minimum monthly sum of precipitation for the site or platform in mm.

```
DataType:      Number (Double)
Status:        optional
Example:       200
```

Precipiation [mm] - maximum: Maximum monthly sum of precipitation for the site or platform in mm.

```
DataType:      Number (Double)
Status:        optional
Example:       408
```

Precipiation [mm] - sum: Annual sum of precipitation for the site or platform in mm.

```
DataType:      Number (Double)
Status:        mandatory
Example:       1106
```

Temperature [°C] - minimum: Monthly average temperature of the coldest month (January) for the site or platform in mm.

```
DataType:      Number (Double)
Status:        optional
Example:       -1.8
```

Temperature [°C] - maximum: Monthly average temperature of the warmest month (July) for the site or platform in mm.

```
DataType:      Number (Double)
Status:        optional
Example:       16
```

Temperature [°C] - average: Annual mean temperature for the site or platform in mm.

```
DataType:      Number (Double)
Status:        mandatory
Example:       5,6
```

Focal_Ecosystem: which ecosystem is targeted in the monitoring and/or research at the site/platform and which is the main ecosystem type within the LTER Site or LTSER Platform

```
DataType:      LOV (reference list); according to the ILTER Metadatabase
Reference:     _unknown
               _other
               Coastal
               Desert
               Forest
               Fresh water
               Marine
               Montane
               Praire
               Reef
               Riparian
               Riverine
               Tundra
```

```
                     Wetland

Status:              mandatory
Example:             Forest
```

Focal Ecosystem 1st: which ecosystem is targeted in the monitoring and/or research at the site/platform based on the ILTER classification – first priority

```
DataType:            Text
Status:              optional
Example:             /N
```

Focal Ecosystem 2nd: which ecosystem is targeted in the monitoring and/or research at the site/platform based on the ILTER classification – second priority

```
DataType:            Text
Status:              optional
Example:             /N
```

Focal Ecosystem 3rd: which ecosystem is targeted in the monitoring and/or research at the site/platform based on the ILTER classification – third priority

```
DataType:            Text
Status:              optional
Example:             /N
```

4.5.2   C.2 SITE LOCATION

This metadata section consists of the location of the site or platforms. In principal the centre coordinate is provided.

Latitude (DMS WGS84) - average: Latitude in degrees, minutes and seconds (also indicate the hemisphere) of the centroid of the LTER Site or LTSER Platform. At least the latitude of the centroid is mandatory.

```
DataType:            Text
Status:              mandatory
Example:             47° 52' 00" N
```

Latitude (DMS WGS84) - minimum: Minimum latitude in degrees, minutes and seconds (also indicate the hemisphere) of the extent of the LTER Site or LTSER Platform. Minimum and maximum is referring to the bounding box of the site or platform.

```
DataType:            Text
Status:              optional
Example:             47° 52' 00" N
```

Latitude (DMS WGS84) - maximum: Maximum latitude in degrees, minutes and seconds (also indicate the hemisphere) of the extent of the LTER Site or LTSER Platform. Minimum and maximum is referring to the bounding box of the site or platform.

```
DataType:            Text
Status:              optional
Example:             47° 52' 00" N
```

Longitude (DMS WGS84) - average: Longitude in degrees, minutes and seconds (using 180° from Greenwich) of the centroid of the LTER Site or LTSER Platform. At least the latitude of the centroid is mandatory.

```
DataType:        Text
Status:          mandatory
Example:         14° 26' 00" E
```

Longitude (DMS WGS84) - minimum: Minimum Longitude in degrees, minutes and seconds (using 180° from Greenwich) of the extent of the LTER Site or LTSER Platform. Minimum and maximum is referring to the bounding box of the site or platform.

```
DataType:        Text
Status:          optional
Example:         14° 26' 00" E
```

Longitude (DMS WGS84) - maximum: Maximum Longitude in degrees, minutes and seconds (using 180° from Greenwich) of the extent of the LTER Site or LTSER Platform. Minimum and maximum is referring to the bounding box of the site or platform.

```
DataType:        Text
Status:          optional
Example:         14° 26' 00" E
```

Shapefile available: Limits of site available in digital format as GIS file. Where yes, please also provide the boundaries as an ESRI shapefile. ATTENTION: As part of the minimum documentation the delineation of the site must be provided, preferably as an ESRI Shape-File (*.shp). A template can be found at http://www.lter-europe.net/info_manage/infobase-entry-tool. Projection: Lambert Equal Area ETRS89 or geographicc WGS84. ALTERNATIVELY the file can be delineation as a *.kml file, which can be simply produced, e.g. with Google Earth: see link to the right.

In case of "yes" a ESRI shapefile or KML file needs to be uploaded to the 4_shape directory at the specified ftp server.

```
DataType:        LOV (reference list)
Reference:       yes
                 no
                 _unknown
Status:          mandatory
Example:         yes
```

4.5.3   C.3 SITE STATUS

This metadata section consists of the information about the status of the site or platform. This includes the date of establishment as well as the documentation status.

Site Declaration: The Declaration status of the site or platform describes if the site or platform is formally listed within the LTER Europe Network. This includes the following options:

```
DataType:         reference list
Reference:        _unknown
             Formal LTER/LTSER - LTER site or LTSER platform which lies
             in a country which is formally member of LTER Europe and
             the site or platform is listed in LTER Europe
             Candidate LTER - LTER Site or LTSER Platform which lies in a
             country which is not formally member of LTER Europe but
             would be listed as formal LTER/LTSER
```

```
                        Potential LTER - LTER site which lies in a country which is
                        formally member of LTER Europe but the site is not listed
                        in LTER Europe
Status:                 mandatory
Example:                Formal LTER/LTSER
```

Site Documentation: The Documentation status of the site or platform describes if the site or platform the completeness of the metadata in the LTER InfoBase. This includes the following options:

```
DataType:               LOV (reference list)
Reference:              _unknown
                        Minimum documentation - only site characteristics are
                        recorded
                        Basic documentation - including infrastructure, network,
                        research topics and habitat description
                        Full documentation - including observed parameters
Example:                Full documentation
```


Figure 1 Documentation levels for the different topics

LTER_Site_Status: The Site status of the site or platform describes the current status of the site - if it exists or is in a planning stage.

```
DataType:               reference list
Reference:              _unknown
                        Preliminary - site or platform is planned or concepts
exist
                        Existing - site or platform exists
                        Abandoned - site or platform is abandoned
Status:                 mandatory
Example:                existing
```

Site Classification: LTER Europe site classification. Metadata on LTER facilities in LTER Infobase have until 2010 been selected to reflect research topics (down to parameters), environmental zones, habitats etc. In one word: contents of research. Recent project proposals revealed the following information requirements relevant for e.g. multi-site projects or identification as major research infrastructure:

- technical aspects of work at the sites (intervals of basic sampling, technical maintanence...)
- basic infrastructure (power supply, all year access...)
- technical equipment
- data and IT infrastructure

The classification was adopted at the 7th LTER-Europe conference in Lodz. Site co-ordinators are asked to apply this overall classification to their sites, but also provide detailed metadata on the above categories in order to facilitate quick responses to specific information requests on the network level, e.g. which sites do have all year access AND power supply AND weekly sampling (see LTER Site Fact Sheet 2011 and onwards). According to technical aspects

```
DataType:        reference list
Reference:       _unknown
                 Master Site ("top sites" or "super sites" or "LTER hubs" or
                 "HIS=Highly Instrumeted Sites"; M-Site): Highly
                 instrumented and permanently operated sites, featuring an
                 ecosystem approach in terms of combining regular sampling
                 (weekly as standard), permanent measurements and
                 inventories at appropriate intervals across drivers and
                 ecosystem compartments . Design of sites customized
                 according the ecological profile of the site and enabling
                 integrated analyses across system strata (geosphere to
                 atmosphere) and covering therefore required spatial scales.
                 Experimental approaches shall be existent or possible. All
                 year access and power supply must be secured in order to
                 enable e.g. measurement of climate data according to
                 international standards. A maximum of other networks and/or
                 related projects shall have been using this category of
                 site (e.g. EMEP, CarboEurope, UNECE ICPs, national
                 monitoring networks...). Operation for at least 10 years.
                 The intention is to flag sites, which can be considered as
                 key ecosystem research infrastructures on the European
                 scale.
                 REGULAR Site ("regular LTER site; R-Site): In principle,
                 these sites comply with the description of Master LTER
                 Sites, but differ in volume of instrumentation as well as
                 multi use and availability of long-term data across all
                 ecosystem compartments and disciplines.
                 EMERGING Site - recently established LTER Sites (3-5 years
                 of observation) being developed towards a higher category
                 EXTENSIVE Sites -  LTER Site with specific long-term
                 monitoring  and/or specific scientific foci and therefore
                 not following the full ecosystem approach (e.g. for reasons
                 of limited considered spatial scale). Extensive LTER Sites
                 may emphasize the long-term monitoring (observation), but
                 there must be an explicit research component.
Status:          mandatory
Example:         Master Site
```

Site Classification EXPEER: classification of the site according to the definition in the EXPEER network.

```
DataType:        reference list
Reference:       _unknown
                 HIOS: highly instrumented observation site
```

```
                    HIES: highly instrumented experimental site

Status:         mandatory
Example:        HIOS
```

Note: additional notes about the site status

```
DataType:       text (max. 255 characters)
Status:         optional
Example:        …
```

4.5.4   C.4 MANAGEMENT AND PROTECTION STATUS

Protection: site or platform is under protection (if yes, please also fill the following mandatory fields)

```
DataType:       reference list
Reference:      _unknown
                yes
                no

Status:         mandatory
Example:        yes
```

Protection status: what area within the site is under protection

```
DataType:       reference list
Reference:      _unknown
                <25 of area
                25-50%
                50-75%
                >75%
Status:         mandatory
Example:        >75%
```

Kind of protection - Natura 2000: Site is protected under the FFH directive (Nat2000)

```
DataType:       reference list
Reference:      _unknown
                yes
                no
Status:         mandatory
Example:        _unknown
```

Kind of protection - Natura 2000 Code : if available, please provide the Natura 2000 code of the site listed in the Natura2000 network

```
DataType:       text (max. 255 characters)
Status:         optional
Example:
```

Kind of protection - Natura 2000 Coverage: how much of the site is covered by this designation?

```
DataType:       reference list
Reference:      _unknown
                not part - in case of "no"
                entire site - entire site is under designation
                part of site - part of the site is under designation
                nearby the site - areas under the designation are nearby
to the site
Status:         optional
Example:        _unknown
```

Kind of protection - IUCN Nat. Park: Site is protected as part of a national park (according to the IUCN categories)

```
DataType:        reference list
Reference:       _unknown
                 yes
                 no
Status:          mandatory
Example:         _unknown
```

Kind of protection - IUCN Nat. Park Coverage: how much of the site is covered by this designation?

```
DataType:        reference list
Reference:       _unknown
                 not part - in case of "no"
                 entire site - entire site is under designation
                 part of site - part of the site is under designation
                 nearby the site - areas under the designation are nearby
to the site
Status:          optional
Example:         _unknown
```

Kind of protection - Biosphere Reserve: Site is protected as part of a biosphere reserve

```
DataType:        reference list
Reference:        unknown
                 yes
                 no
Status:          mandatory
Example:         _unknown
```

Kind of protection - Biosphere Reserve Coverage: how much of the site is covered by this designation?

```
DataType:        reference list
Reference:       _unknown
                 not part - in case of "no"
                 entire site - entire site is under designation
                 part of site - part of the site is under designation
                 nearby the site - areas under the designation are nearby
to the site
Status:          optional
Example:         _unknown
```

Kind of protection - Nat. Protection: Site is protected according to a national protection category

```
DataType:        reference list
Reference:       _unknown
                 yes
                 no
Status:          mandatory
Example:         _unknown
```

Kind of protection - Nat. Protection Coverage: how much of the site is covered by this designation?

```
DataType:        reference list
Reference:       _unknown
                 not part - in case of "no"
                 entire site - entire site is under designation
```

```
                        part of site - part of the site is under designation
                        nearby the site - areas under the designation are nearby
to the site
Status:          optional
Example:         _unknown
```

Management and use of natural resources: site is used or managed to extract natural resources (e.g. forestry, fishery, etc.)

```
DataType:        reference list
Reference:       _unknown
                 yes
                 no
Status:          mandatory
Example:         _unknown
```

Coverage of the managed or used area within the site: share of area in %-categories which is used or managed within the site

```
DataType:        reference list
Reference:       _unknown
                 <25 of area
                 25-50%
                 50-75%
                 >75%
Status:          mandatory
Example:         >75%
```

Note: additional notes about the management and protection status

```
DataType:        text (max. 255 characters)
Status:          optional
Example:         …
```

4.6   D. Infrastructure

This section contains the description of the metadata items contained in the INFRASTRUCTURE page of the LTER Europe Fact Sheet. This contains information about the infrastructure for the LTER Sites or LTSER Platforms and their availability. Please report for every requested infrastructure.

4.6.1   D.1 INFRASTRUCTURE

Cumulative infrastructure value [€]:   please give an estimate on the cumulative infrastructure value form the site. This includes all kind of infrastructure existing at or belonging to the LTER Site or LTSER Platform.

```
DataType:        LOV (reference list)
Reference:       _unknown
                 <50 k €
                 50-100 k €
                 100-700 k €
                 700-2000 k €
                 2000-5000 k €
                 >5000 k €
Status:          mandatory
Example:         50-100 k €
```

Is the site currently expanded: are there currently any installation of additional equipments, new projects, etc.

```
DataType:          LOV (reference list)
Reference:         _unknown
                   yes
                   no
Status:            mandatory
Example:           no
```

All year access of site by vehicle: Indication, if the site is accessible during the whole year. In the case of marine or aquatic sites this could mean the availability of a boat. This question is combined with the following - see detailed question "**Kind of access to site"** for kind of access below.

```
DataType:          LOV (reference list)
Reference:         _unknown
                   yes
                   no
Status:            mandatory
Example:           yes
```

Kind of access to site: Please indicate the type of vehicle which needs to be used to access the site.

```
DataType:          LOV (reference list)
Reference:         _unknown
                   dirt road (4WD)
                   regular car
                   paved road
                   boat
Status:            optional
Example:           regular car
```

Clearing of snow: Indication, if clearing of snow during the winter time is done to sustain the accessibility to the site. Please provide no also in case when no snow clearing is necessary. This question is combined with the following question "**Frequency of snow clearing**".

```
DataType:          LOV (reference list)
Reference:         _unknown
                   yes
                   no
Status:            mandatory
Example:           yes
```

Frequence of snow clearing: please indicate the frequency of snow clearing.

```
DataType:          LOV (reference list)
Reference:         _unknown
                   daily - every day during winter time
                   weekly - at least once a week during winter time
                   monthly - at least once a month during winter time
Status:            optional
Example:           LTER_EU_AT_006
```

All terrain within site accessible by motorized vehicle: please indicate if all the terrain within the site is accessible by motorised vehicle. Please provide no, if at least a major part can only be accessed on foot e.g. because of the roughness of the terrain.

```
DataType:          LOV (reference list)
Reference:         _unknown
                   yes
                   no
Status:            mandatory
```

```
Example:            no
```

Permanent power supply (220 V):   please indicate if permanent (all year) power supply is available at the site. This question is combined with the following questions "**Maximum continuous power**" and "**Location of power supply**"

```
DataType:          LOV (reference list)
Reference:         _unknown
                   yes
                   no
Status:            mandatory
Example:           yes
```

Maximum continuous power: please indicate the maximum continuous power which is available at the site.

```
DataType:          LOV (reference list)
Reference:         _unknown
                   <1 kW
                   1-5 kW
                   5-10 kW
                   10-100 kW
                   >100 kW
Status:            optional
Example:           5-10 kW
```

Location of power supply: please indicate the location of the power supply within the site.

```
DataType:          LOV (reference list)
Reference:         _unknown
                   central station(s)
                   All over site/catchment
Status:            optional
Example:           central station(s)
```

Data transmission within site: please indicate if there is a permanently established automatic system for data transfer within the site. This question is combined with the following questions "**Type of data transmission within the site**"

```
DataType:          LOV (reference list)
Reference:         _unknown
                   yes
                   no
Status:            mandatory
Example:           yes
```

Type of data transmission within the site: please indicate the technical solution for the data transmission within the site.

```
DataType:          LOV (reference list)
Reference:         _unknown
                   radio transmission system (repeaters, receivers, central
                    station)
                   cable based
                   others
Status:            optional
Example:           radio transmission system
```

Data transmission from site: please indicate if there is a permanently established automatic system for data transfer from the site to the database/data repository. This question is combined with the following questions "**Type of data transmission from the site**"

```
DataType:        LOV (reference list)
Reference:       _unknown
                 yes
                 no
Status:          mandatory
Example:         yes
```

Type of data transmission from the site: please indicate the technical solution for the data transmission within the site.

```
DataType:        LOV (reference list)
Reference:       _unknown
                 telephone line
                 GMS/UMTS
                 radio transmission
                 satellite
                 others
Status:          optional
Example:         telephone line
```

Temperature controlled container: please indicate the availability of a temperature controlled container as a central station for quality assured air chemistry measurements, data transmission, sample storage etc.

```
DataType:        LOV (reference list)
Reference:       _unknown
                 yes
                 no
Status:          mandatory
Example:         yes
```

Measuring tower: please indicate the availability of a measuring tower as platform for different sensors, e.g. wind speed, CO2, etc. This question is combined with the following question "**Type of measuring tower**"

```
DataType:        LOV (reference list)
Reference:       _unknown
                 yes
                 no
Status:          mandatory
Example:         yes
```

Type of measuring tower: please indicate the technical solution for the data transmission within the site.

```
DataType:        LOV (reference list)
Reference:       _unknown
                 in canopy
                 less than 10m above canopy
                 more than 10m above canopy
Status:          optional
Example:         less than 10m above canopy
```

Marine platform available: please indicate the availability of a marine platform in marine in lacustrine environment as platform for different sensors.

```
DataType:           LOV (reference list)
Reference:          _unknown
                    yes
                    no
Status:             mandatory
Example:            no
```

Staff room/possibility for office work at the site: please indicate the availability of staff room for office work at the site.

```
DataType:           LOV (reference list)
Reference:          _unknown
                    yes
                    no
Status:             mandatory
Example:            yes
```

Lodging at the site: please indicate the availability of lodging at the site. This question is combined with the following question "**Number of sleeping berths at the site**"

```
DataType:           LOV (reference list)
Reference:          _unknown
                    yes
                    no
Status:             mandatory
Example:            yes
```

Number of sleeping berths at the site: please indicate the number of available sleeping berths at the site

```
DataType:           number (integer)
Status:             optional
Example:            6
```

Note: additonal explanations about the infrastructure at the site

```
DataType:           text (max. 255 characters)
Status:             optional
Example:            ...
```

4.6.2   D.2 OPERATION AND USE

Yearly operational costs [€]:   please give an estimate on the yearly operational costs for the site. This includes maintenance and operation of all kind of infrastructure existing at or belonging to the LTER Site or LTSER Platform.

```
DataType:           LOV (reference list)
Reference:          _unknown
                    <10 k €
                    10-30 k €
                    30-100 k €
                    100-300 k €
                    300-500 k €
                    >500 k €
Status:             mandatory
Example:            30-100 k €
```

Permanent operation: please indicate if the site is operated permanently. This question is combined with the following question "**Intervall of regular sampling and presence of trained staff**" and "**Interval of technical control and maintenance**"

```
DataType:        LOV (reference list)
Reference:       _unknown
                 yes
                 no
Status:          mandatory
Example:         yes
```

Intervall of regular sampling and presence of trained staff [Days]:   Interval of standard visits of technical staff for standard programs such as deposition or soil water sampling.

```
DataType:        number (integer)
Status:          optional
Example:         7
```

Interval of technical control and maintenance [Days]:   Interval of standard visits of technical staff for control of devices and maintenance work.

```
DataType:        number (integer)
Status:          optional
Example:         30
```

Field staff could take on additional work: please indicate if with little additional cost/effort minor activities could be included in the e.g. weekly sampling to provide information or samples for other (multi-site) project

```
DataType:        LOV (reference list)
Reference:       _unknown
                 yes
                 no
Status:          mandatory
Example:         yes
```

Number of running international projects at the site: Indication of the number of international (or European) projects running at the site, or using data or equipment, devices, etc. from the site.

```
DataType:        number (integer)
Status:          mandatory
Example:         2
```

Number of running national projects at the site: please indicate the number of national projects running at the site, or using data or equipment, devices, etc. from the site.

```
DataType:        number (integer)
Status:          mandatory
Example:         2
```

Note: additional explanations about the operation and costs of the site

```
DataType:        text (max. 255 characters)
Status:          optional
Example:         ...
```

4.7 E. Networks

Description of the metadata items in the page NETWORKS of the LTER Europe Fact Sheet. Please indicate in which international networks the site is listed or takes part. At the end of the page you find the possibility to list also national networks if appropriate. Note that the mandatory networks on which information is needed are marked in red. You can find them at the top of the list.

4.7.1 INTERNATIONAL OR EUROPEAN NETWORKS (MANDATORY)

This meta-information section consists of the information about the networks and / or projects in which the site or platform takes part. For each network or international project a line is added. please indicate in which international networks the site is listed or takes part. At the end of the page you find the possibility to list also national networks if appropriate. Note that the mandatory networks on which information is needed are marked in red. You can find them at the top of the list.

Network: the networks or international projects in which the site or platform takes part. This question is combined with the following questions "**Part of network**", "**Date from**", "**Date to**", and "**Note**".

```
DataType:       fixed list
Status:         mandatory (at least this networks needs to be answered by
yes/no)

Reference:        ALTER-Net
                Biosphere Reserve (EuroMAB)
                CarboEurope (EuroFlux, CarboEuroFlux)
                EMEP
                EUROFLUX
                FLUXNET
                GLORIA
                GTOS
                IBP
                ICOS
                ICP Forest
                ICP Forest II
                ICP Integrated Monitoring
                ICP Vegetation
                ICP Waters
                ILTER
                MAB
                MARBEF
                Natura2000
                NitroEurope
                Ramsar

Status:         optional (this networks can be ticked optionally)
Reference:        BASIN
                Black Sea Scientific Network
                CALM Circumpolar Active Layer Monitoring
                CBIS-CERI
                CLIMECO
                CLIMMANI
                EBONE
                Eclaire
                EMAN
                Encore
                ENFORS
                ENVISNAR-YPI
                EUCAARI
```

```
                        EUROAIRNET
                        EuroWaterNet
                        EvolTree Intensive Study Site
                        EXPEER
                        FAO-FRA
                        FunDiv FP7
                        FutMon
                        GAW Global Atmosphere Watch
                        GEF Biodiversity project
                        GLEON
                        GLOCHAMOST
                        Greenveins (EU-Project 2001-2004)
                        GTN-P GT-Net Permafrost
                        INCREASE
                        IP ALARM
                        IP Sensor
                        ITEX  International Tundra Experiment
                        Landscape tomorrow network
                        LapBIAT Network
                        LimnoRed
                        Living Lakes
                        MERGE-YPI
                        MONARPOP (persistent organic pollutants)
                        National Park IUCN
                        NECC
                        REDOTE
                        SCANNET
                        TERENO
                        TMAP - Trilateral Monitoring and Assessment Programme
                        UNESCO Demo Site
                        USDA FAS
                        VEGA
                        WGMS World Glacier Monitoring Service
                        World Heritage
                        WRFC World Register of Field Centres

Status:         mandatory (at least for mandatory networks a answer is
needed)
Example:        ICP Integrated Monitoring
```

Part of network: please indicate of the LTER Site or LTSER Platform take part in the network (and projects) listed in the column "Network". At least for the mandatory networks a answer needs to be given.

```
DataType:       LOV (Boolean)
Reference:      _unknown
                yes
                no
Status:         mandatory (for the mandatory networks)
Example:        yes
```

Date from: please indicate from which year the LTER Site or LTSER Platform takes part in the network (and projects) listed in the column "Network".

```
DataType:       Date (year YYYY)
Status:         optional
Example:        1992
```

Date to: please indicate until which year the LTER Site or LTSER Platform takes part in the network (and projects) listed in the column "Network". Leave blank if the site is still within the network.

```
DataType:          Date (year YYYY)
Status:            optional
Example:           1992
```

Note: additional remarks about the network or international project which can not be entered into the reference list

```
DataType:          text
Status:            optional
Example:           ---
```

EntryNr: internal record ID

```
DataType:          number (long)
Status:            internal
```

4.7.2   RELEVANT NATIONAL OR OTHER NETWORKS (OPTIONAL)

Network: the national or other networks or projects in which the site or platform takes part. This question is combined with the following questions "**Part of network**", "**Date from**", "**Date to**", and "**Note**".

```
DataType:          text
Status:            optional
Example:           LTER Austria
```

Part of network: please indicate of the LTER Site or LTSER Platform take part in the network (and projects) listed in the column "Network". At least for the mandatory networks a answer needs to be given.

```
DataType:          LOV (Boolean)
Reference:         _unknown
                   yes
                   no
Status:            mandatory (for the mandatory networks)
Example:           yes
```

Date from: please indicate from which year the LTER Site or LTSER Platform takes part in the network (and projects) listed in the column "Network".

```
DataType:          Date (year YYYY)
Status:            optional
Example:           1992
```

Date to: please indicate until which year the LTER Site or LTSER Platform takes part in the network (and projects) listed in the column "Network". Leave blank if the site is still within the network.

```
DataType:          Date (year YYYY)
Status:            optional
Example:           1992
```

Note: additional remarks about the network or international project which can not be entered into the reference list

```
DataType:          text
Status:            optional
Example:           ---
```

EntryNr: internal record ID

```
DataType:          number (long)
Status:            internal
```

4.8 F. Research topics

Description of the metadata items of the page RESEARCH TOPICS of the LTER Europe Fact Sheet. Please indicate the research topics tackled at the LTER Site or LTSER Platform. Please record every research topic for the site platform in one line. More than one entry is possible

ResearchTopic: the research topic or question investigated at the site or platform. The research topic is structured into two parts: a) the environmental topics and b) the socio-ecological topics. The topics are provided as fixed list.

```
DataType:          fixed list
Reference:            ENVIRONMENTAL TOPIC
                             Pollution effects
                             Ecosystem structure
                                     Hydrology
                                     Habitat structure
                             Species composition
                                     General species composition
                                     Arthropods
                                     Reptiles
                                     Amphibians
                                     Birds
                                     Fish
                                     Mammals
                                     Algae
                                     Fungi
                                     Bryophytes & lichens
                                     Vascular plants
                                     Phytoplancton
                                     Zooplancton
                                     Bacteria
                                     Other invertebrates (e.g. mollusca,
annelida, etc.)
                                     Other heterotrophic
                             Biodiversity
                                     Biodiversity driven by landuse
                                     Biodiversity driven by climate change
                                     Biodiversity driven by
chemicals/eutrophication
                                     Invasive species
                             Climate
                                     Climate change
                             Biogeochemical cycles
                                     Carbon cycle
                                     Eutrophication
                                     Trophic state
                                     Gas exchange
                             Impact of extreme events
                                     Wind
                                     Fire
                                     Drought
                             Species biology
                             Population dynamics
                                     Endangered species
                                     Endemic species
                                     Exploited species
                                     Succession
                             System ecology
                                     Forest ecology
                                     Grassland ecology
                                     Arctic ecology
                                     Alpine ecology
                                     Desert ecology
                                     Urban ecology
                                     River ecology
                                     Lake ecology
                                     Wetland ecology
                                     Marine ecology
```

```
                                        Coastal ecology
                                        Estuary ecology
                        Landscape ecology
                        Pedology
                                        Soil biology
                                        Soil chemistry
                                        Soil physics
                        Molecular ecology (genetics)
                        Production
                                        Primary production
                                        Secondary production
                        Other Environmental Questions

                        SOCIO-ECONOMIC TOPIC
                        Socio-ecological issues
                                        Nature conservation
                                        Regional development
                                        Restoration
                                        Transport
                                        Hunting
                                        Forestry
                                        Agriculture
                                        Fishery
                                        Shepherding
                                        Bioenergy
                                        Tourism
                                        Drivers of ecosystem services
                        Valuation of ecosystem services
                        Resilience of social and ecological systems
                        Sustainability
                        Public attitudes
                        Management
                                        Management changes
                                        Habitat management
                                        Population management
                                        Semi-natural habitat management
(agriculture etc.)
                                        Protected areas (national parks etc.)
                                        Climate change mitigation
                        Land use
                                        Land transformation
                                        Urbanisation
                                        Sustainable use of natural resources
                        Other socio-economic questions


Status:         mandatory
Example:        Biogeochemical cycles
```

topic adressed: please indicate if the topic listed in the column "Research topic" is adressed at the LTER Site or LTSER Platform.

```
DataType:       LOV (Boolean)
Reference:       unknown
                yes
                no
Status:         **mandatory** (for the mandatory networks)
Example:        yes
```

Note: additional remarks about the research question which can not be entered into the reference list of the research infrastructure

```
DataType:       text (max 255 characters)
Status:         optional
Example:        ---
```

4.9   G. Parameter groups

Description of the metadata items in the page PARAMETER GROUPS in the LTER Europe Fact Sheet. Please indicate the observed parameter groups and available data for the site / platform. Please go through the list and mark those which you observe or data are available. If possible please provide start and end of the time series (optional)

Parameter group: list of parameter groups observed, measured or estimated at the site. This question is combined with the following questions "**available**", "**measured from**", "**measured to**", and "**Note**".

```
DataType:       fixed list
Reference:       Meteorology and Climate -
                Air chemistry -
                Deposition - wet, dry
                Total nitrogen input - eutrophication
                Gas household - on the system level: CO2 and greenhouse gas
                 input/output
                Hydrology - precipitation, hydrological status, runoff
                Hydrological model and balance - on the system level
                Key fluxes of energy and matter within the system -
                 litterfall, stemflow etc.
                Carbon sequestration model and balance - on the system level
                Surface water properties - rivers, lakes, chemistry and
                 physics
                Ground water properties - ground water and springs chemistry
                 and physics
                Sediments properties - chemical and physical properties
                Soil properties - chemical and physical properties
                Soil array measurements - moisture, gas exchange...
                Ecosystem and habitat structure - e.g. forest structure,
                 grass canopy structure, river morphology etc.
                Phenology - of plants and/or animals
                (Key) primary producers inventories - inventories,
                 structure, productivity, etc.
                (Key) primary producers chemistry - C, N, major ions and
                 trace elements
                Biomass aquatic
                Biomass terrestrial - e.g. forest inventory, grass biomass,
                 biomass above ground and below ground...
                Biodiversity overall
                Biodiversity of plants - autotrophic compartment
                Biodiversity of animals - heterotrophic compartment
                Biodiversity of microbes
                Biodiversity, genetic
                Land cover terrestrial - terrestrial inventories and maps
                Land cover remote sensing - e.g. CORINE LandCover
                Terrain model - high resolution, e.g. LIDAR
                Land use - monitoring and inventories of predominant/driving
                 land use (forestry...)
                Ecosystem management - information on ecosystem management
                 affecting/driving the respective system, including
                 conservation measures etc.
                Ecosystem services - quantitative information on ecosystem
                 services of respective system
                Demography - if relevant for the scale of the site
                Economic indicators - if relevant for the scale of the site
Status:         mandatory
Example:        Meteorology and Climate
```

available: please indicate if data from the parameter group specified in column "Parameter group" are available for the LTER Site or LTSER Platform.

```
DataType:          LOV (Boolean)
Reference:         _unknown
                   yes
                   no
Status:            mandatory (for the mandatory networks)
Example:           yes
```

measured from: please indicate from which year the parameter group specified in column "Parameter group" is observed at the LTER Site or LTSER Platform.

```
DataType:          Date (year YYYY)
Status:            optional
Example:           1992
```

measured to: please indicate to which year the parameter group specified in column "Parameter group" is observed at the LTER Site or LTSER Platform. Leave blank if observations are still on-going.

```
DataType:          Date (year YYYY)
Status:            optional
Example:
```

Note: additional remarks about the network or international project which can not be entered into the reference list

```
DataType:          text
Status:            optional
Example:           ---
```

EntryNr: internal record ID

```
DataType:          number (long)
Status:            internal
```

4.10 H. Site description text

This section refers to the description of the metadata items of the page SITE DESCRIPTION TEXT of the LTER Europe Fact Sheet. Please provide a short site description which could also be used on the web site. This description should cover: a brief history of the LTER Site or LTSER Platform, the main scientific purpose at present and major plans for future, a brief overall description of infrastructure, and a brief overall description of available data/information.

Site description: Please provide a short site description which could also be used on the web site. This description should cover: a brief history of the LTER Site or LTSER Platform, the main scientific purpose at present and major plans for future, a brief overall description of infrastructure, and a brief overall description of available data/information.

```
DataType:          text (max. 3000 characters)
Status:            optional
Example:           "The site lies at the foothill of the Alps ..."
```

4.11 I. Data management

This section refers to the description of the metadata items of the page DATA MANAGEMENT of the LTER Europe Fact Sheet. Please indicate the different forms of data management for the site or platform as well as the availability of the data.

4.11.1 I.1 DATA FORMAT

Database: data are stored in a relational database, e.g. Oracle, Access, etc.

```
DataType:      LOV (Boolean)
Reference:     _unknown
               yes
               no
Status:        mandatory
Example:       yes
```

XML Database: data are stored in a XML repository or XML database

```
DataType:      LOV (Boolean)
Reference:     _unknown
               yes
               no
Status:        mandatory
Example:       yes
```

Structured files: data are stored as structured files or spread sheets, e.g. Excel, structured ACSII file

```
DataType:      LOV (Boolean)
Reference:     _unknown
               yes
               no
Status:        mandatory
Example:       yes
```

Unstructured file: data are stored in unstructured files, e.g. e.g. unstructured text file.

```
DataType:      LOV (Boolean)
Reference:     _unknown
               yes
               no
Status:        mandatory
Example:       yes
```

Spatial data file (GIS): data are stored as GIS file, e.g. ESRI shape file or similar.

```
DataType:      LOV (Boolean)
Reference:     _unknown
               yes
               no
Status:        mandatory
Example:       yes
```

Spatial database (GIS): data are stored in spatial database, (geodatabase) e.g. PostGIS, Personal GeoDatabase, ArcSDE.

```
DataType:      LOV (Boolean)
Reference:     _unknown
               yes
               no
Status:        mandatory
```

```
Example:       yes
```

Proprietary file format: produced by different field equipments/sensors.

```
DataType:      LOV (Boolean)
Reference:     _unknown
               yes
               no
Status:        mandatory
Example:       yes
```

Paper: Filled in paper, printed paper forms or reports, non digital.

```
DataType:      LOV (Boolean)
Reference:     _unknown
               yes
               no
Status:        mandatory
Example:       yes
```

4.11.2 I2. DATA STORAGE

Location of data sources: please indicate where your data are stored.

```
DataType:      LOV (reference list)
Reference:     _unknown
               Central
               Distributed within institution
               Distributed over multiple institutions
               other
Status:        mandatory
Example:       Distributed within institution
```

Number of places: indicate the approximate number of different locations where the data are stored.

```
DataType:      number (integer)
Status:        mandatory
Example:       2
```

4.11.3 I.3 DATA SERVICE

Web Feature Service (WFS): a WFS is provided to share spatial data.

```
DataType:      LOV (Boolean)
Reference:     _unknown
               yes
               no
Status:        optional
Example:       yes
```

Web Map Service (WMS): a WMS is provided to share view on site data.

```
DataType:      LOV (Boolean)
Reference:     _unknown
               yes
               no
Status:        optional
Example:       yes
```

Web Coverage Service (WCS): a WCS is provided to share raster grid data.

```
DataType:     LOV (Boolean)
Reference:    _unknown
              yes
              no
Status:       optional
Example:      yes
```

Sensor Web Enabledment (SWE): a SOS is provided to share data.

```
DataType:     LOV (Boolean)
Reference:    _unknown
              yes
              no
Status:       optional
Example:      yes
```

Web Catalogue Service (CSW): a CSW is provided to share site data set level metadata.

```
DataType:     LOV (Boolean)
Reference:    _unknown
              yes
              no
Status:       optional
Example:      yes
```

Data portal: a data portal is provided to view and access the data.

```
DataType:     LOV (Boolean)
Reference:    _unknown
              yes
              no
Status:       optional
Example:      yes
```

Other: other services to the data are provided.

```
DataType:     LOV (Boolean)
Reference:    _unknown
              yes
              no
Status:       optional
Example:      yes
```

4.11.4 I.4 DATA REQUEST

Data request: indicate how the data can be requested.

```
DataType:     LOV (reference list)
Reference:    _unknown
              Offline (Mail or Telephone)
              Online (Reference for access)
              Inline (Access within a discovery system)
Status:       mandatory
Example:      yes
```

4.11.5 I.5 DATA ACCESS

indicate the data policy for the different user groups

Administration: indicate the data policy for the different user groups.

```
DataType:     LOV (reference list)
Reference:    _unknown
```

```
          Free: free use under the specified terms of use
          Free upon request: terms of use are negotiated case by case,
           but the data are in principal free to use
          Restricted: use of the data is only for either a restricted
           group or for restricted purposes. Terms of use are
           specified.
          No: data are not free to use or fees are charged
Status:   mandatory
Example:  Free
```

Public: indicate the data policy for the different user groups.

```
DataType:   LOV (reference list)
Reference:  _unknown
            Free: free use under the specified terms of use
            Free upon request : terms of use are negotiated case by case,
             but the data are in principal free to use
            Restricted: use of the data is only for either a restricted
             group or for restricted purposes. Terms of use are
             specified.
            No: data are not free to use or fees are charged
Status:     mandatory
Example:    Free
```

Education: indicate the data policy for the different user groups.

```
DataType:   LOV (reference list)
Reference:  _unknown
            Free: free use under the specified terms of use
            Free upon request : terms of use are negotiated case by case,
             but the data are in principal free to use
            Restricted: use of the data is only for either a restricted
             group or for restricted purposes. Terms of use are
             specified.
            No: data are not free to use or fees are charged
Status:     mandatory
Example:    Free
```

Research: indicate the data policy for the different user groups.

```
DataType:   LOV (reference list)
Reference:  _unknown
            Free: free use under the specified terms of use
            Free upon request : terms of use are negotiated case by case,
             but the data are in principal free to use
            Restricted: use of the data is only for either a restricted
             group or for restricted purposes. Terms of use are
             specified.
            No: data are not free to use or fees are charged
Status:     mandatory
Example:    Free
```

Other: indicate the data policy for the different user groups.

```
DataType:   LOV (reference list)
Reference:  _unknown
            Free: free use under the specified terms of use
            Free upon request : terms of use are negotiated case by case,
             but the data are in principal free to use
```

```
               Restricted: use of the data is only for either a restricted
                group or for restricted purposes. Terms of use are
                specified.
               No: data are not free to use or fees are charged
Status:        mandatory
Example:       Free
```

4.11.6 I.6 DATA COSTS

Administration: indicate how the data costs are expected to be reimbursed for different user groups.

```
DataType:      LOV (Boolean)
Reference:     _unknown
               No: no costs are charged for the data exchange
               Data manipulation cost: only data manipulation costs are
                charged to the user
               Data creation costs: also costs of the data generation are
                charged to the user
Status:        mandatory
Example:       yes
```

Public: indicate how the data costs are expected to be reimbursed for different user groups.

```
DataType:      LOV (Boolean)
Reference:     _unknown
               No: no costs are charged for the data exchange
               Data manipulation cost: only data manipulation costs are
                charged to the user
               Data creation costs: also costs of the data generation are
                charged to the user
Status:        mandatory
Example:       yes
```

Education: indicate how the data costs are expected to be reimbursed for different user groups.

```
DataType:      LOV (Boolean)
Reference:     _unknown
               No: no costs are charged for the data exchange
               Data manipulation cost: only data manipulation costs are
                charged to the user
               Data creation costs: also costs of the data generation are
                charged to the user
Status:        mandatory
Example:       yes
```

Research: indicate how the data costs are expected to be reimbursed for different user groups.

```
DataType:      LOV (Boolean)
Reference:     _unknown
               No: no costs are charged for the data exchange
               Data manipulation cost: only data manipulation costs are
                charged to the user
               Data creation costs: also costs of the data generation are
                charged to the user
Status:        mandatory
Example:       yes
```

Other: indicate how the data costs are expected to be reimbursed for different user groups.

```
DataType:      LOV (Boolean)
Reference:     _unknown
               No: no costs are charged for the data exchange
```

```
                    Data manipulation cost: only data manipulation costs are
                     charged to the user
                    Data creation costs: also costs of the data generation are
                     charged to the user
Status:        mandatory
Example:       yes
```

4.12 J. Habitat characteristics

This section contains the description of the metadata items of the page HABITAT CHARACTERISTICS of the LTER Europe Fact Sheet "Habitat characteristics of the site or platform". Please record the share of the existing habitats according to the EUNIS classification. At least on the EUNIS Level I the habitats should be listed. Every habitat is recorded in one line. More than one entry is possible.

EUNIS Level I: Habitats present at the site or platform according the EUNIS habitat classification from level I.

```
DataType:      reference list
Reference:     _unknown
               Marine habitats
               Coastal habitats
               Inland surface waters
               Mires, bogs and fens
               Grasslands and lands dominated by forbs, mosses or lichens
               Heathland, scrub and tundra
               Woodland, forest and other wooded land
               Inland unvegetated or sparsely vegetated habitats
               Constructed, industrial and other artificial habitats
               Habitat complexes
Status:        mandatory
Example:       Woodland, forest and other wooded land
```

EUNIS detail: in addtion to the level I of the EUNIS habitat classification the habitat can be further detailed using the other levels of EUNIS**.**

```
DataType:      reference list
Reference:     _unknown
               see reference list (more than 500 entries, not displayed)
                Status:        optional
Example:       ...
```

Cover: Cover in % of the habitat listed in the site or platform

```
DataType:         number (Double)
Status: mandatory
Example:    90
```

Note: additonal notes for the habitat characteristics

```
DataType:      text (max. 255 characters)
Status:        optional
Example:       ...
```

EntryNr: internal record ID

```
DataType:      number (long)
Status:        internal
```

5   Metadata upload

In 2011 the LTER InfoBase Contents from all sites are be updated. Therefore the contents of the InfoBase have been extracted to the LTER Europe Factsheet. The LTER Europe Factsheet is an excel file containing all information available about one site.

For the LTER Europe Factsheets all information collected in earlier years was collected to produce a central documentation of your sites and platforms for multiple uses. These LTER Site Fact Sheets are pre-filled with all data already reported as basis for checking, updating and completing site metadata.

The inquiry has 3 levels of documentation details, but we ask you to provide as complete information as possible:

> level 1: minimum documentation (15 minutes for first report; 5 minutes for update)

> level 2: basic documentation (about 1 hour)

> level 3: full documentation (about 2 hours)

5.1   Roles and responsibilities

The information from the LTER InfoBase was centrally extracted to a LTER Europe Factsheet containing all information available for the sites. For already registered sites in the LTER InfoBase this Factsheets are generated. The factsheets can be directly accessed and downloaded using the ftp-repository at the Umweltbundesamt ftp://ftp.umweltbundesamt.at/. To get username and password, please contact InfoBase Helpdesk.

For the process of collecting the updated site description of the network of sites in EnvEurope and LTER Europe the following roles and responsibilities have been identified:

- **National Network Representatives (NNR)** as well as the Site Co-ordinators and Platform Managers are contacted to update and complete the LTER Europe Factsheets for their sites
- **National Network Representatives (NNR)** are asked to co-ordinate the collection of the LTER Europe Factsheets in their countries and make sure to distribute all information to all responsible site co-ordinators and platform managers.
- **Site Co-ordinators** and **Platform Managers** are asked to complete the LTER Europe Factsheets for their sites and upload the files to the specified ftp-repository.
- **The LTER InfoBase Team** check the completeness of the LTER Europe Factsheets uploaded and import to the central database.

According to defined roles the actors have been contacted and provided with the information needed to perform the task.

5.2   Access LTER Europe Factsheets

The information from the LTER InfoBase was centrally extracted to a LTER Europe Factsheet containing all information available for the sites. This LTER Europe Site Factsheet is provided to the Site-Co-ordinators and Platform Managers. The LTER Europe Factsheets can be accessed via the ftp-repository at the Umweltbundesamt.

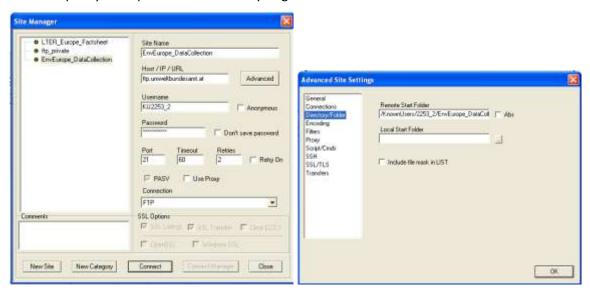### 5.2.1   ftp-repository - Path, username and password

The URL to the ftp-repository is ftp://ftp.umweltbundesamt.at/KnownUsers/2253_2/.

To directly access the ftp-repository in the Micorsoft Windows Explorer you can use the link ftp://<username>:<password>@ftp.umweltbundesamt.at/KnownUsers/2253_2/. Please replace username and password with the received username and password.

The repository is password secured. Username and password can be requested from LTERInfoBase@umweltbundesamt.at and sent to you by mail.

We recommend Core-ftp Lite which is a freeware ftp-client. This client can be downloaded from http://www.coreftp.com/download.html.

You can specify the ftp-connection when you go in the menu "FILE" → "CONNECT"

Further specify under "ADVANCED" in this window the start directory. This needs to be set to /KnownUsers/2253_2/Formal_Candidate/.

5.2.2   ftp-repository - Directory structure

The directory …/Formal_Candidate/ contains the pre-filled LTER Europe Factsheets for the registered LTER Sites and LTSER Platforms in the LTER InfoBase with the status "Formal LTER/LTSER" or "Candidate LTER".

Within this directory you find country directories according to the national LTER networks, e.g. /Formal_Candidate/Austria/...
Directly in the country directory you find two files:

a) A empty template for the LTER Europe Factsheet for creating a new LTER Europe Factsheet. This file can also be downloaded from the LTER Europe website --> LTER_Europe_Factsheet_Template.xls

b) A report file with the LTER Europe Factsheets generated for the Update 2011 --> see country folder at the ftp-repository (e.g. Austria_LTER_Europe_Export_29.06.2011.xls). In this you get an overview on the registered sites, the filenames and the direct link to the files.

1_original: The directory 1_original contains the exported LTER Europe Factsheet for the already registered LTER Sites and LTSER Platforms. This directory is read-only. Please download the appropriate file from here to edit and update the metadata for the LTER Site or LTSER Platform.

2_return: The directory 2_return contains the updated or newly generated LTER Europe Factsheet. The name of the files should be added by the date of the metadata creation. This directory is for read-write access.

3_checked: The directory 3_checked is only used by the coordination of the metadata update 2011. Here the files are moved to which pass the check routines. From here the data are automatically uploaded to the LTER InfoBase.

4_shape: The directory 4_shape is used to upload the KML or ESRI Shape Files with the delineation of the boundary of the LTER Site or LTSER Platform.

5_imported: The directory 5_imported contains the uploaded LTER Europe Factsheets in the current update process.

5.3   Use of the LTER Europe Factsheet

To fill the LTER Europe Factsheet for a respective site, the following workflow is needed.

Step A - How to check if a LTER Europe Factsheet is already provided?

1. Please login to the ftp-repository and navigate to your country directory
2. Please check the report file in the country directory, if a LTER Europe Factsheet for your site is already provided. The report file provides information about the country, name of the site, site coordinator, main ecosystem type and file name.
3. If you find a LTER Europe Factsheet for your site please proceed to "**Step B.1 LTER Europe Factsheet provided**".
4. If you do not find a LTER Europe Factsheet for your site, please proceed to "**Step B.2 Create new LTER Europe Factsheet**"

Step B.1 - LTER Europe Factsheet provided

1. Please **login to the ftp-repository** and navigate to your country directory. You can either use a ftp-client (e.g. FileZilla) to download the file or directly the Microsoft Windows Explorer or similar. Please log in to the ftp-repository as specified above in this article and navigate to your country directory in Formal_Candidate.
2. **Download the LTER Europe Factsheet file** from the ftp-repository which is placed in the sub-directory 1_original. Please select the file and download it to your hard drive.
3. Once you have downloaded the file you can **edit the LTER Europe Factsheet** with Microsoft Excel. It should work with version 2003 and later.
4. When you have finished editing the metadata for your site you need to **upload the file again to the ftp-repository using the directory 2_return** in your country folder. Please change the file name by adding the date of metadata creation in the format YYYYMMDD, e.g. 20110628, at the end of the file name.
5. In addition please **update the report file in the country directory** (e.g. Austria_LTER_Europe_Export_29.06.2011.xls). Save and rename it by adding the name of the metadata creator (e.g. Austria_LTER_Europe_Export_29.06.2011_**Peterseil**.xls) at the end of the file name of the report file. Note - that you normally just need to save one report file for each metadata creator. This report file then contains all the files added or updated by the metadata creator.
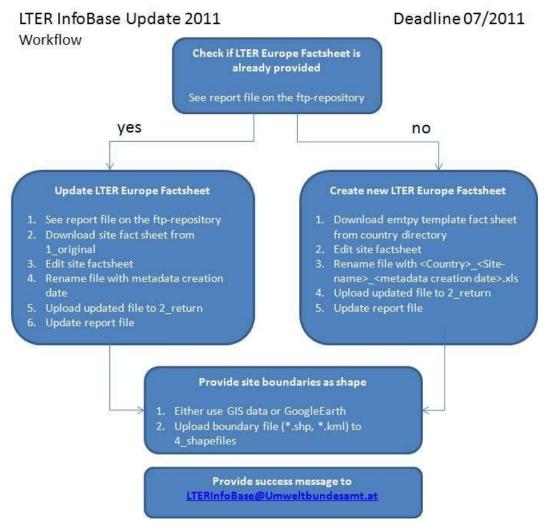6. If there are any problems, please contact LTERInfoBase@umweltbundesamt.at.

Figure 2 Work flow for the update to the site description

Step B.2 - Create new LTER Europe Factsheet

1. Please login to the ftp-repository and navigate to your country directory. You can either use a ftp-client (e.g. FileZilla) to download the file or directly the Microsoft Windows Explorer or similar. Please log in to the ftp-repository as specified above in this article and navigate to your country directory in Formal_Candidate.

2. Download the file LTER_Europe_Factsheet_template.xls from your country directory. This is a new and emtpy file for the LTER Europe Factsheet. Please select the file and download it to your hard drive.

3. Once you have downloaded the file you can edit the LTER Europe Factsheet with Microsoft Excel. It should work with version 2003 and later.

4. When you have finished editing the metadata for your site you need to upload the file again to the ftp-repository using the directory 2_return in your country folder. Please change the file name by using the following naming convention: <Country>_<site-name>_<metadata creation in the format YYYYMMDD, e.g. 20110628>.xls

5. In addition please add a new entry to **the report file in the country directory** (e.g. Austria_LTER_Europe_Export_29.06.2011.xls) with the necessary information about the site created. Save and rename it by adding the name of the metadata creator at the end of the file name of the report file (e.g. Austria_LTER_Europe_Export_29.06.2011_**Peterseil**.xls). Note - that you normally just need to save one report file for each metadata creator. This report file then contains all the files added or updated by the metadata creator.

6. If there are any problems, please contact LTERInfoBase@umweltbundesamt.at.

How to add the site boundaries?

1. Create the site boundaries either using your GIS data or GoogleEarth. For a detailed description read here ...
2. The site boundaries need to be uploaded to the directory 4_shapes in your country directory. Use the naming convention <Country>_<site-name>.shp or <Country>_<site-name>.kml.
3. If there are any problems, please contact LTERInfoBase@umweltbundesamt.at.

Step D – Provide success message

Please provide a success message to LTERInfoBase@Umweltbundesamt.at about finishing the task. In this mail please add if sites need to be deleted from the LTER InfoBase.

HOW TO GET HELP? If there are any questions, please contact LTERInfoBase@umweltbundesamt.at.

6   Metadata presentation

6.1   Current situation

On the technical level the LTER InfoBase consists of three components: (a) LTER Europe Factsheet which allows the creation, editing and deletion of metadata about a site or platform; (b) a web based meta data request viewer which includes the geographic representation of the sites[1] (Schentz et al. 2005); and (c) an extensive description of the contents and help on the ALTER-Net WIKI[2]. The metadata are stored in a central object relational database (MORIS; see Mirtl & Schentz 1997, Schentz & Mirtl 2003).
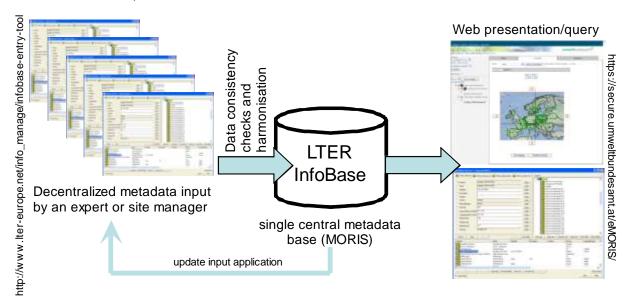

Figure 3 Data flow for the site description

The basic data flow is shown in Figure 3. The metadata are input by an expert or site manager (decentralized). Data consistency checks are performed before the metadata are integrated to the central metadata base. If needed, during this process a harmonisation of the used reference lists is performed. The metadata can be queried using the LTER InfoBase eMORIS application (URL: https://secure.umweltbundesamt.at/eMORIS/).

6.2   Next steps

Currently in co-operation of EnvEurope, LTER Europe and ILTER a reimplementation of the site description using DRUPAL is planned. This has the aim to closely link the dataset description with the site description. A full web based management of the metadata for the datasets and sites will be possible. The task has just started and will be finished until the end of 2012.

---

[1] https://secure.umweltbundesamt.at/eMORIS/
[2] http://www5.umweltbundesamt.at/ALTERNET/

7 References

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8   Appendix LTER Europe Factsheet

The Appendix shows the current version of the LTER Europe Factsheet. The file is in Microsoft Excel format and is used for collection and central upload of the metadata to the central data repository managed at the Umweltbundesamt GmbH.