Field description LTER InfoBase

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1. Introduction

In the following the structure of the questions asked and the information needed about sites will be presented. This document could be understood as a handbook for the LTER InfoBase.

1.1. Goal of the LTER InfoBase

The aim of the LTER InfoBase is to collect the meta-information of the relevant sites for LTER and LTSER related research in Europe. There are several existing meta-databases, but none of them can directly be used for this purpose. In a first run the data from existing data sets were collected and completed. In a second run, which is performed now, the meta-information about the sites should be provided in more detail.

- to gather information for the LTER InfoBase
- to develop a standardized and common usable questionnaire for LTER networks
- to provide an input in the development of domain ontologies within the WP I6
- to provide a basis of a discussion regarding the definition of the minimum criteria for the selection of LTSER sites (Task within the WP I3)

For this purpose a tool was created to collect this information from the site managers in a simple and flexible manner.

1.2. Basic structure

The basic information is concentrated on the sites, which is reflected on the structure of the tables in InfoBase. The main table for the sites is the 'Site-Platfoms' table, which classifies the sites into complex and simple ones, all other tables starting with the term 'Site_' e.g. 'Site administration' in its labels provide additional information with different focuses (about databases, references, research questions, characteristic habitats, measured parameters, networks, research infrastructure, sampling structure – see fig. 1). In addition the table describing actors exists.

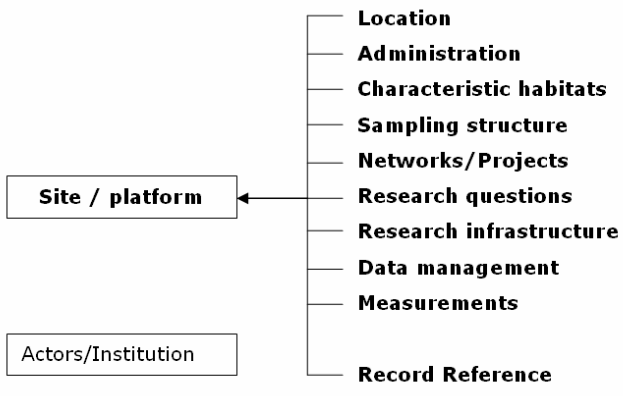

Figure 1. Schematic data structure of the LTER InfoBase

2. Meta data fields and structure of the tables

The following text describes the metadata fields for the LTER InfoBase.
Fields are marked **purple** to emphasis the priority of information collection, if so far no information has been added into these fields. The chapters refer to the tables of the LTER InfoBase. See also Figure 1 for the structure of the LTER InfoBase.

Some of the fields must use predefined **reference lists**, their labels start with 'tree' like for example 'treeSites' listing all sites and platforms. The respective entry is taken from the list. New entries have to be attached to the respective reference list before they can be chosen from the list. The reference list can also reflect a hierarchy between the entries if so defined, grouping them into different classes. Be sure to choose an element from the lowest level of the hierarchy. New hierarchies and entries can be added by the user using the buttons 'new child' to add a record under an existing entry (which becomes than a class with sub entries) or 'new sibling' to add a new record beside of existing ones. Existing entries are not editable or erasable with the InfoBase tool. Some of the entries (whose icons show a transparent book) are however moveable, but not up to the highest level (all these changes are only possible in the database itself).

Following field is present in all site-related tables:

DataSet: LTER site or platform according to the reference list.

Usage: reference list
In the reference list *treeDataSets* the sites and platforms and the structure of the platforms are listed. They are grouped by the country of the site.

Example: Zöbelboden (AT01)

2.1. 01Site_Platforms

This table section consists of data about the location and the inner characteristic of the site or platform. It is the central list of the site or platforms within the LTER InfoBase.

Name: LTER site or platform according to the reference list.

Usage: reference list
In the reference list *treeSites* the sites and platforms and the structure of the platforms are listed. They are grouped by the country of the site.

Example: Zöbelboden (AT01)

Identifier: Identifier of the site or platform. The LTER sites which are listed in different research or monitoring networks are listed by code.

Usage: Text

Example: ICP_IM_AT01

***Description**: Description of the site or platform.

Usage: Text

Example:

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

Usage: Text

Example: http://www.umweltbundesamt.at/en/umweltschutz/oekosystem/im/zoebelboden_standort/

Country: Country in which the site or platform is situated

Usage: reference list
in the reference list *treeCountries* the countries are listed.

Example: Austria

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

Usage: reference list
in the reference list *treeBiogeogRegions* the regions are listed. The list is according to the EEAs classification of the bio-geographic regions.

Example: Alpine

Size (ha): Size of the site or platform in hectare

Usage: Number (Double)
used without millennia separator

Example: 5000

***Latitude (DMS WGS84)**: Latitude in DMS (Degree minutes seconds) according to the datum WGS84 of the centre point of the site or platform. This field is used for the description of the site

Usage: Text
if GIS data exist, the exact location should be extracted from this data otherwise the centre coordinate should be put in as degree, minutes and seconds.

Example: 47° 52' N

***Longitude (DMS WGS84)**: Longitude in DMS (Degree minutes seconds) according to the datum WGS84 of the centre point of the site or platform. This field is used for the description of the site

Usage: Text
if GIS data exist, the exact location should be extracted from this data otherwise the centre coordinate should be put in as degree, minutes and seconds.

Example: 14° 26' E

***Altitude (min)**: Minimum altitude in m a.s.l. of the site or platform

Usage: Number (Double)

Example: 700

Altitude (avg): Average altitude in m a.s.l. of the site or platform

Usage: Number (Double)

Example: 850

***Altitude (max)**: Maximum altitude in m a.s.l. of the site or platform

Usage: Number (Double)

Example: 950

SiteType: 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.

Usage: reference list
in the reference list *treeSiteTypes* the different options are listed.

Example: Simple Site

2.2. 02Site_DataSource

This table section consists of the information about the source of the record of the site or platform in the LTER InfoBase. A lot of information was collected from existing metadata databases and meta information sources. The history of the metadata record can be tracked by this information.

Source: name of the source of the metadata record.

Usage: text
if the record originates in another metadata database the name of the database is mentioned otherwise the relevant information.

Example: http://www.umweltbundesamt.at/en/umweltschutz/oekosystem/im/zoebelboden_standort/

Cross-checked by: Full name of the person who cross-checked the metadata record about the site or platform

Usage: reference list
the respective actor has be taken from the reference list *treeActors*. You find the person name under the first letter of the last name.

Example: Michael Mirtl

Date of Check: Date on which the cross-check of the metadata record about the site or platform was performed

Usage: Date/Time

Example: 12.12.2004

2.3. 03Site_Administration

This table section consists of the information about the administration of the site. This encloses the management and funding, as well as the source of information.

Managed by person: Full name of the person who is responsible for the management of the site or platform

Usage: reference list
the respective actor has to be taken from the reference list *treeActors*. You find the person name under the first letter of the last name.

Example: Thomas Dirnböck

Institution: Name of the institution which is responsible for the management of the site or platform

Usage: reference list
the respective actor institution has to be taken from the reference list *treeInstitutions*.

Example: Federal Environment Agency

***Funded by**: name of the main funding body for site or platform

Usage: reference list
the respective actor has to be taken from the reference list *treeInstitutions*.

Example: Federal Environment Agency

Established in: year of establishment of the site or platform

Usage: Date/Time
if no date is present the site or platform is still in use

Example: 1992

***Abandoned in**: year of abandonment of the site or platform

Usage: Date/Time

Example: 1994

2.4. 04Site_DataManagement

This table section consists of the information about the data management structure of the site or platform.

Type of data source: available data format for the data of the site or platform

Usage: reference list
In the reference list *treeFormat* the possible formats are listed.

Example: database

Access to data: access to the data of the site or platform

Usage: reference list
In the reference list *treeAccess* the possible entries are listed.

Example: limited

2.5. 05Site_ DataUsage

longterm time series: longterm time series present

Usage: reference list
In the reference list *treeBoolean* the possible entries (yes, no, unknown) are listed

Example: yes

shortterm time series: shortterm time series present

Usage: reference list
In the reference list *treeBoolean* the possible entries (yes, no, unknown) are listed

Example: yes

modelling: modelling data exist

Usage: reference list
In the reference list *treeBoolean* the possible entries (yes, no, unknown) are listed

Example: yes

Risk assessment: risk assessment data exist

Usage: reference list
In the reference list *treeBoolean* the possible entries (yes, no, unknown) are listed

Example: yes

User group: list of users using the data of the site or platform

Usage: reference list
In the reference list *treeUserGroups* the possible entries are listed (government, public, reseach and the combinations of them)

Example: government, public

***Note**: additional information of data usage can be added

Usage: text

Example:

2.6. 06Site_ ResearchEnvironment

This table section consists of the information about the research infrastructure present at the site. This includes researcher, laboratories, measurement equipment, etc. For each research infrastructure entity for the site a new record is entered.

Research envirionment: research environment present at the site or platform. This includes personal resources as well as research equipment, like a meteorological measurement tower.

Usage: reference list
In the reference list *treeResearchEnvironment* the possible entries are listed.

Example: meteorological measurement tower

***Amount**: Amount of research infrastructure items (optional)

Usage: number (long)

Example: 2

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

Usage: text

Example: Containers (management, staff) , towers, gauging weirs, power supply, telephone, permanent plots (boardwalks), all year access, meteorological stations, radio transceiver installation (in-site data transfer), high resolution DEM (6000 geodetically surveyed points)

2.7. 07Site_ ResearchQuestions

This meta-information section consists of the information about the research topics investigated at the site or platform. For each research question a record is entered.

Research question: the research topic or question investigated at the site or platform

Usage: reference list
In the reference list *treeResearchQuestion* the possible entries are listed.

Example: Biogeochemical cycles

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

Usage: text

Example: ---

2.8. 08Site_Network

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.

Networks: the networks or international projects in which the site or platform takes part

Usage: reference list
In the reference list *treeNetworks* the possible entries are listed.

Example: ICP IM

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

Usage: text

Example: ---

2.9. 08Site_HabitatCharacteristic

This meta-information section consists of the information about the habitats present in the site or platform. For each habitat a line is added.

EUNIS Habitats: Habitats present at the site or platform according the EUNIS habitat classification

Usage: reference list
In the reference list *treeEUNISHabitats* the possible entries are listed.

Example: Woodland, forest and other wooded land

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

Usage: number (Double)

Example: 99

2.10. 10Site_ Parameters

This meta-information section consists of the information about parameters measured in the site or platform. For each parameter a new line is added. The parameters measured are assigned to the “experimental unit” investigated. This mean the entity observed should be listed, e.g. Forest floor vegetation, mineral soil layer.

***EUNIS Habitats**: Habitat investigated in the site or platform according the EUNIS habitat classification

Usage: reference list
in the reference list *treeEUNISHabitats* the possible entries are listed.

Example: Woodland, forest and other wooded land

Experimental Unit: Compartment investigated in the habitat named. The classification of the experimental unit follows the ALTER-Net discussion about the ecosystem compartments, e.g. forest ground floor vegetation, hums layer, mineral soil layer. This is the entity observed in the field.

Usage: reference list
in the reference list *treeExperimentalUnits* the possible entries are listed.

Example: mineral soil layer

Parameter: Parameter investigated in the experimental unit listed

Usage: reference list
in the reference list *treeParameters* the possible entries are listed.

Example: Pb

***Unit or Measurement**: unit of the measurement

Usage: reference list
in the reference list *treeUnits* the possible entries are listed.

Example: µg/kg

Method of measurement: Method used for the measurement

Usage: reference list
in the reference list *treeMethods* the possible entries are listed.

Example: ICP-OES

Start or measurement: Start of the measurement in the site or platform

Usage: Date

Example: 01.01.1992

***End of measurement**: End time or the measurement in the site or platform

Usage: Date
leave blank if the measurements are still going on

Example:

***Note**: additional remarks about the measurement

Usage: memo

Example: ---

2.11. 11Site_SamplingStructure

This meta-information section consists of the information about way and the method how the site or platform was selected.

Population: The population from which the site or platform was chosen

Usage: text

Example: Karst areas in Austria

Sampling Method: method of sampling

Usage: reference list
in the reference list *treeSamplingMethods* the possible entries are listed.

Example: selected

2.12. 12ContactPerson

This meta-information section consists of the contact information about the persons listed in the LTER InfoBase. This includes persons as well as institutions.

Display Name: full name displayed for the actor

Usage: reference list
the respective actor has to be taken from the reference list *treeActors*. You find the person name under the first letter of the last name.

Example: Johannes Peterseil

First Name: first name

Usage: text
in the case of an institution it is left blank

Example: Johannes

Last Name: last name

Usage: text
in the case of an institution the name of the organisation is listed here

Example: Peterseil

e-mail: contact information e-mail adress

Usage: text

Example: Johannes.Peterseil@umweltbundesamt.at

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

Usage: reference list
in the reference list *treeSamplingMethods* the possible entries are listed.

Example: Federal Environment Agency

***Note**: additional remarks about the contact person

Usage: text

Example: ---

Priority list:

Marked in purple: fields to be filled in (no data yet)

* optional fields (in case of latitude and longitude only if GIS data of dataset exists)

all other fields to be checked