

# LTER-EUROPE: CRITERIA AND RECOMMENDATIONS

**M. Mirtl (UBA), M. Frenzel (UFZ), E. Furman (SYKE), C. Ohi (UFZ), K. Krauze (ICE-PAS), C. Grünbühel (UBA/IFF)**

**Version 1.1, 2007-06-12**

The proposal is based on lists of disciplinary descriptors proposed by WP I3, R4 and R1 of ALTER-Net. The grouping and categorization considers the outcomes of related discussions of the LTER-Europe conferences in Mallorca (February 2007) and Hungary (June 2007). Regarding the types of LTER facilities it refers to the document [I3017v02\\_LTER\\_design\\_nomencl\\_Mirtl.doc](#). The table giving the characteristics of LTER-sites and LTSEER platforms is attached to this document (annex 1).

## **1 Criteria for LTER-Europe Network membership**

### **1.1 Criteria for application**

- Recognition by a government body or other institutional entity acting at the national level;
- Existence of a national committee or other management structure;
- A set of sites or proposed sites with criteria for selection of new sites;
- A statement of collective purpose that might include defined research or monitoring themes;
- A data management and accessibility policy including a commitment to share and exchange data and knowledge with other members of LTER-Europe;
- Evidence for long-term stability of the programme;
- A commitment to supply information about its sites and procedures as may be reasonably requested by the LTER-Europe Committees or its officers.

### **1.2 Criteria for members**

- Participation in the annual LTER-Europe Coordinating Committee meeting.
- Maximum response time to questions/requests of 15 days (email).
- Conduct LTER research & monitoring
- Share data
- Update national Web page
- Update information on national LTER facilities in the LTER database (metadata on registered sites and platforms)
- Response to LTER-Europe calls for action
- Conduct strategic LTER-Europe research
- Foster capacity building

To be discussed

- To be discussed: membership dues

## **2 General criteria for LTER sites and LTSEER platforms**

Equally applicable for LTER sites AND LTSEER platforms on the one hand and monitoring and research on the other.

### **2.1 Formal criteria**

- Basic commitment of hosting institution(s) for at least 5 years (signed paper) including
  - Financing
  - Staff
  - Infrastructure (field work, lab work etc.)
- Principal agreement on data exchange

- Availability of information in **English**
- Maximum response time to questions/requests of 10 days (email).

## 2.2 Data criteria

- Language: English
- Up-to-date/current documentation in the LTER database (3 adopted levels of metainformation, first level of highly integrated data)
- Storage (ad hoc solution -> Excel, Access; future perspective -> shared database, at least for metadata)
- Availability (bylaws for sharing)
- Time series (depend on topics; at least two data sets with a sufficient time interval)
- Frequency of measurements (thresholds for discontinuity?)

## 3 Explicit LTER site criteria

Checking of criteria is the task of national networks (negotiation, approval and evaluation of applying new LTER sites and already accepted members)

### 3.1 Formal criteria

- Site coordinator (permanent staff) with distinct definition of tasks (should express his/her willingness separately)
- Site coordinator formally appointed for at least 2 years

### 3.2 Status of sites

- **Regular sites** (explicit criteria fulfilled)
- **Intermediate sites** (e.g. no sufficient time series of long-term data, but promising for the future)
- **Starting sites** (newcomers, just starting to collect long-term data)

## 4 LTSER Platforms

### 4.1 Explicit LTSER platform criteria

#### 4.1.1 Selection criteria for LTSER regions (European and nat. networks perspective)

These are criteria to be applied to the selection of NEW LTSER regions by the national LTER-networks and by LTER-Europe as a continental network, mainly to achieve the best possible coverage in terms of various European gradients.

- Coverage of European environmental zones
- Coverage of LTER socio-ecological regions (LTER-SER)
- Inclusion of a maximum no. of countries
- Regions with varying income levels, but similar resource endowments of special interest

#### 4.1.2 Formal criteria

- Management of the entire LTSER platform established
  - Includes several LTER sites with affiliated site coordinators
  - Platform manager formally appointed for at least 2 years

- Memorandum of understanding signed by at least 5 participating partners across client groups. The underlying assumption is that LTSER platforms enable a kind of research which can only take place in LTSER regions, given their characteristics and fingerprints (typology of LTER facilities). This includes ongoing sociological, economic and natural scientific research ("socio-ecological research") as well as the binding involvement of non-scientific client groups and stakeholders (local decision makers, provincial administration, regional developers, population) to support transdisciplinarity and participatory approaches. Thus the number of 5 partners represents a bottom line of involvement, even if one institute covers a range of scientific disciplines.
- Institutional commitment of partners

#### 4.1.3 Design criteria

- Scale- and level explicit approach: concept how the design addresses relevant levels and scales
- LTSER facilities/activities shall cover main habitat types of region
- LTSER facilities/activities shall cover different scales, levels of organisation and sectors
- Involvement of client groups (research, networks, monitoring, local decision makers, regional development)
- Coverage of within-gradients of the biogeographical region (e.g. range of land use intensity)
- Concept for the coupling of monitoring and research and how both can be secured in the long term

#### 4.1.4 Data criteria

- Statement on the availability of documentation of land use history (*centuries*). Research shall have been carried out to allow for a reliable judgement on the potential availability of data on land use and environmental history.
- Ongoing collection of both ecological and socio-economic data (according to concept addressing relevant scales and levels)
- Measurement of the set of mandatory LTER-parameters according to LTER standards

### 4.2 Recommendations

#### 4.2.1 Formal

- **Involvement of** ecologists, local administrators and communities
- Maximum of existing LTER-relevant activities/facilities (*long-term*)
- Good status and perspective of facilities (*commitments, contacts, data access*)

#### 4.2.2 Design

- Use of existing ecological and social monitoring networks

#### 4.2.3 General character of the region

- Cultural and socio-economic (*administrative*) unit
- **Vulnerability** due to biodiversity changes (e.g. dependency of economic sectors on set of species)

#### 4.2.4 Activities

- Conducting monitoring at **appropriate scales** e.g. landscape and land use related issues
- Ecosystem services (*relevant for broader region*) investigated
- Relevant management practices investigated (*alternatives, szenarios*)
- Use of **qualitative monitoring** e.g. for sociological parameters: narratives, responses from individuals and organizations to problem oriented questions
- Enabling and encouraging **participatory** research development
  - local participation in data collection
  - **Policies** addressing biodiversity and **participation** of sectoral stakeholders

#### 4.2.5 Coverage of gradients

Existence of strong gradients in space and time to allow for good results in the shortest possible time:

-- **Demography:** dynamic structure

-- Located where **rapid development** and potential conflicts are anticipated

- **Contrasting intensities** of human impact hence different conservation needs
- Availability of reference areas (*undisturbed natural habitat(s) typical for the region*)
- **Conflicting social goals** (open, gradual, potential influence on biodiversity)
- Subsistence production vs. trade networks: **range of shares**
- Present **good or bad relations** between scientists and local communities
- 

#### 4.2.6 Data requirements

- **Ecological data:** main habitats, taxonomic groups, mass flows, abiotic base parameters...
- **Human impact:** waste, pollution, erosion
- **Demographic data:** population size, migration rate, age, origin, wealth, gender, employment, income, and topics related to operating scale (e.g. distance to nearest city)
- **Human use of area:** habitat diversity, use and harvest of natural resources, recreation, cultural traditions, industry, need for resources
- **Attitudes:** ecological awareness, educational resources and activities, follow-up of media rhetoric, voluntary contribution
- **Management information:** existing policies, management strategy, participation in management
- **Economic data,** especially **Income** from primary (changing intensity), secondary (changing volume) and tertiary sector (incl. tourist industry)

• ANNEX 1

## Developing finger prints for main types

The table below (Tab. 1) contrasts types of LTER-facilities alongside a set of criteria which cover the design as well as thematic foci and fostered research contents.

The characteristics given for the two types are to describe these types in an exemplary way with some remaining fuzziness in each single criterion (e.g. size depending on ecozone, orography, landscape type).

| Criteria  | LTER-facilities  |   |
|---|--|---|
|   | LTSER-platform   | LTER-site   |
| Categories  | LTSER-platform   | LTER-site   |
| Synonyms  | LTER-cluster, Multifunctional Research Platform (MFRP)                   | traditional LTER-site                               |
| <b>General description</b>                                    |  |   |
| Design  | hierarchical   | simple  |
| Consists of   | LTER-sites and other LTER-facilities (e.g. laboratories, infrastructure) | field stations within the site (plots, grid points) |
| Size  | 100-10000 km <sup>2</sup>  | 1-10 km <sup>2</sup>                                |
| Frequency (p. country)  | 0-5  | 5-20  |
| Frequency (Europe)  | 30-80  | 100-300   |
|   |  |   |
| <b>Administrational, institutional and management aspects</b> |  |   |
| Number of institutions involved                               | many   | 1-few   |
| Specific management necessary                                 | unconditionally  | limited   |
| Top-class information technology                              | unconditionally  | advantageous  |
| Flexibility   | high   | low   |
| Potential for (Multi-site) Experiments                        | high   | limited   |
| Cross-facility activities and harmonisation                   | frequent   | limited   |
|   |  |   |
| <b>Scales and hierarchical levels covered</b>                 |  |   |
| Plot  | yes (multi)  | yes (multi)   |
| Habitat/ local  | yes (multi)  | yes   |
| Landscape   | yes  | no  |
| Corresponding administrational units                          | yes (municipality, district, province)                                   | little probable                                     |
| Corresponding economic units                                  | yes (farm, forest company, municipality, district, province)             | little probable                                     |
| Corresponding social units                                    | yes (region, "homeland", municipality, districts, provinces)             | no  |
|   |  |   |
| <b>Parameter-groups</b>                                       |  |   |
| Abiotic   | yes  | yes   |
| Biotic  | yes, multi-habitat   | yes   |
| Management practices  | yes  | no  |
| Socio-economy   | yes  | no  |

|   |                    |         |
|---|--------------------|---------|
| Sociology, demography                                     | yes                | no      |
| <b>In-facility gradients</b>                              |                    |         |
| Altitude  | yes (dep. ecozone) | limited |
| Mesoclimate   | yes                | limited |
| Climate   | limited            | no      |
| Habitat   | yes                | no      |
| Land use intensity  | yes                | no      |
| Management practice                                       | yes                | no      |
| Demography  | limited            | no      |
| <b>Research foci supported</b>                            |                    |         |
| Primary production  | yes                | yes     |
| Populations   | yes                | yes     |
| Inorganic input   | yes                | yes     |
| Organic matter  | yes                | yes     |
| Disturbances  | yes                | yes     |
| Biodiversity and biodiversity related ecosystem processes | yes                | limited |
| Sustainable regional development under global change      | yes                | no      |
| Coupled human-ecological systems (models)                 | yes                | no      |
| Public awareness and education                            | yes                | no      |
| Ecosystem services  | yes                | limited |
| Sustainable development and local decision making         | yes                | no      |
| <b>Drivers and pressures covered potentially</b>          |                    |         |
| Land use change (history)                                 | yes                | limited |
| Management practices (agriculture, forest, hunting)       | yes                | limited |
| Climate change  | yes                | yes     |
| Human population dynamics                                 |                    |         |
| Alien species   | yes                | limited |
| <b>Functionalities</b>                                    |                    |         |
| Cross-scale activities (up-scaling...)                    | yes                | limited |
| Multidisciplinary approaches                              | yes                | limited |
| Transdisciplinary approaches                              | yes                | no      |

**Tab. 1: Fingerprints of LTER-sites and LTSER-platforms as main types of European LTER-facilities**