



Second circular

ILTER 2015 Science Days in Rome during EEF (Sep. 24th) and at CNR Headquarters (Sep. 25th)

Long-Term Ecological Research:

Environmental signals and large scale insights from a global network – ILTER

Dates September 24th – 25th, 2015

Venues:

September 24th; Congress Centre of Rome – EUR

September 25th; Headquarter of the National Research Council of Italy (CNR) in Rome Center
(Close to Central Station)

Co-organizer: LTER Italy, International Long-Term Ecological Research Network (ILTER)

Aim: Long-Term Ecological Research (LTER) is a powerful research framework to understand dynamic behaviors of various ecosystems locally, regionally and globally. ILTER is an expanding global network (38 member networks with over 700 LTER sites) focusing on various ecological, environmental and socio-ecological research topics. The ILTER Science Days which will take place as a part of 13th European Ecological Federation (EEF) will provide you interactive opportunity to share the research findings of ecological and environmental studies on long-term aspects from local insights to global aspects, and to develop our next research agenda and further collaborations.

Overall structure:

◆ ILTER Symposium (24/09)

ILTER Science: Findings and Opportunities (Moderator: Hideaki Shibata)

Keynote talks

- **Michael Bahn** (Institute of Ecology, University of Innsbruck): Effects of changing land use and climate on grassland biogeochemistry in the Austrian Alps
- **Giuseppe Arduino** (International Hydrological Programme (IHP), UNESCO): UNESCO International Hydrological Programme – Ecohydrology, engineering harmony for a sustainable world
- **Mark Sutton** (NERC Centre for Ecology and Hydrology, UK): Nitrogen cycle – LTER challenges and INI perspectives

ILTER–Italy: Progress and contribution to ILTER (Moderator: Giorgio Mattiucci)

- **Giorgio Matteucci** (LTER Italy Coordinator, CNR, Italy): LTER Italy: a really trans-domain, trans-disciplinary LTER network
- **Antonello Provenzale** (Director of the Inst. of Geosciences and Georesources, CNR, Italy): Long-term ecological research at the Gran Paradiso National Park (GPNP), Italy
- **To be announced:** Research and Results from a LTER site in Italy

◆ LTER-Europe Symposium (Moderator: Stephan Klotz) (24/09)

- **Stefan Klotz** (Helmholtz Centre for Environmental Research): Introduction
- **Michael Mirtl** (Environment Agency Austria): eLTER European Backbone infrastructure for integrated long-term ecosystem, critical zone and socio-ecological system research
- **Ingolf Kuehn** (Helmholtz Centre for Environmental Research): Aims and challenges of the scientific analyses of long-term ecological research
- **Dario Fornara** (Agri-Food & Biosciences Institute): Long-term ecological research on soil carbon sequestration: evidence from three European grassland experiments
- **Mark Frenzel** (Helmholtz Centre for Environmental Research): Long-term bee and bird communities observation in agricultural landscapes: what are the drivers of temporal changes?
- **Martin Forsius** (Finnish Environment Institute): Changes in retention of sulphur and nitrogen compounds at 18 European LTER/ICP IM SITESin
- **Mathias Kuemmerlen** (Senckenberg Research Institute and Natural History Museum Frankfurt): Insights from long-term monitoring data in freshwater species distribution models: predictions for stream
- **Alessandra Pugnetti** (CNR ISMAR): Riding through ecosystems and biodiversity: long-term Italian ecosystem research for the citizens
- **Halada Ľuboš** (Institute of Landscape Ecology): LTSEr platform Poloniny (Slovakia) Undergoes significant changes

◆ Poster session (Moderator: Johan Pauw) (24/09)

Poster presentations are invited to highlight one or more of the following ILTER science approaches -

- (A) Network-level science
- (B) Socio-ecological or transdisciplinary network science
- (C) Multi-network, collaborative science
- (D) New perspectives on ILTER, including methodologies, approaches, etc.

Posters should illustrate how ILTER science has:

- (A) Improved understanding of continental and global ecosystems and informed solutions to current and future environmental problems
- (B) Addressed one or more of ILTER's 10-year goals which are:
 1. Foster collaboration and coordination among socioeconomic and ecosystem researchers and research networks at local, regional and global scales
 2. Improve comparability of data from LTER sites around the world, and facilitate exchange and preservation of this data
 3. Deliver scientific information to scientists, policymakers, and the public to meet the needs of decision-makers at multiple levels
 4. Facilitate education of the next generation of LTER scientists

◆ ILTER Workshops

- ILTER Nitrogen Initiative (Moderator: Hideaki Shibata) (24-25/09)
- ILTER Carbon Initiative (Moderator: Tiffany Troxler (co-chair Jim Penman)) (24/09)
- EcoHydrology (Moderator: Kinga Krauze) (25/09)
- Litter decomposition project (Moderator: Ika Djukic) (25/09)
- ILTER-PECS linkage (Moderator: Manual Maass) (25/09)
- Wicked problem (Moderator: Patrick Bourgeron) (25/09)

Note: Sep 24th will be at EEF, Congress Center of Rome EUR; Sep. 25th will be at CNR Headquarters, Rome Center (close to Central Station)

ILTER Rome 2015 **SCIENCE DAYS** Program (updated July 16th)

	September 24th (Thursday)		September 25th (Friday)		
	Room A	Room B	Room A	Room B	Room C
8:30 - 8:45	1		7		
8:45 - 9:00	ILTER		ILTER workshop – Opening & Keynote		
9:00 - 9:15	Europe		(Hideaki Shibata)		
9:15 - 9:30	Session		Introduction and key questions of breakour groups by group leaders		
9:30 - 9:45	I				
9:45 - 10:00	(Stephan Klotz)				
10:00 - 10:15	Coffee brake		Coffe brake		
10:15 - 10:30					
10:30 - 10:45	ILTER				
10:45 - 11:00	Europe		BREAKOUT GROUPS		
11:00 - 11:15	Session		BREAKOUT GROUPS		
11:15 - 11:30	II		<i>Litter decomposition</i>		
11:30 - 11:45	(Stephan Klotz)		<i>Eco-Hydrology</i>		
11:45 - 12:00			(Ika Djukic)		
12:00 - 12:15	EEF Plenary Session		(Kinga Krauze)		
12:15 - 12:30					
12:30 - 12:45	2		Lunch		
12:45 - 13:00	Poster Session				
13:00 - 13:15	(Johan Pauw)				
13:15 - 13:30					
13:30 - 13:45	3				
13:45 - 14:00	ILTER-Nitrogen Initiative		BREAKOUT GROUPS		
14:00 - 14:15	<i>Strategic meeting</i>		BREAKOUT GROUPS		
14:15 - 14:30			<i>N-Initiative I</i>		
14:30 - 14:45	(Hideaki Shibata)		<i>ILTER-PECS</i>		
14:45 - 15:00	4 (OPEN Workshop)		BREAKOUT GROUPS		
15:00 - 15:15	Carbon ILTER INITIATIVE		<i>Wicked problem</i>		
15:15 - 15:30			(Patrick Bourgeron)		
15:30 - 15:45	(Tffany Troxler)				
15:45 - 16:00	Coffee break		Coffee break		
16:00 - 16:15					
16:15 - 16:30	5		BREAKOUT GROUPS		
16:30 - 16:45	ILTER Symposium		BREAKOUT GROUPS		
16:45 - 17:00	ILTER findings and partnership		<i>N-Initiative II</i>		
17:00 - 17:15			<i>Carbon I nitiative II</i>		
17:15 - 17:30	Three keynote speakers & discussion		(Hideaki Shibata)		
17:30 - 17:45	(Hideaki Shibata)		(Tffany Troxler)		
17:45 - 18:00			Workshop Synthesis & Closed		
18:00 - 18:15	6		(Manuel Maass)		
18:15 - 18:30	Italy LTER presentations				
18:30 - 18:45	(Giorgio Mattuecci)				
18:45 - 19:00					
19:00 - 19:15					
19:15 - 19:30					

Overall program for symposium and workshop

ILTER Symposium, “ILTER Science: Findings and Opportunities”

Moderator: Hideaki Shibata and Giorgio Matteucci

Date: 24/09/2015

Scope: Long-Term Ecological Research (LTER) is a powerful research framework to understand dynamic behaviors of various ecosystems locally, regionally and globally. ILTER is an expanding global network (38 member networks with over 700 LTER sites) focusing on various ecological, environmental and socio-ecological research topics. This symposium will provide great opportunity to share the recent research findings, on-going programs and new research initiatives performed on the ILTER platform with the partnership programs of ILTER locally, regionally and globally. A number of Italy LTER studies will be also presented as a national case study in this symposium. We welcome all of the participants (senior and young researchers, postdoc and graduate and undergraduate students) who are interested in the LTER activity and the related research activities.

Speaker:

Keynote talks: Michael Bahn (Institute of Ecology, University of Innsbruck), Giuseppe Arduino (International Hydrological Programme (IHP), UNESCO), Mark Sutton (NERC Centre for Ecology and Hydrology, UK)

LTER-Italy: Several oral presentations on Italy LTER studies

LTER-Europe Symposium

Moderator: Stephan Klotz

Date: 24/09/2015

Scope: Long-Term Ecological Research is an essential component of world-wide efforts to a better understanding of ecosystems. Observation, monitoring and experimentation specifically address present research challenges. The symposium includes presentations on general observation and monitoring strategies and case studies from national LTER networks in Europe.

Speaker: Stefan Klotz (Helmholtz Centre for Environmental Research), Ingolf Kuehn (Helmholtz Centre for Environmental Research), Dario Fornara (Agri-Food & Biosciences Institute), Mark Frenzel (Helmholtz Centre for Environmental Research), Martin Forsius (Finnish Environment Institute), Mathias Kuemmerlen (Senckenberg Research Institute and Natural History Museum Frankfurt), Alessandra Pugnetti (CNR ISMAR), Halada Ľuboš (Institute of Landscape Ecology)

ILTER Nitrogen Initiative workshop

Moderator: Hideaki Shibata

Date: 24 and 25/09/2015

Scope: Nitrogen is an essential nutrient for ecosystem, but become source of pollutant at the excess N use by human activity. Nitrogen pollution is a key global and regional environmental issue that already exceed planetary boundary. The ILTER-N Initiative is one of the leading research initiatives working on the ILTER platform with international collaboration of the site-based studies. The ILTER Nitrogen Initiative has been organized to foster the various nitrogen-related researches since 2011 through several workshops with publication of review paper (Shibata et al.2015: AMBIO 44(3):178-193). The ILTER-N initiative is now conducting global comparative or meta-analysis on key research topics on nitrogen issues in ecosystems

with long-term aspects based on the field observation data in each LTER site in various climate and biomes. The series of session is prepared to share and discuss the current achievement and future strategies including the linkage to training program for young generation. Those who are interested in these activities are welcomed to join us. We will have three sessions with a couple of short presentations and interactive discussion among participants:

- *Strategic workshop*: Reviewing and planning the initiative activity (Thursday afternoon)
- *Workshop I*: Global comparison of case studies (Friday afternoon)
- *Workshop II*: Linkage to the ILTER international training program (Friday afternoon)

Speaker: Hideaki Shibata (Japan LTER), Peter Groffman (US-LTER), Cristina Branquinho (Portugal LTER) and other key members in the ILTER-N Initiative global analysis team (TBD)

ILTER Carbon Initiative workshop

Moderator: Tiffany Troxler (co-chair Jim Penman)

Date: 24/09/2015

Scope: The ultimate objective of the Climate Change Convention (UNFCCC) is to achieve "... stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system." Estimating the levels of greenhouse gas (GHG) emissions and removals through GHG inventories is an important element of the efforts to achieve this objective. The goal of this workshop is to present the context for a framework and mechanism to support this objective in the areas of agricultural and land use and land-use change, and increase capacity around the globe to produce inventories that are "neither over nor underestimates and reduce uncertainties as far as practicable" (IPCC 2000). Through integration, we can broaden the societal relevance of international carbon networks and ILTER to achieve stabilization of GHG and address environmental issues at national and global scales. The IPCC Task Force for National Greenhouse Gas Inventories (TFI) develops national-scale greenhouse gas (GHG) methodological guidance in documents requested by governments through the United Nations Framework Convention on Climate Change (UNFCCC). The TFI hosts a database or "evolving library" of data (Emission Factor Database), including country-specific data that is used to improve the quality of greenhouse gas (GHG) inventories. The potential for synergies created by linkages between efforts like that being conducted by the IPCC, the ILTER Network and international carbon networks is phenomenal.

Speaker:

Annette Freibauer – Overall policy needs/inventory reporting/accounting

Martin Forsius (TBC) ILTER speaker – ILTER network, and data to address adaptation needs to support ecosystem services with a changing climate

TBC – Global carbon science data needs

Francesco Tubiello – Increasing capacity for GHG inventories

ILTER-PECS linkage

Moderator: Manuel Maass

Date: 25/09/2015

Scope: Program for Ecosystem Change and Society (PECS) is a new initiative fostered by the International Council for Science (ICSU) within its Global Change Framework aiming to integrate research on the stewardship of socio-ecosystems by understanding the flux of services and control factors that modulate

their dynamic. Due to their multiple overlapping theoretical interests and applied activities, we have proposed that the ILTER network and PECS are natural partners which can work synergistically towards their shared objectives and goals. On this framework, a group of 15 LTER sites have been exploring a coordinated effort to contribute to the understanding of how policies and technologies drive either towards or away from the sustainable delivery of ecosystem services. This effort is based on three tenets: trans-disciplinary research; cross scale interactions and subsequent dynamics; and an ecological stewardship orientation. The overarching goal is to design management practices taking into account trade-offs between using and conserving ecosystems towards more sustainable solutions. The workshop objectives are 1) Review the conceptual approach outlined to linking ecosystem integrity, ecosystem services and stakeholder well-being, and as a way to analyze trade-offs among ecosystem services inherent in diverse management options, and 2) Review the strategy and methodological approach which includes:

- a) Monitoring and synthesis activities following spatial and temporal trends and changes on each site and by documenting cross-scale interactions;
- b) Developing analytical tools for integration;
- c) Promoting trans-site comparison; and
- d) Developing conceptual tools to design adequate policies and management interventions to deal with trade-offs.

EcoHydrology

Moderator: Kinga Krauze

Date: 25/09/2015

Scope: Due to the number of factors: growth of human population, climate variability, increasing demand for resources and related environmental degradation, and economic instabilities due to broadly understood conflicts, water security in many parts of the world cannot be guaranteed in long term. The problem has been recognized internationally and addressed by global initiatives such as UNESCO International Hydrological Programme or UNDP Water Governance Security Programme. Simultaneously, both researchers and practitioners started to seek the solutions to water problems, which are economically feasible, ecologically efficient, and societally acceptable. The key issues became understanding of dependencies of society on water systems exposed to increasing stress and ways of achieving water security at all scales – local, regional and global, through development of respective systemic solutions. Current approach to the issues is threefold. First, water governance aspects attract more and more attention, especially: equity and efficiency in water resource and services allocation and distribution; IWM; water administration; relevance of policies, legislation and institutions; and clarification of the roles and responsibilities of government, civil society and the private sector. Secondly, it became critical to quantify ecosystem processes as relying on water – biota mutual regulation, to understand how the regulatory feedbacks will change under variety of pressures – both locally and globally, and how the regulation can be reinforced through nature-based solutions and harmonizing engineering, technology and green infrastructure. That approach is e.g. promoted by Ecohydrology Programme of UNESCO IHP. Thirdly, it became inevitable to develop societal tools and mechanisms to maximize the co-benefits that sustained water provides our regional social – ecohydrological - technological systems (socio-ecohydrological context). We believe that ILTER as a unique network acting across space, scales, and research domains, and able to deliver synthesis of the long term data recording co-evolution and mutual dependencies of social, economic and ecological components of socio-ecological systems, has a potential to become an important partner in research and actions focused on water security and sustainability.

Litter decomposition project**Moderator:** Ika Djukic**Date:** 25/09/2015

Scope: Litter decomposition represents one of the largest fluxes in the global terrestrial carbon cycle and it is strongly driven by nutrient status, litter quality and climatic conditions. Therefore, any climatic and environmental changes pose a reciprocal influence. Understanding of these changes have been investigated over recent decades by a large number of the large-scale decomposition experiments taking into account the effects of substrate quality, macroclimate, nutrient dynamics as well as biological diversity on long-term decomposition. However, the comparison of similar data across different experiments still poses a major challenge due to lack of common protocols and standard matrices. Moreover, there is a need for higher resolution measurements with better global coverage in order to increase the predictor power of the models. This workshop aims to introduce the use benefits of a common matrix (i.e. tea bag-index) in a coordinated decomposition study across ILTER sites combined with existing ILTER data bases for mapping and comparison of global soil function between sites and experimental treatments. The main focus of this coordinated study is to provide data to calibrate and validate models, which will help us to better understand key processes of the carbon cycle and how they differ under different climate or land-use scenarios relevant to decision-making and policy.

Speaker: Views from experimental and model perspectives shall be provided by tree speakers and ensuing discussion

Wicked problem: The emergence of wicked problems in coupled human and natural systems: contributions of the ILTER to a partnership

Moderator: Patrick Bourgeron**Date:** 25/09/2015

Scope: Sustainability of coupled human and natural systems (CHANS) requires policy and management strategies that consider both change in different domains (e.g., ecological, socio-economic, cultural) at different spatio-temporal scales and their impact internally and externally to the considered system. Environmental issues in CHANS can be characterized as wicked problems when: there is no single definition of the issues; no definitive and optimal solution exists; and proposed solutions create unintended secondary problems at different spatio-temporal scales and in different domains. Because wicked problems always occur in a social context, they have been largely overlooked by natural scientists.

The goal of the workshop is to characterize the contributions of the ILTER to the existing partnership on the study of wicked problems focusing on: the development of a general CHANS framework that includes the interactions between environmental and socio-economic dynamics, and the forecast of the effects of these interactions on CHANS dynamics, ecosystem services and sustainability; the characterization of wicked problems across the globe and of their potential interactions; the formulation of a process to identify when an environmental issue becomes a wicked problem; and outlining the implications for ecosystem management. The workshop will be open to non LTER groups and projects willing to join the existing partnership.