NextData-LTER-Mountain

Standard e armonizzazione di dati eco-biologici da siti montani della Rete LTER – Italia

Risultati 2014-2015

Piano di lavoro 2017 (2018)

Incontro NextData 24 Gennaio 2017 – CNR - Roma

Proposal for a research project Data-LTER-Mountain

Harmonisation and standards for existing and newly collected Data and MetaData on LTER sites in Italian Mountain ecosystems

Proposing Consortium: CNR-IBAF, CNR-IREA, CNR-ISE, Univ. of Torino, Univ. of Molise, Univ. of Parma

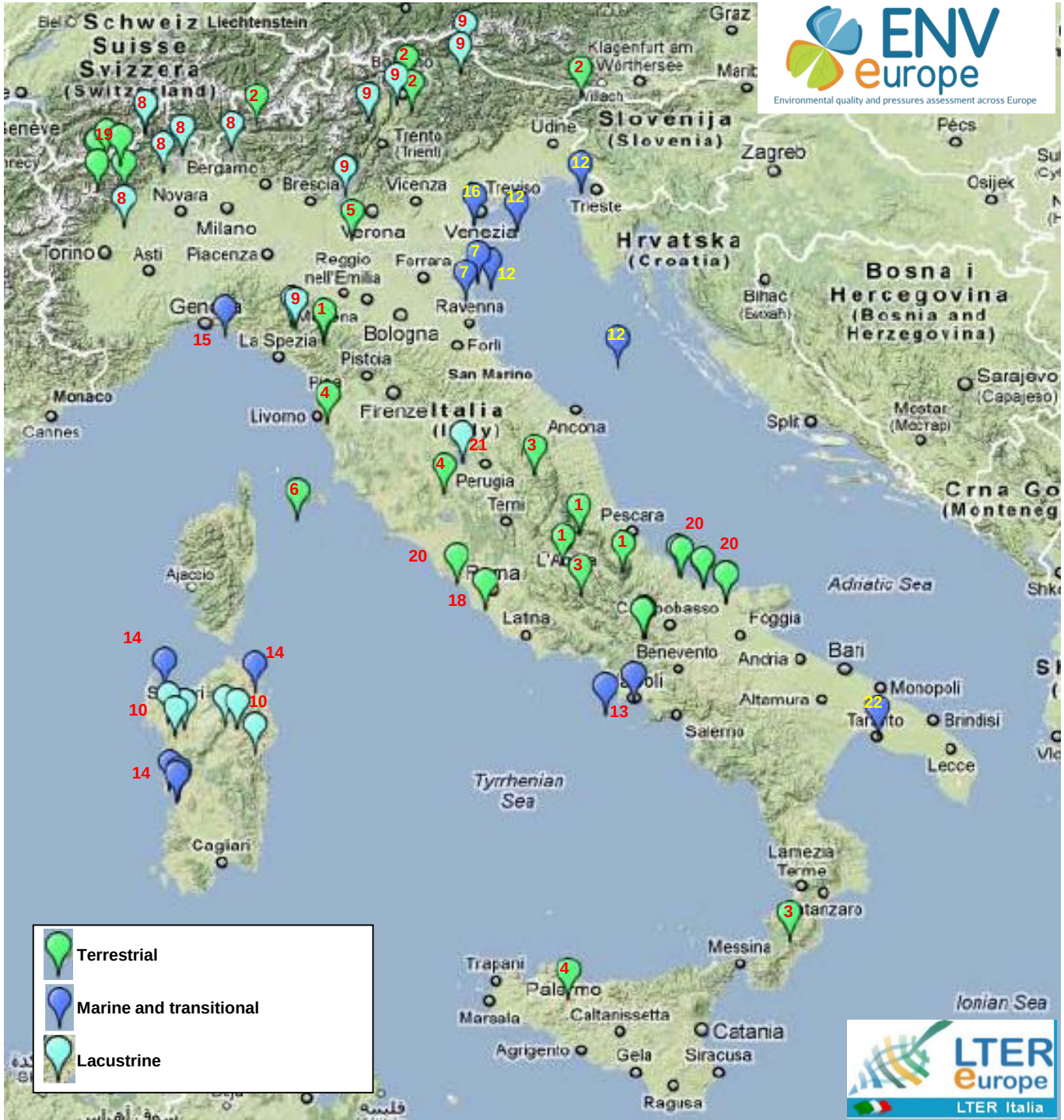
Scientific Coordinator: Giorgio Matteucci

Scientific Responsibles of Research Units:
Paola Carrara – CNR-IREA
Michela Rogora – CNR-ISE
Michele Freppaz – Univ. of Torino
Angela Stanisci – Univ. of Molise
Giampaolo Rossetti – Univ. of Parma

Motivations for the project Data-LTER-Mountain

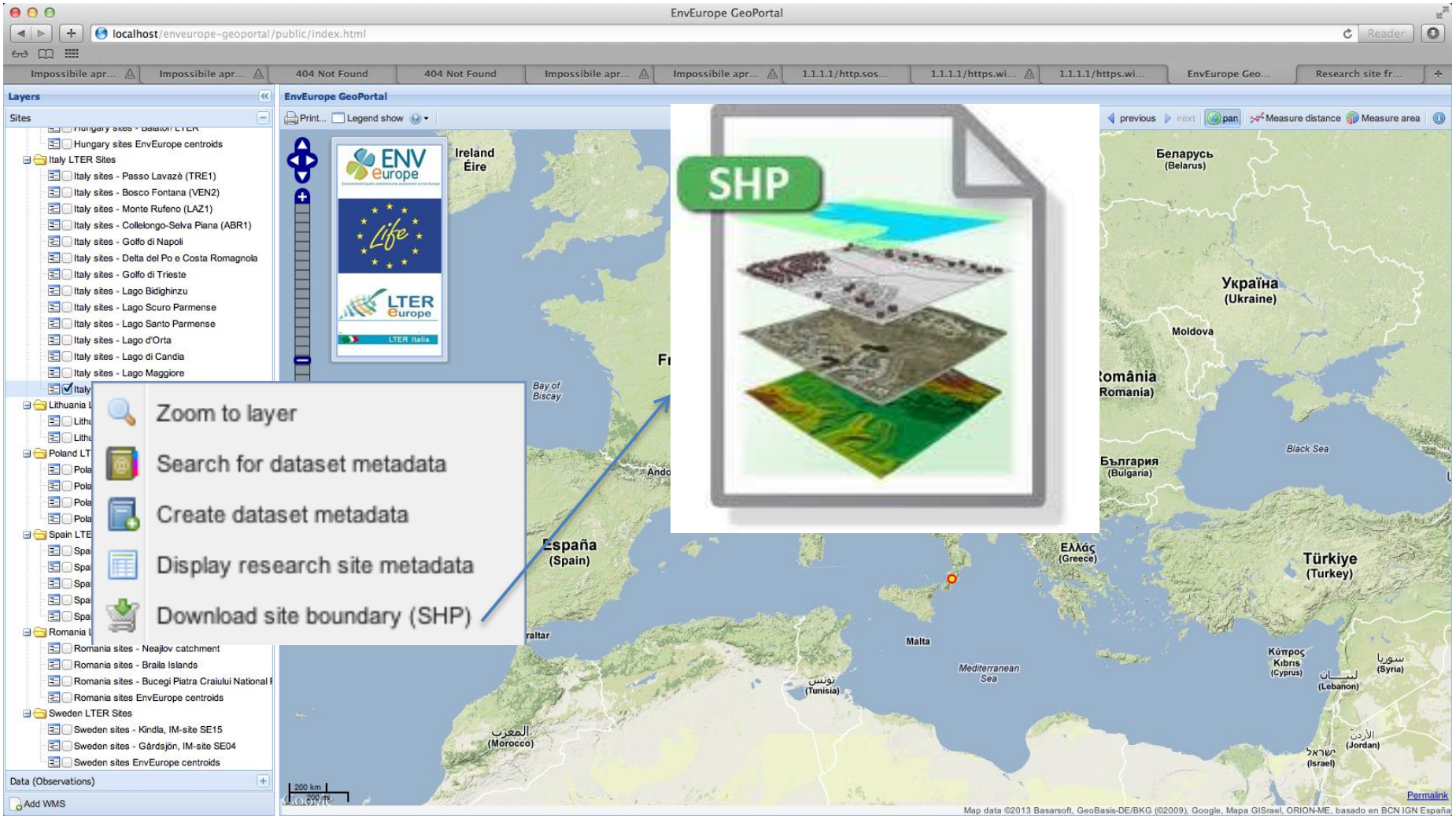
The proposed project, starting from activities recently started (EnvEurope – LTER Europe), **will propose and implement data- and metadata-set solutions for ecological and biological variables** collected in mountain ecosystems in Italy.

A **specific data/metadata management system will be developed for mountain sites**, according to defined standards and models. It will allow **data discovery, access and geoviewing.**



Consiglio Nazionale
delle Ricerche

Integrazione/uso degli strumenti per la gestione dati realizzati in EnvEurope



Task 1. Data tools and standards

Deliverables

1. Evaluation of the existing data standards/models and of partners practices
   Type: report
   Month 3
2. Definitions of standards and models for biological and ecological data and metadata collected in mountain sites
   Type: report
   Month 6
3. Data and metadata systems, according to defined standards and models, in connection to NextData tools
   Type: tools for metadata entry and discovery; services for dataset storage and delivery
   Month 9
   Type: discovery and geoviewing online tools
   Month: 14, 21

Milestones

a. Standards and models for data and metadata defined
   Month 6
b. Data system developed (three stages: empty tools, archives with basic variables, archives with bio-eco variables)
   Month 9, 14, 21

Task 2. Data and metadata from mountain ecosystems: test cases from LTER Italy sites in mountain ecosystems

Deliverables

1. Description of the sites
   Type: Report
   Month 3
2. Site metadata available in the Data-LTER-Mountain data system
   Type: data entry, brief report
   Month 10
3. Data- and metadata-sets of basic variables
   Type: data and metadata set
   Month 10, month 21
4. Data- and metadata-sets of ecological and biological variables
   Type: data and metadata set
   Month 14, month 21
5. Analysis of the effects of a common driver/impact on mountain LTER sites
   Type: scientific analysis and report
   Month 21

Milestones

a. Selection of the sites
   Month 2
b. Provision of data- and metadata-sets of basic variables
   Month: 10, 21
c. Provision of data- and metadata-sets of ecological and biological variables
   Month: 14, 21

Task 1 e Task 2
Risultati ottenuti

Verifica, aggiornamento e normalizzazione dei metadati dei siti, delle persone e dei relativi dataset, nelle facility IT di LTER Europe (DEIMS), per i siti lacustri e terrestri LTER in NextData.

Inserimento dei metadati di dataset nelle facility IT di LTER Europe (DEIMS) in 10 simple site, per un totale di nuovi 71 metadati di dataset.

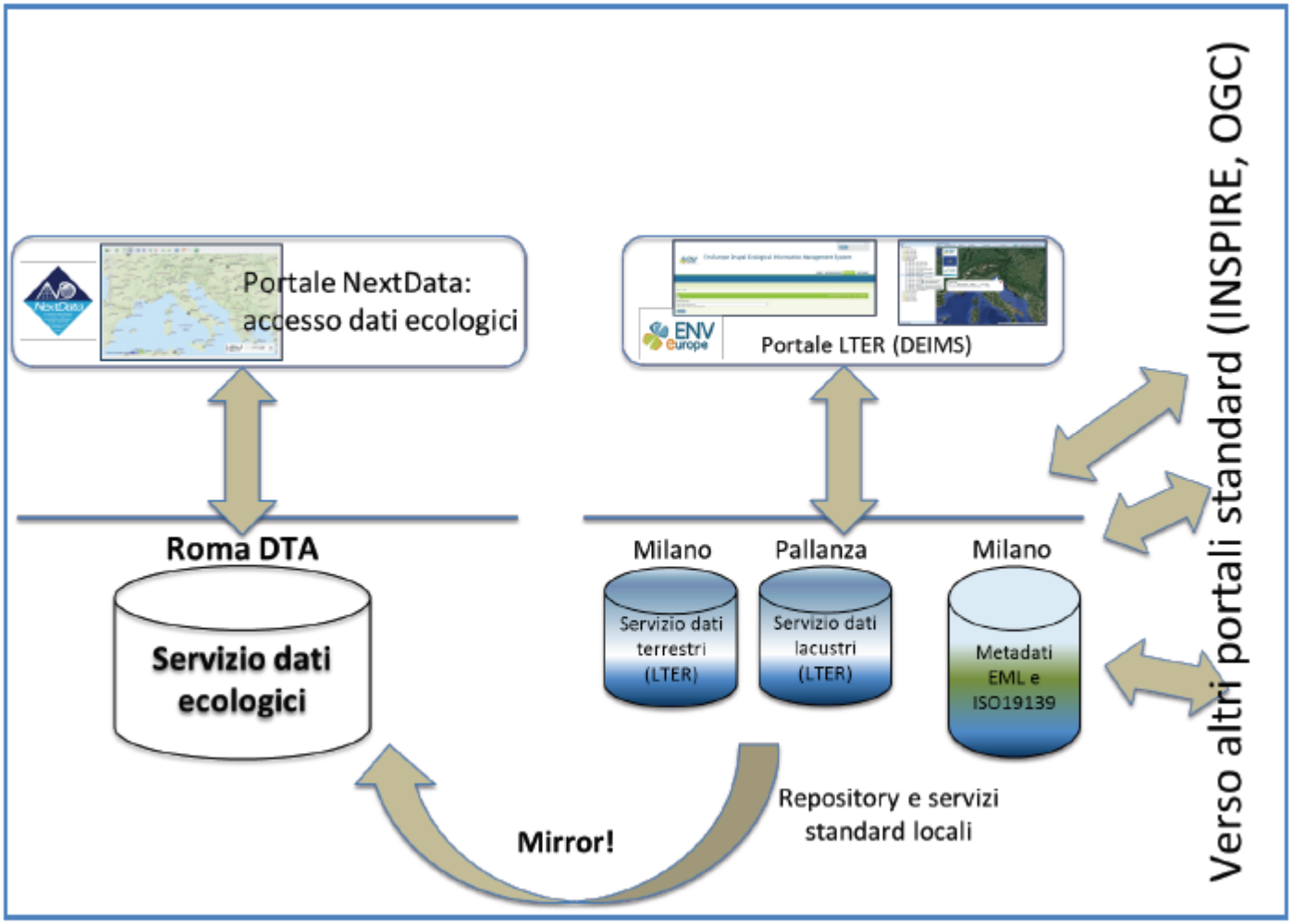
Creazione di un infrastruttura interoperabile distribuita costituita da due nodi, CNR-ISE di Pallanza relativo agli archivi e ai servizi sui dati lacustri (http://sk.ise.cnr.it), CNR IREA di Milano per gli archivi e servizi sui dati terrestri (http://nextdata.get-it.it) e connessione dei due nodi al DEIMS.

Attivazione delle interfacce SOS per i nodi di Pallanza e Milano.

Inserimento di 71 nuovi dataset all'interno dei due nodi.

Creazione di un servizio di catalogo CSW compatibile INSPIRE per i metadati di dataset della rete LTER Europe (http://155.253.20.42:8080/geonetwork/).

Architettura del sistema di dati e metadati – CNR - IREA



Armonizzazione dei metadati – sistema DEIMS

Parent Site	Simple Site	Long Name	Metadata Dataset - Inizio Progetto	Metadata Dataset - Fine Progetto
IT01- Apennines - High elevation Ecosystems	LTER_EU_IT_025	Appennino centrale: Velino-Duchessa	NO	YES
	LTER_EU_IT_022	Appennino centro-meridionale: Majella-Matese	NO	YES
	LTER_EU_IT_023	Appennino settentrionale	NO	YES
	LTER_EU_IT_021	Appennino centrale: Gran Sasso d'Italia	NO	YES
IT02-Forests of the Alps	LTER_EU_IT_027	Passo Lavazè TRE1	NO	NO
	LTER_EU_IT_029	Renon BOL1	NO	NO
	LTER_EU_IT_028	Val Masino LOM1	NO	NO
	LTER_EU_IT_026	Tarvisio FRI2	YES	YES
	LTER_EU_IT_085	Valbona	NO	NO
IT03-Forest of the Apennines	LTER_EU_IT_032	Piano Limina CAL1	NO	NO
	LTER_EU_IT_033	Montagna di Torricchio	NO	NO
	LTER_EU_IT_031	Collelongo-Selva Piana ABR1	NO	YES
IT09-Mountain Lakes	LTER_EU_IT_046	Lago Santo Parmense	YES	YES
	LTER_EU_IT_047	Lago Scuro Parmense	YES	YES
	LTER_EU_IT_088	Lago Paione Inferiore	NO	YES
	LTER_EU_IT_089	Lago Paione Superiore	NO	YES
IT19-Western Alps (High Elevation)	LTER_EU_IT_076	Istituto Scientifico Angelo Mosso (MOSSO)	NO	YES
	LTER_EU_IT_077	Comune di Torgnon (Tellinod)	NO	YES

Tabella 2: Presenza dei metadati dei dataset in DEIMS alla data di inizio (ottobre 2014) e fine progetto (ottobre 2015). In arancione è evidenziata l'assenza di metadati dei dataset.

Dati inseriti nel sistema

Laghi, nodo Pallanza

SITO	PARAMETRO	RANGE TEMPORALE
Lake Scuro	Chlorophyll	1986-2009
	Ammonium	1986-2009
	Nitrate	1986-2009
	Reactive Phosphorus	1986-2009
	Optical visibility in the water column	1986-2009
	Silica	1986-2009
	pH	1986-2009
Lake Santo	Chlorophyll	1973-2010
	Ammonium	1973-2010
	Nitrate	1953-2010
	Reactive Phosphorus	1953-2010
	Optical visibility in the water column	1971-2010
	Reactive Silica	1953-2010
	Water Temp	1951-2010
	Dissolved oxygen	1952-2010
	pH	1971-2010
	Ammonia	1953-1954
Lake Paione superiore	Cations	1984-2013
	Anions	1984-2013
	Electrical conductivity	1984-2013
	pH	1984-2013
	Total alkalinity	1984-2013
	Total Nitrogen	1984-2013
	Ammonium	1984-2013
	Total Phosphorus	1984-2013
	Reactive Phosphorus	1984-2013
	Reactive silica	1984-2013
	Nitrate	1984-2013
Lake Paione inferiore	Cations	1984-2013
	Anions	1984-2013
	Electrical conductivity	1984-2013
	pH	1984-2013
	Total alkalinity	1984-2013
	Total Nitrogen	1984-2013
	Ammonium	1984-2013
	Total Phosphorus	1984-2013
	Reactive Phosphorus	1984-2013
	Reactive silica	1984-2013
	Nitrate	1984-2013

Tabella 5: Dataset inseriti nel nodo di Pallanza distinti per località, parametro e range temporale.

Siti terrestri, nodo Milano

SITO	PARAMETRO	RANGE TEMPORALE
Istituto Scientifico Angelo Mosso, Sites 1 -3 - 5	Soil temperature	2008-2014
	Snow Cover Duration	2008-2012
	Nitrate	2008-2012
Comune di Torgnon (Tellinod)	Soil Temperature	2010-2015
Appennino centro-meridionale: Majella-Matese, Sites FEM, MAC, MAM, MT1, MT2 - EAST, NORTH, SOUTH, WEST	Soil Temperature	2008-2015
Collelongo-Selva Piana ABR1	Soil Temperature	2008-2015

Tabella 6: :Dataset inseriti nel nodo di Milano distinti per località, parametro e range temporale.

Visualizzazione e accesso ai dataset – GET-IT

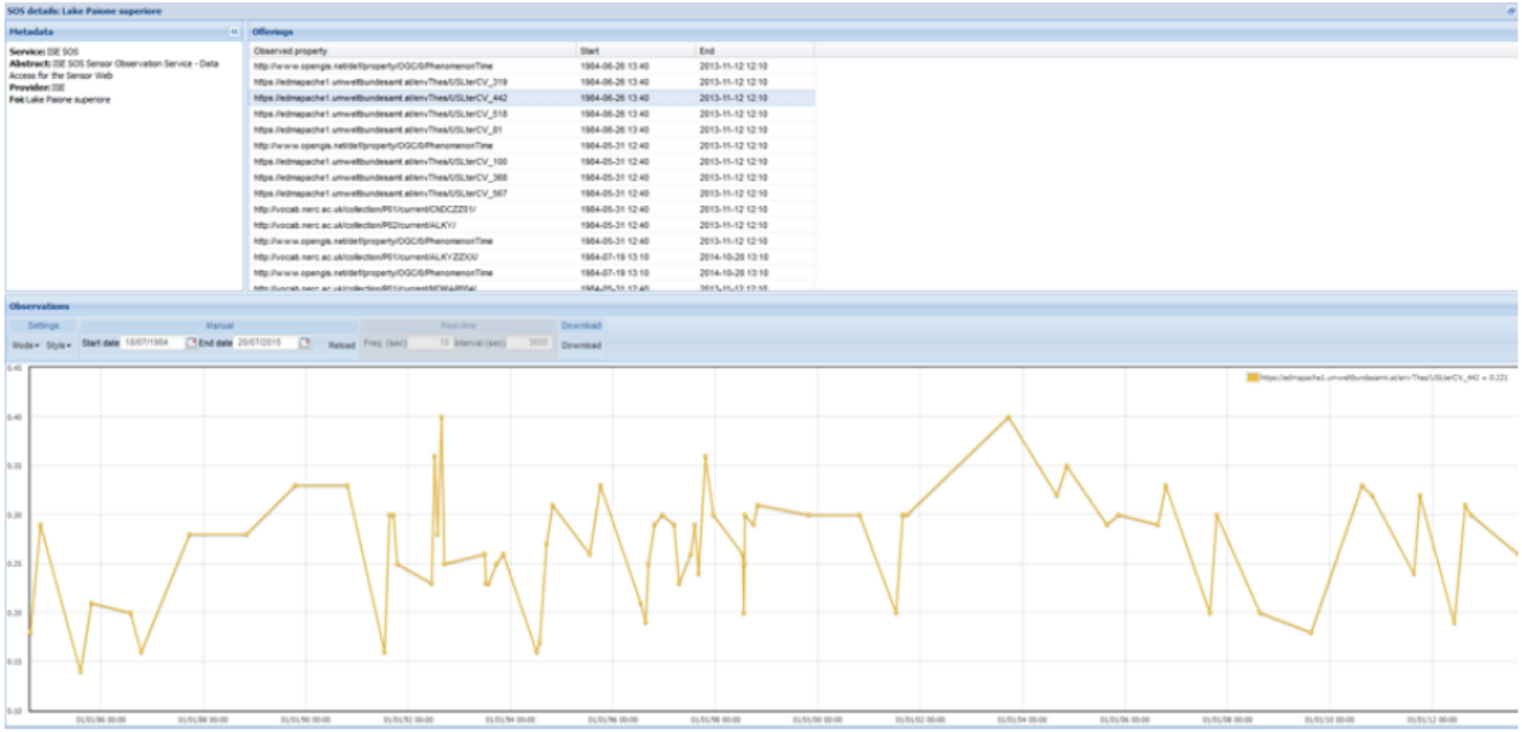


Figura 3: Interfaccia grafica di visualizzazione dei valori del parametro concentrazione di potassio (mg/l), raccolto tra agosto 1984 e novembre 2013 nel sito Lago Paione Superiore e distribuito dal nodo di Pallanza.

Ricerca dati – Geonetwork Opensource

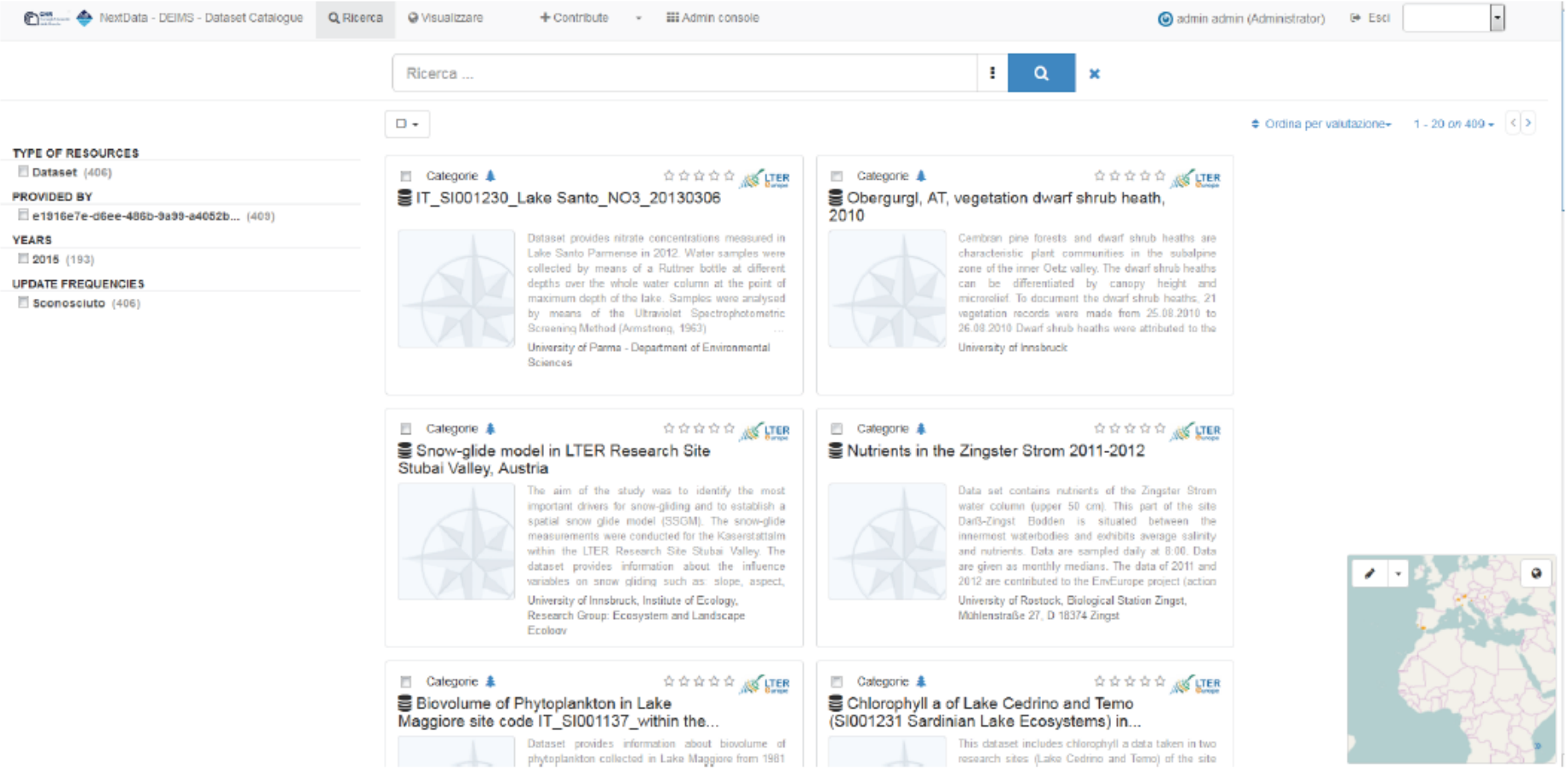
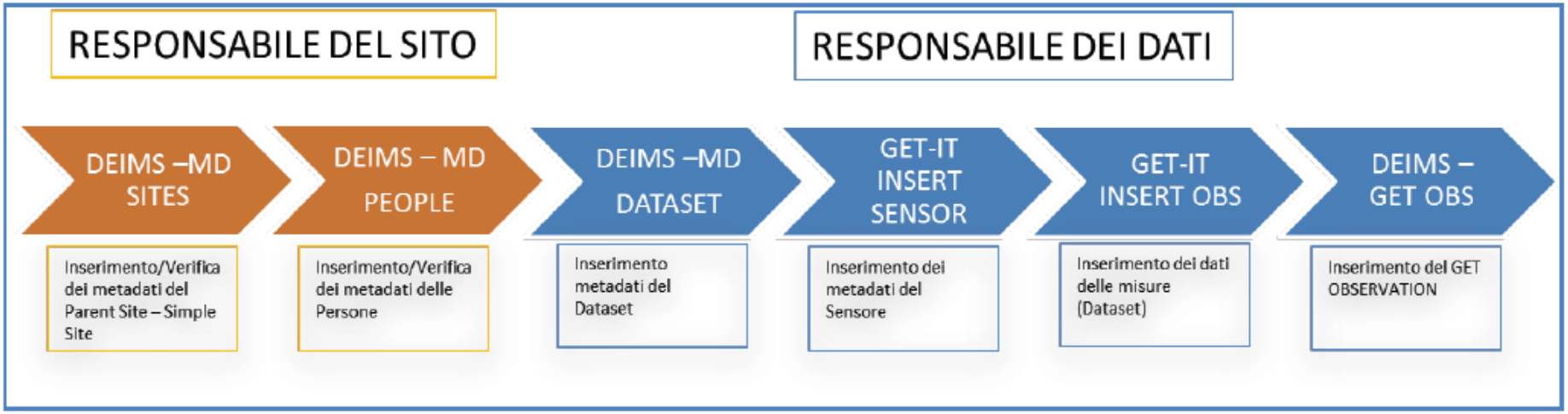


Figura 5: Interfaccia di ricerca tramite GeoNetwork Opensource dei metadati dei dataset presenti in DEIMS.

Workflow dati osservativi rete LTER Italia



Task 2. Data and metadata from mountain ecosystems: test cases from LTER Italy sites in mountain ecosystems

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Milestones

a. Selection of the sites
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   Month: 10, 21
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   Month: 14, 21

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DOI: 10.1007/s10021-015-9914-5

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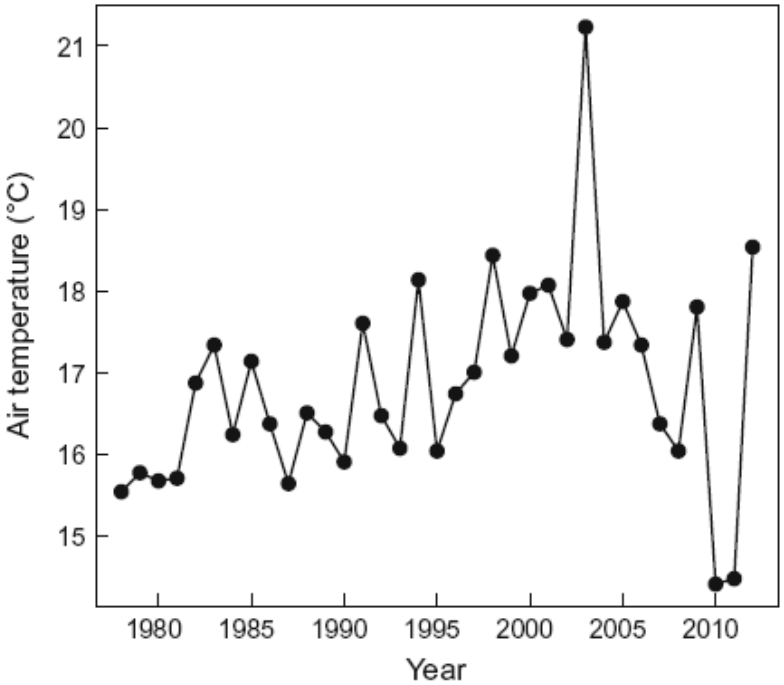
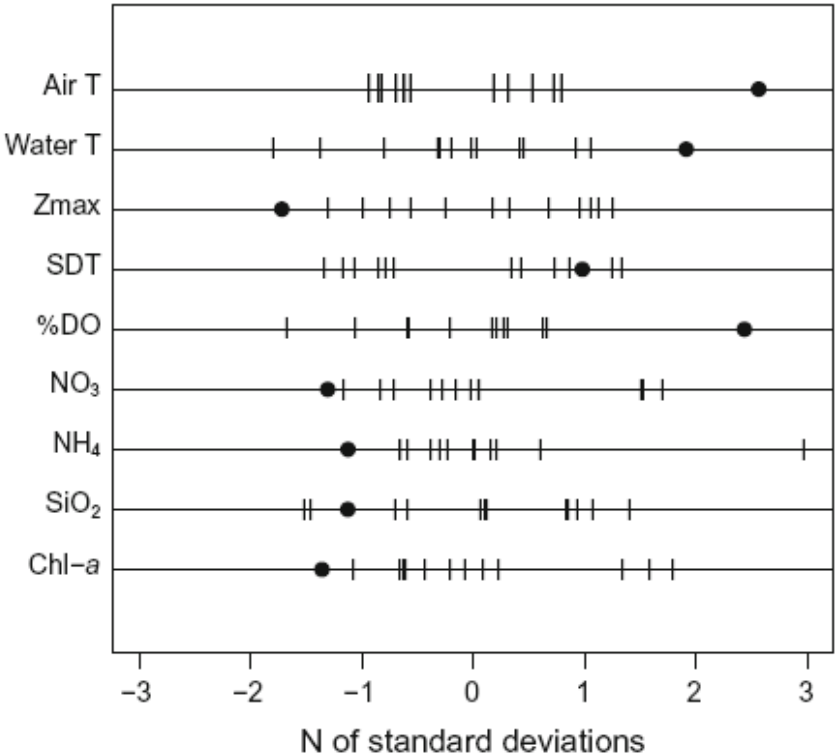
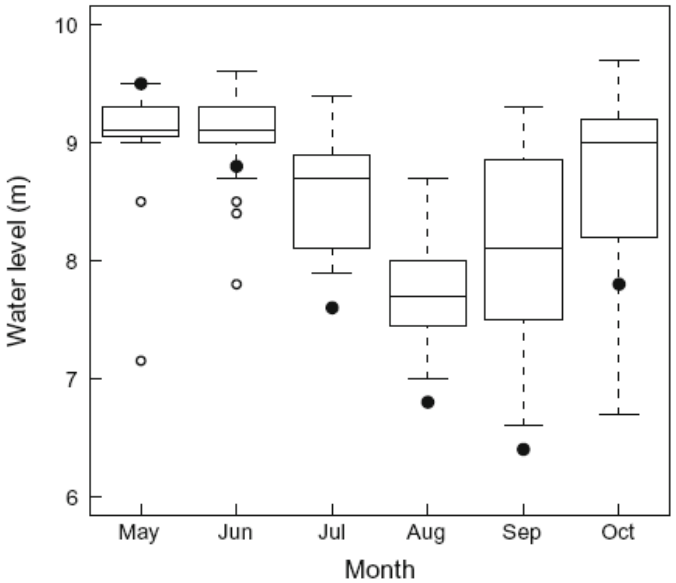
Extreme Climatic Event Triggers a Lake Regime Shift that Propagates Across Multiple Trophic Levels

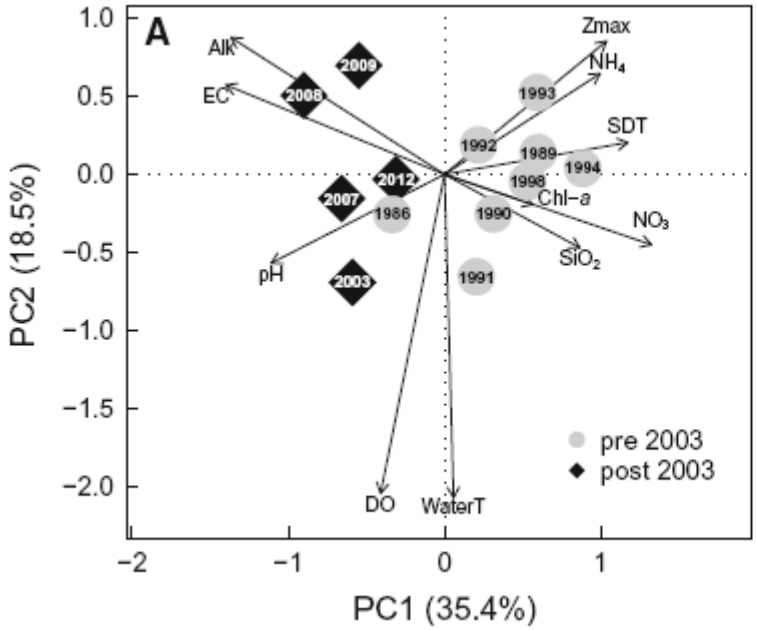
Isabella Bertani,[1,3]* Raul Primicerio,[2] and Giampaolo Rossetti[1]

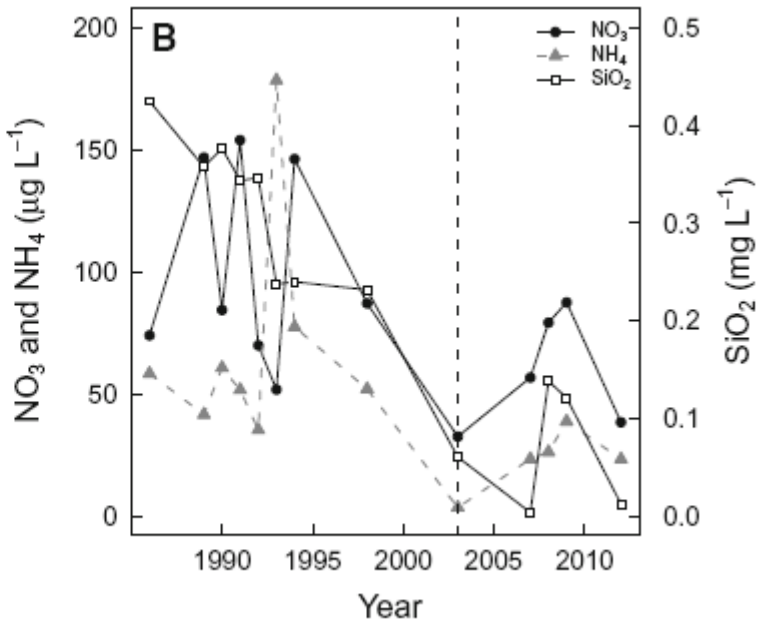

Air temperature (°C)
21
20
19
18
17
16
15
1980
1985
1990
1995
2000
2005
2010
Year


Air T
Water T
Zmax
SDT
%DO
NO3
NH4
SiO2
Chl–a
–3
–2
–1
0
1
2
3
N of standard deviations

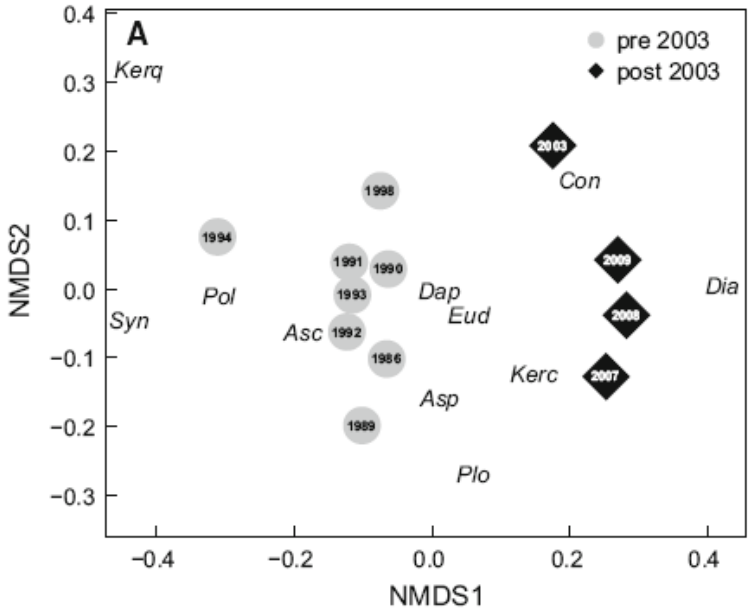

Water level (m)
10
9
8
7
6
May
Jun
Jul
Aug
Sep
Oct
Month

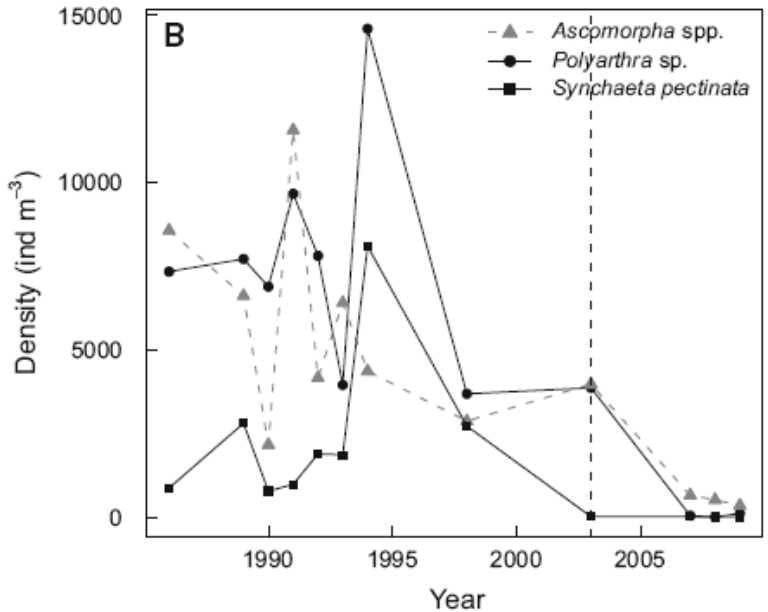
Dati chimici (in nero: post 2003, in grigio pre 2003)





Dati biologici: fauna (in nero: post 2003, in grigio pre 2003)





Presentazione di tutti i siti montani all'assemblea del Decennale di LTER - Italia

Progetto Speciale NEXTData-LTER-Mountain

Armonizzazione e standard per dati esistenti e di nuova raccolta e metadati su siti LTER in ecosistemi montani italiani

Nucleo: siti montani LTER Italia

Pratiche: strumenti di condivisione interoperabile dei dati creati per la comunità ecologica LTER Europa

Dati: dati (e metadati) dei siti montani di LTER Italia

Parent Site	Simple Site	Long Name
IT01-Apennines - High elevation Ecosystems	LTER_EU_IT_025	Appennino centrale: Velino-Duchessa
	LTER_EU_IT_022	Appennino centro-meridionale: Maella-Matese
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	LTER_EU_IT_029	Renon BOL1
	LTER_EU_IT_028	Val Masino LOM1
	LTER_EU_IT_026	TarvisioFRI2
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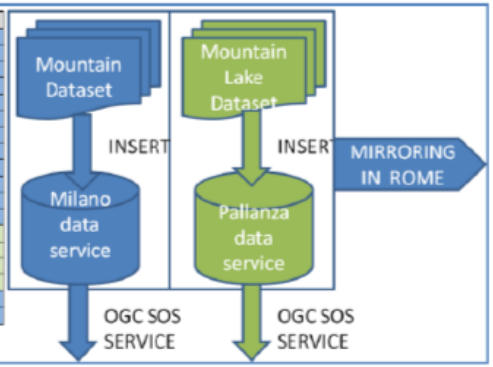
	LTER_EU_IT_077	Comune di Torgnon (Tellinod)



Carrara et al. Special Project "Data-LTER-Mountain". Deliverable 1 Task 1

Incontro NextData 24 Gennaio 2017 – CNR - Roma

Task 3. Collection of new data sets from LTER Italy sites in mountain ecosystems

Deliverables

1. Data- and metadata-sets of newly collected ecological and biological variables
   Type: data and metadata set
   Month 12, 21

Milestones

a. Collection of new data sets started
   Month: 6
b. Provision of data- and metadata-sets of ecological and biological variables
   Month: 12, 21

Piano per 2017 - 2018

✓ Estendere il modello di metadati e dati a tutti i siti di LTER Italia (e oltre – collegamento con eLTER H2020)

✓Inserire nel sistema anche i dati degli altri due progetti speciali del WP 1.7

✓Ampliare i dataset disponibili – monitoraggio in ecosistemi di alta quota

✓ Verificare ampliamento caso di studio (al momento in preparazione un lavoro per STOTEN)

✓ Analisi comune dei dati

✓ A supporto: rinnovare gli accordi tra Istituti CNR e con le Università, trasferimento risorse, ripartenza delle attività