

General information	SoilTrEC CZO	SoilTrEC CZO	SoilTrEC CZO	SoilTrEC CZO	SoilTrEC EU satellite site	SoilTrEC EU satellite site	
	Damma	Fuchsenbiel	Koiliaris	Lysina	Kindla	Plynlimon	
SoilTrEC contact person(s)	Stefano Bernasconi	Georg Lair Heide Spiegel (AGES)	Daniel Moraetis Fotini Stamatii	Pavel Kram Jakub Hruska (emergency only)	Lars Lundin	Brian Reynolds	
site manager	Stefano Bernasconi	Christian Katzlberger (AGES) Heide Spiegel (AGES) Christian Baumgartner (Donau-Auen)	Nikolaos Nikolaidis	Pavel Kram	Lars Lundin	Brian Reynolds Mark Robinson Simon Grant	
website	http://www.cces.ethz.ch/projects/clench/BigLink/	www.ages.at	www.koiliaris.tuc.gr	under development	http://info1.ma.slu.se/IM/station/Kind.html	https://gateway.ceh.ac.uk http://bangor.ceh.ac.uk/plynlimon/index.htm	
digital map	google monitoring stations	google	google soil monitoring stations water monitoring stations	Lysina & Pluhuv Bor catchments Lysina detail	monitoring stations GIS-files available	monitoring stations GIS located at CEH Wallingford + some hard	
visiting time	possible preferred holidays WP2+1?	June-October beginning July first 3 weeks of August yes	March-November early spring(before sowing) or autumn (after harvest) July to mid August yes	anytime regular monthly visits: Wed-Thur in last/first week of month that is closest to 1st day of (next) month yes	from mid May - 1st November, to be coordinated	May-June 2010, preferably to coincide with visit of Ashlee Dere (Penn State PhD) in May 2010 yes, see above	
data archive, general	public or private, SoilTrEC or external	meteorological data and basic soil data are public domain other data only available in cooperation with site researchers. A list of available data will be provided; data to be obtained via researchers, co-authorship rules on case-by-case basis in some cases particular rules may apply when third party funding is involved	time series data are usually not public, but available on request; basic characteristics on geology, soil and climate are available on public maps and internet soil chronosequence data (BOKU) via Georg Lair; long term cropland field data (tillage-experiments) via Heide Spiegel; co-authorship for data distribution requested; AGES data only to be published upon approval by and in cooperation with AGES for other data (e.g. DEM, hydrological models) arrangements to be made with Institute of interest via Georg Lair	full access to TUC data, via Daniel Moraetis full access to relevant Crete Region data, via Daniel Moraetis	requests to Pavel Kram or Jakub Hruska (current status in April 2010) co-authorship or at least official acknowledgement necessary, to be agreed with Pavel Kram	in principle publicly available, on request	CEH dedicated website available approx. June 2010 co-authorship preferred or official acknowledgement
	format, access	meteorological and hydrological data are/will be online public data (once published) could be on SoilTrEC database or online for site most data stored as Excel spreadsheets with researchers	basic soil data will be included on SoilTrEC website main chronosequence data can be compiled in Excel spreadsheet (in English) main soil characteristics/properties from long-term field experiments idem published data available through literature (partly in German)	ArcMap GIS shp files, Excel spreadsheet; non-digital archive of soil studies (1970's)	Excel or Quattro spreadsheets published data available through literature	some data readily available from database http://info1.ma.slu.se/IM/IMeng.html some data behind passwords some data in personal files, only on contact	CEH dedicated website available approx. June 2010 some historic datasets in non-digital form (with little metadata)
	language	English	German, easy translation to English by owner	English, non-digital archive in Greek	Czech or English, no translation problems	Swedish and English, headings could be translated	English
	geo-referenced	yes, all	yes, all	yes (apart from soil archive)	yes, in spreadsheets	not all, also analyses on composite samples	yes
	time-referenced	yes, all	yes, all	yes (apart from soil archive)	yes, in spreadsheets		yes
	meta-data	not yet, to become available via reference to publications	standard protocols, these are cited in literature	date, units, measurement techniques in general terms with database. Detailed measurements protocols available	units in spreadsheets, instrument and protocol information only in paper hardcopies	some, on website http://info1.ma.slu.se/IM/IMeng.htm	CEH dedicated website available approx. June 2010. Meteorological and Hydrological data are likely to conform to high level standards of measurement, information on instruments, etc. is available but may not be on the external database. Hydro-chemistry data should have all available information on analytical methods, instruments, limits of detection, accuracy, etc.
	overarching data	Regional DEM (25m resolution, possibly higher)	Danube Floodplain DEM available (owner viadonau GmbH, Austria) Historical maps of landuse back to 18th century, actual aero-photographs available	Digital elevation - Region of Crete	Topographic map 1:10000 Areal photographs	Digital elevation	5m DEM
		Meteorological and climatological time series for the last 50 to 100 years (depending on parameters/resolution needed)	Meteorological data from ZAMG (temperature, precipitation, windspeed, humidity) at 3 nearby stations (Großenzersdorf, Gänserndorf, Obersiebenbrunn) from 1936 to date, on hourly, daily or monthly basis		Meteorological and climatological data from three nearby stations of the Czech Hydrological Institute (Lazy, Marianske Lazne, Mt. Lysina)	climate, meteorology	
		Hydrological timeseries from Swiss hydrological services and from the hydroelectric power plant owners 500 to 100 years depending on location	groundwater models, Danube stream data (Donau Auen)			soil moisture, groundwater level, runoff	detailed digital river network
		Geological map	geological data (Donau-Auen)	Geologic formations and hydroclass - region of Crete	Geological maps 1:25000	geology	geology
Regional soil maps			Soil types - FAO & Greek typology	Soil map 1:10000 (based on typological map)	soil physics	soil maps	
Glacier movement records		vegetation and land cover, zoological data (Donau Auen)	Land cover - CORINE	Forest stock map 1:10000	land cover, vegetation incl. forest trees (vegetation databank see http://info1.ma.slu.se/IM/IMeng.html)	1km land cover	
Air quality from Swiss Monitoring Network		atmospheric deposition data for PAHs from EU-project AquaTerra (monitored from 2004-2006)		Air quality from Research Institute of Forestry and Game Management (nearby station Lazy)	air chemistry, precipitation chemistry, throughfall, see http://info1.ma.slu.se/IM/IMeng.html		
			Load calculation for each subbasin (point and non-point sources, i.e. agriculture and livestock)		decomposition data		
data archive, meteorological	# of stations time, frequency list	3 2008-continuing, 30 minutes link to Damma metadata worksheet	no CZO specific monitoring	3 1 since 1897, daily; others since 2007 hourly link to Koiliaris metadata worksheet	3 stations of the Czech Hydrometeorol. Inst. since 1987, daily link to Kindla metadata worksheet	2 since 1997, hourly, daily Early 1970s; hourly	
	# of stations	3	no CZO specific monitoring	1 River, 2 Wells; historic data on soil moisture and infiltration capacity (1966)	2 stations (brooks) of the CGS	one stream, one groundwater well	

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site manager	Stefano Bernasconi	Christian Kätzberger (AGES) Heide Spiegel (AGES) Christian Baumgartner (Donau-Auen)	Nikolaos Nikolaidis	Pavel Kram	Lars Lundin	Brian Reynolds Mark Robinson Simon Grant	
data archive, hydrological	time, frequency 2008-continuing, 10 minutes list link to Damma metadata worksheet		since 2004, River every 10 minutes, Wells daily link to Koiliaris metadata worksheet	since 1989 (main brook continuously until 2001, every 20 minutes since 2002) (second brook weekly) link to Lysina metadata worksheet	V-notch and groundwater level daily since 1997, soil moisture daily since 2005 link to Kindla metadata worksheet	Early 1970s; 15 minute	
data archive, soil characteristics	# of stations 24 time, frequency once, September 2008 (with some repeats) depths 0-5cm, 5-10cm (no deeper horizons available) list link to Damma metadata worksheet	A:11 chronosequence sites, B: 1 long term experimental site A: once, 2004; B: start in 1988, yearly measurements from around 2000 A: 0-5, 5-10, 10-20, 20-30, 30-40, 40-50, 50-60cm, B: 0-10, 10-20, 20-30 cm link to Fuchsenbiql metadata worksheet	22 (for pH, EC, N-total only) + 24 historic (1966) once, 2010 or 1966 2010: 0-15, 15-30 cm 1966: 0-30, 30-60, 60-90, 90-130, 130-180 cm link to Koiliaris metadata worksheet	21 quantitative pits (0.5 m2) 1993, 2003, 2004,2005 to the C horizon (ca 50 cm) link to Lysina metadata worksheet	6 bulk samples from a 40*40 m plot + 3 in EU BioSoil project (0-80 cm) 10 year interval 1997 and 2007 link to Kindla metadata worksheet	Numerous 1979-1995 0-70 cm link to Plynlimon metadata worksheet	
data archive, pore water / groundwater composition	# of stations 20 time, frequency irregular, specific of individual projects depths most 0-5 cm, some deeper list data will be compiled end of 2010	no CZO specific monitoring	3 Wells monthly to three times per year phreatic link to Koiliaris metadata worksheet	well with overflow Lenka + 7 wells Lenka since 1989, monthly, others 2000,2007 1,50 m (others 1.4-4.7 m) link to Lysina metadata worksheet	1 since 1997, 3 times per year link to Kindla metadata worksheet	Numerous sites and transects 1970s onwards, no current monitoring Variable link to Plynlimon metadata worksheet	
data archive, surface water composition	# of stations 1 time, frequency June-october 2008, 3 times 24-hour sampling campaigns at 1 hour resolution list database in preparation	no CZO specific monitoring	2 Rivers, 5 Springs monthly to three times per year; main outlet continuous for temp, EC, DO, NO ₃ link to Koiliaris metadata worksheet	2 stations (brooks) since 1989, weekly link to Lysina metadata worksheet	3 since 1997, 2-weekly link to Kindla metadata worksheet	7 Since 1983, weekly link to Plynlimon metadata worksheet	
data archive, other	overall type glaciological, biological list link to Damma metadata worksheet	Danube soil sediments link to Fuchsenbiql metadata worksheet	- link to Koiliaris metadata worksheet	bulk precipitation, throughfall chemistry link to Lysina metadata worksheet	Forest, tree layer; Ground vegetation; Decomposition; Respiration, potential link to Kindla metadata worksheet	bulk precipitation, cloudwater, throughfall & stemflow chemistry link to Plynlimon metadata worksheet	
publications	updated list http://www.cces.ethz.ch/projects/clench/Bigl_ink/ availability as pdf or weblink, public or private publications can be put on public weblink diploma theses only on password protected site	to be put on SoilTrEC public website publication pdfs can be put on private part of SoilTrEC website	partially on: http://www.koiliaris.tuc.gr/ full list to be put on SoilTrEC public website	to be put on SoilTrEC public website available as pdf or libraries	Swedish Annual report published every year. Site included in annual ICP report (Kleemola & Forsius, 2009), selection of publications can be put on SoilTrEC website	Endnote data base containing in excess of 350 publications in need of updating. Three special volumes of Hydrology and Earth System Sciences (2007: Vol 11; 2004: Vol 8; 1997: Vol 1) which feature work from the site. More complete bibliographic information should be available by June 2010	
type of modelling and processes addressed	previous or current	• catchment hydrology (Alpine3D distributed watershed model)	• C-sequestration rates along chronosequence (dry continental climate, Danube)	An integrated framework for the hydrologic simulation of a complex geomorphological river basin (Kourgiolas et al, 2010. Journal of Hydrology, 381:308-321)	• biogeochemical: PnET-BGC/CHES (Santore et al. 1996), MAGIC (Cosby et al. 1985, 2001), SAFE (Warfvinge et al. 1993)	• hydrological (Top Model)	hydrological TOPMODEL, SHE, IHACRES
		• glacier mass balance		Stochastic Modeling of the Karstic System of western Apokoronas in Crete (Stamati et al., 2006 In: VIII International Conference Protection and Restoration of the Environment VIII, Chania Greece, 184-192)	• hydrochemical: MINEQL+ (Schecher and McAvoy 1991), ALCHEMI (Schecher and Driscoll 1995), pBDM (Laudon et al. 2004)	• weathering (Profile)	hydrochemical: MAGIC, ALCHEMI
				High frequency monitoring for the identification of hydrological and biochemical processes in a Mediterranean river basin (Moraetis et al., Journal of Hydrology, under review)	• hydrological: SAC-SMA (Burnash 1995) , BROOK (Federer 1993)	• water and metal flow/transport (Watbal)	weathering PROFILE; SAFE
						• atmospheric (Match)	
	SoilTrEC	1) Hydrology of a glaciated catchment and its response to climate change.	Assess sequestration and turnover rates of soil organic matter along a soil chronosequence. Organic matter pools/characteristics will be measured and quantified in depth intervals down to the mineral soil horizon. C-14 labeled organic material at the Fuchsenbiql site will help to follow the translocation of dissolved organic matter and the build-up of soil aggregates (i.e. pedogenesis, compare WP1) in time. Roth-C will be used to model carbon dynamics under changing climate and landuse conditions.	all processes and threats: WP1 plot scale; WP2 watershed scale	processes related to extremely acidic nutrient-poor forest soils, metal toxicity, low biodiversity	Work within the site relates much to water and chemical element balances, storage of chemical elements including carbon sequestration, biodiversity relations, soil development under influence of various hydrological flow pathways, near stream zone processes, enhanced understanding of the CZ conditions and processes also in deeper soil layers.	Element and nutrient cycling; mineral weathering; soil formation; soil erosion; soil carbon dynamics CEH will continue to maintain the core hydrometeorological and hydrochemical monitoring. The main emphasis of current activity is to develop a database for continuing monitoring activities and then to extend this to include legacy data. A PhD student from Penn State Univ will also be working at the site to investigate processes of soil formation.
		2) Rates of organic carbon buildup and its relation to nutrients and biological activity. I see possible links to the modeling of aggregates, and testing how this aggregate formation happens at timescales of 150 years.					
		3) Mechanisms of carbon stabilization in soils mineral-organic matter interactions					
		4) Ecosystem evolution along a primary succession; this modeling will have a relevance in studying processes of recovery of degraded environments					
	soil functions addressed	carbon storage	carbon storage	carbon storage	carbon storage	carbon storage	carbon storage
		biological habitat & gene pool	biological habitat & gene pool	biological habitat & gene pool	biological habitat	biological habitat	biological habitat
soil threats addressed		loss of soil carbon	erosion			erosion (fluvial sediment fluxes)	
			declining soil fertility	declining soil fertility		soil carbon loss	
			loss of soil carbon	loss of soil carbon	loss of soil carbon	contamination (acid rain, nitrogen depts, heavy metal depts)	
			changes in biodiversity	changes in biodiversity		soil fertility change (forest harvesting)	

General information	SoiTrEC EU satellite site	SoiTrEC CN site	SoiTrEC US site	SoiTrEC US site		
	Strengbach	Yingtian	Clear Creek	Shale Hills		
SoiTrEC contact person(s)	Francois Chabaux	Bin Zhang		Christopher Duffy		
site manager	Marie-Claire Pierret	Bin Zhang	Marian Muste Jerald L. Schnoor	Christopher Duffy		
website	http://ohge.u-strasbg.fr/indexuk.html		http://www.iowacdi.net/ http://his08.ihr.uiowa.edu/uicc/	http://www.czo.psu.edu/		
digital map	monitoring stations	monitoring stations google soil sampling site	monitoring stations	monitoring stations GIS files: http://www.czo.psu.edu/		
visiting time	possible		anytime	anytime		
	preferred		May-July	early summer is best		
	holidays WP2+1?		August yes			
data archive, general	public or private, SoiTrEC or external		time series data usually are not public, but available on request	Publicly available through the url: http://his08.ihr.uiowa.edu/uicc/	The 6 US CZO's have agreed to make all data available on their server/website	
				basic characteristics on geology, soil and climate are available on public maps and internet		
						part of the data will be embargoed for up to 2 years by agreement with US NSF
	format, access	some hydrological and hydrochemical data (1985-2008) readily available from the database http://ohge.u-strasbg.fr/ogebanque/banquedonnees.htm	most data stored in personal files, only available on contact	data available online http://his08.ihr.uiowa.edu/uicc/	From website http://www.czo.psu.edu/ . Embargoed data will be automatically released in 2 yrs.	
		some data behind passwords/ need permission	most data are available, but some need permission		Basic meta data will be included on the SoiTrEC website with instructions on how to read flat files and databases.	
			ArcMap GIS shp files, Excel spreadsheet	CSV, Excel (MyDB) format	Data will be available as flat files and/or databases. Other services for data access are also being developed by each CZO.	
	language	French	most in English, some in Chinese	English	English	
geo-referenced		yes	yes, all	yes, all		
time-referenced		yes	yes, all	yes, all (may be delays in posting)		
meta-data		date, units, sampling locations, measurement techniques	Query Parameters: QueryDate, Location, Variable, DateRange, QueryURL Source Information: Organization, SourceID, Source Desc, Email, Address, TypeOfContact, ContactName, Phone Site Information: Name, Code, Location Variable Information: Name, Code, Vocabulary, Valuetype, Datatype, GeneralCategory, NoDataValue, Units	The real time data will initially have relatively simple meta data: units, instrument, protocol, location, real-time, geospatial, other. There are other groups building a comprehensive information system.		
overarching data			DEM	10m DEM	1 lidar topographic survey, 2 more in 2010	
			land use map	land use map		
			meteorological and climatological data from the two nearby stations in the Red Soil Experimental Station; the precipitation data also can be obtained by another additional rain gauge installed in catchment	meteorological data from IOWA City and Cedar Rapids stations		
			soil moisture, runoff	detailed digital river network		
			geological data			
			soil map	soil map		
			land use	land use		
			atmospheric dry and wet deposition data			
data archive, meteorological	# of stations		2	Multiple (~18)		
	time, frequency list		since 1998, hourly link to Yingtian metadata worksheet	since 2003, hourly link to Clear Creek metadata worksheet		
	# of stations		6	2		

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SoilTrEC contact person(s)	Strengbach Francois Chabaux	Yingtian Bin Zhang	Clear Creek	Shale Hills Christopher Duffy	
site manager	Marie-Claire Pierret	Bin Zhang	Marian Muste Jerald L. Schnoor	Christopher Duffy	
data archive, hydrological	time, frequency	since 2000, every 10 minutes	since 2008 (Every 15 and 30 minutes respectively)		
	list	link to Yingtian metadata worksheet	link to Clear Creek metadata worksheet		
data archive, soil characteristics	# of stations	41	n/a		
	time, frequency	once in 2000			
	depths	to the 100 cm depth in paddy rice field, and 150 cm for the upland field.			
	list	link to Yingtian metadata worksheet			
data archive, pore water / groundwater composition	# of stations	8 stations for soil pore water and 1 station for groundwater	n/a		
	time, frequency	weekly			
	depths	20, 40 and 85 cm			
	list	link to Yingtian metadata worksheet			
data archive, surface water composition	# of stations	6 stations for weirs and 1 station for pond	8		
	time, frequency	weekly	Since 2000 (In 4 sites sporadic). Since 2007 (every 20 minutes)		
	list	link to Yingtian metadata worksheet	link to Clear Creek metadata worksheet		
data archive, other	overall type	fertilizer application, crop yield, crop and forest phenology			
	list	link to Yingtian metadata worksheet			
publications	updated list	1986-2007: http://ohge.u-strasbg.fr/publication/publi_fr.htm	to be put on SoilTrEC public website	to be put on SoilTrEC public website	
	availability as pdf or weblink, public or private			http://www.czo.psu.edu/ for information on the Shale Hills CZO http://www.pihm.psu.edu/ for Penn State Modeling System information http://public.me.com/cxd111 in the folder PIHM_CZO for model pubs	
type of modelling and processes addressed	previous or current	exchange processes between the main surface reservoirs (atmosphere, water, soil, plants)	hydrological processes and associated nutrient unloading from the agricultural catchment	hydrological SWAT	Fully integrated, physics-based model including fully-distributed land-surface energy budget recently completed. Earlier model described in: Qu Y., C. J. Duffy (2007), Water Resour. Res., 43, W08419, doi:10.1029/2006WR005752.
		response of the natural environment to antropogenic perturbations	charicaterizing the exchange process of water and nutrient in and among different land use units, esp. the interaction between the upland and paddy rice field.	hydrochemical: SWAT	
		modeling future development of the natural systems	determining and simulating the land use change on soil water regime, soil erosion and nutrient losses.		
		the development of soil structure and resulting hydrological properties			
	SoilTrEC	simulating the hydrological process with various models, and compared their validity of simulating the catchment with cascaded paddy rice field		Modeling of soil critical zone processes with the new Integrated Critical Zone Model	eKo.net: groundwater drilling and installation of ad-hoc real-time wireless sensor network for observing soil water, groundwater level, energy, and total dissolved solids (C.Duffy) Macropore model from empirical data (Henry Lin). Numerical macropore computational model with GIS tool to include vertical and horizontal macropore hydraulic characteristics to the pedo-transfer function (C. Duffy/PIHM group). Experiments and theory development for weathering of shales, based on lysimeters network (Sue Brantley/Geochem group)
		determining the subsurface lateral flow and their influences on no-source pollution and geochemistry processes			Sapflow measurements and tree mapping/classification (D. Eisenstaat)
	soil functions addressed	food and fibre production		food and fibre production	
		filtering, buffering and transformation		filtering, buffering and transformation of water, nutrients, and contaminants	
		carbon storage		storage of carbon	
	soil threats addressed	erosion		erosion	
declining soil fertility (through compaction, contamination, salinisation, sealing)			declining soil fertility (through compaction, contamination, salinisation, sealing)		
loss of soil carbon			loss of soil carbon		