INTEGRATED SINK ENHANCEMENT ASSESSMENT

I N S E A
P A R T N E R S

INSEA Data processing

for EU25 biophysical modelling

by

Juraj Balkovič, Erwin Schmid, Radoslav Bujnovský, Rastislav Skalský, Vladimir Stolbovoi, Katarina Poltárska, Michael Obersteiner, Elena Moltchanova, Michael Fuchs, Rainer Bartiz & Uwe Schneider

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Outlines

1. List of databases
2. Concept of Homogeneous Response Units
3. EPIC Input List
4. Database Logic
5. Publishing the indicators

List of databases:

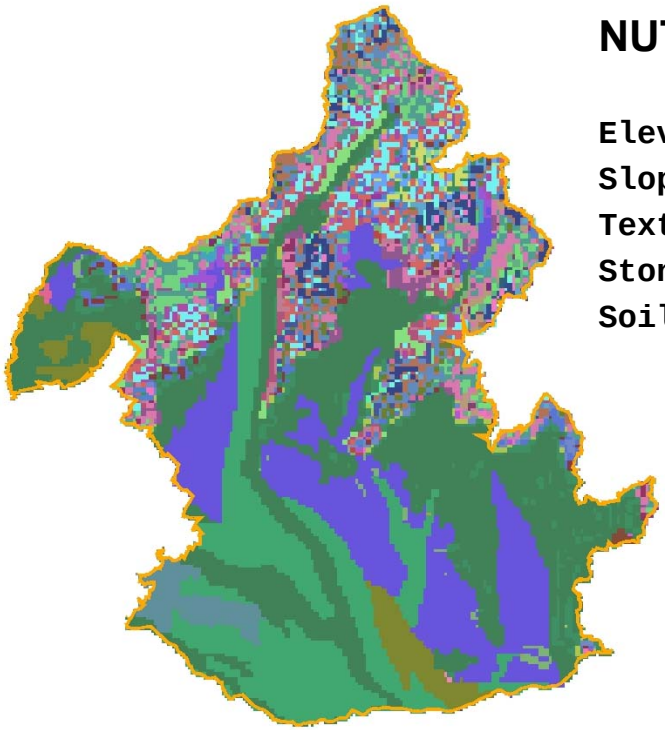
Climatic Data		
MARS	Monitoring of Agriculture with Remote Sensing	daily meteorological data
East Anglia	climatic change	climatic change scenario
EMEP	Monitoring and evaluation of the long-range transmission of air pollution in Europe	deposition of atmospheric nitrogen
Topographical data		
GTOPO30	Global digital elevation model (1km)	elevation and slope
SRTM90	Global digital elevation model (90m)	elevation and slope
Soil Data		
ESDB v. 2	The European soil database v. 2. (SGDBE and PTRDB)	soil properties for the topsoil and subsoil
OC TOP v. 1.2	The map of organic carbon in topsoils in Europe, Ver. 1.2	content of soil organic carbon in the topsoil
HYPRESE	Hydraulic properties of European soils	PTF for hydrophysical properties of soils
Land Cover		
CORINE & PELCOM	Combined Corine and Pelcom	land cover information
Administative regions		
AGISCO	Geographical information system of European commission	NUTS regions
Land Use		
NEW CRONOS	regional statistics of EUROSTAT	crop shares, crop yields, livestock, land cover …
LUCAS	Land use and land cover area frame statistical survey (phase I.)	crop distributions, irrigation distribution
FAO	fertilizer use by crops for countries	mineral N, P, K
MARS	Crop calendar	crop calendar

Projected coordination system: Lambert Azimuthal equal area

Concept of Homogeneous Response Units (HRU)

- **Geographical coverage for biophysical modelling (based on 1km presentation)**
  - ... how data of different character, scales and aggregation levels could be consistently passed to the EPIC-GIS workspace
- **Representative for the scale 1:1,000,000 (built upon 1km resolution GIS rasters)**
- **Is merged with NUTS-2 regions and Land-cover classes**
- **Is characterised by a single climate and crop management**

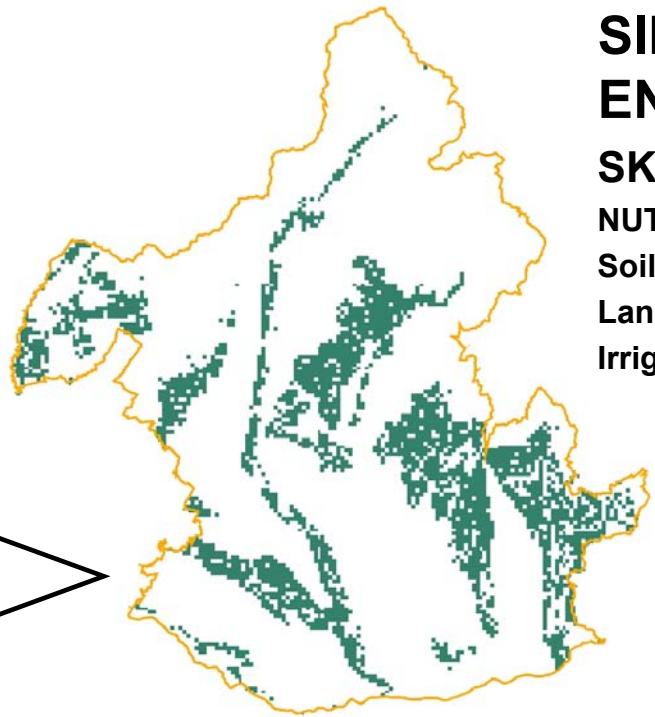
HRU delineation



NUTS2: SK02

Elevation: < 300m, 300-600m, 600-1100m, > 1100m
Slope: < 3%, 3-6%, 6-10%, 10-15%, > 15%
Texture: coarse, medium, medium-fine, fine, very fine, peat
Stoniness: low content, medium content, high content
Soil depth: shallow, medium, deep

A single HRU

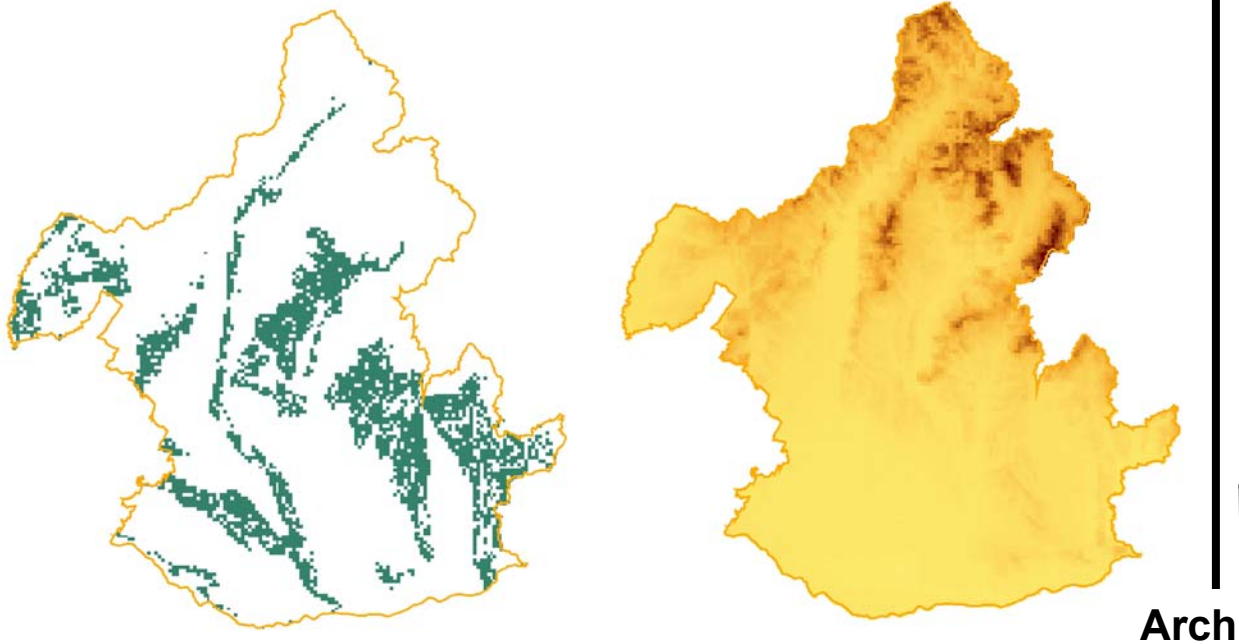


SIMULATED ENTITY:

SK02_33_21_0

NUTS2: SK02
SoilClass: 33
LandCat: 21
Irrigation: 0

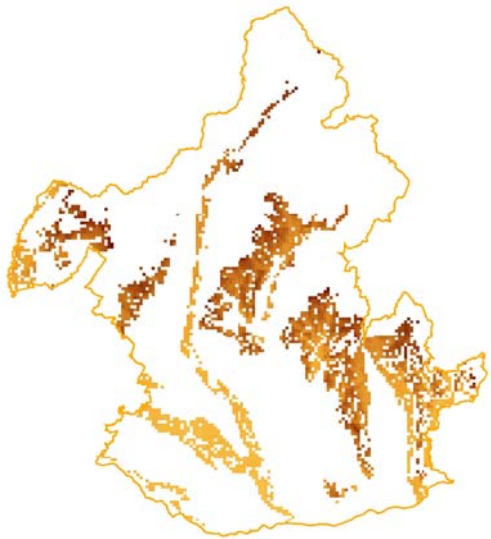
< 300m, < 3%, medium-fine, low stoniness, deep soils



Delineation procedure

Feeding the input list (MEAN function)

Archive of soil and topography rasters



```
Mean(OC-TOP)      = 1.5%
SD(OC-TOP)        = 0.2%
Mean(SAND-TOP)    = 45%
SD(SAND-TOP)      = 5%
...
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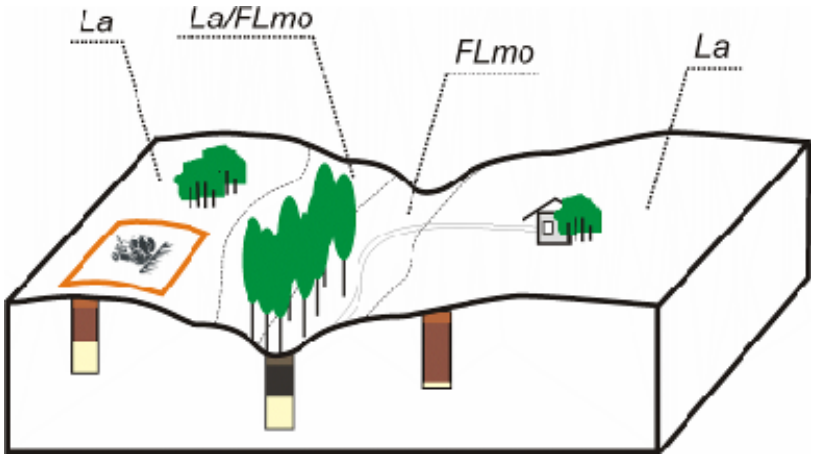
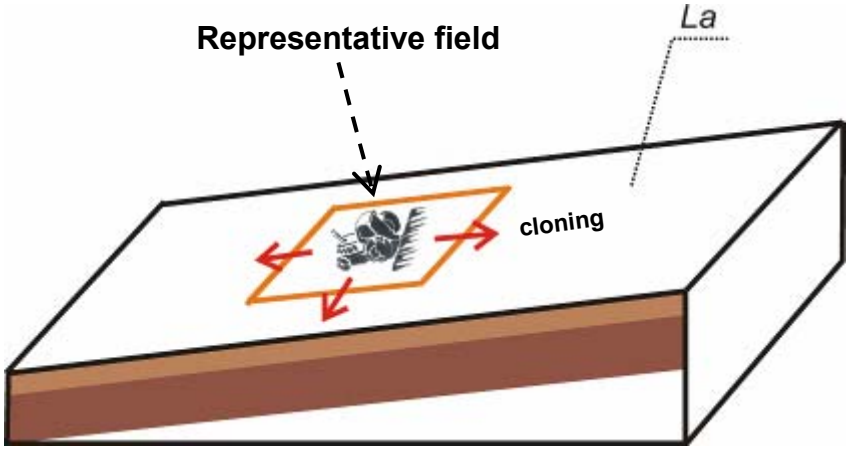
dbf



HRU reality



HRU spatial model (1:1,000,000)

Base-run parameters of entity SK01-33-21-0:

Soil properties: not known exactly

Meteorology: not known exactly

Acreage of land cover: not known exactly.

Management: not known exactly

Field size: unknown

.....

Status: NOT HOMOGENEOUS

setup the generalization

1:1,000,000

Base-run „generalization“ of parameters of SK01-33-21-0:

Elevation: avg. 250 m (< 300 m)
Slope: avg. 4.3° (3-6°)
Texture: moderately heavy
Stoniness: free of stones
Depth: 30cm top, 80 cm sub
Field: 5ha

.....

Mean or most frequent properties:
OCtop = 2.1 %, OCsub = 0.2 %
SANDtop = 45%, SANDsub = 35%
SILTtop = 40%, SILTsub = 45%
CLAYtop = 15%, CLAYsub = 20% ...

.....

Meteo: file 54057.txt

.....

Rotation: OAT, WWHT, CORN, irrig: 0, etc.

.....

Status: HOMOGENEOUS

EPIC input list – soil and topography inputs

- **40 attributes**

Field	Data type	Character	Description	Unit
ID	Text		NUTS2_LandCat_SoilClass	
ID2	Text		NUTS2_Landcat_SoilClass_Irrig	
NUTS2	Text		Code of NUTS2 region (AGISCO)	
LandCat	Text		Code for land cover category (CORINE and PELCOM) (21 arable land, 22 – permanent crops, 23 – pastures, 24 – heterogeneous agricultural area, 311 – broadleaved forest, 312 – coniferous forest, 313 – mixed forest, 41 – inner wetlands, 42 – maritime wetlands)	
SoilClass	Text		Code of HRU	
Irrig	Integer		0 – non irrigated, 1 – irrigated	
km2	Integer	SUM	Area of ID2 (in km2)	km^2
VS_TOP	Double	Mean	Volume of stones in topsoil	vol. %
VS_SUB	Double	Mean	Volume of stones in subsoil	vol. %
OC_TOP	Double	Mean	Organic carbon content in topsoil	%
SAND_TOP	Double	Mean	Sand content in topsoil	%
SAND_SUB	Double	Mean	Sand content in subsoil	%
SILT_TOP	Double	Mean	Silt content in topsoil	%
SILT_SUB	Double	Mean	Silt content in subsoil	%
CLAY_TOP	Double	Mean	Clay content in topsoil	%
CLAY_SUB	Double	Mean	Clay content in subsoil	%
BD_TOP	Double	Mean	Bulk density in topsoil	g/cm^3
BD_SUB	Double	Mean	Bulk density in subsoil	g/cm^3
CEC_TOP	Double	Mean	Cation exchange capacity in topsoil	cmol$_c$/kg
CEC_SUB	Double	Mean	Cation exchange capacity in subsoil	cmol$_c$/kg
SOB_TOP	Double	Mean	Sum of bases in topsoil	cmol$_c$/kg
SOB_SUB	Double	Mean	Sum of bases in subsoil	cmol$_c$/kg
BS_TOP	Double	Mean	Base saturation in topsoil	%
BS_SUB	Double	Mean	Base saturation ion subsoil	%
PH_TOP	Double	Mean	Soil reaction in topsoil	
PH_SUB	Double	Mean	Soil reaction in subsoil	
KS_TOP	Double	Mean	Saturated hydraulic conductivity in topsoil	mm/hour
KS_SUB	Double	Mean	Saturated hydraulic conductivity in subsoil	mm/hour
WP_TOP	Double	Mean	Wilting point at 1500 kPa in topsoil	cm3/cm3
WP_SUB	Double	Mean	Wilting point at 1500 kPa in subsoil	cm3/cm3
FWC_TOP	Double	Mean	Field water capacity at 33 kPa in topsoil	cm3/cm3
FWC_SUB	Double	Mean	Field water capacity at 33 kPa in subsoil	cm3/cm3
HYDR_GR	Integer	Majority	Hydrological group	
SLENGTH	Integer		Average slope length	m
FLDSIZE	Integer		Average field size	ha
ELEVATION	Double	Mean	Average elevation	m
SLOPE	Double	Majority	Most frequent slope	%
TOPL	Integer		Depth of topsoil	m
SUBL	Integer		Depth of subsoil	m
SOILIDFR	Double		Fraction of ID2 per total LandCat area within NUTS2	
MARSCd	Integer		Code of representative MARS meteo-file	

EPIC input list – set of pedotransfer functions

1. **Volume of stones in subsoil** (expert matrix)
   - VS_TOP (volume of stones in topsoil – PTFDB)
   - DR (depth to rock – PTFDBF)
   - PARAMDO2 (parent material – PTFDB)

2. **pH** (for agricultural soil, pH in 1N KCl)
   - $pH = 6E\text{-}06*BS^3 – 0.0004*BS^2 + 0.0179*BS+4.1731$ ($R^2 = 0.76$***, n = 12,000, source: KPP SK), where BS is base saturation of PTFDB)

3. **FWC, WP, KS (HYPRESE)**

A. IF CLAY < 18% And SAND > 65% Then THR = 0.025 Else THR = 0.01

B. THS = 0.7919 + 0.001691 *CLAY - 0.29619 * BD - 0.000001491 * SILT^ 2 + 0.0000821 * (OC *1.724) ^ 2 + 0.02427 * CLAY^-1 + 0.01113 * SILT^-1 + 0.01472 * Log(SILT) / Log(2.71828182) - 0.0000733 * OC * 1.724 * CLAY - 0.000619 * BD * CLAY - 0.001183 * BD * OC * 1.724 - 0.0001664 * 1 * SILT

C. LN_ALPHA = -14.96 + 0.03135 * CLAY + 0.0351 * SILT + 0.646 * OC * 1.724 + 15.29 * BD - 0.192 * 1 - 4.671 * BD ^ 2 - 0.000781 * CLAY ^ 2 - 0.00687 * (OC* 1.724) ^ 2 + 0.0449 * (OC * 1.724) ^ -1 + 0.0663 * (Log(SILT) / Log(2.71828182)) + 0.1482 * (Log(OC * 1.724) / Log(2.71828182)) - 0.04546 * BD * SILT - 0.4852 * BD * (OC * 1.724) + 0.00673 * 1 * CLAY

D. LN_N = -25.23 - 0.02195 * CLAY + 0.0074 * SILT - 0.194 * (OC * 1.724) + 45.5 * BD - 7.24 * (BD) ^ 2 + 0.0003658 * (CLAY) ^ 2 + 0.002885 * (OC * 1.724) ^ 2 - 12.81 * (BD) ^ -1 - 0.1524 * (SILT) ^ -1 - 0.01958 * (OC * 1.724) ^ (-1) - 0.2876 * (Log(SILT) / Log(2.71828182)) - 0.0709 * (Log(OC * 1.724) / Log(2.71828182)) - 44.6 * (Log(BD) / Log(2.71828182)) - 0.02264 * BD * CLAY + 0.0896 * BD * (OC * 1.724) + 0.00718 * 1 * CLAY

E. LN_KS = 7.755 + 0.0352 *SILT + 0.93 * 1 - 0.967 * BD ^ 2 - 0.000484 * CLAY ^ 2 - 0.000322 * SILT ^ 2 + 0.001 * SILT ^ -1 - 0.0748 * (OC * 1.724) ^ -1 - 0.643 * (Log(SILT) / Log(2.71828182)) - 0.01398 * BD * CLAY - 0.1673 * BD * (OC * 1.724) + 0.02986 * 1 *CLAY - 0.03305 * 1 * SILT

EPIC input list – set of pedotransfer functions

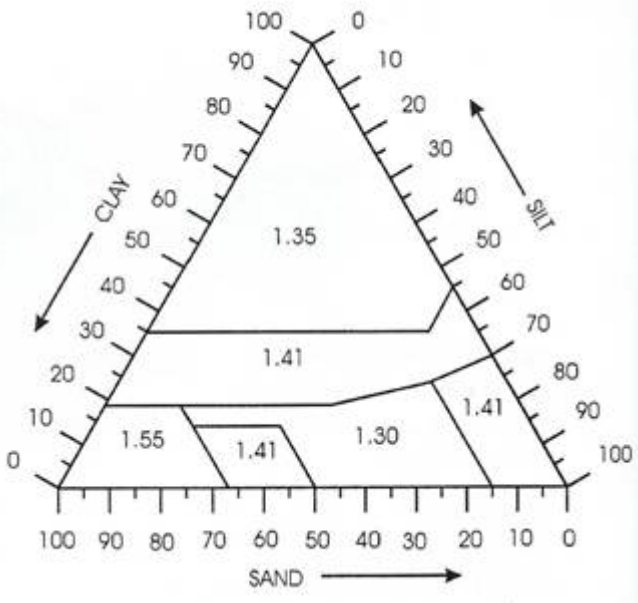
WP = THR + (THS - THR) / ((1 + (ALPHA * 15000) ^ N) ^ (1 - 1 / N))
FWC = THR + (THS - THR) / ((1 + (ALPHA * 330) ^ N) ^ (1 - 1 / N))

4. Bulk density

a. **BD_TOP = PD_TOP - (CLAY_TOP*0.009)**
BD_SUB = PD_SUB - (CLAY_TOP*0.009), where PD is package density (PTFDB) and CLAY is clay content of PTFDB

b. **BD = 100 / {(OM/VOM)+(100-OM)/VMF}**

where
OM = OC% * 1.32*2
VOM = 0.224 g/cm3
VMF (triangle Boon 1984) →



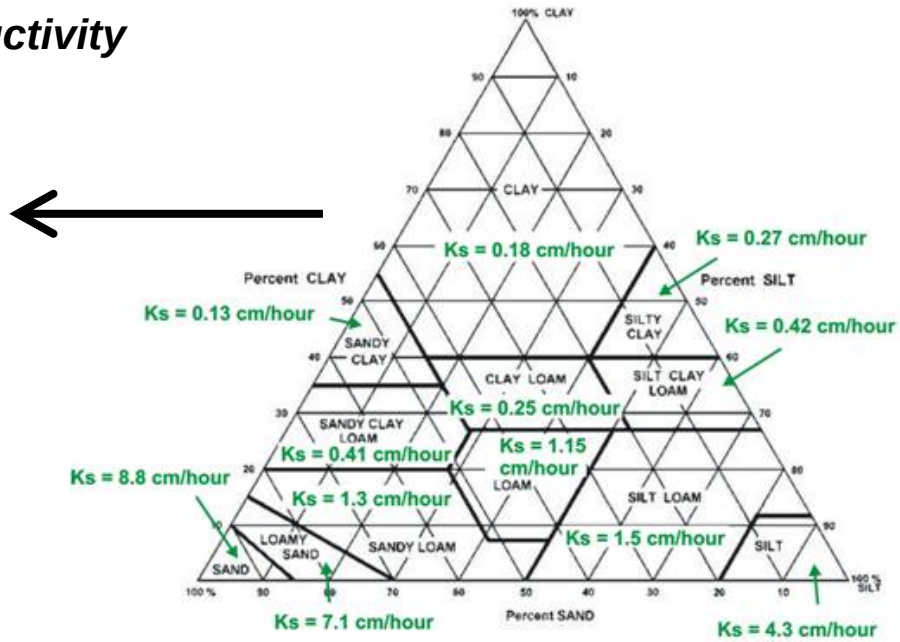
EPIC input list – set of pedotransfer functions

5. Hydrological group (expert matrix)

5.1. Textural criterion and saturated conductivity

Topsoil, Subsoil

A: Sand, Loamy Sand, Silt
B: Sandy Loam, Loam, Silt Loam
C: Sandy Clay Loam, Clay Loam, Silt Clay Loam, Silty Clay
D: Clay, Sandy Clay



Topsoil

Subsoil	A	B	C	D
A	A	A	B	C
B	B	B	B	C
C	C	C	C	D
D	D	D	D	D

5.2. Depth to Gley horizon (from PTFDB)

DTG

Texture	Shallow	Moderate	Deep
A	D	B	A
B	D	C	B
C	D	D	C
D	D	D	D

EPIC input list - meteorology

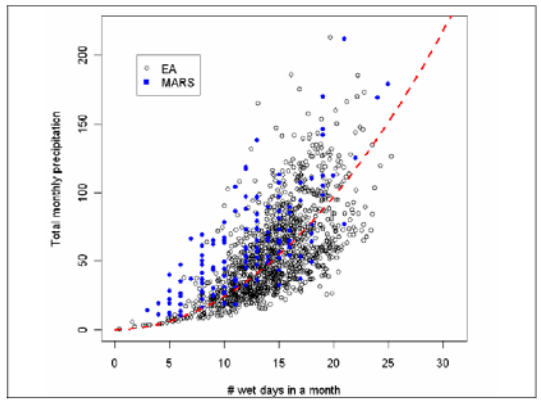
MARS EU data

50 km

Daily data 1990-2002

MAXIMUM_TEMPERATURE (Tmax)	maximum daily air temperature (C)
MINIMUM_TEMPERATURE (Tmin)	minimum daily air temperature (C)
VAPOUR_PRESSURE	mean daily vapour pressure (hPa)
WINDSPEED	mean daily wind speed at 10 m height (m/s)*
RAINFALL (RAIN)	mean daily rainfall (mm)
E0	Penman potential evaporation from a free water surface (mm/day)
ES0	Penman potential evaporation from a moist bare soil surface (mm/day)
ET0	Penman potential transpiration from a crop canopy (mm/day)
CALCULATED_RADIATION (SRAD)	daily global radiation in KJ/m^2/day
SNOW_DEPTH	daily mean snow depth in cm*

East Anglia vs. MARS



Global meteo-input list

EPIC input list - management

Field	Description	Unit
NUTS2	NUTS2 region (AGISCO)	
SWHT	Soft wheat share, source: New Cronos	%
SWHT1	Soft wheat share, alt. < 300 m	%
SWHT2	Soft wheat share, alt. 300-600 m	%
SWHT3	Soft wheat share, alt. 600-1100 m	%
DWHT	Durum wheat share: source: New Cronos	%
DWHT1	Durum wheat share, alt. < 300 m	%
DWHT2	Durum wheat share, alt. 300-600 m	%
DWHT3	Durum wheat share, alt. 600-1100 m	%
WRYE	Winter rye share: source: New Cronos	%
WRYE1	Winter rye share, alt. < 300 m	%
WRYE2	Winter rye share, alt. 300-600 m	%
WRYE3	Winter rye share, alt. 600-1100 m	%
CBAR	Spring barley share: source: New Cronos	%
CBAR1	Spring barley share, alt. < 300 m	%
CBAR2	Spring barley share, alt. 300-600 m	%
CBAR3	Spring barley share, alt. 600-1100 m	%
CORN	Maize corn share: source: New Cronos	%
CORN1	Maize corn share, alt. < 300 m	%
CORN2	Maize corn share, alt. 300-600 m	%
CORN3	Maize corn share, alt. 600-1100 m	%
OCER	Other cereals share: source: New Cronos	%
OCER1	Other cereals share, alt. < 300 m	%
OCER2	Other cereals share, alt. 300-600 m	%
OCER3	Other cereals share, alt. 600-1100 m	%
RICE	Rice share: source: New Cronos	%
RICE1	Rice share, alt. < 300 m	%
RICE2	Rice share, alt. 300-600 m	%
RICE3	Rice share, alt. 600-1100 m	%
CSIL	Maize silage share: source: New Cronos	%
CSIL1	Maize silage share, alt. < 300 m	%
CSIL2	Maize silage share, alt. 300-600 m	%
CSIL3	Maize silage share, alt. 600-1100 m	%
POTA	Potatoes share: source: New Cronos	%
POTA1	Potatoes share, alt. < 300 m	%
POTA2	Potatoes share, alt. 300-600 m	%
POTA3	Potatoes share, alt. 600-1100 m	%
FPEA	Peas share: source: New Cronos	%
FPEA1	Peas share, alt. < 300 m	%
FPEA2	Peas share, alt. 300-600 m	%
FPEA3	Peas share, alt. 600-1100 m	%
SGBT	Sugar beet share: source: New Cronos	%
SGBT1	Sugar beet share, alt. < 300 m	%
SGBT2	Sugar beet share, alt. 300-600 m	%
SGBT3	Sugar beet share, alt. 600-1100 m	%
WRAP	Rape share: source: New Cronos	%
WRAP1	Rape share, alt. < 300 m	%
WRAP2	Rape share, alt. 300-600 m	%
WRAP3	Rape share, alt. 600-1100 m	%

Field	Description	Unit
SUNF	Sunflower share: source: New Cronos	%
SUNF1	Sunflower share, alt. < 300 m	%
SUNF2	Sunflower share, alt. 300-600 m	%
SUNF3	Sunflower share, alt. 600-1100 m	%
SOYB	Soybean share: source: New Cronos	%
SOYB1	Soybean share, alt. < 300 m	%
SOYB2	Soybean share, alt. 300-600 m	%
SOYB3	Soybean share, alt. 600-1100 m	%
OOIL	Other oil crops share: source: New Cronos	%
OOIL1	Other oil crops share, alt. < 300 m	%
OOIL2	Other oil crops share, alt. 300-600 m	%
OOIL3	Other oil crops share, alt. 600-1100 m	%
FLAX	Flax share: source: New Cronos	%
FLAX1	Flax share, alt. < 300 m	%
FLAX2	Flax share, alt. 300-600 m	%
FLAX3	Flax share, alt. 600-1100 m	%
COTT	Cotton share: source: New Cronos	%
COTT1	Cotton share, alt. < 300 m	%
COTT2	Cotton share, alt. 300-600 m	%
COTT3	Cotton share, alt. 600-1100 m	%
TBCC	Tobacco share: source: New Cronos	%
TBCC1	Tobacco share, alt. < 300 m	%
TBCC2	Tobacco share, alt. 300-600 m	%
TBCC3	Tobacco share, alt. 600-1100 m	%
FALW	Fallow share: source: New Cronos	%
FALW1	Fallow share, alt. < 300 m	%
FALW2	Fallow share, alt. 300-600 m	%
FALW3	Fallow share, alt. 600-1100 m	%
GCL1	Clover-grass mix share: source: New Cronos	%
GCL11	Clover-grass mix share, alt. < 300 m	%
GCL12	Clover-grass mix share, alt. 300-600 m	%
GCL13	Clover-grass mix share, alt. 600-1100 m	%
OCRP	Other crops share: source: New Cronos	%
OCRP1	Other crops share, alt. < 300 m	%
OCRP2	Other crops share, alt. 300-600 m	%
OCRP3	Other crops share, alt. 600-1100 m	%
SWHT_YLD	Average yields of soft wheat	t/ha
DWHT_YLD	Average yields of durum wheat	t/ha
WRYE_YLD	Average yields of winter rye	t/ha
CBAR_YLD	Average yields of spring barley	t/ha
CORN_YLD	Average yields of maize corn	t/ha
RICE_YLD	Average yields of rice	t/ha
CSIL_YLD	Average yields of maize silage	t/ha
POTA_YLD	Average yields of potatoes	t/ha
FPEA_YLD	Average yields of field peas	t/ha
SGBT_YLD	Average yields of sugar beet	t/ha
SUNF_YLD	Average yields of sunflower	t/ha
WRAP_YLD	Average yields of winter rape	t/ha
SOYB_YLD	Average yields of soybean	t/ha
FLAX_YLD	Average yields of flax	t/ha
COTT_YLD	Average yields of cotton	t/ha
TBCC_YLD	Average yields of tobacco	t/ha
Year1	Crop in 1st year of a crop rotation	
Year2	Crop in 2nd year of a crop rotation	
Year3	Crop in 3rd year of a crop rotation	

EPIC input list - management

Field	Description	Unit
Year4	Crop in 4th year of a crop rotation	
Year5	Crop in 5th year of a crop rotation	
Year6	Crop in 6th year of a crop rotation	
CBAR_N	N - fertilization rate per crop	kg/ha
CBAR_P205	P2O5 - fertilization rate per crop	kg/ha
CBAR_K2O	K20 - fertilization rate per crop	kg/ha
CORN_N	N - fertilization rate per crop	kg/ha
CORN_P205	P2O5 - fertilization rate per crop	kg/ha
CORN_K2O	K20 - fertilization rate per crop	kg/ha
CSIL_N	N - fertilization rate per crop	kg/ha
CSIL_P205	P2O5 - fertilization rate per crop	kg/ha
CSIL_K2O	K20 - fertilization rate per crop	kg/ha
FPEA_N	N - fertilization rate per crop	kg/ha
FPEA_P205	P2O5 - fertilization rate per crop	kg/ha
FPEA_K2O	K20 - fertilization rate per crop	kg/ha
GCL1_N	N - fertilization rate per crop	kg/ha
GCL1_P205	P2O5 - fertilization rate per crop	kg/ha
GCL1_K2O	K20 - fertilization rate per crop	kg/ha
POTA_N	N - fertilization rate per crop	kg/ha
POTA_P205	P2O5 - fertilization rate per crop	kg/ha
POTA_K2O	K20 - fertilization rate per crop	kg/ha
SUNF_N	N - fertilization rate per crop	kg/ha
SUNF_P205	P2O5 - fertilization rate per crop	kg/ha
SUNF_K2O	K20 - fertilization rate per crop	kg/ha
SWHT_N	N - fertilization rate per crop	kg/ha
SWHT_P205	P2O5 - fertilization rate per crop	kg/ha
SWHT_K2O	K20 - fertilization rate per crop	kg/ha
WRAP_N	N - fertilization rate per crop	kg/ha
WRAP_P205	P2O5 - fertilization rate per crop	kg/ha
WRAP_K2O	K20 - fertilization rate per crop	kg/ha
WRYE_N	N - fertilization rate per crop	kg/ha
WRYE_P205	P2O5 - fertilization rate per crop	kg/ha
WRYE_K2O	K20 - fertilization rate per crop	kg/ha
NHXDEPOS	NHx depositions from atmosphere	kg/km2
NOXDEPOS	NOx depositions from atmosphete	kg/km2
AGRIAREA	Acreage of agricultural area	1,000 ha
ARABLAND	Acreage of arable land	1,000 ha
FALLOW	Acreage of fallow	1,000 ha
GARDEN	Acreage of gardens	1,000 ha
GRASSLAND	Acreage of grassland	1,000 ha
GREENFOD	Acreage of green fodders	1,000 ha
OLIVEPL	Acreage of olive plantations	1,000 ha
PERMCROP	Acreage of permanent crops	1,000 ha
VINEYARD	Acreage of vineyards	1,000 ha
FOREST	Acreage of forest	1,000 ha
ELEVCLASS	Elevation class	

EPIC input list – breaking crop shares

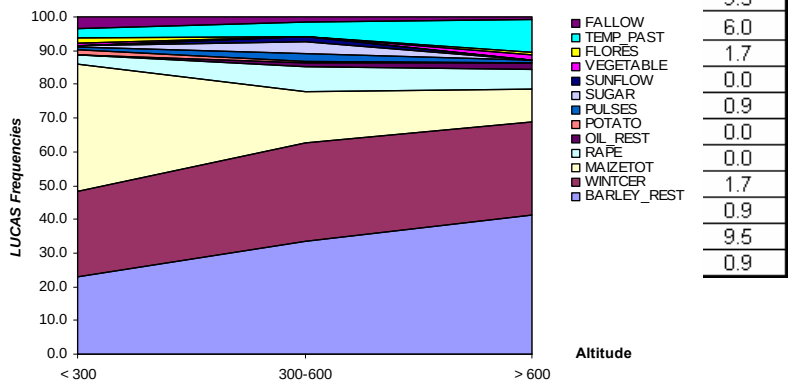
	DE11	DE12	DE13	DE14
WINTCER	27.3	29.3	19.7	26.3
MAIZEGR	2	7.2	17.3	2
BARLEY_REST	34.5	26.7	28.1	34.7
PULSES	1	1	0.7	1.3
RAPE	8	6.4	5.6	9.1
SUNFLOW	0.8	1.9	1.7	0.2
OIL_REST	0.1	0.2	0.3	0.2
POTATO	1.2	0.7	1.7	0.8
SUGAR	5	4.1	0.3	0.3
TOBACCO	0	0.5	0.4	0
MAIZEFOD	8.9	6.4	7.4	11.2
GREENFOD_REST	4.6	4.2	6	7.3
FALLOW	4.6	8.5	7.4	
REST_CROPS	2	2.9	3.4	

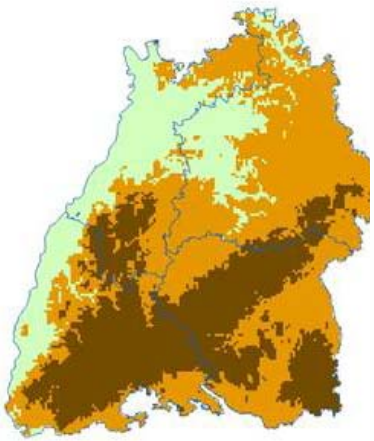
dbf

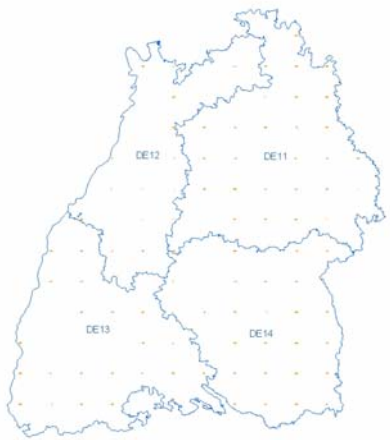
New Cronos statistics for NUTS2 (relative crop shares)

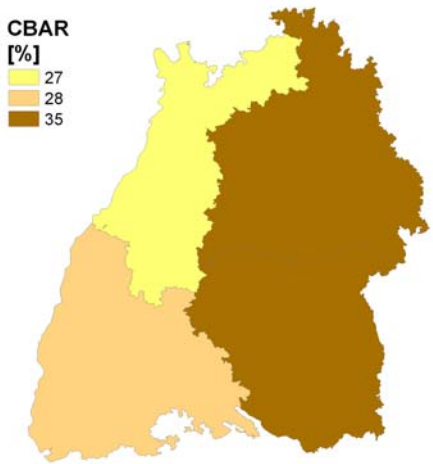
Frequency of LUCAS Crops in Baden-Wurtemberg

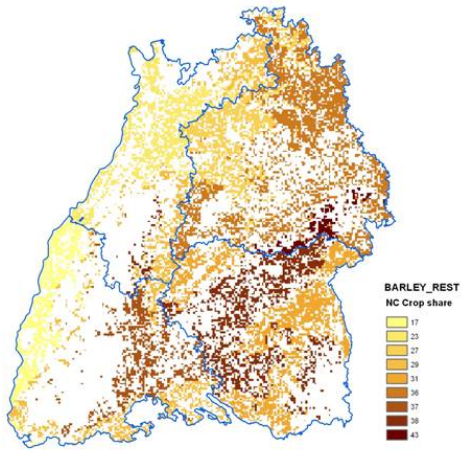
	< 300	300-600	> 600
BARLEY_REST	23.1	33.5	41.4
WINTCER	25.2	29.2	27.6
			9.5
			6.0
			1.7
			0.0
			0.9
			0.0
			0.0
			1.7
			0.9
			9.5
			0.9



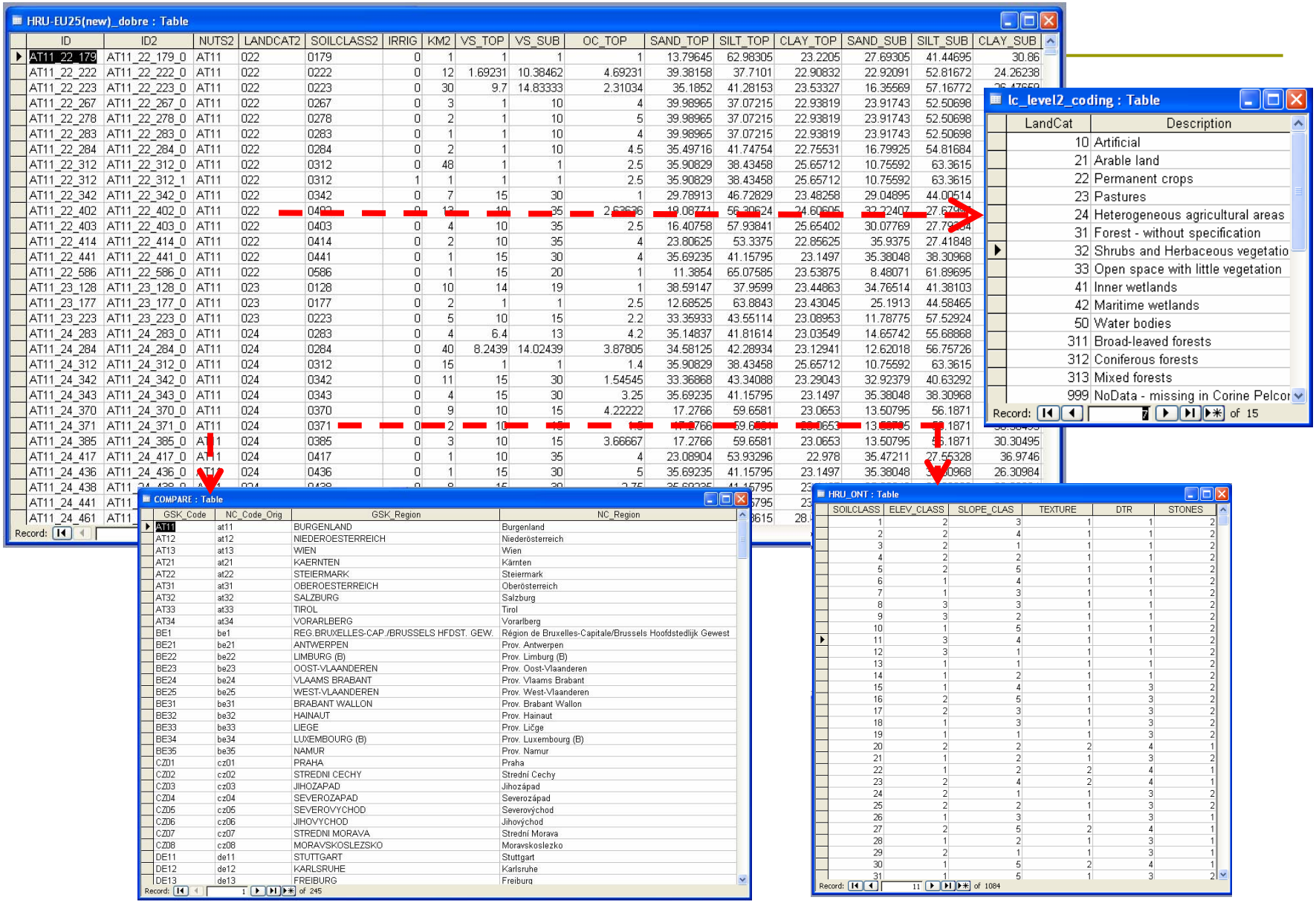








Database logic



HRU-EU25(new)_dobre : Table

ID	ID2	NUTS2	LANDCAT2	SOILCLASS2	IRRIG	KM2	VS_TOP	VS_SUB	OC_TOP	SAND_TOP	SILT_TOP	CLAY_TOP	SAND_SUB	SILT_SUB	CLAY_SUB
AT11_22_179	AT11_22_179_0	AT11	022	0179	0	1	1	1	1	13.79645	62.98305	23.2205	27.69305	41.44695	30.86
AT11_22_222	AT11_22_222_0	AT11	022	0222	0	12	1.69231	10.38462	4.69231	39.38158	37.7101	22.90832	22.92091	52.81672	24.26238
AT11_22_223	AT11_22_223_0	AT11	022	0223	0	30	9.7	14.83333	2.31034	35.1852	41.28153	23.53327	16.35569	57.16772	
AT11_22_267	AT11_22_267_0	AT11	022	0267	0	3	1	10	4	39.98965	37.07215	22.93819	23.91743	52.50698	
AT11_22_278	AT11_22_278_0	AT11	022	0278	0	2	1	10	5	39.98965	37.07215	22.93819	23.91743	52.50698	
AT11_22_283	AT11_22_283_0	AT11	022	0283	0	1	1	10	4	39.98965	37.07215	22.93819	23.91743	52.50698	
AT11_22_284	AT11_22_284_0	AT11	022	0284	0	2	1	10	4.5	35.49716	41.74754	22.75531	16.79925	54.81684	
AT11_22_312	AT11_22_312_0	AT11	022	0312	0	48	1	1	2.5	35.90829	38.43458	25.65712	10.75592	63.3615	
AT11_22_312	AT11_22_312_1	AT11	022	0312	1	1	1	1	2.5	35.90829	38.43458	25.65712	10.75592	63.3615	
AT11_22_342	AT11_22_342_0	AT11	022	0342	0	7	15	30	1	29.78913	46.72829	23.48258	29.04895	44.00514	
AT11_22_402	AT11_22_402_0	AT11	022	0402	0	12	10	35	2.63636	19.08771	56.30624	24.60605	33.22402	27.62	
AT11_22_403	AT11_22_403_0	AT11	022	0403	0	4	10	35	2.5	16.40758	57.93841	25.65402	30.07769	27.79	
AT11_22_414	AT11_22_414_0	AT11	022	0414	0	2	10	35	4	23.80625	53.3375	22.85625	35.9375	27.41848	
AT11_22_441	AT11_22_441_0	AT11	022	0441	0	1	15	30	4	35.69235	41.15795	23.1497	35.38048	38.30968	
AT11_22_586	AT11_22_586_0	AT11	022	0586	0	1	15	20	1	11.3854	65.07585	23.53875	8.48071	61.89695	
AT11_23_128	AT11_23_128_0	AT11	023	0128	0	10	14	19	1	38.59147	37.9599	23.44863	34.76514	41.38103	
AT11_23_177	AT11_23_177_0	AT11	023	0177	0	2	1	1	2.5	12.68525	63.8843	23.43045	25.1913	44.58465	
AT11_23_223	AT11_23_223_0	AT11	023	0223	0	5	10	15	2.2	33.35933	43.55114	23.08953	11.78775	57.52924	
AT11_24_283	AT11_24_283_0	AT11	024	0283	0	4	6.4	13	4.2	35.14837	41.81614	23.03549	14.65742	55.68868	
AT11_24_284	AT11_24_284_0	AT11	024	0284	0	40	8.2439	14.02439	3.87805	34.58125	42.28934	23.12941	12.62018	56.75726	
AT11_24_312	AT11_24_312_0	AT11	024	0312	0	15	1	1	1.4	35.90829	38.43458	25.65712	10.75592	63.3615	
AT11_24_342	AT11_24_342_0	AT11	024	0342	0	11	15	30	1.54545	33.36868	43.34088	23.29043	32.92379	40.63292	
AT11_24_343	AT11_24_343_0	AT11	024	0343	0	4	15	30	3.25	35.69235	41.15795	23.1497	35.38048	38.30968	
AT11_24_370	AT11_24_370_0	AT11	024	0370	0	9	10	15	4.22222	17.2766	59.6581	23.0653	13.50795	56.1871	
AT11_24_371	AT11_24_371_0	AT11	024	0371	0	2	10	15	4.5	17.2766	59.6581	23.0653	13.50795	56.1871	
AT11_24_385	AT11_24_385_0	AT11	024	0385	0	3	10	15	3.66667	17.2766	59.6581	23.0653	13.50795	56.1871	30.30495
AT11_24_417	AT11_24_417_0	AT11	024	0417	0	1	10	35	4	23.08904	53.93296	22.978	35.47211	27.55328	36.9746
AT11_24_436	AT11_24_436_0	AT11	024	0436	0	1	15	30	5	35.69235	41.15795	23.1497	35.38048	38.30968	26.30984
AT11_24_438	AT11_24_438_0	AT11	024	0438	0	8	15	30	2.75	35.69235	41.15795	23.1497	35.38048	38.30968	
AT11_24_441	AT11_24_441_0	AT11	024	0441	0	1	15	30	4	35.69235	41.15795	23.1497	35.38048	38.30968	
AT11_24_461	AT11_24_461_0	AT11	024	0461	0	1	15	30	5	35.69235	41.15795	23.1497	35.38048	38.30968	26.30984

Record: 1 of 1084

lc_level2_coding : Table

LandCat	Description
10	Artificial
21	Arable land
22	Permanent crops
23	Pastures
24	Heterogeneous agricultural areas
31	Forest - without specification
32	Shrubs and Herbaceous vegetatio
33	Open space with little vegetation
41	Inner wetlands
42	Maritime wetlands
50	Water bodies
311	Broad-leaved forests
312	Coniferous forests
313	Mixed forests
999	NoData - missing in Corine Pelcor

Record: 7 of 15

COMPARE : Table

GSK_Code	NC_Code_Orig	GSK_Region	NC_Region
AT11	at11	BURGENLAND	Burgenland
AT12	at12	NIEDEROESTERREICH	Niederösterreich
AT13	at13	WIEN	Wien
AT21	at21	KAERNTEN	Kärnten
AT22	at22	STEIERMARK	Steiermark
AT31	at31	OBEROESTERREICH	Oberösterreich
AT32	at32	SALZBURG	Salzburg
AT33	at33	TIROL	Tirol
AT34	at34	VORARLBERG	Vorarlberg
BE1	be1	REG.BRUXELLES-CAP./BRUSSELS HFDST. GEW.	Région de Bruxelles-Capitale/Brussels Hoofdstedlijk Gewest
BE21	be21	ANTWERPEN	Prov. Antwerpen
BE22	be22	LIMBURG (B)	Prov. Limburg (B)
BE23	be23	OOST-VLAANDEREN	Prov. Oost-Vlaanderen
BE24	be24	VLAAMS BRABANT	Prov. Vlaams Brabant
BE25	be25	WEST-VLAANDEREN	Prov. West-Vlaanderen
BE31	be31	BRABANT WALLON	Prov. Brabant Wallon
BE32	be32	HAINAUT	Prov. Hainaut
BE33	be33	LIEGE	Prov. Liège
BE34	be34	LUXEMBOURG (B)	Prov. Luxembourg (B)
BE35	be35	NAMUR	Prov. Namur
CZ01	cz01	PRAHA	Praha
CZ02	cz02	STREDNI CECHY	Střední Čechy
CZ03	cz03	JIHOZAPAD	Jihozápad
CZ04	cz04	SEVEROZAPAD	Severozápad
CZ05	cz05	SEVEROVYCHOD	Severovýchod
CZ06	cz06	JIHOVYCHOD	Jihovýchod
CZ07	cz07	STREDNI MORAVA	Střední Morava
CZ08	cz08	MORAVSKOSLEZSKO	Moravskoslezko
DE11	de11	STUTTGART	Stuttgart
DE12	de12	KARLSRUHE	Karlsruhe
DE13	de13	FREIBURG	Freiburg

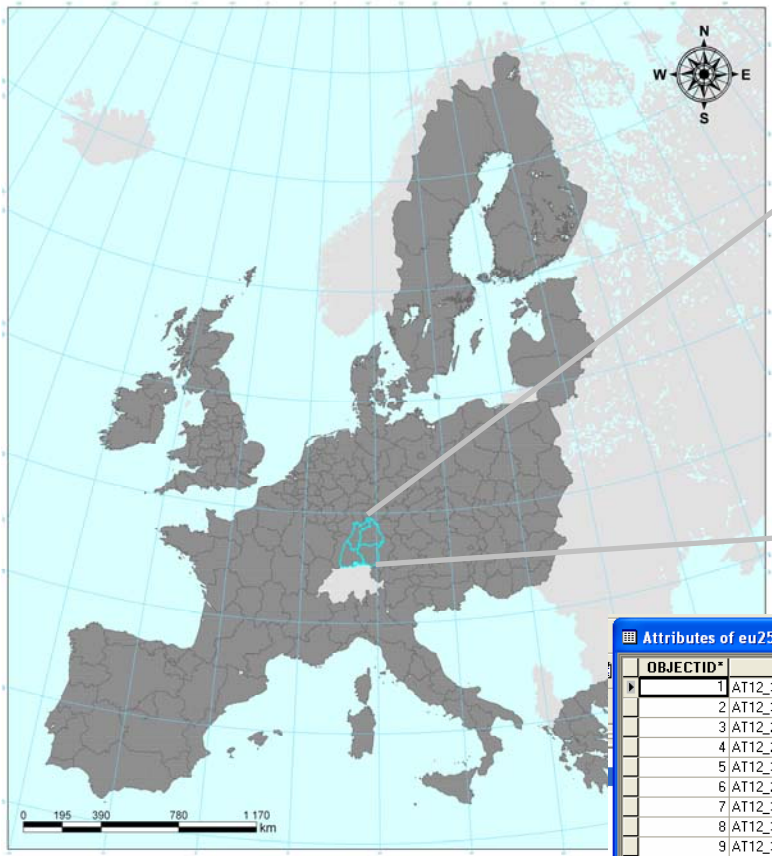
Record: 1 of 245

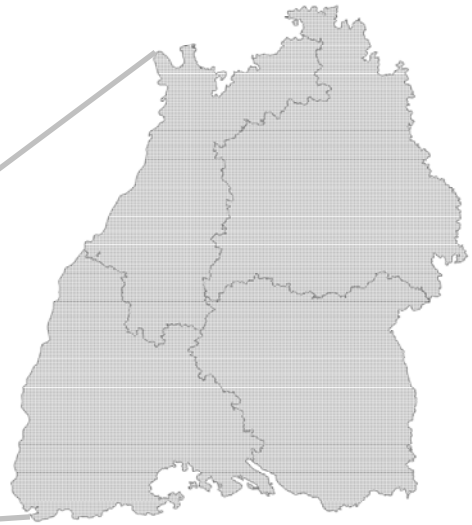
HRU_ONT : Table

SOILCLASS	ELEV_CLASS	SLOPE_CLAS	TEXTURE	DTR	STONES
1	2	3	1	1	2
2	2	4	1	1	2
3	2	1	1	1	2
4	2	2	1	1	2
5	2	5	1	1	2
6	1	4	1	1	2
7	1	3	1	1	2
8	3	3	1	1	2
9	3	2	1	1	2
10	1	5	1	1	2
11	3	4	1	1	2
12	3	1	1	1	2
13	1	1	1	1	2
14	1	2	1	1	2
15	1	4	1	3	2
16	2	5	1	3	2
17	2	3	1	3	2
18	1	3	1	3	2
19	1	1	1	3	2
20	2	2	2	4	1
21	1	2	1	3	2
22	1	2	2	4	1
23	2	4	2	4	1
24	2	1	1	3	2
25	2	2	1	3	2
26	1	3	1	3	1
27	2	5	2	4	1
28	1	2	1	3	1
29	2	1	1	3	1
30	1	5	2	4	1
31	1	5	1	3	2

Record: 11 of 1084

Publishing the indicators



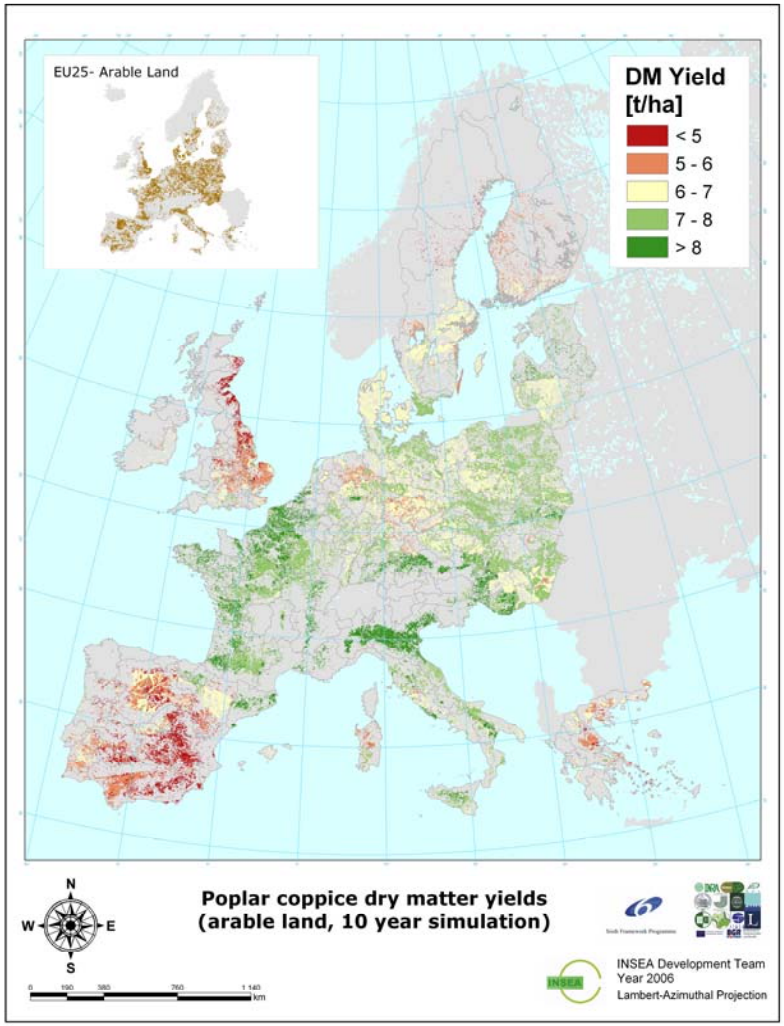


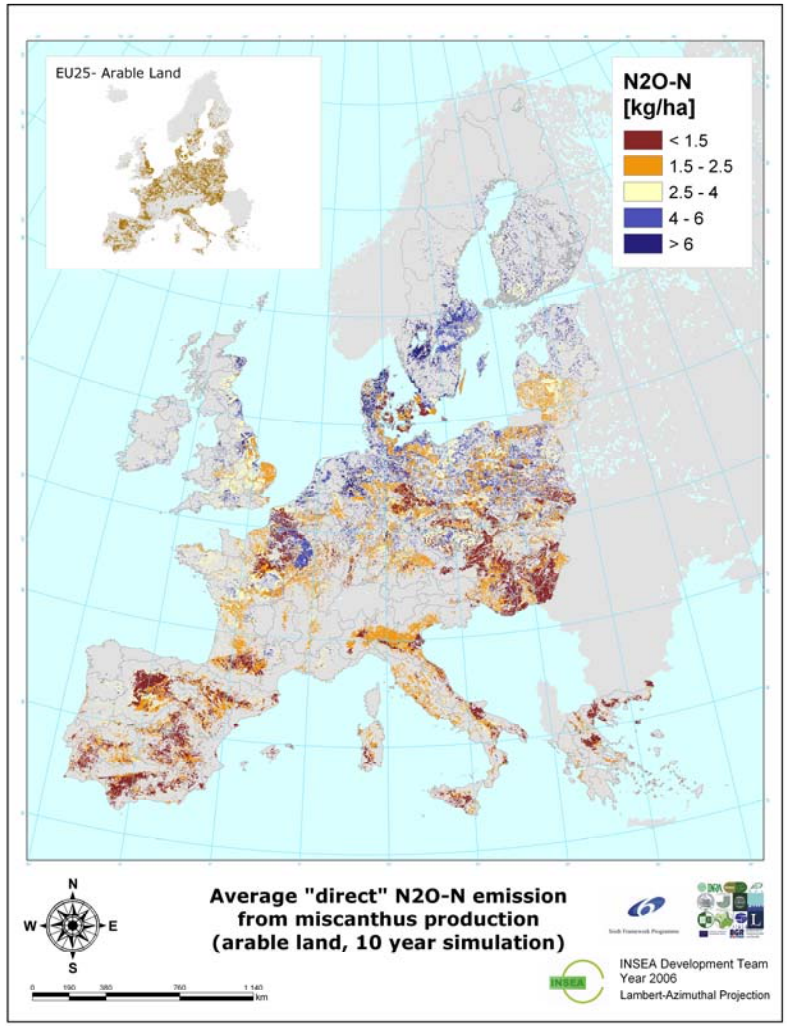
ESRI Geodatabase

Attributes of eu25

OBJECTID*	ID	ID2	ID3	NUTS2	LANDCAT	SOILCLASS	irrig	X	Y	FADNCd	Shape*
1	AT12_312_444	AT12_312_444_0	660_312_444	AT12	312	444	0	436732.000628	129698.000896	660	Point
2	AT12_31_444	AT12_31_444_0	660_31_444	AT12	31	444	0	437732.000117	129698.000896	660	Point
3	AT12_24_444	AT12_24_444_0	660_24_444	AT12	24	444	0	438731.999606	129698.000896	660	Point
4	AT12_24_382	AT12_24_382_0	660_24_382	AT12	24	382	0	439731.999095	129698.000896	660	Point
5	AT12_31_382	AT12_31_382_0	660_31_382	AT12	31	382	0	440732.000632	129698.000896	660	Point
6	AT12_24_444	AT12_24_444_0	660_24_444	AT12	24	444	0	441732.000121	129698.000896	660	Point
7	AT12_31_382	AT12_31_382_0	660_31_382	AT12	31	382	0	437732.000117	128697.999359	660	Point
8	AT12_31_382	AT12_31_382_0	660_31_382	AT12	31	382	0	438731.999606	128697.999359	660	Point
9	AT12_31_282	AT12_31_282_0	660_31_282	AT12	31	282	0	439731.999095	128697.999359	660	Point
10	AT12_24_284	AT12_24_284_0	660_24_284	AT12	24	284	0	440732.000632	128697.999359	660	Point
11	AT12_24_282	AT12_24_282_0	660_24_282	AT12	24	282	0	441732.000121	128697.999359	660	Point
12	AT12_24_451	AT12_24_451_0	660_24_451	AT12	24	451	0	445732.000125	128697.999359	660	Point
13	AT12_31_451	AT12_31_451_0	660_31_451	AT12	31	451	0	446731.999614	128697.999359	660	Point
14	AT12_24_451	AT12_24_451_0	660_24_451	AT12	24	451	0	447731.999103	128697.999359	660	Point
15	AT12_312_451	AT12_312_451_0	660_312_451	AT12	312	451	0	457732.000136	128697.999359	660	Point
16	AT12_31_382	AT12_31_382_0	660_31_382	AT12	31	382	0	437732.000117	127697.999870	660	Point
17	AT12_31_282	AT12_31_282_0	660_31_282	AT12	31	282	0	438731.999606	127697.999870	660	Point
18	AT12_31_282	AT12_31_282_0	660_31_282	AT12	31	282	0	439731.999095	127697.999870	660	Point

Publishing the indicators





Thank you for attention!