

Geodati

Dato geografico:

- Astrazione
- Scala di analisi (...risoluzione)
- Area di riferimento
- Dinamismo temporale

Dati raster: risoluzione

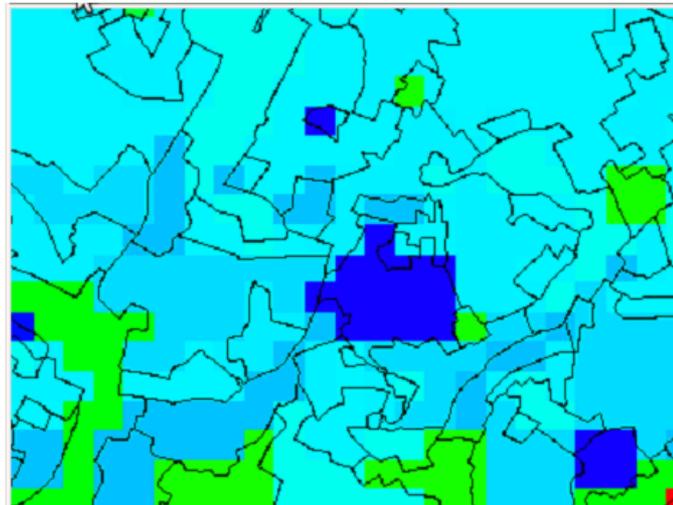
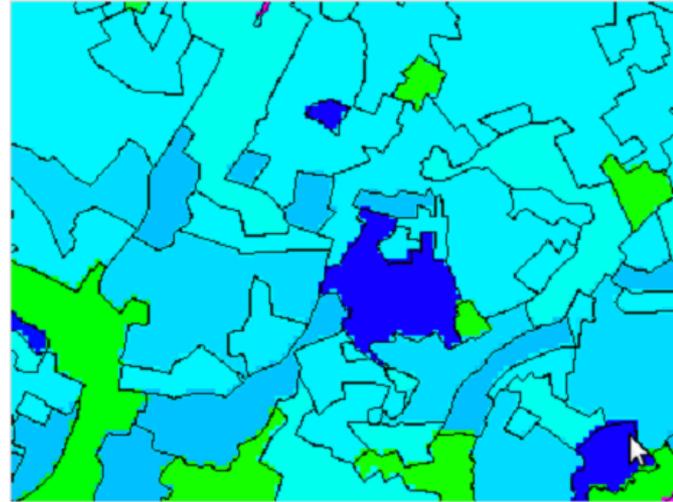
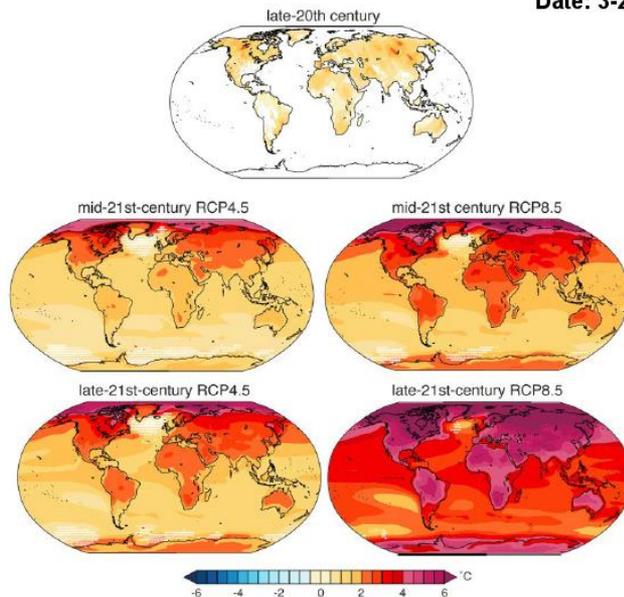
- Accuratezza
- Valutazione dell'incertezza

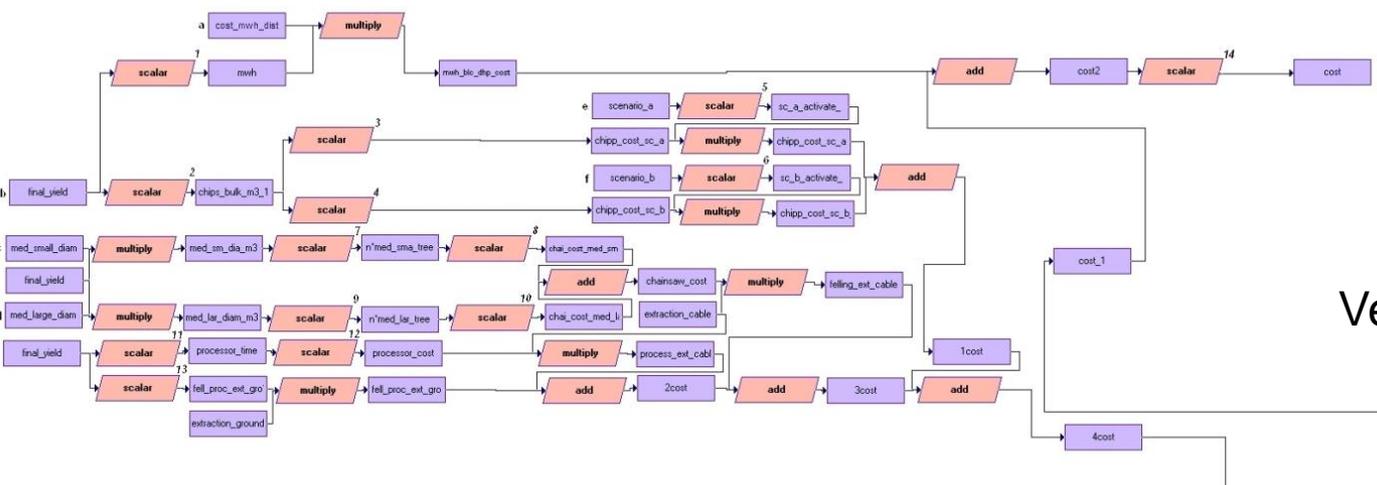
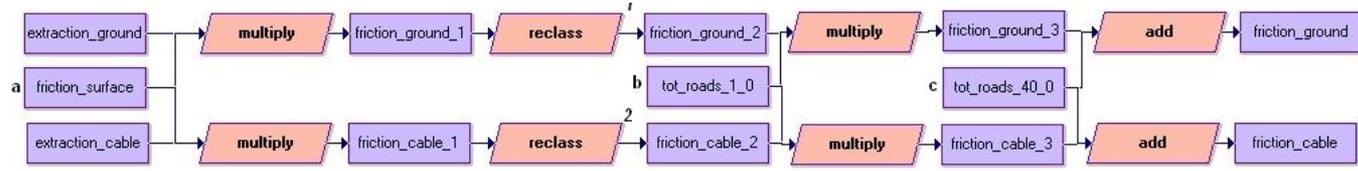
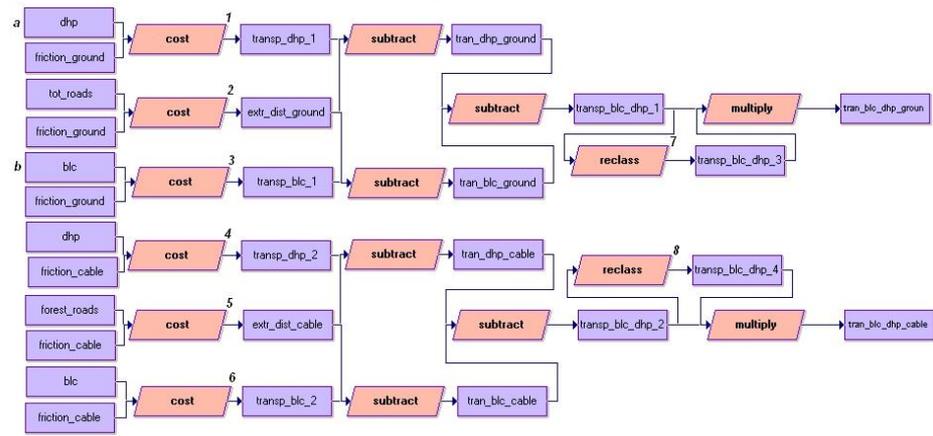
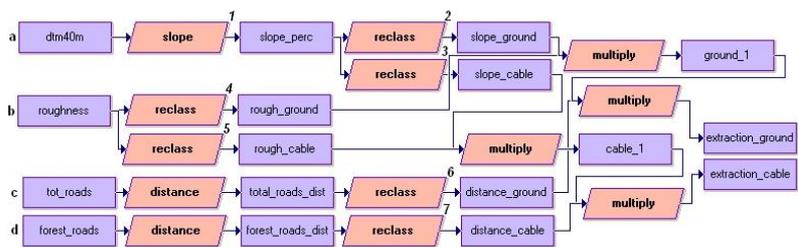
IPCC WGII AR5 Government and Expert Review

WGII AR5 Summary for Policymakers

Date: 3-28-13

A





Velocità di elaborazione

Dati raster: risoluzione

N X V

M C T H 0.2

A F D Z E 0.3

B G L Y C K I 0.4

H D F Z V X T 0.5

D L V B N C M F 0.6

F N P O H V D L X 0.7

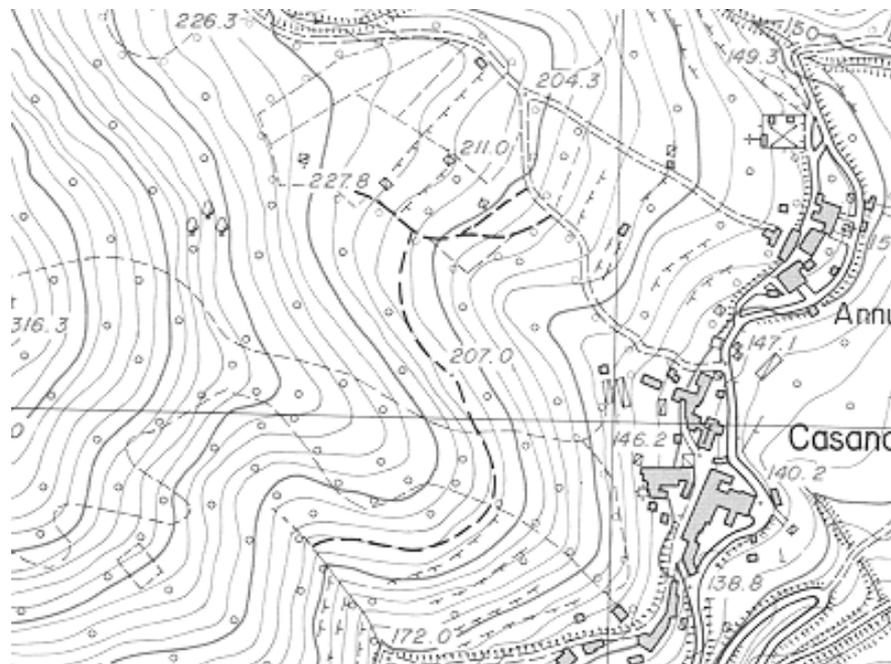
A G D U Z B N F K 0.8

C H N F L D T U P Z 0.9

I B S D V O X T N U 1

A C F L U N D P H Z X 1.2

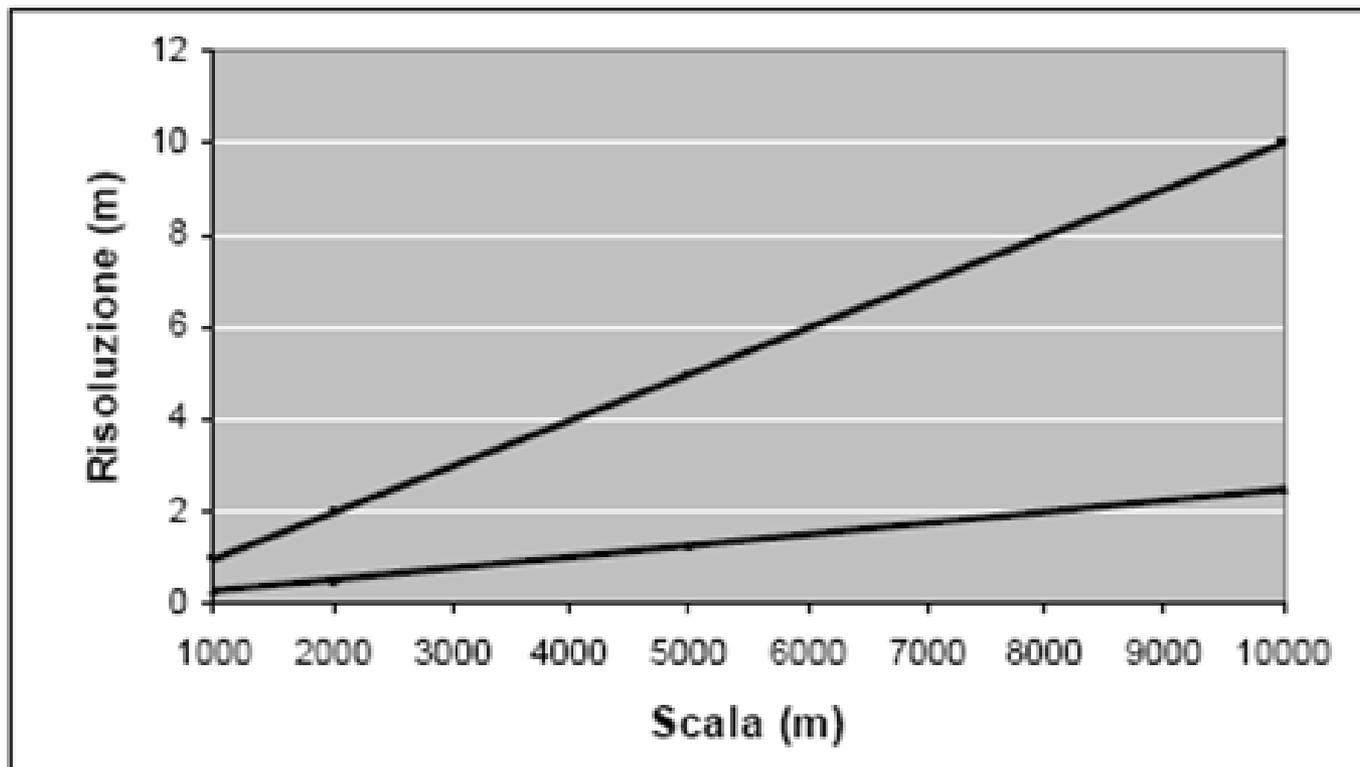
D P R Z K O E U L F N 1.5



1:10.000

10 linee per millimetro a 20-30cm

Dati raster: risoluzione

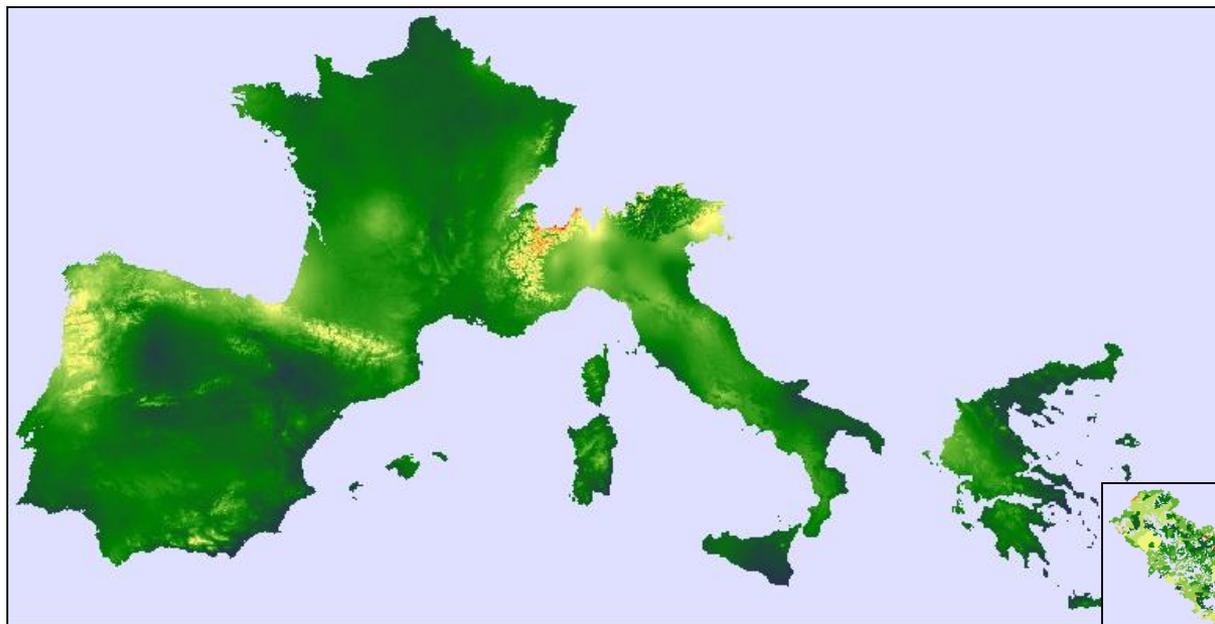


Geodati

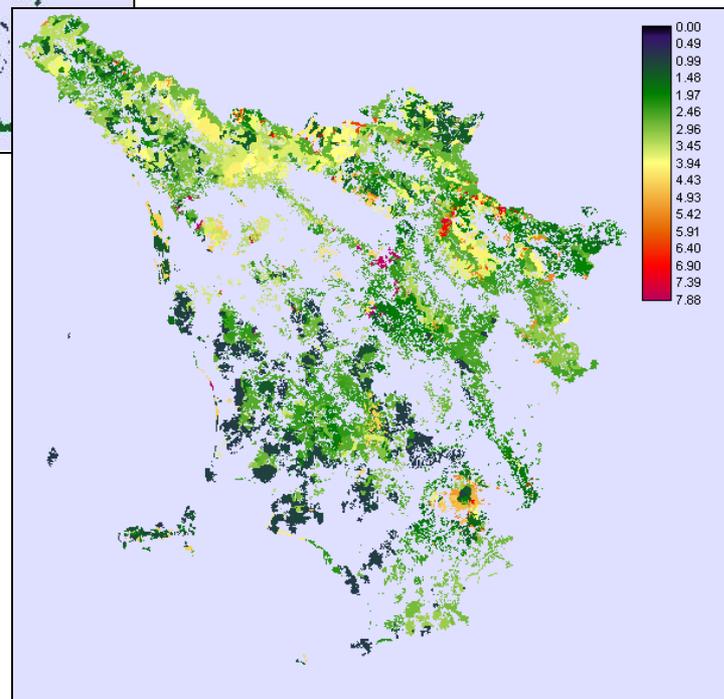
Dato geografico:

- Astrazione
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Dati raster: area di riferimento



Concetto di finestra cartografica (o regione «computazionale»)

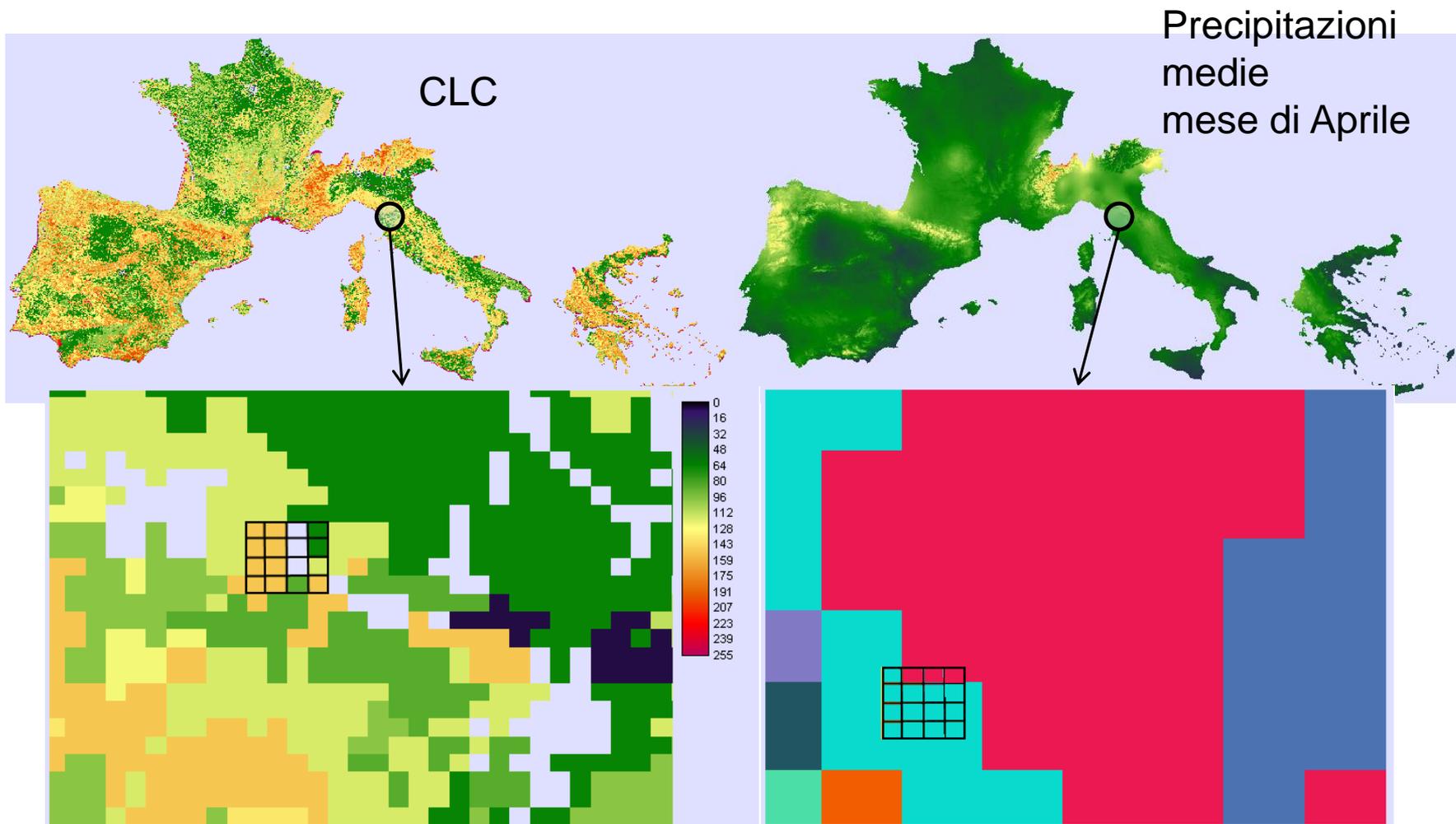


Geodati

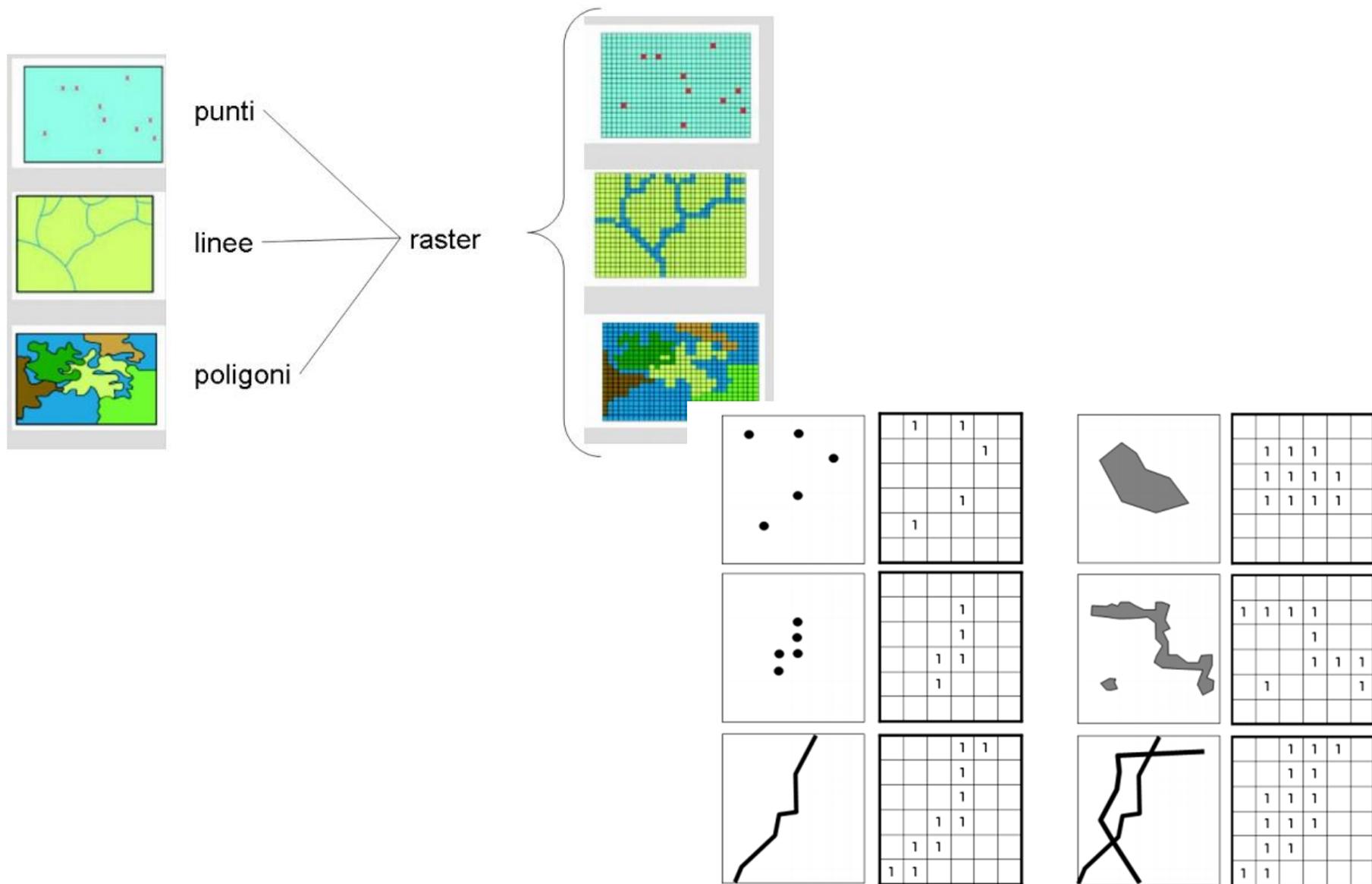
Dato geografico:

- Astrazione
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- Area di riferimento
- Dinamismo temporale

Dati raster: ricampionamento

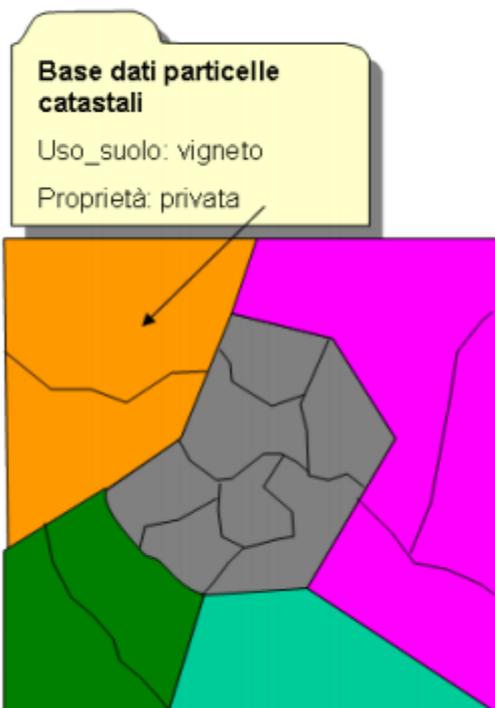


Rasterizzazione di dati vettoriali



Rasterizzazione di dati vettoriali

I dati Vettoriali associano a ciascun oggetto un record di database



Nel modello raster ciascun attributo rappresenta una griglia a parte

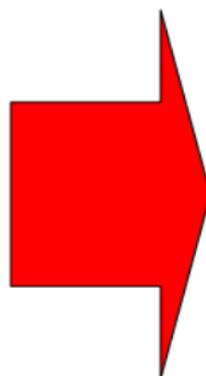
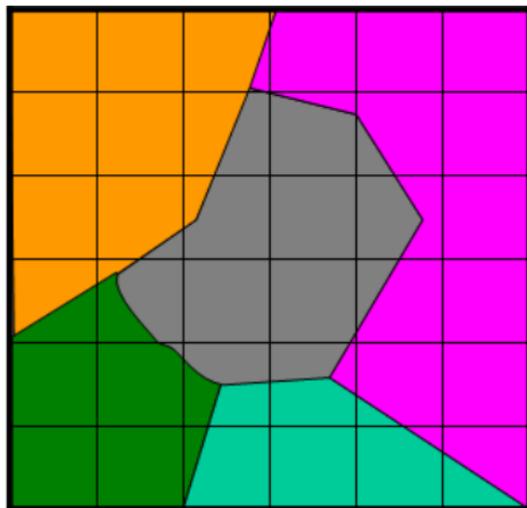
1	1	1	2	2	2
1	1	2	1	1	1
1	1	2	1	1	1
1	2	2	1	1	1
2	2	1	1	1	1
2	2	1	1	1	1

Proprietà

2	2	2	5	5	5
2	2	1	1	5	5
2	2	1	1	1	5
2	1	1	1	5	5
3	3	4	4	5	5
3	3	4	4	4	5

Uso suolo

Dati raster



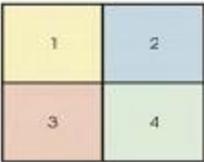
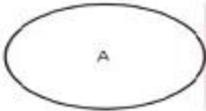
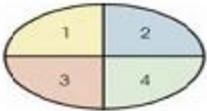
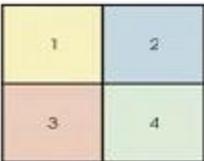
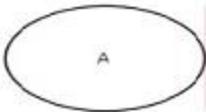
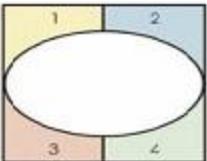
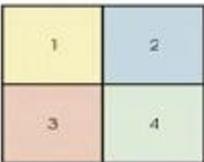
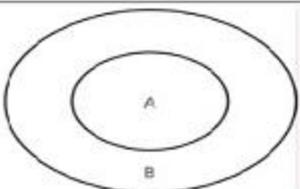
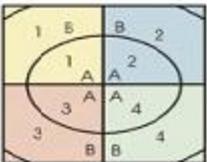
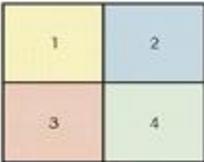
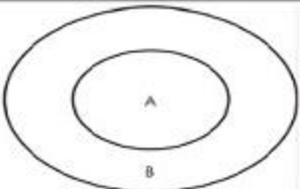
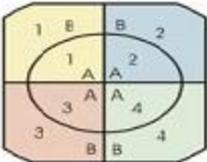
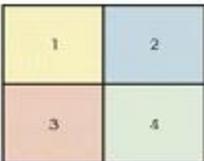
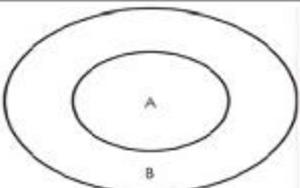
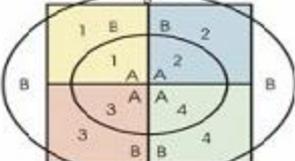
2	2	2	5	5	5
2	2	1	1	5	5
2	2	1	1	1	5
2	1	1	1	5	5
3	3	4	4	5	5
3	3	4	4	4	5

Attenzione: per loro natura i dati raster sono numerici:

I dati alfanumerici debbono essere codificati

- 1: urbano
- 2: seminativo
- 3: bosco
- 4: lago
- 5: vigneto

Operazioni tra geodati (vettoriali)

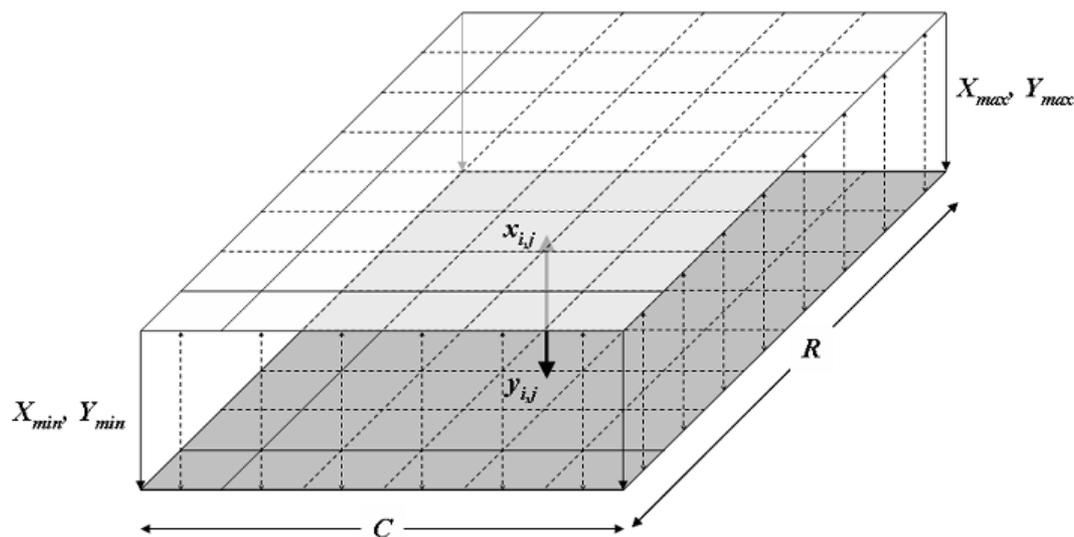
OPERAZIONE	INPUT	OVERLAY	OUTPUT
CLIP			
ERASE			
IDENTITY			
INTERSECT			
UNION			
MERGE			

Operazioni su geodati (vettoriali)



Geodati raster: map algebra

Necessità di perfetta sovrapposizione!



The screenshot shows the 'Layer Properties' dialog box for a raster layer named 'dhp'. The 'Properties' tab is selected, displaying the following metadata:

Property	Value
File type	Binary
Columns	1161
Rows	975
Ref. system	Plane
Ref. units	Meters
Unit dist.	1.0000000
Min. X	1612565.7500000
Max. X	1728699.0000000
Min. Y	5059757.0000000
Max. Y	5157283.5000000
Pos'n error	Unknown
Y Resolution	100.02718
X Resolution	100.02864
Min. value	0

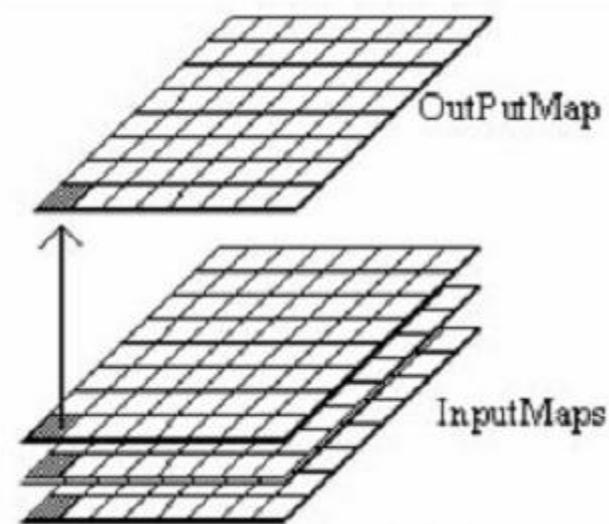
Buttons at the bottom include 'Histogram', 'OK', 'Close', and 'Help'.

Geodati raster: map algebra

Operatori di Tomlin

- Locali
- Focali
- Zonali
- Globali

Operatori locali



Operatori locali

Matematici

Relazionali

Logici

Altri operatori

Aritmetico

Statistico

...

Maggiore di...

...

Vero - Falso

crosstab, ...

Operatori locali

Operatore monoargomento

	2	1	0.5		0.9	0.8	0.5
SEN	1.2	0.8	0.5	=	0.9	0.7	0.4
	0.7	2.2	2.3		0.6	0.8	0.7

Operatori locali

Operatore multiargomento

1	0	3
3	8	0
0	1	5

MIN

=

1	0	2
1	8	0
0	1	3

1	2	2
1	9	2
4	4	3

1	7	3
3	7	4
1	1	1

+

=

2	9	5
4	10	6
5	5	4

1	7	3
3	7	4
1	1	1

*

5

=

5	35	15
15	35	20
5	5	5

1	2	2
1	3	2
4	4	3

Operatori locali

1	1	3
3	7	4
3	1	5

\geq

=

1	0	1
1	0	1
0	0	1

1	2	2
1	9	2
4	4	3

1	1	3
0	7	no data
3	no data	5

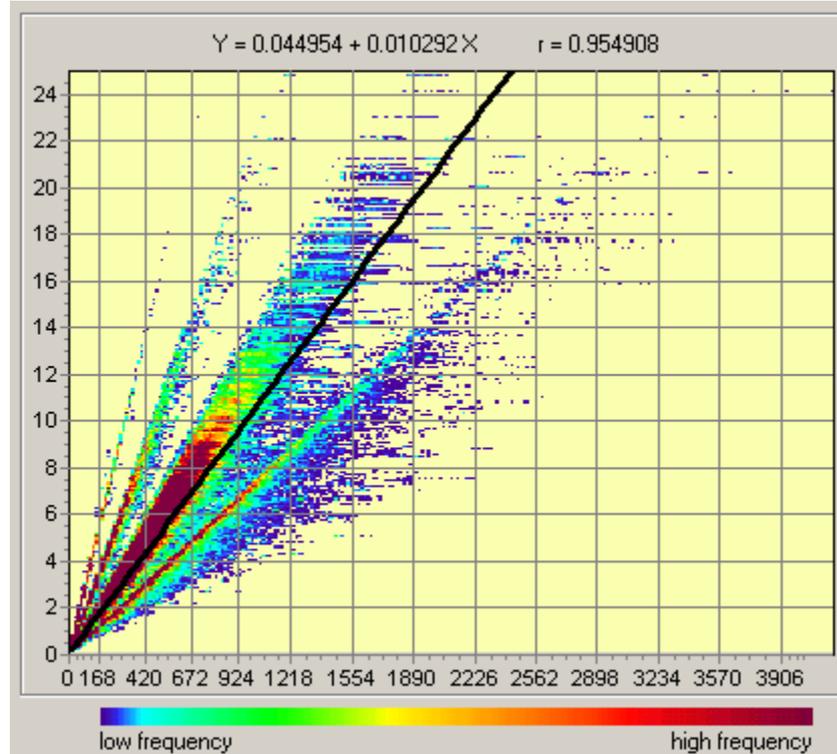
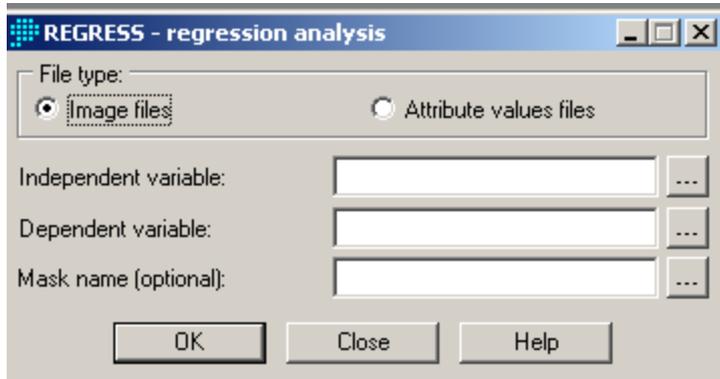
\geq

=

1	no data	1
0	0	no data
1	no data	1

1	no data	2
1	9	2
0	4	3

Operatori locali

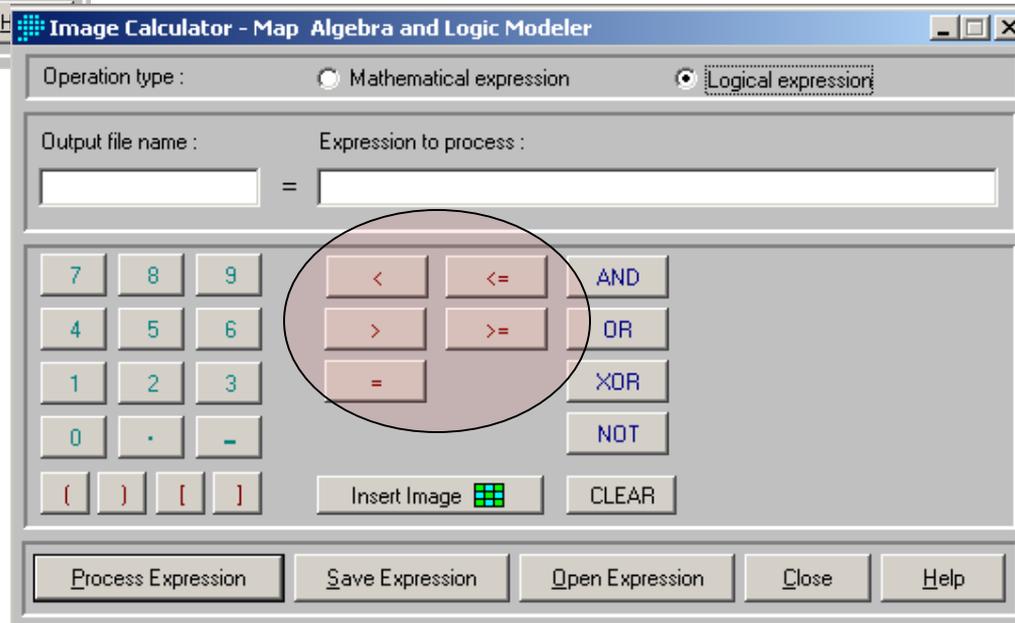
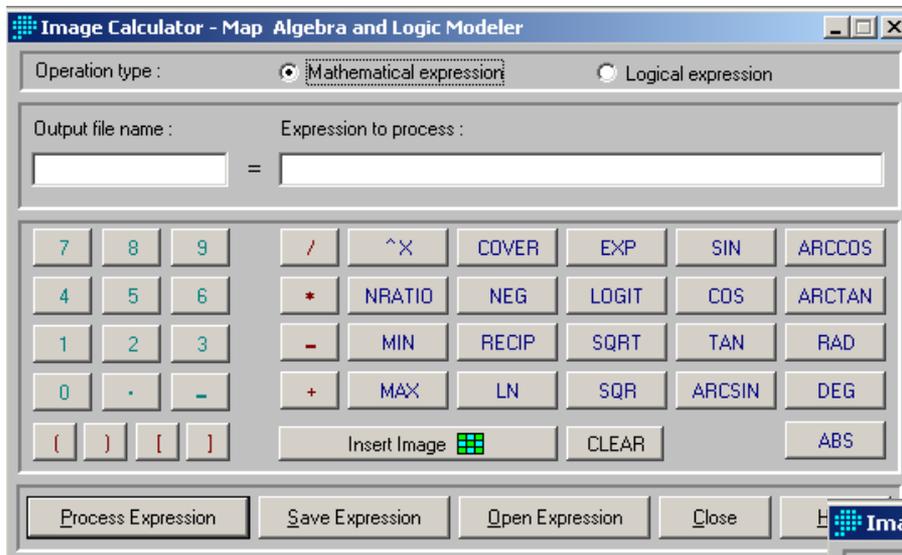


Regression Parameters:

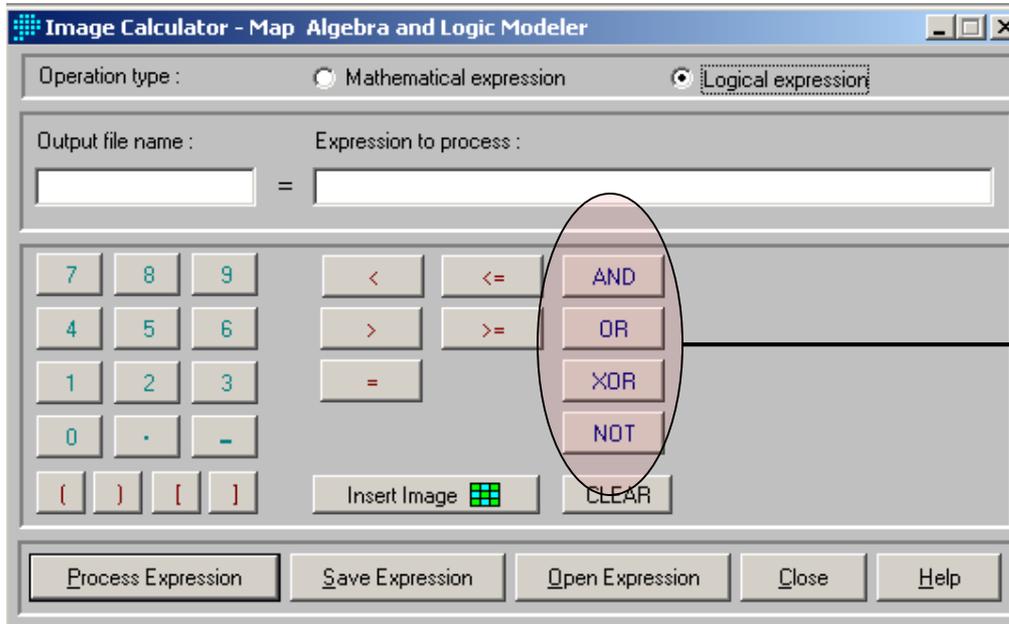
X axis: cos_sc_a_350kg_mag
Y axis: final_yield

Coeff. of Det.	=	91.18 %
Std. Dev. of X	=	186.026785
Std. Dev. of Y	=	2.004987
S.E. of Estimate	=	0.595282
Std. Error of Beta	=	0.000001
t Stat for r or Beta	=	8983.929427
t Stat for Beta <> 1	=	1.000000
Sample Size (n)	=	7802470
Apparent df	=	7802468

Operatori locali



Operatori locali



Algebra booleana

Operatori locali

a	a	a	 a
NOT a	a'	\bar{a}	 a
a AND b	a · b	a ∧ b	 a, b → a ∧ b
a OR b	a + b	a ∨ b	 a, b → a ∨ b
a XOR b		a ⊕ b	 a, b → a ⊕ b

Min / moltiplicazione / \subset

AND	Risultato
0 0	0
0 1	0
1 0	0
1 1	1

MAX / \cup

OR	Risultato
0 0	0
0 1	1
1 0	1
1 1	1

Operatori locali

Disgiunzione (OR) esclusiva o operatore di disparità

XOR	Risultato
0 0	0
0 1	1
1 0	1
1 1	0

NOR	Risultato
0 0	1
0 1	0
1 0	0
1 1	0

Operatori locali

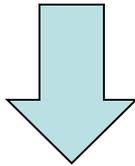
NOT	Risultato
0	1
1	0

Mappe booleane

Tipo di operazione		Input	Output	Parametri
Classificazione binaria		Mappa qualitativa o quantitativa ¹	Mappa binaria	Regole di classificazione
Operatori basati sulla posizione: BUFFER		Mappa binaria	Mappa binaria	Dimensione del buffer
Prodotto cartesiano		Mappa qualitativa	Mappa qualitativa	
Overlay	AND, MIN, Moltiplicazione, (intersezione)	Mappa binaria	Mappa binaria	
	OR, MAX, (unione)	Mappa binaria	Mappa binaria	
	NOT, complemento a 1	Mappa binaria	Mappa binaria	

Mappe booleane

SE (mappa operatore **valore**, *allora*, *altrimenti*)



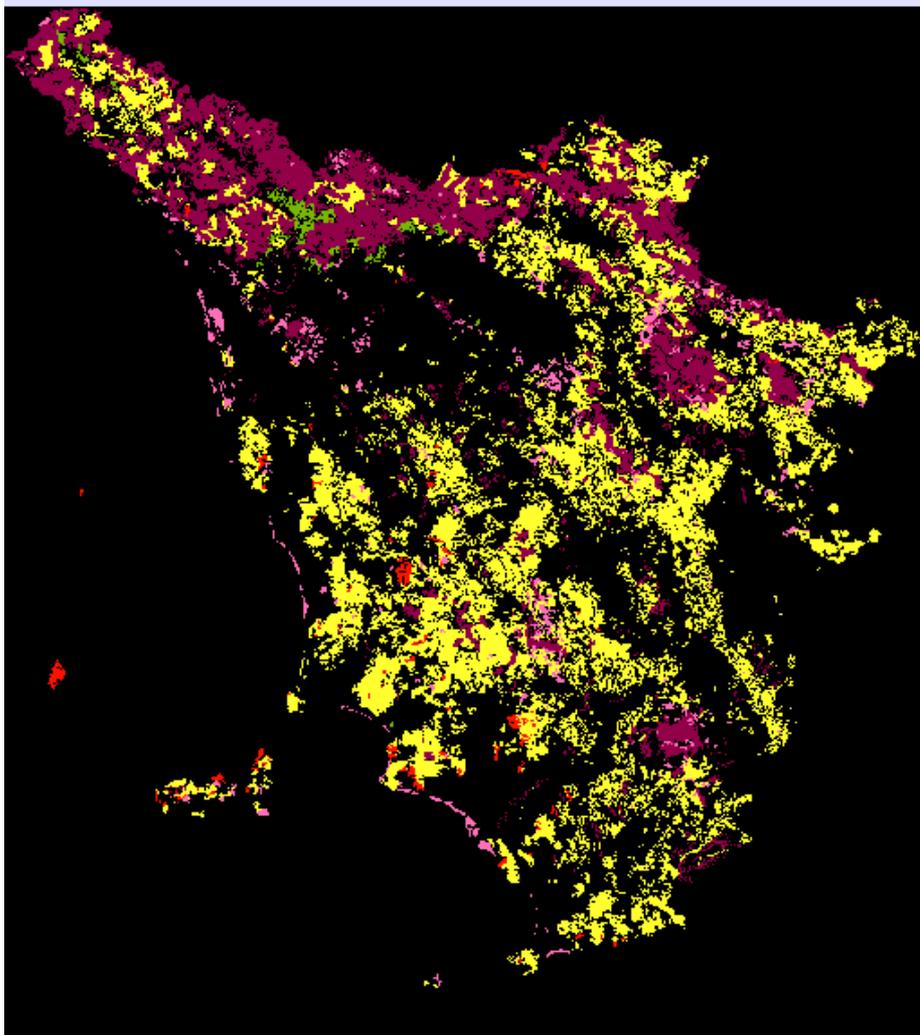
Mappa booleana

SE (mappa operatore **valore**, VERO, FALSO)

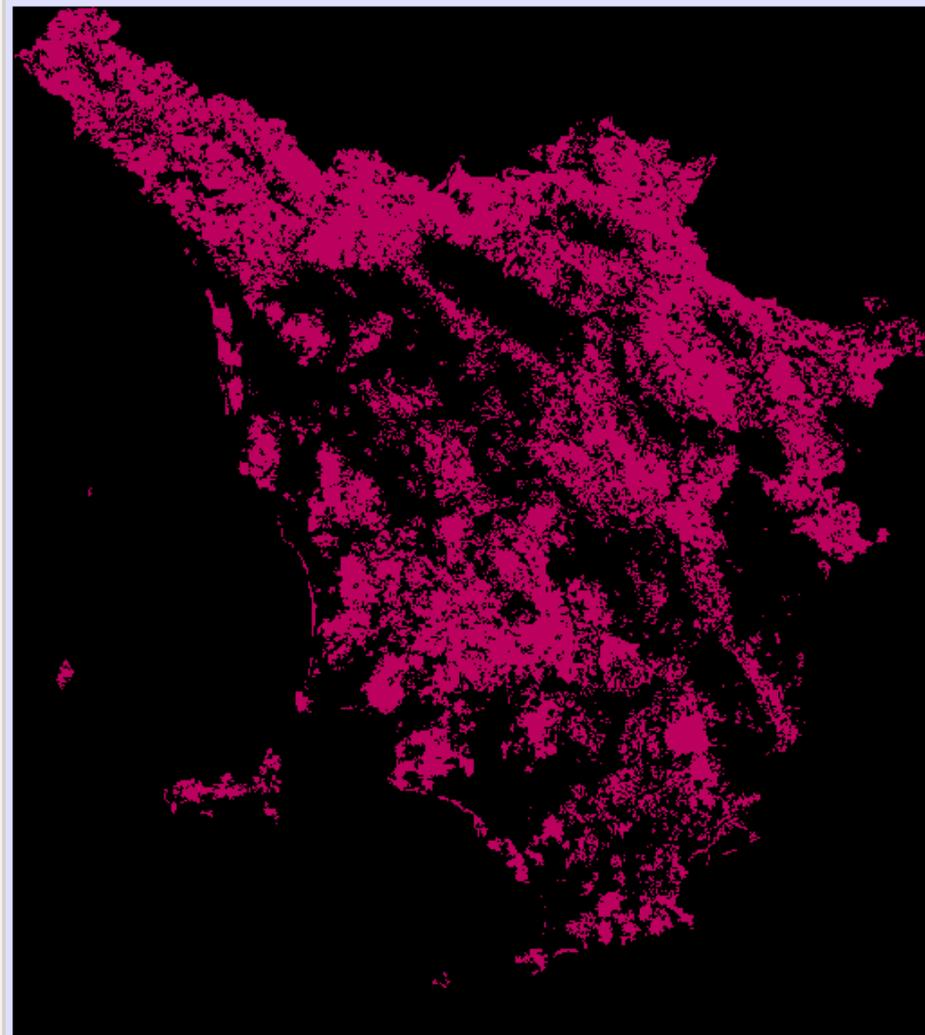
Mappe booleane

SE (CLC \geq 311 AND CLC \leq 313, 1, 0)

clc_forestale



bosco_0_1



Mappe booleane

RECLASS - image classification / reclassification

Type of file to reclass
 Image
 Vector
 Attribute values file

Classification type
 User-defined reclass
 Equal-interval reclass

Input file : ...

Output file : ...

Reclass parameters

Assign a new value of	To all values from	To just less than
0	1	2
1	3	4

Use .RCL file... Save as .RCL file... Remove line Clear grid

Output documentation...

OK Close Help

GRASS GIS Raster Map Calculator

Operators

+	-	&&	
*	/	&	
>	>=	&&&	
<	<=	<<	>>
==	!=	>>>	!
%	^	a ? b : c	~

Operands

Name for new raster map to create

Insert mapcalc function

Insert existing raster map

() Clear

Expression

Load Save Help Run Close

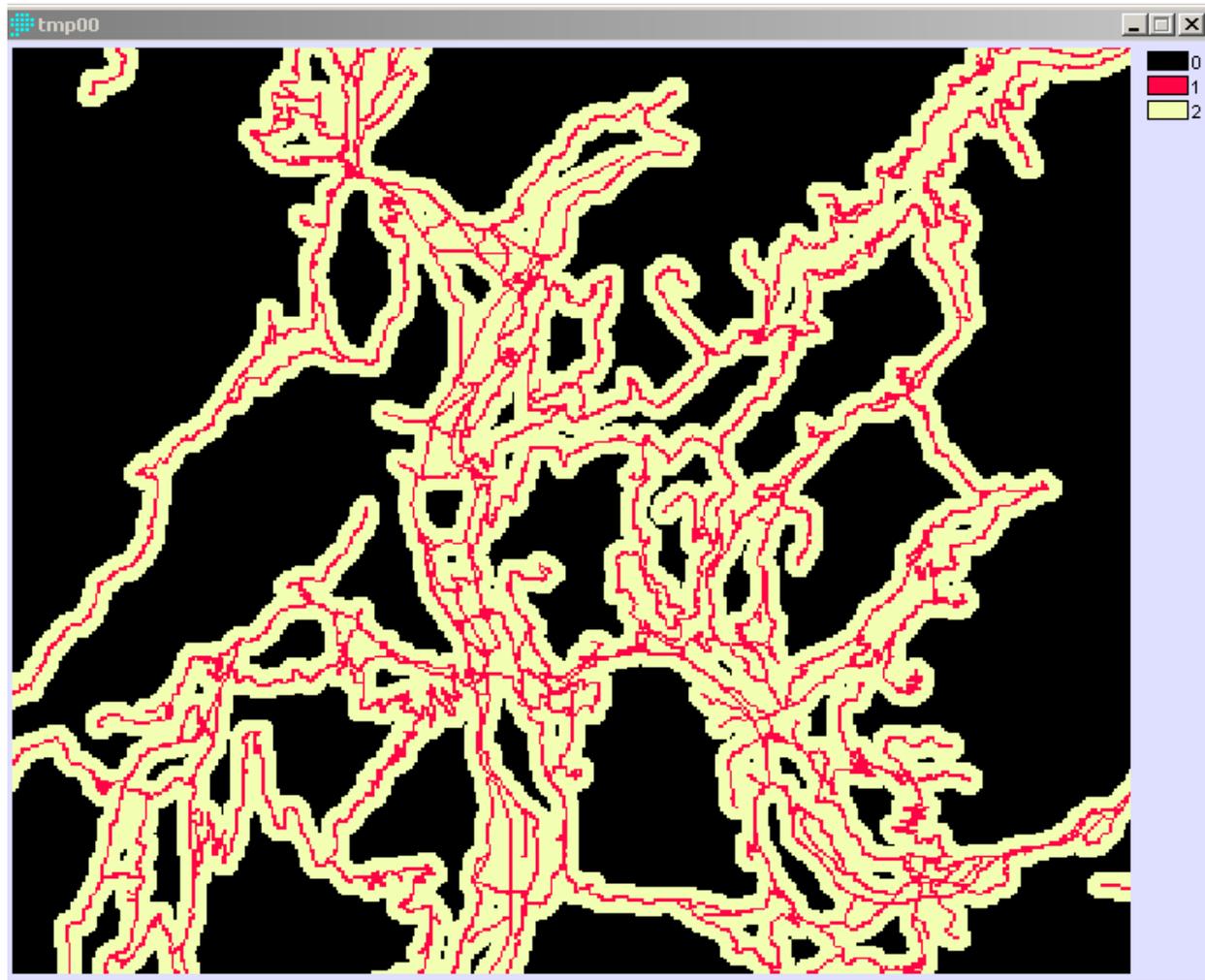
Add created raster map into layer tree

r.mapcalc 'dtm_rec = if(DTM@PERMANENT)>=900,1,0'

rough_ground.RCL - Blocco note

```
File Modifica Formato Visualizza ?
1 0 2
0 2 4
```

Mappe booleane



Prodotto cartesiano

Rischio frane

A- Uso del suolo {terreno agrario, terreno abbandonato, bosco}

B - Morfologia {pendenza inferiore o uguale al 20%, pendenza tra il 20 ed il 70%, pendenza maggiore o uguale al 70%}

C - Litologia {terreno argilloso, rocce ofiolitiche}

$A \times B \times C = \{agr-p1-arg, agr-p1-of, agr-p2-arg, agr-p2-of, agr-p3-arg, agr-p3-of, abb-p1-arg, abb-p1-of, abb-p2-arg, abb-p2-of, \mathbf{abb-p3-arg}, abb-p3-of, bos-p1-arg, bos-p1-of, bos-p2-arg, bos-p2-of, bos-p3-arg, bos-p3-of\}$