IZSAM G.CAPORALE
TERAMO

Individuazione di eco-regioni in Italia a supporto della gestione di malattie trasmesse da vettori

Annamaria Conte, Carla Ippoliti, Luca Candeloro, Maria Goffredo

Progetto IZS AM RC 05/14

Obiettivo: individuare eco-regioni in Italia supporto della gestione di malattie trasmesse da vettori

PARTNERS

- Statistica e GIS - IZSAM
- Epidemiologia - IZSAM
- Entomologia - IZSAM
- Biological Control and Spatial Ecology - Université Libre de Bruxelles
- Center of Excellence for the integration of remote sensing TEchniques and numerical Modelling for the Prediction of Severe weather, CETEMPS – Università dell'Aquila

ECOREGIONI

Si definiscono ecoregioni aree aventi condizioni climatiche ed ambientali «**simili**» e che sono classificate per specifici «**obiettivi**»

Quale obiettivo?

Quali condizioni?

Qual è il nostro obiettivo?

West Nile Disease, Rift Valley, Usutu ⇨ **zanzare**

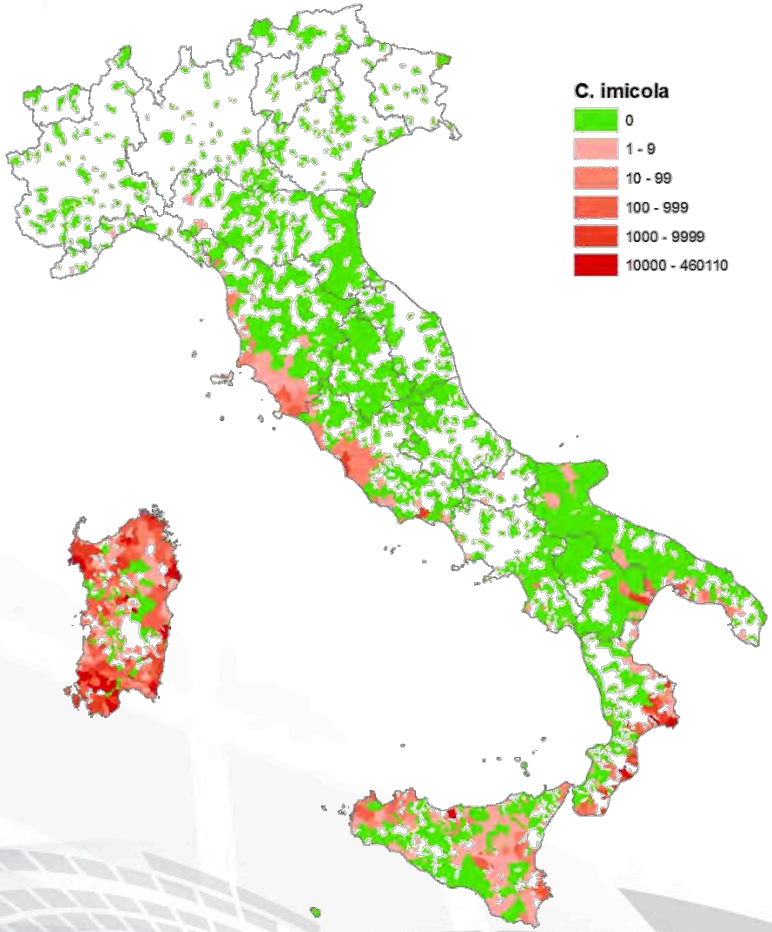
Qual è il nostro obiettivo?

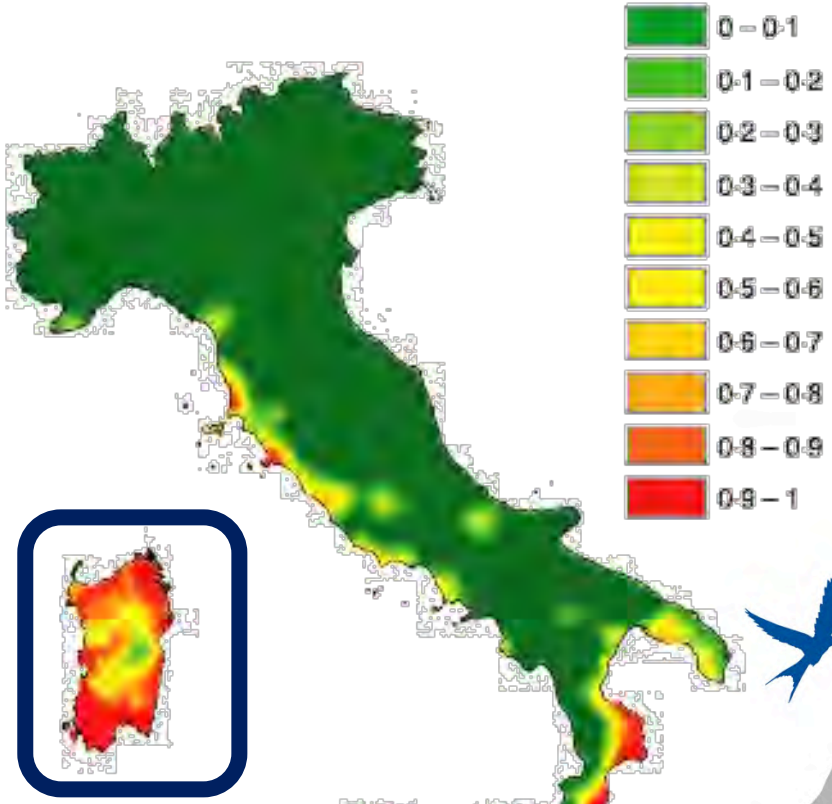
Bluetongue, Peste Equina, Epizootic Hemorragic Disease, Schmallenberg → **Culicoides**

C. imicola

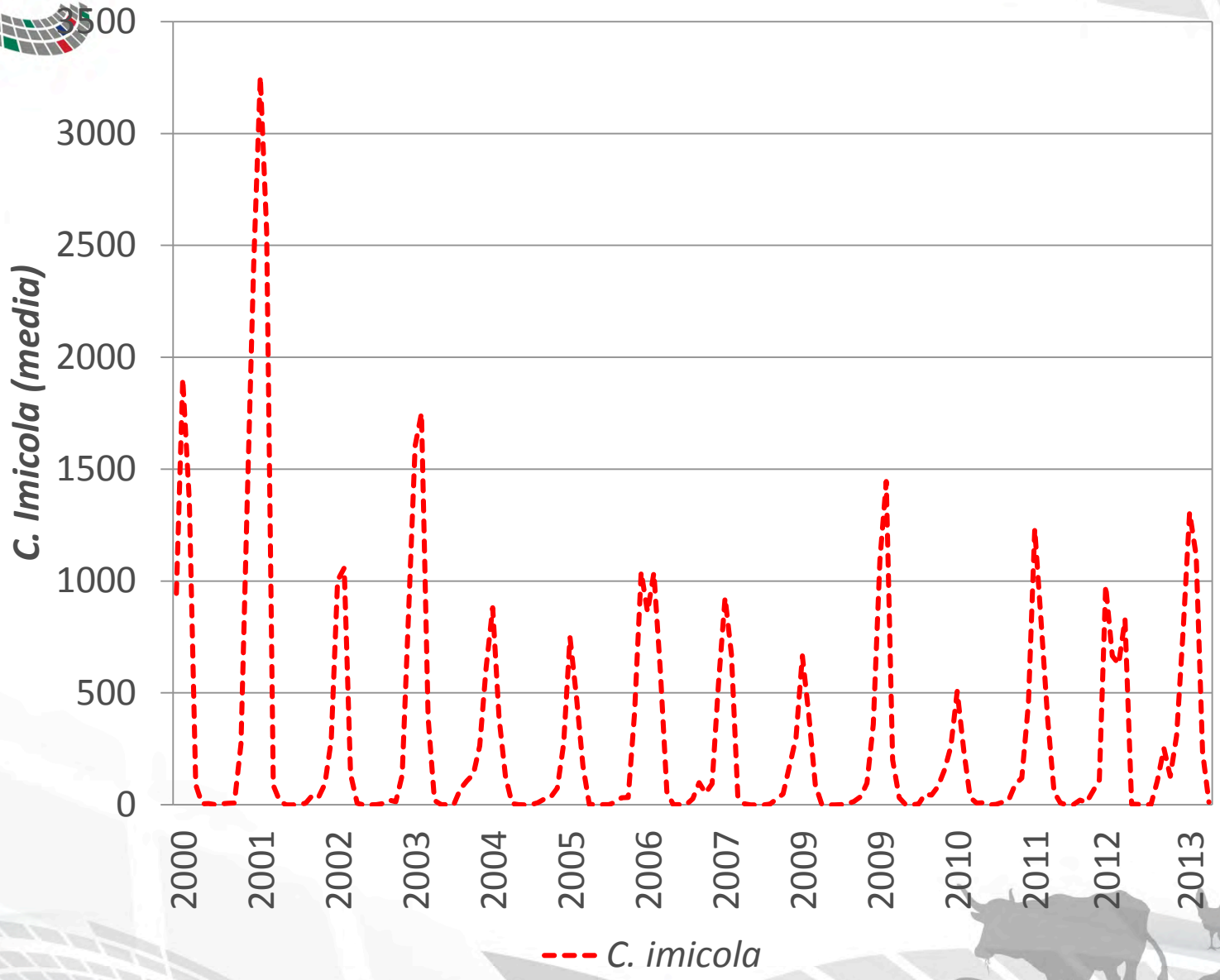
C. obsoletus/scoticus

Distribuzione *C. imicola*

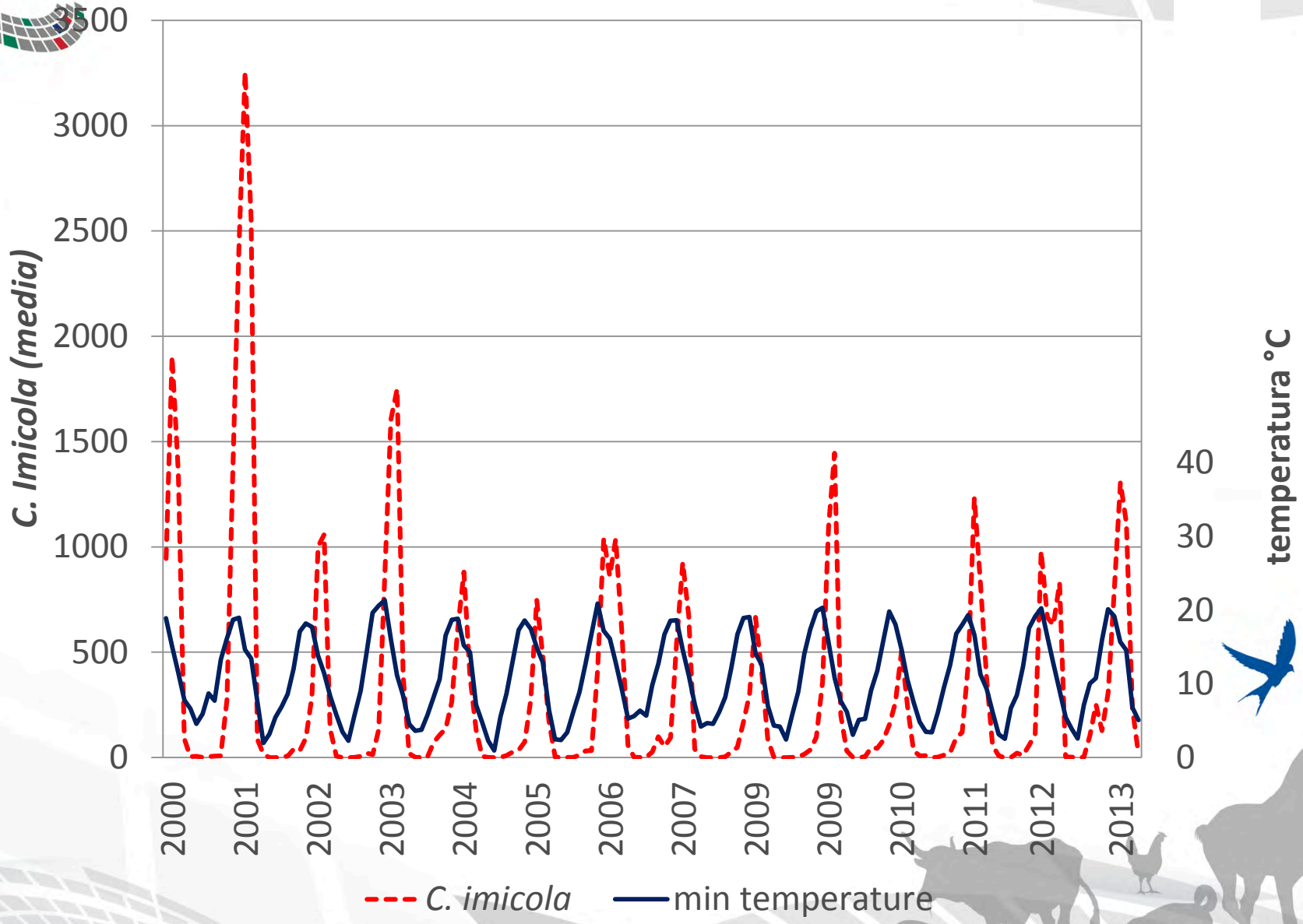




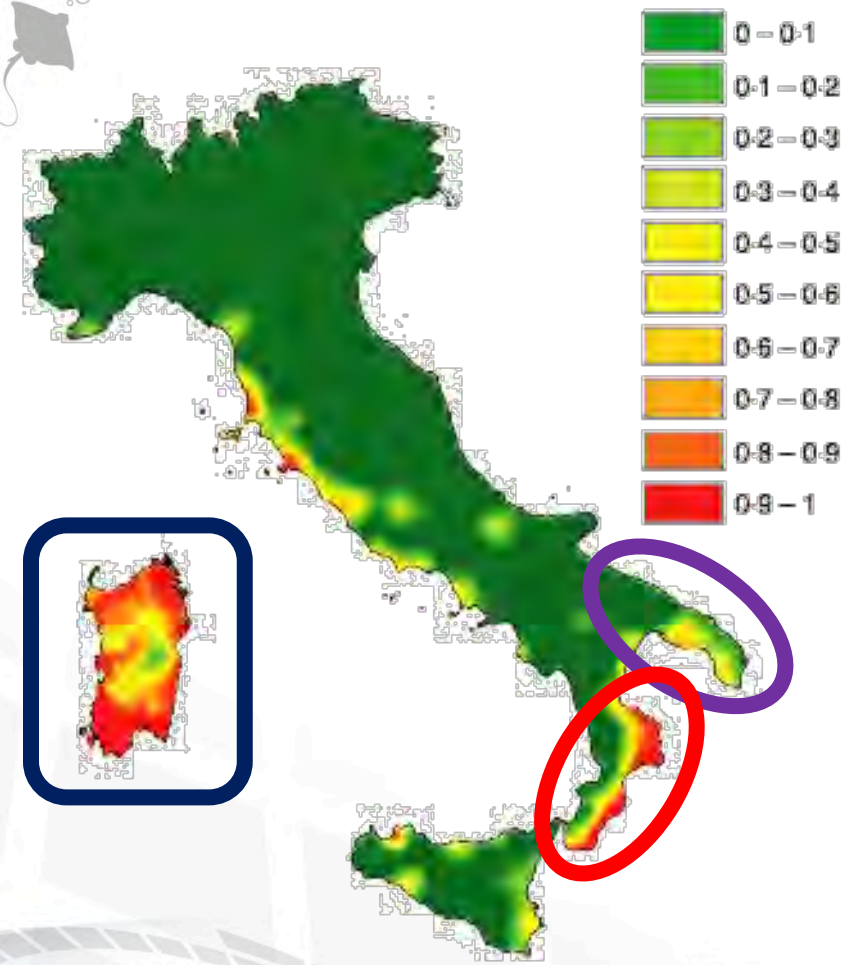
Andamento C. imicola

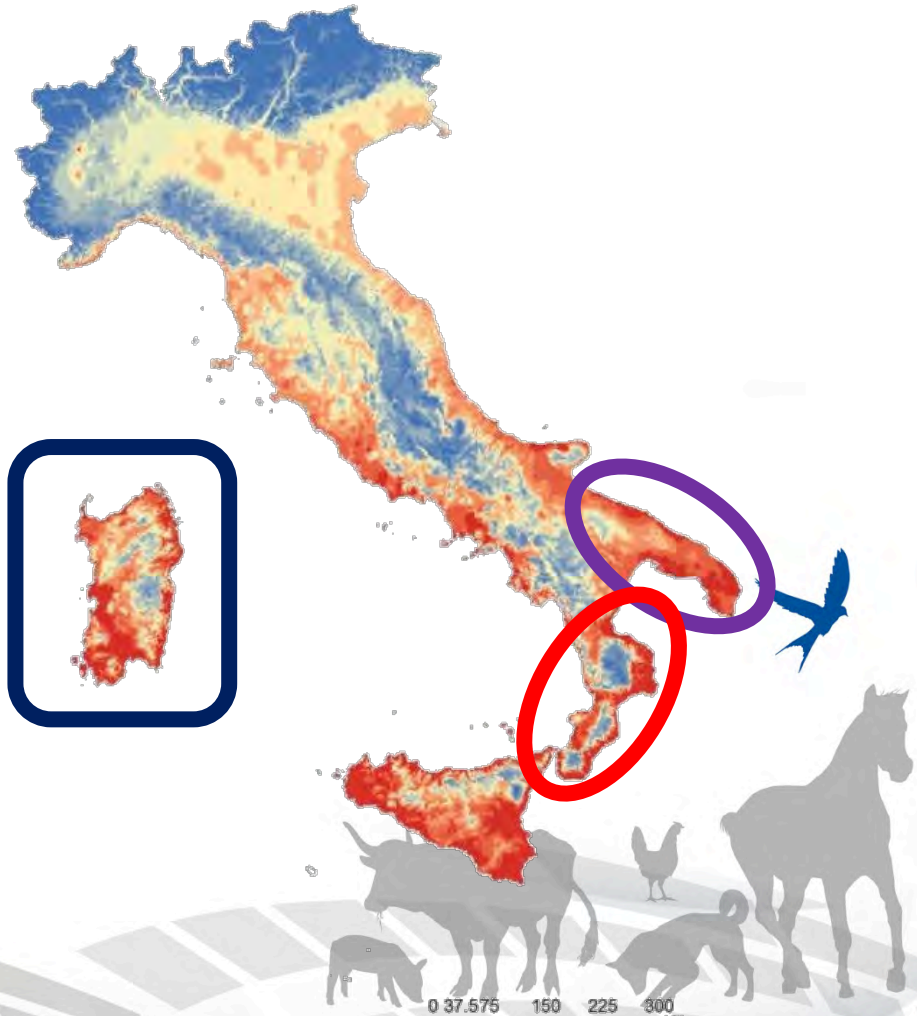


Andamento C. imicola



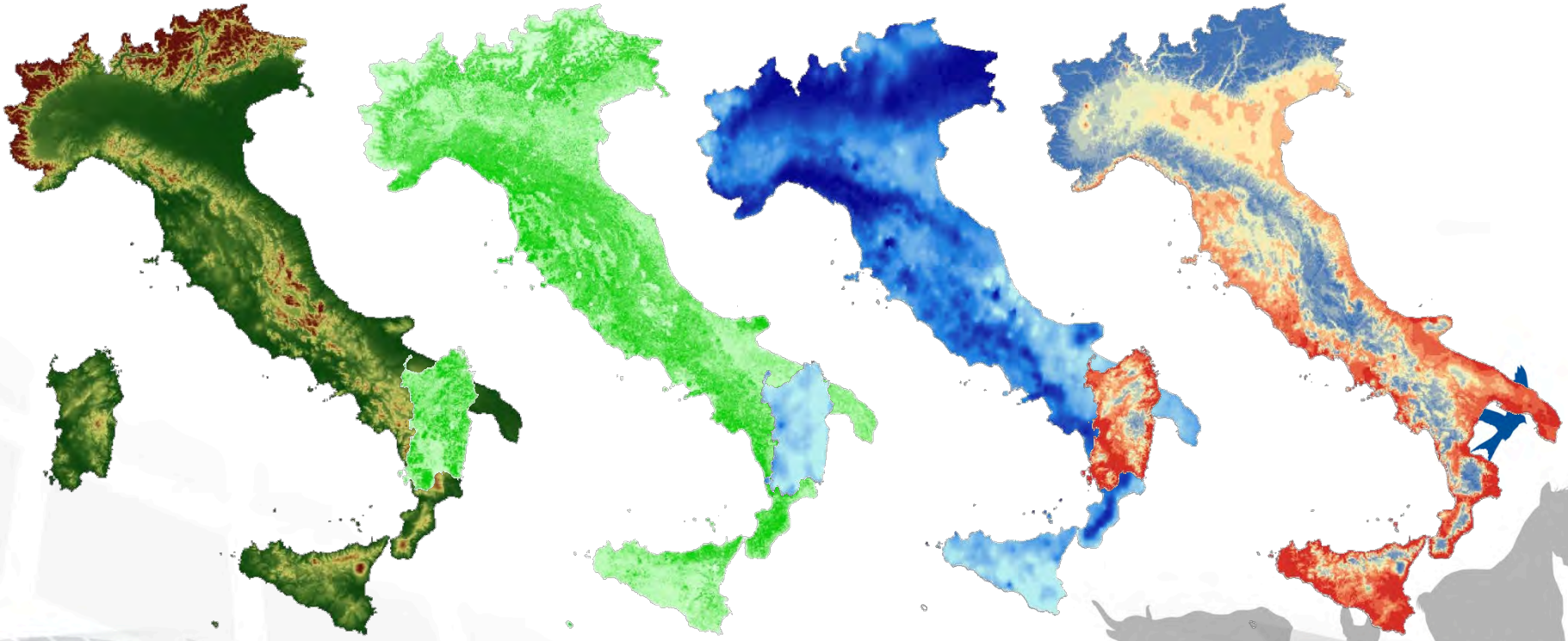
Distribuzione *C. imicola* e temperatura





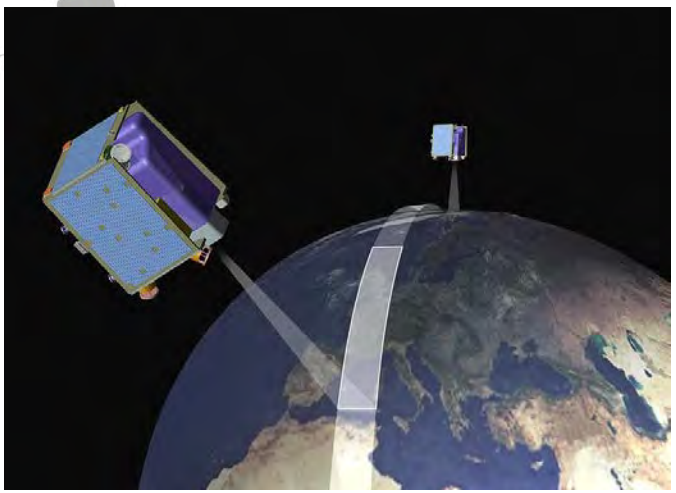
Approccio multivariato: variabili climatiche ed ambientali e derivate

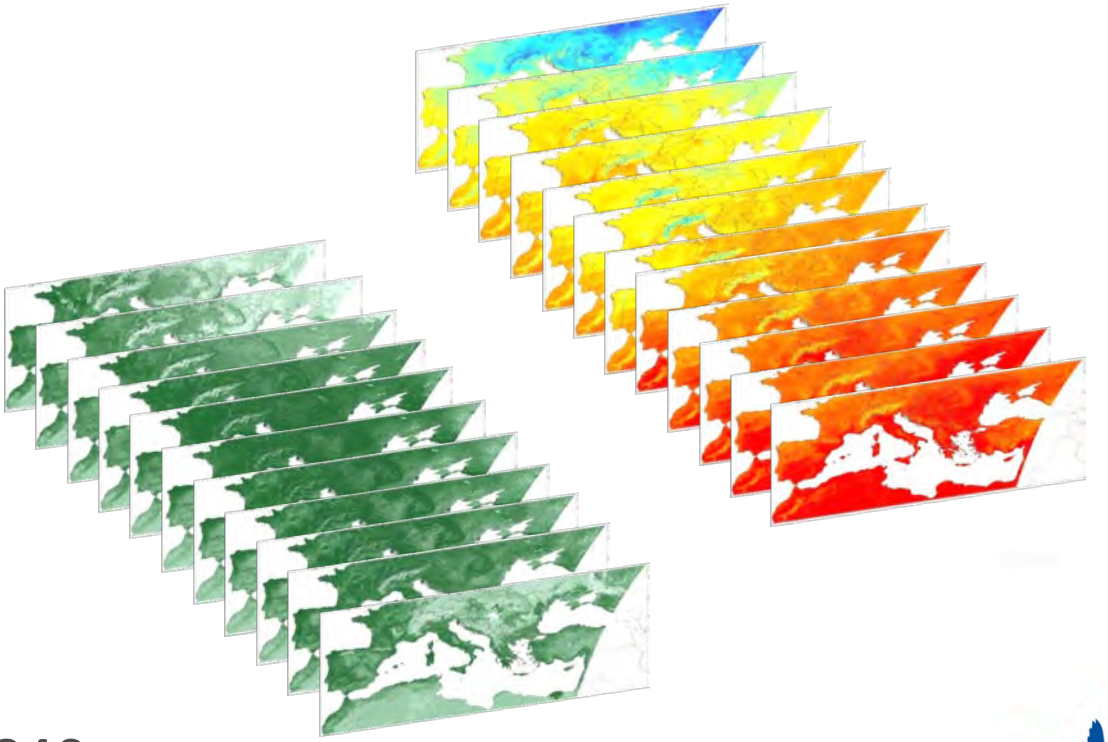
altitudine NDVI pioggia temperatura



Approccio multivariato: variabili climatiche ed ambientali e derivate

Periodo: 2007-2016





Temperatura: 46x4x10 = 1840

Vegetazione: 23x4x10 = 920

Immagini pioggia: 356x10= 3652

Approccio multivariato: variabili climatiche ed ambientali e stats

- Altitudine - variabilità
- Temperatura
- Variazione temperatura
- Periodo di massima temperatura
- Vegetazione
- Variazione vegetazione
- Pioggia

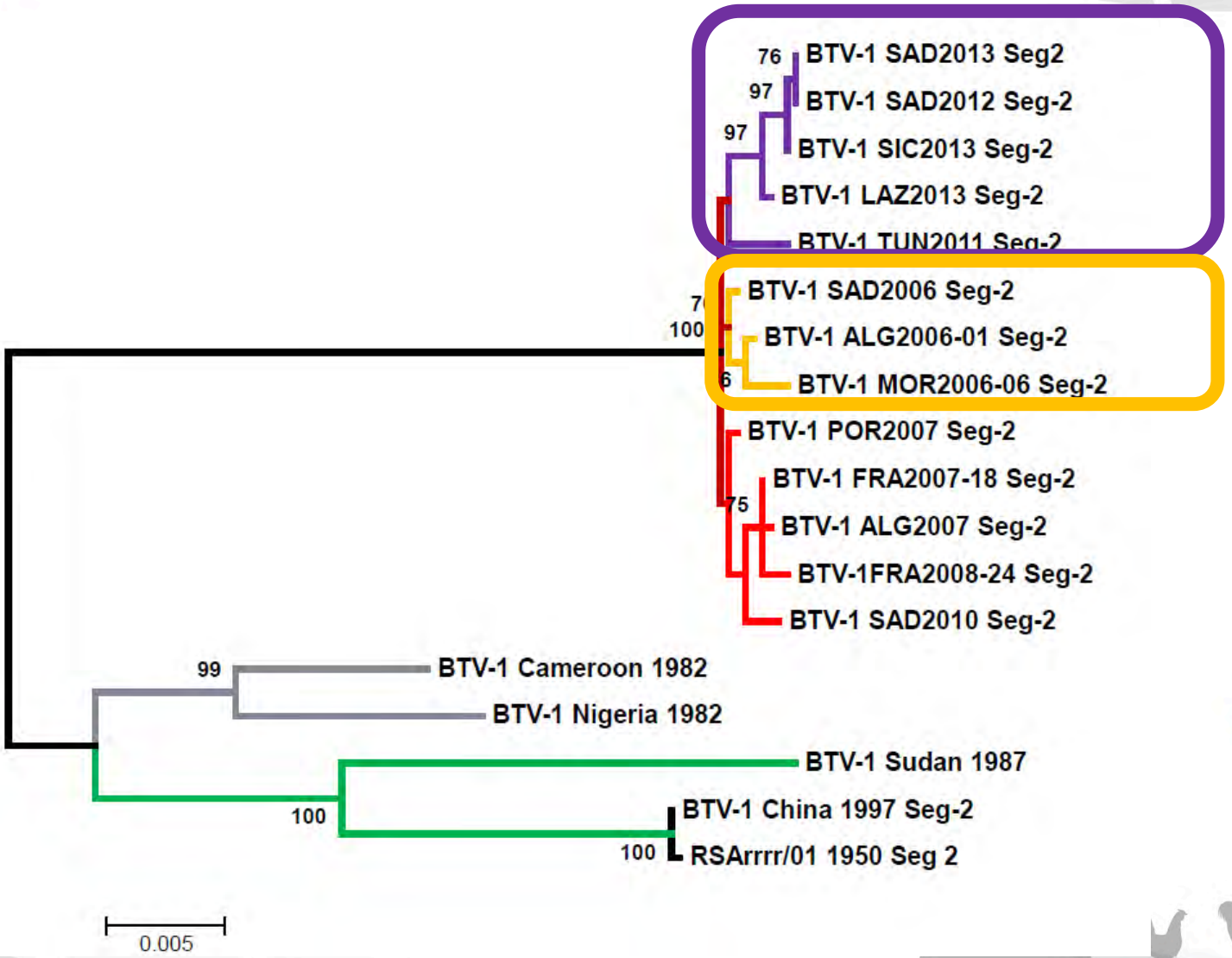
PCA →

F_1 F_2 F_3

Cluster analysis ↓

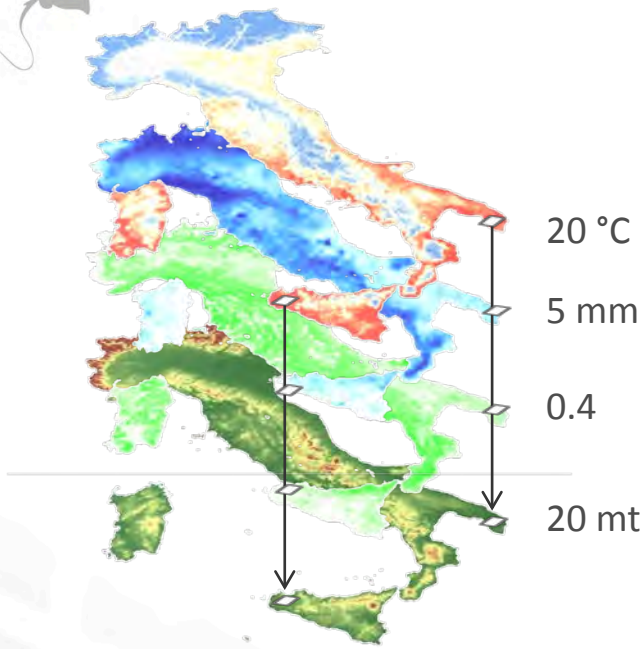
Aree simili

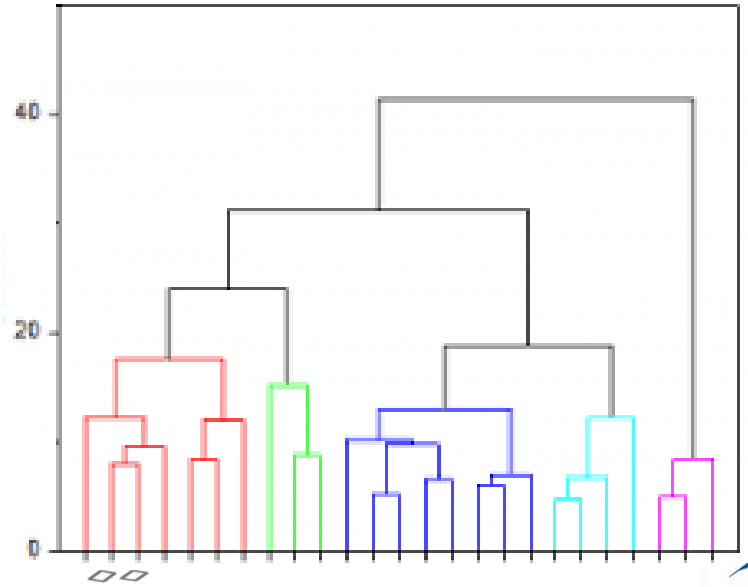
Cluster analysis



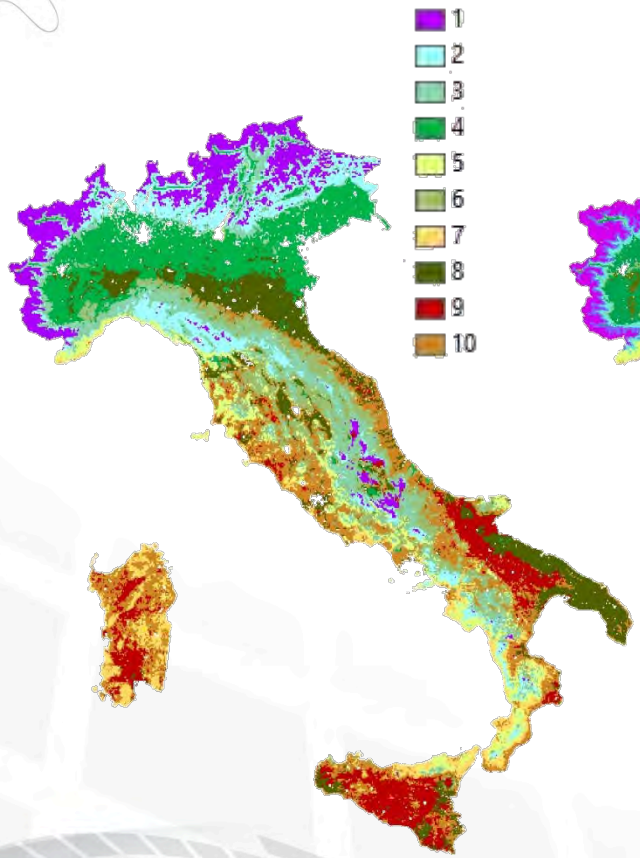
Lorusso et.al 2014 Infection Genetics and Evolution

Cluster analysis: variabili climatiche ed ambientali

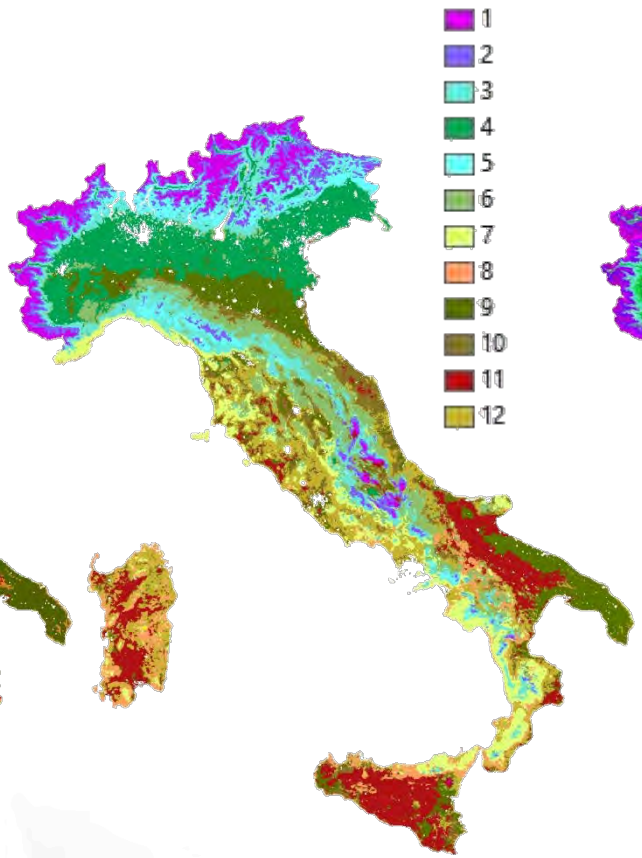




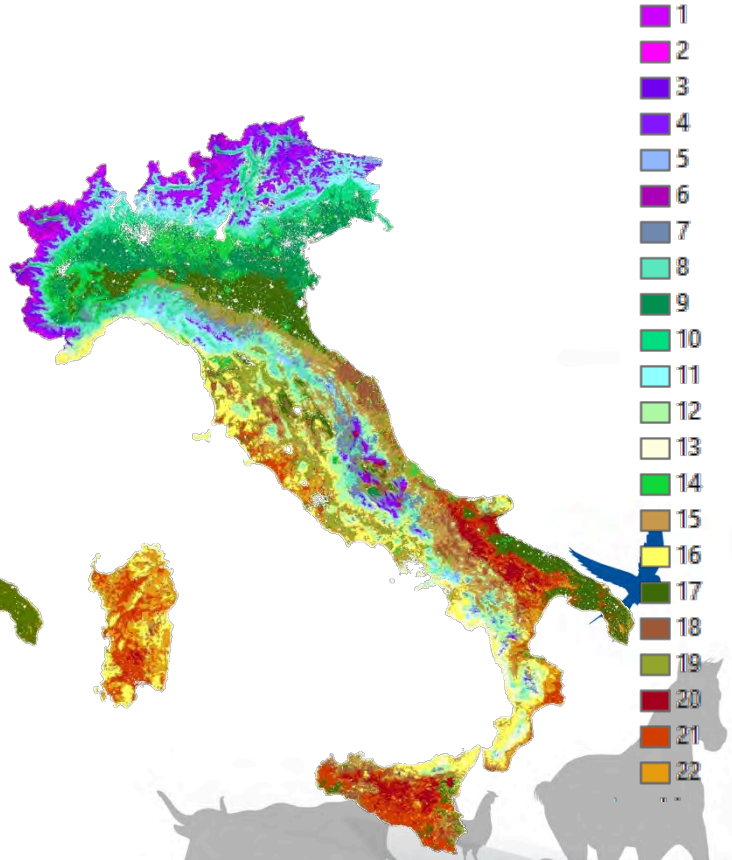
Cluster analysis variabili climatiche ed ambientali



2000 mt

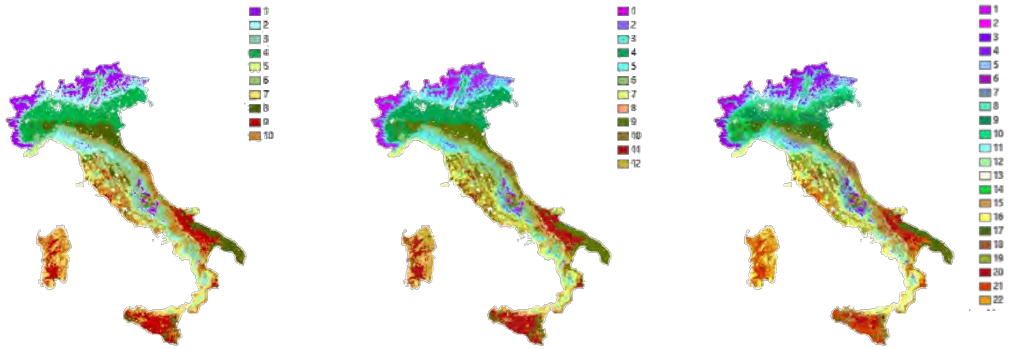


1000 mt



250 mt

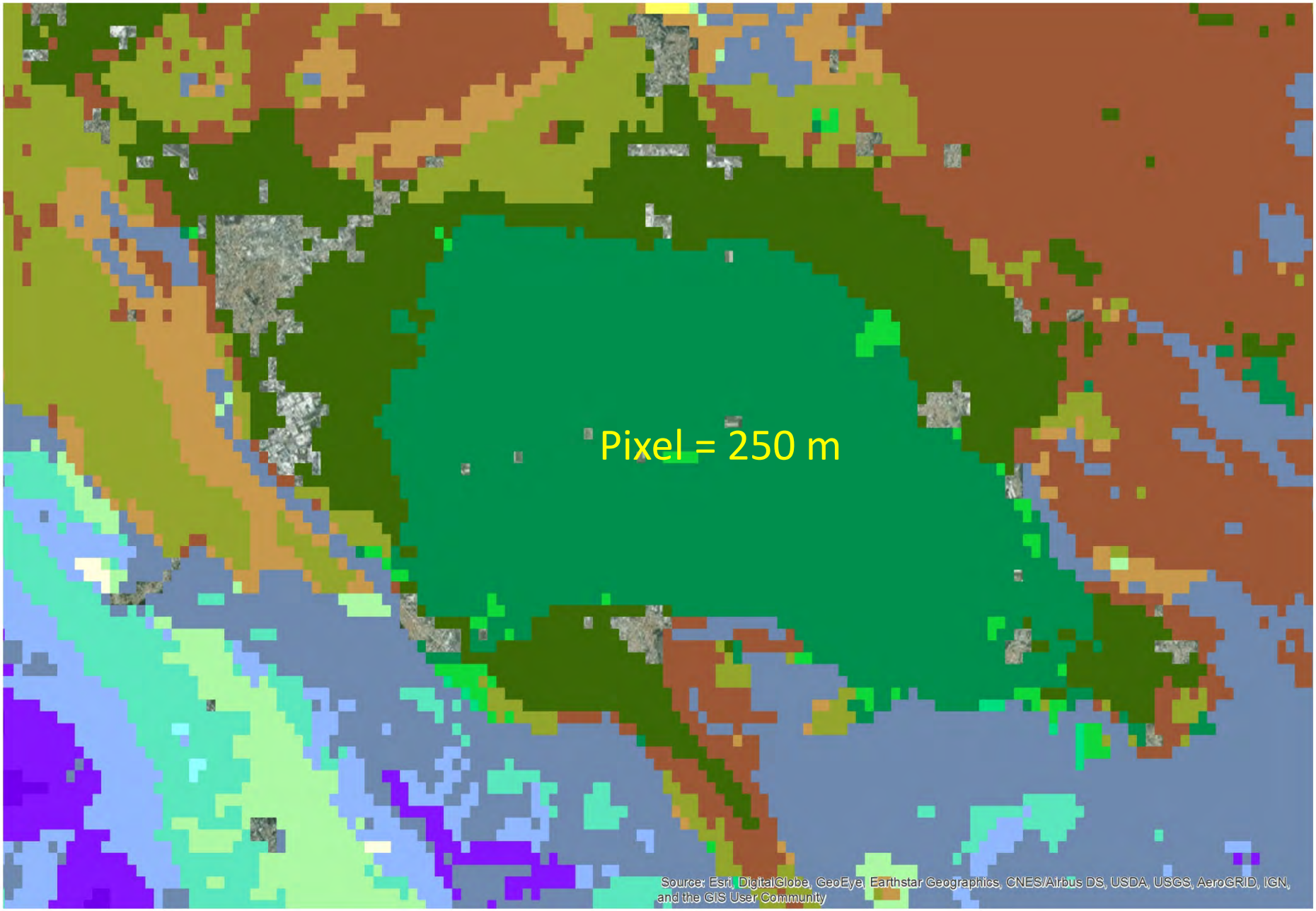
Cluster analysis variabili climatiche ed ambientali



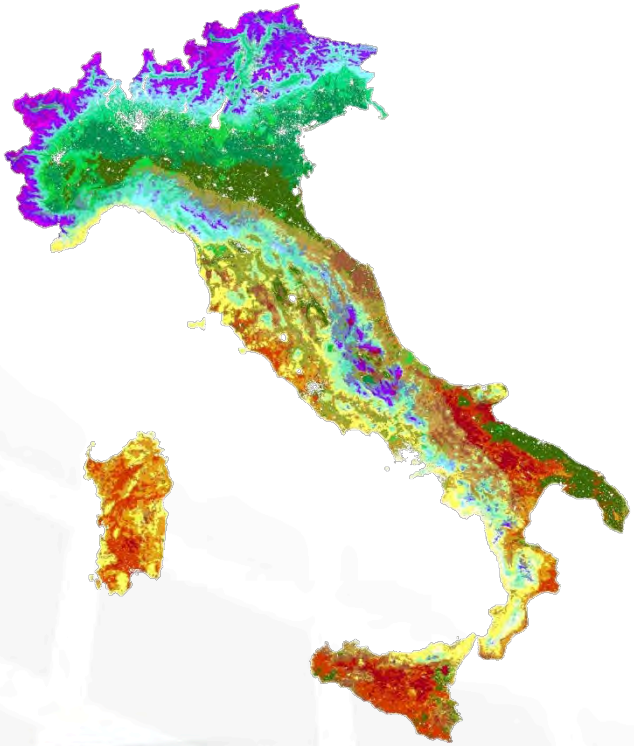
risoluzione	Numero pixel
2000 mt	362.250
1000 mt	1.441.032
250 mt	23.037.003

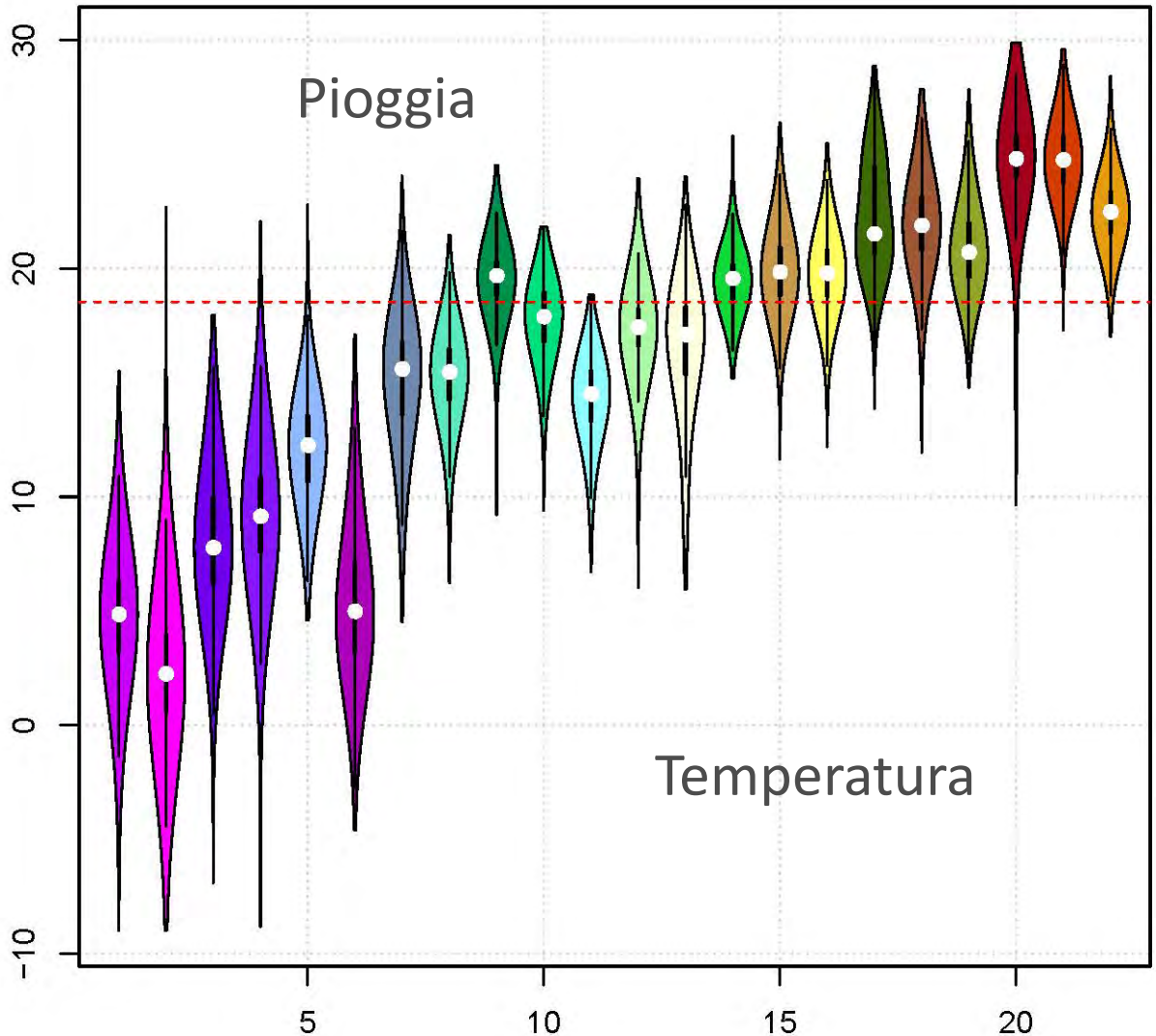
Pixel = 2 km
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Pixel = 1 km
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

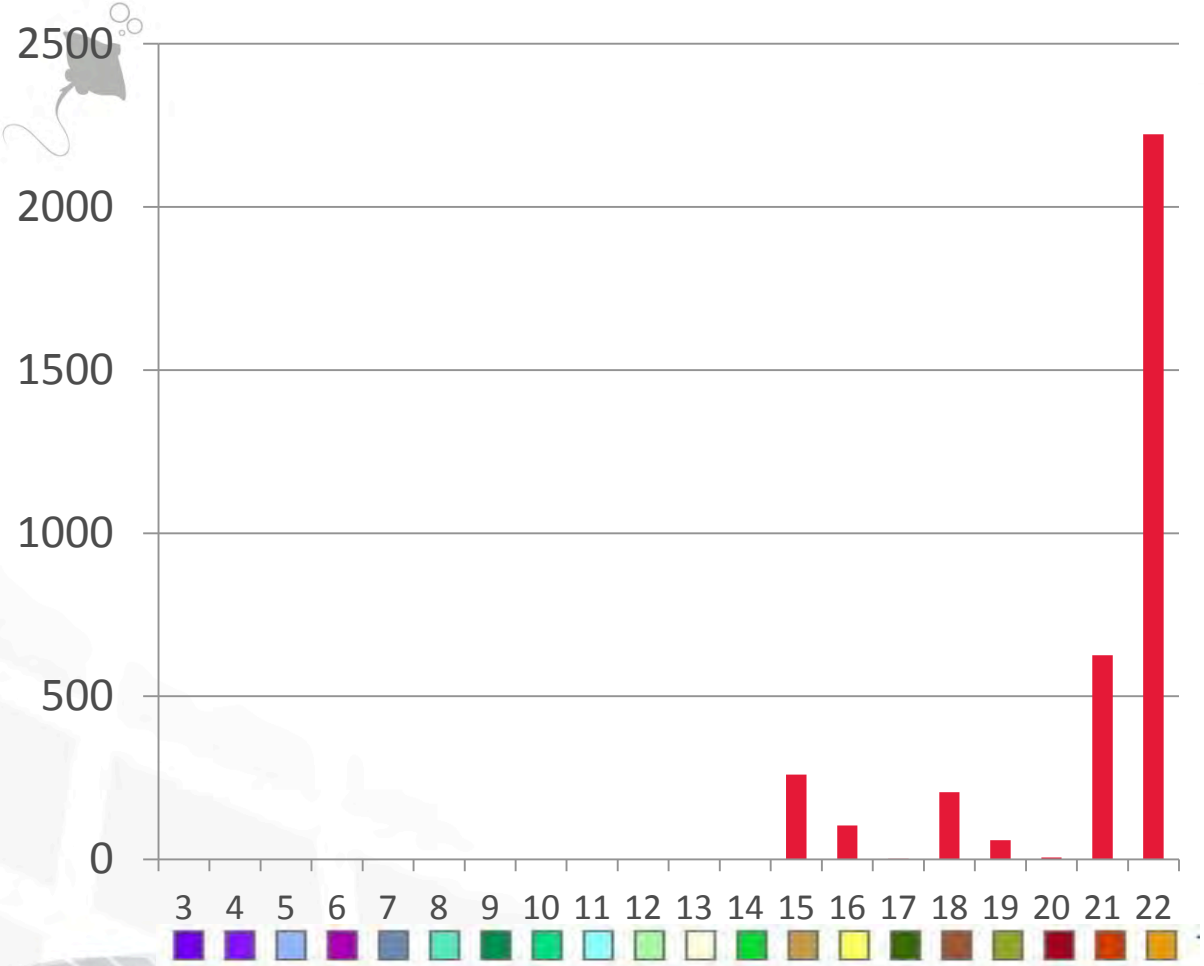

Pixel = 250 m
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

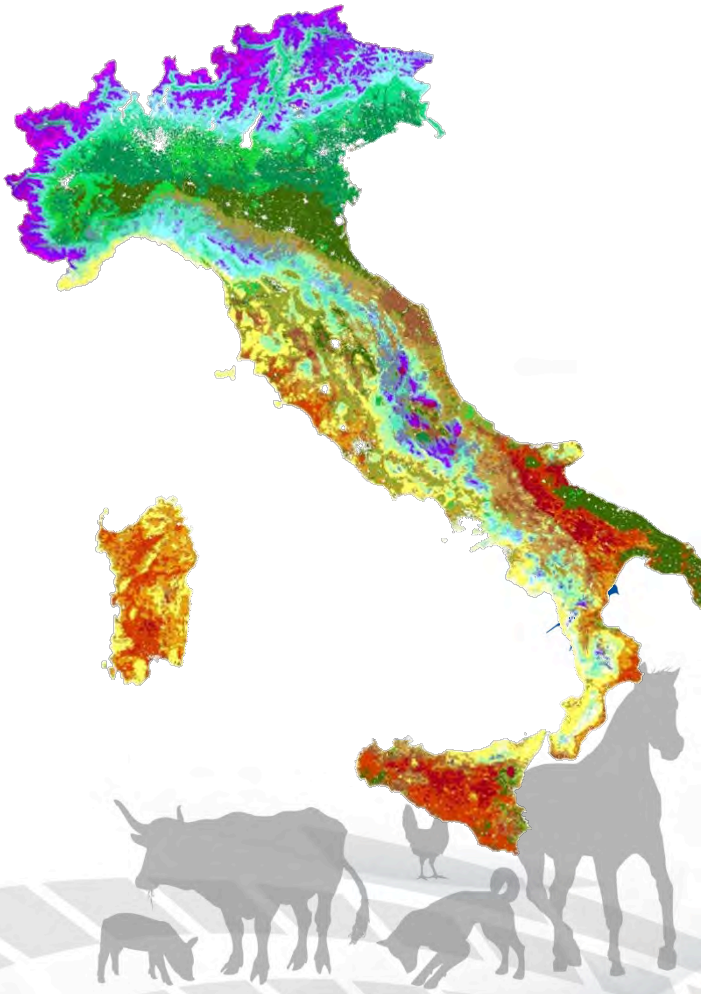
Cluster analysis: risultati



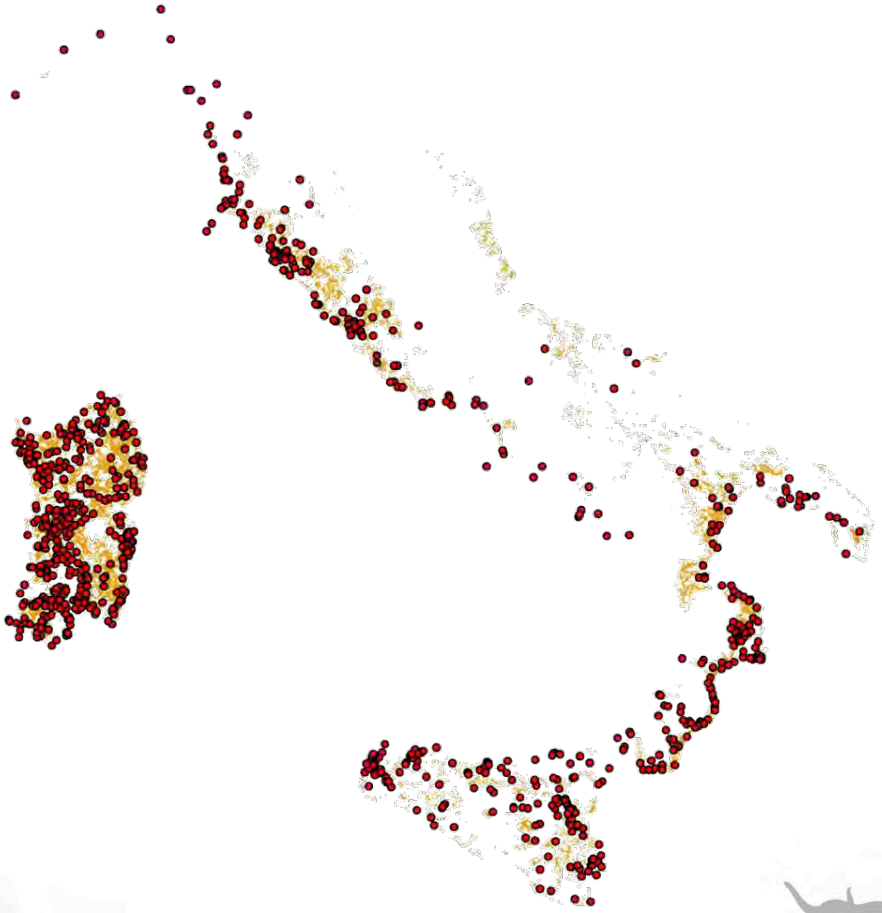


C. imicola media per cluster

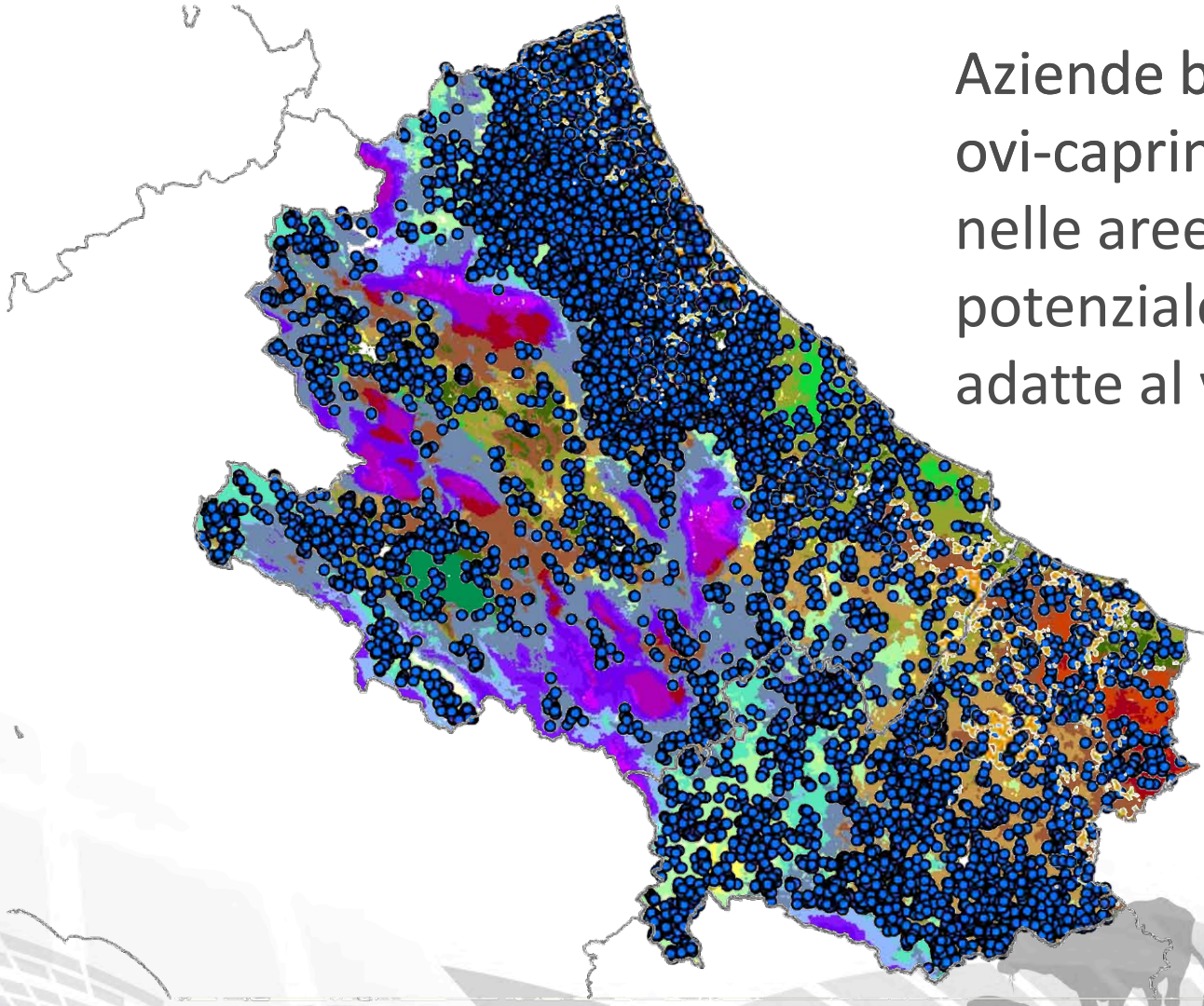




Presenza di *C. imicola* & cluster 22

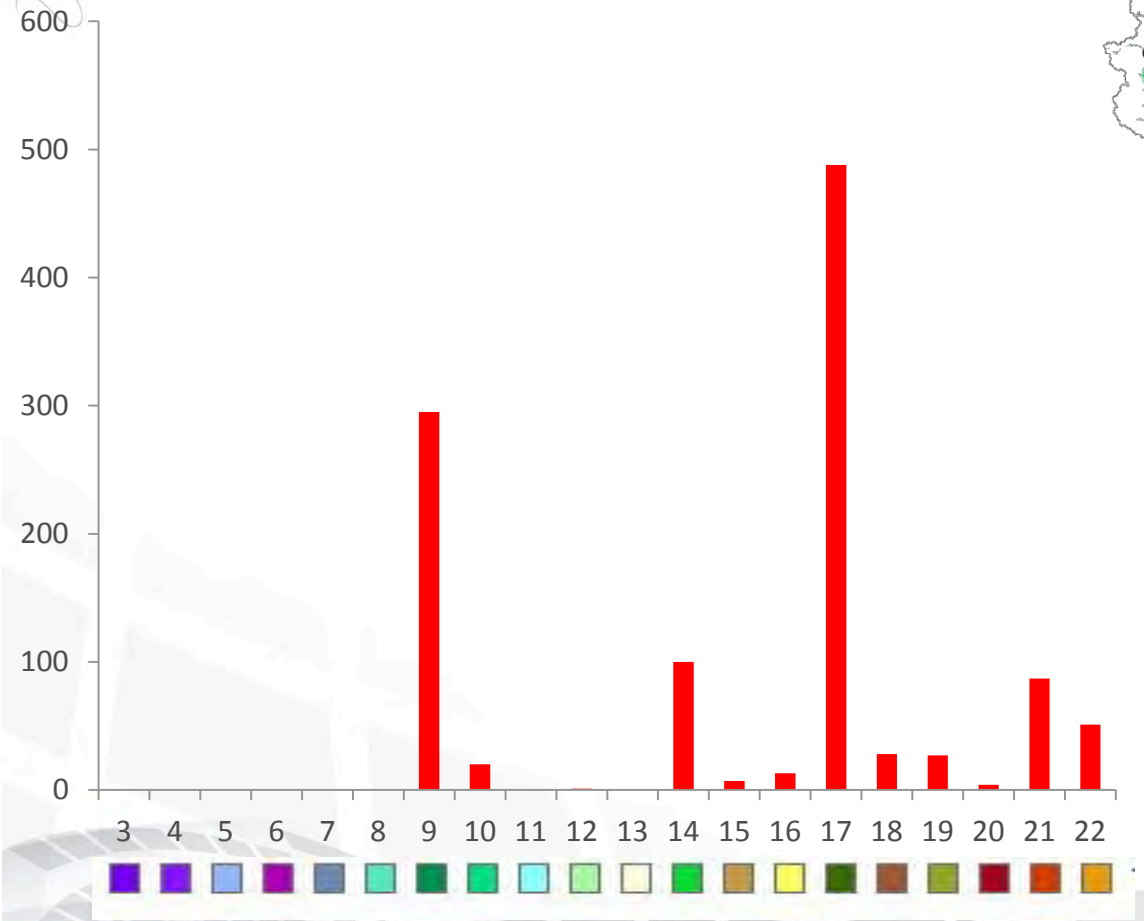


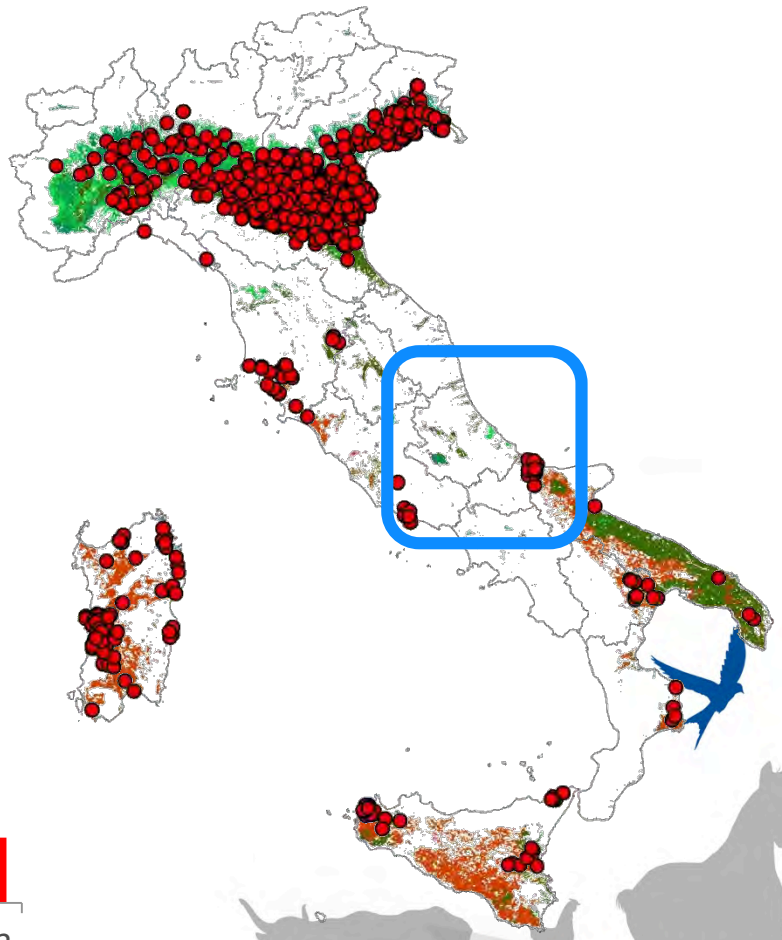
Come utilizzare le ecoregioni?



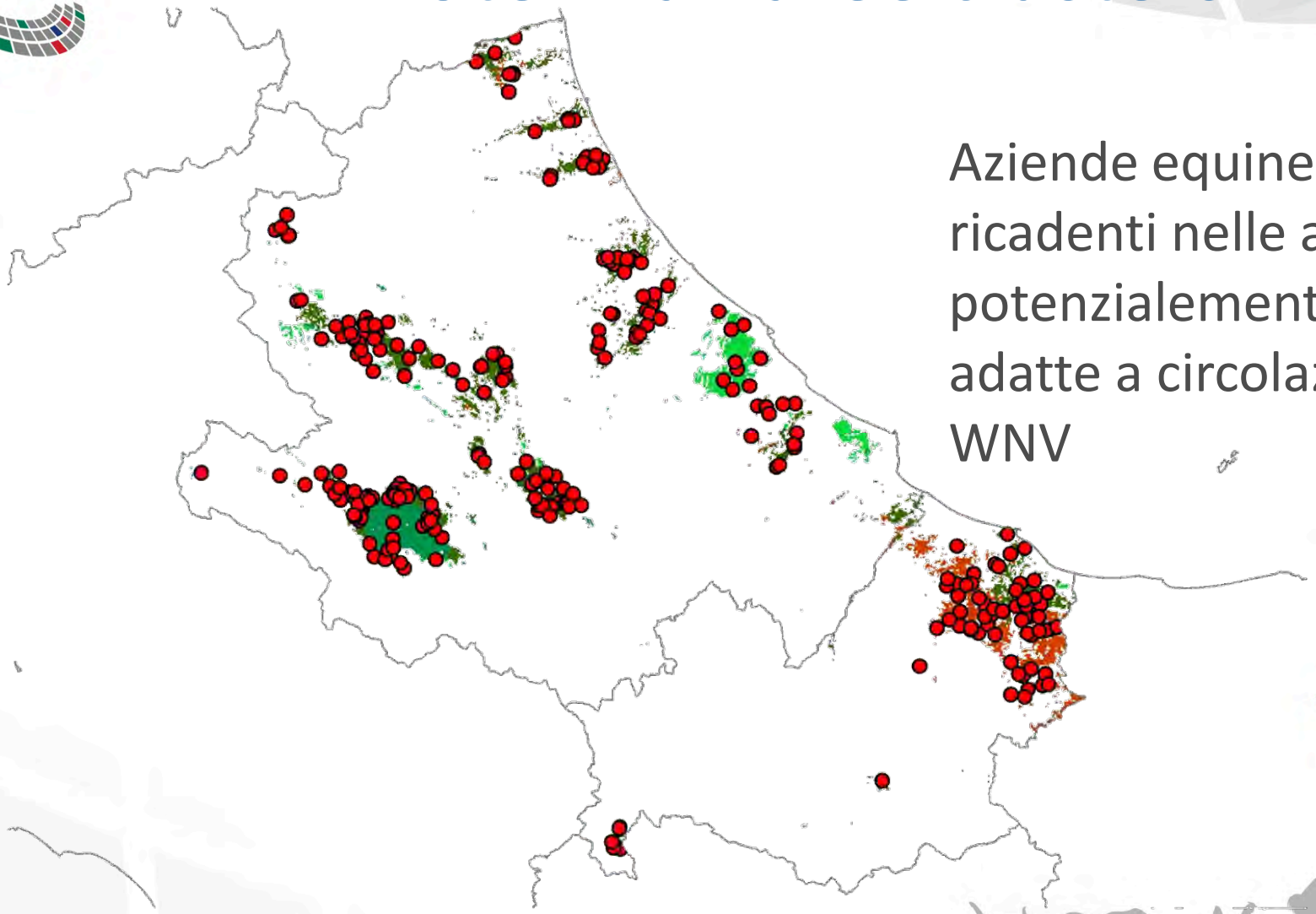
Aziende bovine e ovi-caprine ricadenti nelle aree potenzialemente più adatte al vettore

Focolai di WND dal 2008





Potenziali aree clusters WND



Aziende equine ricadenti nelle aree potenzialemente più adatte a circolazione WNV

Considerazioni

- Approccio oggettivo e riproducibile
- Applicabile a contesti generali, dalle VBD alla definizioni degli areali delle specie selvatiche, rischio di endemizzazione di specie aliene
- caratterizzabile nello specifico in base alla selezione delle adeguate variabili
- Strato informativo utilizzabile nelle pianificazioni di piani di sorveglianza, monitoraggio e controllo
- Clusters dinamici: metodo di individuazione di aree simili per periodo (chi è simile a chi e quando)

Gruppo di lavoro

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Grazie dell’attenzione