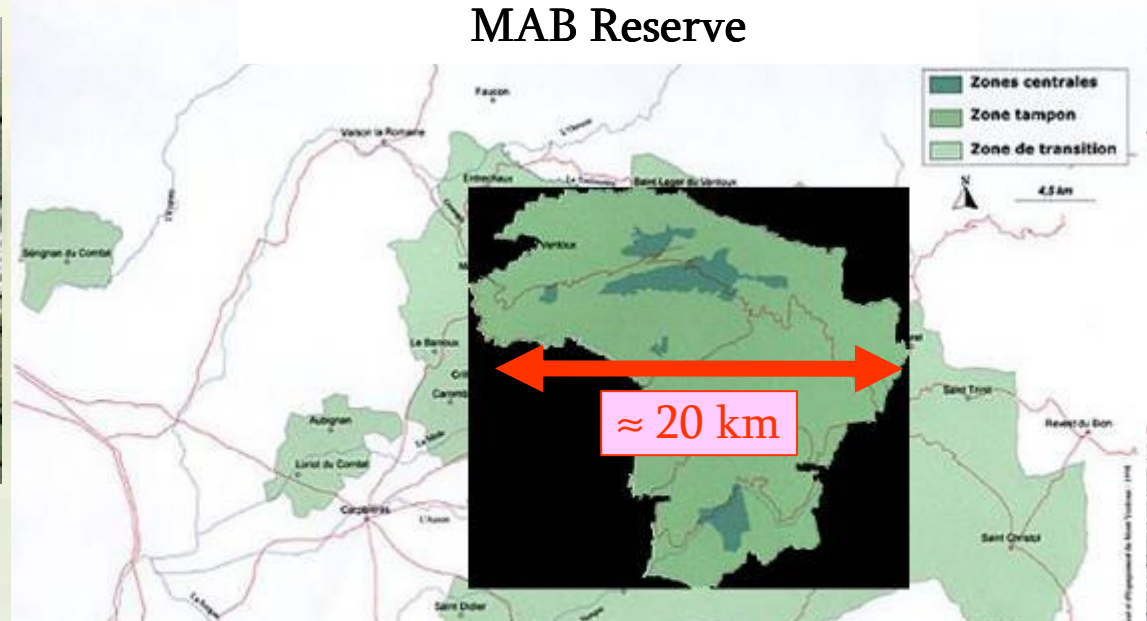
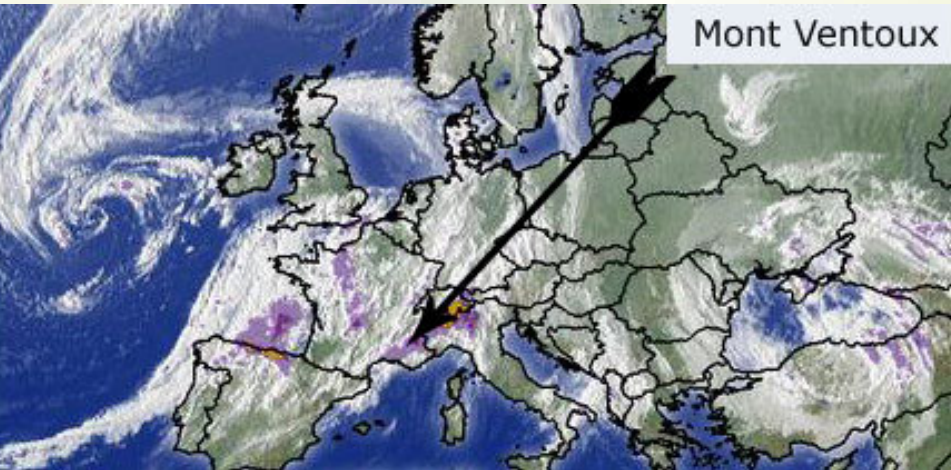


Ventoux : candidate for Mediterranean/alpine ISS



Main traits :

- Total area: 29 000 ha
- 20 km east-west range
- Calcareous bedrock
- Elevation range : 400-1900m
- Two highly contrasted North and South exposures
- Mainly covered by forest trees (about 80%)



Ventoux : A long history of multidisciplinary researches



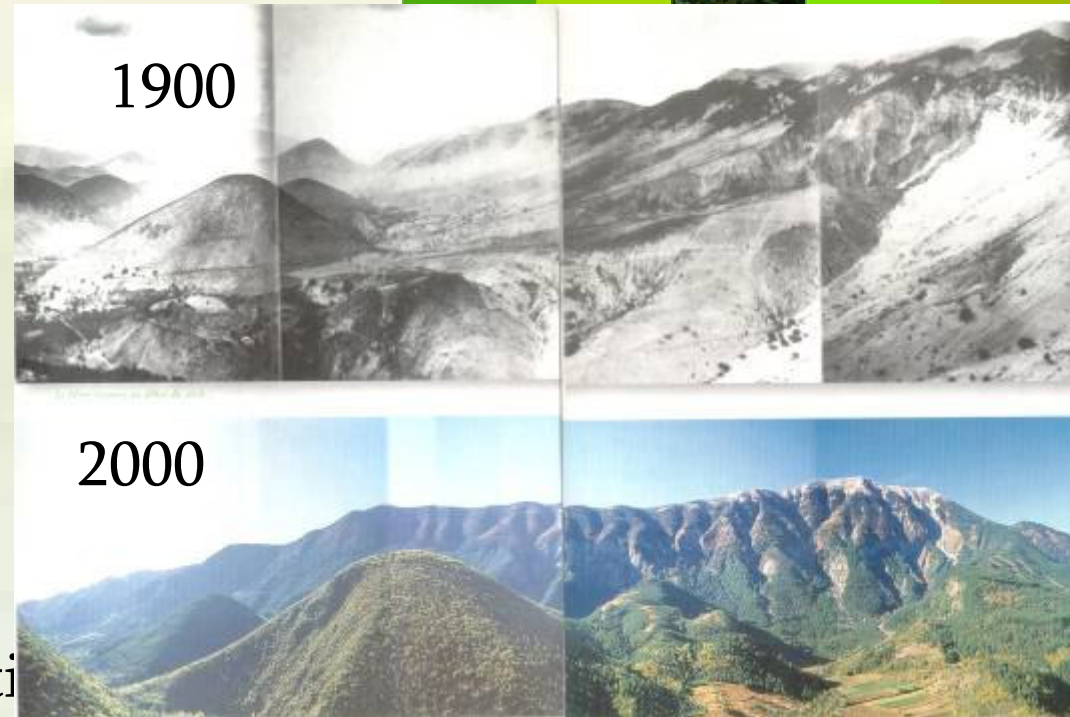
A highly dynamic forest composition:

1850 : very scarce vegetation due to deforestation and over-grazing

1860 -> 1950 : intensive afforestation for soil restoration and erosion control (mainly with pines)

1950 -> : evolution of species composition

Recolonization of “climax” broadleaves and conifers into the planted pine forest



Ventoux: A natural lab for researches on forest dynamics...

1960 -> intensive study site for ecological studies on animal or plant communities, landuse... by Universities and research institutes.

Ventoux : long history of multidisciplinary researches



LA TERRE ET LA VIE

revue d'écologie appliquée

Edité par la
SOCIÉTÉ NATIONALE DE PROTECTION DE LA NATURE
ET D'ACCLIMATATION DE FRANCE

57, rue Cuvier - PARIS V^e

The Ecology of Mont
Ventoux, Southern France

1978

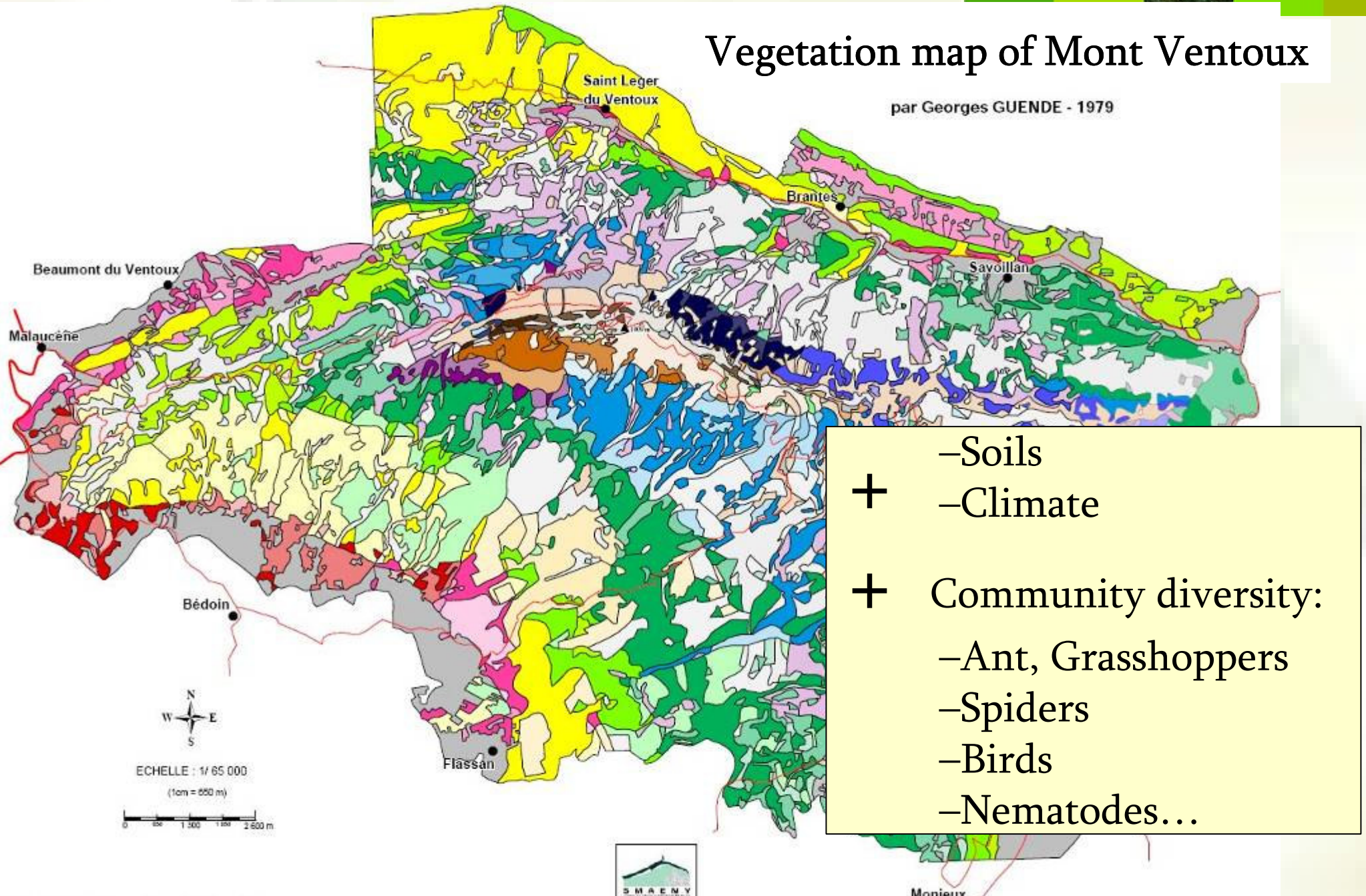
P. du Merle (INRA
Avignon) coordinator

(research program “Biological
equilibrium in Mont Ventoux,
1972-1977)

Ventoux : Large diversity of communities & ecosystems

Vegetation map of Mont Ventoux

par Georges GUENDE - 1979



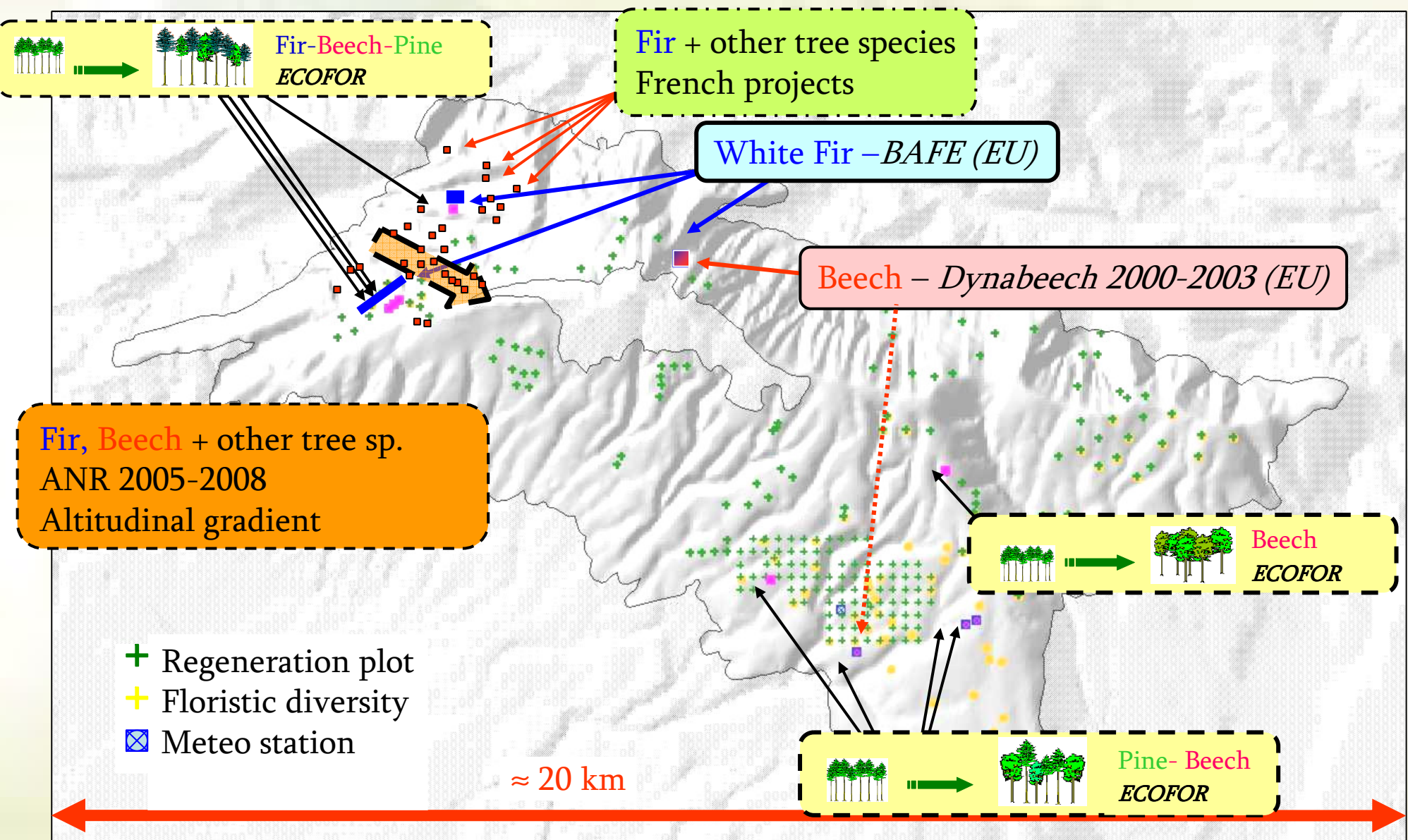
- Soils
- + -Climate
- + Community diversity:
 - Ant, Grasshoppers
 - Spiders
 - Birds
 - Nematodes...

Ventoux : recent / ongoing ISP



NATIONAL 1998-2001 : ■ 10 sites of 0,5 to 1 ha (≈ 7 ha) Biodiversity survey +
 PROJECT + 214 permanent plots (≈ 12 ha) Competition dynamics

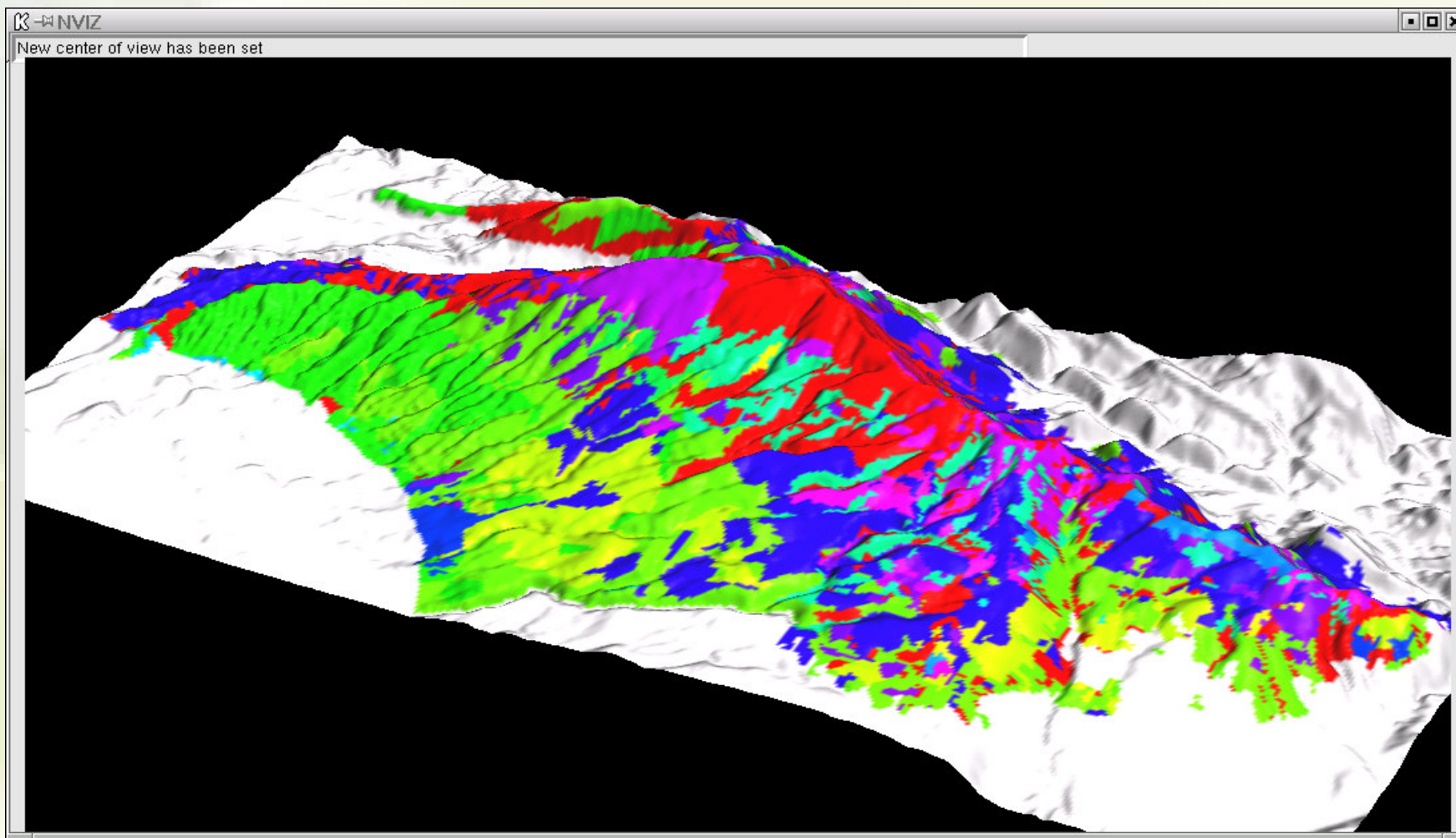
NATIONAL 2002-2003 : ■ 30 permanent plots (1,2 ha)



Ventoux : a large within site diversity of population, species & communities

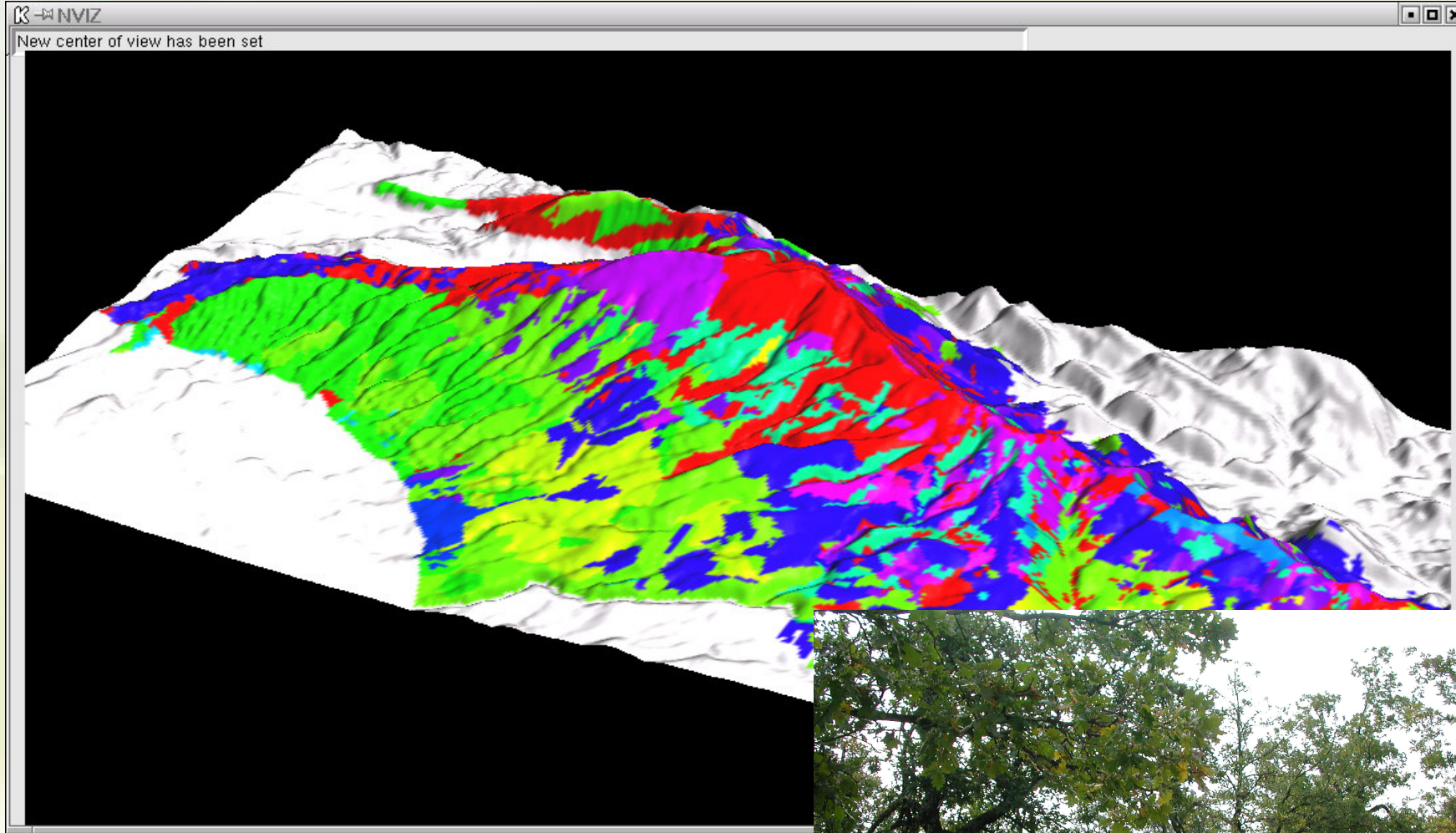


- Sorbus aria
- Cedrus atlantica
- Quercus pubescent
- Quercus ilex
- Acer opalus
- Fagus sylvatica
- Larix decidua
- Pinus halepensis
- Pinus nigra Arn.
- Pinus pinaster
- Pinus nigra
- Pinus sylvestris
- Pinus uncinata
- other resinous species
- Mediterranean firs
- Abies alba
- no forest tree



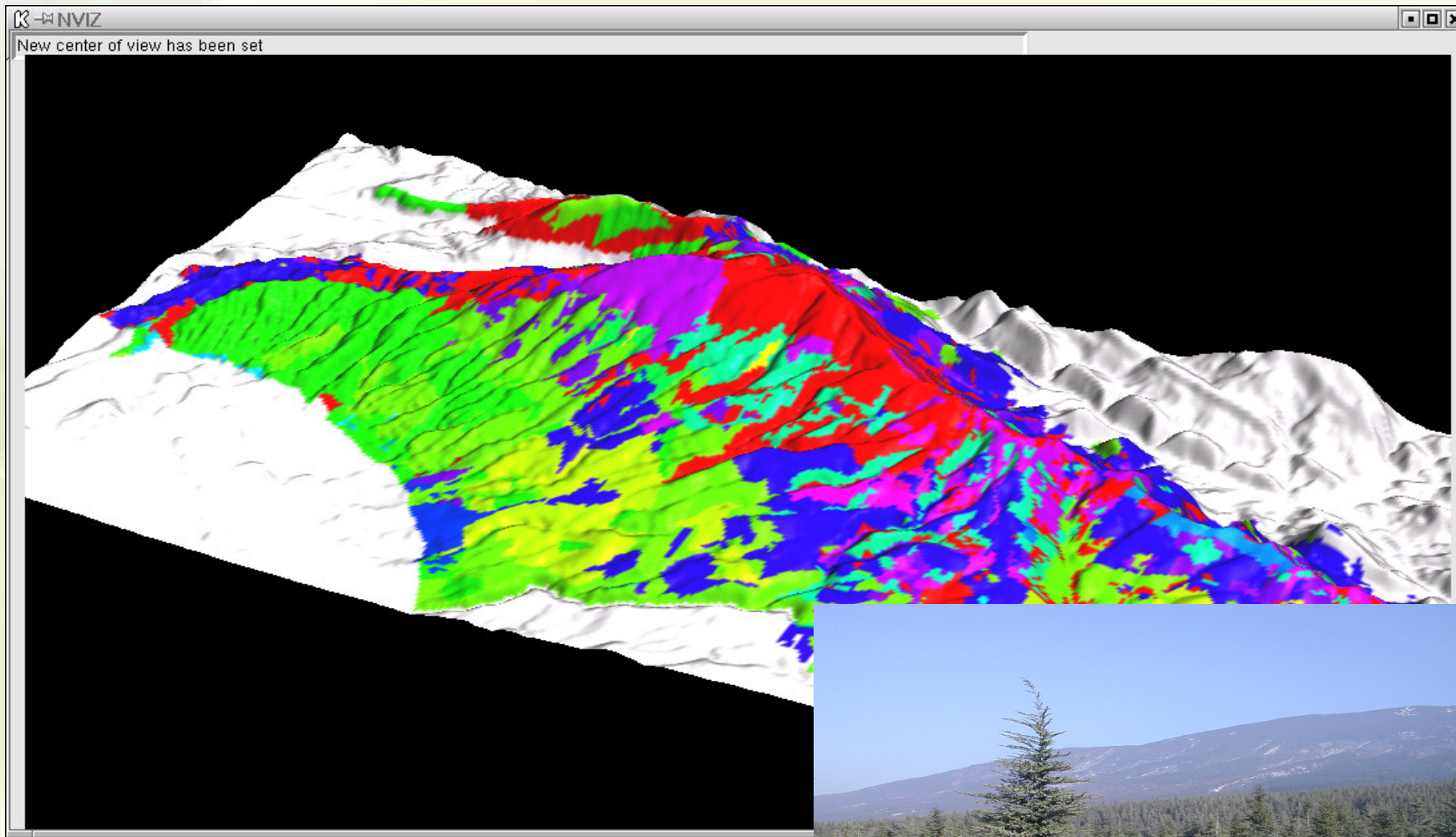
JERA3.1: Multi species genetic diversity

Ventoux : a large within site diversity of population, species & communities



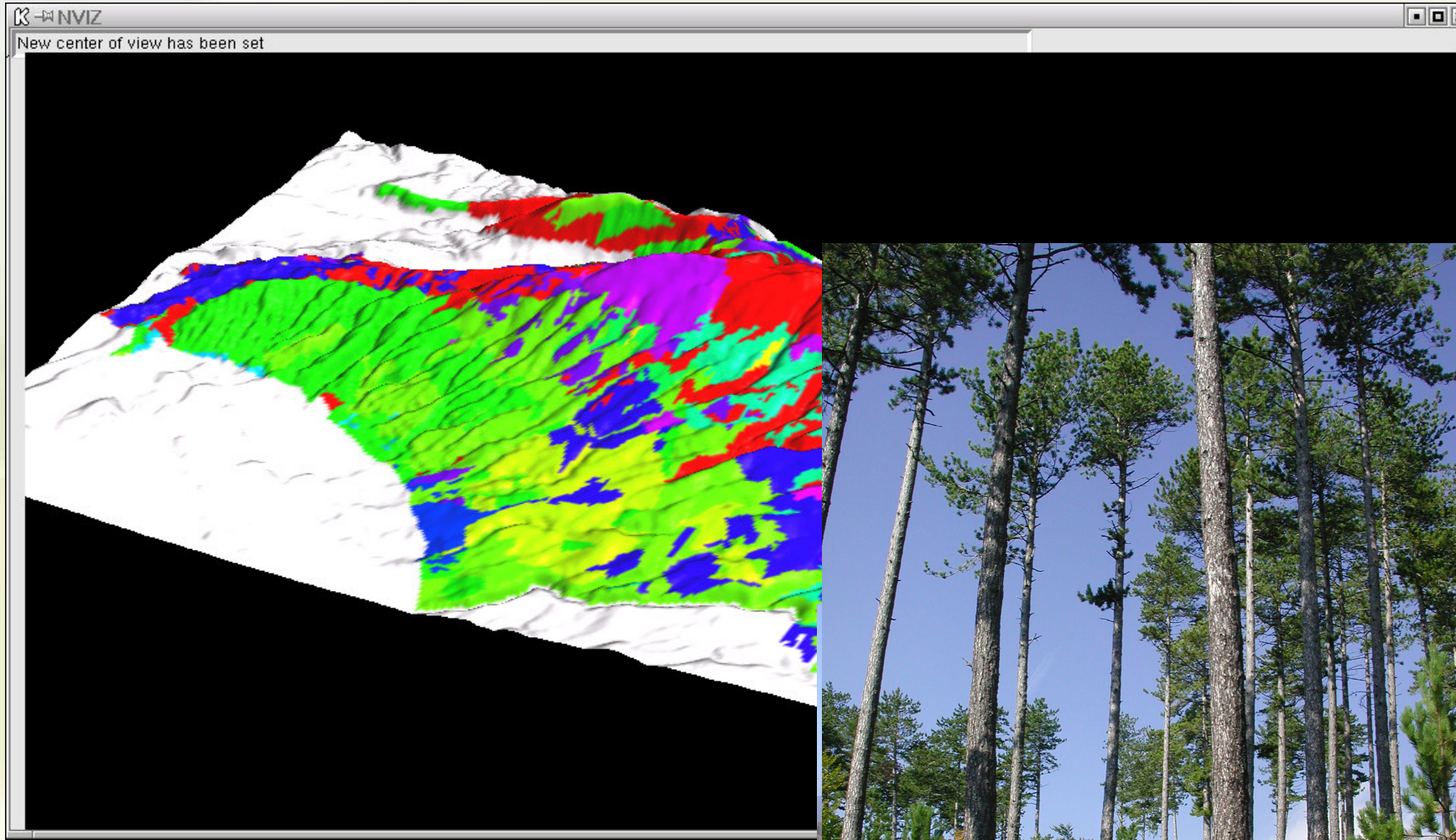
JERA3.1: Multi species genetic diversity

Ventoux : a large within site diversity of population, species & communities



JERA3.1: Multi species genetic diversity

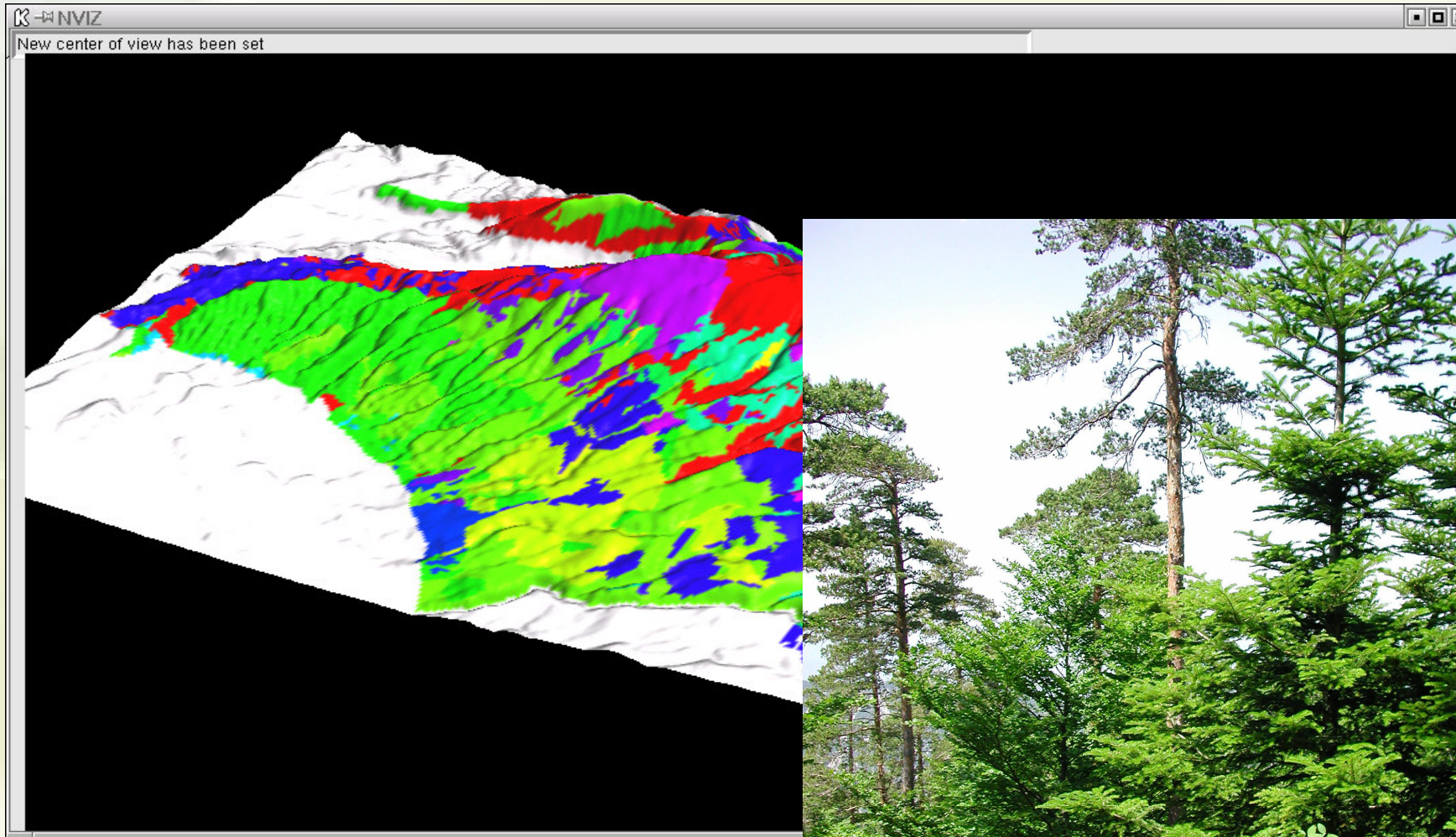
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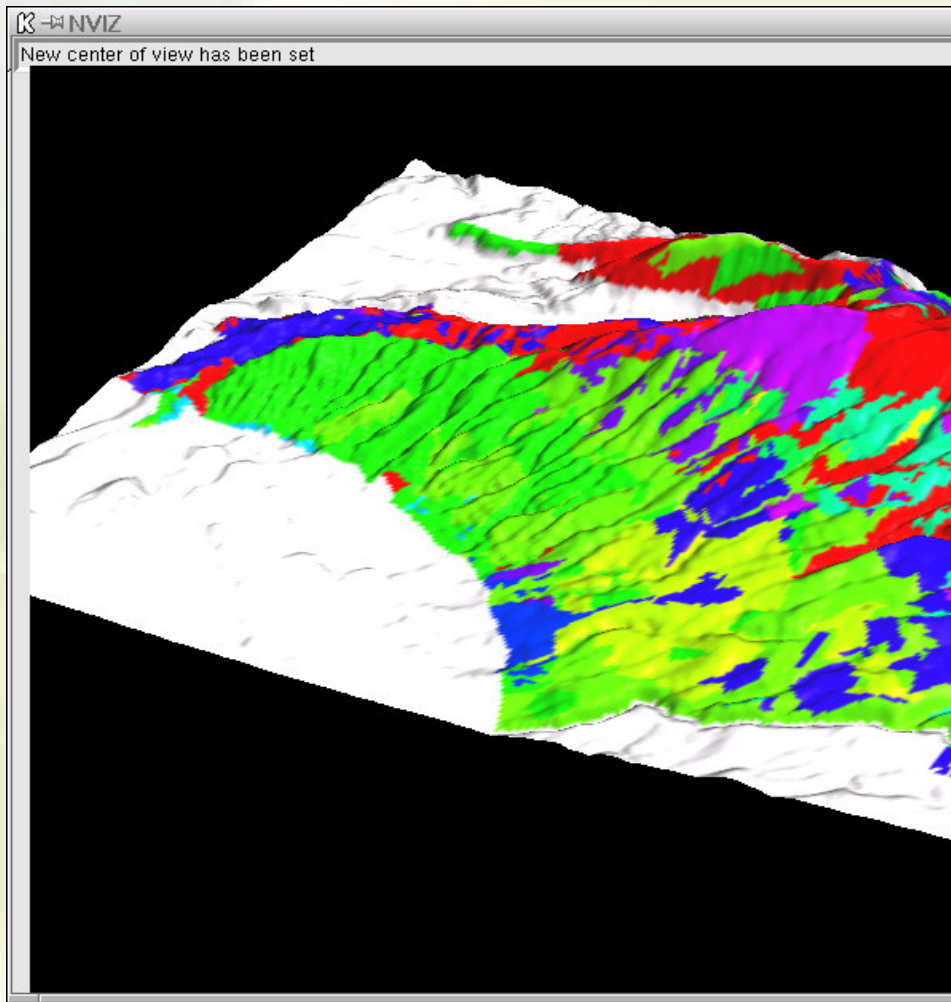
Ventoux : a large within site diversity of population, species & communities



JERA3.1: Multi species genetic diversity



Ventoux : a large within site diversity of population, species & communities

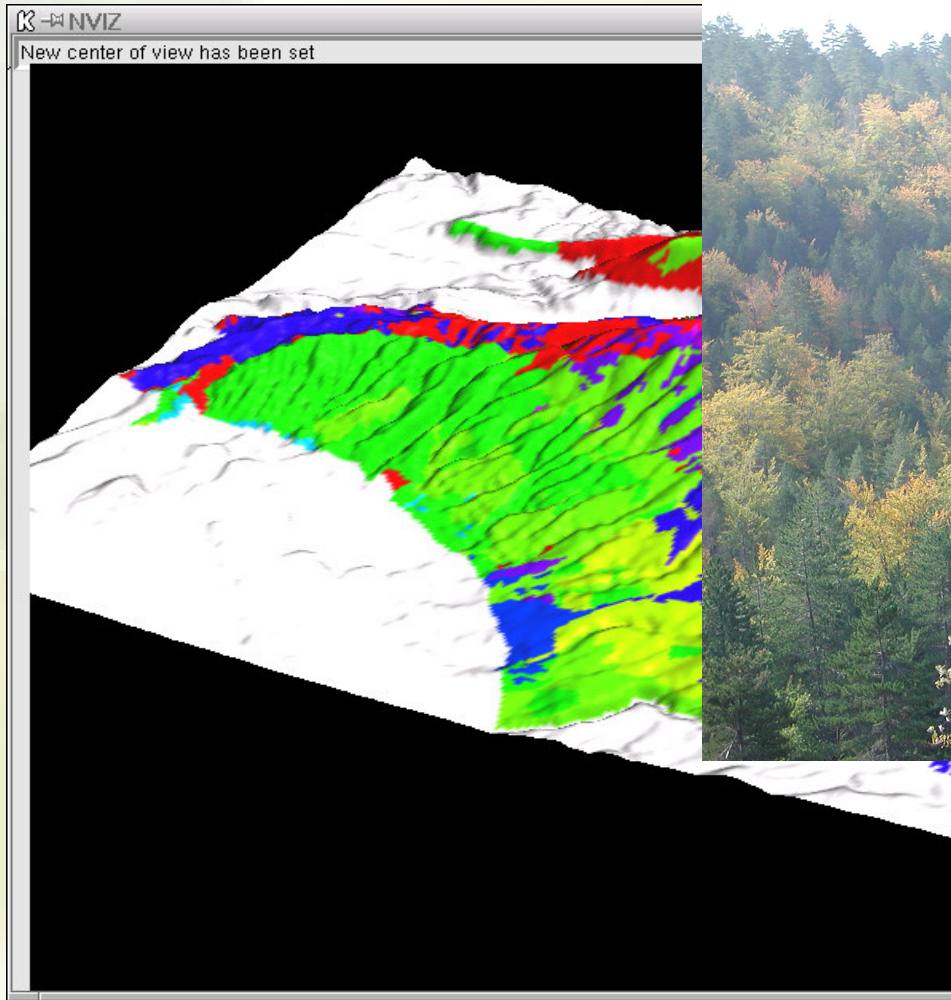


JERA3.1: Multi species genetic diversity

Ventoux : a large within site diversity of population, species & communities

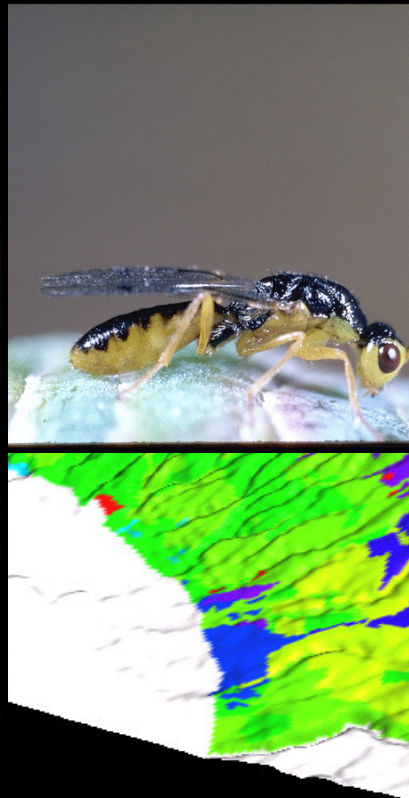


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JERA3.1: Multi species genetic diversity

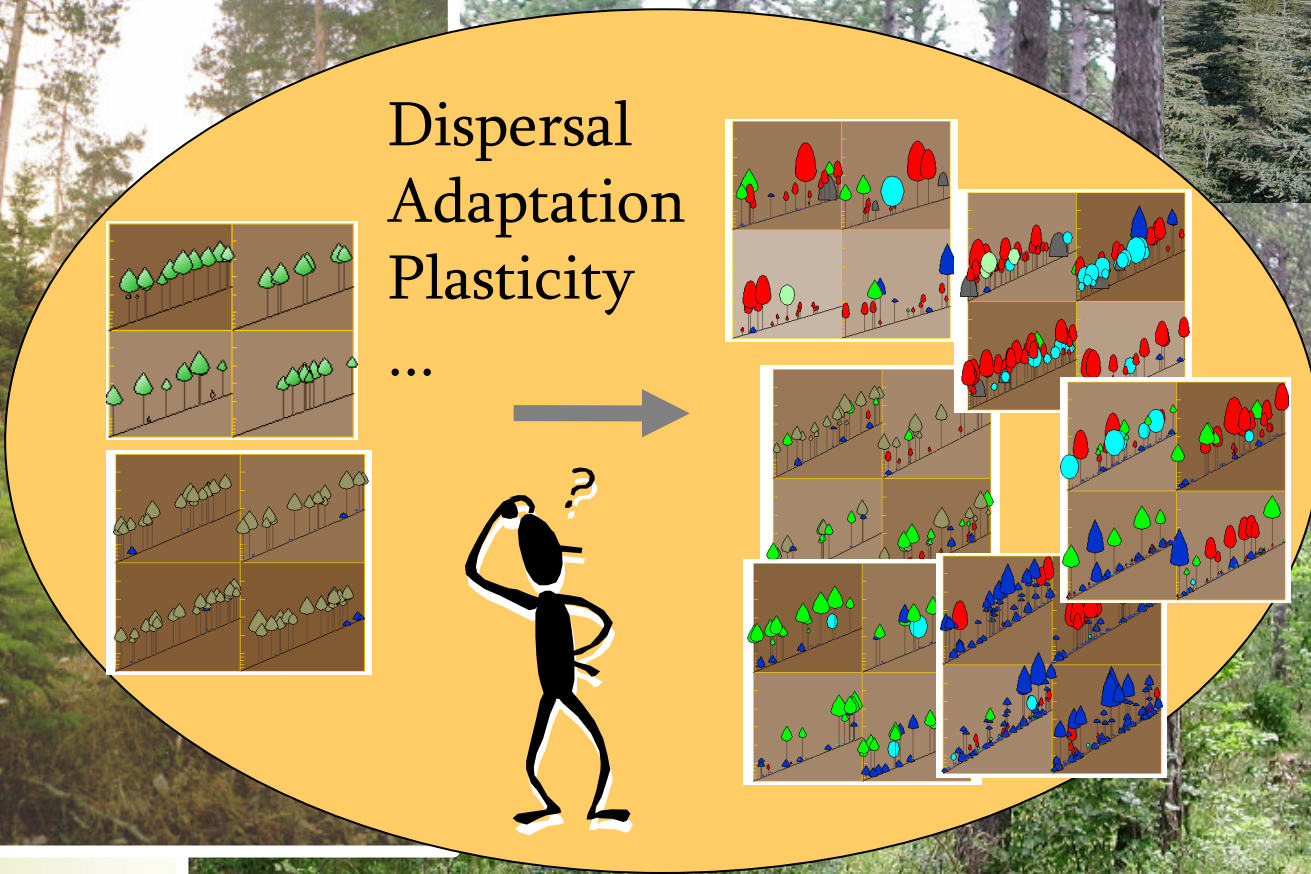
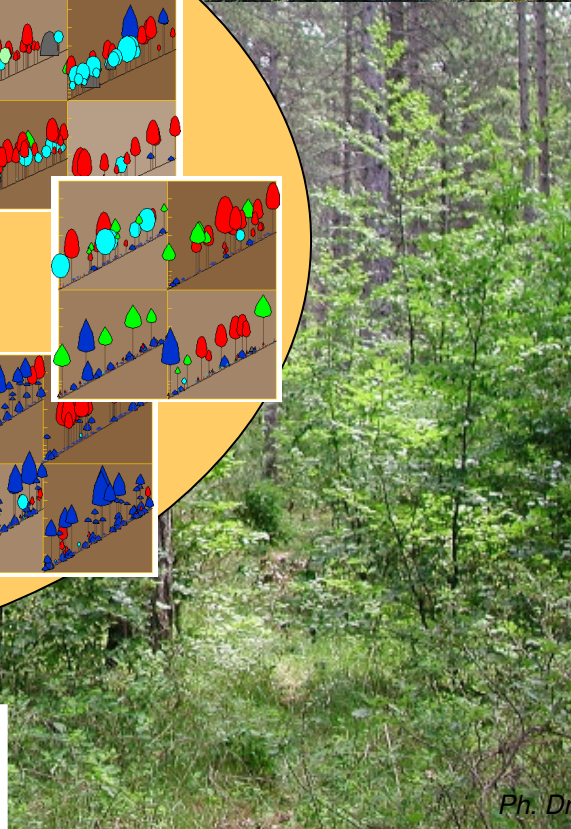
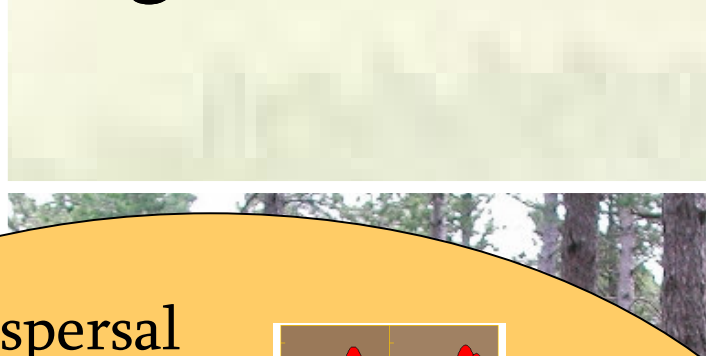
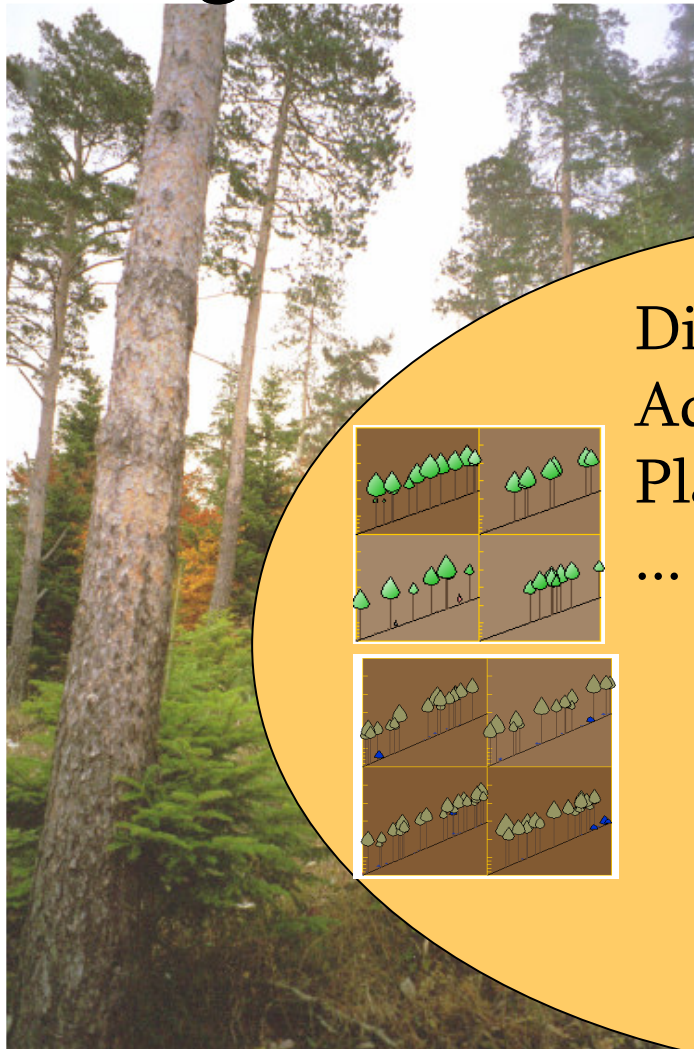
JERA 3.2: Interaction between species

Ventoux : an ongoing re-colonisation dynamics along an altitudinal gradient



Jera 4.2 Response Of Populations To Global Change
Jera 4.3 Future Dynamics Of Diversity

Ventoux : an ongoing re-colonisation dynamics along an altitudinal gradient

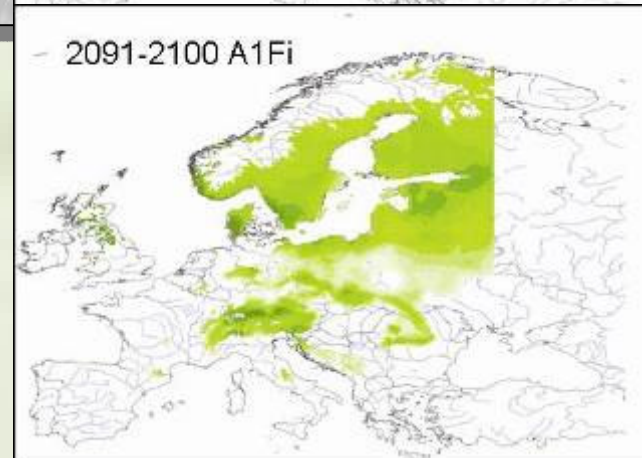
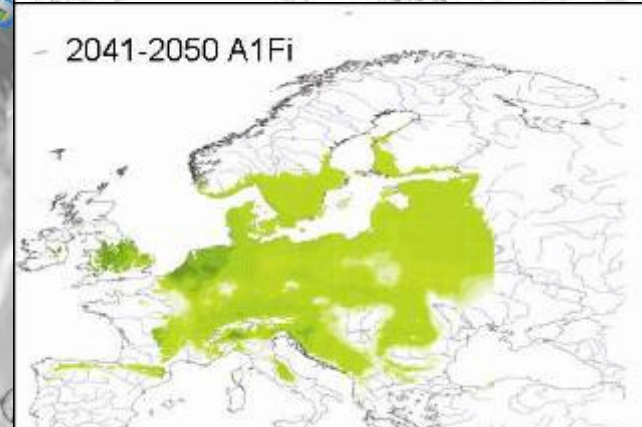
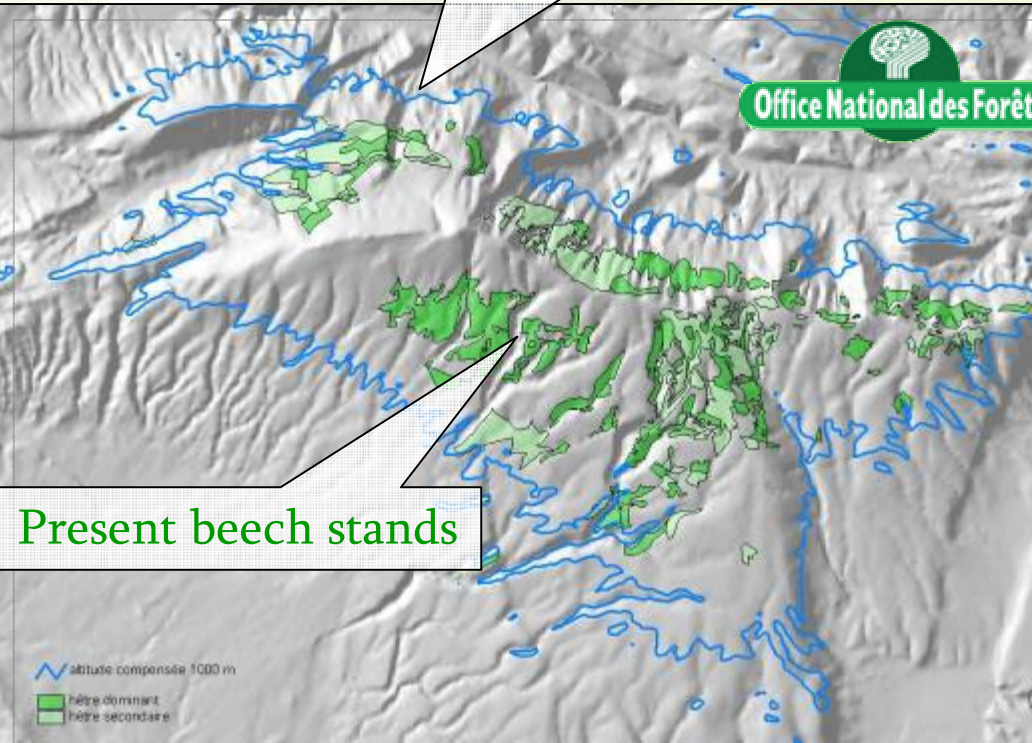


Jera 4.2 Response Of Populations To Global Change
Jera 4.3 Future Dynamics Of Diversity

Response of populations to global change



Present potential limit of Beech



Bioclimatic envelope model (STASH)

Evolution for beech



ISS scale pertinent to gauge how migration, adaptation, and plasticity respectively contribute to species response to climate change

Effect of 2003 heat-wave on Fir mortality



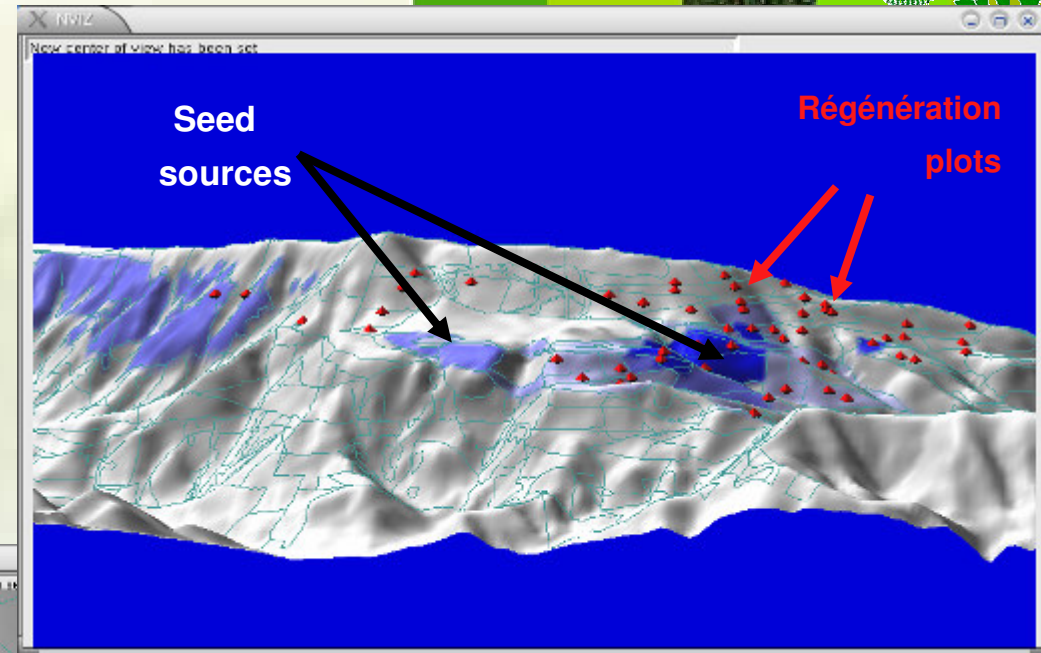
Decline of forest stands

Ventoux : other available tools



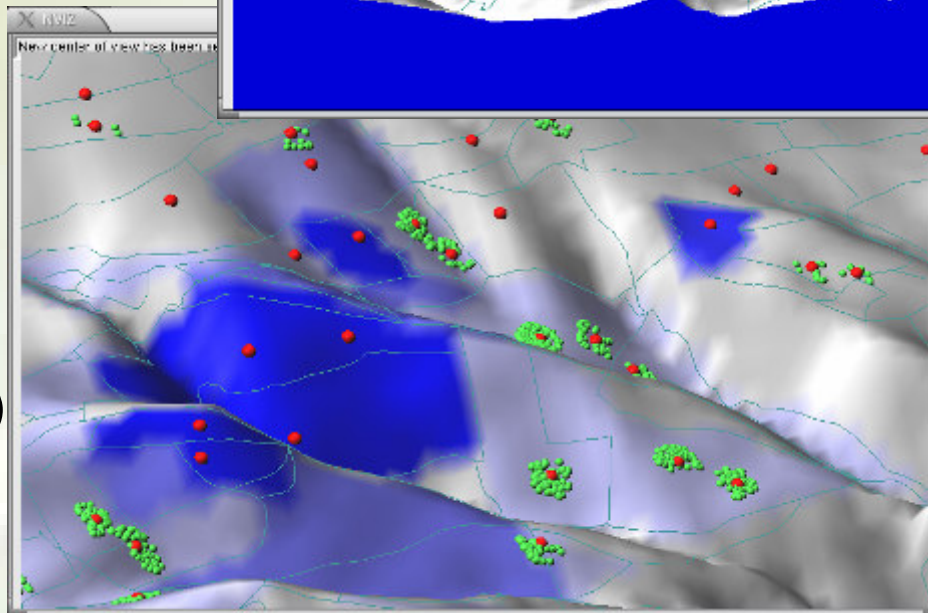
GIS – Database and GPS facilities :

- > Grass – Postgres Open software
- > High precision GPS (< 1 m)
- > Digital maps and aerial photographs



DNA Database :

- > cpSSRs, nSSRs
(*Abies alba*, *Fagus sylvatica*)



Ventoux : Conclusions



Highly instrumented site :

- Numerous ISPs
- GIS, GPS
- Modeling platform
- Long-term climatic data
- Molecular markers
- Biodiversity surveys (plants and animals)

Easily accessible site

- Central location for Mediterranean research teams
- 40 km from INRA research center (sample preparation, GIS)

Local expertise:

- Community ecology,
- Population genetics and dynamics
- Entomology
- Ecophysiology
- Bioclimatology
- Modeling
- Biostatistics

Long-term perspective:

- Public forest, partnership with forest managers
- Legal/protection status: MAB, conservation site for fir, Natura 2000

Scientific value:

- Natural laboratory of a re-colonisation dynamics under global change
- Plant material for JERA 1, 2
- Strong links to JERA 3 & 4, to IA 4.1
- Past experience in infrastructure sharing with Mediterranean research teams
- High benefice of international cooperation to address these challenging issues