LIFE08 ENV/IT/436

PROJECT ACT

ADAPTING TO CLIMATE CHANGE IN TIME

Carried out and planned activities on baseline climate scenario for the ACT project

Franco Desiato

Rome July 2010

ISPRA Institute for Environmental Protection and Research

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Istituto Superiore per la Protezione
e la Ricerca Ambientale

ISPRA – Climate and Applied Meteorology Unit

ACTIVITIES

- Climate data collection, statistics and indicators calculation, dissemination and regular update (SCIA system)
- Time series homogenisation, climate trends estimate through statistical models
- Reporting of national climate status and trends
- Climate data spatialization
- Downscaling of climate scenarios through empirical-statistical models

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Meteorological networks and data providers in Italy

(WMO standards)

SYNOPTIC (GTS dissemination)

• Air Force Weather Service		from ‘50s – ‘60s	~ 90 stations
• ENAV Comp. for Air Navigation Services		from ’80s	~ 40 stations

National Agrometeorological (Min. of Agricolture)

• Automatic agromet. stations	hourly	from 1991	~ 40 stations
• Agromet. observatories	daily	from 1860	~ 30 stations

REGIONAL

• Reg. meteorological services	hourly	from ’90s	a few tenths/region
• Hydrological/Civil Prot. netw.	Dail/hou	from ’50s	a few tenths/region
• Reg. agrometeorological serv.	hourly	form ’90s	a few tenths/region

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Role and objective of ISPRA:
Present and trend **CLIMATE INDICATORS**

➔ Development of the **SCIA** system, in collaboration with several data owners:

- **No raw data** centralization;
- **ten-daily, monthly and yearly quality-checked statistical data** of climate variables (temperature, precipitation, wind, relative humidity, cloud cover, etc.) calculation and database upload via a common, standardized procedure
- Yearly update

All climate statistical indicators, normals and anomalies are available through the SCIA web site

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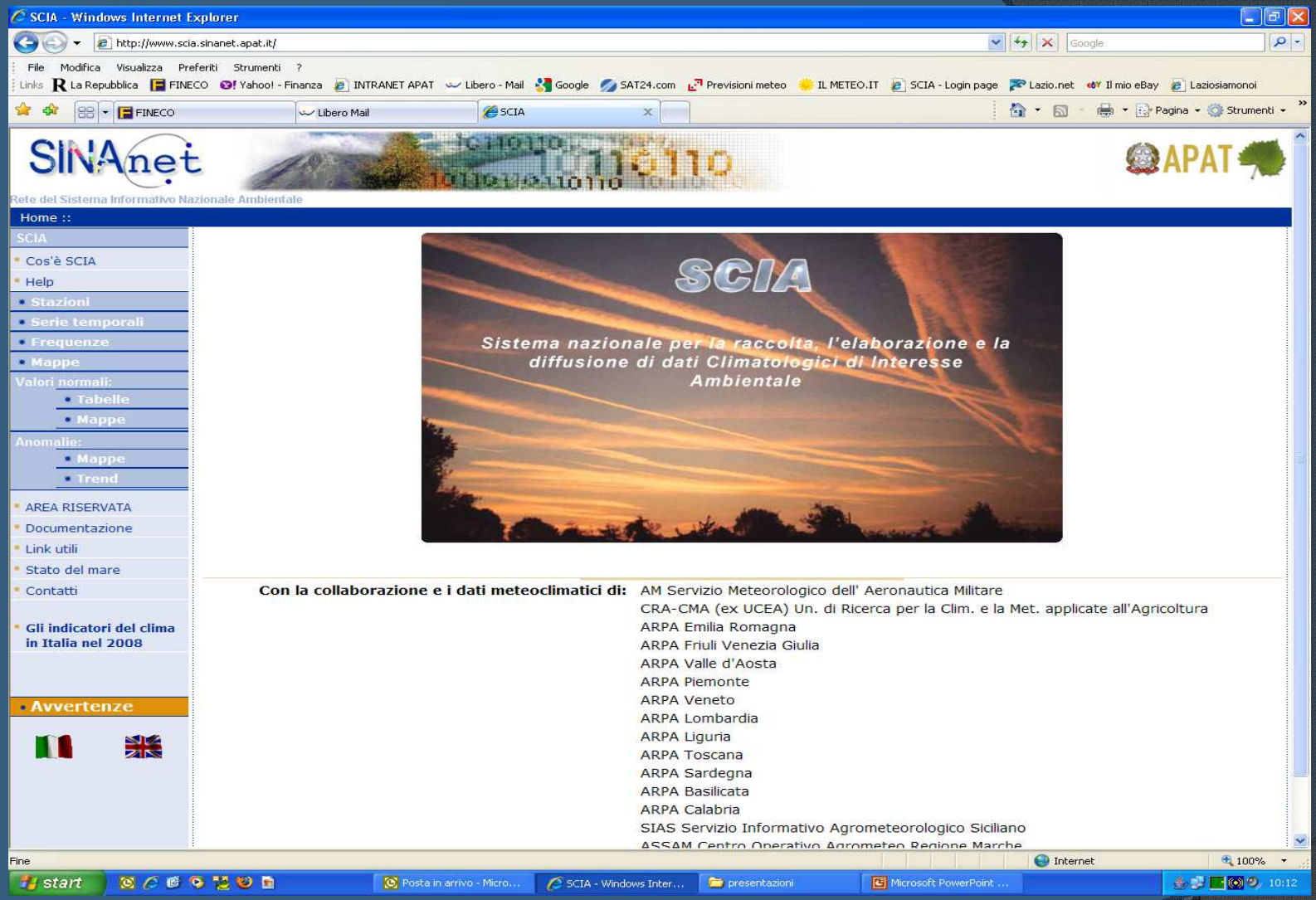

www.scia.sinanet.apat.it

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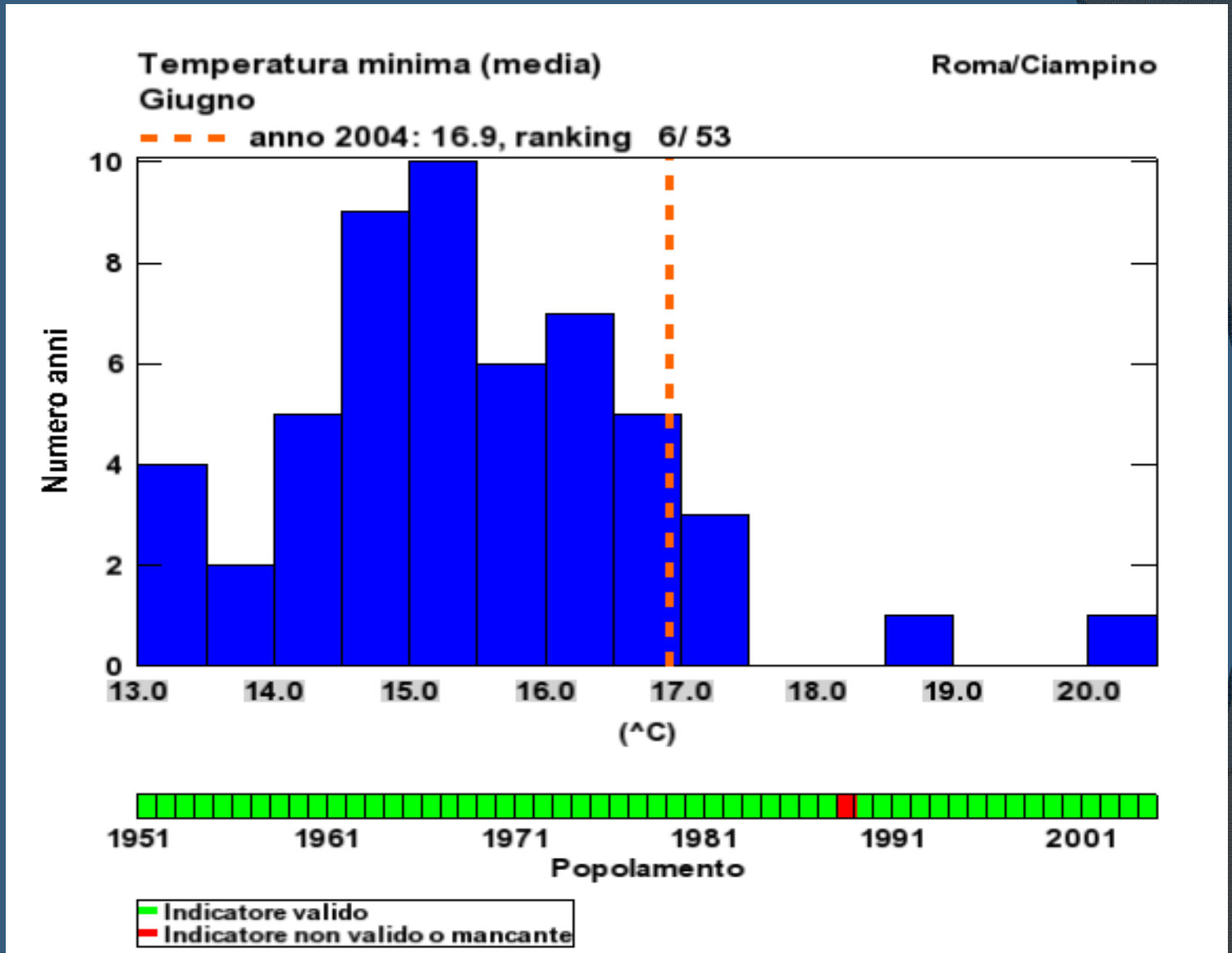
Climate indicators available through SCIA: example



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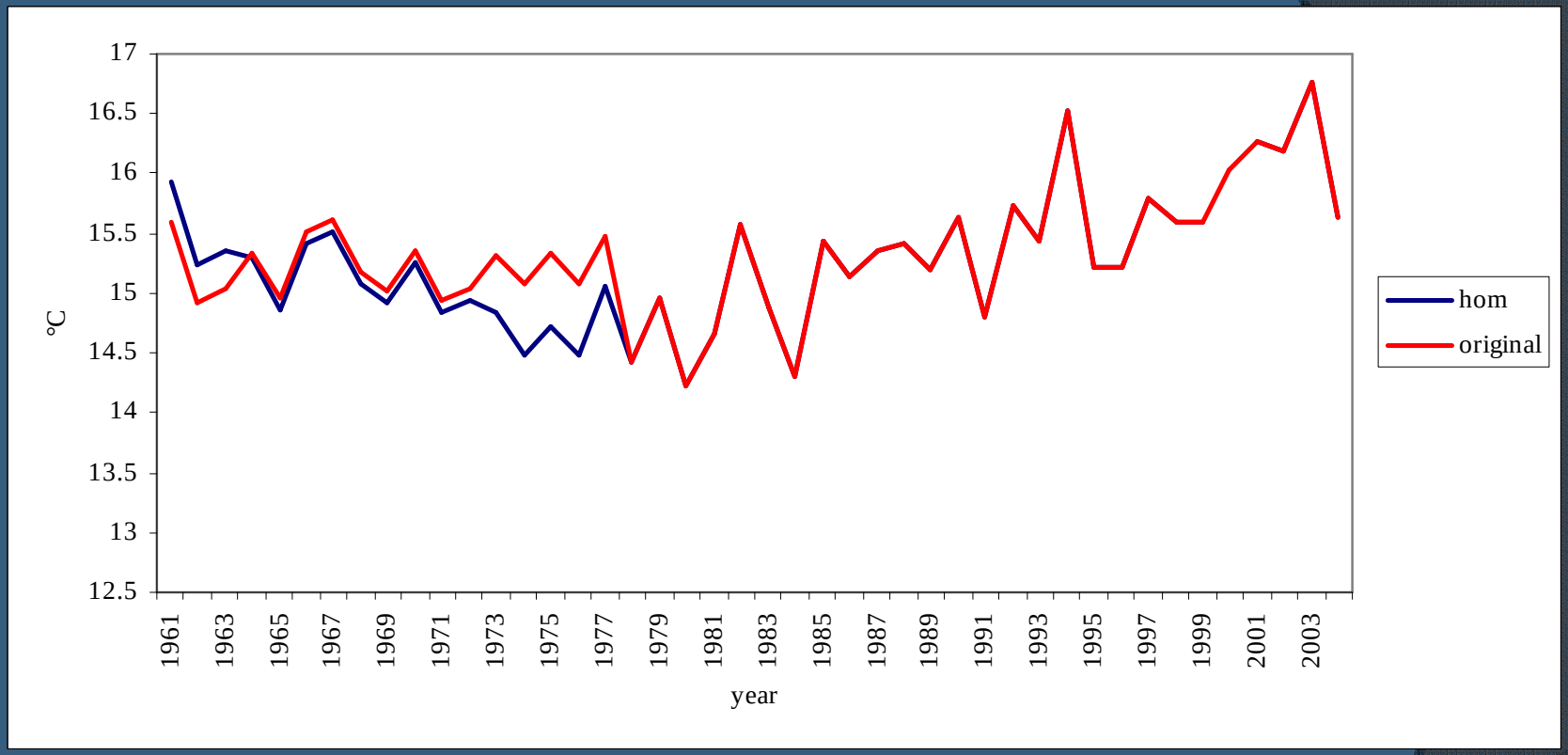
Times series homogenisation



Example: Roma Ciampino

3 discontinuouties found: february 1964, march 1973, august 1977

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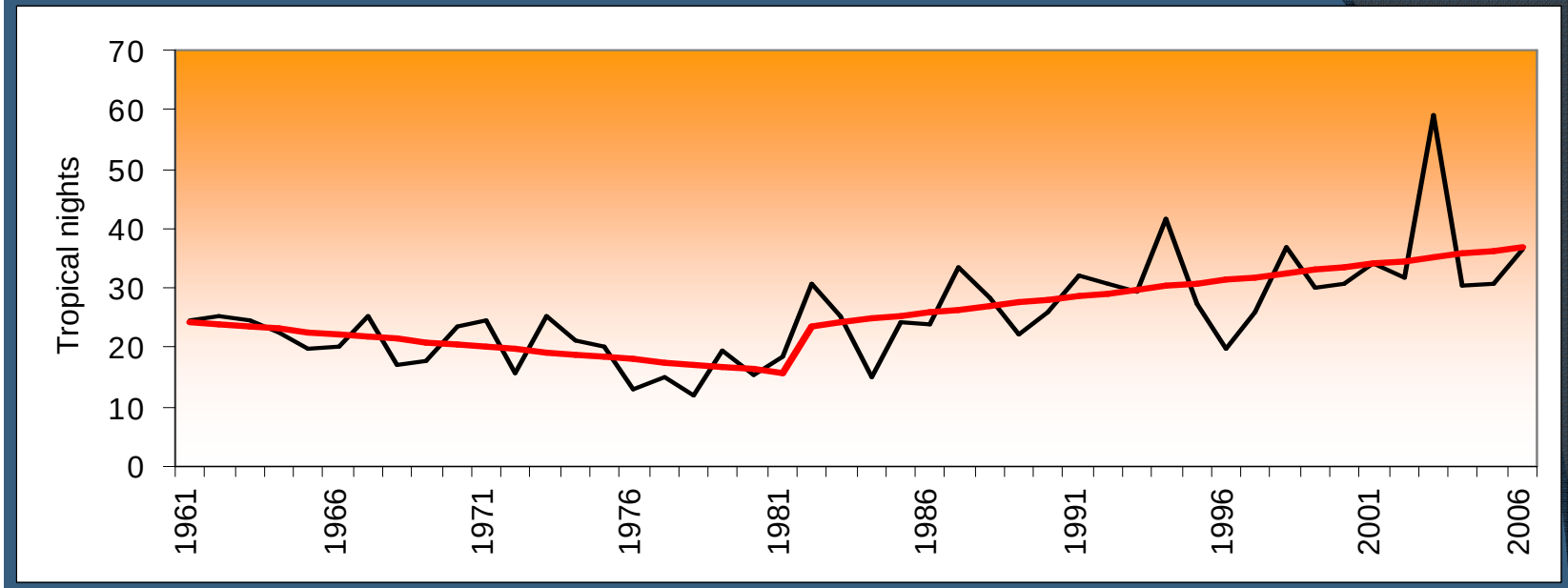
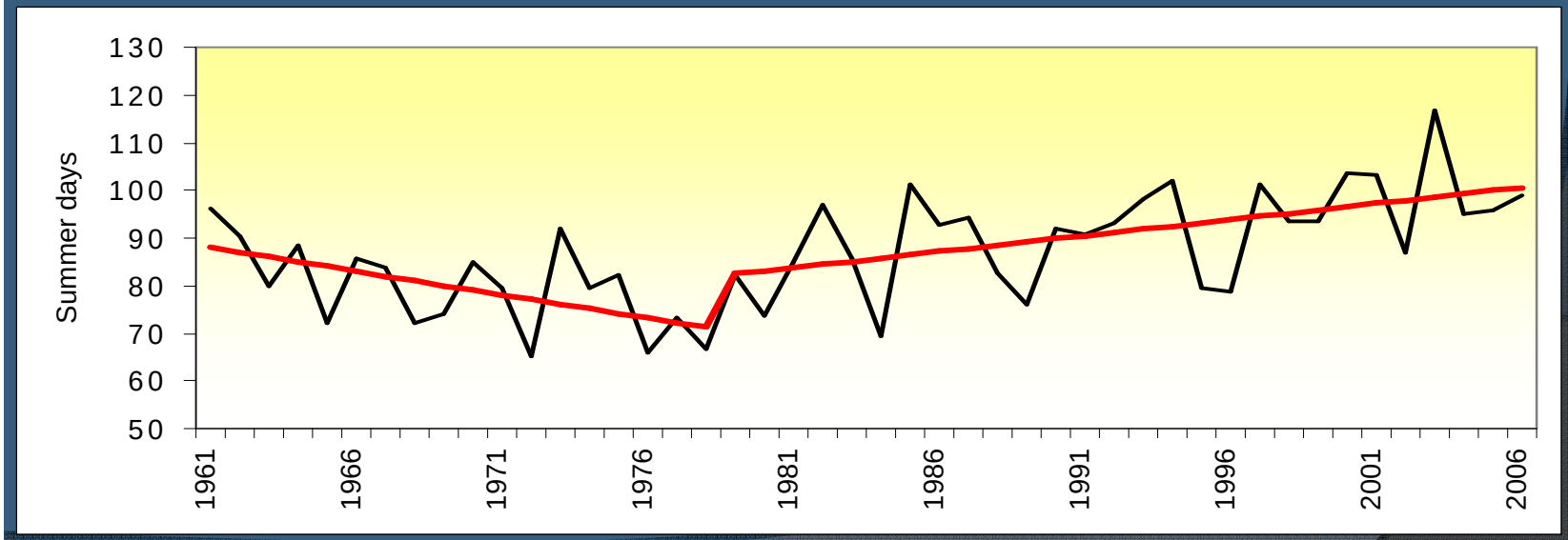
Trends recognition and estimate through statistical models





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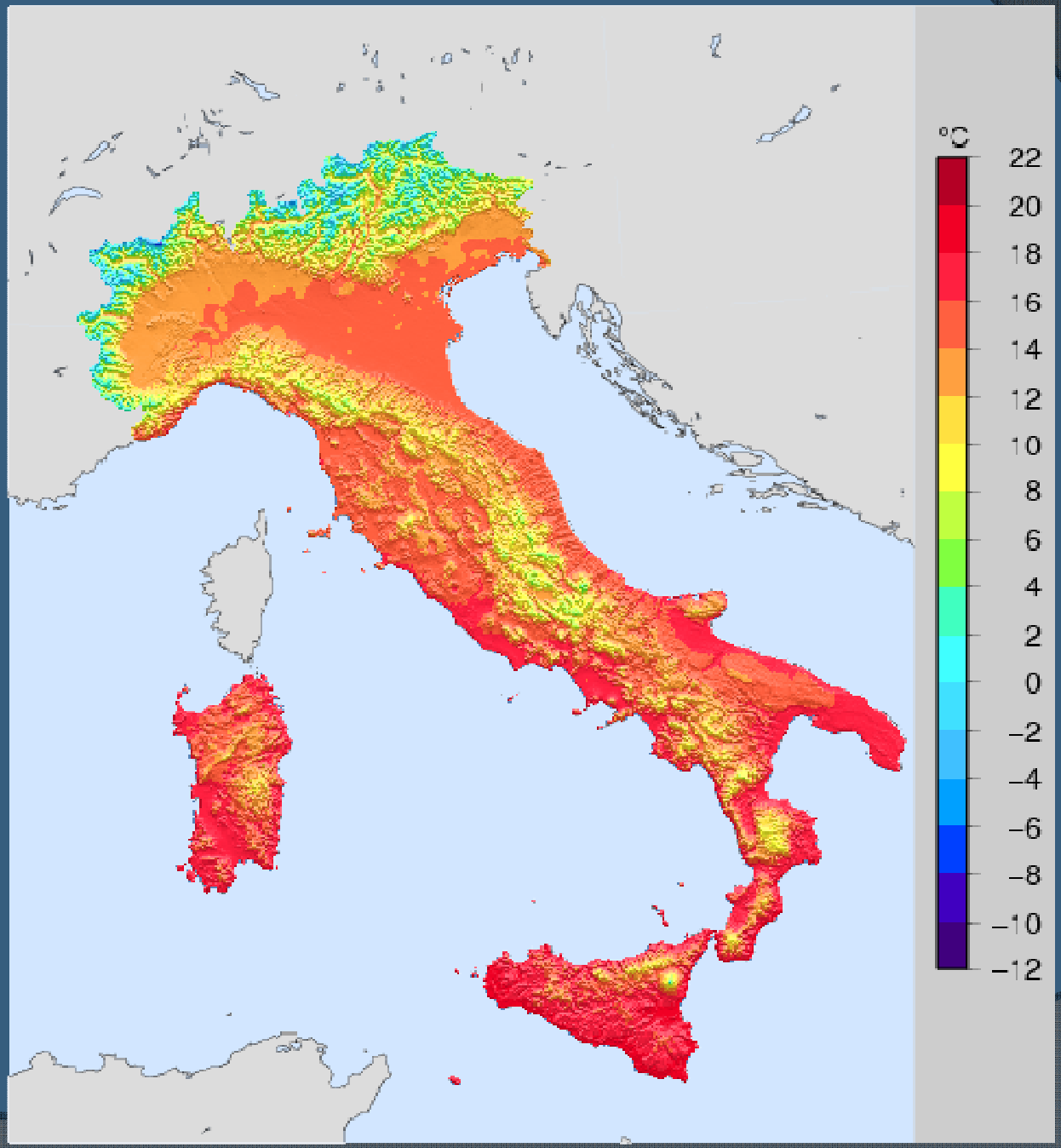

Climate Data Spatialisation

Mean Temperature 2008

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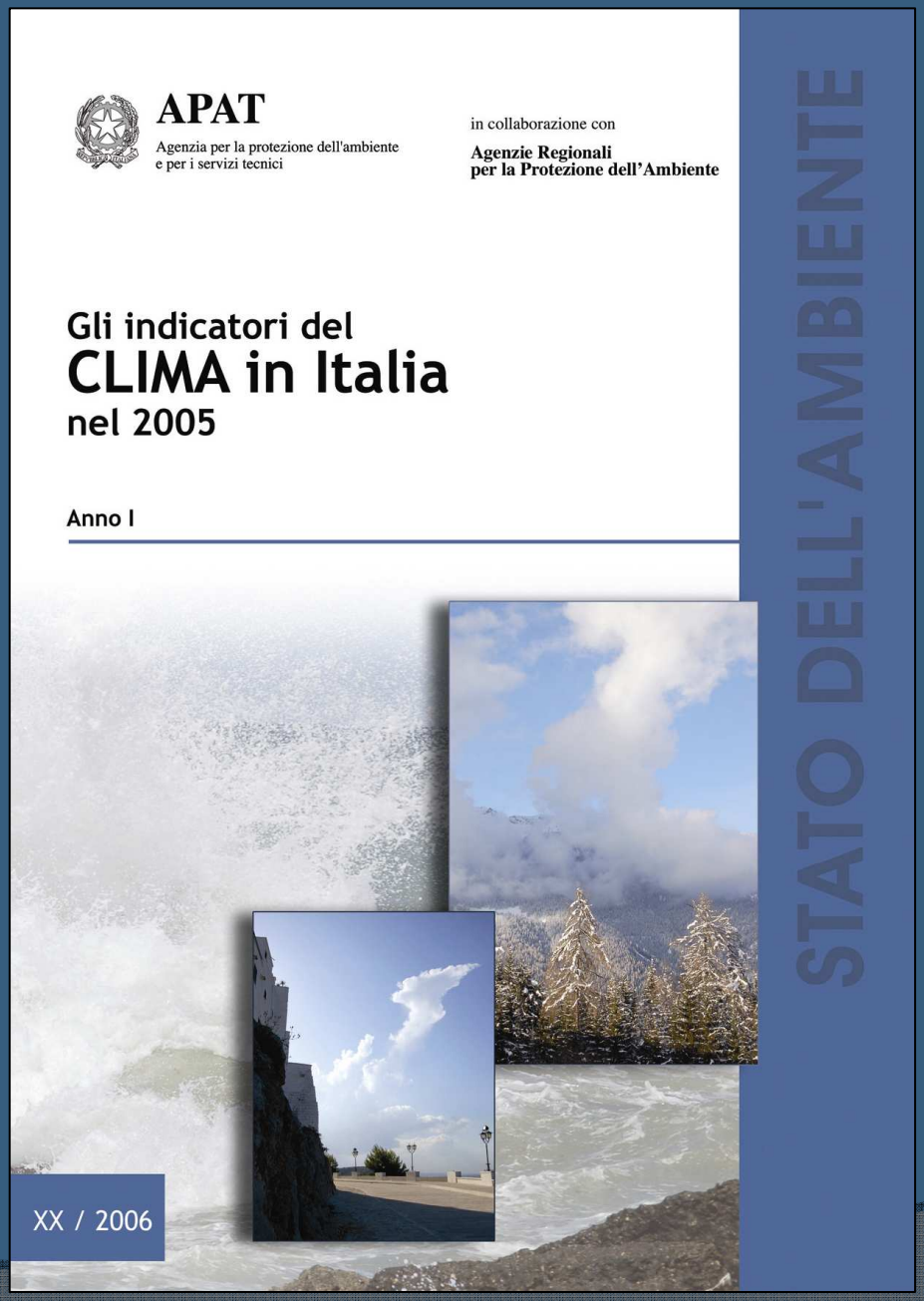

Annual reporting on climate over Italy

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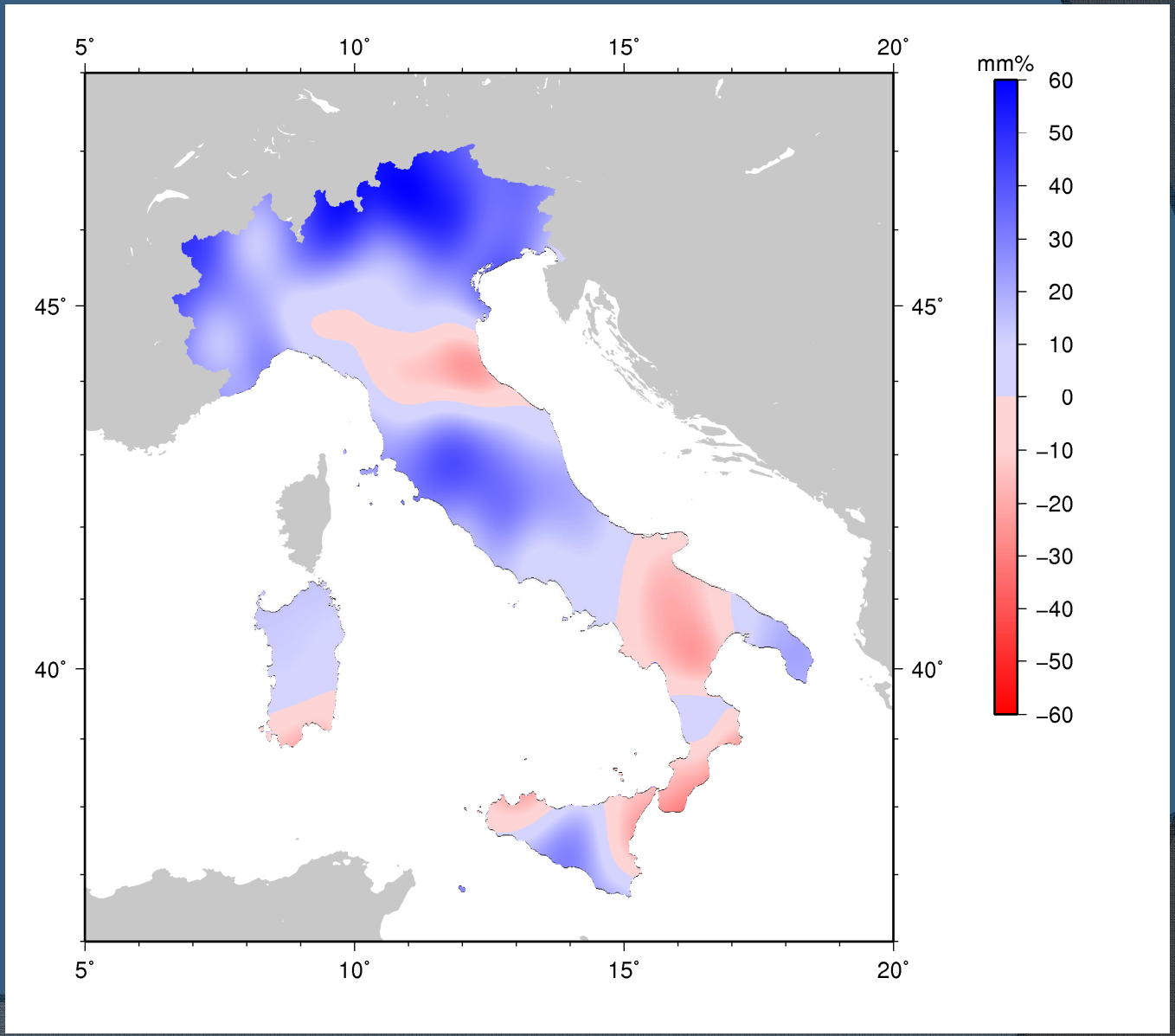
Climate indicators example: Precipitation anomaly 2008



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Recent papers published on international climate journals

Desiato F., Lena F. e Toreti A., 2007, **SCIA: a system for a better knowledge of the Italian climate**. Bollettino di Geofisica Teorica ed Applicata, Vol. 48, n. 3 351-358.

Toreti A. and Desiato F., 2007a, **Temperature trend over Italy from 1961 to 2004**, Theoretical Applied Climatology, DOI 10.1007/s00704-006-0289-6.

Toreti A. and Desiato F., 2007b, **Changes in temperature extremes over Italy in the last 44 years**, International Journal of Climatology, DOI 10.1002/joc.1576

Toreti A., Desiato F., Fioravanti G. and Perconti W., 2009a, **Seasonal temperatures over Italy and their relationship with low-frequency atmospheric circulation patterns**. Climatic Change, doi 10.1007/s10584-009-9640-0.

Toreti A., Desiato F., Fioravanti G. and Perconti W., 2009b. **Annual and seasonal precipitation over Italy from 1961 to 2006**. International Journal of Climatology, doi 10.1002/joc.1840.

Fioravanti G., Desiato F., Fraschetti P., Perconti W., **Mean temperature maps over Italy with regression kriging**, 2010 submitted to International Journal of Geographical Information Science

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Baseline climate scenario for ACT
(Ancona, Bullas, Patras)

Recent past and current Climate trends

(time series analysis, trends estimate through statistical models)

Climate projections

(Global and Regional Climate models, Empirical-statistical downscaling)

Impact and vulnerability assessments

Adaptation plans

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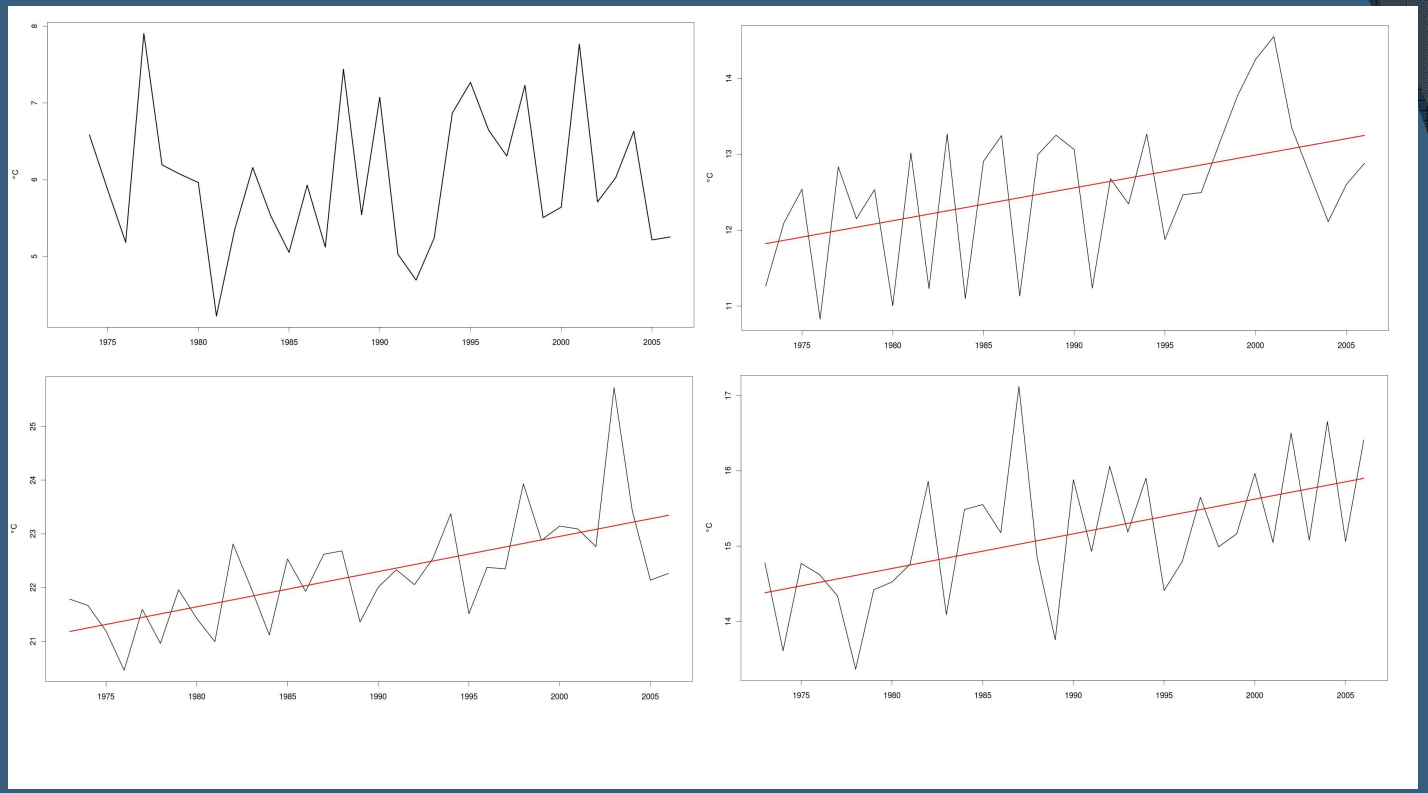
Recent past and current climate trends
(time series analysis, trends estimate through statistical models)

ANCONA



Time series analysis and current climate trends estimates

Guido Fioravanti

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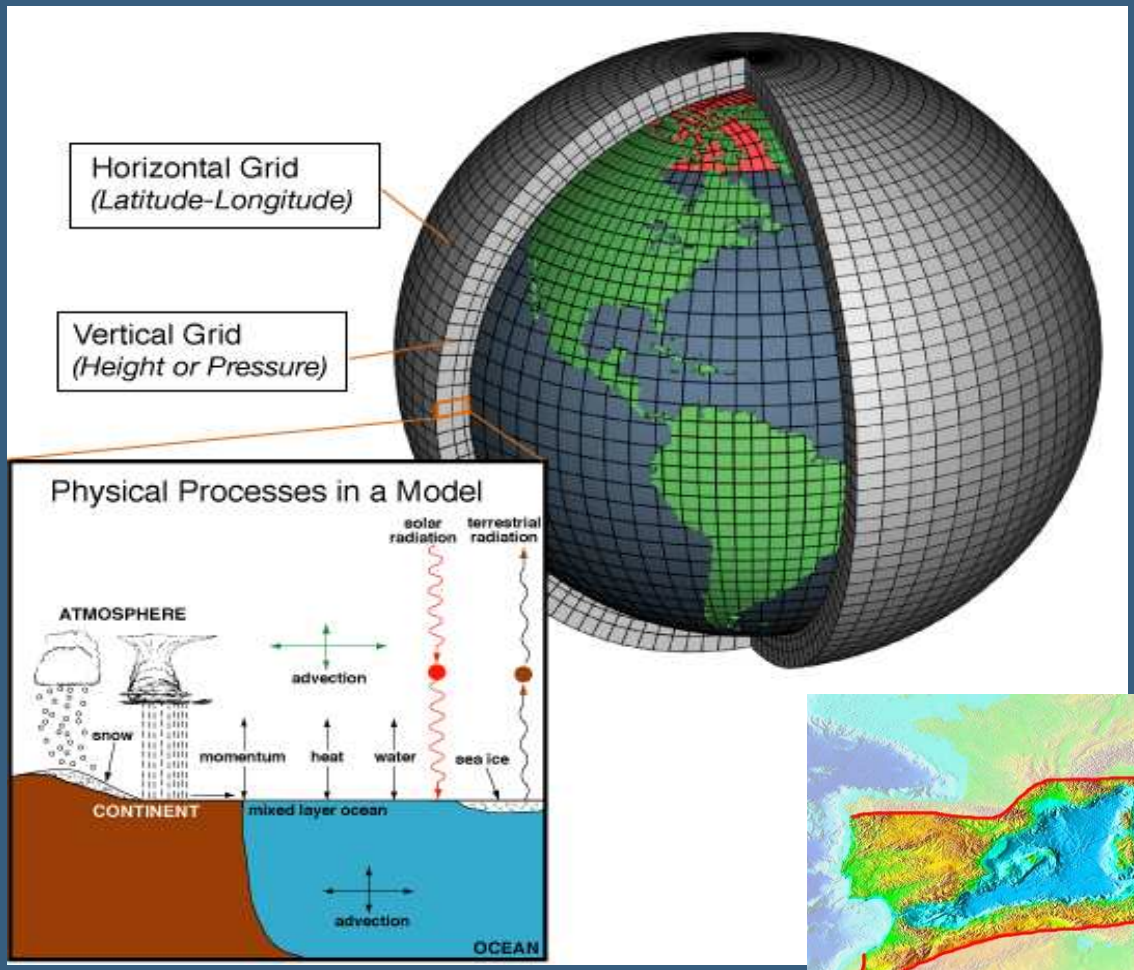
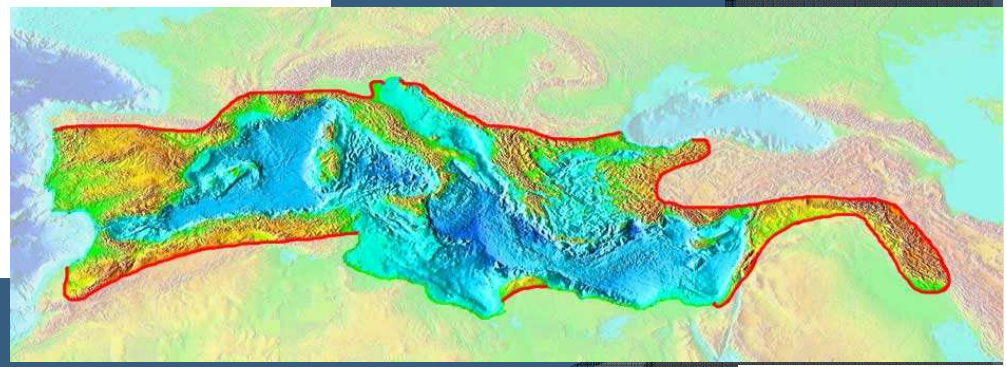
Climate projections





Global and regional climate models scenarios for the Mediterranean area

Andrea Toreti

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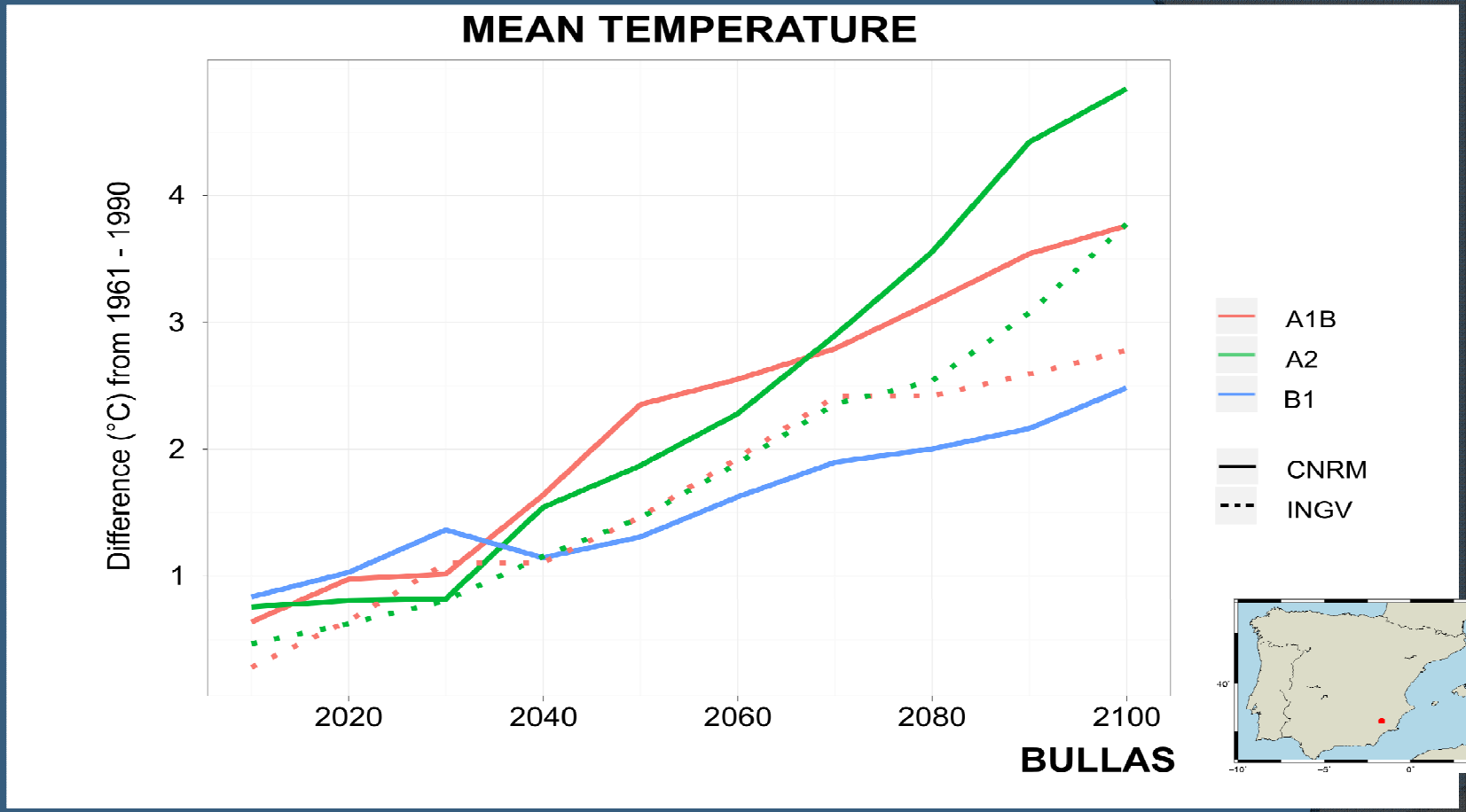
Climate projections



Projections of climate models on ACT target areas

Walter Perconti and Piero Fraschetti

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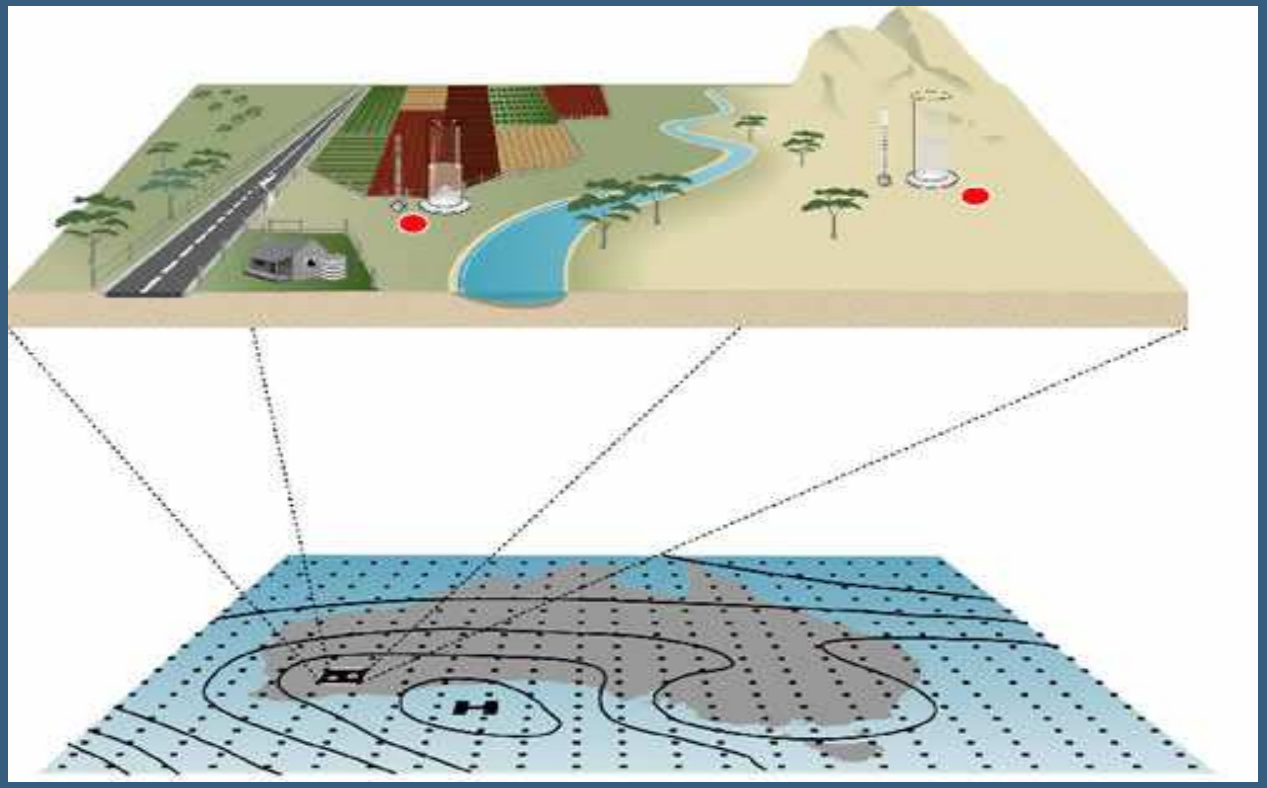
Empirical-statistical downscaling



Downscaling through empirical-statistical modelling: methodologies and planned activities

Andrea Toreti

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