

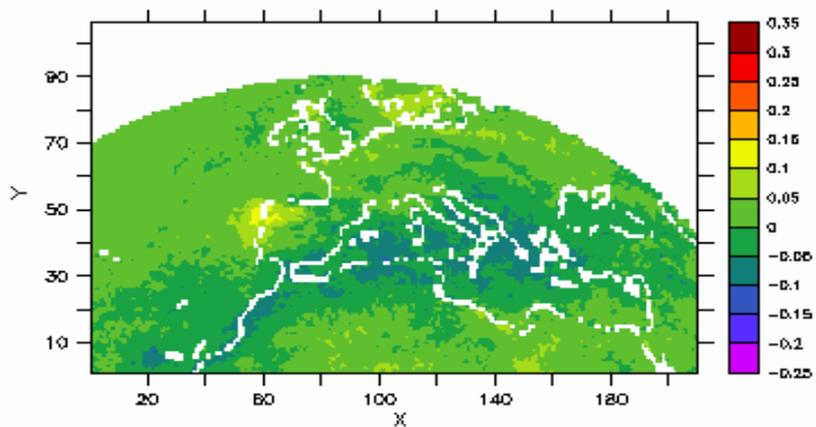
# Tempêtes: statistiques, prévisions, évolutions

Hervé Le Treut

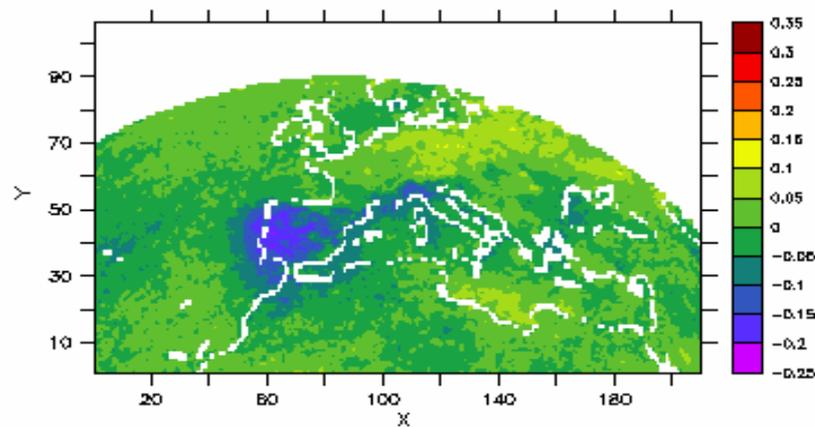
CNRS

# Tempêtes: statistiques, prévisions, évolutions

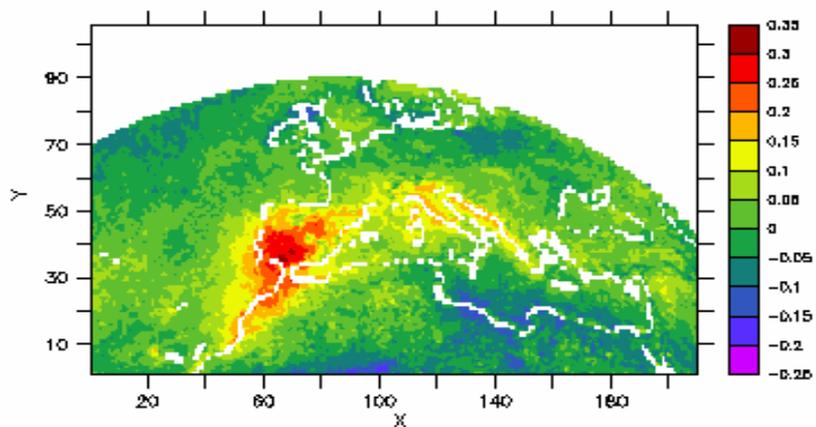
1. Les moyennes latitudes sont caractérisée par une météorologie très fluctuante, dont les variations ne peuvent être évaluées que statistiquement, avec un recul qui fait défaut sur la forêt des Landes



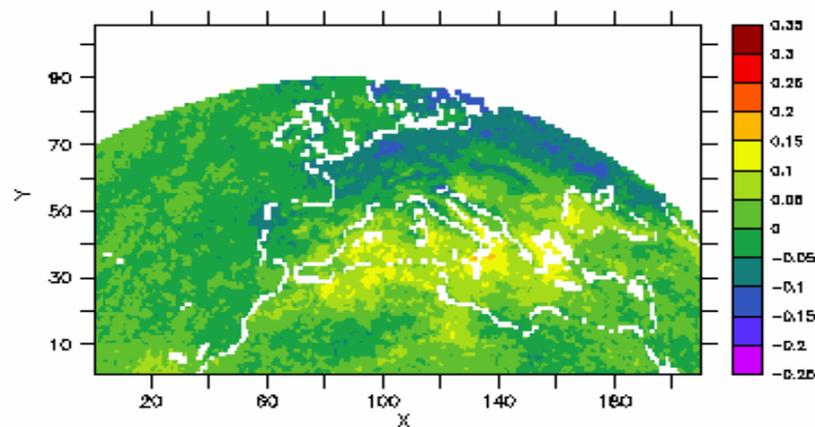
REGIME ZONAL (NAO+)



DORSALE ATLANTIQUE



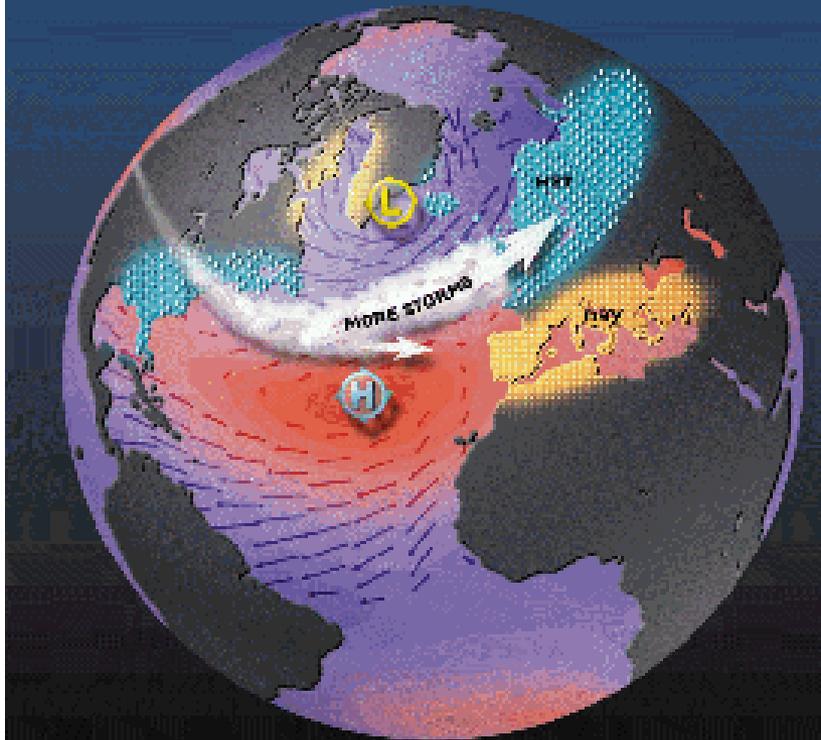
ANTICYCLONE DE GROENLAND (NAO-)



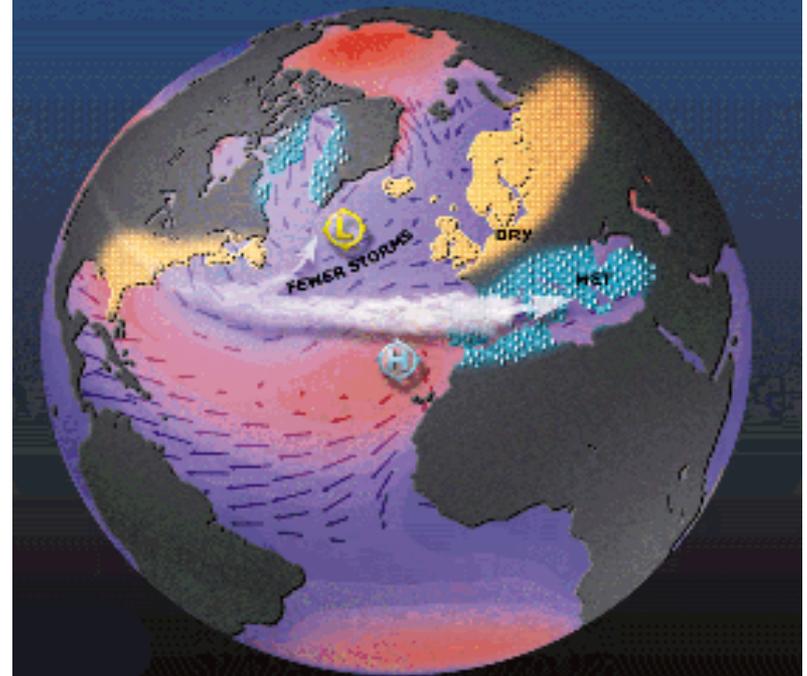
BLDCAGE

Fig. 3 - Anomalie de la couverture nuageuse moyenne pour les quatre régimes de temps

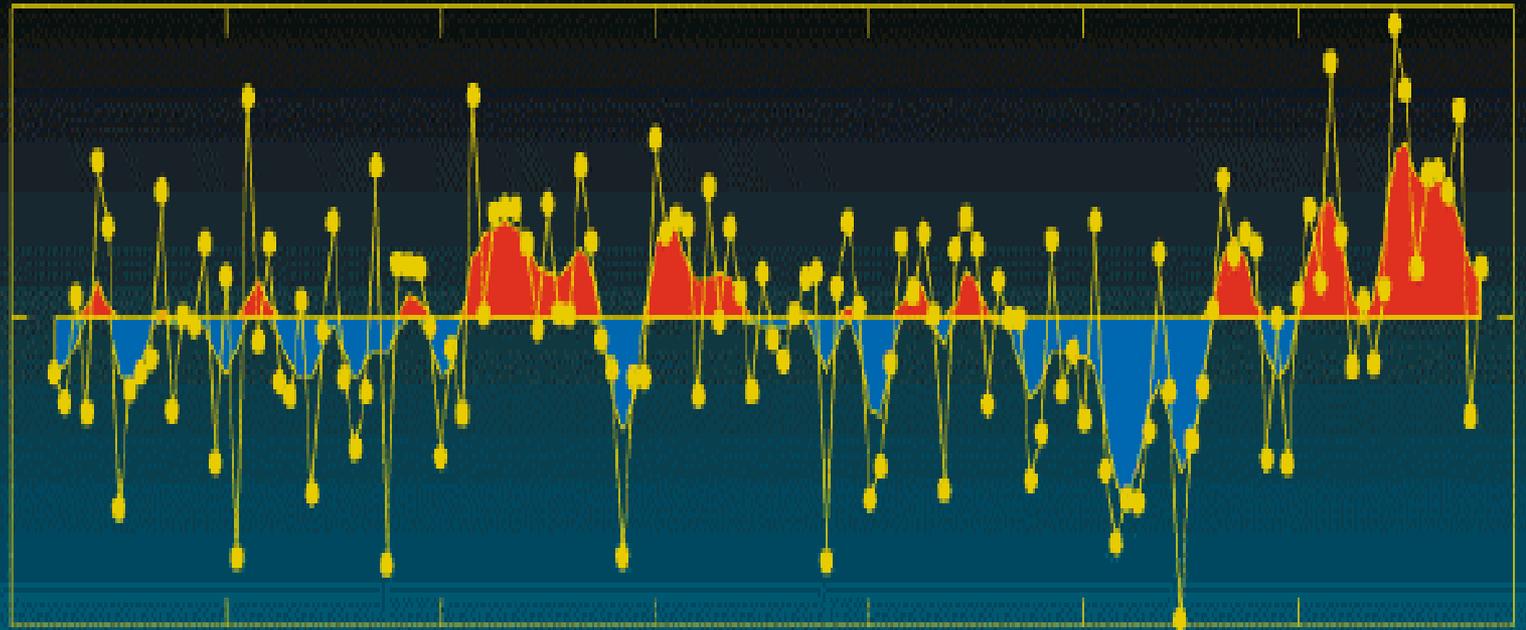
# North Atlantic Oscillation



# North Atlantic Oscillation



# NAO Index



1860

1880

1900

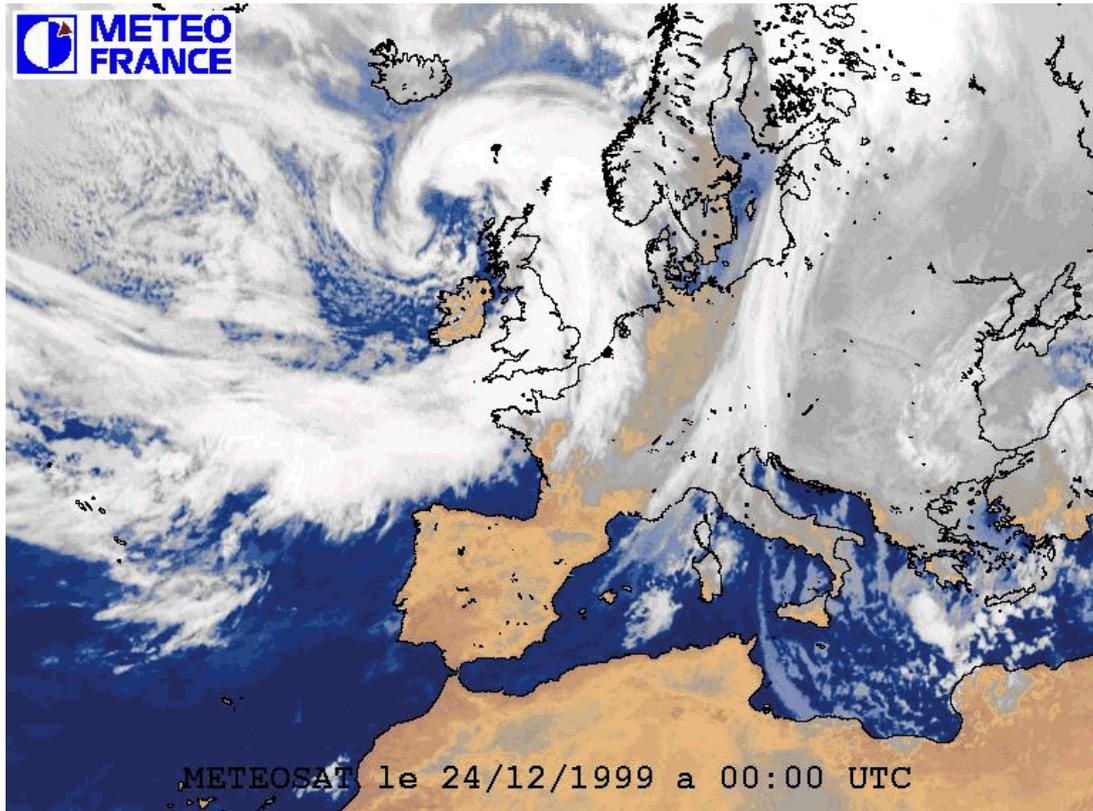
1920

1940

1960

1980

2000

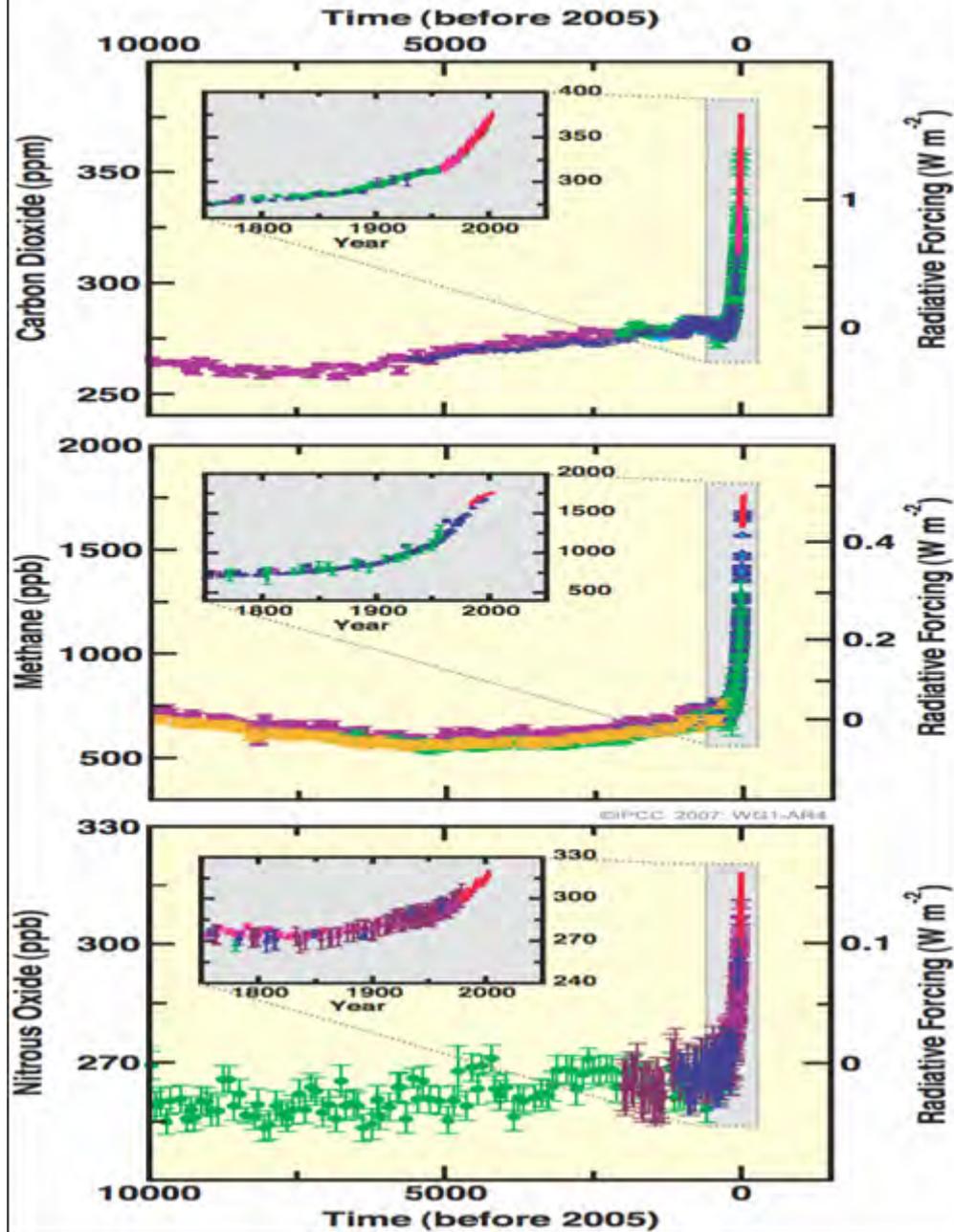


METEOSAT le 24/12/1999 a 00:00 UTC

# Tempêtes: statistiques, prévisions, évolutions

2. Le changement climatique lié aux gaz à effet de serre est très largement un phénomène futur, à développement rapide, mais dont les conséquences régionales restent difficiles à apprécier

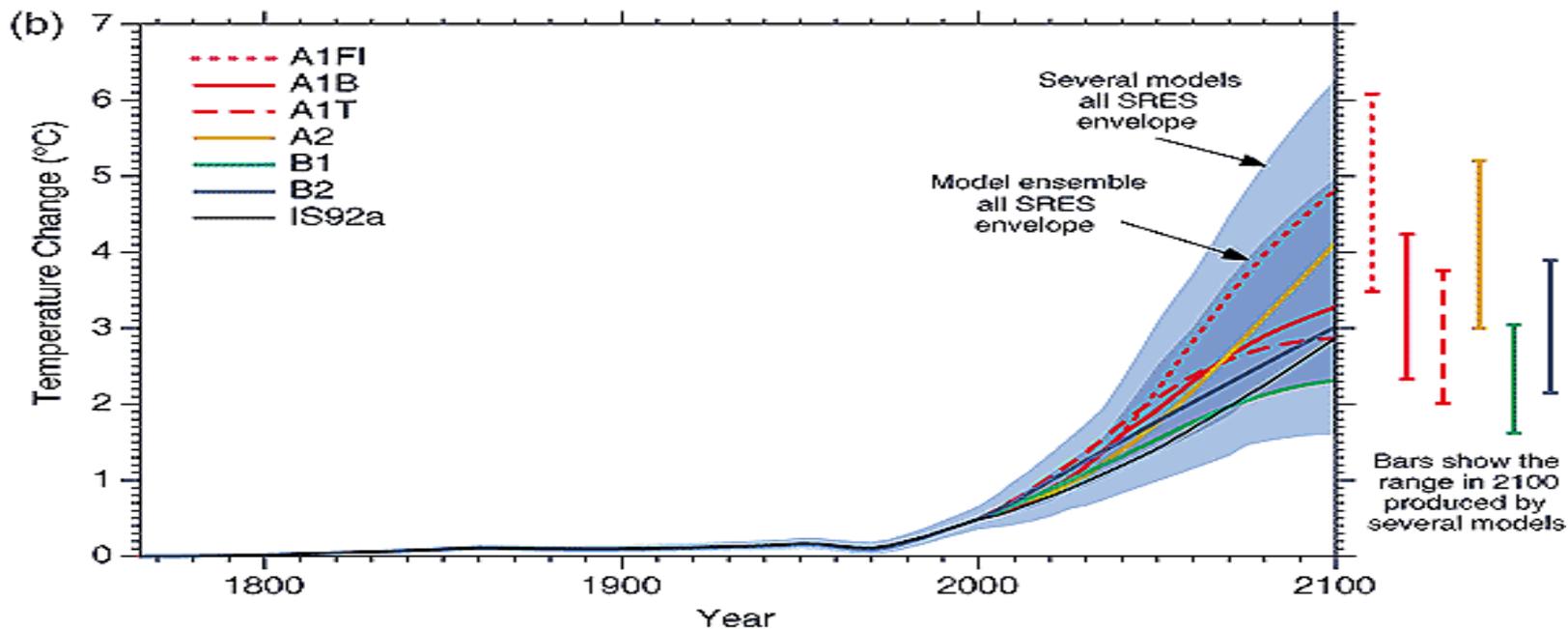
# Changes in Greenhouse Gases from ice-Core and Modern Data



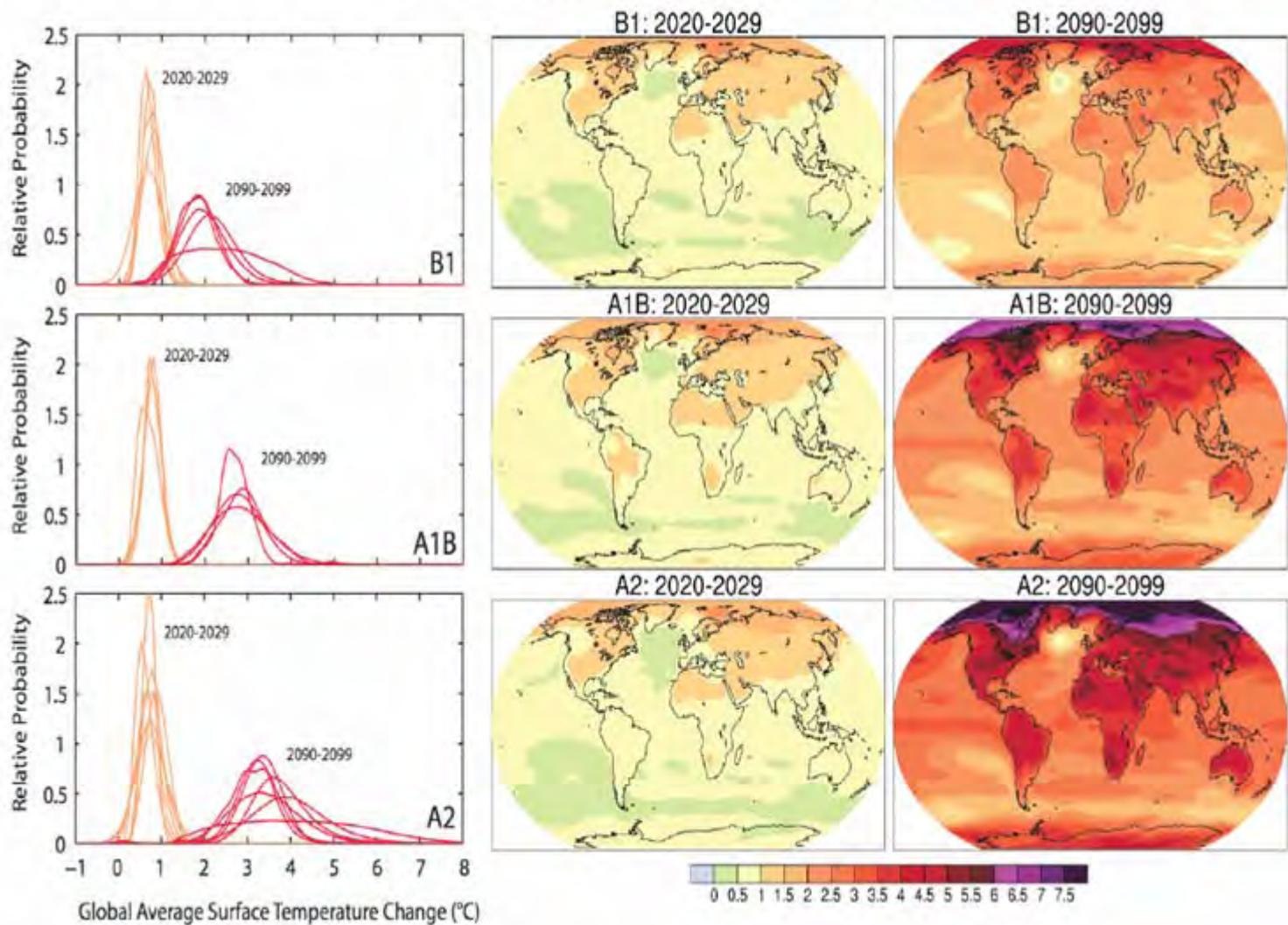


# Conclusions from last IPCC report

- Persistent spread in model behaviour:



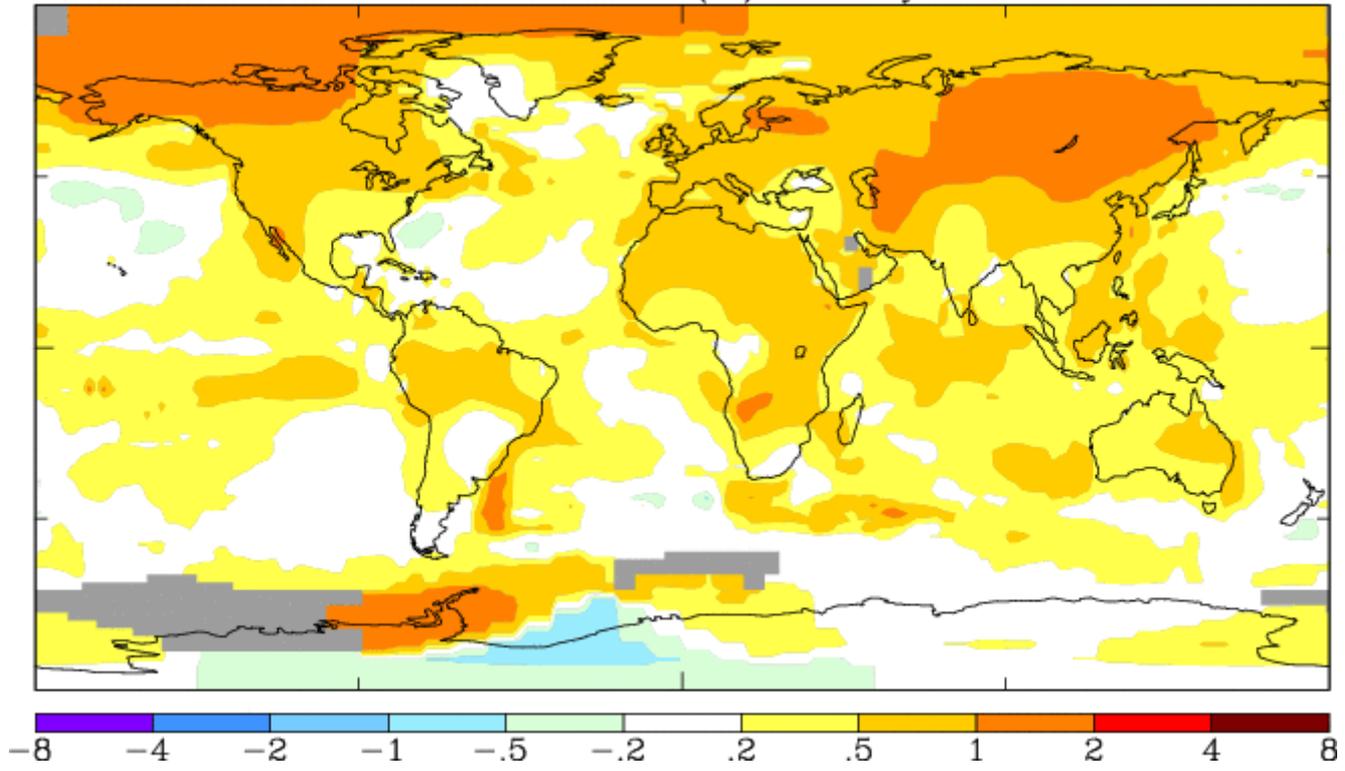
# AOGCM Projections of Surface Temperatures



Nov-Oct 1991-2006

L-OTI(°C) Anomaly vs 1951-1980

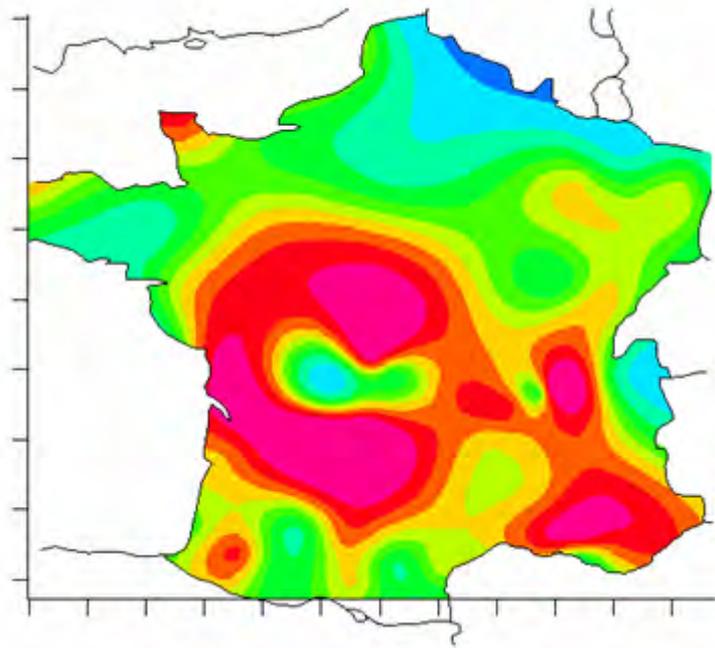
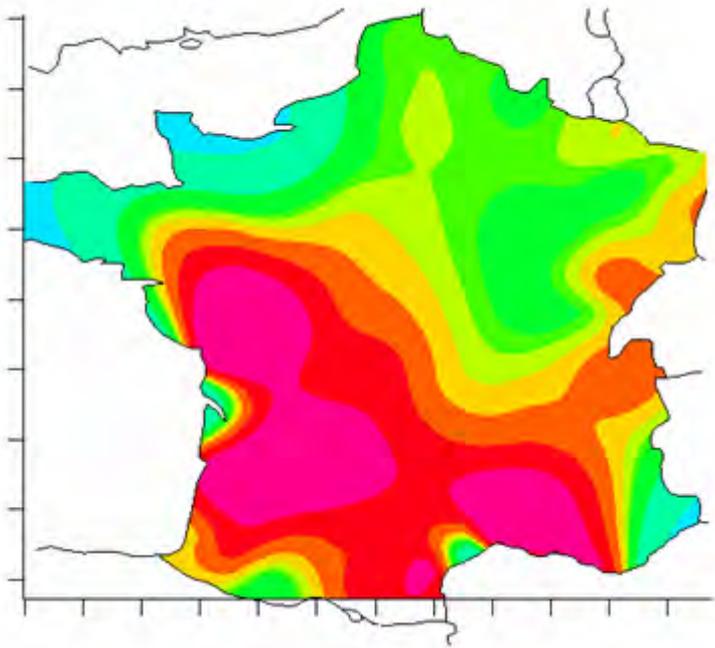
.40



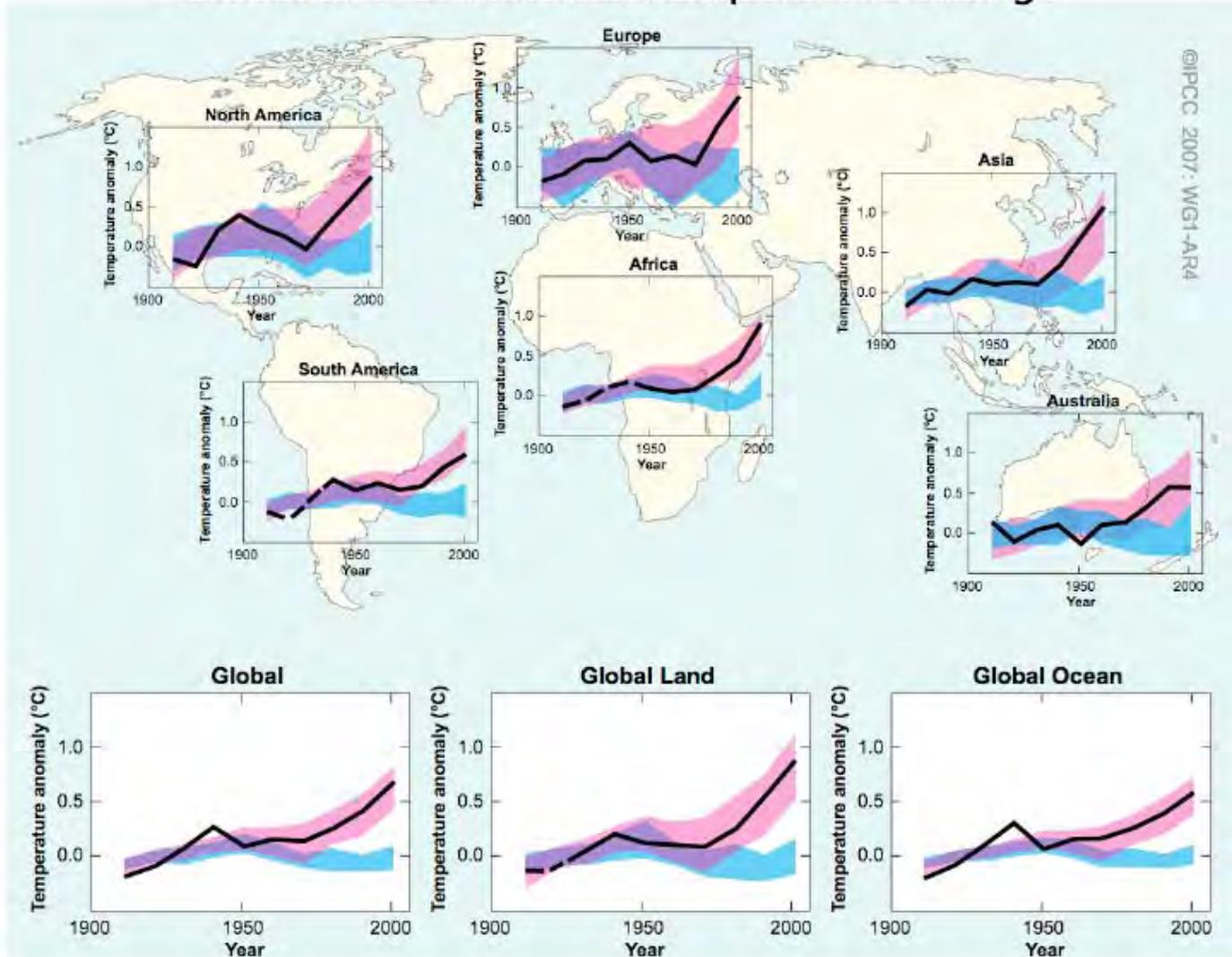
# Températures minimales journalières estivales

Changement simulé

Tendances observées  
1971-2000



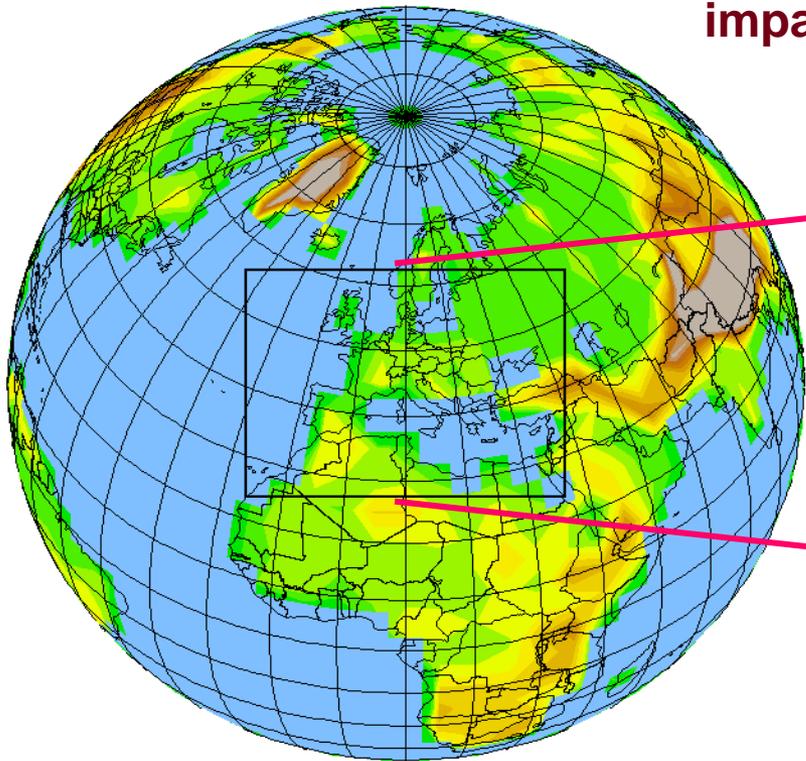
# Global and Continental Temperature Change



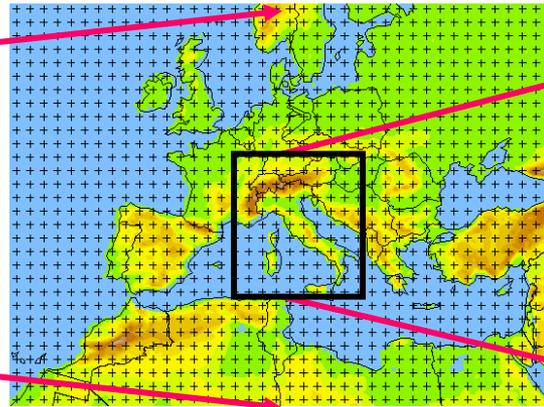
# Climate projections on regional and local scales

Performance of current AOGCMs (like those from CMIP3) deteriorate when looking at finer temporal and spatial scales which are needed for many impact assessment studies.

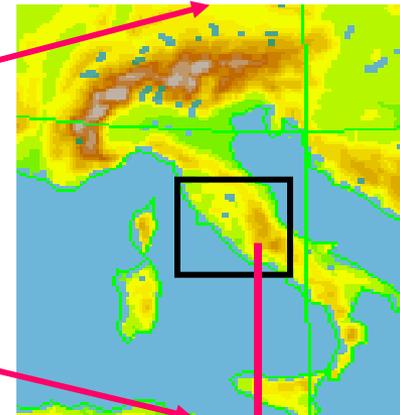
## Global



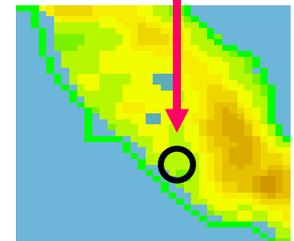
## Continental

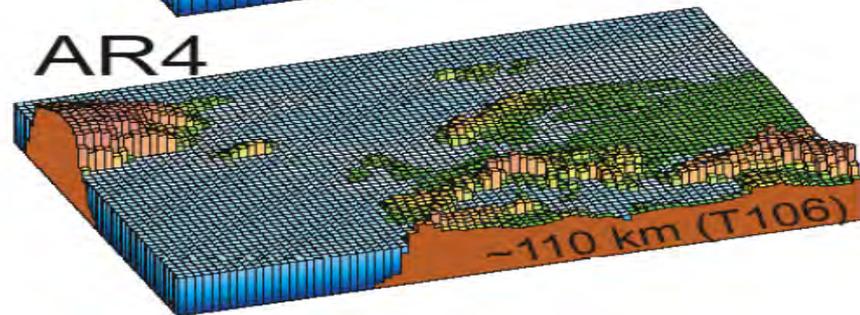
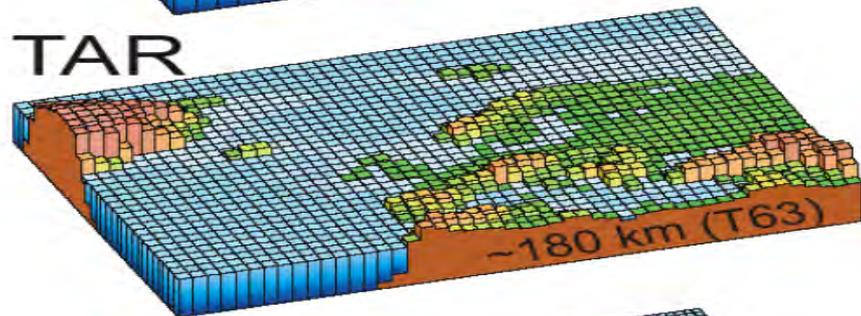
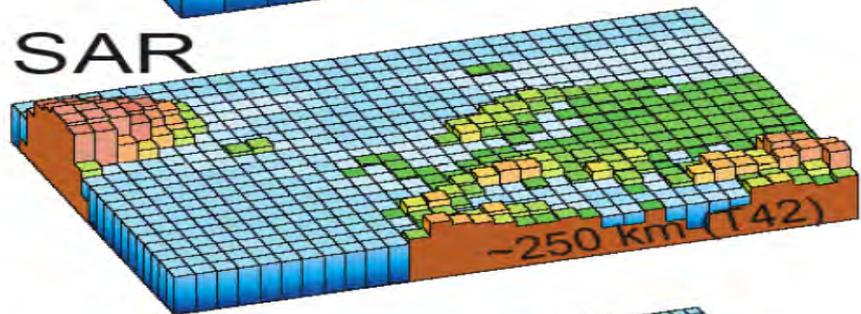
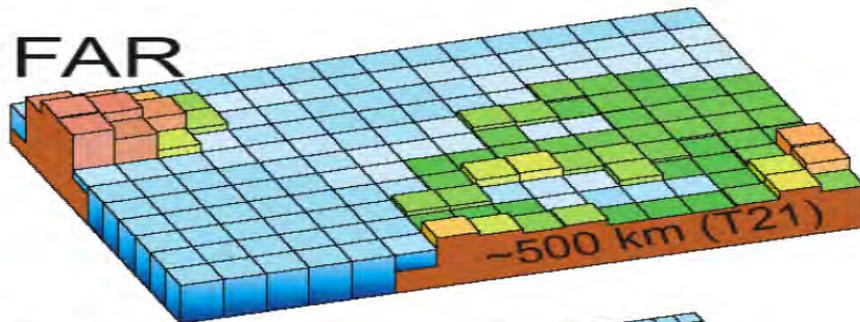


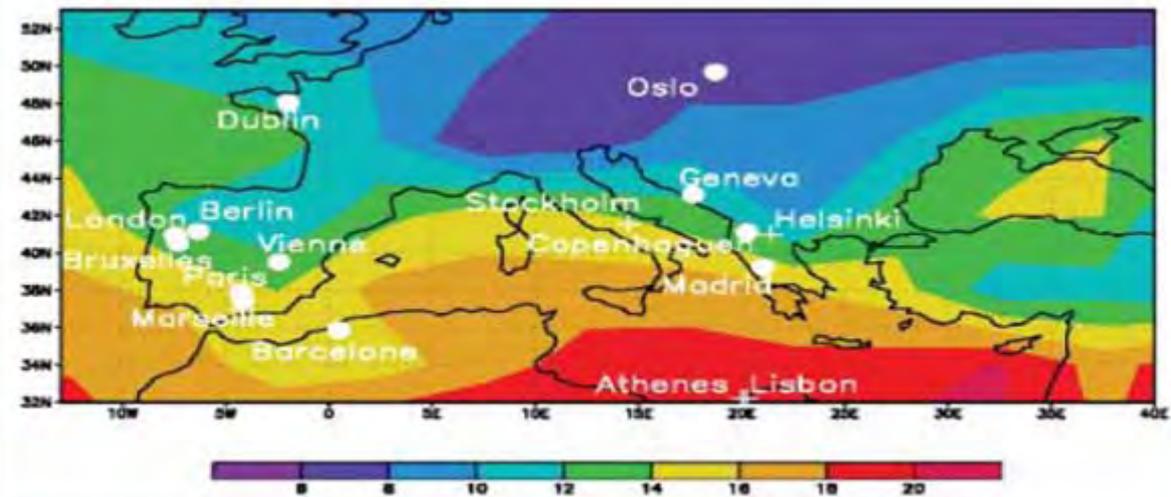
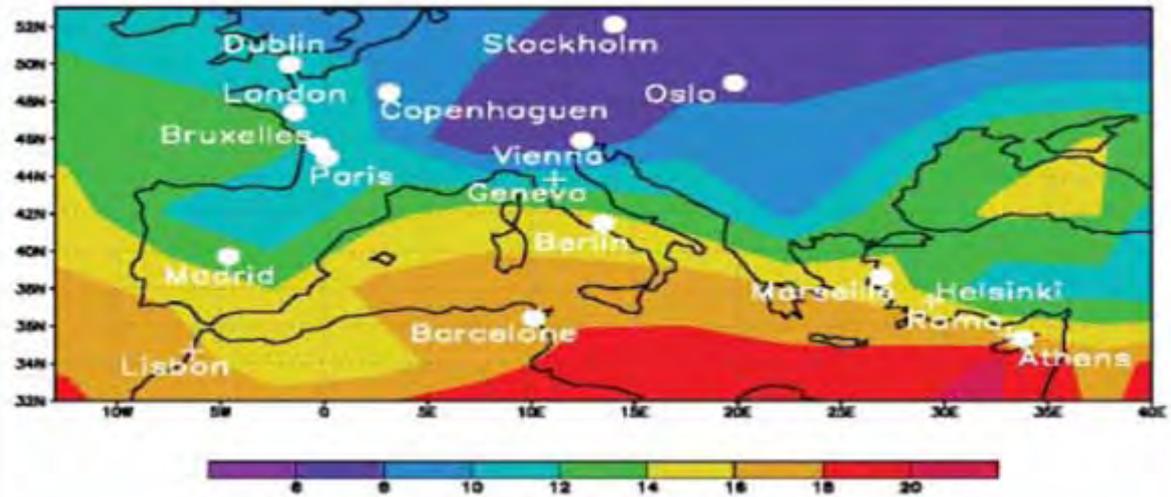
## Regional



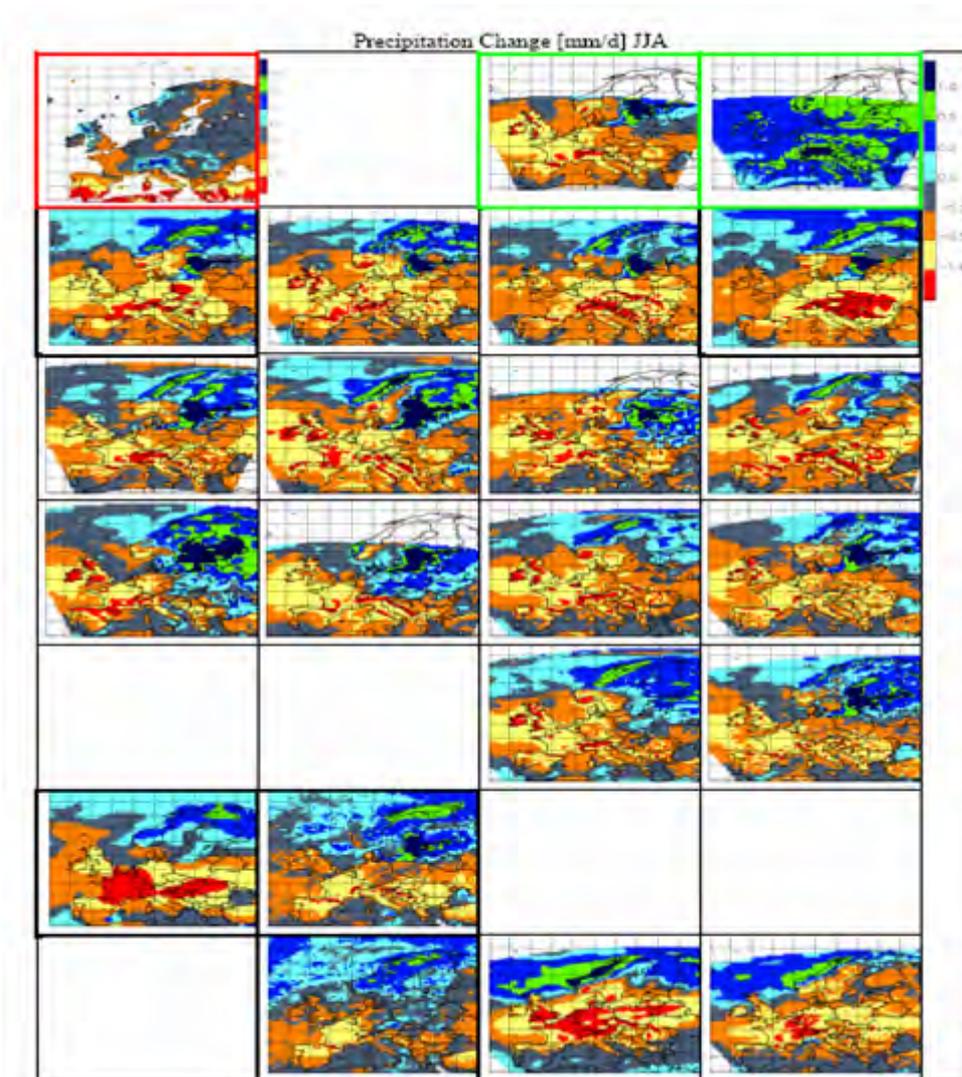
## Local







# Approches régionales: résultats de PRUDENCE



(Prudence est un projet financé par la Commission Européenne)

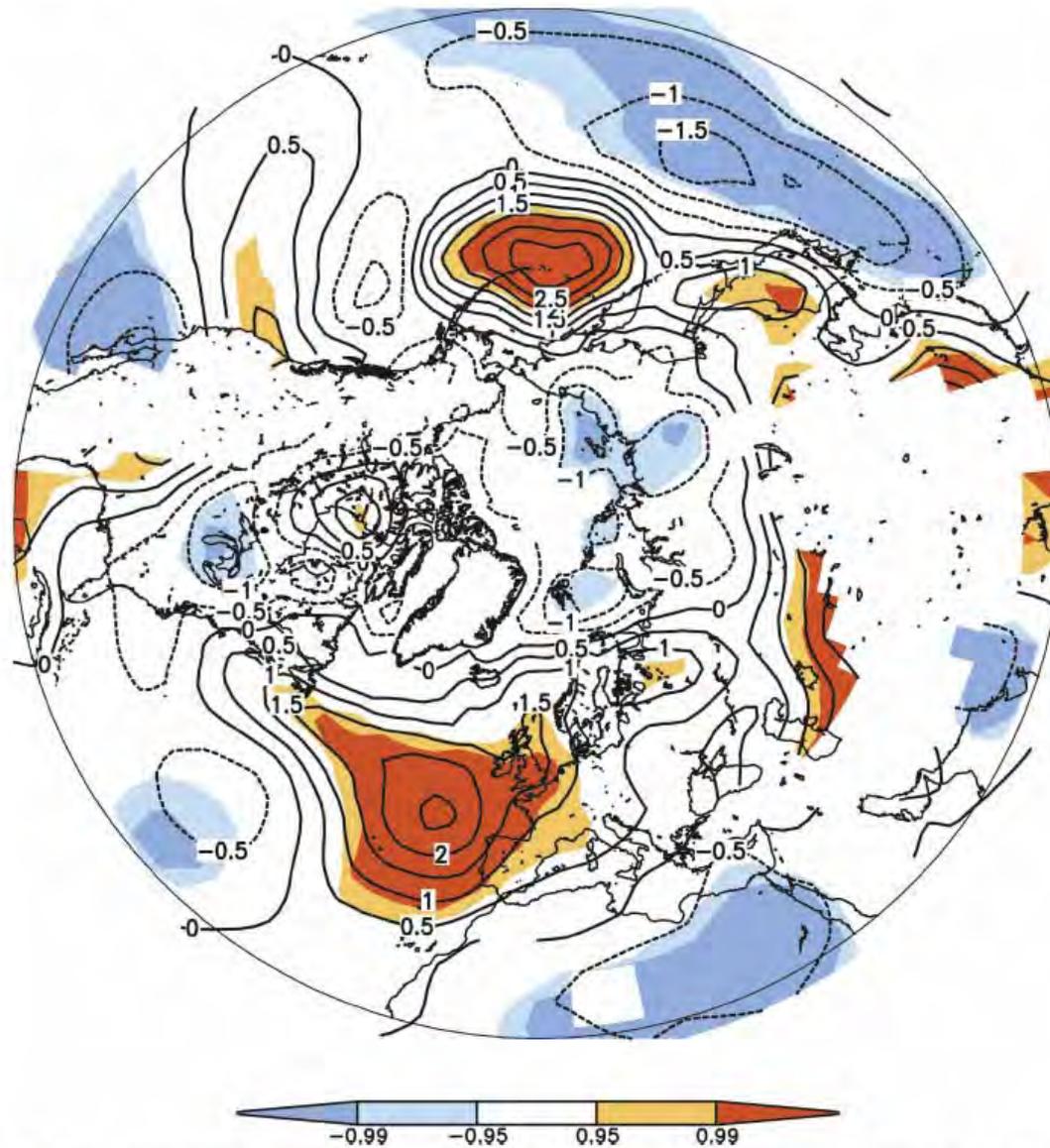


FIG. 2. Greenhouse gas signal for MSLP storm track in 1/10 hPa, computed as the difference between the forcing period of SRES A1B (2080–2100) and the present-day forcing (1960–2000). Values over high ground (>1000 m MSL) are omitted. Significant differences at 95% (and 99%) confidence levels are in color, with a  $t$  test on the winter basis.

# Tempêtes: statistiques, prévisions, évolutions

3. Malgré un manque d'études notable, on peut affirmer que la forêt est un élément du système climatique local

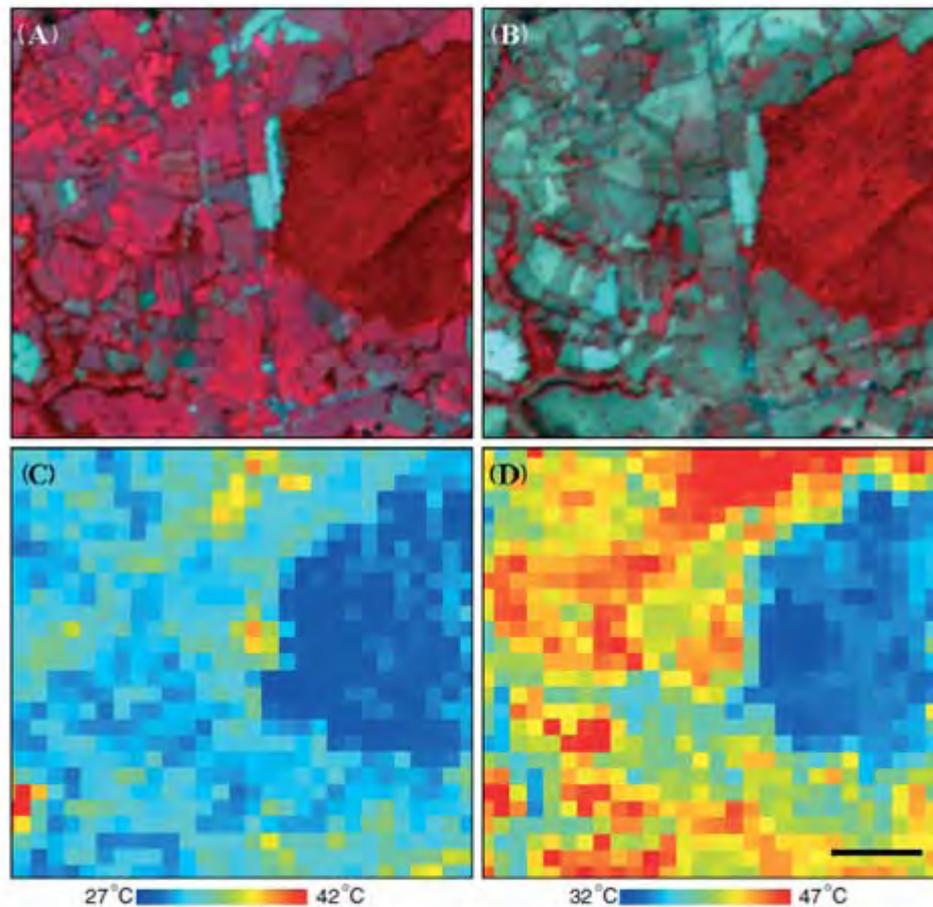


Figure 10. Level 2 ASTER products for a subset of the image footprint. (A), (B) Atmospherically corrected surface reflectances displayed as 321-RGB false color composites for the (A) 1 August, 2000 and (B) 10 August, 2003 images. Vegetation appears red because of the high reflectance in the near-IR (ASTER band 3). (C), (D) ASTER-derived kinematic surface temperature for the same (C) 2000 and (D) 2003 scenes. Note the large contrast between agricultural lands and forest patches in the 2003 image. Scale bar indicates 500 m and applies to all four images