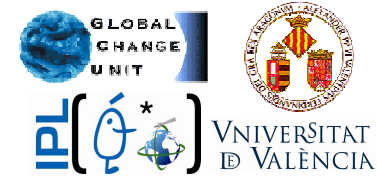
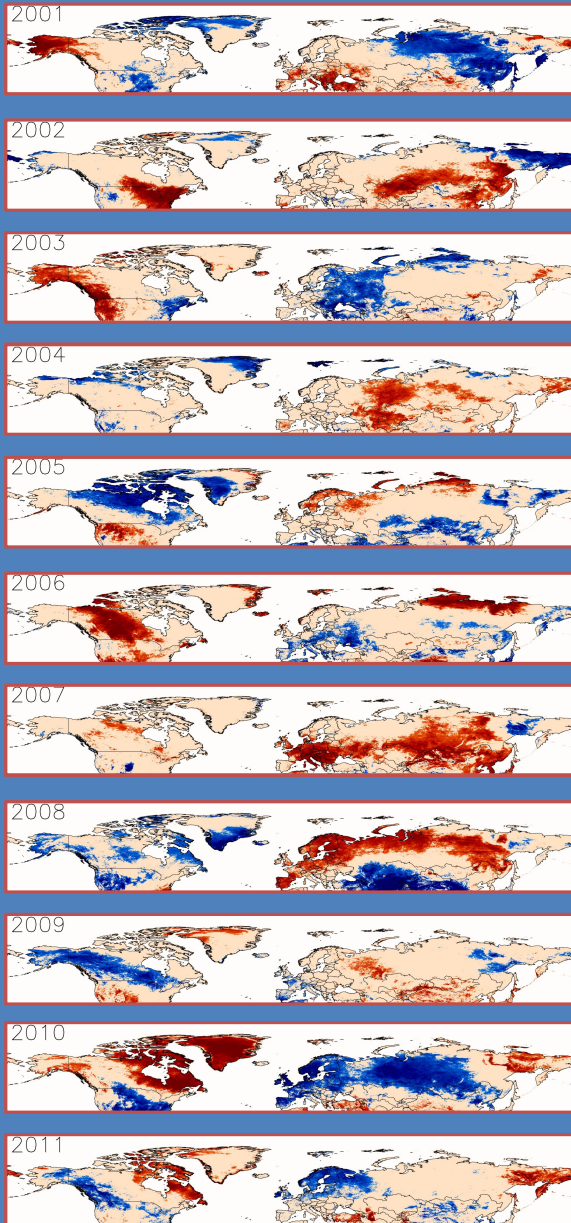


Analysis of recent Temperature Anomalies over the Northern Hemisphere using MODIS-LST and Reanalysis products

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Winter: DJF



ABSTRACT. - The IPCC reported a significant rise on the global mean surface temperatures over the last 100 years, with a rate of warming over the last few decades almost double that over the last 100 years. The rate of warming is higher at land surfaces over the Northern Hemisphere (NH), and particularly extreme warming is projected over the Arctic. In this poster we show trends in surface skin temperature over the mid- to high-latitudes of the NH (30N-90N) in the last decades using MODIS/LST products (2000-2011) and ERA interim reanalysis data (1980-2011). Results extracted from ERA-int data show a significant widespread warming trend in summer and almost a neutral trend in the winter season, except for the case of Greenland, with a widespread warming in both seasons. Further analysis is required to assess the suitability of MODIS and ERA-int data for this kind of studies.

Data

- MODIS monthly Land Surface Temperature & Emissivity product (MOD11C3) at 0.05° latitude/longitude Climate Modeling Grid (CMG) from 2000 to 2011.
- ERA-Interim (ERA-int) dataset (ECMWF) at 1.5° × 1.5° latitude/longitude global spatial resolution and available from 1979 to present.

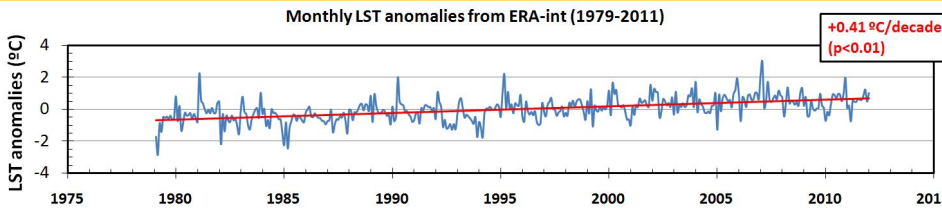
Results

MODIS/LST standardized anomalies (DJF and JJA seasons)

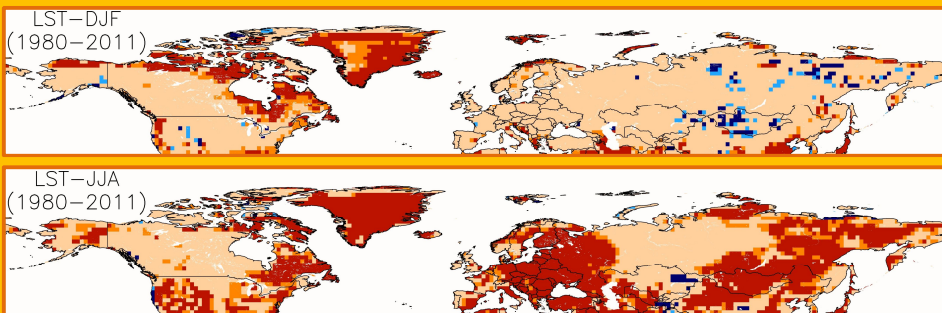
- Historic heat wave in the summer of 2003 over Europe
- Exceptional European warmth of winter 2007
- Extreme cold during the 2009/2010 winter
- Anomalous warming (and melting) in Greenland during the 2010 winter

Trends in LST (1980-2011) using ERA-int data

- Positive and significant trend in LST anomalies: warming rate = 0.4 °C/decade
- Almost a neutral trend is observed during the DJF season
- Warming trend observed in most part of Eurasia during the JJA season
- Greenland: significant warming both in DJF and JJA seasons



Trends in LST (ERA-int) from 1980 to 2011



Summer: JJA

