



Simulating Recent Climate Extremes and their Impacts on Weather with a High Resolution Atmospheric Model

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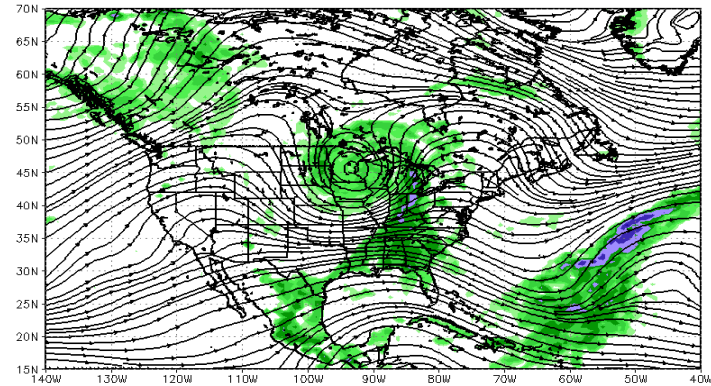
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Objective of Columbia Usage

- To carry out large ensemble, high resolution AGCM simulations of selected recent climate extremes including
 - extreme winter storms and recent ENSO variability
 - the 2003 European heat wave
 - the ongoing drought in the SW U.S.

Identify the codes to be run on Columbia

- NSIPP-1: atmospheric-land general circulation model (1/2 degree resolution)



Example of an intense springtime storm over the US simulated by the NSIPP-1 AGCM run at one-half degree horizontal resolution. Contours are 200mb streamlines and shading is precipitation.

Key Milestones

Completion date

- | | |
|---------------------------------------|----------|
| • 15-year AMIP run | Jul 2005 |
| • 1999-2004 MJJA 10 members each year | May 2005 |
| • 2003 MJJA 50 members for heat wave | Aug 2005 |
| • 1997/98 DJFM 50 member ensemble | Jun 2005 |
| • 1998/99 DJFM 50 member ensemble | Jun 2005 |
| • 2004/05 DJFM 50 member ensemble | Jun 2005 |

Scientific Impact

- improved estimates of how El Nino and La Nina and other SST anomalies affect extreme weather events over the US
- improved estimates of the tails of the PDF of near-surface temperature over Europe
- Improved understanding of the mechanism(s) that maintain the SW drought over many years

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