MM5I simulations for NARCCAP

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Model Features

• Dynamics: Non-hydrostatic (like 2 others)
• Spectral nudging? No (like 3 others)
• Vertical levels: 23 (others: 18 – 35)
• “Sponge zone”: 4 grid points (4 – 15)
• Land model: NOAH, 4 layers (like 2 others)
• Convection: Kain-Fritsch2 (unique)
• Cloud microphysics: Dudhia simple ice (unique)
• Boundary layer: Hong-Pan, non-local K (like 1 other)
Temperature Bias [°C]

DJF

Spatial RMSE = 2.8°C
Temperature Bias [°C] JJA

Spatial RMSE = 2.3°C
Precipitation Bias [%] DJF

Spatial RMSE = 1.1 mm/d
Precipitation Bias [%] JJA

Spatial RMSE = 0.6 mm/d
Ranked Monthly Precipitation – Coastal CA
Precipitation Frequency vs. Intensity

Upper Mississippi - DJF

99.5%
Caution: Snow depth (SND)

- The model did not save snow-water equivalent.

- It saves an estimated depth of the snow (SWE / snow density)
Final Remarks

- MM5I tends to fall in the middle in overall statistics ...

- ... but note regional differences. (This should not be interpreted to simply use the “best” model for a region.)

- See Melissa’s talk for some MM5 problems
Analyses at an advanced stage
(see posters)

- Extreme Winds:
  Rachel Hatteberg (Gene Takle)

- Extreme Precipitation:
  Sho Kawazoe (Bill Gutowski)