

GC31A-11- EXPERIMENTS USING NEW INITIAL SOIL MOISTURE CONDITIONS AND SOIL MAP IN THE ETA MODEL OVER LA PLATA BASIN

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NEW SOIL MAP

Soil hydraulic parameters selected to create new soil categorization

REFSMC: Reference soil moisture (onset of soil moisture stress in transpiration)

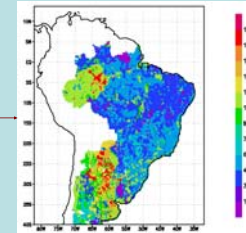
MAXSMC: Maximum soil moisture content (porosity)

WLTSMC: Wilting point soil moisture contents

	Categ. 1	Categ. 2	Categ. 3
REFSMC	≤ 75	75 - 150	> 150
MAXSMC	≤ 200	200 - 350	> 350
WLTSMC	≤ 150	150 - 250	> 250

16 NEW CATEGORIES

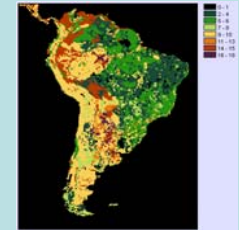
Brasil, Argentina, Paraguay and Uruguay



0.25° x 0.25°

+ UCAR Soil map

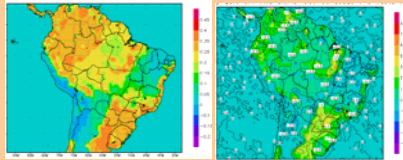
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New ETA soil map

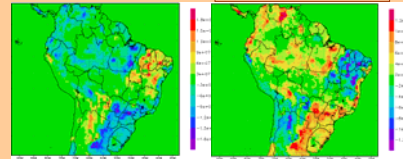
CASE STUDY – 8 – 11 October 2006

24 HR - Oct 8
CTRL – M&M



Soil moisture

Sfc T (lines)
Sfc spec hum (shaded)



Latent Heat

Sensible Heat

EXPERIMENTS - ETA model 40km

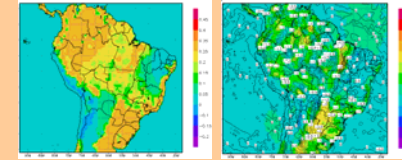
Initial and boundary conditions taken from the CPTEC global model

- **Control (CTRL):** uses the NOAH land surface model, with a 4 layer soil model and 9 different types of soil
- **MOIST:** initial soil moisture conditions from hydrological balance model developed and running operational at CPTEC
- **MAP:** new soil map with 16 categories
- **M&M:** Incorporates both the new soil map and the initial soil moisture conditions from the hydrological balance model



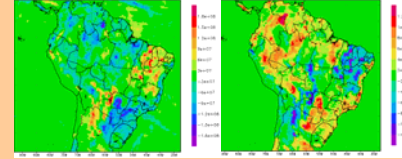
9/10/06 – 2340UTC 10/10/06 2010UTC 11/10/06 740UTC
GOES 12

72 HR - Oct 10
CTRL – M&M



Soil moisture

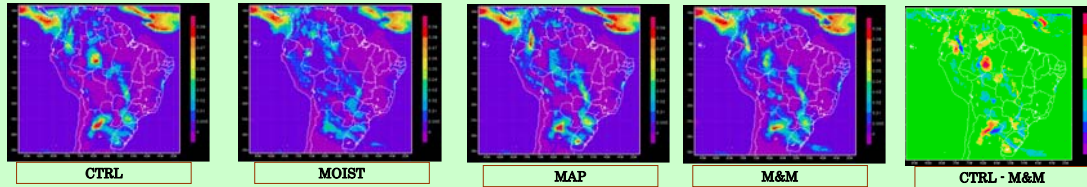
Sfc T (lines)
Sfc spec hum (shaded)



Latent Heat

Sensible Heat

96 HR - Oct 11 PRECIPITATION (m)



CTRL

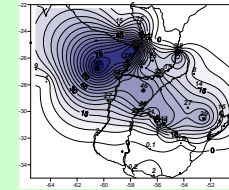
MOIST

MAP

M&M

CTRL - M&M

OBSERVED PRECIPITATION



Results indicate that modifying initial soil moisture conditions and incorporating a new soil map improves rainfall forecasting both through a better spatial representation of precipitation and daily total precipitation values. Although both CTRL and M&M overestimate the total precipitation of the MCC, M&M maximum precipitation is located closer to Presidente Roque Saenz Peña where the most intense precipitation was registered and the difference with the observed value is smaller