

Experimentos con MM5

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4^a Reunión de la Red Ibérica para la investigación
y el desarrollo de aplicaciones
en base al modelo atmosférico MM5,
Aveiro, 26-27 de abril de 2007



Outline

- 1 Introducción
- 2 Tests
 - Modelo de Suelo
 - SST
- 3 Evaluación
 - Descripción de Bases de Datos
 - Ciclo Anual
 - Variabilidad
- 4 Aplicaciones



- 1 **Introducción**
- 2 Tests
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- 4 Aplicaciones



Contexto de trabajo

Adaptación climática de MM5
↓
Integraciones largas (pasado y futuro)



Experimentos

- MM5-a01 (1900-1990)
- MM5-a08 (1990-2099)
- MM5-a09 (1990-2099)
- **MM5-ERA40 (1958-2001)**



Configuración física de los experimentos

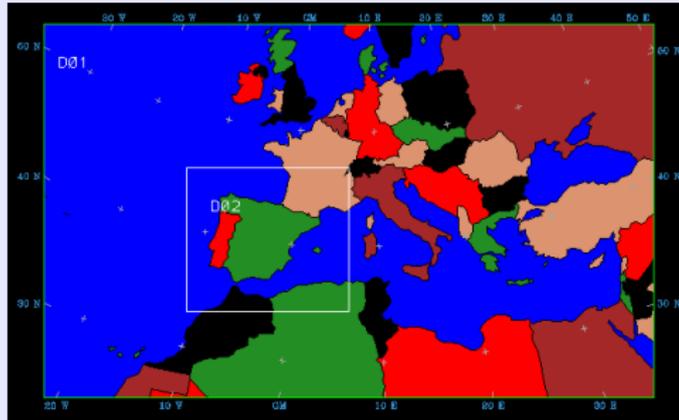
- Parametrizaciones:
 - Cúmulos: GRELL
 - Capa límite: MRF
 - Radiación: RRTM
 - Microfísica: Simple Ice

Criterio general: menor coste computacional (Fernández et.al, 2007)

- Otros:
 - 23 niveles sigma medios hasta 100 mb
 - Shallow Convection (activado)
 - Nudging (desactivado)
- Modelo de suelo (Noah LSM, 4 capas)



Dominios



- D1 y D2 anidados bidireccionalmente
- Resolución: 90 y 30 km

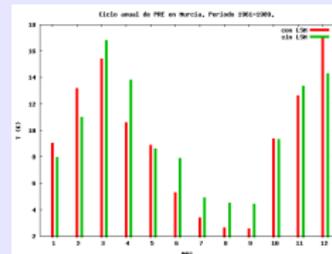
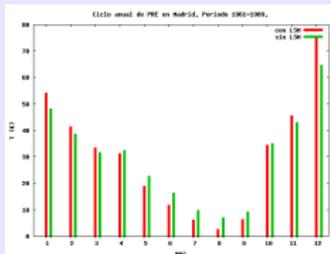


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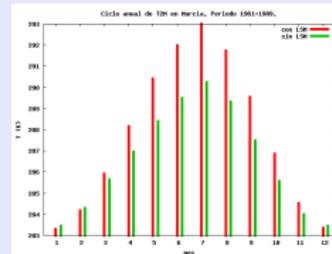
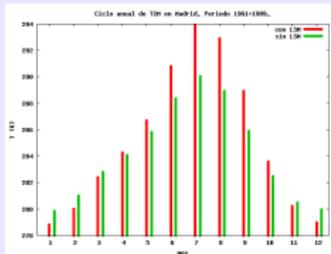


Mejoras

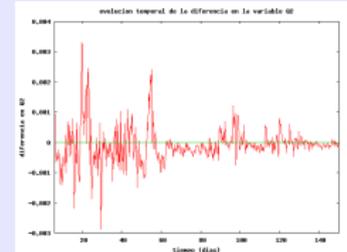
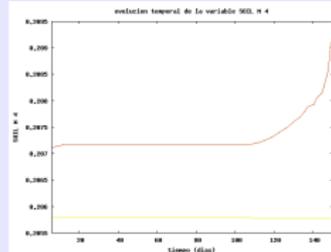
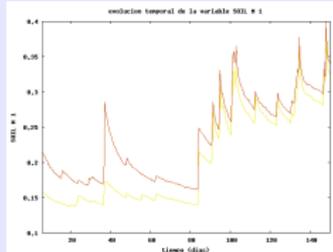
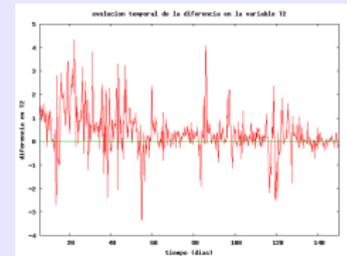
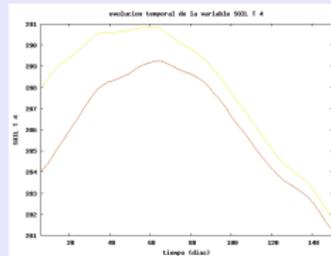
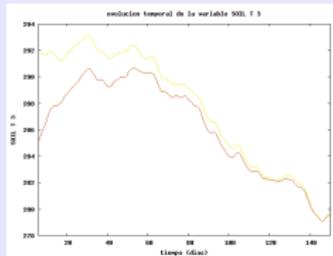
- Ciclo Anual de Precipitación



- Ciclo Anual de Temperatura



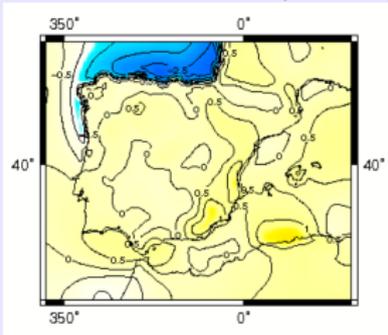
Spinup



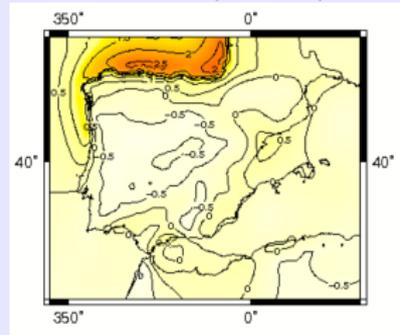
Advertencias sobre la SST

- ¡Que varíe!

Diferencias en T2M (DJF, 1970)



Diferencias en T2M (JJA, 1970)

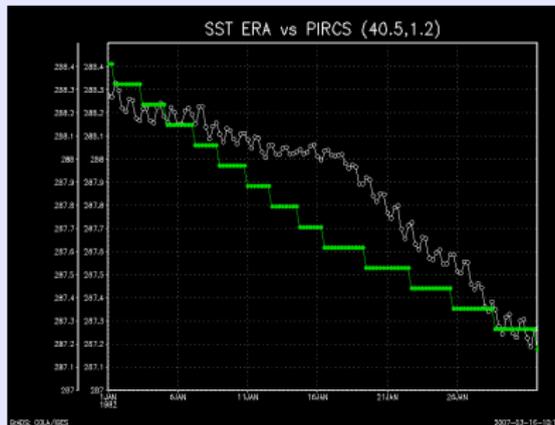


GRIB Code	Level Code	Level 1	Level 2	REGRID Name	REGRID Units	REGRID Description
139	112	0	7	SST	K	Skin Temperature



Advertencias sobre la SST

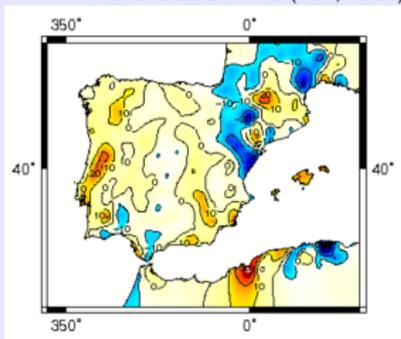
- ¿SST de PIRCS?



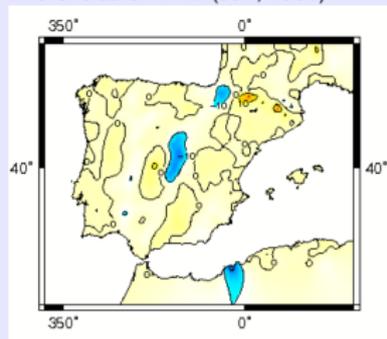
Advertencias sobre la SST

- Generar fichero SIVT

Diferencias en PRE (DJF, 1982)



Diferencias en PRE (JJA, 1982)

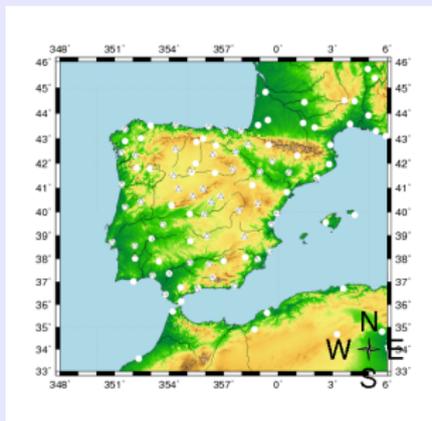


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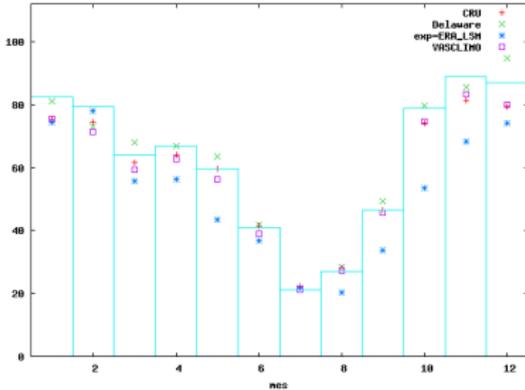
Bases de datos para la evaluación

- Fefi: PRE, 1899-1999, datos en estaciones
- INM: TMP, 1949-2002, datos en estaciones
- CRU: TMP y PRE, 1901-2002, resolución 0.5°
- Delaware: TMP y PRE, 1950-1999, resolución 0.5°
- VASCLIMO: PRE, 1951-2000, resolución 0.5°

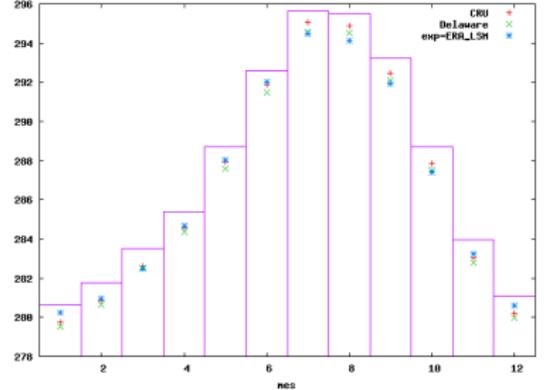


Ciclos anuales

Ciclo anual de PRE promedio para todas las estaciones y para el periodo 1960-1990.

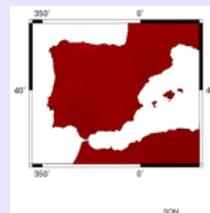
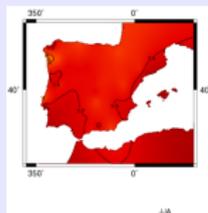
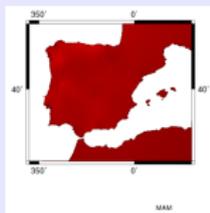
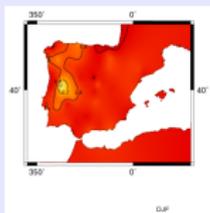


Ciclo anual de TMP promedio para todas las estaciones y para el periodo 1960-1990.

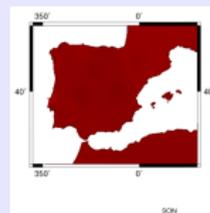
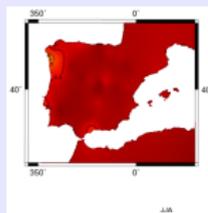
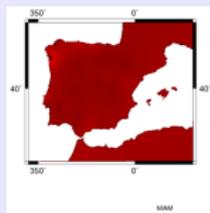
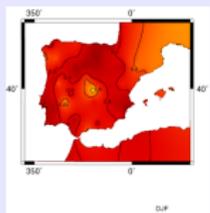


Correlación de TMP (1960-1990)

• MM5-ERA40 vs. INM

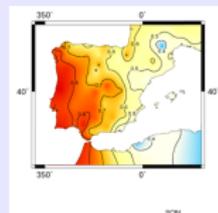
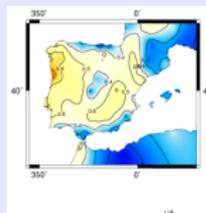
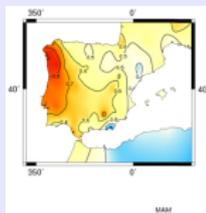
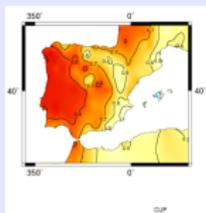


• CRU vs. INM

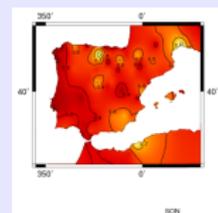
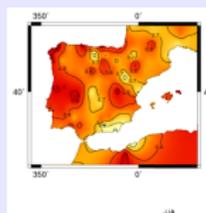
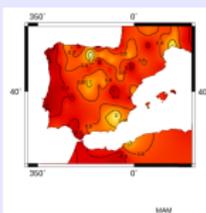
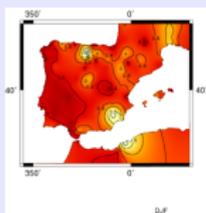


Correlación de PRE (1960-1990)

● MM5-ERA40 vs. Fefi

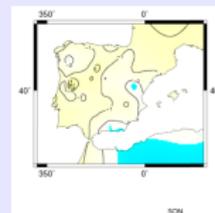
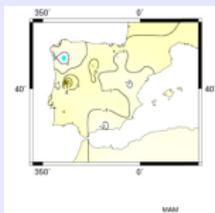
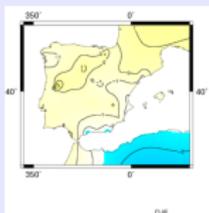


● CRU vs. Fefi

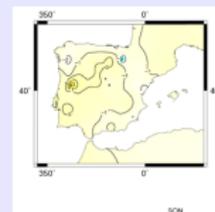
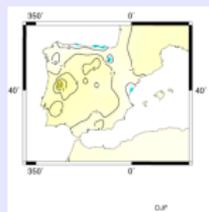


Bias de TMP (1960-1990)

● MM5-ERA40 vs. INM

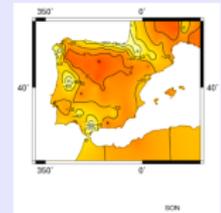
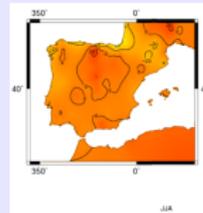
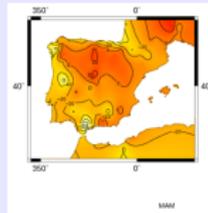
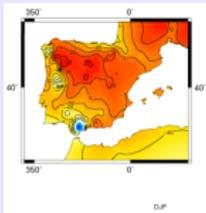


● CRU vs. INM

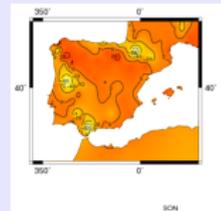
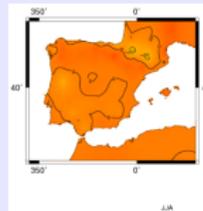
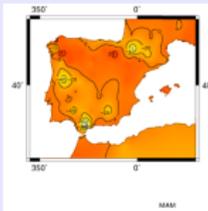
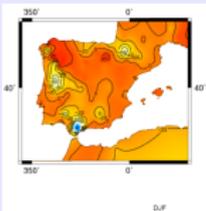


Bias de PRE (1960-1990)

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● CRU vs. Fefi



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Proyecciones de futuro

