

Actividades del Grupo de Modelización Atmosférica Regional. Reunión del ORCC.

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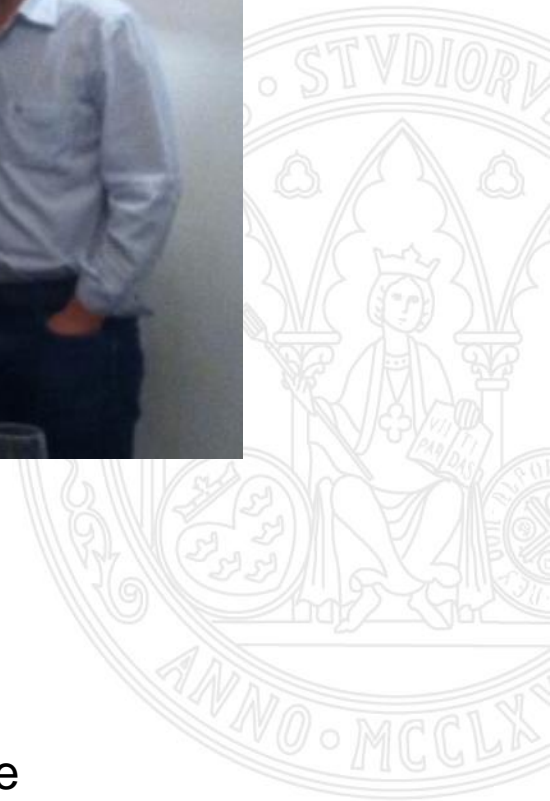
Grupo de Modelización Atmosférica
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- Miembros del grupo
 - Modelización numérica de procesos geofísicos externos
- Líneas de investigación
 - Paleoclima y Cambio Climático
 - Contaminación atmosférica
 - Recursos energéticos
 - Interrelación entre ellos (impactos)

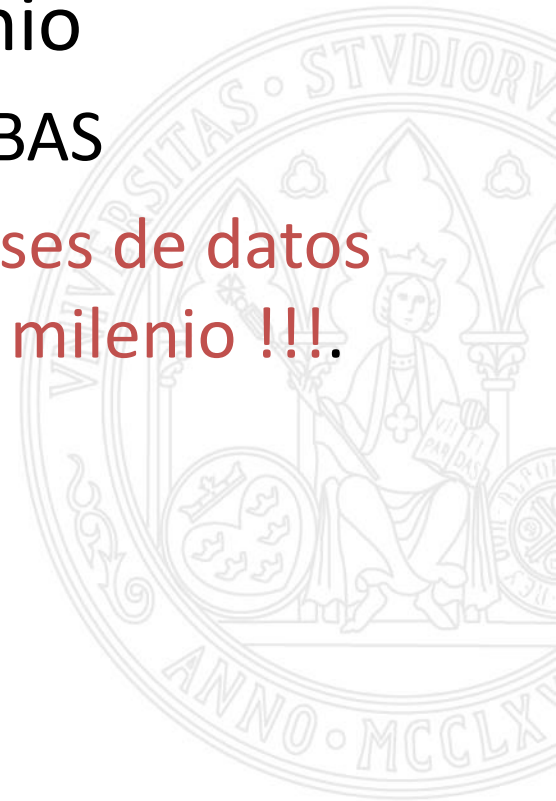




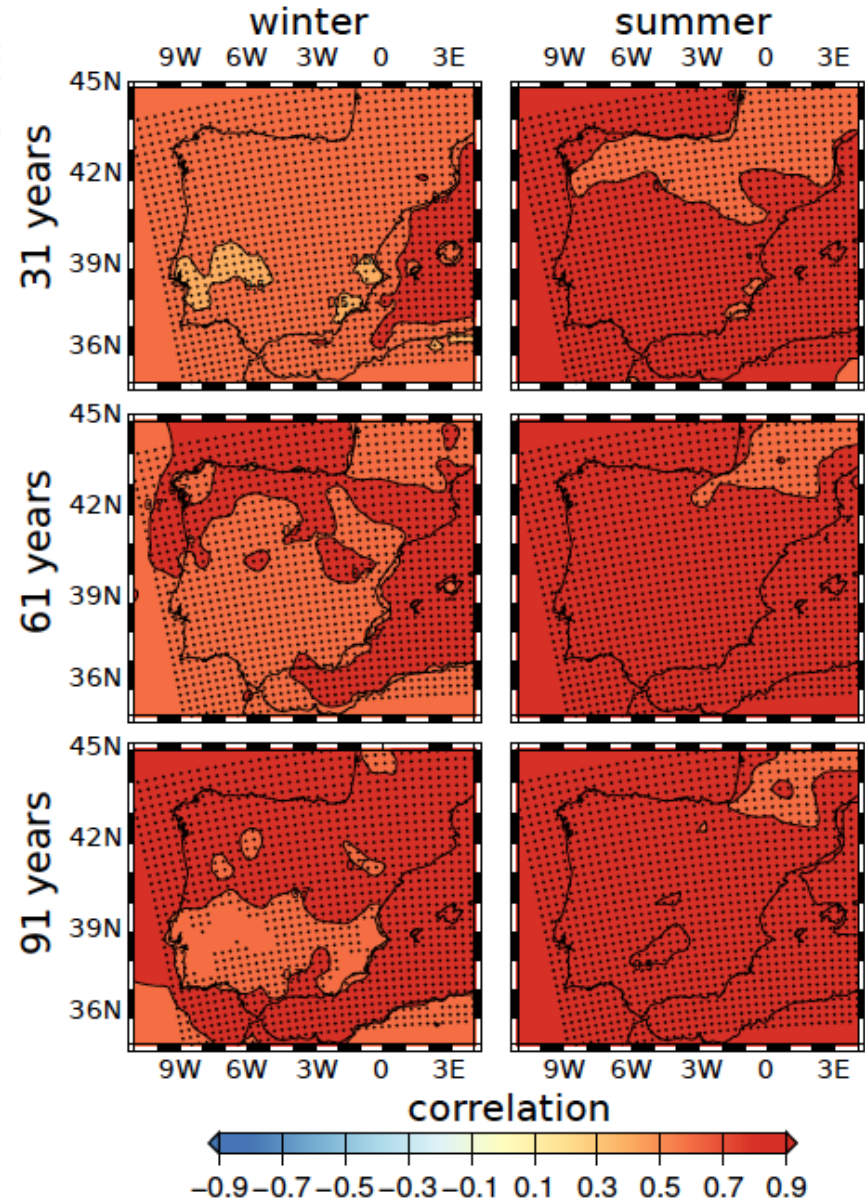
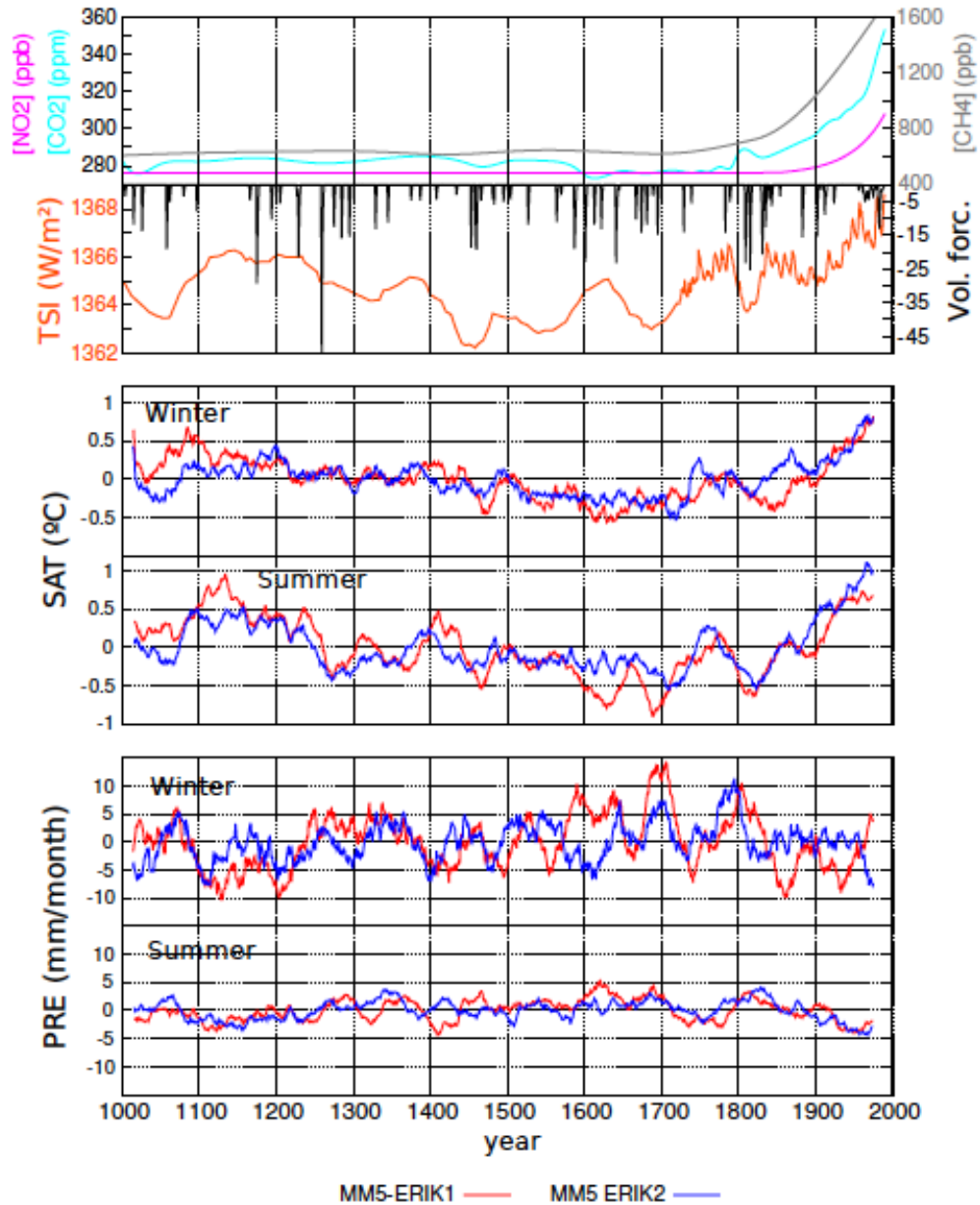
Equipo multidisciplinar formado por Físicos,
Meteorólogos, Ingenieros Químicos y
Ambientólogos.
Colaboraciones con distintos grupos españoles e
internacionales



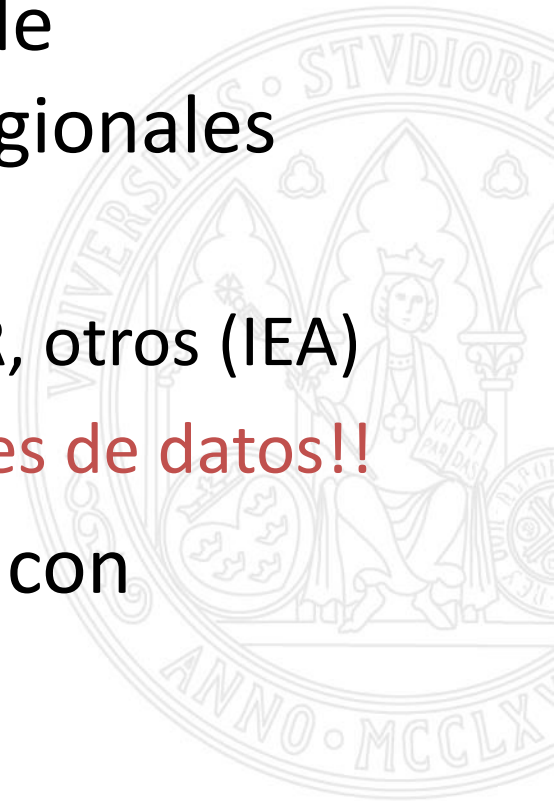
- Varios proyectos en el ámbito de simulación climática regional del último milenio
 - **SPEQTRES, SPECMORE, SALVA-SINOBAS**
 - Disponibilidad de bases de varias bases de datos de simulación del clima en el último milenio !!!



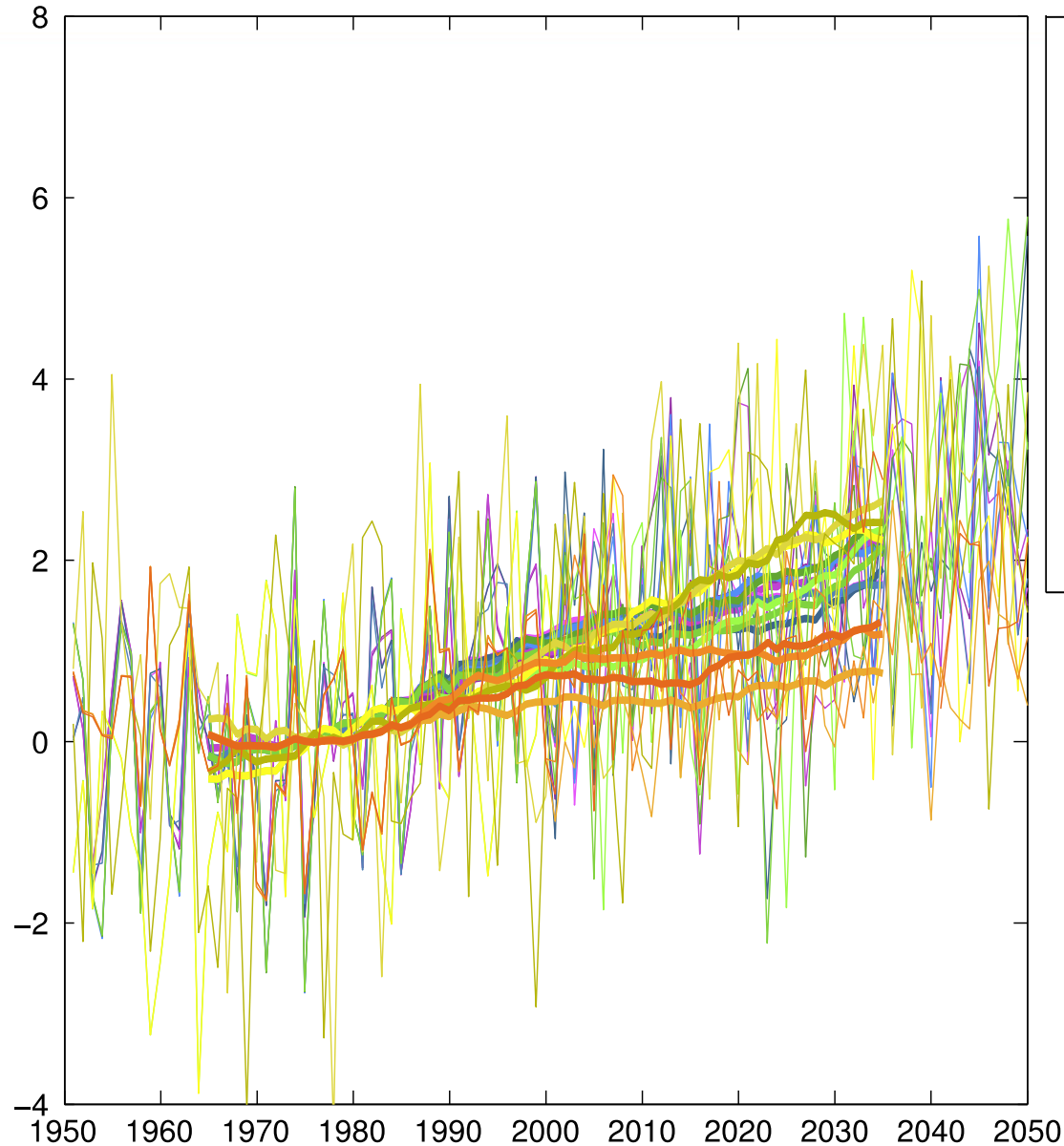
Líneas de investigación: Paleoclima



- Participación en diversos proyectos nacionales e internacionales en elaboración de escenarios de cambio climático regionales (dinámicos).
 - CORDEX, CORWES, ESCENA, CLIMUR, otros (IEA)
 - Disponibilidad pública de varias bases de datos!!
- Proyecciones de cambio climático con modelos estadísticos



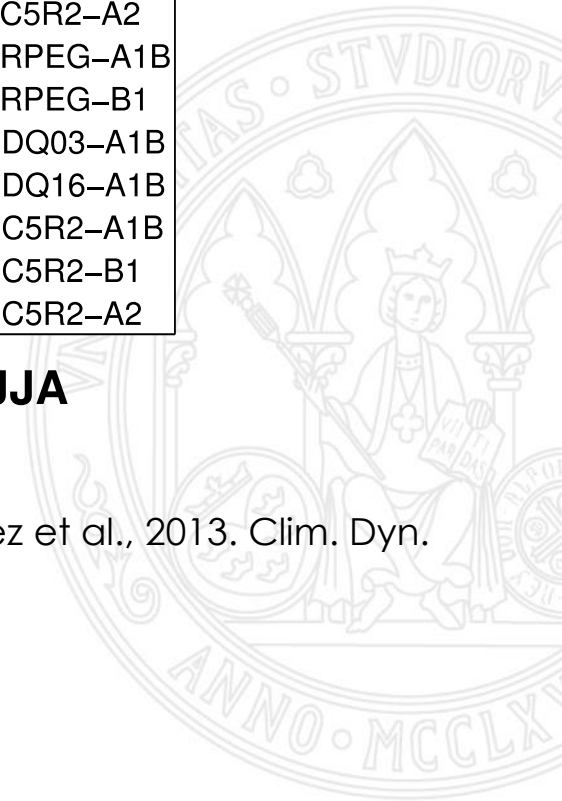
PC1 de la temperatura máxima (JJA)



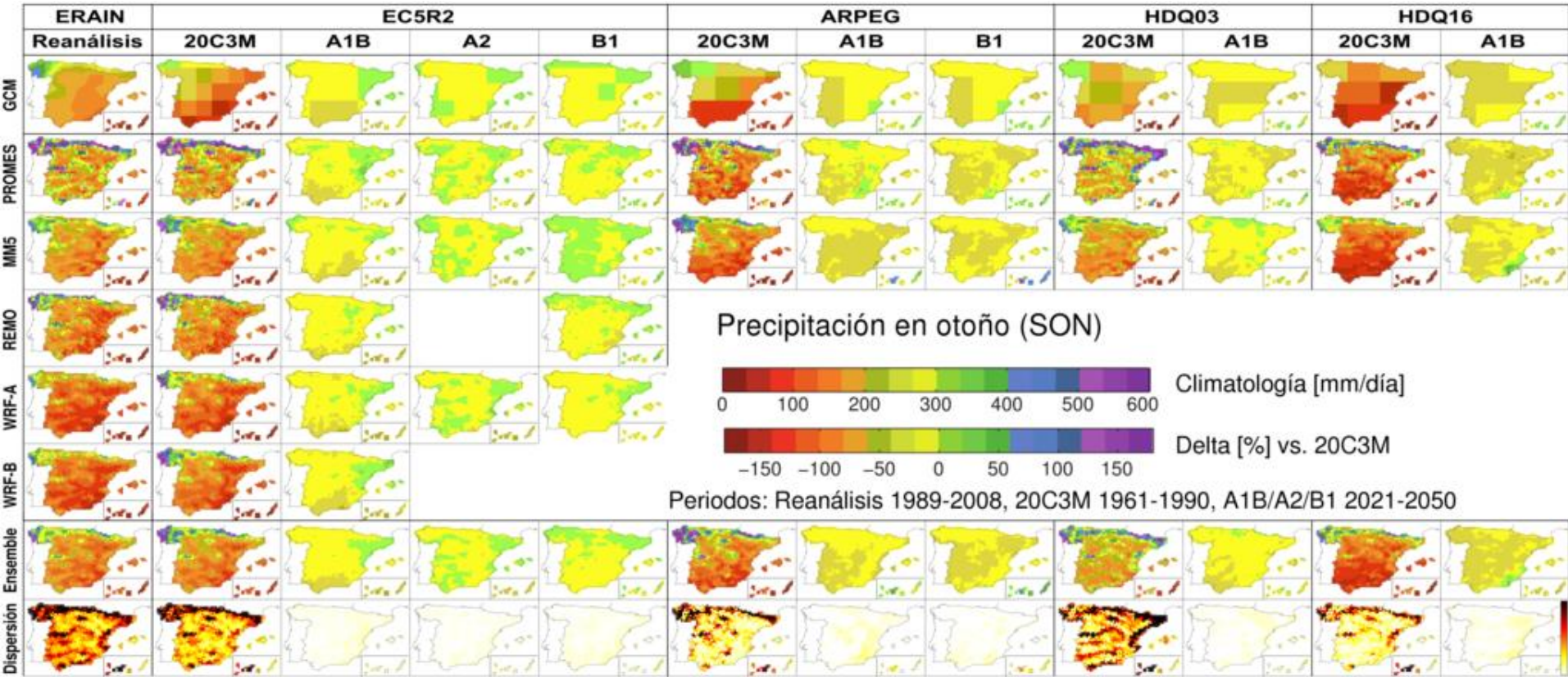
- REM-EC5R2-B1
- WRA-EC5R2-A1B
- WRA-EC5R2-A2
- WRB-EC5R2-A1B
- PRO-EC5R2-A1B
- PRO-EC5R2-B1
- PRO-EC5R2-A2
- PRO-ARPEG-A1B
- PRO-ARPEG-B1
- PRO-HDQ03-A1B
- PRO-HDQ16-A1B
- MM5-EC5R2-A1B
- MM5-EC5R2-B1
- MM5-EC5R2-A2

tasmax JJA

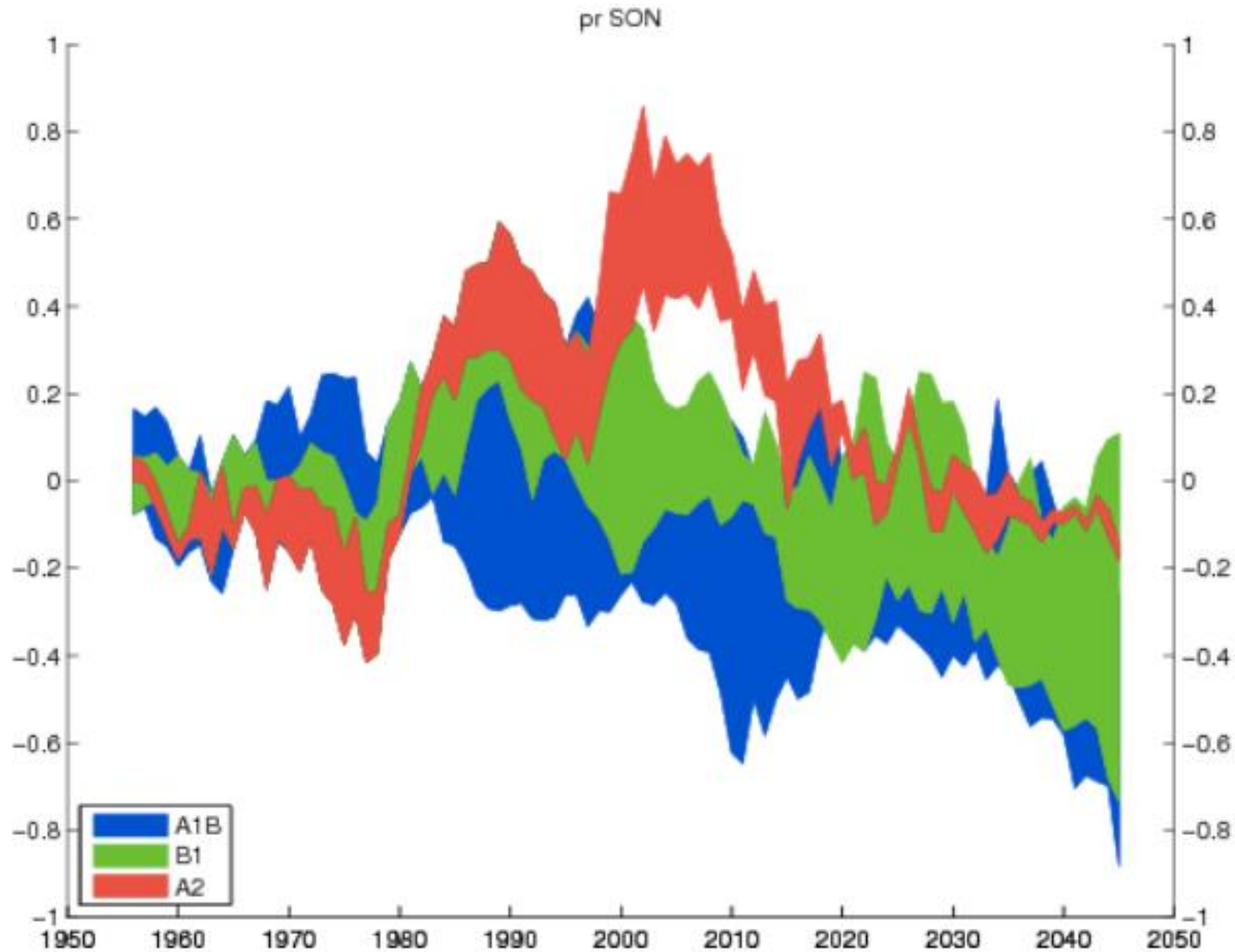
Fernández et al., 2013. Clim. Dyn.



Precipitación en otoño (SON)

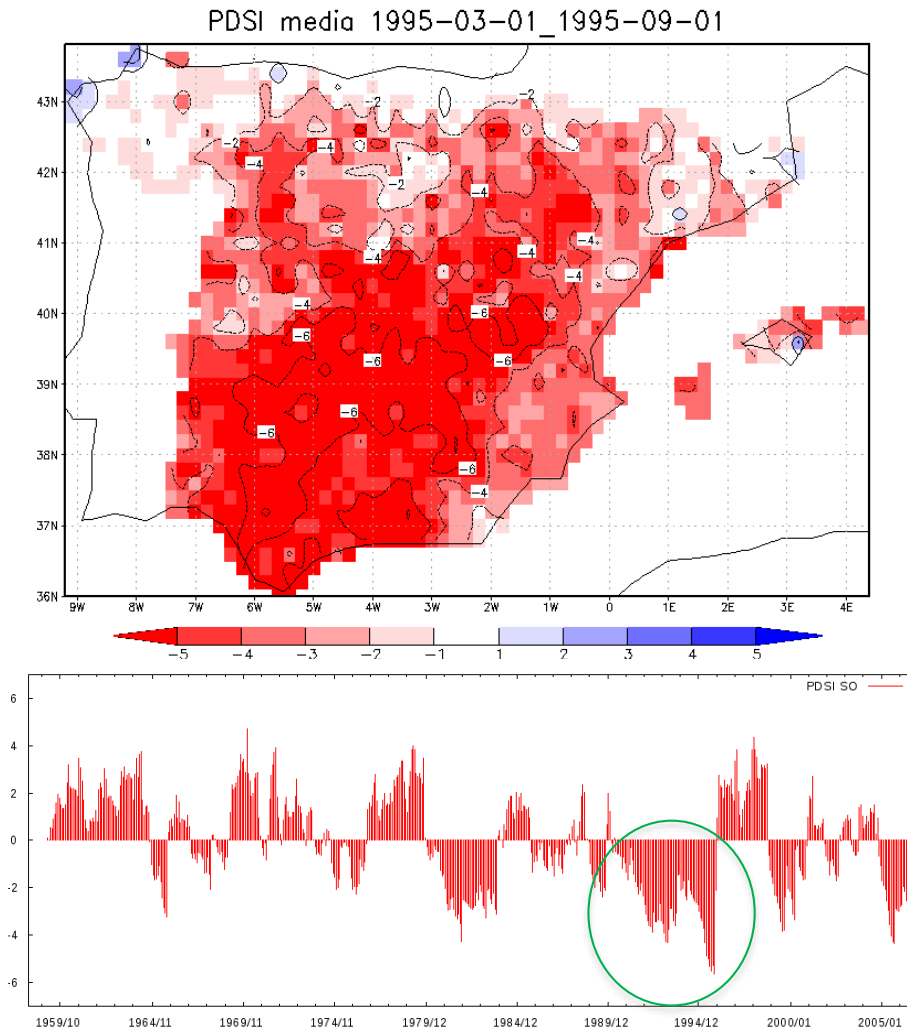


Precipitación en otoño (SON) bajo distintos escenarios



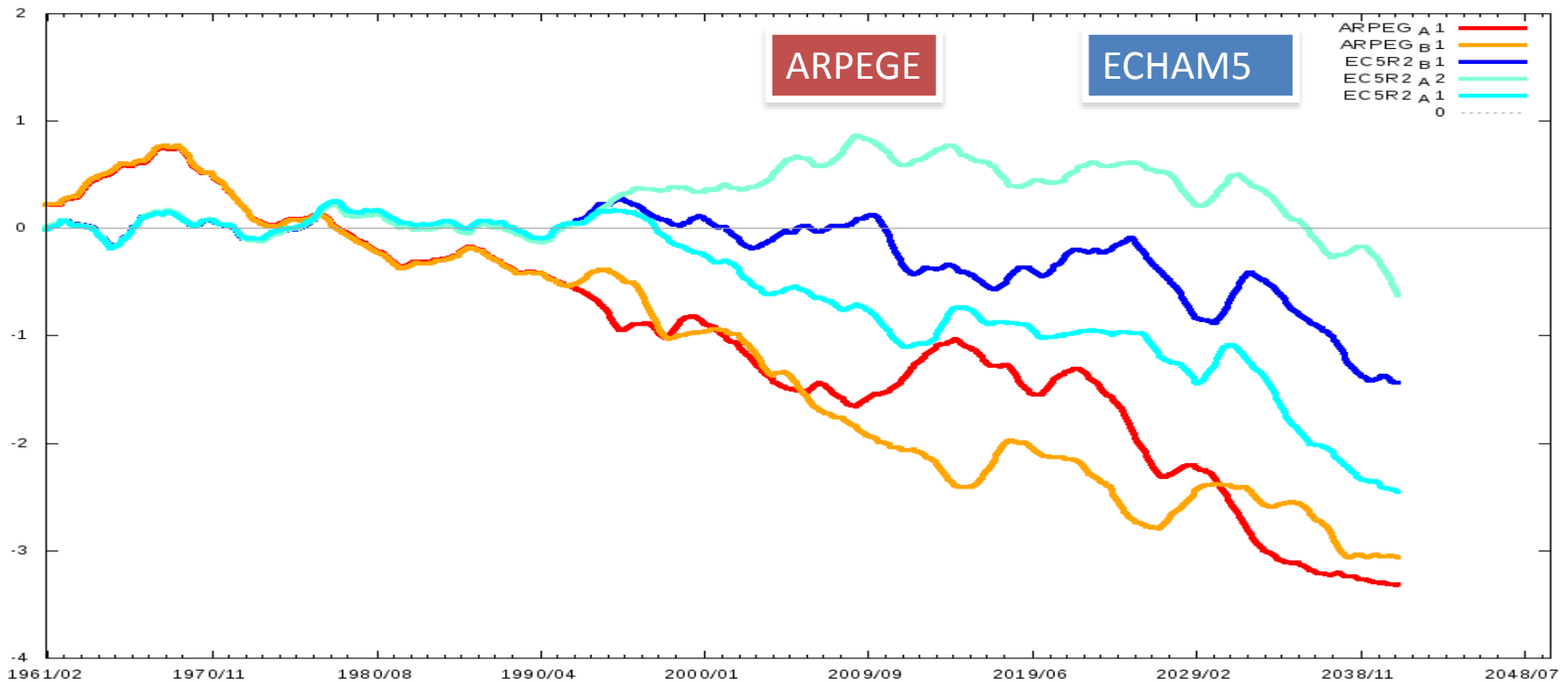
Evaluación preliminar de períodos de sequía en tres áreas de la Península Ibérica

Área Suroeste



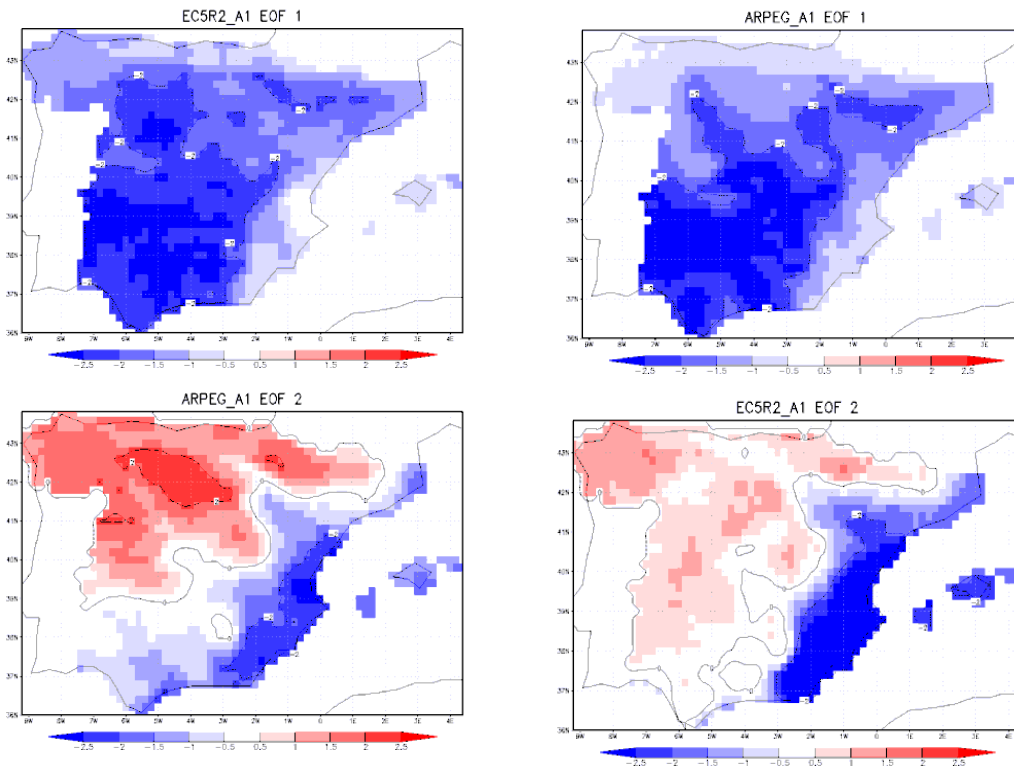
(Arriba) Valores del PDSI medios para el periodo 1/3/1995-1/9/1995.
(Abajo) Serie de PDSI durante el periodo 1957-2007 para el Área Suroeste.

Análisis de los patrones de sequías bajo diversos escenarios de cambio climático: proyecciones futuras



Media móvil de 20 años de los valores del PDSI proyectados y promediados sobre toda la Península Ibérica.

Patrones espaciales del PSDI en proyecciones de cambio climático



	SPAIN02 -ARPEGE	SPAIN02 -EC5R2	EC5R2- ARPEGE
EOF1	0,93	0,95	0,95
EOF2	0,71	0,88	0,83
EOF3	0,58	0,72	0,82
EOF4	0,26	0,30	0,74

Correlaciones existentes entre los distintos modelos comparando los valores de cada una de las EOF's.

	SPAIN02	EC5R2	ARPEGE
EOF1	38	52	49
EOF2	11	13	10
EOF3	7	8	7
EOF4	6	3	5
Σ	62	76	71

Resultados de las primeras EOF's para los modelos ECHAM5 y ARPEGE para la PI en el periodo 2001-2050.

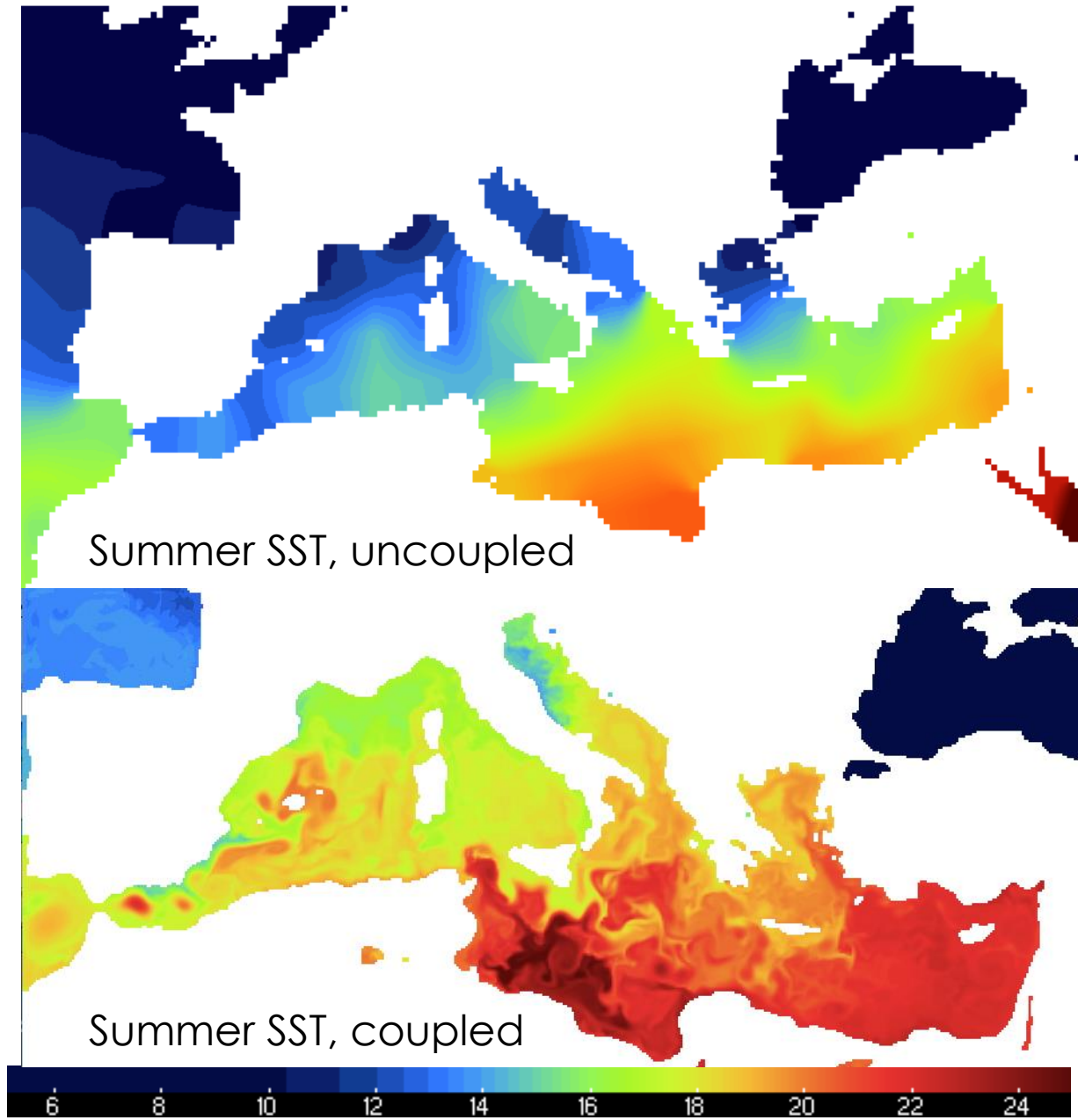
Porcentaje explicado de la varianza del PSDI en la PI por cada EOF's



1. Contribute with basic CORDEX-compliant simulations for its key domains, through CORDEX-WRF and CORWES-UC coordinated project.
2. **Conduct research on the regional atmosphere-ocean coupling**, assesing the role of the coupling on the climate change signal. The Regional Ocean Model System (ROMS) coupled to the WRF model will be used for this purpose.
3. Contribute to the analysis of the impacts in the climate change signal of atmosphere-ocean coupled models in such a complex area as the Canary Islands.
4. Maximize the number of basic CORDEX-compliant simulations. For that purpose, further research will be devoted to the optimization of the parallel performance of WRF-ROMS coupled system in a massive parallel infrastucture.
5. Transfer technology and knowledge among the groups, and to the rest of the scientific community, while developing diagnostic and formatting tools to be contributed as open source tools.

Comparison of sea surface temperature (°C)

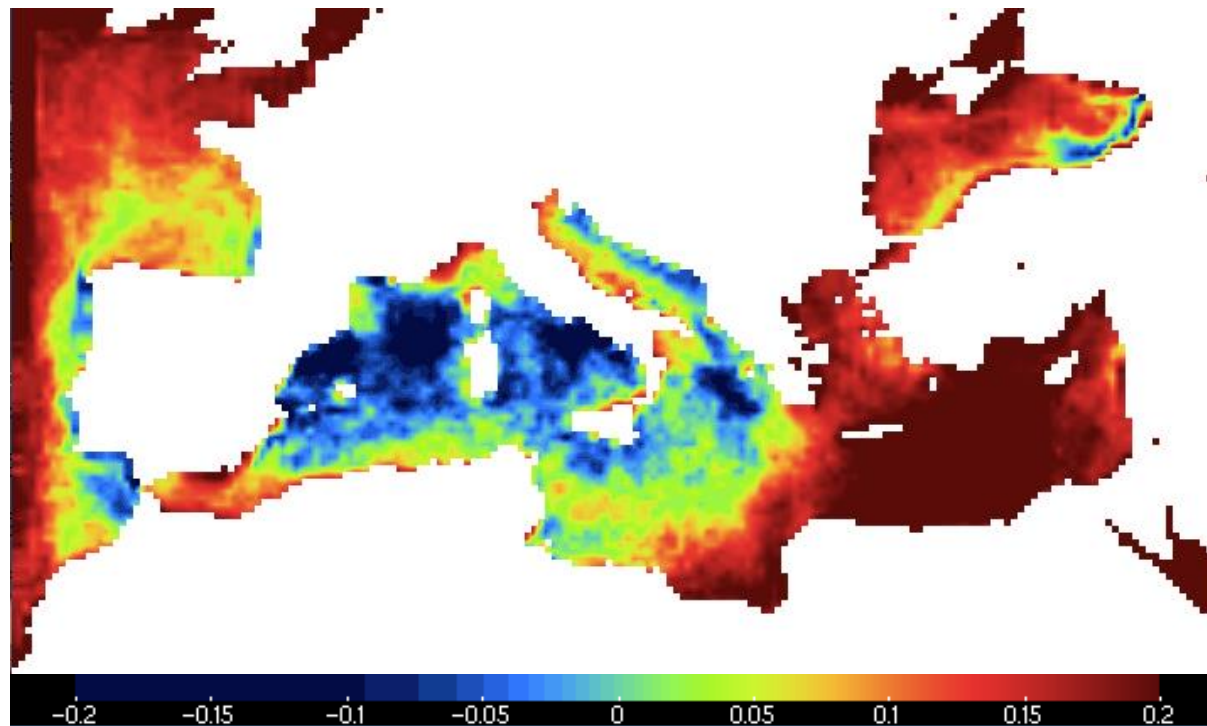
Uncoupled vs. coupled simulations for the Mediterranean domain



Difference in JJA conv. precipitation (mm/day)

Coupled vs. uncoupled simulations

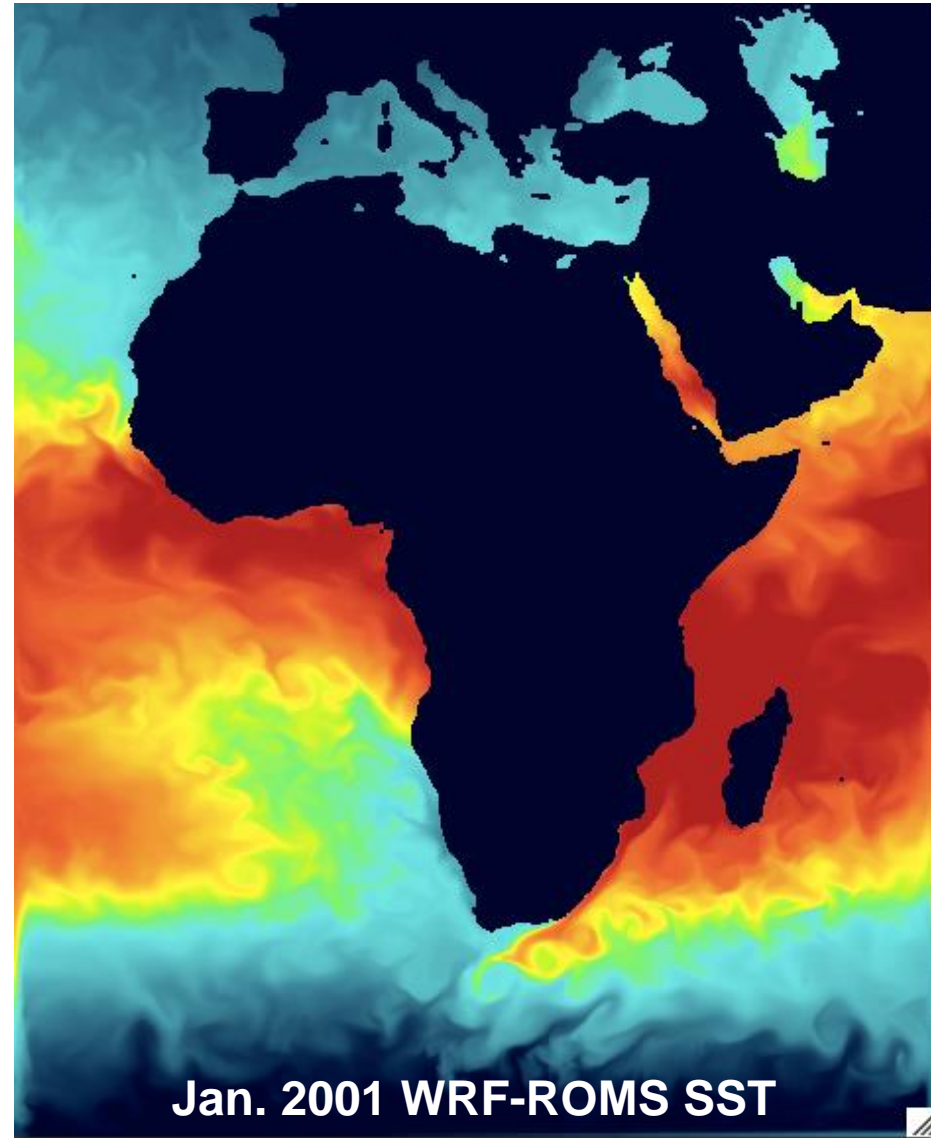
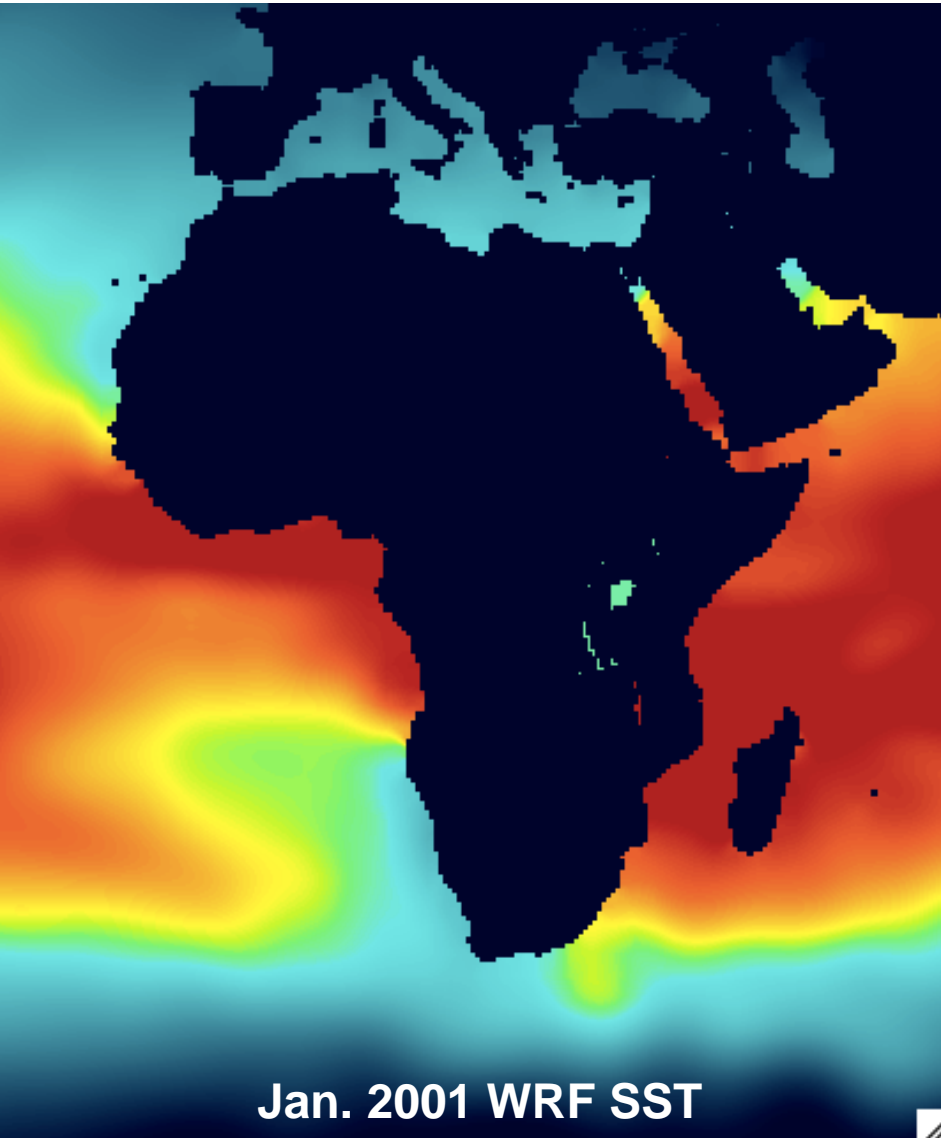
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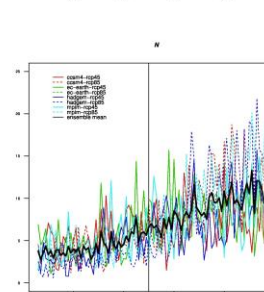
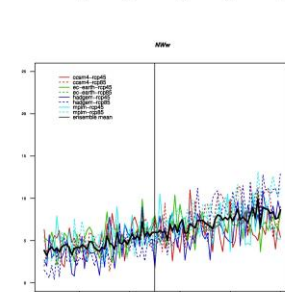
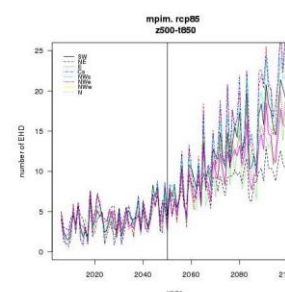
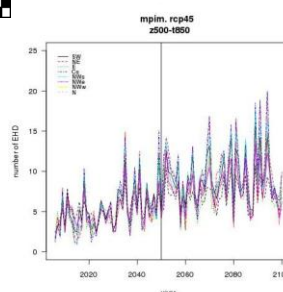
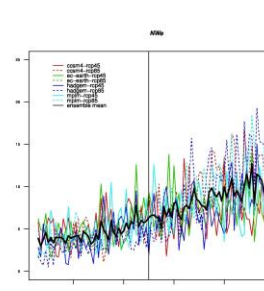
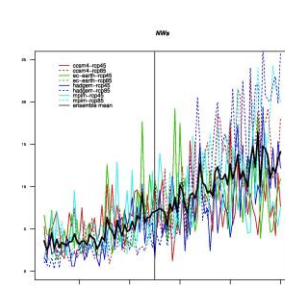
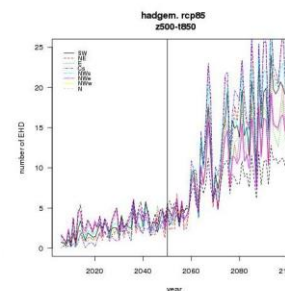
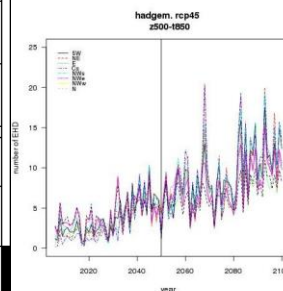
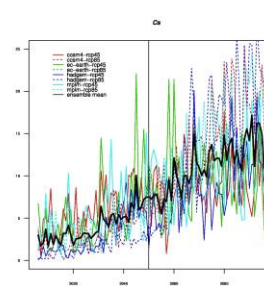
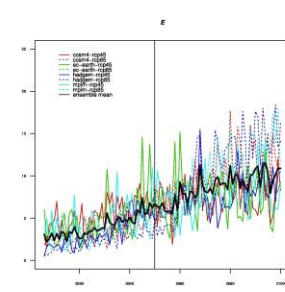
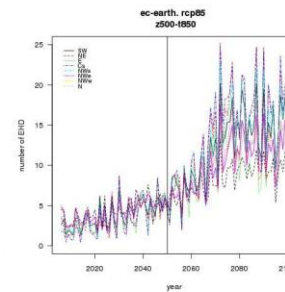
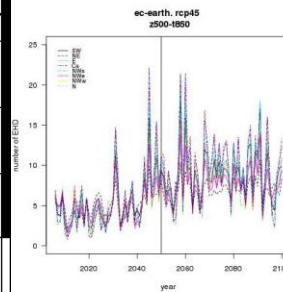
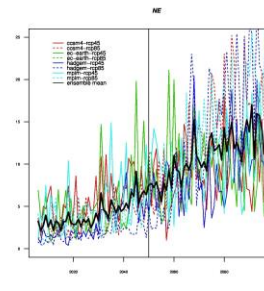
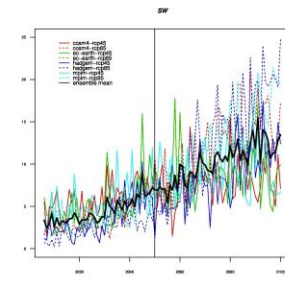
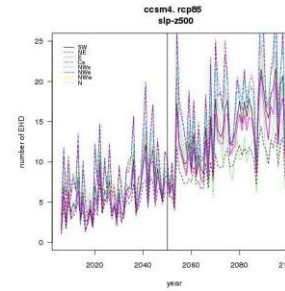
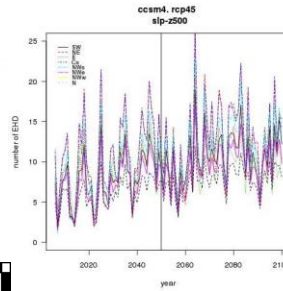
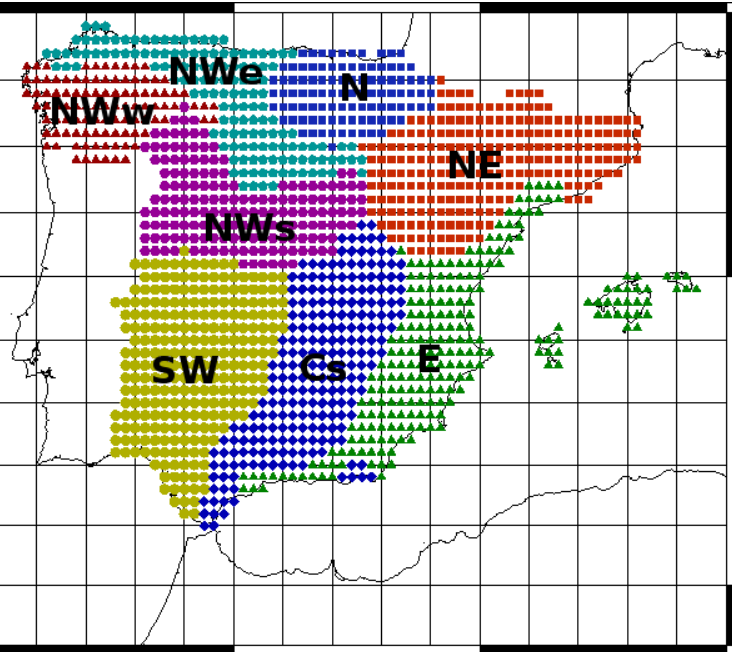
In the WRF-ROMS simulation, mostly in the warm seasons, we find less convective rainfall over the Adriatic and the north-eastern Levantine basin (more convective rainfall over southern coasts and the eastern Mediterranean).

The differences in convective precipitation are associated to the differences found for SST in the coupled vs. uncoupled simulations.

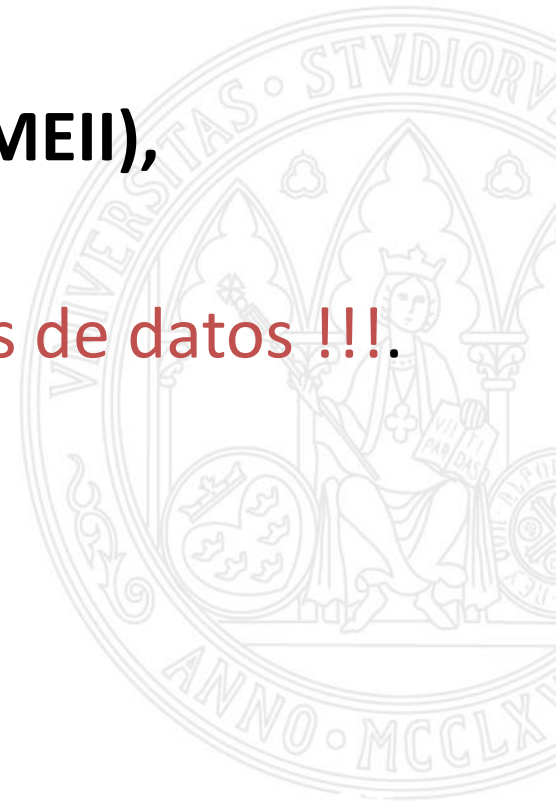
Comparison of sea surface temperature Uncoupled vs. coupled simulations for CORDEX-Africa



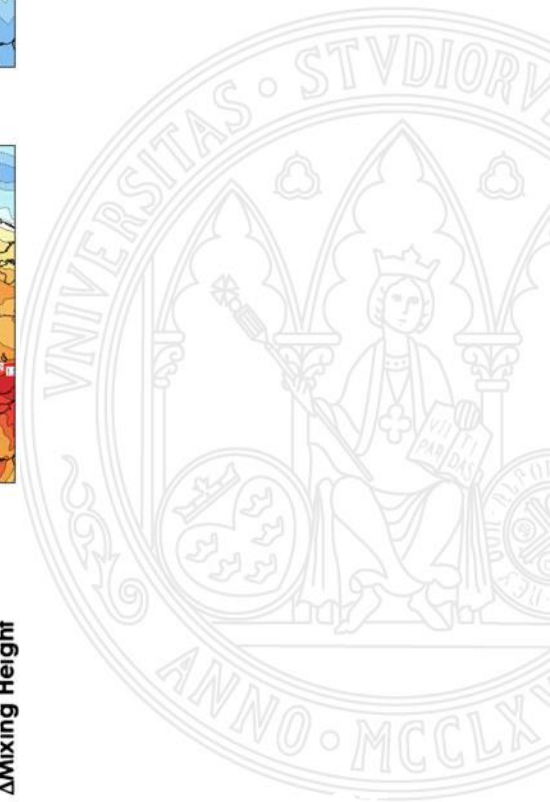
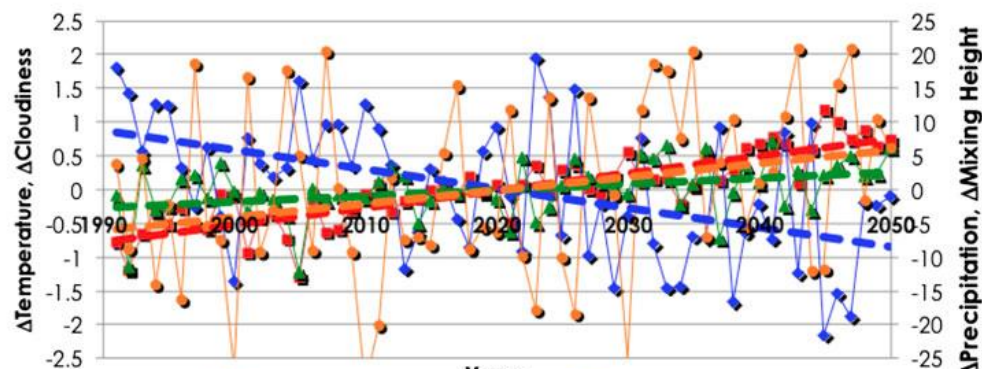
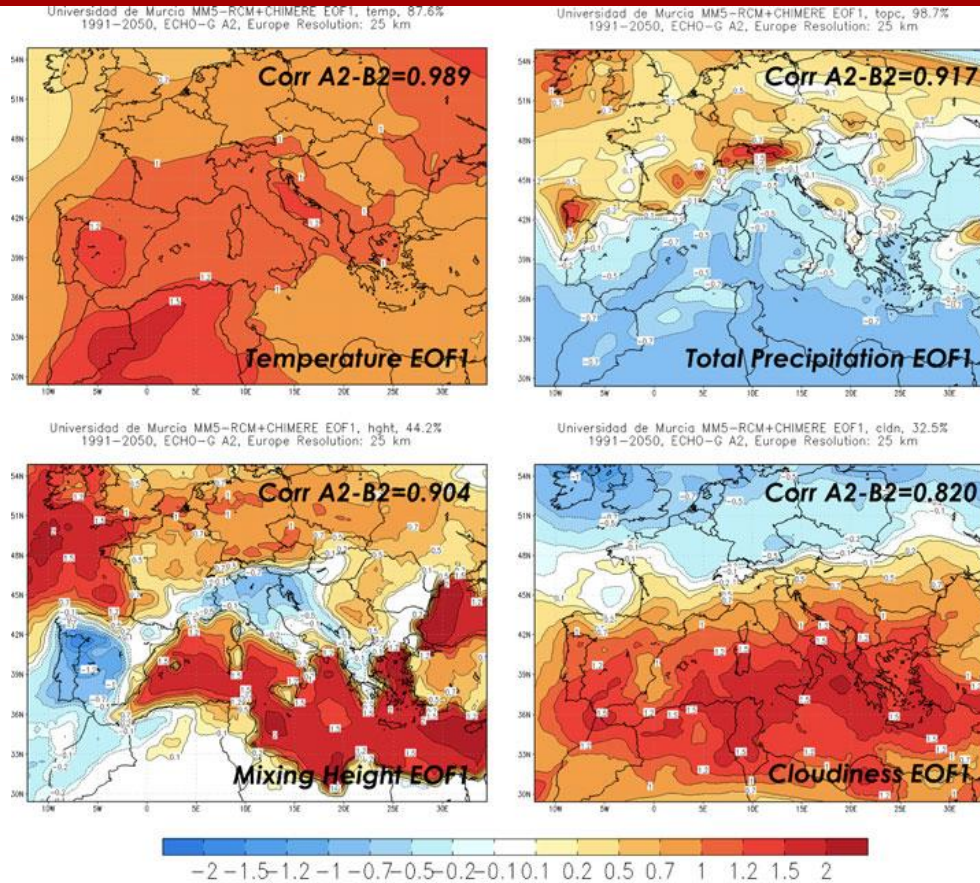
Proyecciones estadísticas: Días extremos de calor



- Varios proyectos en el ámbito de simulación de la contaminación atmosférica.
 - **SInQlair, Q-ensembles, DIDIER (AQMEII), RENOVAIRE**
 - Disponibilidad futura de varias bases de datos !!!.



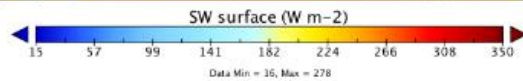
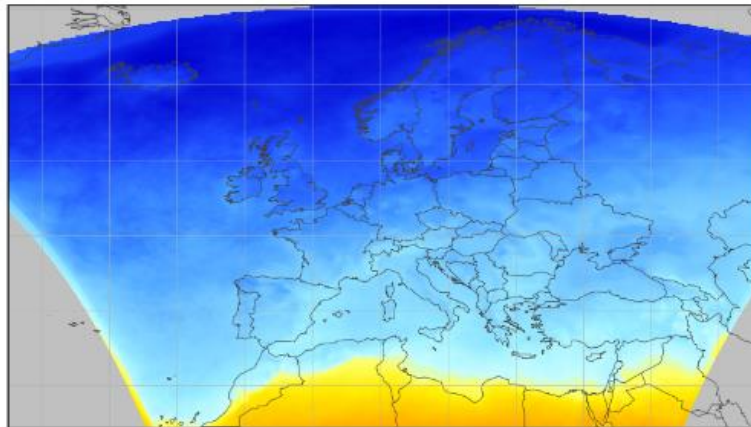
Contaminación atmosférica y cambio Climático



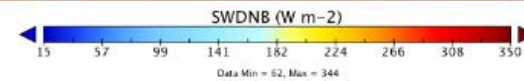
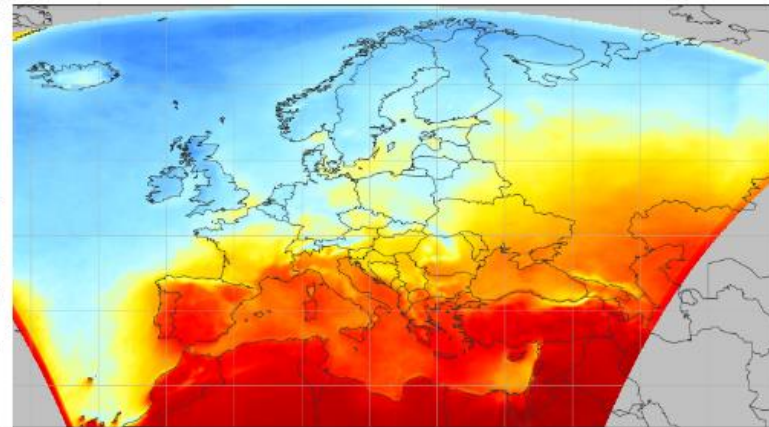
Contaminación atmosférica e incertidumbres

Efecto directo aerosoles

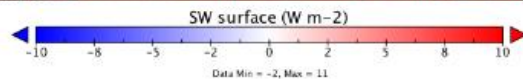
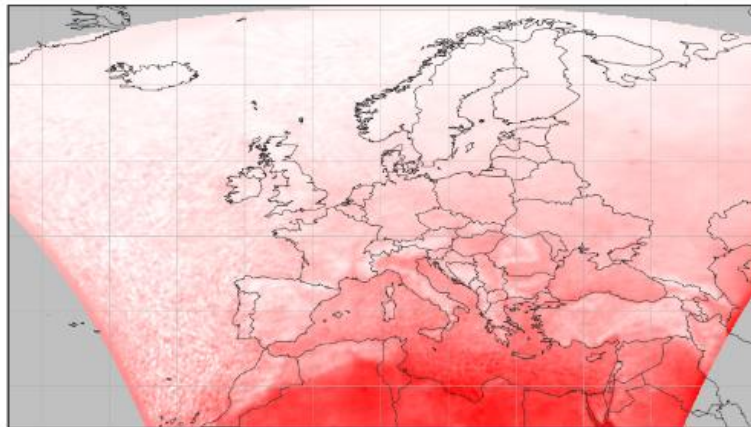
SW surface JFM



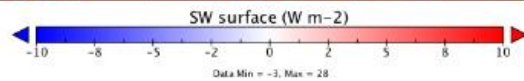
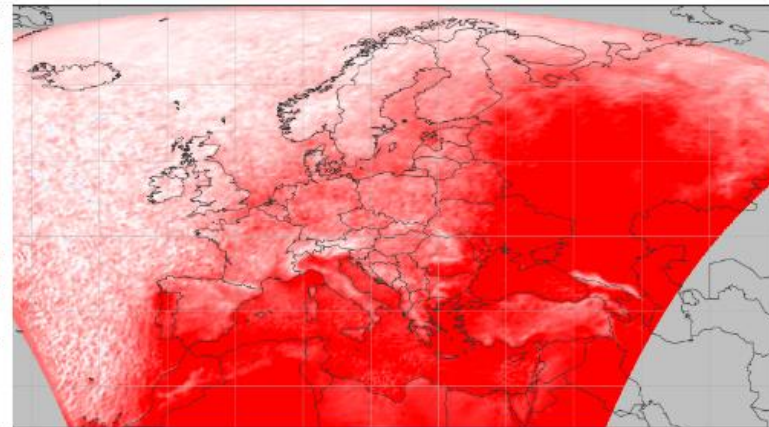
SW surface JAS



SW surface JFM

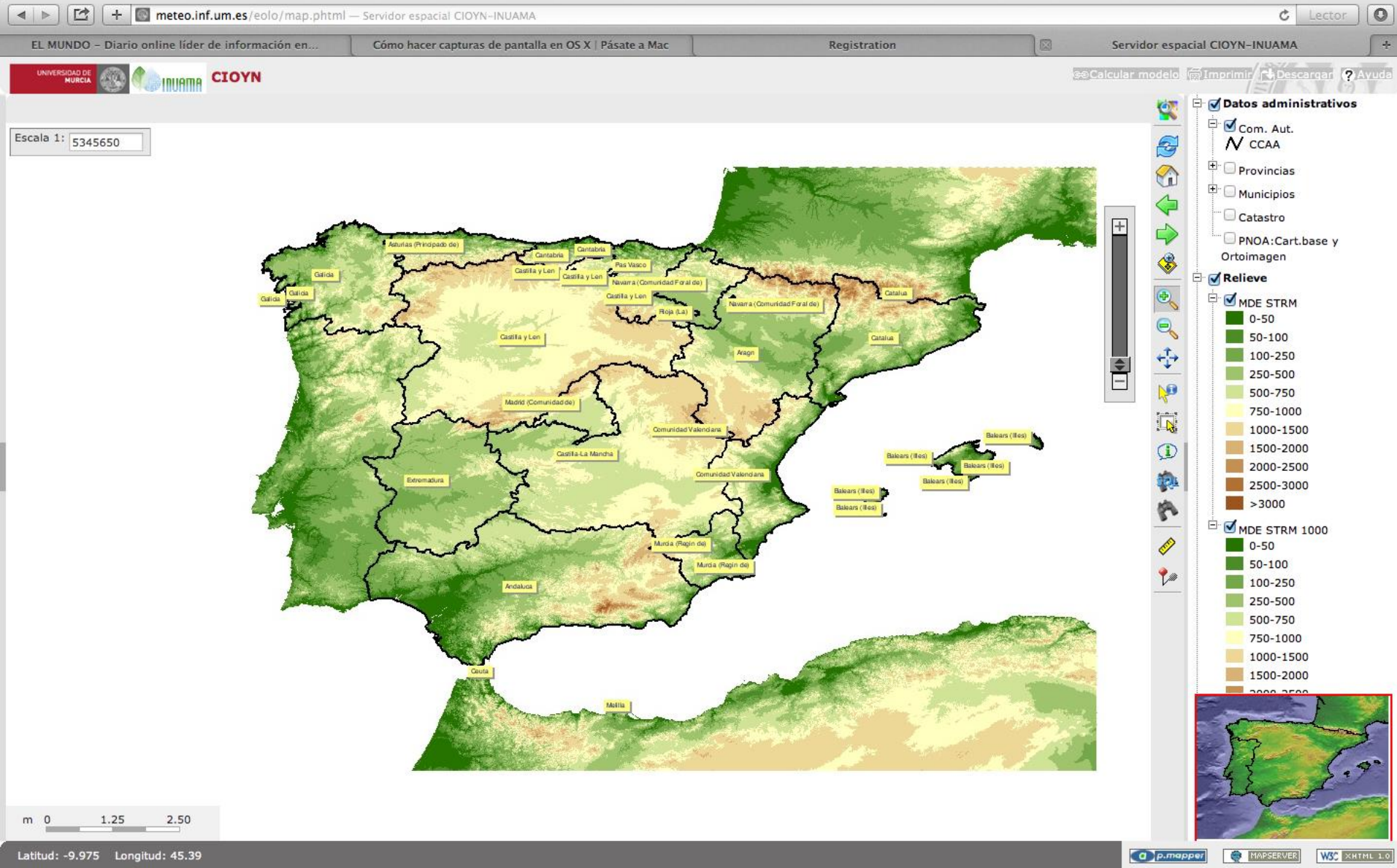


SW surface JAS



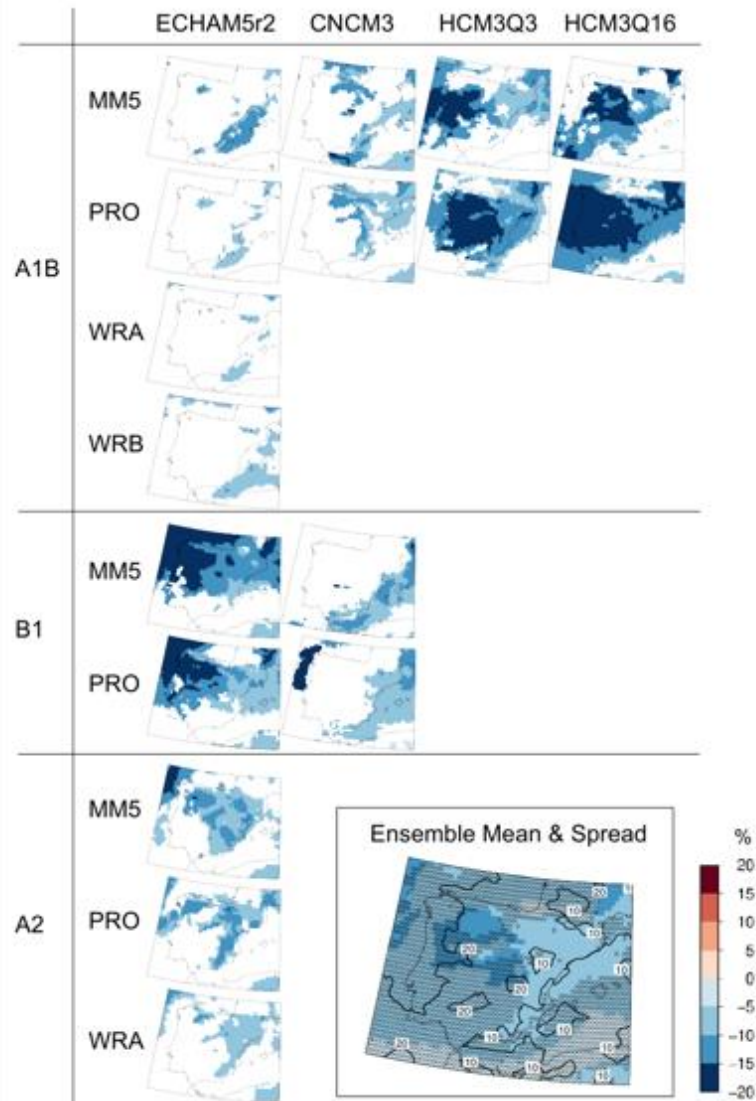
- Varios proyectos en el ámbito de evaluación de recursos renovables energéticos.
 - **EOLMAP (PSE Minieólica), INVENTO, RENUEVA y otros**
 - Disponibilidad de bases de varias bases de datos
!!!.



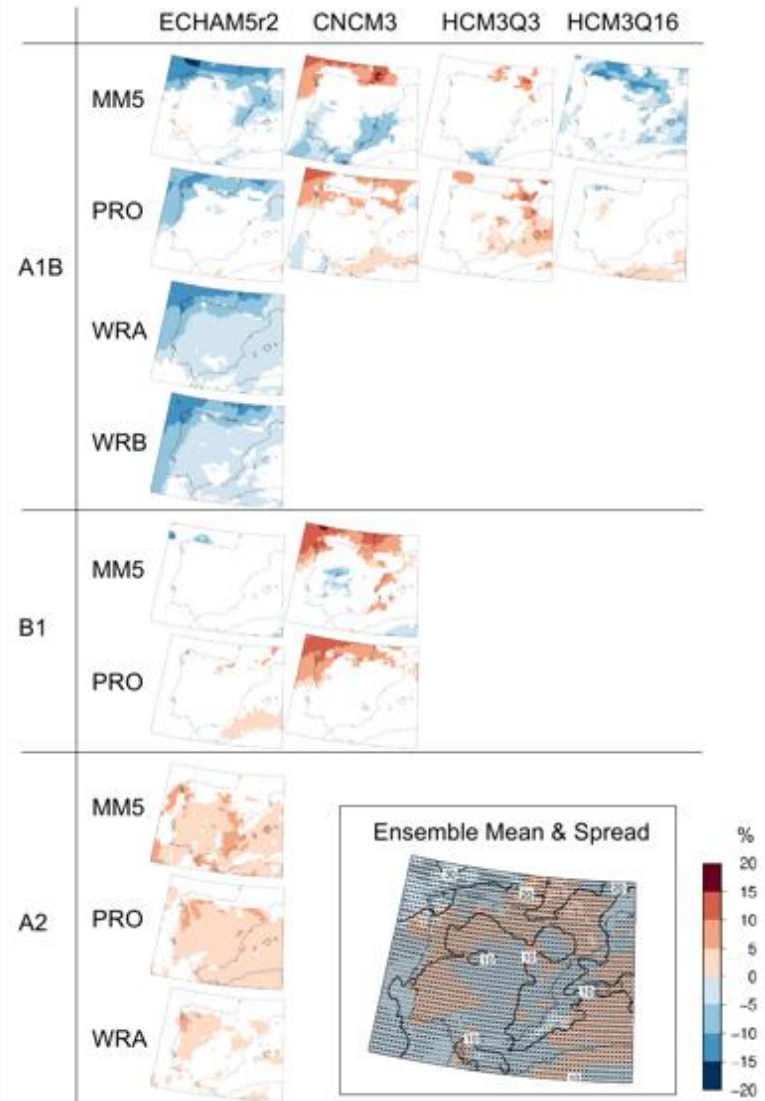


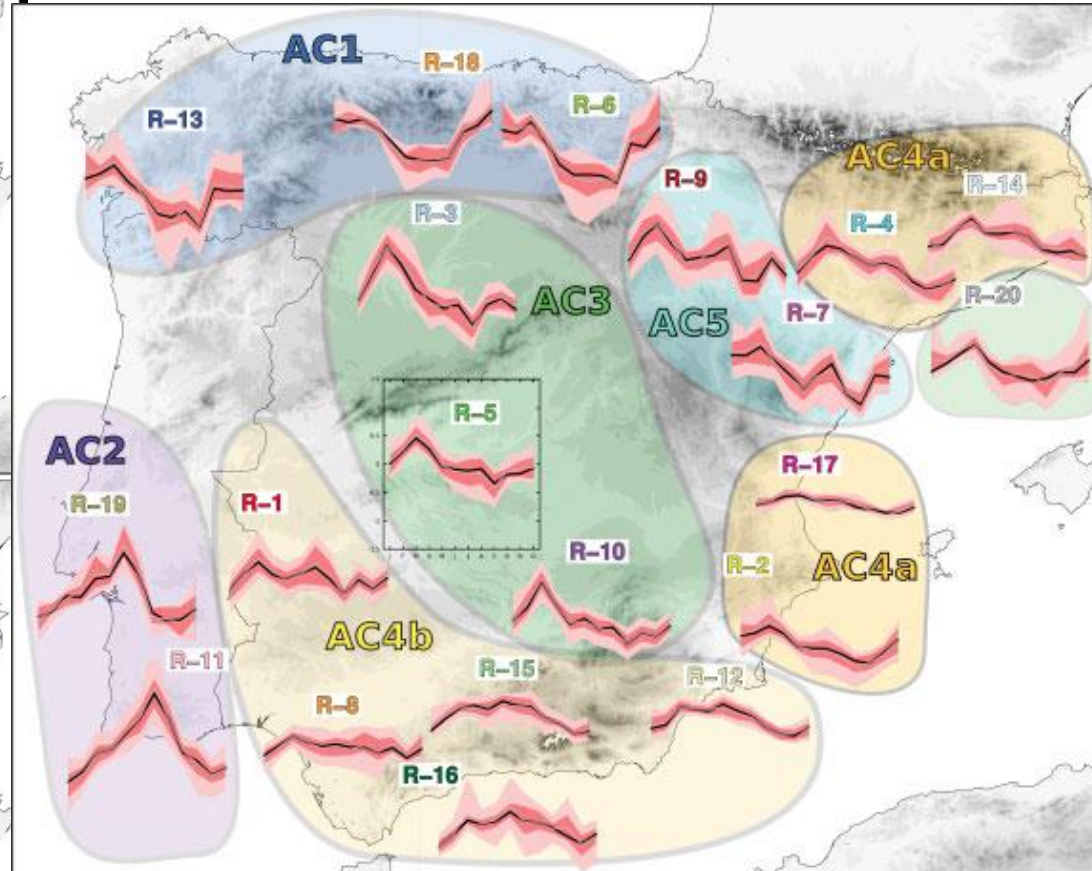
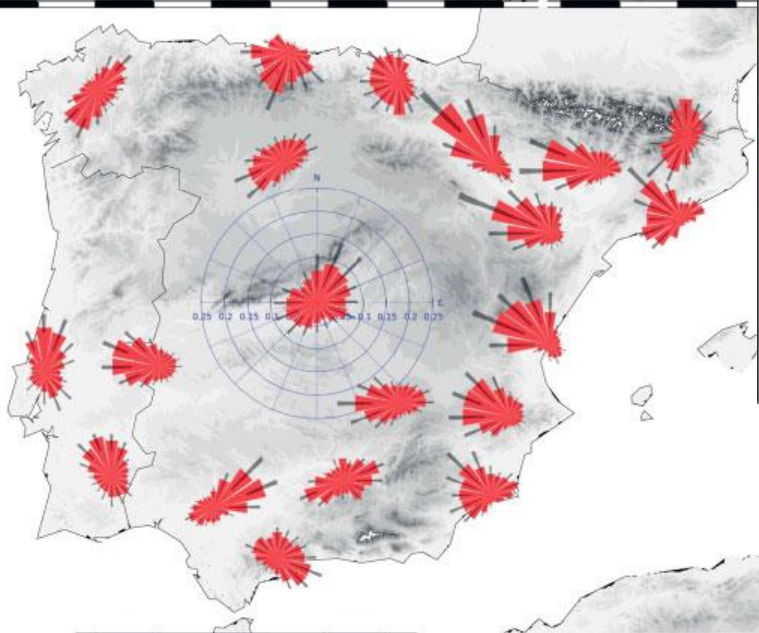
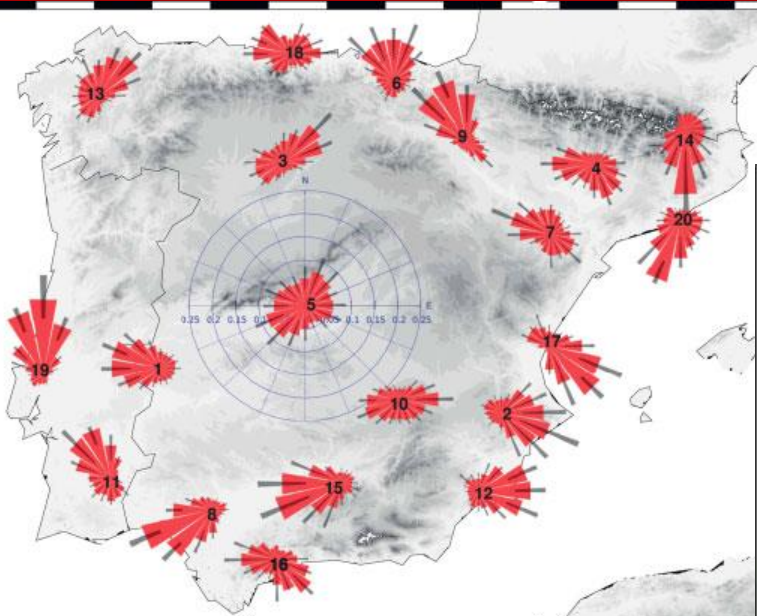
Incertidumbres en las proyecciones a medio plazo de los recursos renovables

ESCENA – surface SW radiation – DJF mean values

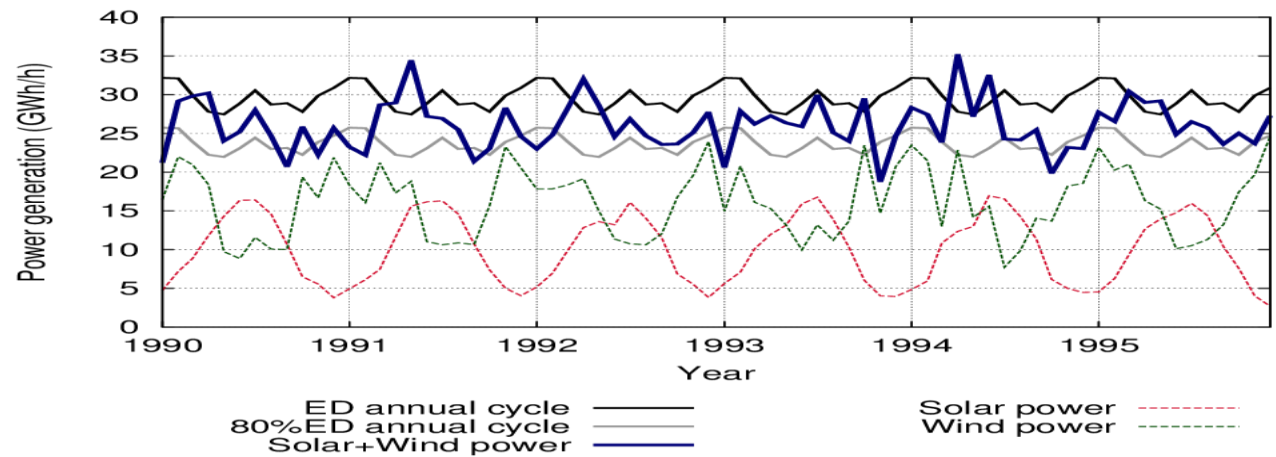
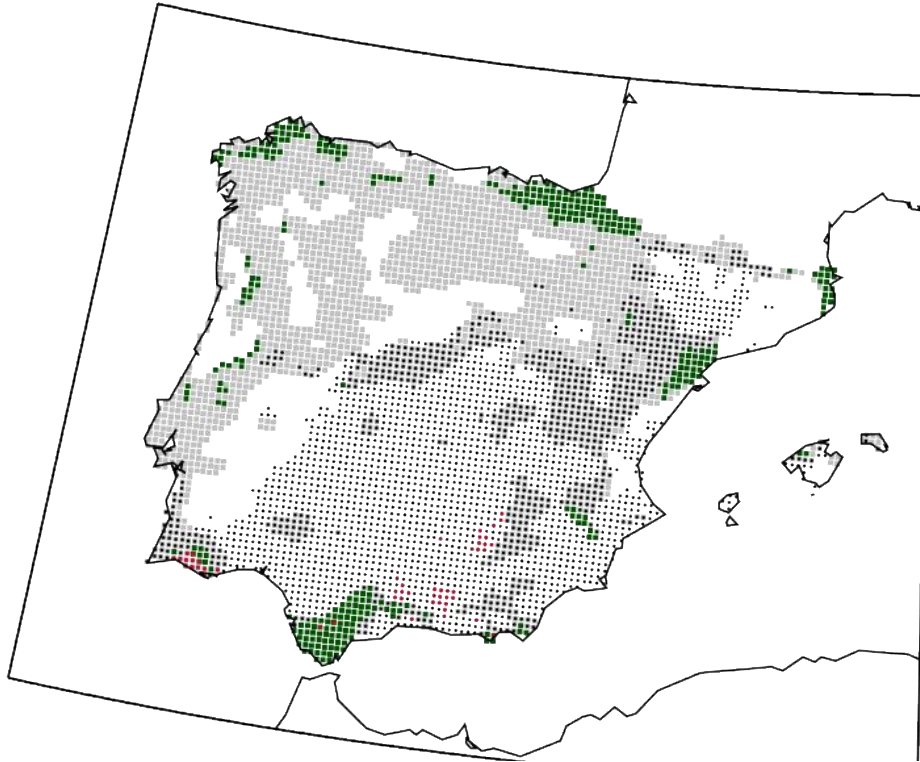


ESCENA – surface SW radiation – JJA mean values





Energías renovables: complementareidad espacio-temporal



- Proyectos solicitados
 - **RENOVAIRE (cambio climático, contaminación y energías renovables)**
 - **SMAR (FACCE-JPI) impactos sobre predadores y plagas**



Gracias por su atención

