

1st CIMAs Workshop, CIMAs-WI

Climate research initiative for Iberian Mountain Areas

June 28-30th, 2023.

Agencia Estatal de Meteorología
Universidad Complutense de Madrid

Updated: june 22th, 2023

Convened by

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1. Statement

CIMAs (Climate research Initiative for Iberian Mountain Areas) is a project focused on the analysis of climate in high-mountain environments and the impact of climate change on these areas. CIMAs is a cooperation initiative between the Spanish Meteorological Agency (AEMET¹) and the Complutense University of Madrid (UCM²), with other institutions (e.g. CIEMAT³, IGEO⁴, GuMNet⁵) that are also involved. The purpose of CIMAs is to establish cooperation links with other groups under this frame.

CIMAs focuses on the Central System of the Iberian Peninsula and the surrounding lowland areas. Simulations with the WRF model will be employed, using high resolutions of at least 1km, but indeed higher resolutions are targeted. This effort involves challenges related to the realism of modelling in complex terrain/mountain environments, like convection, simulation of snow cover, etc.

To evaluate the realism of the simulations, CIMAs incorporates observational data from monitoring stations over the domain of interest. The main source is AEMET but contributions from other sources like the Duero and Tajo SAIHs (Sistema Automático de Información Hidrológica), GuMNet over the Sierra de Guadarrama and the IPMA in Portugal. Therefore, one challenge in this field is to integrate different observational systems oriented to one purpose. The main target elements are temperature and precipitation, but other values may become of interest during the project.

Finally, CIMAs wants to contribute to the understanding and broader public visibility of mountain systems, their sensitivity to climate change and to the diffusion of the science focused on them. For this purpose CIMAs will develop an annual workshop to promote networking, visibility and outreach of research on mountain climate and the effects of climate change. These objectives are aligned within the frame of the PNACC2 (Plan Nacional de Adaptación al Cambio Climático 2).

¹ <https://www.aemet.es/es/portada>

² <https://www.ucm.es/>

³ <https://www.ciemat.es/>

⁴ <https://igeo.ucm-csic.es/>

⁵ <https://www.ucm.es/gumnet/>

2. Objective of the workshop

The CIMAs consortium addresses modelling, building up observational datasets, and model-data comparison over the Sistema Central. The objective of CIMAs-WI is helping to identify current challenges in these areas, identify potential problems in our current approaches and help reshaping tasks by learning from the experience and the discussions with the colleagues attending the workshop.

CIMAs-WI will address some target topics combining informative lectures and group discussions in an atmosphere of collaboration. The initial key points to be addressed are the challenges in modelling related to increasing spatial resolution towards the kilometer scale and beyond and the problems in the simulation of mountain environments, the challenge of having representative observations blended from different sources and discussing strategies for model-data comparison. Therefore, specific discussions about convection permitting schemes, snow and land surface modelling, sensitivity or modelling of hydrological resources, forest fires and other sensitive issues have been included. We are aware that important issues are missing, and thus, initially unplanned contributions and discussion that may be found relevant, are welcome.

The workshop aims at facilitating easy-going dialogue and collaboration oriented to participants exploring innovative strategies and approaches to address the challenges posed by climate change in mountain areas.

Lastly, CIMAs-WI aims at contributing to the awareness among the general public about the importance of mountain environments in a climate change context. Overall, the workshop provides a platform for in-depth scientific discussions, collaboration and knowledge dissemination, with the ultimate goal of fostering a better understanding of climate change impacts on mountain regions and inspiring proactive responses to safeguard these invaluable regions.

3. Talks and group dynamics

The workshop is scheduled in two and a half days including talks and working group dynamics. Three Long Talks (LTs, Tables 1-3) are included in 1.5 h blocks and address regional modeling in Cordex regarding CPSs, land surface influences, the problems faced when using very high resolutions, snow modelling and the relevance of this issues within the PNACC2. These talks can take about 45 min or more if needed by the speaker or required by the discussion and ample time is available to expand it to smaller group discussions towards coffee or lunch breaks.

Smaller Talks (STs, Tables 1-3) share 1.5 h blocks and address work in development by the CIMAs group and other colleagues that can be placed in the context of the LTs. The

aim is to discuss current problems and activities, identify potential errors/solutions or areas of improvement in the work being developed. These discussions should feed the working group (WG) blocks (Table 1), aimed at a more systematic discussion of the challenges. A final WG session will take place at the end of the meeting with presentations reflecting on the synthesis of what has been learned through the discussions.

4. Venue

The Ateneo de Madrid⁶ is the venue for the workshop, provides an ideal setting for intellectual and cultural exchange. Located in the very heart of Madrid, this historic institution has been a hub for artistic, literary and scientific gatherings since its official establishment in 1835. The majestic architecture and rich heritage of the Ateneo create an inspiring atmosphere that encourages creativity and critical thinking. With its well-equipped conference facilities and comfortable spaces, participants of the workshop at the Ateneo de Madrid can fully immerse themselves in a stimulating environment, fostering engaging discussions and a vibrant exchange of ideas.

The location of the Ateneo is [here](#).

5. Lunch and dinner

Lunch will take place at the canteen of the Ateneo (see Table 1). We will arrange group dinners Tuesday, Wednesday and Thursday. **Please fill up your availability in Table 5 asap.** If you have any food preferences or constraints, let us know by sending a mail to C. Vegas (see Table 2).

6. Traveling organization and accomodation

The organization of travel arrangements for invited participants is managed through a user-friendly online platform provided by the UCM⁷. A request form was filled for the guests, providing their personal information and travel preferences. This process ensures that individual needs and preferences are taken into account when making travel arrangements.

Guests will be staying at the Hotel Mora⁸, in the center of Madrid, just a 10 minutes-long walk away from the workshop venue.

⁶ <https://www.ateneodemadrid.com/>

⁷ <https://www.ucm.es/formulario-servicios-de-viaje>

⁸ <https://www.hotelmorabymij.com/es/>

Contact: Vegas, C (see Table 2).

7. Outreach activities

An outreach event will be organized on Wednesday 28th of June at 19:00 (see Table 1). This will be a round table including several well known guests (Table 4) that will discuss about mountains and climate change, specifically for the case of the Sierra de Guadarrama. This activity is organized in collaboration with the Sección de Medioambiente of the Ateneo. See advert in Figure 1.



Sección de Medio Ambiente, AEMET, UCM y CIEMAT

La Sierra de Guadarrama ¿centinela del cambio climático?

Intervienen:

Pablo Sanjuanbenito
Director Parque Nacional de la Sierra
de Guadarrama

Fernando Valladares
Científico del CSIC y Profesor de la URJC

José Miguel Viñas
Meteorólogo de Meteored y comunicador
científico



Presenta:
Gonzalo Vázquez

Modera:
Ernesto Rodríguez Camino
Presidente de la Asociación Meteorológica
Española



Miér. 28.6.2023

19h.

Entrada libre hasta completar el aforo

Sala Úbeda. 4ª planta. Calle Prado 21

Figure 1. Advert for the outreach event distributed by the Ateneo.

Table 1. Scheme of the workshop. Blocks identify longer talks (LT) and shorter talks (ST). All talks are by invitation. WGs indicate working group sessions. An outreach event will take place on the 28th of June, at 19:00. See Sections 2 and 3.

| | June 28th | June 29th | 30 de junio |
|-------|--|-------------------|--------------|
| 9:00 | | | |
| 9:30 | Welcome + CIMAs presentation & workshop objectives | LT-II | LT-III |
| 10:00 | | | |
| 10:30 | | | |
| 11:00 | Coffee break | Coffee break | Coffee break |
| 11:30 | LT-I | ST3 ST4 ST5 | WG synthesis |
| 12:00 | | | |
| 12:30 | | | |
| 13:00 | Lunch | Lunch | Lunch |
| 13:30 | | | |
| 14:00 | ST1 ST2 | ST6 ST7 | |
| 14:30 | | | |
| 15:00 | | | |
| 15:30 | Coffee break | Coffee break | |
| 16:00 | WGs | WGs | |
| 16:30 | | | |
| 17:00 | | | |
| 17:30 | | | |
| 18:00 | | | |
| 18:30 | | | |
| 19:00 | Outreach event | Dinner | |
| 19:30 | | | |
| 20:00 | | | |
| 20:30 | | | |
| 21:00 | Dinner | | |
| ... | | | |

Table 2. Workshop participants.

| | Name | Institution | email | Working Group |
|----|------------------------------|--------------------|----------------------------------|----------------------|
| 0 | Belusic, Danijel (online) | Univ. Zagreb | dbelusic@gfz.hr | WG2 (Modeling) |
| 1 | Correa, Carlos | AEMET | ccorreag@aemet.es | WG2 (Modeling) |
| 2 | Caballero Valero, David | FIC/Meteogrid | david@meteogrid.com | WG2 (Modeling) |
| 3 | Cardoso Tavares, Rita M. | Univ. Lisboa | rncardoso@ciencias.ulisboa.pt | WG2 (Modeling) |
| 4 | Ferreira, Joao | IPMA | joao.ferreira@ipma.pt | WG2 (Modeling) |
| 5 | García Bustamante, Elena | CIEMAT | elgarcia@ucm.es | WG3 (Data) |
| 6 | García Pereira, Félix | UCM | felgar03@ucm.es | WG3 (Data) |
| 7 | Gómez Navarro. J. José | AEMET | kgomez@ucm.es | WG2 (Modeling) |
| 8 | González Rouco, J. Fidel | UCM | fidelgr@ucm.es | WG1,2,3 |
| 9 | Greciano Zamorano, Emilio | AEMET | emiliogr@ucm.es | WG3 (Data) |
| 10 | Heras Hernández, Paco | OECC | fjheras@miteco.es | WG1 (Users) |
| 11 | Hernanz Lázaro, Alfonso | AEMET | ahernanzl@aemet.es | WG1 (Users) |
| 12 | López Muñoz, Sandra | UCM | sandlo12@ucm.es | WG3 (Data) |
| 13 | Luna Rico, Yolanda | AEMET | mlunar@aemet.es | WG1 (Users) |
| 14 | Meabe Yanguas, Nagore | UCM | nmeabe@ucm.es | WG3 (Data) |
| 15 | Martínez Hernández, Adrian | UCM | adrmr12@ucm.es | WG3 (Data) |
| 16 | Navarro Montesinos, Jorge | CIEMAT | jorge.navarro@ciemat.es | WG2 (Modeling) |
| 17 | Peral García, María Candelas | AEMET | mperalg@aemet.es | WG3 (Data) |
| 18 | Rodríguez Camino, Ernesto | AME | ernestorodriguezcamino@gmail.com | WG1,2,3 |
| 19 | Rodríguez Guisado, Esteban | AEMET | erodriguezg@aemet.es | WG1 (Users) |
| 20 | Rodríguez Orrego, María José | AEMET | becas2022_proy13@aemet.es | WG2 (Modeling) |

| | | | | |
|----|----------------------------|---------------|----------------------------|----------------|
| 21 | Romero Fresneda, Ramiro | AEMET | rromerof@aemet.es | WG1 (Users) |
| 22 | Salazar, L. Laura | FIC/Meteogrid | leydi.laura@meteogrid.com | WG1 (Users) |
| 23 | Samuelsson, Patrick | SMHI | Patrick.Samuelsson@smhi.se | WG2 (Modeling) |
| 24 | Sánchez Perrino, J. Carlos | AEMET | jsanchezp@aemet.es | WG2 (Modeling) |
| 25 | Torres Michelena, Luis | FIC/Meteogrid | luis@meteogrid.com | WG1 (Users) |
| 26 | Vegas Cañas, Cristina | CSIC | cvegas@ucm.es | WG3 (Data) |

Table 3. Key for talks See Table 1 for personal details of speaker

| Talks | Title (tentative) | Speaker |
|--------|---|---------------------|
| LT-I | Is there added value in high resolution simulations? Challenges and Perspectives | Cardoso, Rita M. |
| LT-II | Modelling of snow and its interaction with vegetation in SURFEX | Samuelsson, Patrick |
| LT-III | PNACC2: Guadarrama in the Sistema Central | Heras, Paco |
| ST1 | Regional modelling approach to CIMAs | García, Elena |
| ST2 | HCLIM regional climate model | Perrino, J. Carlos |
| ST3 | Kilometer-scale regional climate modelling - benefits and challenges | Belusic, Danijel |
| ST4 | High resolution climate modelling in Portugal, obtained with WRF and ERA5 from 1981 to present. | Ferreira, Joao |
| ST5 | Experiences with WRF in AEMET: From an operational SRNWP-EPS to climate research | Gómez, J. José |
| ST6 | High resolution downscaling for wildfire simulations in Guadarrama | Caballero, David |
| ST7 | Wildfire monitoring | Romero, Ramiro |

Table 4. Participants in the outreach event: ‘La Sierra de Guadarrama: ¿Centinela del cambio climático?’.

| | Name | Institution | email |
|---|---------------------------|-------------|----------------------------------|
| 1 | Rodríguez Camino, Ernesto | AME | ernestorodriguezcamino@gmail.com |
| 2 | Sanjuanbenito, Pablo | PNSG | pablo.sanjuanbenito@madrid.org |
| 3 | Valladares, Fernando | CSIC, URJC | valladares@ccma.csic.es |
| 4 | Viñas, José Miguel | ACOMET | info@divulgameteo.es |

Table 5. Timeline of workshop attendance.

| | Name | Tue. 27th Aftern. (dinner) | Wed. 28th Morn. | Wed. 28th Aftern. | Wed. 28th Evn. (dinner) | Thu. 29th Morn. | Thu. 29th Aftern. | Thu. 29th Evn. (dinner) | Fri. 30th Morn. | Fri. 30th Aftern. (lunch) |
|----|-------------------------|---|--------------------------------|----------------------------------|--|--------------------------------|----------------------------------|--|--------------------------------|--|
| 0 | Belusic, D. (online) | | | | | | | | | |
| 1 | Correa, C. | | x | x | | | | | | |
| 2 | Caballero, D. | | | | | x | x | x | | |
| 3 | Cardoso, R. | x | x | x | x | x | x | x | x | x |
| 4 | Ferreira, J. | x | x | x | x | x | x | x | x | x |
| 5 | García B., E. | x | x | x | x | x | x | x | x | x |
| 6 | García P., F. | | x | x | | x | x | x | x | x |
| 7 | Gómez N. J. | | | | | x | x | x | x | |
| 8 | González, F. | x | x | x | x | x | x | x | x | x |
| 9 | Greciano, E. | x | x | x | x | x | x | x | x | x |
| 10 | Heras, P. | | | | | | | | x | |
| 11 | Hernanz, A. | | x | x | | x | x | | x | |
| 12 | López, S. | | | | | x | x | x | x | x |
| 13 | Luna R, Y | | x | | | | | | | |
| 14 | Meabe, N. | | x | x | | x | x | x | x | x |
| 15 | Martínez, A. | | x | x | x | x | x | x | x | x |
| 16 | Navarro M., J. | | x | x | x | x | x | x | x | x |
| 17 | Peral, C | | | | | | | | | |
| 18 | Rodríguez C. ,E. | x | x | x | x | x | x | x | x | x |
| 19 | Rodríguez G. E. | ? | x | x | x | x | x | x | x | x |
| 20 | Rodríguez O. M. J. | | x | x | | x | x | | x | |
| 21 | Romero F. R. | | | | | | | | | |
| 22 | Salazar, L. L. | | x | x | | x | x | | | |
| 23 | Samuelsson, P. | x | x | x | x | x | x | x | x | x |
| 24 | Sánchez P., J. C. | | x | x | x | x | x | x | x | |
| 25 | Torres, L. | | x | x | x | x | x | x | x | |
| 26 | Vegas C. C. | | x | | | x | x | x | x | x |