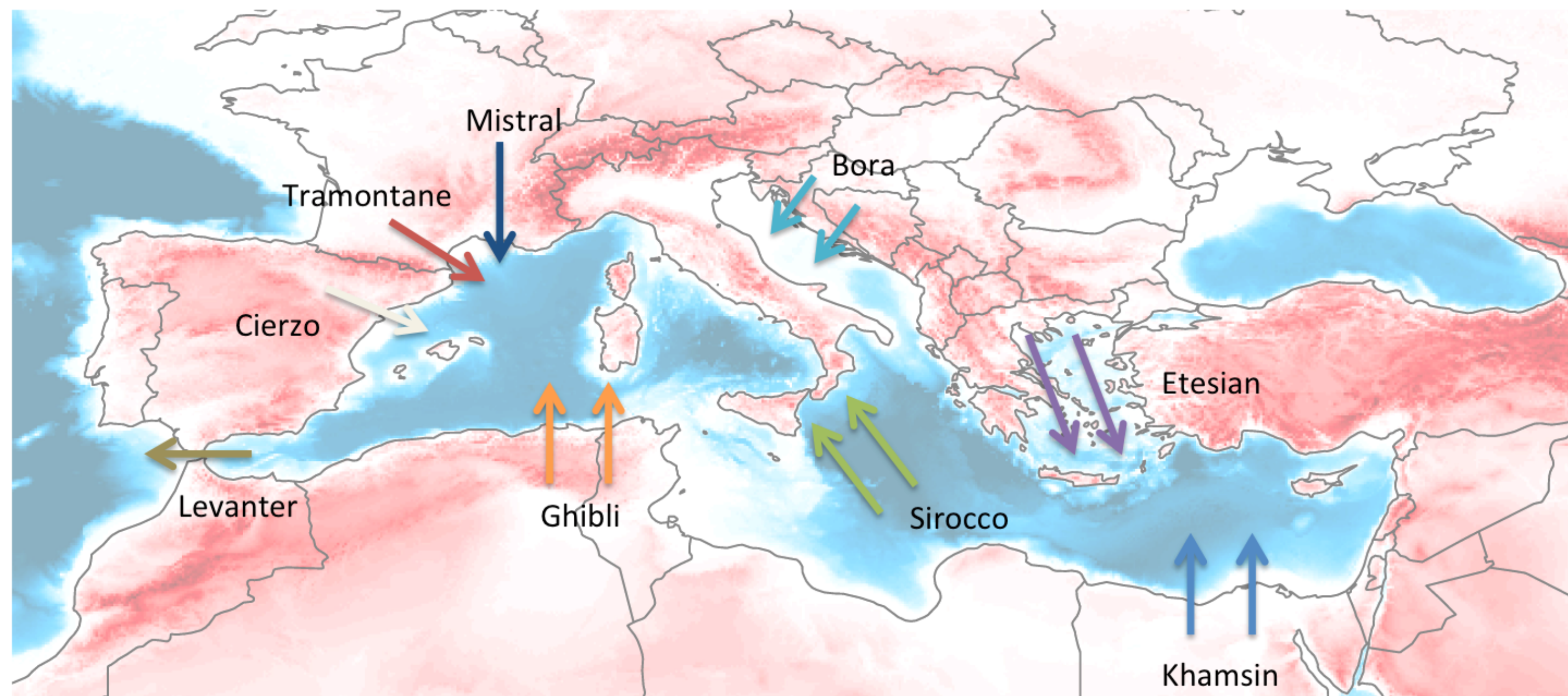


## WINDS IN THE MEDITERRANEAN AREA

Winds systems on all spatial scales occur in the Mediterranean Area. They are caused by pressure gradients in combination with the complex orography of the area. The winds reach from large-scale flows, over channeling (in valleys, straits, and mountain gaps) to land-sea wind systems.

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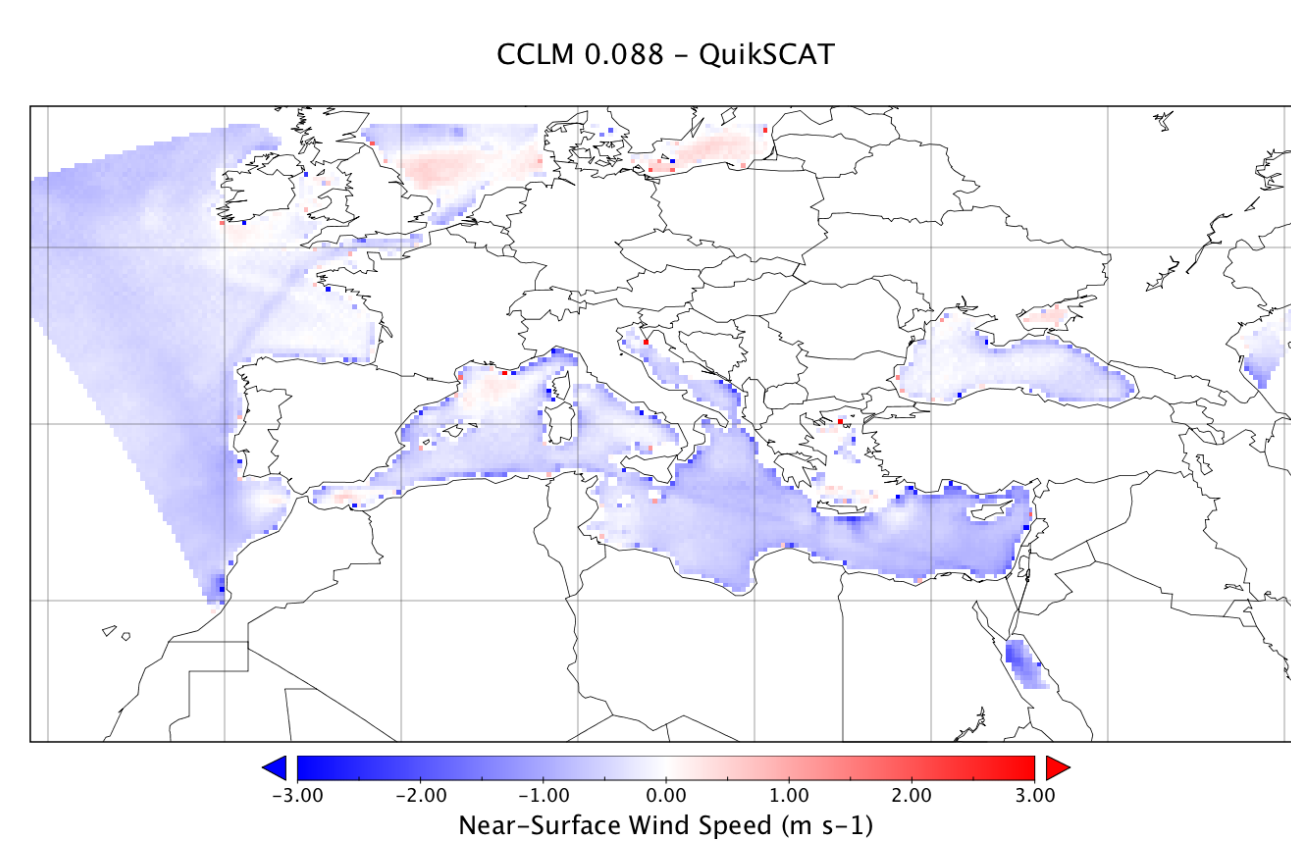


## EVALUATION OF CLIMATE SIMULATIONS

Averaging over longer time spans shows that models can reproduce the observed wind field in general. It also reveals patterns in the bias:

- continental shelf
- ship routes

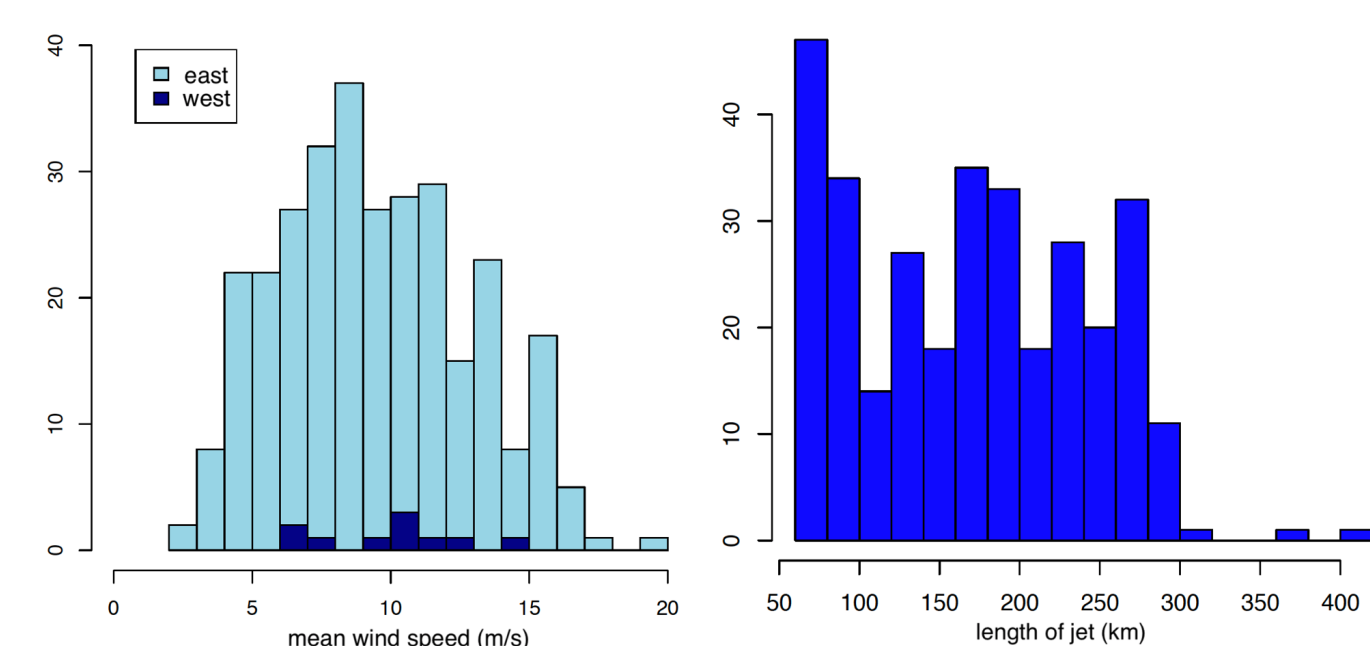
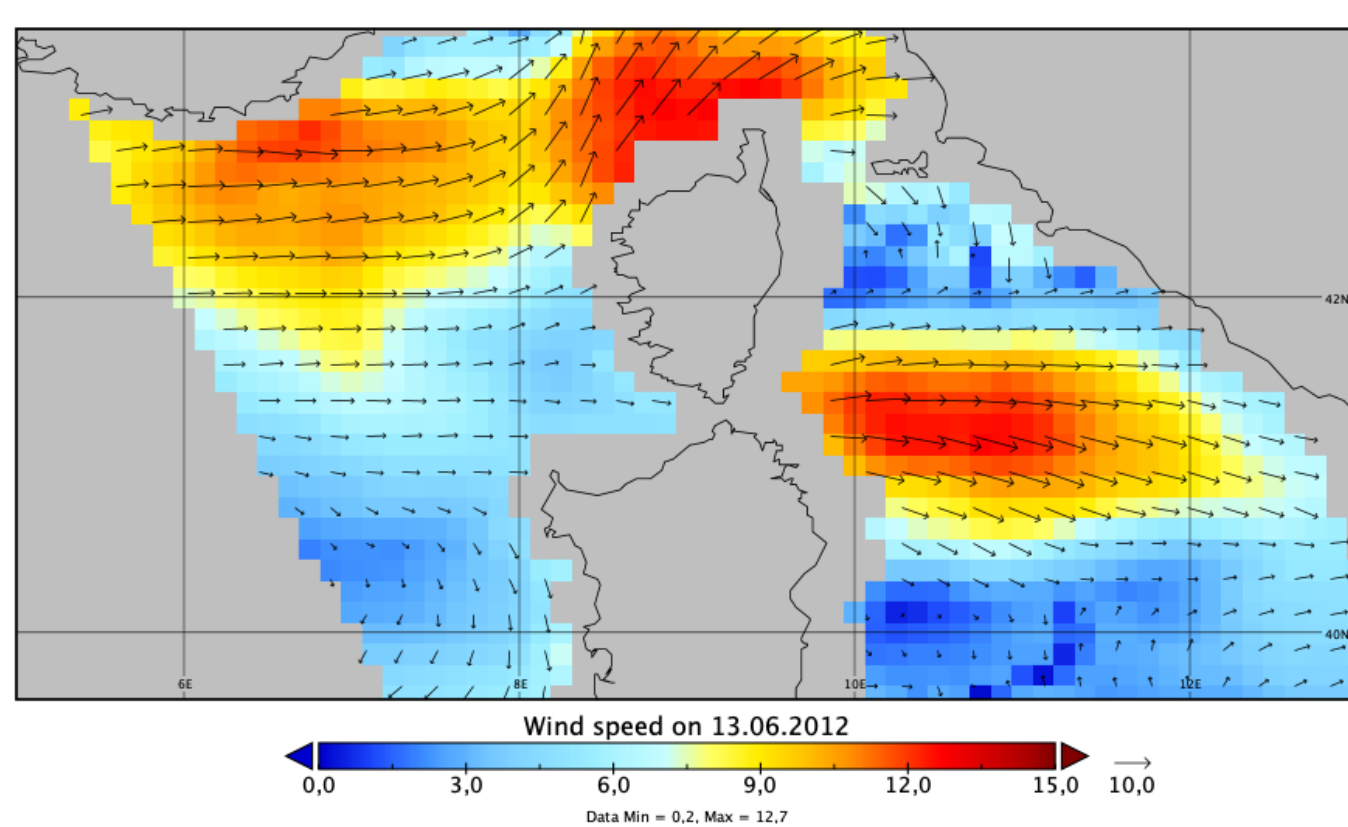
⇒ real patterns or artifacts?



Wind speed bias for 2000-2009.

## CHANNELING IN STRAITS

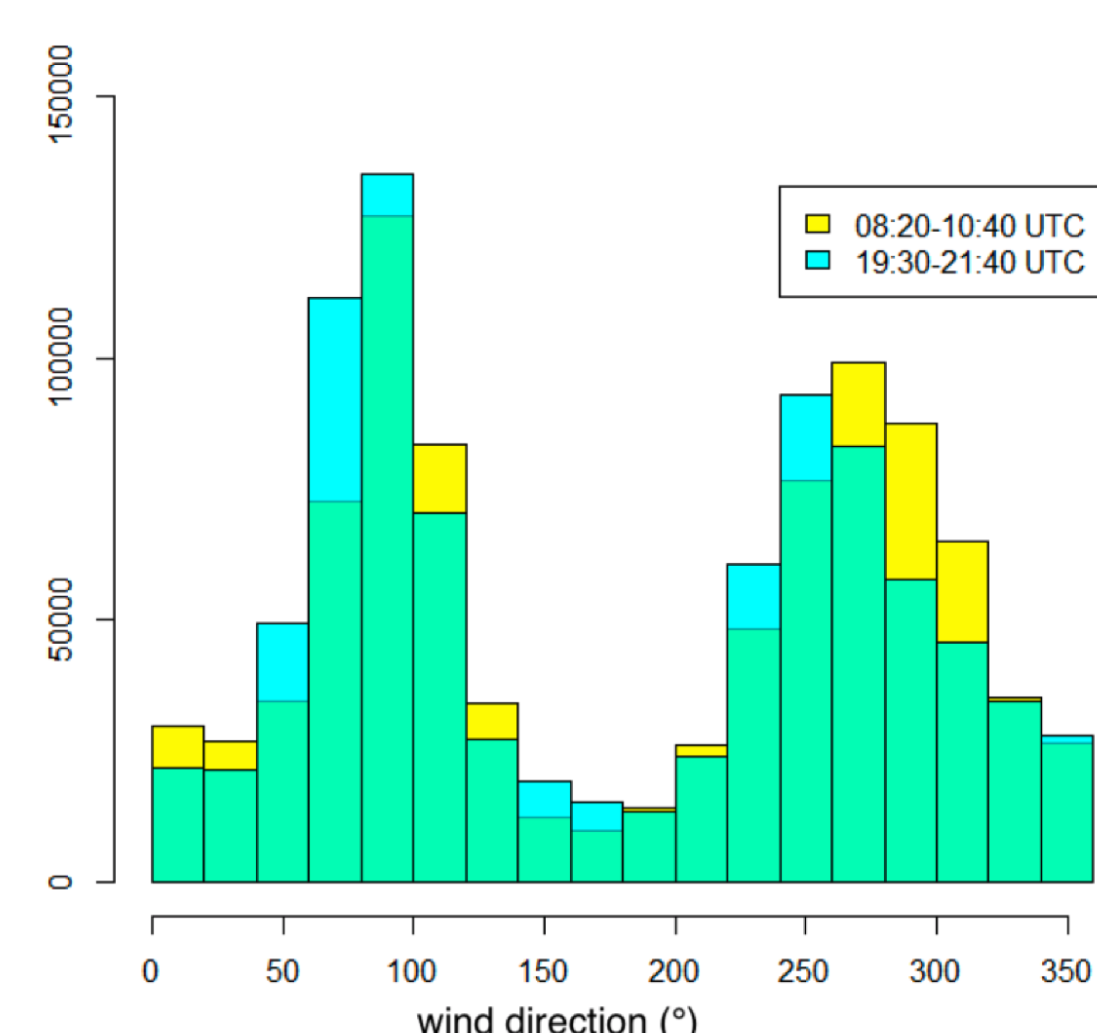
Wind jets occur in the strait of Bonifacio between Corsica and Sardinia.



Frequency of wind jets depending on wind speed and length of the jet [7].

## LAND-SEA WIND

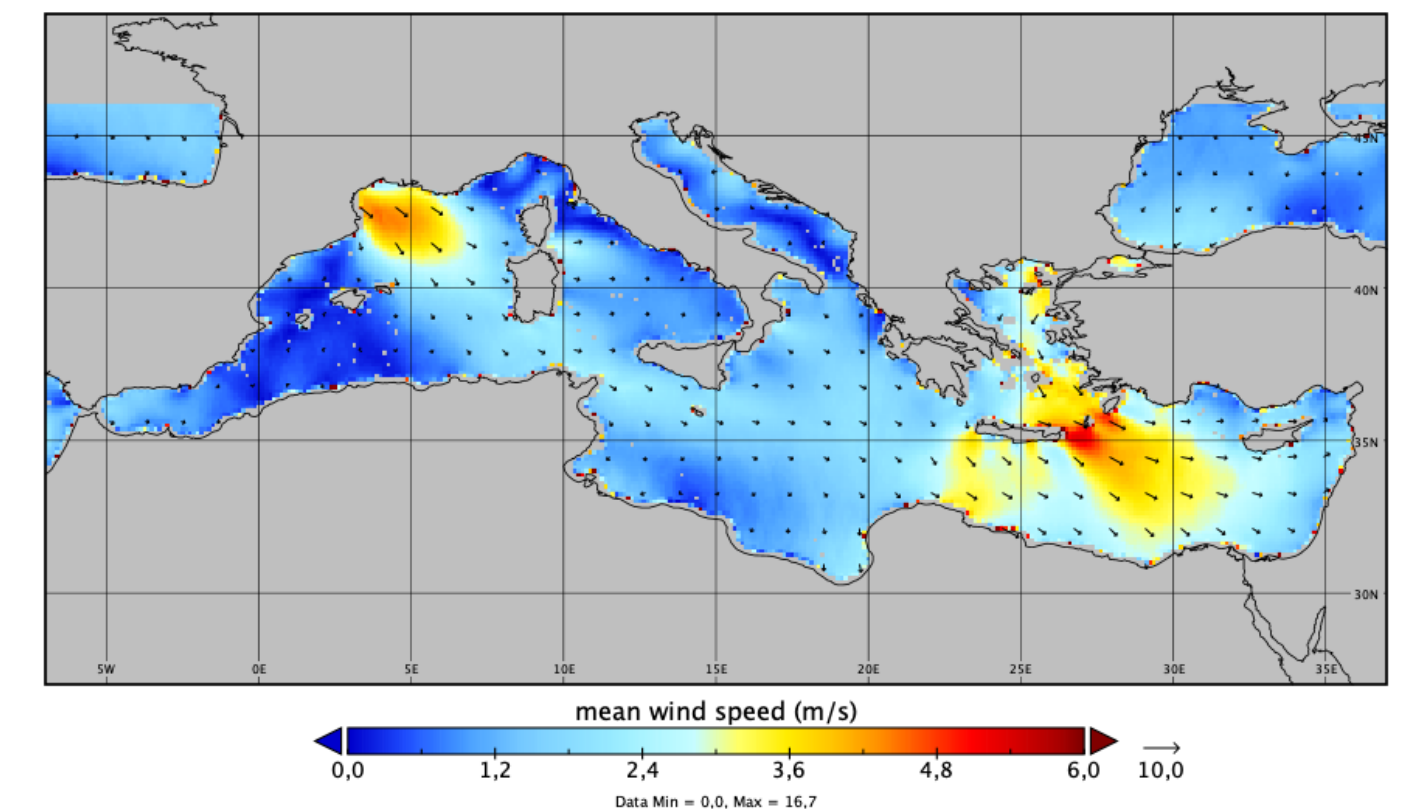
ASCAT data show different frequencies of wind directions close to the African coast depending on the time of the measurement [8]. Observations on several times of the day help to evaluate the diurnal cycle in models.



## WIND SPEED OBSERVATIONS

We use several surface wind products from scatterometers, which provide wind speeds and directions up to two times a day [1]:

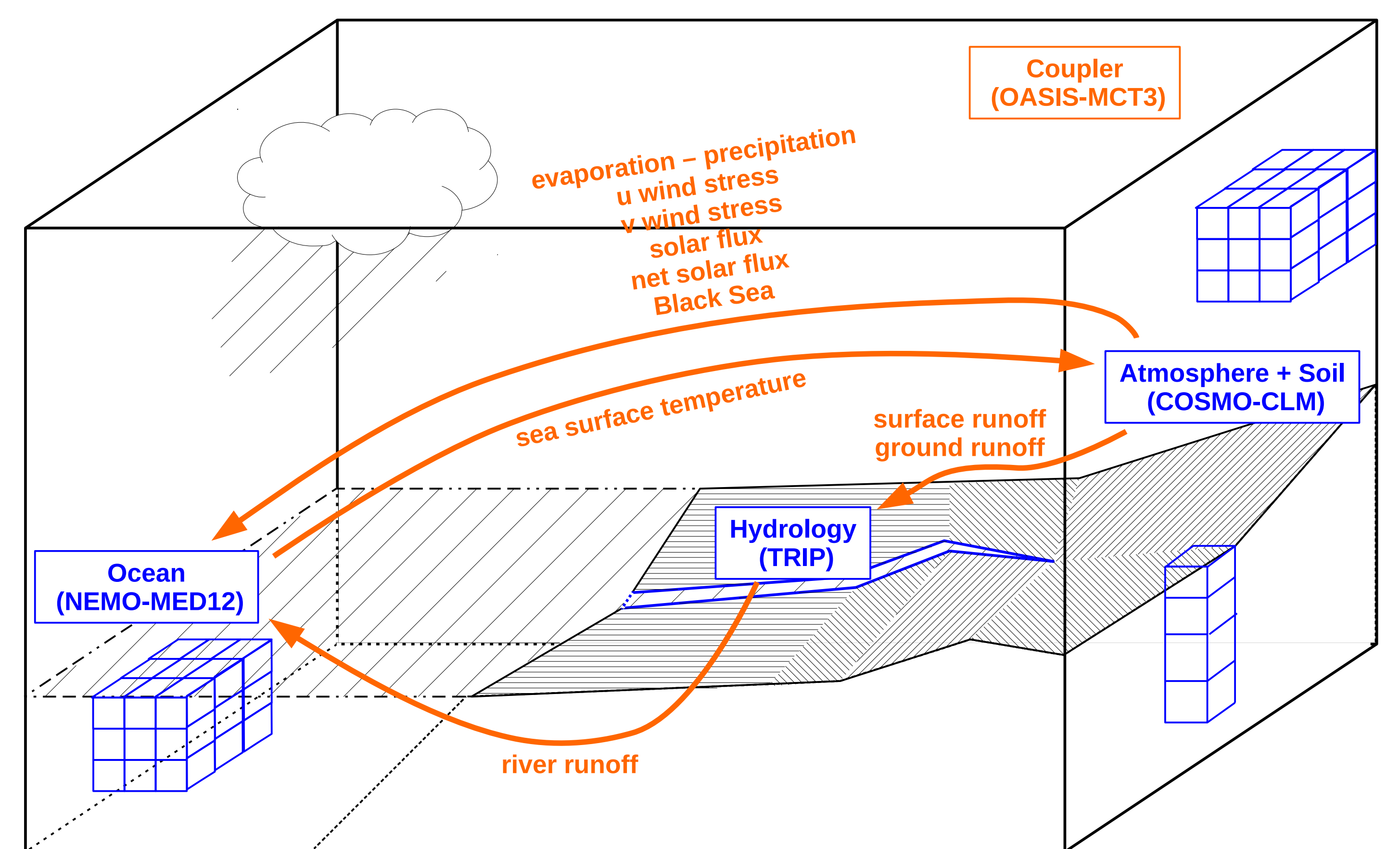
- METOP ASCAT
- QuikSCAT
- ERS SCAT



ASCAT winds 2007-2016.

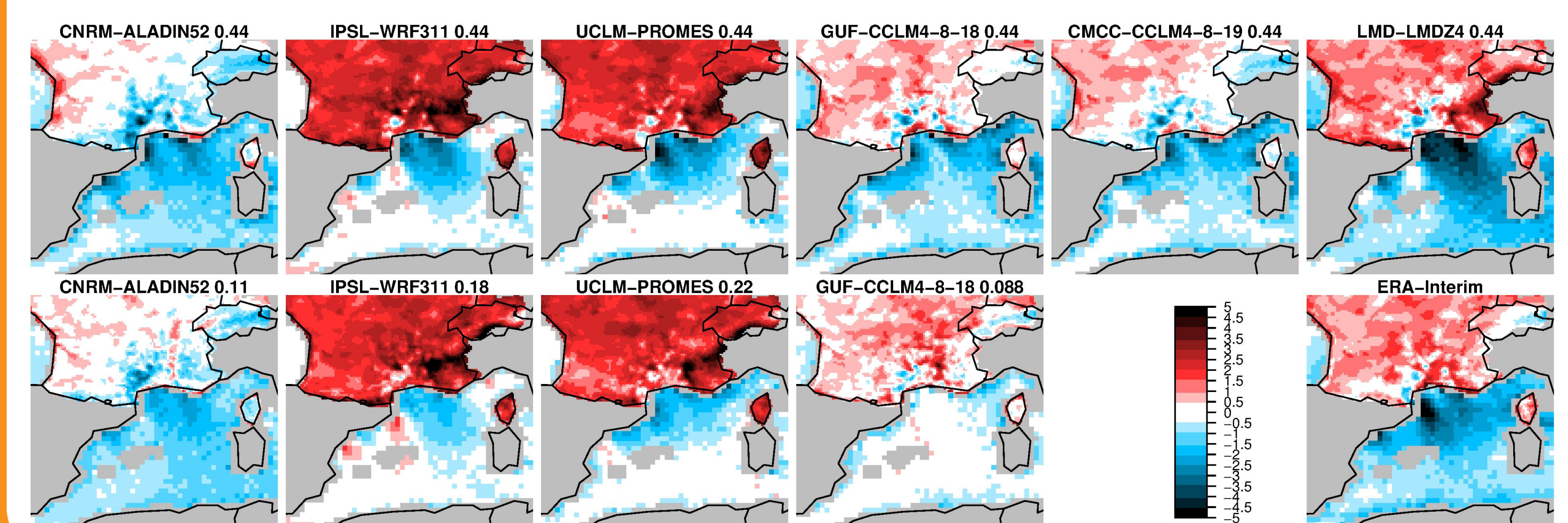
## REGIONAL CLIMATE SIMULATIONS

We use a coupled system [2] with COSMO-CLM [3], NEMO-MED [4] (Mediterranean Sea) and TRIP [5] (river runoff) coupled by OASIS-MCT3 [6]:



## MISTRAL AND TRAMONTANE

Simulations minus QuikSCAT wind speed during Mistral and Tramontane days 2000-2008 (m/s) [9].



## OUTLOOK

Satellite wind observations provide valuable information for climate simulations. We use them in several projects to study Mediterranean wind system on all spatial scales. Therefore,

- higher resolution
- distinction of wind patterns and artifacts
- continuous time series

would be very useful for future studies.

## REFERENCES

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- [2] Akhtar et al. (2018) Clim. Dyn.
- [3] Rockel et al. (2008) Met. Z.
- [4] Madec et al. (2008) Note Pôle Modél
- [5] Oki et al. (1998) Earth int.
- [6] Craig et al. (2017) Geosci. Model Dev.
- [7] Muth (2016) BSc Thesis
- [8] Vovk (2016) BSc Thesis
- [9] Obermann et al. (2018) Cim. Dyn.

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