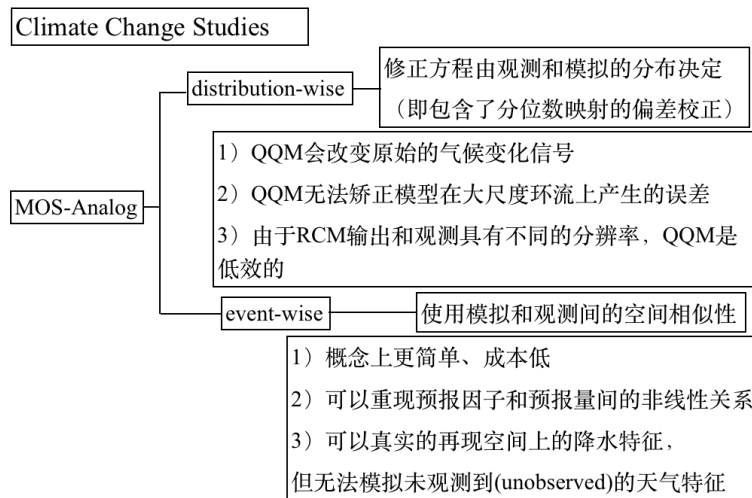


2019年12月5日

# Bias correction and downscaling of future RCM precipitation projection using a MOS-Analog technique

## Introduction:



## Methods:

### 1. ENSEMBLES RCM Data set

EU-funded project ENSEMBLES是欧洲各个国家共同合作, 覆盖整个欧洲的数据集

Observed Data

### 2. 高分辨率的Spain02(0.2° × 0.2°, 20 km × 20 km approximately) data set

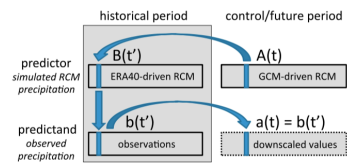


Figure 2. Schematic illustration of the MOS-Analog method (adapted from Fernandez and Soenz [2003]). See the text for details.

## Results:

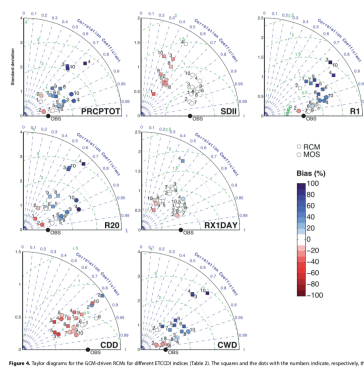


Figure 4. Taylor diagrams for the GCM-driven RCMs for different ETCCS indices (Table 2). The squares and the dots with the numbers indicates, respectively, the model output as defined in Table 1 and the MOS fitting applied to the model.

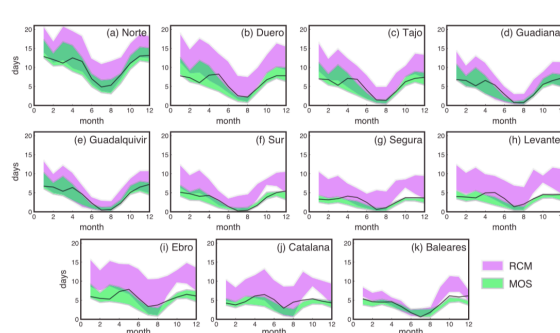


Figure 5. Seasonal cycle of the spatially averaged R1 index (in days) for each river basin (according to Figure 1). The black line represents the observed (Spain02) climatology. The violet-shaded band spans the values for the RCMs, while the green one spans the respective MOS downscaled values.

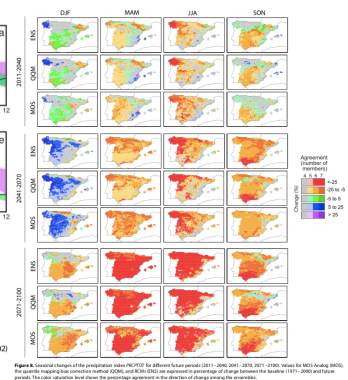


Figure 6. Seasonal changes of the precipitation index R1 (in days) for different basin periods (1971-2000, 2001-2030, 2031-2060, 2061-2090). Values for MOS-Analog (MOS) are reported in Table 3. The color shading level shows the percentage agreement in the direction of change among the ensembles.

## Conclusions:

1. MOS-Analog方法明显改进了RCM原始输出的偏差; 对于未来, 各个变量的变化非常一致, 并且具有空间上的一致性; 本文的模型结果为地中海地区不断增加的干旱提供了一定可信度;
2. RCM的气候变化信号通过基于分布的分位数映射方法得到了普遍保留, 而MOS-Analog方法同样也保留了其气候变化信号;
3. 在获得更好的原始模型前, 偏差校正方法依旧是一个临时解决方案。