# Comparing the CLM and BATS over Eastern Europe

Merve Acar [1]

Ceren Balli [1]

Roxana Cica [2]

[1] Istanbul Technical University, Turkey

[2] National Meteorological Administration, Romania


The Abdus Salam
International Centre for Theoretical Physics

# Motivation

- Learning and testing the RegCM
- During the wet season, comparing the CLM and BATS to investigate model performance
- Because of the RegCM over predict spring precipitation, we want to test overestimation precipitation in spring season by RegCM.

# Configuration

## 4 simulations

**DOMAIN 1**

- ds = 30 km
- iy=67
- jx=118

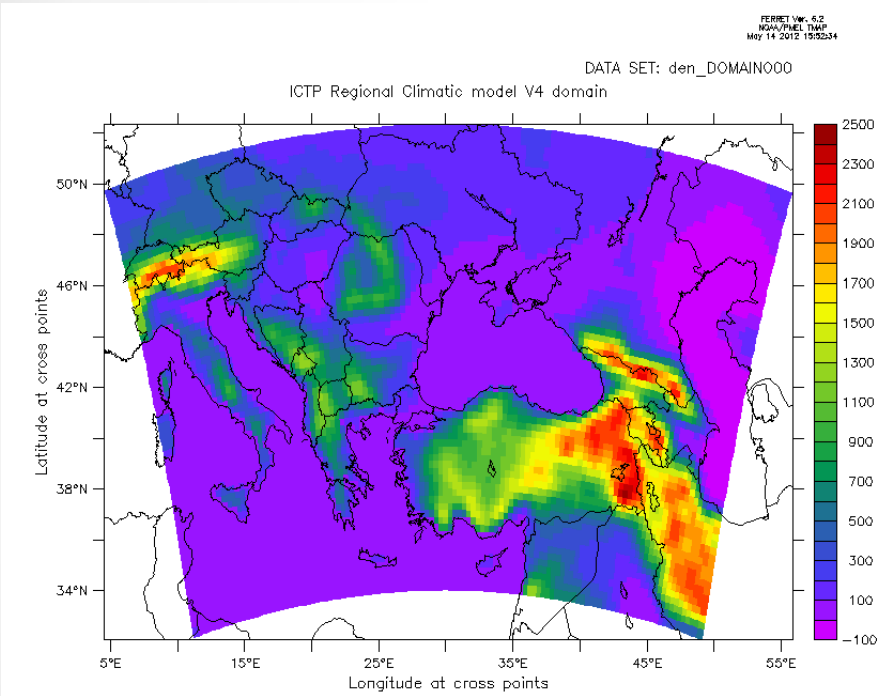
**DOMAIN 2**

- ds = 60 km
- iy=43
- jx=70

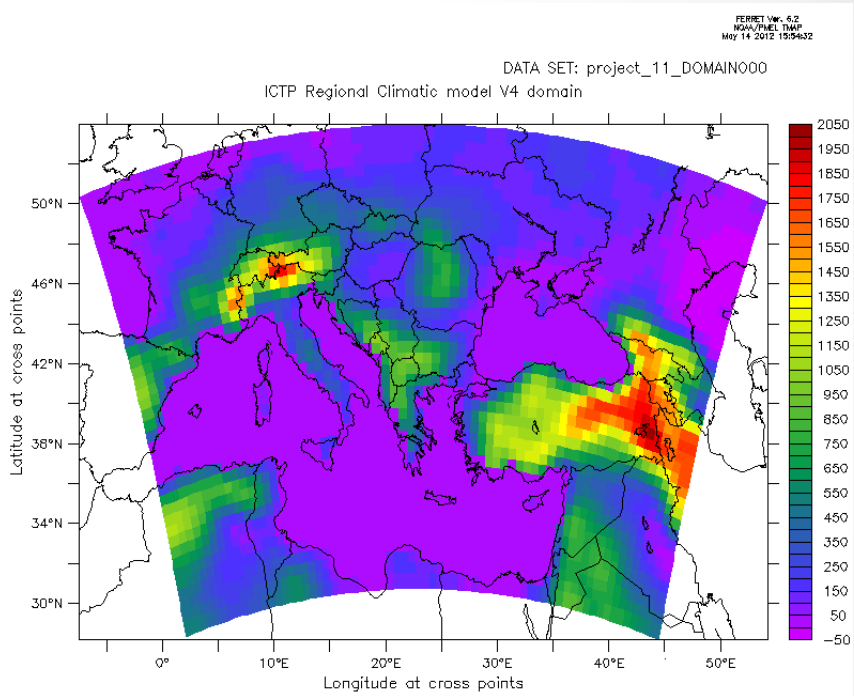
- 18 vertical levels
- 1993100100-1994060100
- ERA-Interim data set
- Cumulus convection scheme Emanuel
- Frequency for clmfrq=0
- Variables: snow water equivalent (scv), precipitation (tpr), t2m
- Observational data : CRU

## Domain 1

## Domain 2




Domain 1 30km Surface Elevation (m)

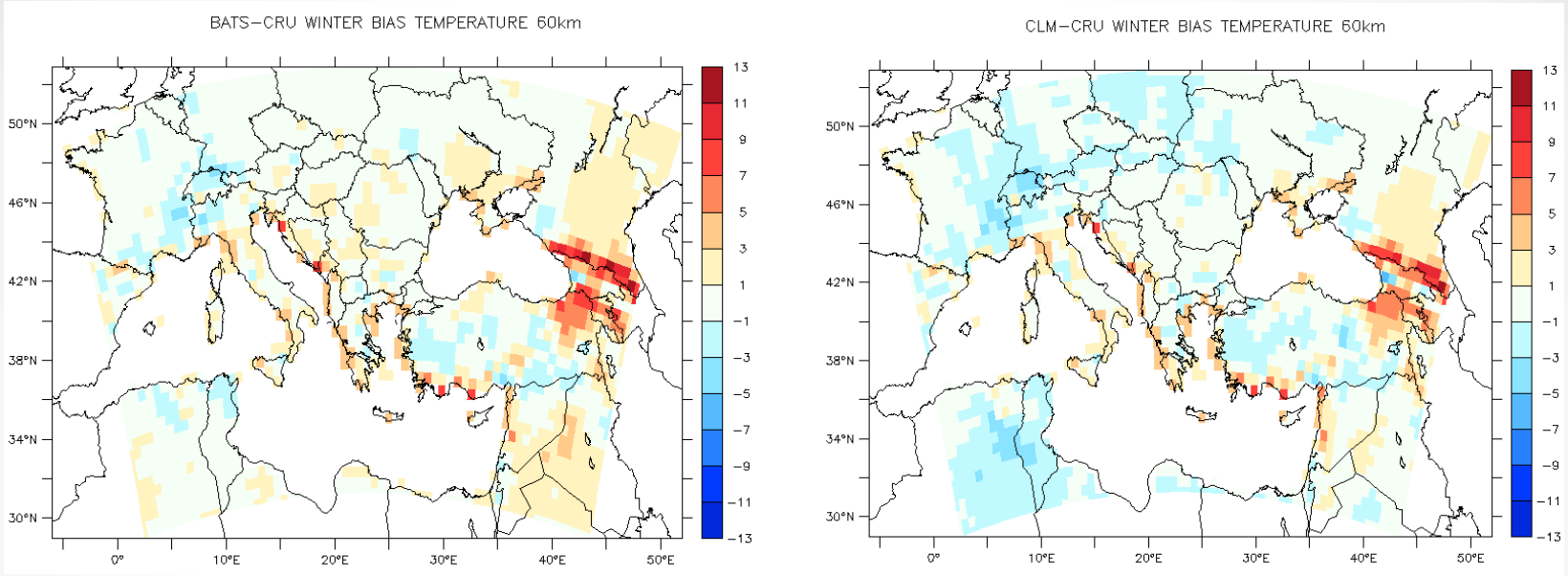


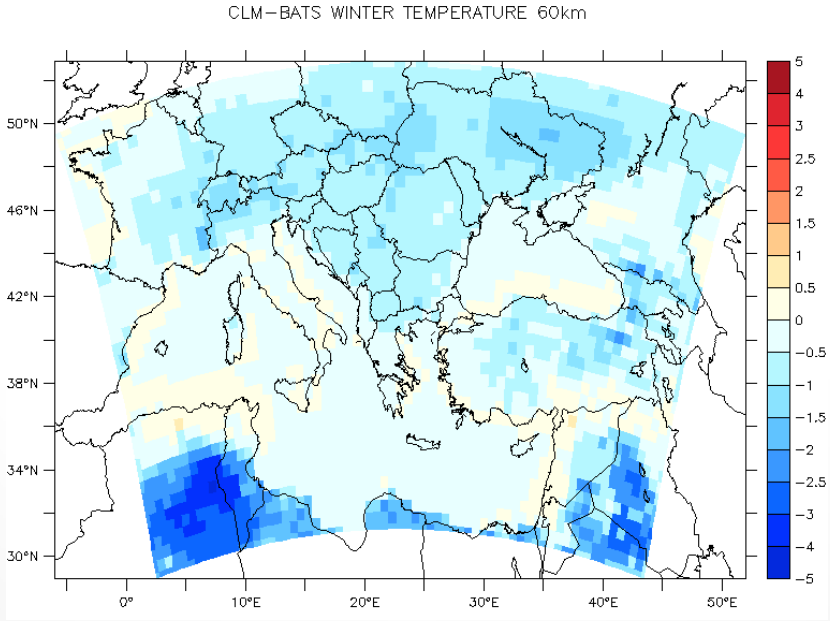

Domain 2 60km Surface Elevation (m)

# Results

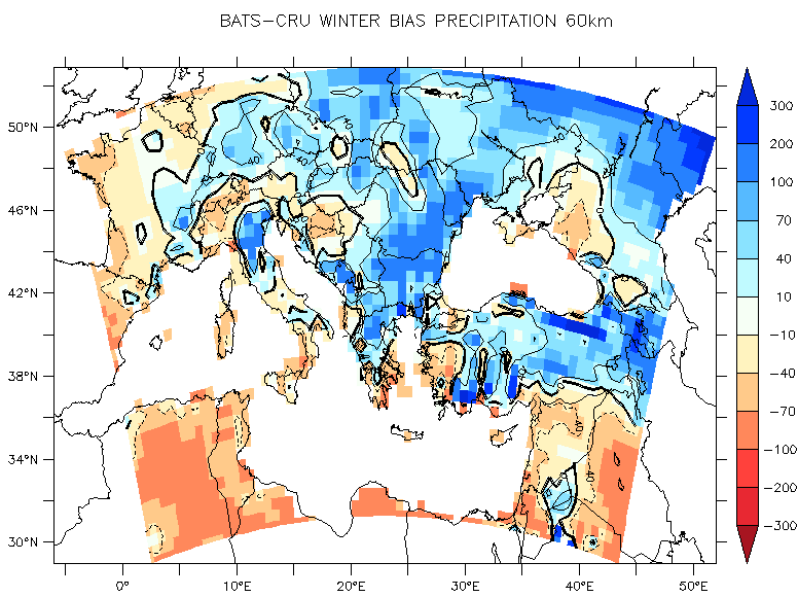
60 KM

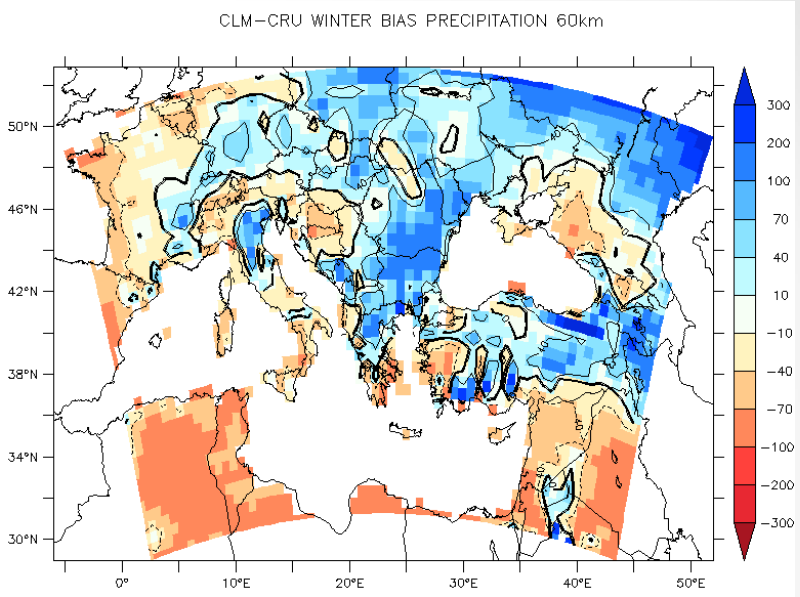
# Temperature Bias (Winter Season)

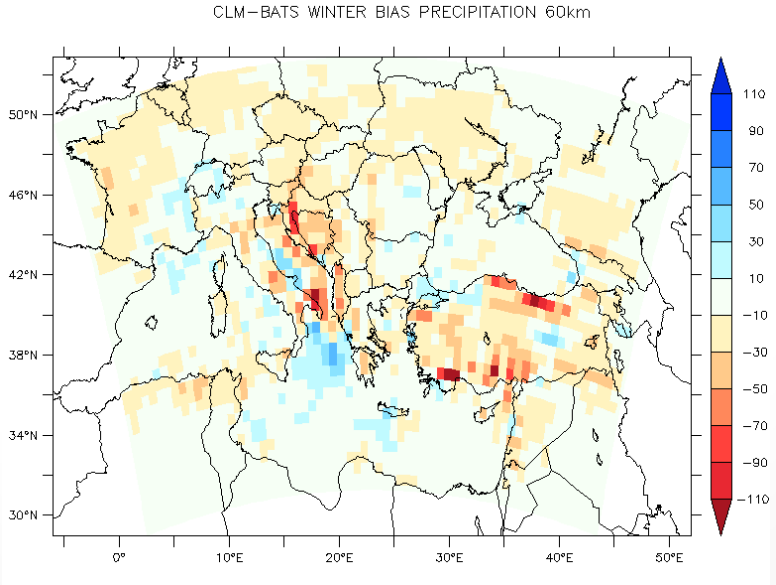


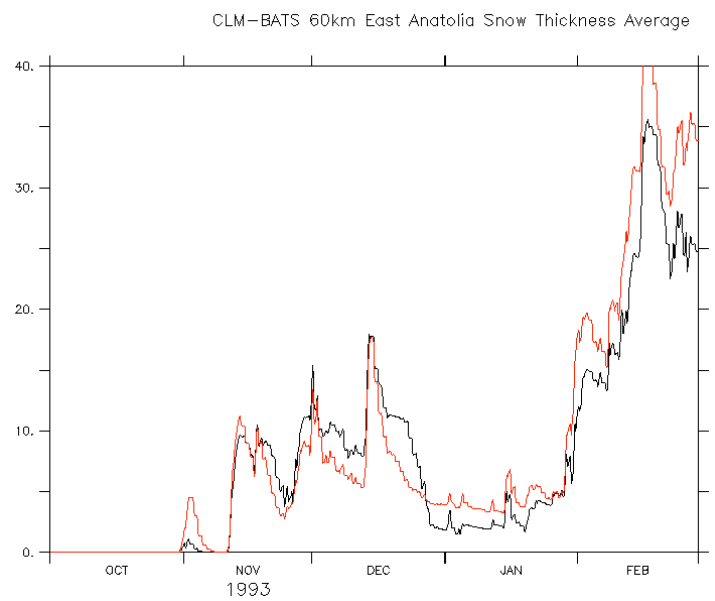
# Precipitation Bias % (Winter Season)

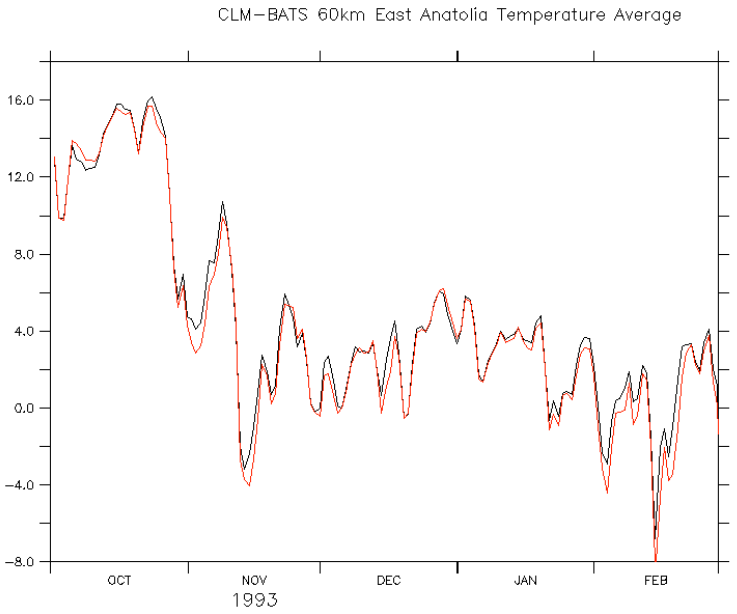


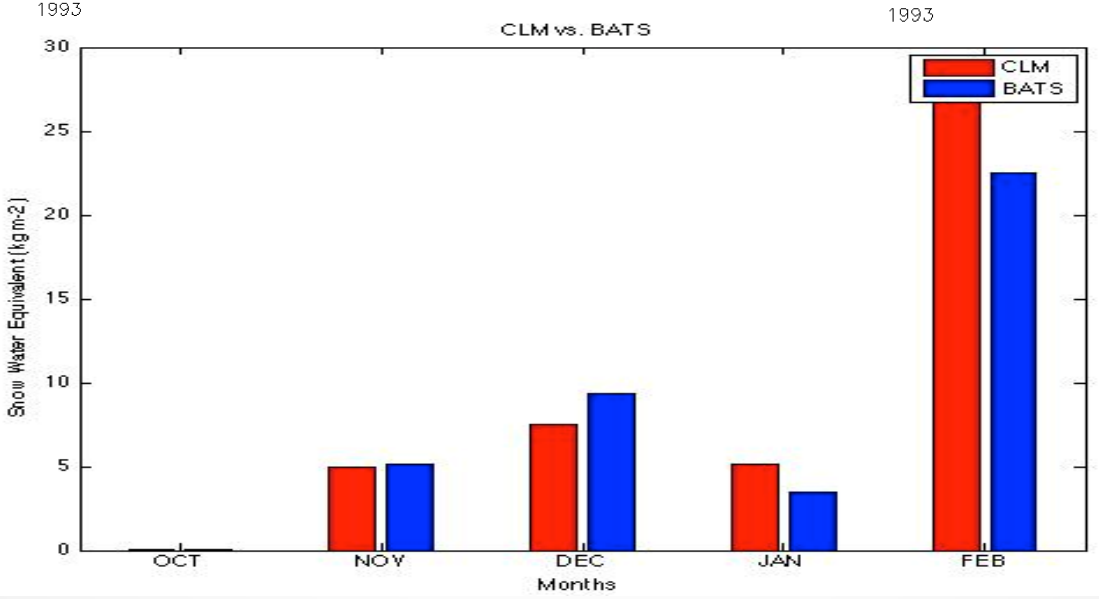



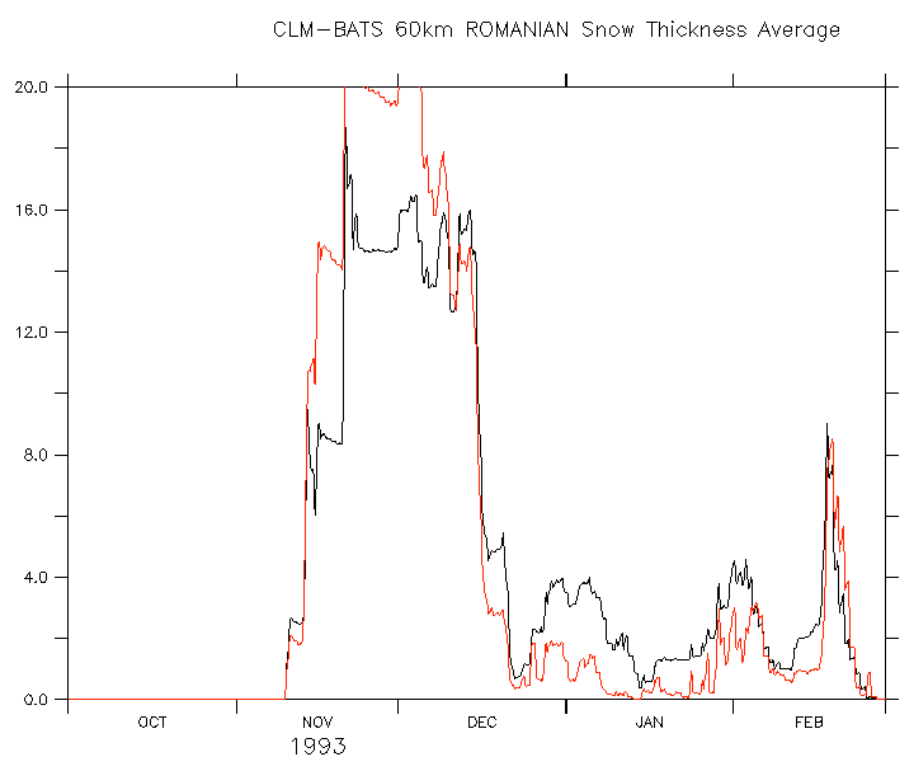
# Eastern Anatolia
# Snow Water Equivalent

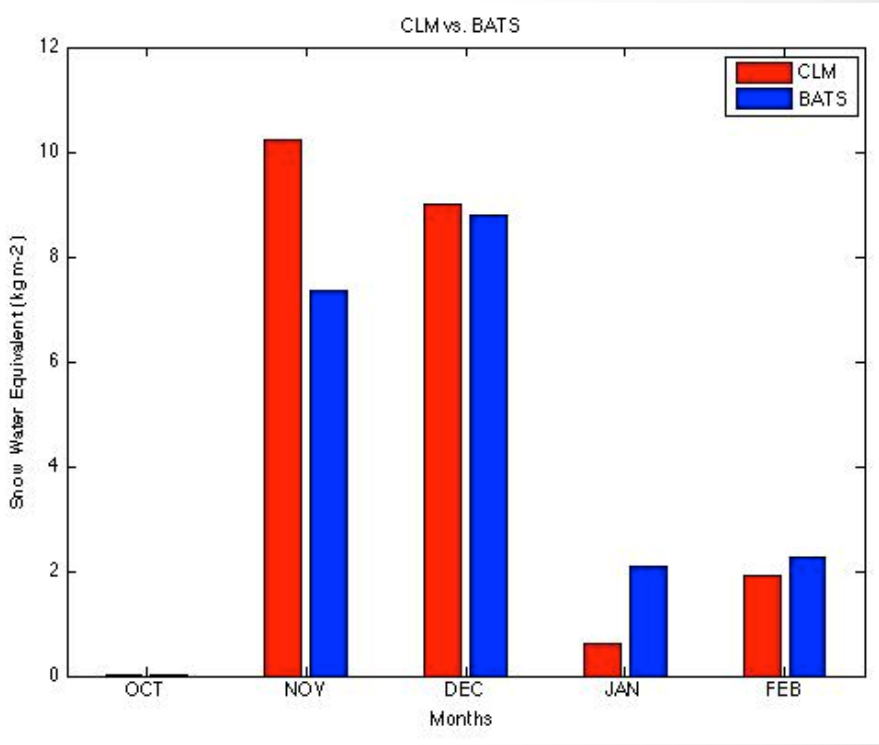


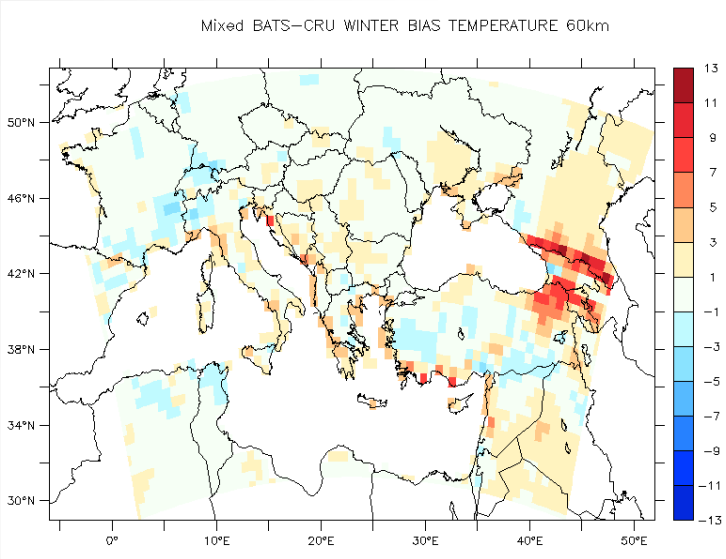
# Romania
# Snow Water Equivalent

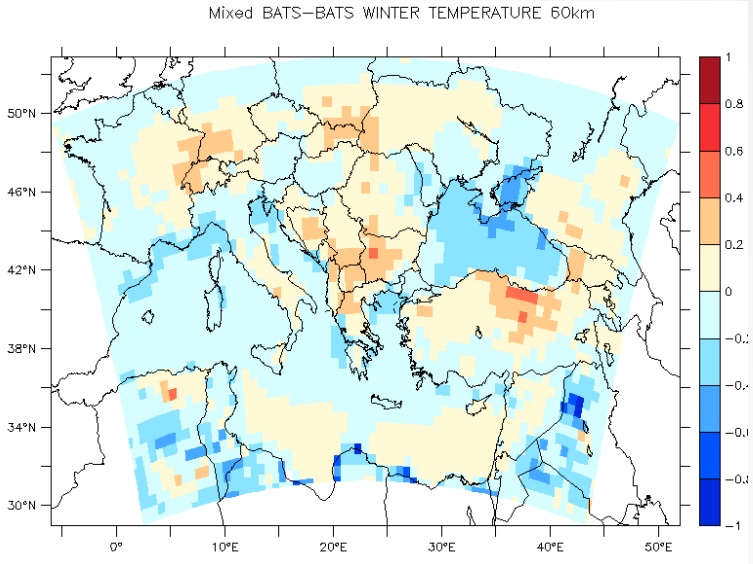


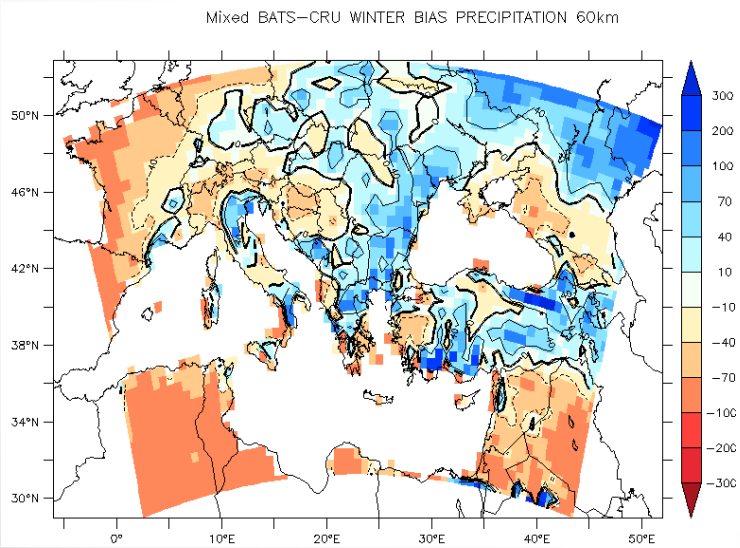



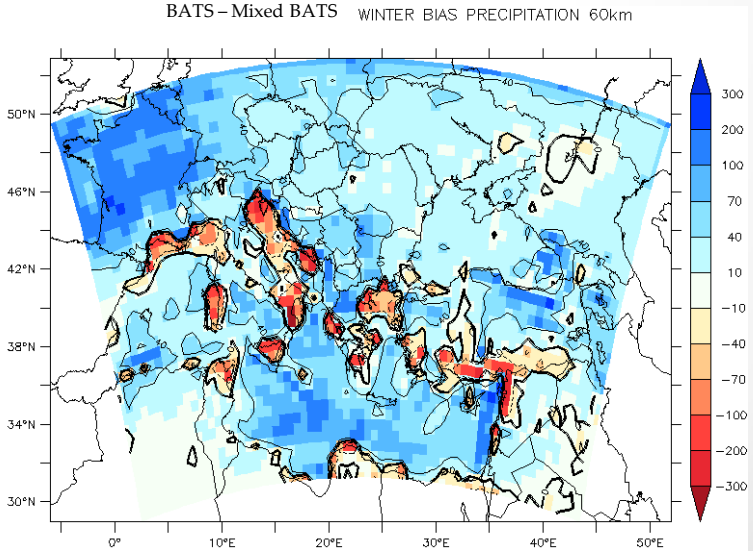
# Case Study

60 KM


Mixed BATS–CRU WINTER BIAS TEMPERATURE 60km
50°N
46°N
42°N
38°N
34°N
30°N
0°
10°E
20°E
30°E
40°E
50°E
13
11
9
7
5
3
1
−1
−3
−5
−7
−9
−11
−13


Mixed BATS–BATS WINTER TEMPERATURE 60km
50°N
46°N
42°N
38°N
34°N
30°N
0°
10°E
20°E
30°E
40°E
50°E
1
0.8
0.6
0.4
0.2
0
−1

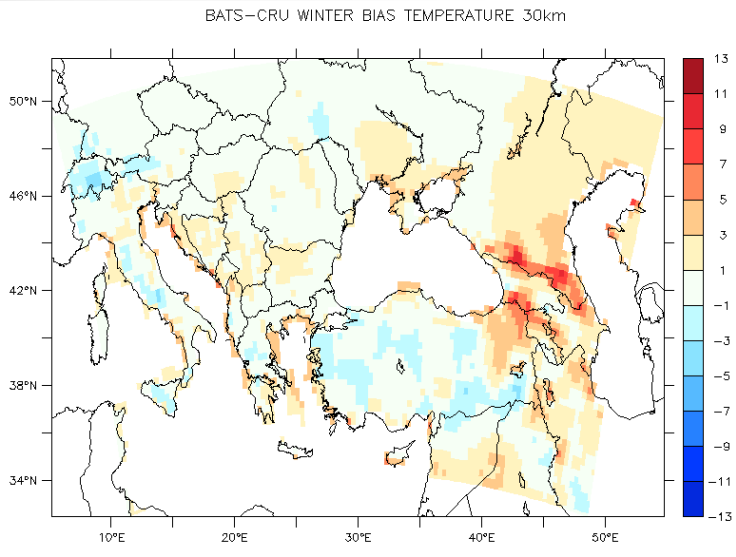

Mixed BATS–CRU WINTER BIAS PRECIPITATION 60km
50°N
46°N
42°N
38°N
34°N
30°N
0°
10°E
20°E
30°E
40°E
50°E
300
200
100
70
40
10
−10
−40
−70
−100
−200
−300

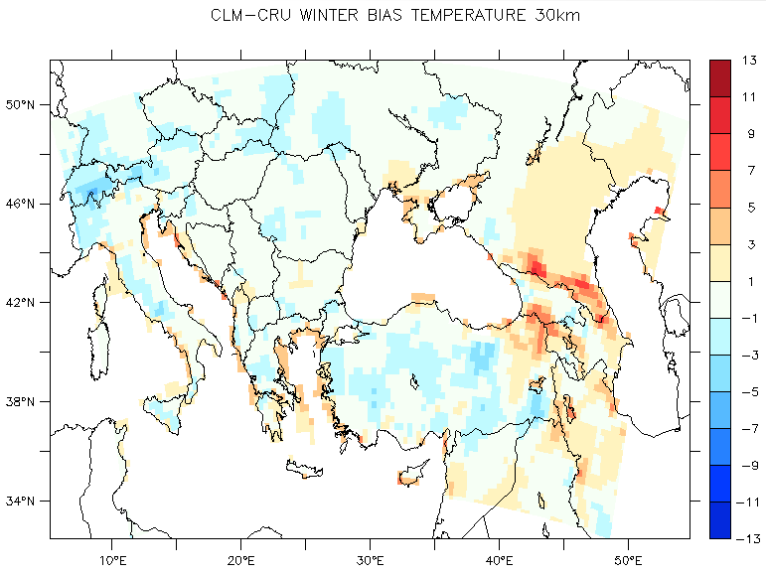

BATS – Mixed BATS WINTER BIAS PRECIPITATION 60km
50°N
46°N
42°N
38°N
34°N
30°N
0°
10°E
20°E
30°E
40°E
50°E
300
200
100
70
40
10
−10
−40
−70
−100
−200
−300

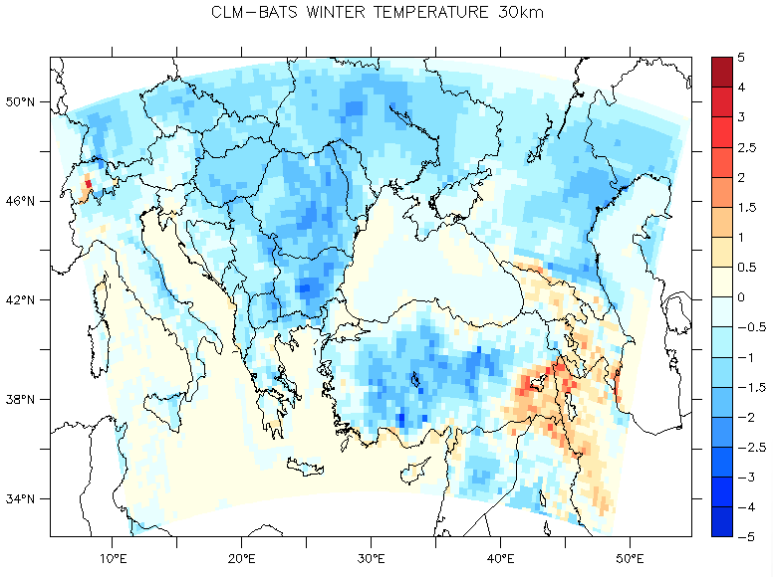
# Results

## 30 KM

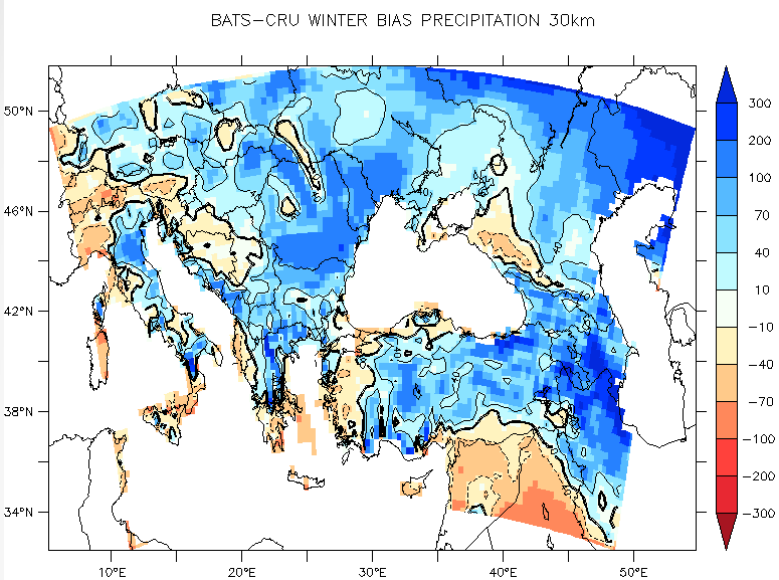
# Temperature Bias (Winter Season)

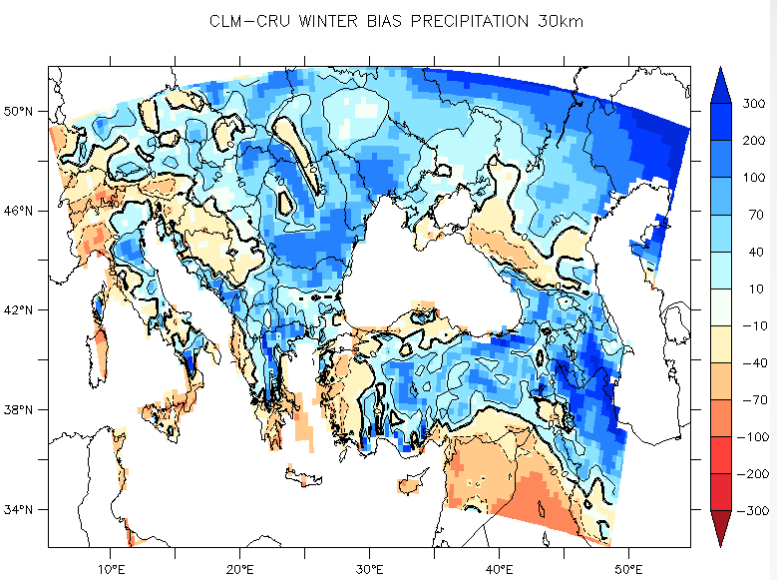


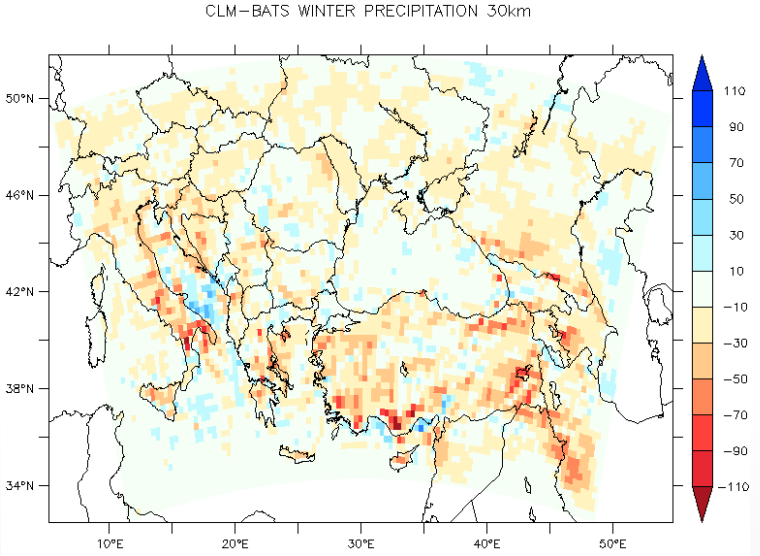



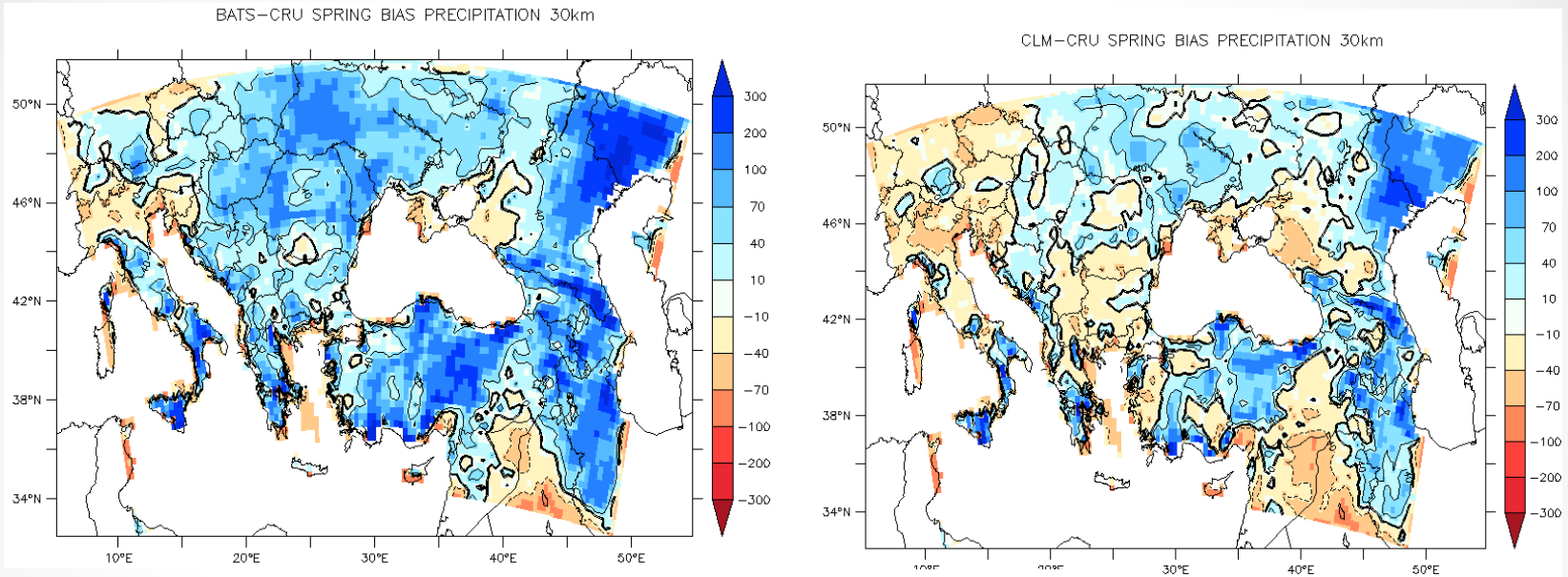
# Precipitation Bias % (Winter Season)

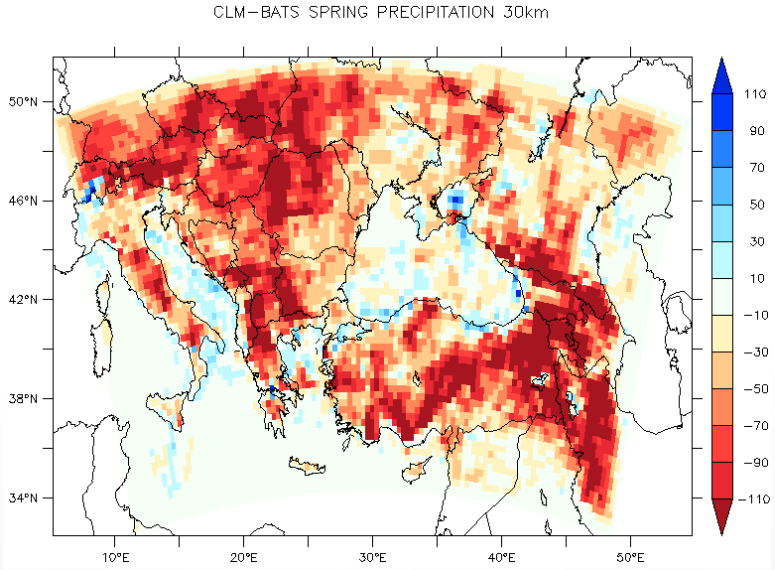


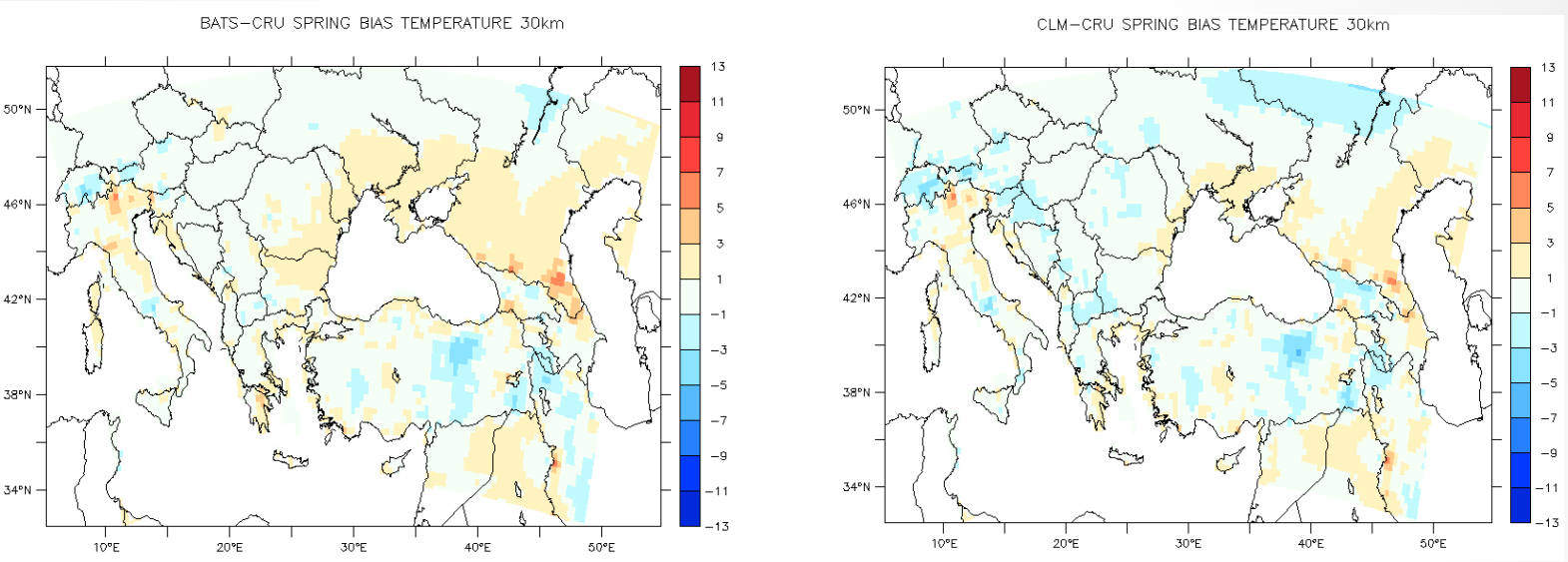



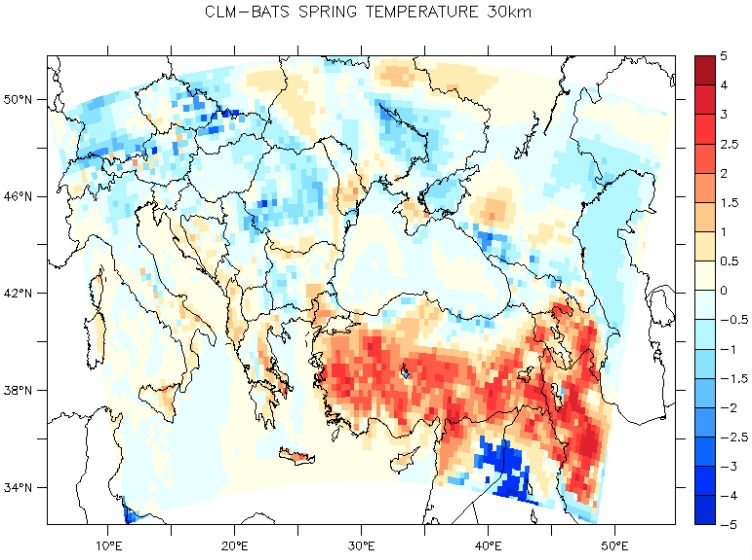
# Precipitation Bias % (Spring Season)



# Temperature Bias (Spring Season)

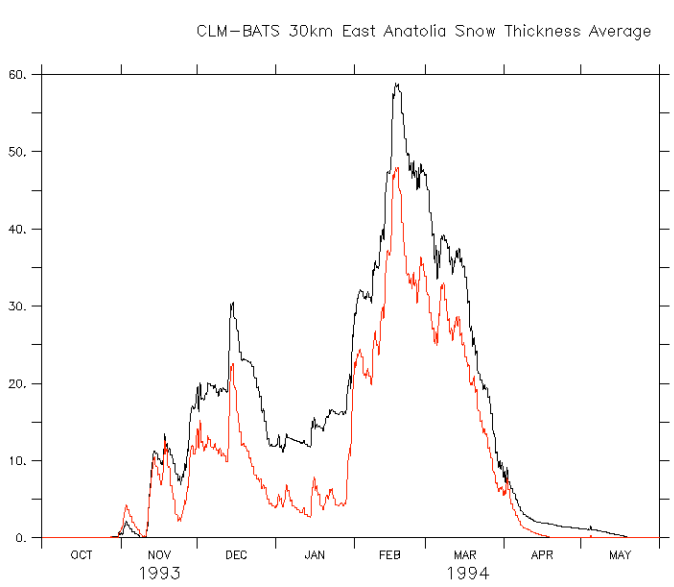


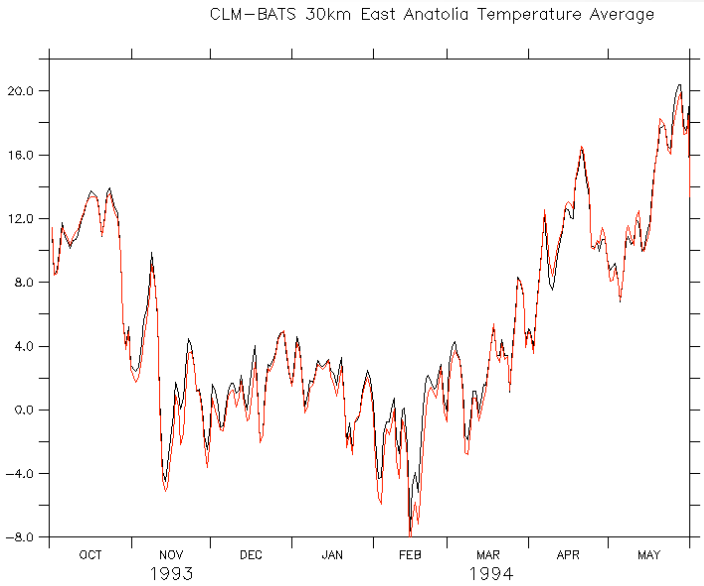



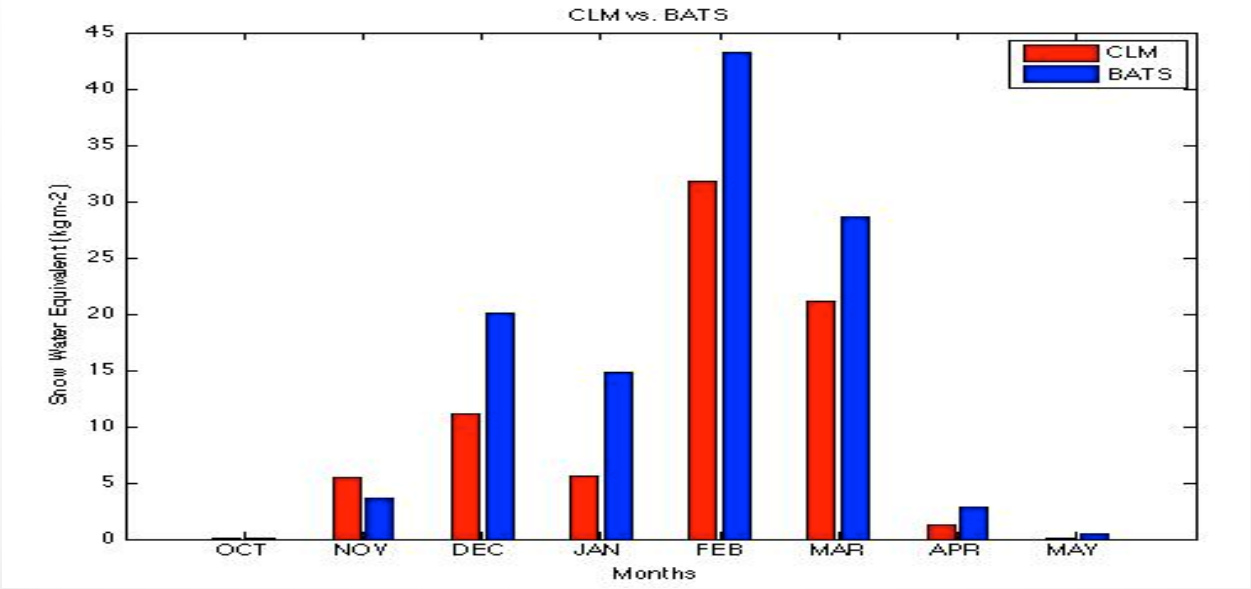
# Case Study

30 KM

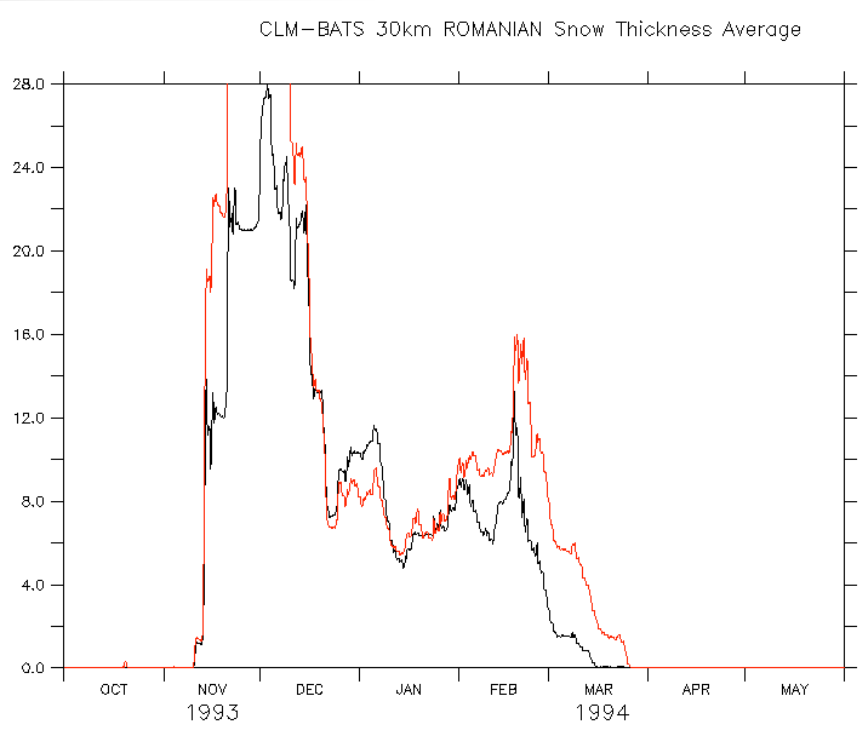
# Eastern Anatolia
# Snow Water Equivalent

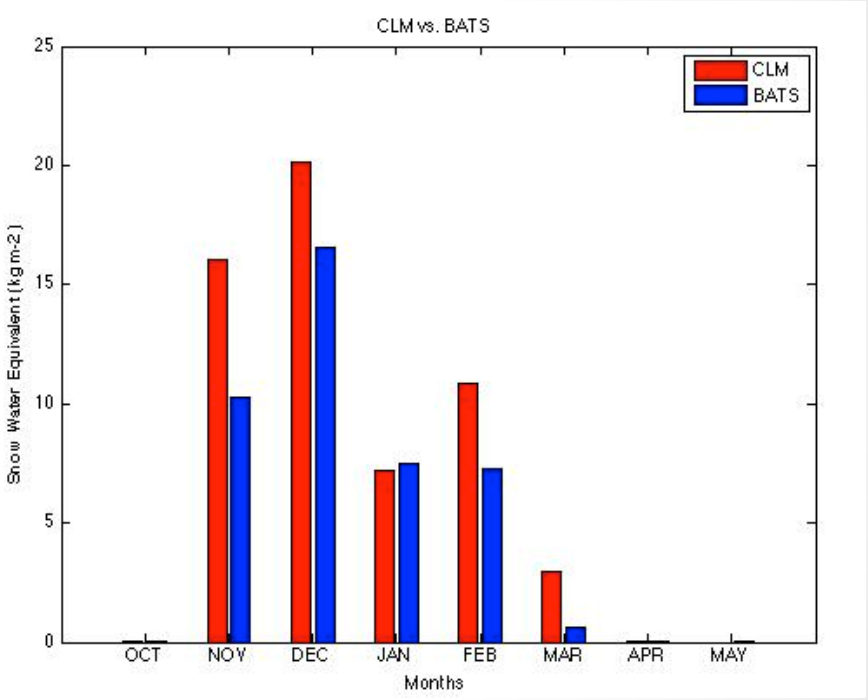


# Romania
# Snow Water Equivalent



# Conclusion

- Comparing the CLM and BATS, results show that CLM has less precipitation than BATS especially in spring. Temperatures in CLM colder than BATS especially in winter.
- Mixed convective schemes simulation (Emanuel-ocean ; Grell-land) comparing with Emanuel scheme simulation indicates that mixed convective schemes has produced less precipitation than Emanuel most part of domain.
- For 30 and 60 km simulations, snow water equivalent over Eastern Anatolia (EA) is compared for the CLM and BATS. CLM results are lower than BATS over EA whereas snow water equivalent produced by CLM are higher than BATS over Romanian .

# THANKS…