Snow Cover Analysis of Turkey comparing to Historical Climate Scenarios of CMIP5 and CMIP6 protocols

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Elcin TAN

EGU General Assembly 2022

Outline

1

Display of CMIP5 and CMIP6 model grid points over Turkey

2

Introduction of selected models and Climate Indexes

3

Comparison of the climate index results calculated by the models and the Turkish State Meteorological Service together with the graphics

4

Analyzing the climate index results according to the graphs

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Objectives

First Objective

Calculation of climate indices with Climate Data Operator (CDO) for CMIP5 and CMIP6 models

Second Objective

Comparison of the results of the climate index of the CMIP5 and CMIP6 data

Third Objective

To compare the consistency of all models from CMIP5 and CMIP6 on Turkey

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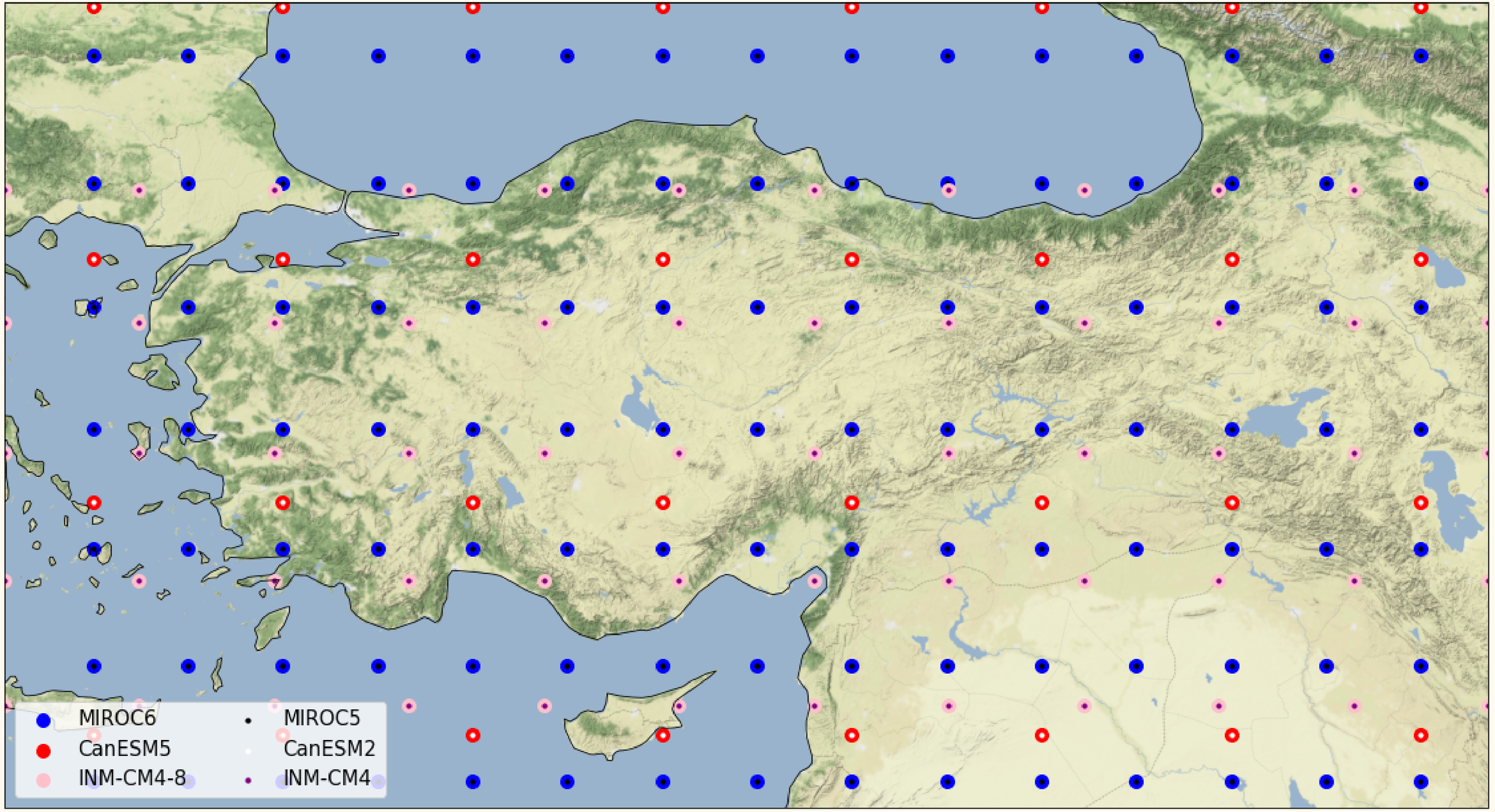
Istanbul Technical University

CMIP5 AND CMIP6 MODEL GRID POINTS IN TURKEY

ITU MetBee



Models and Climate Indices with Climate Data Operators (CDO) Used in the Study

CMIP5 Models	CMIP6 Models
MIROC5 256 lon - 128 lat	MIROC6 256 lon - 128 lat
CanESM2 128 lon - 64 lat	CanESM5 128 lon - 64 lat
INM-CM4 180 lon - 120 lat	INM-CM4-8 180 lon - 120 lat

Climate Indices with CDO
ECAFD
ECAID
FDNS

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References date range

1976-2005

ECAFD

Frost days index per time period

Index Calculation

To get the number of frost days of a time series of daily minimum temperatures

ECAID

Ice days index per time period

Index Calculation

To get the number of ice days of a time series of daily maximum temperatures

FDNS

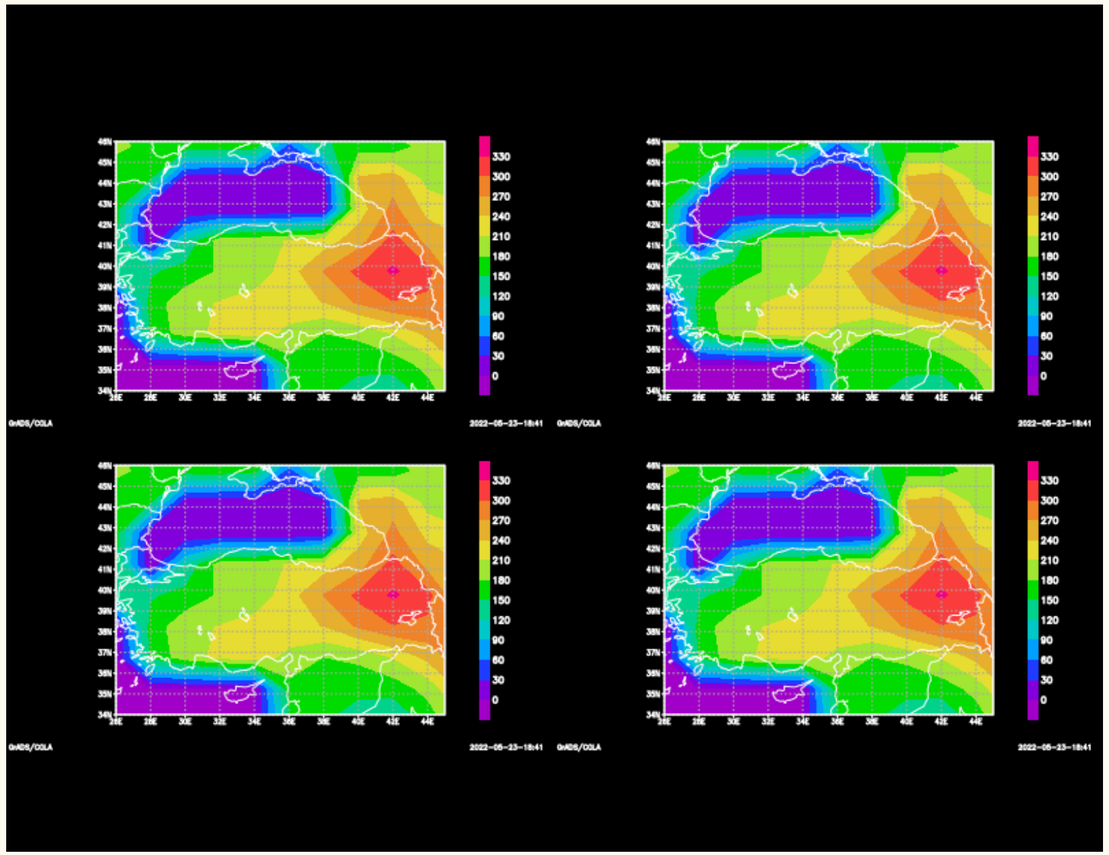
Frost days where no snow index per time period

Index Calculation

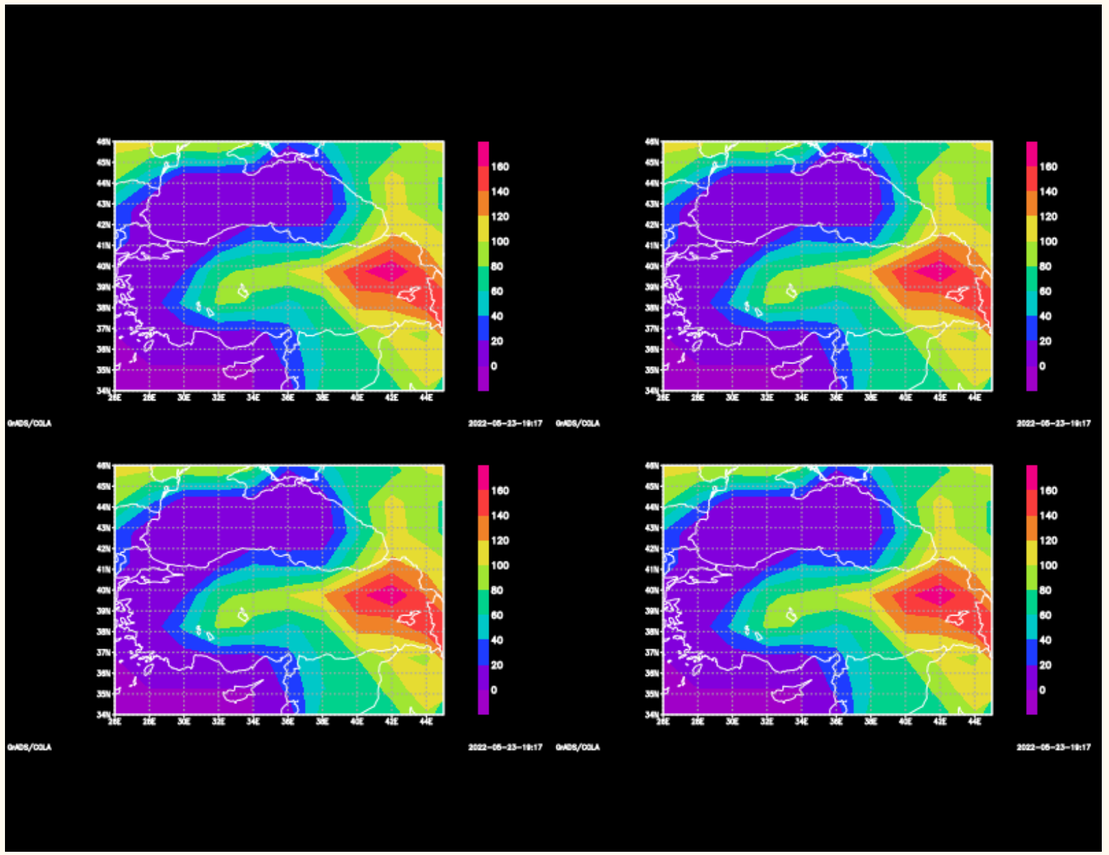
Frost days where no snow index is the number of days without snowcover and where minimum of temperature is below 0 degree Celsius. The time period should be defined by the bounds of the time coordinate

CMIP 5-CMIP6

CMIP5 INM-CM4
ECAFD



CMIP6 INM-CM4-8
ECAFD



CMIP5 MIROC5
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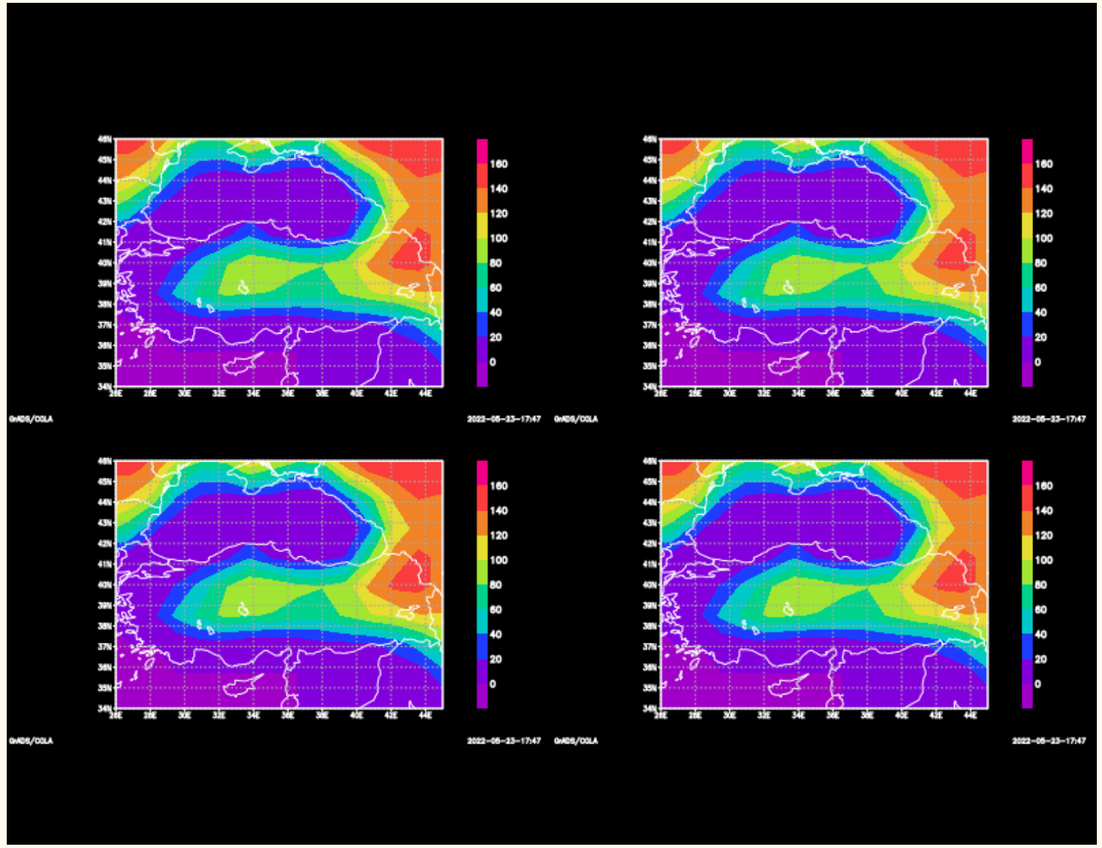

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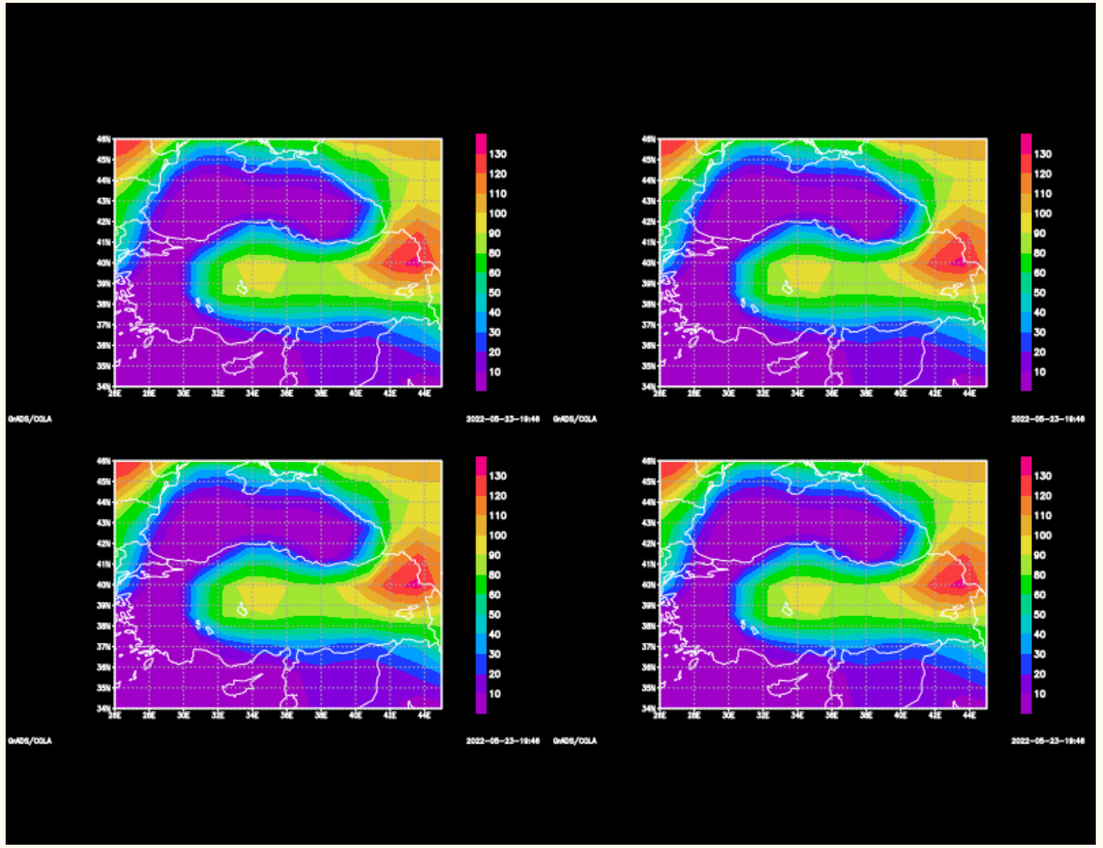

CMIP5 CanESM2
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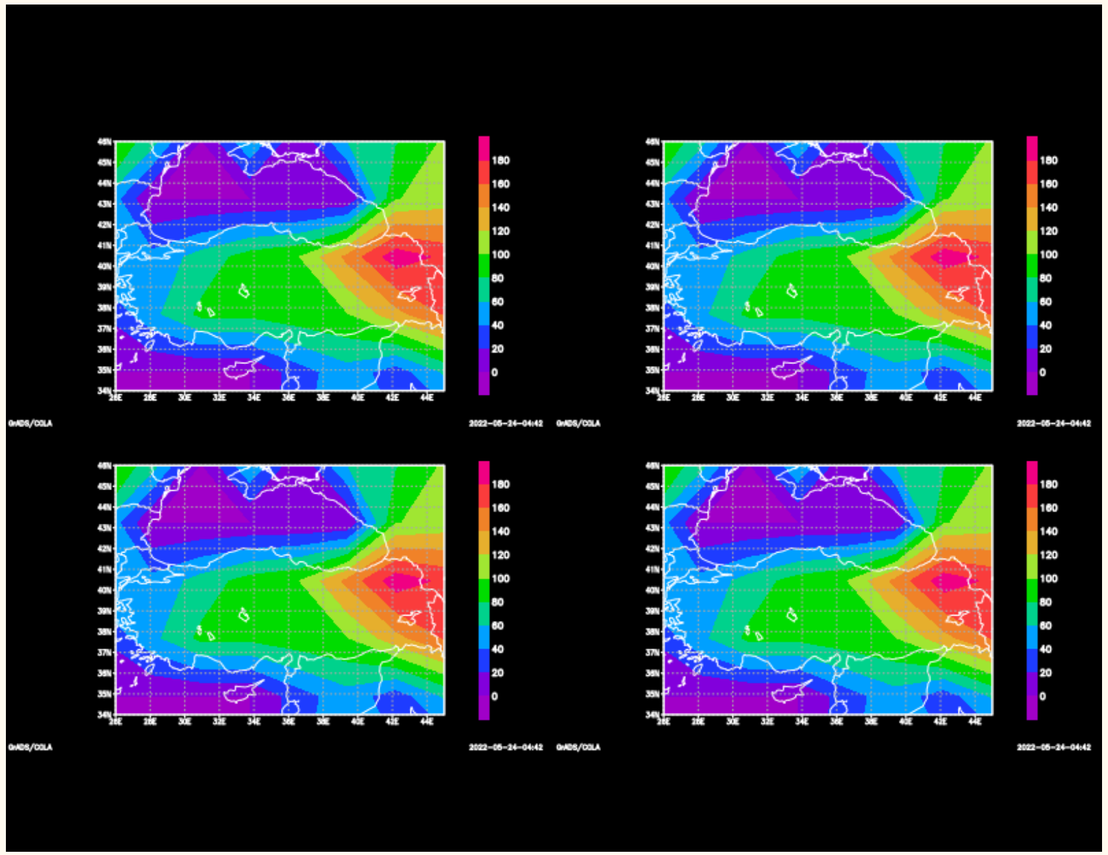

CMIP6 CanESM5
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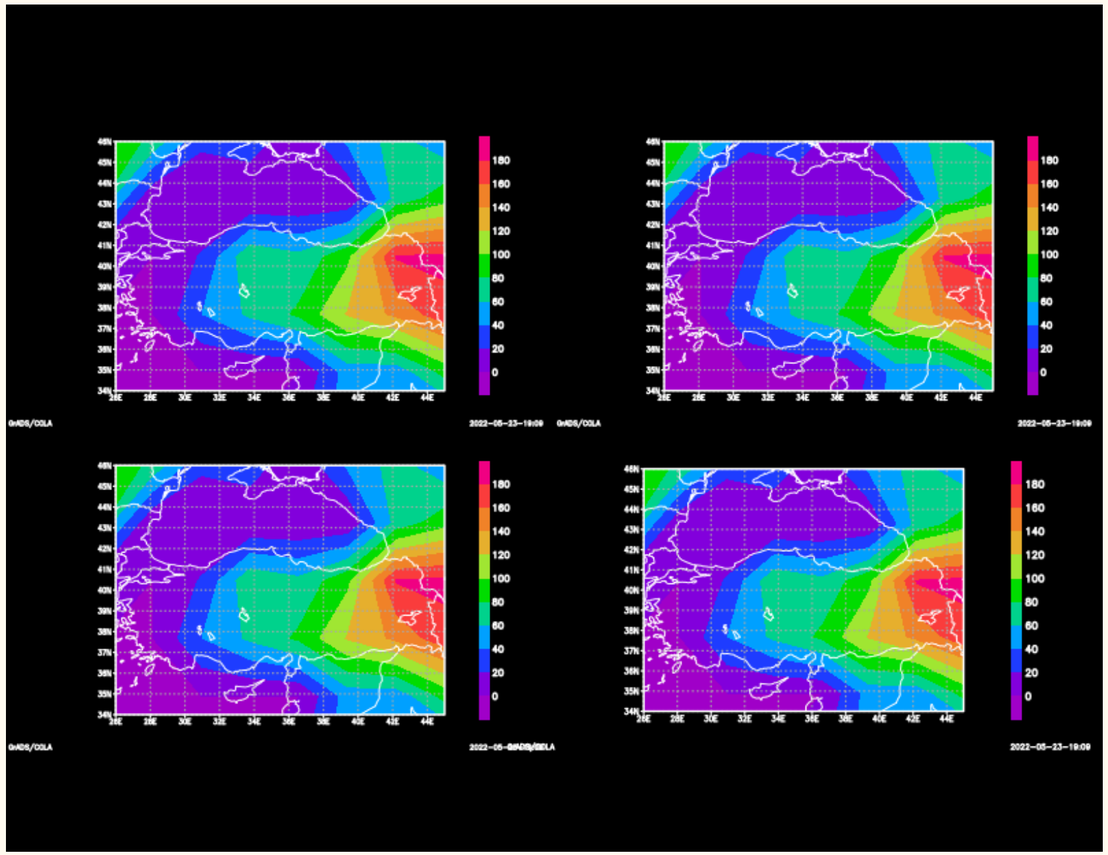

CMIP5 MIROC5
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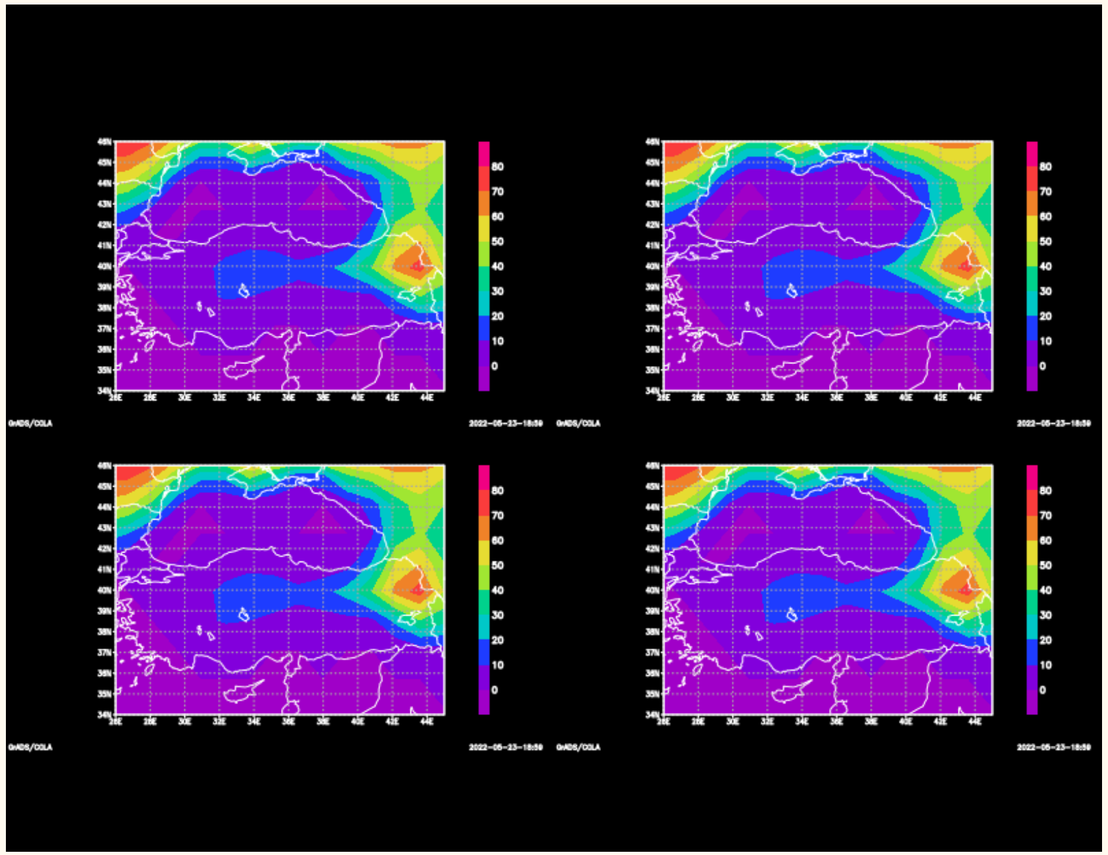

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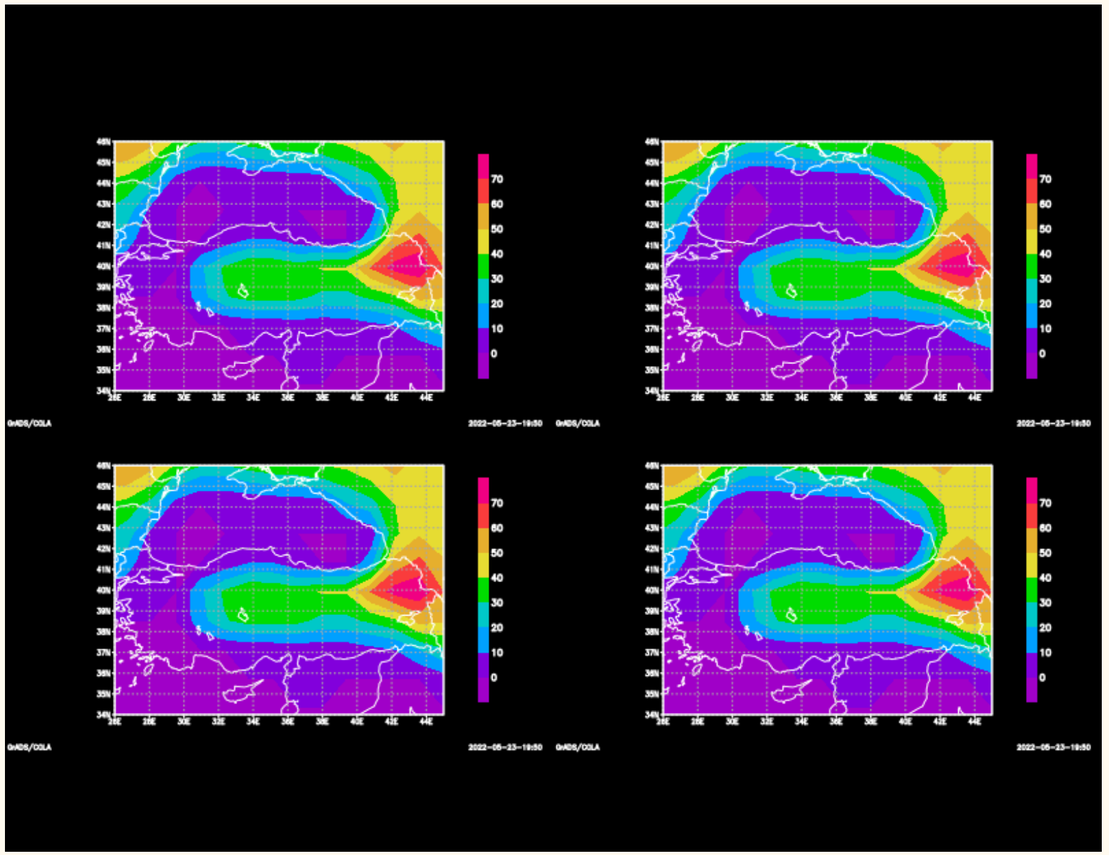

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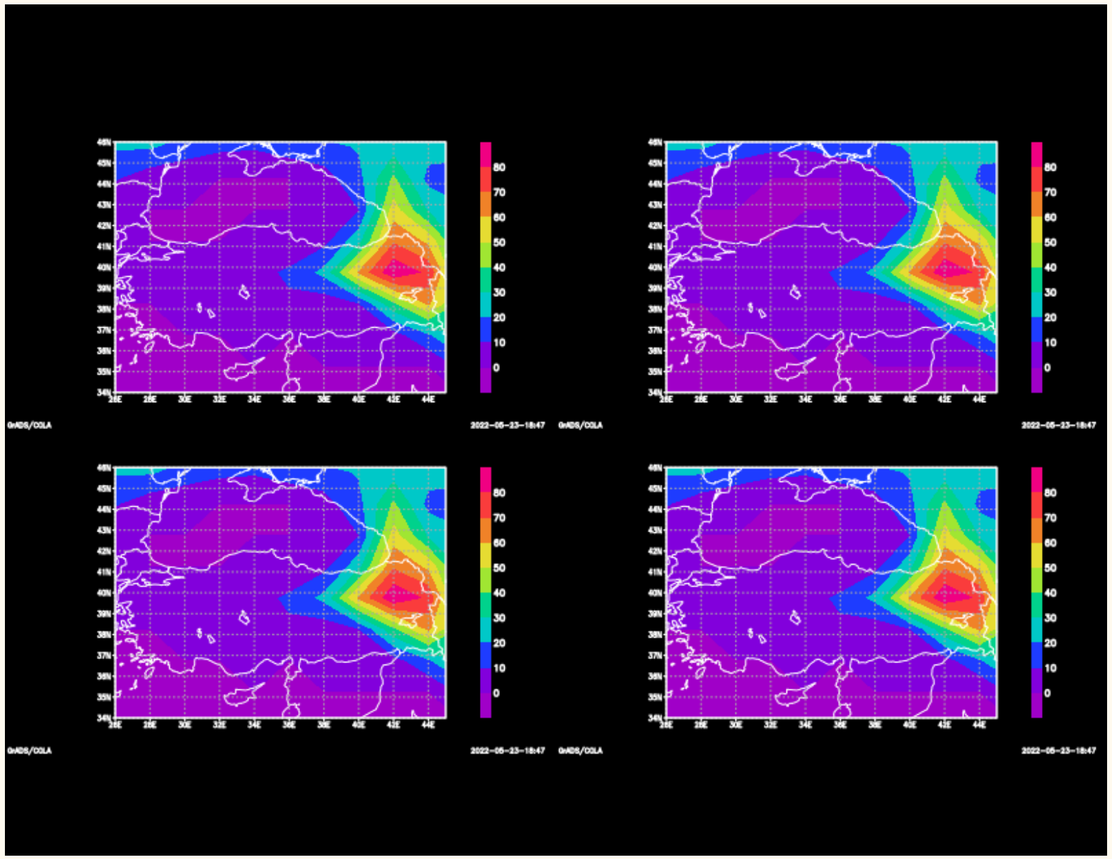

CMIP6 INM-CM4-8
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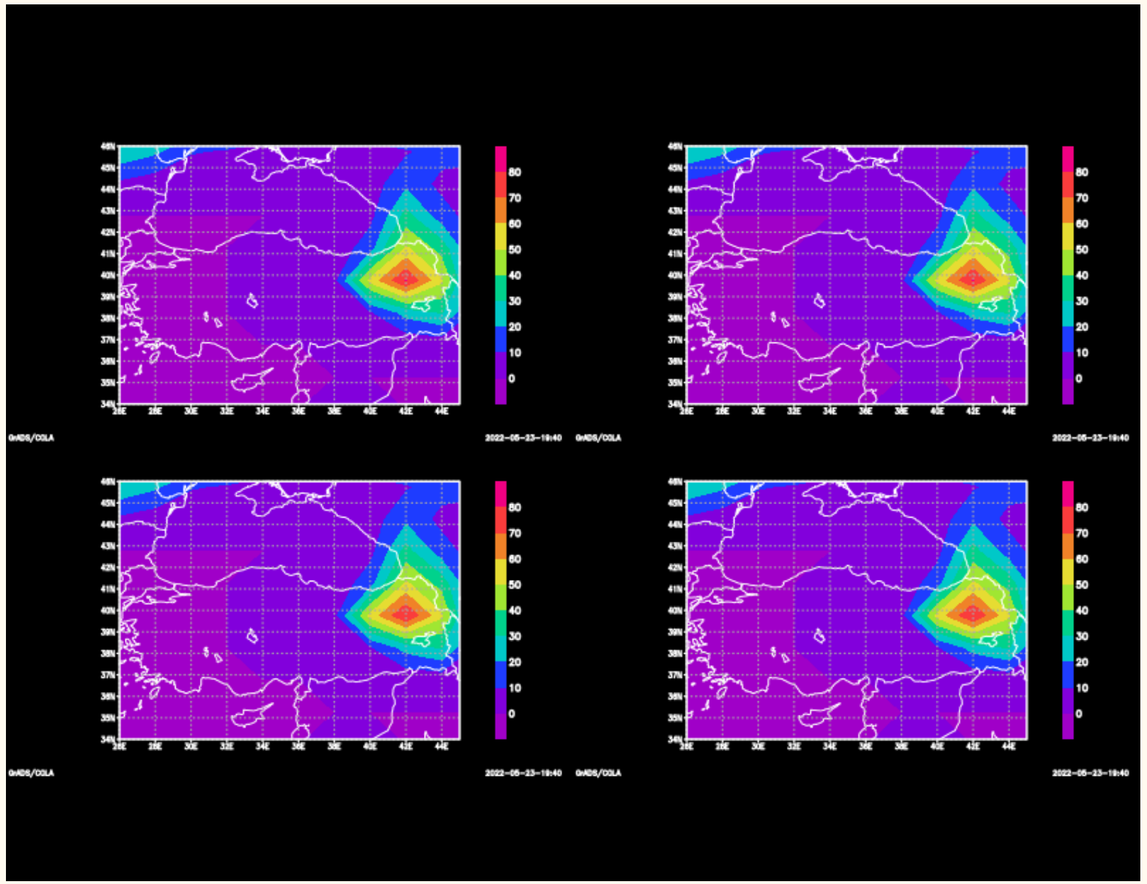

CMIP5 CanESM2
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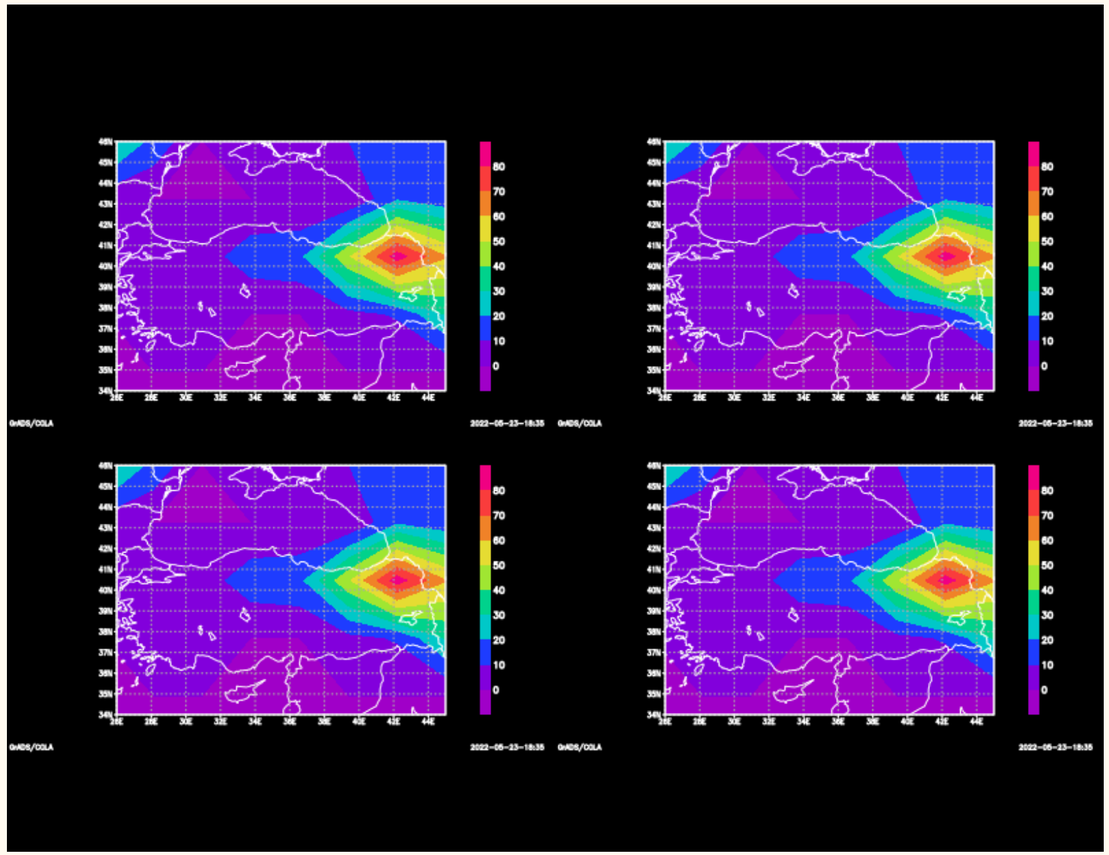

CMIP6 CanESM5
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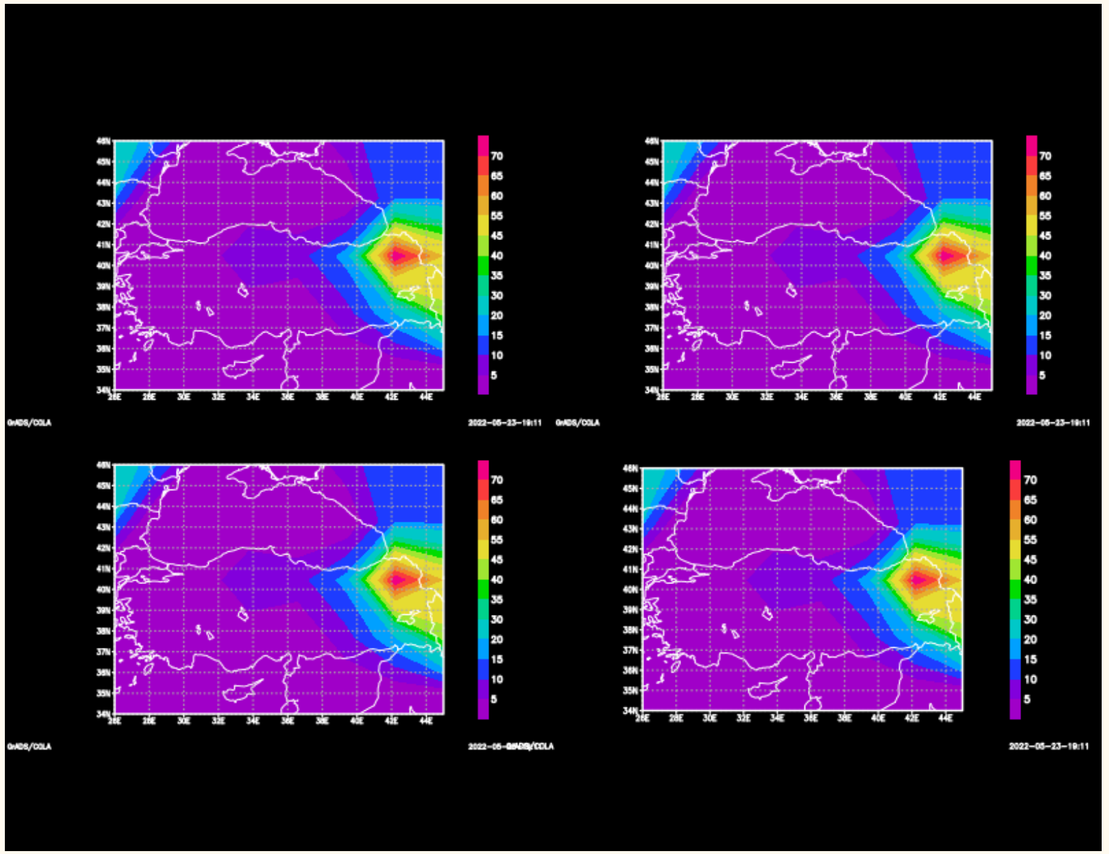
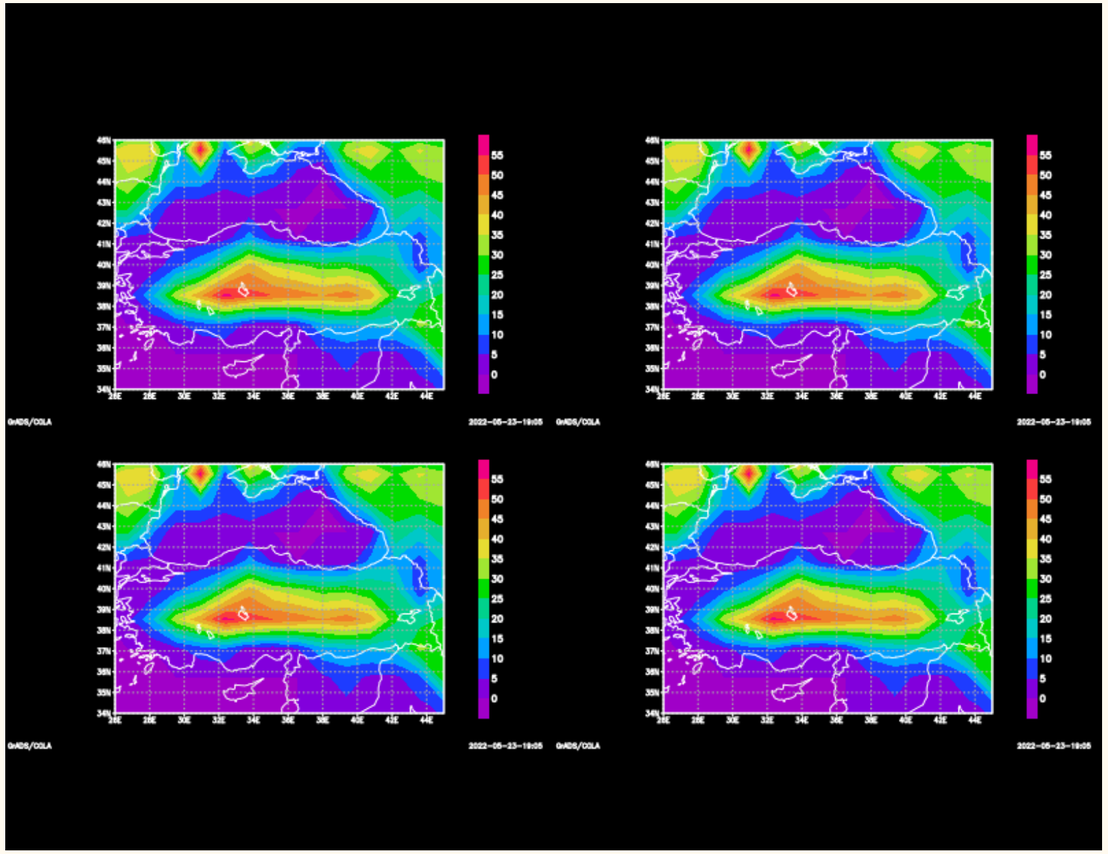


CMIP5 MIROC5
FDNS



CMIP6 MIROC6
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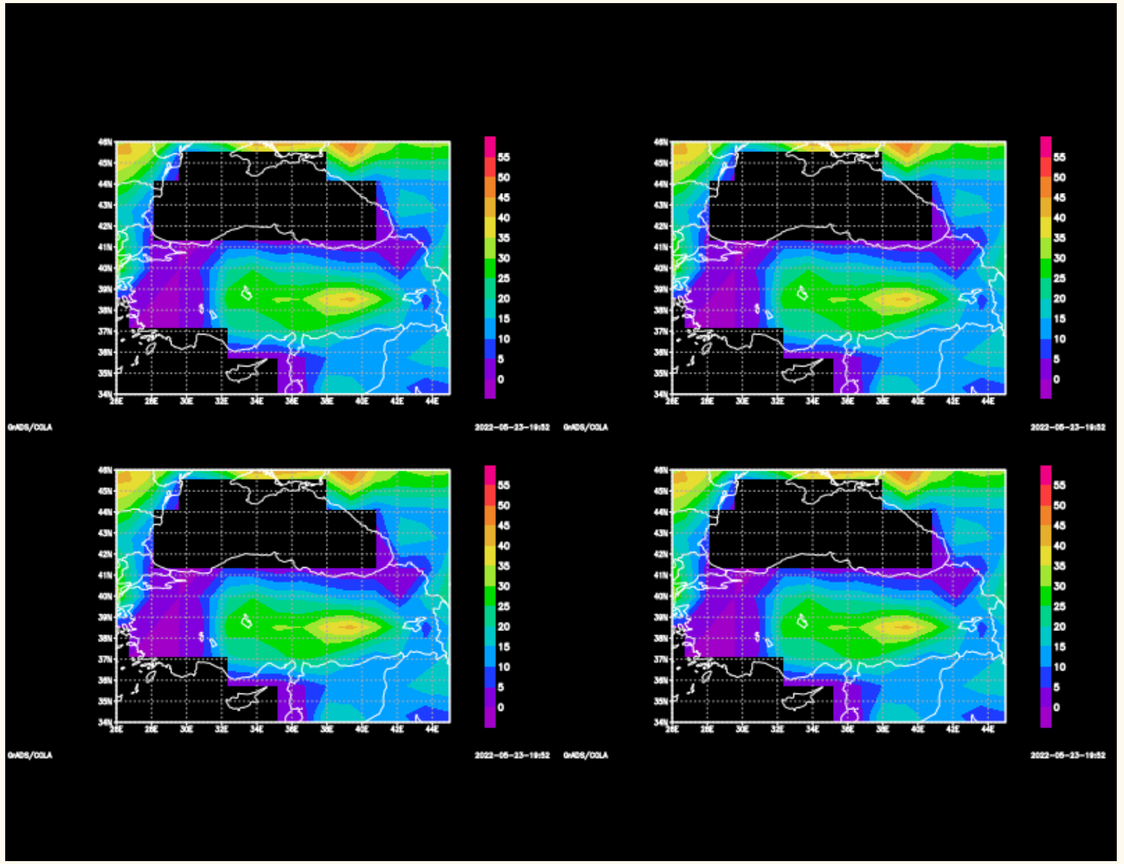

CMIP5 CanESM2
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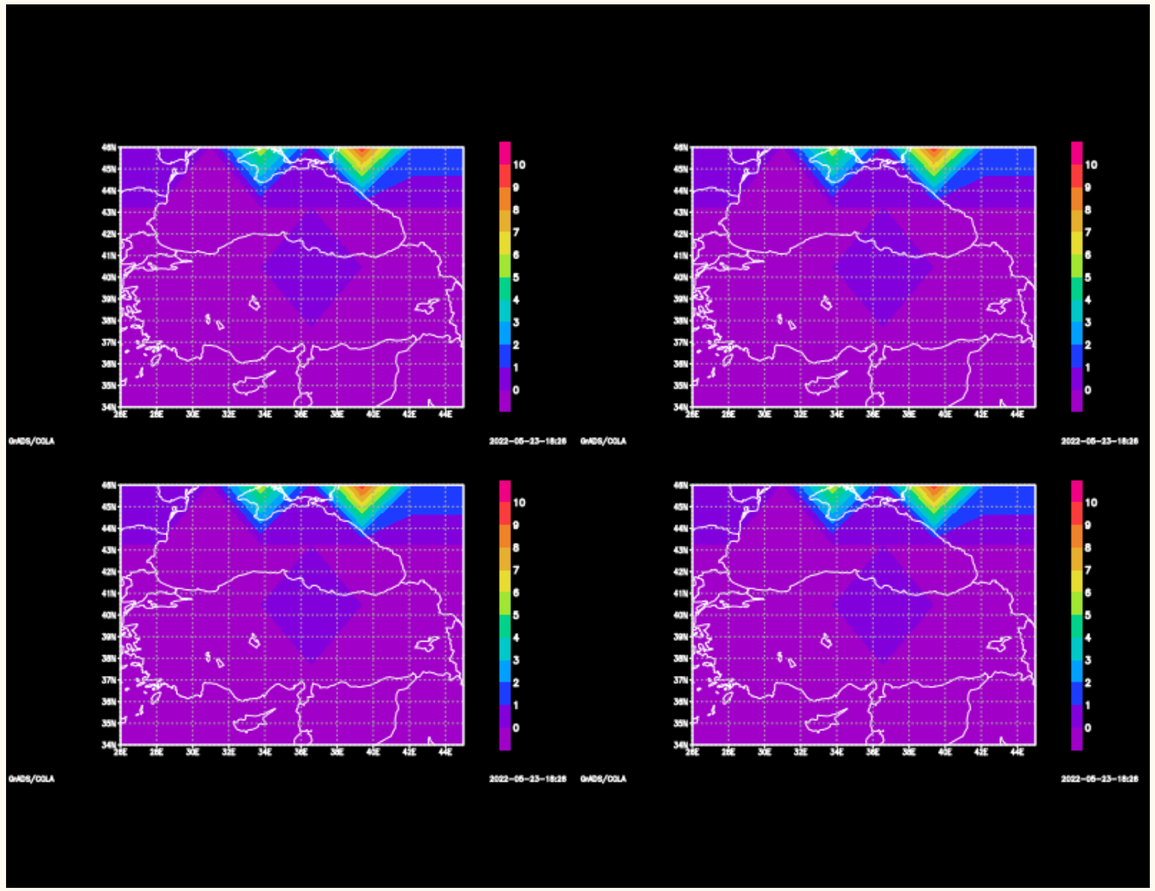

CMIP6 CanESM5
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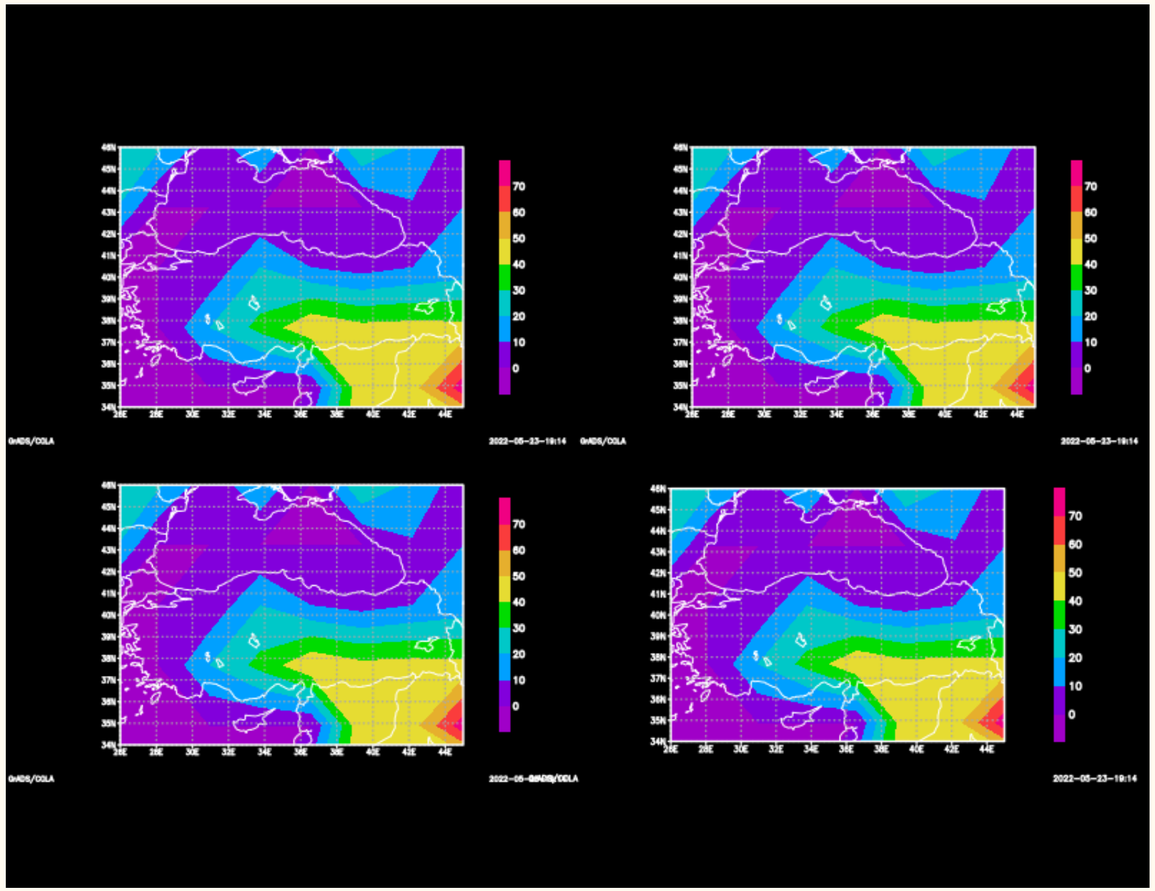

CMIP5 INM-CM4
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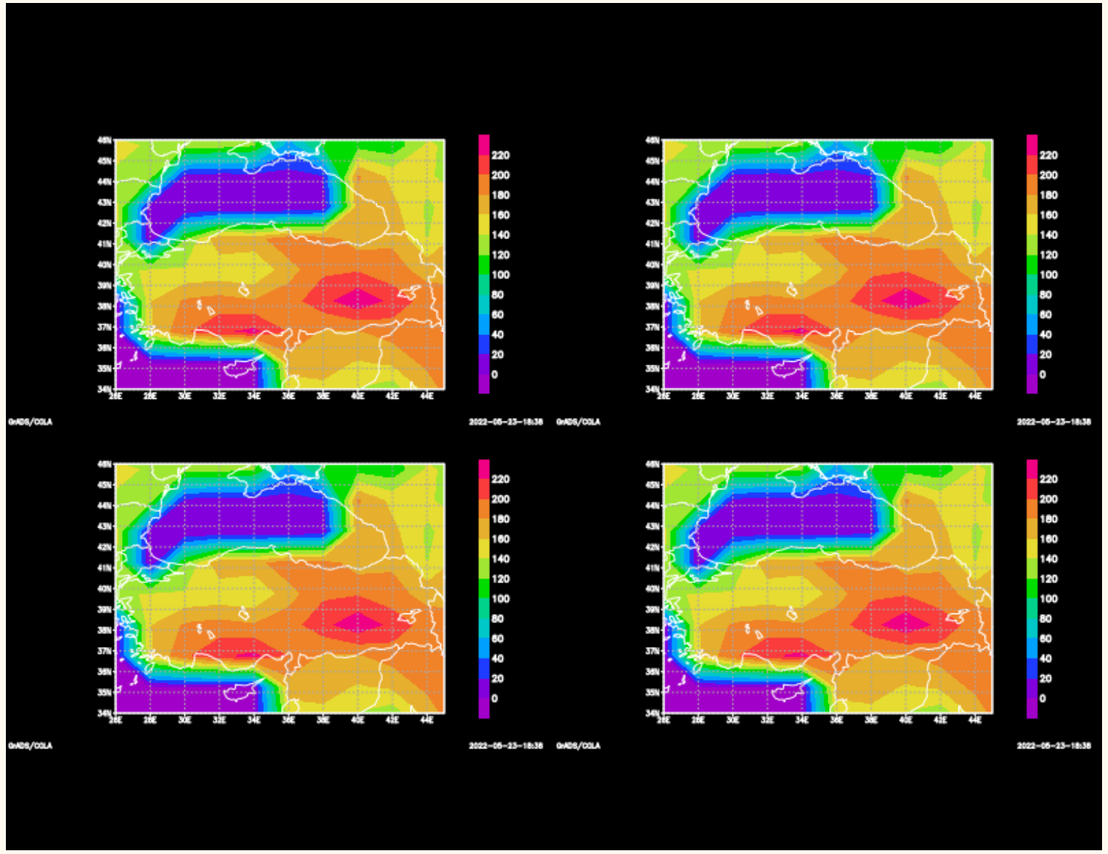

CMIP6 INM-CM4-8
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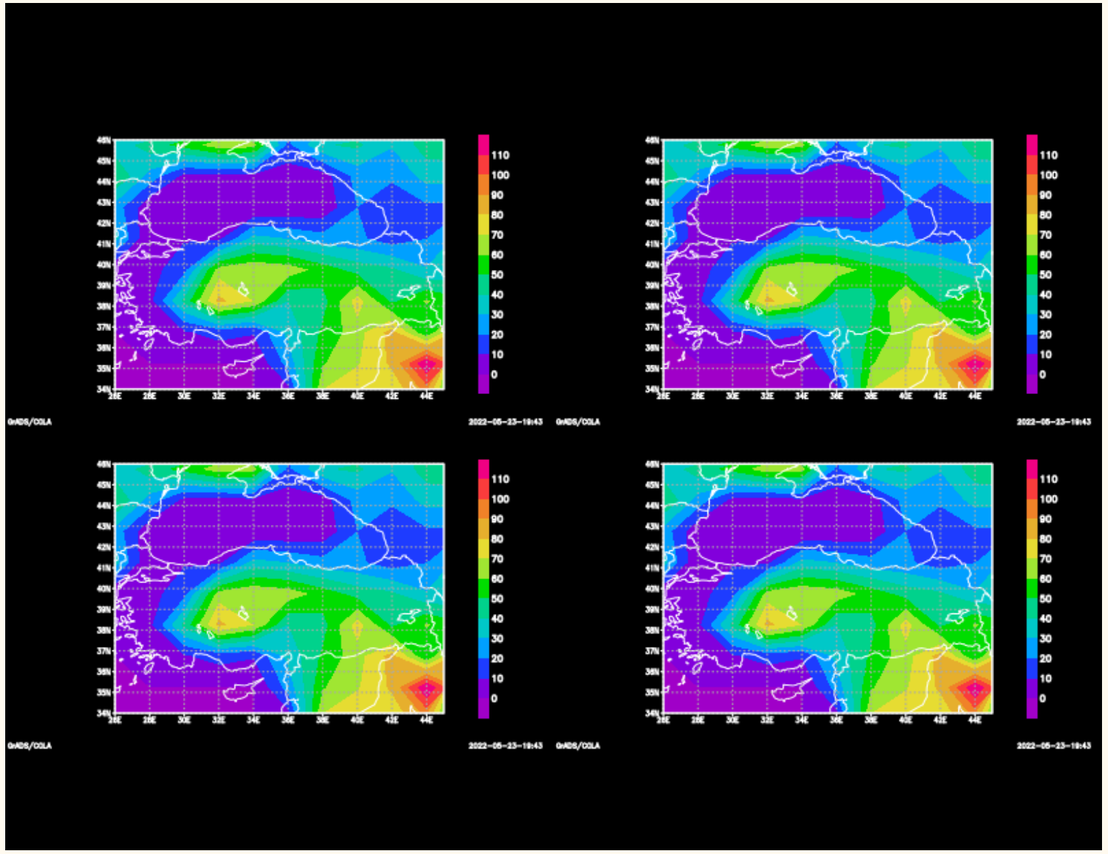

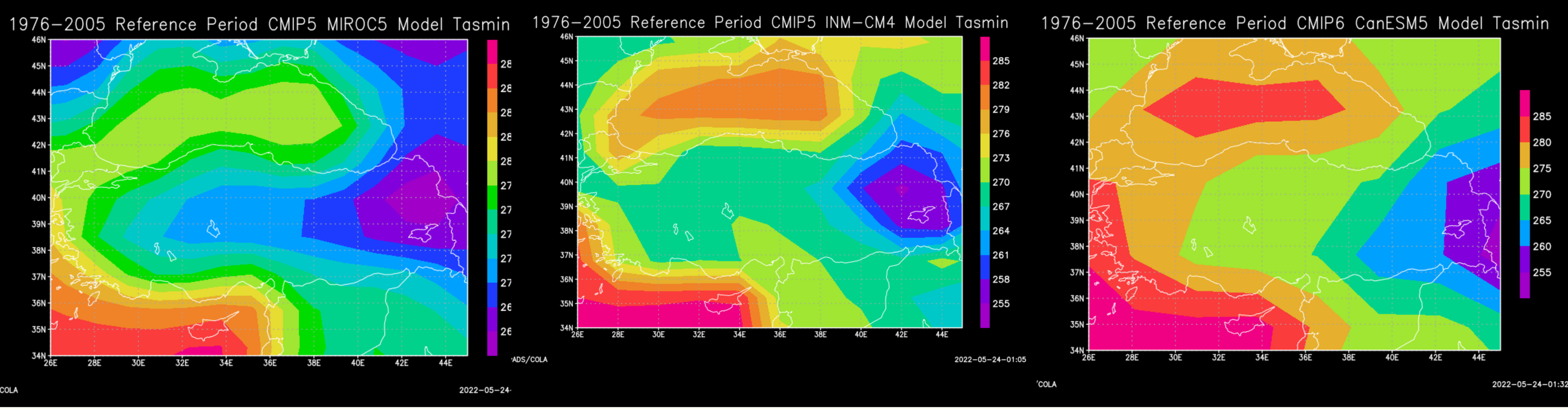
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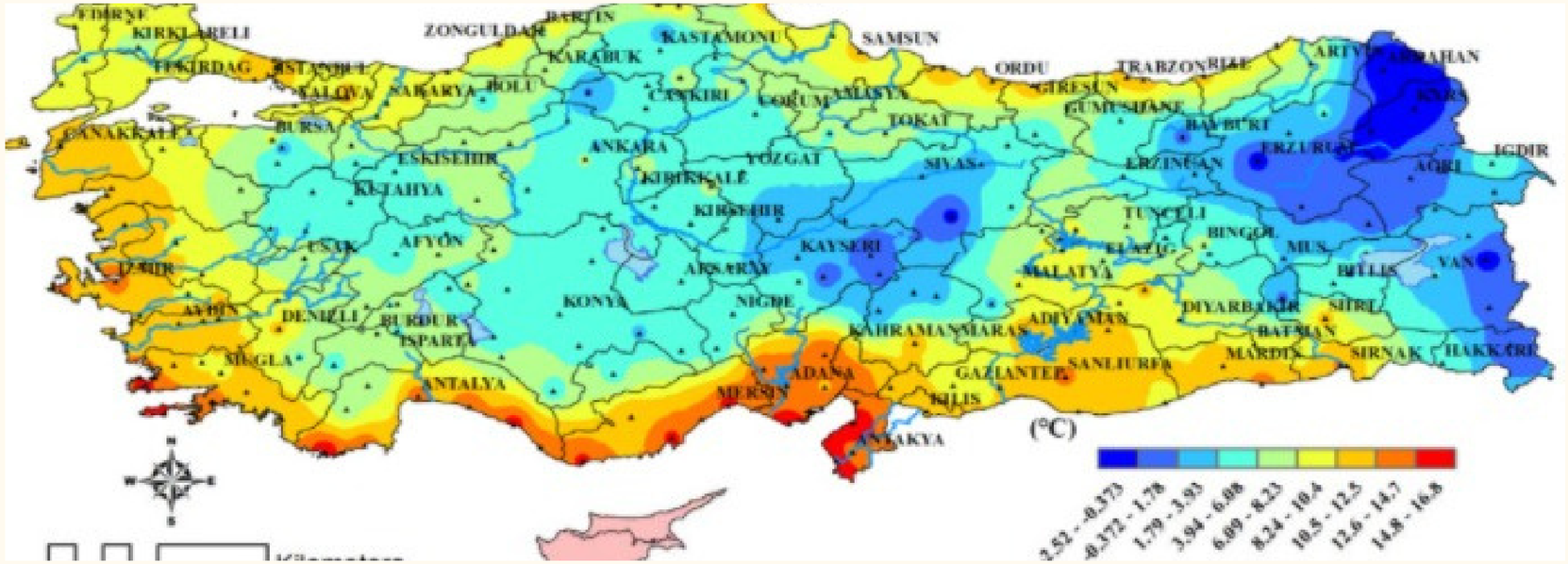
2022–05–24–01:32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1.79 - 3.93
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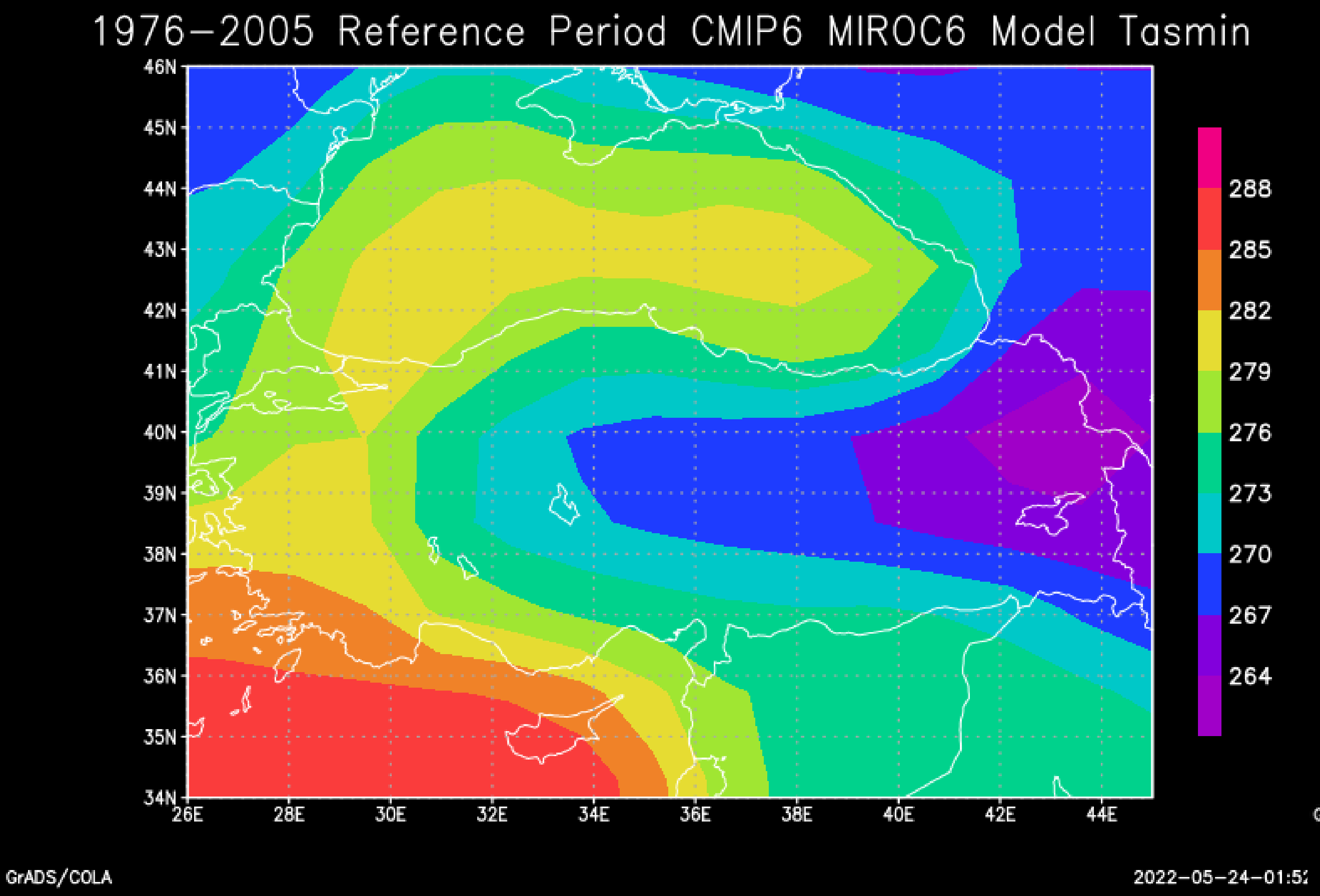
12.6 - 14.7
14.8 - 16.8


1976−2005 Reference Period CMIP6 MIROC6 Model Tasmin
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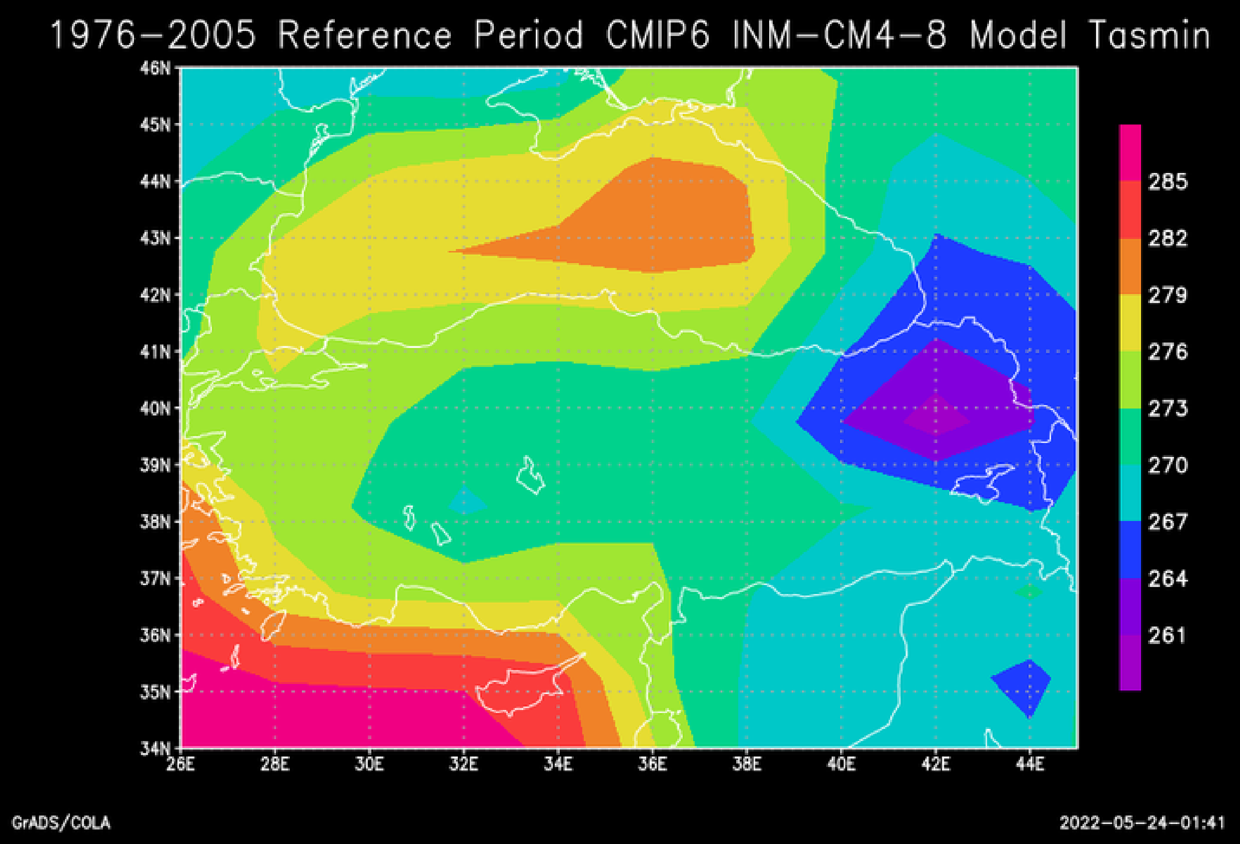
1976−2005 Reference Period CMIP6 INM−CM4−8 Model Tasmin
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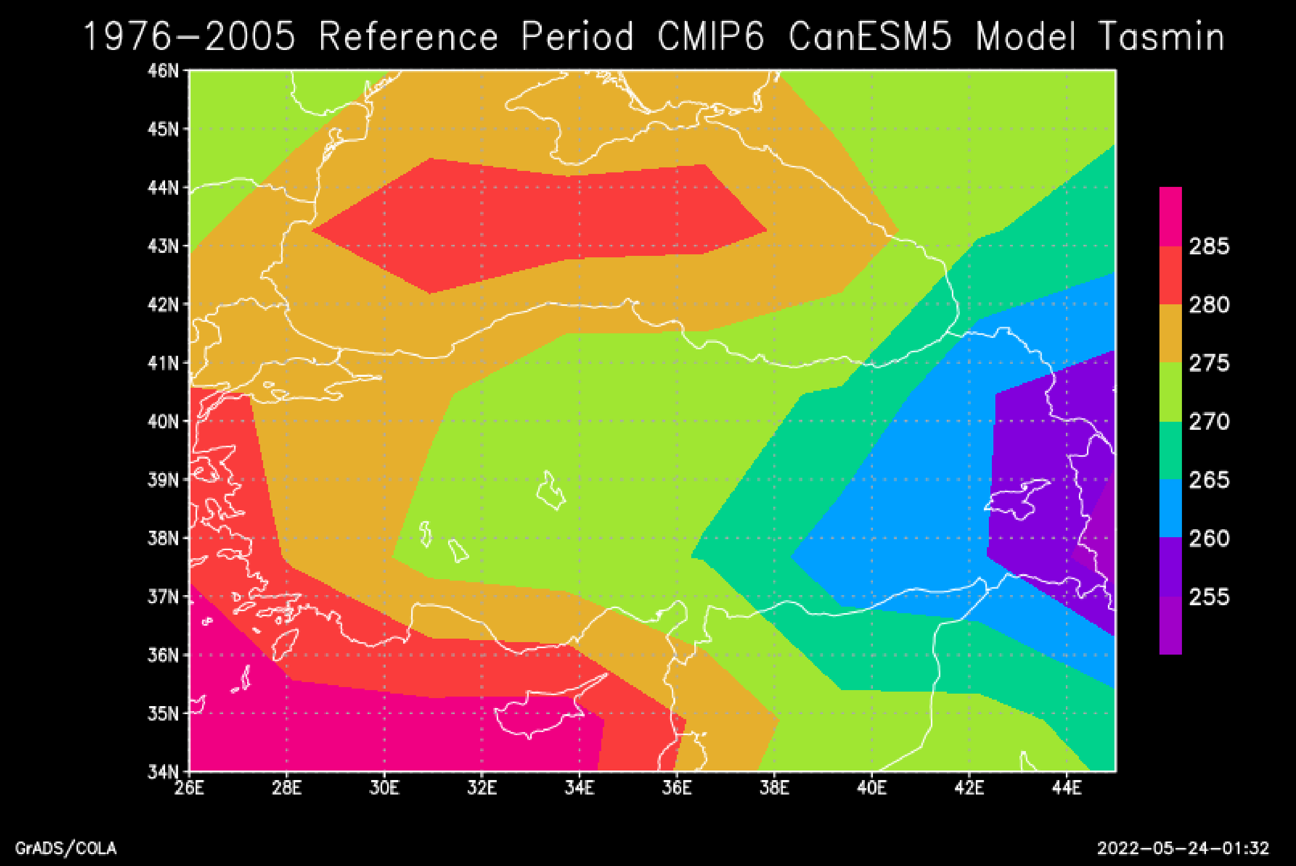
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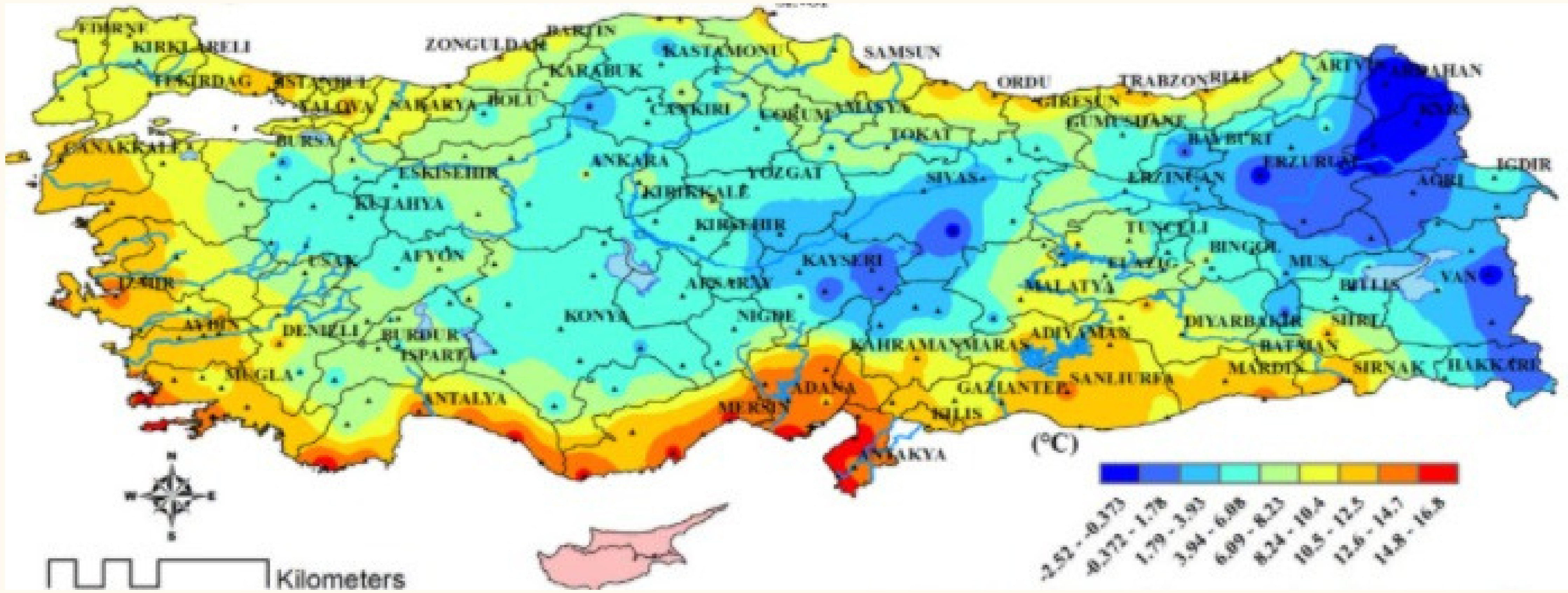
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YALOVA
BURSA
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SIVAS
ERZINCAN
ERZURUM
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KUTAHYA
KIRSEHIR
KAYSERI
TUNCELI
BINGOL
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USAK
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(°C)
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1.79 - 3.93
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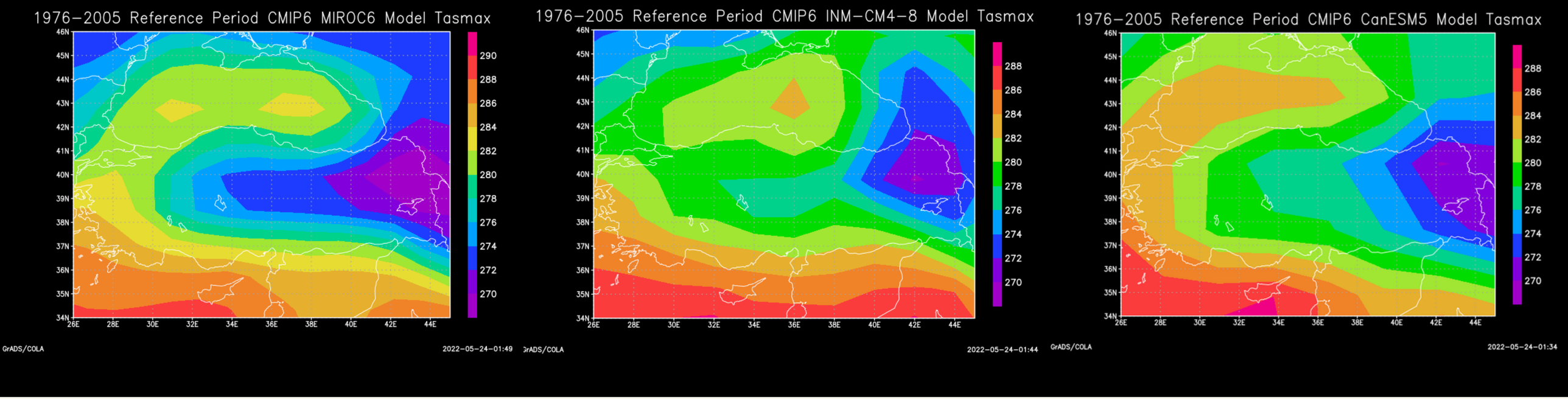
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1976–2005 Reference Period CMIP6 INM-CM4-8 Model Tasmax
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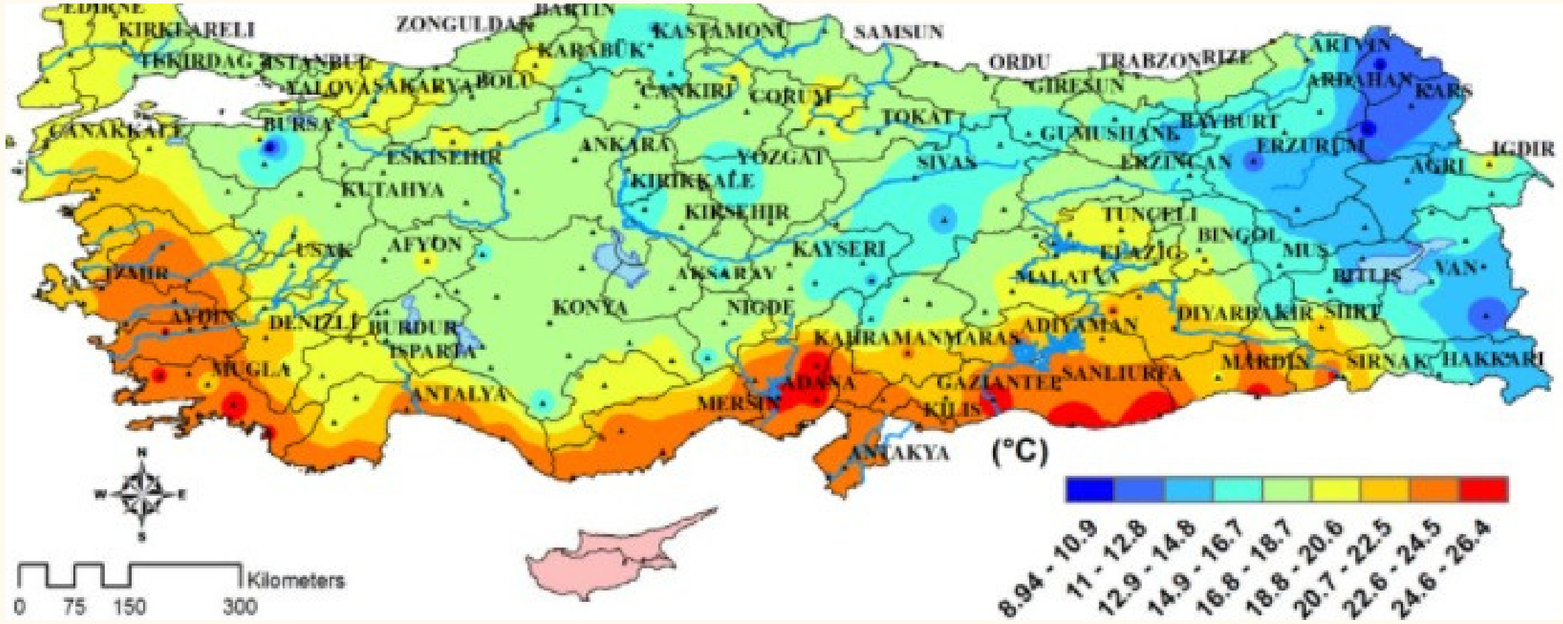
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ERZURUM
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GUMUSHANE
TOKAT
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TUNCELI
(°C)
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Kilometers
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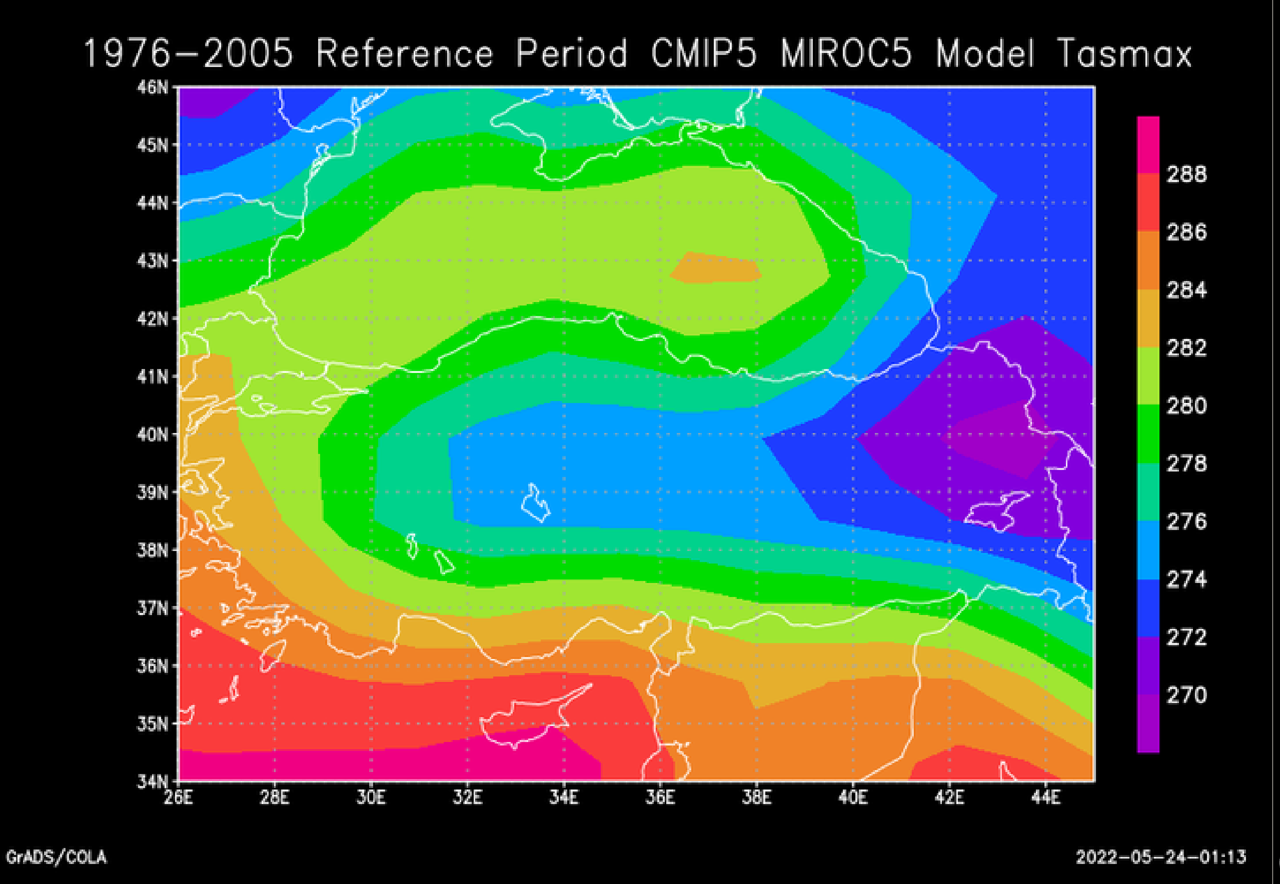
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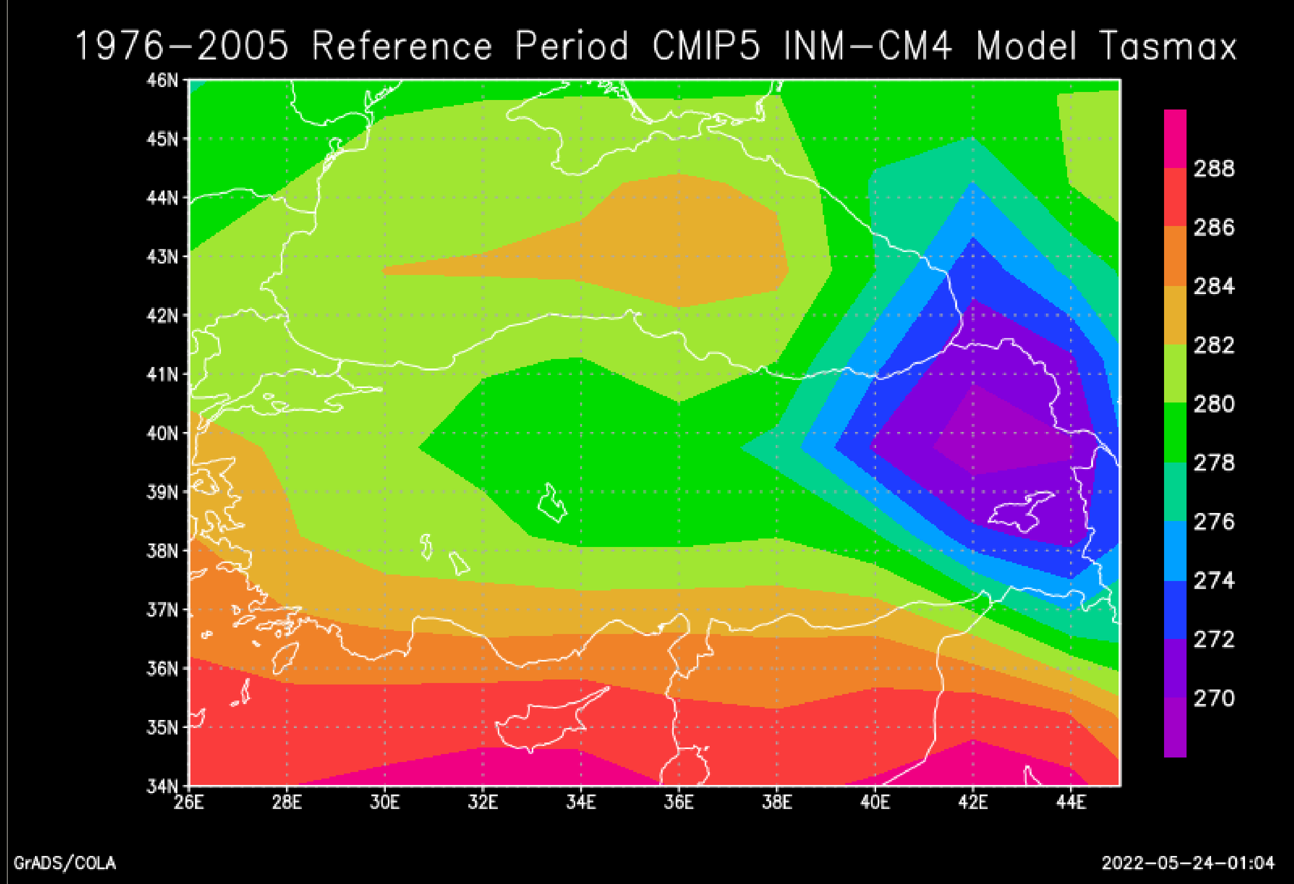
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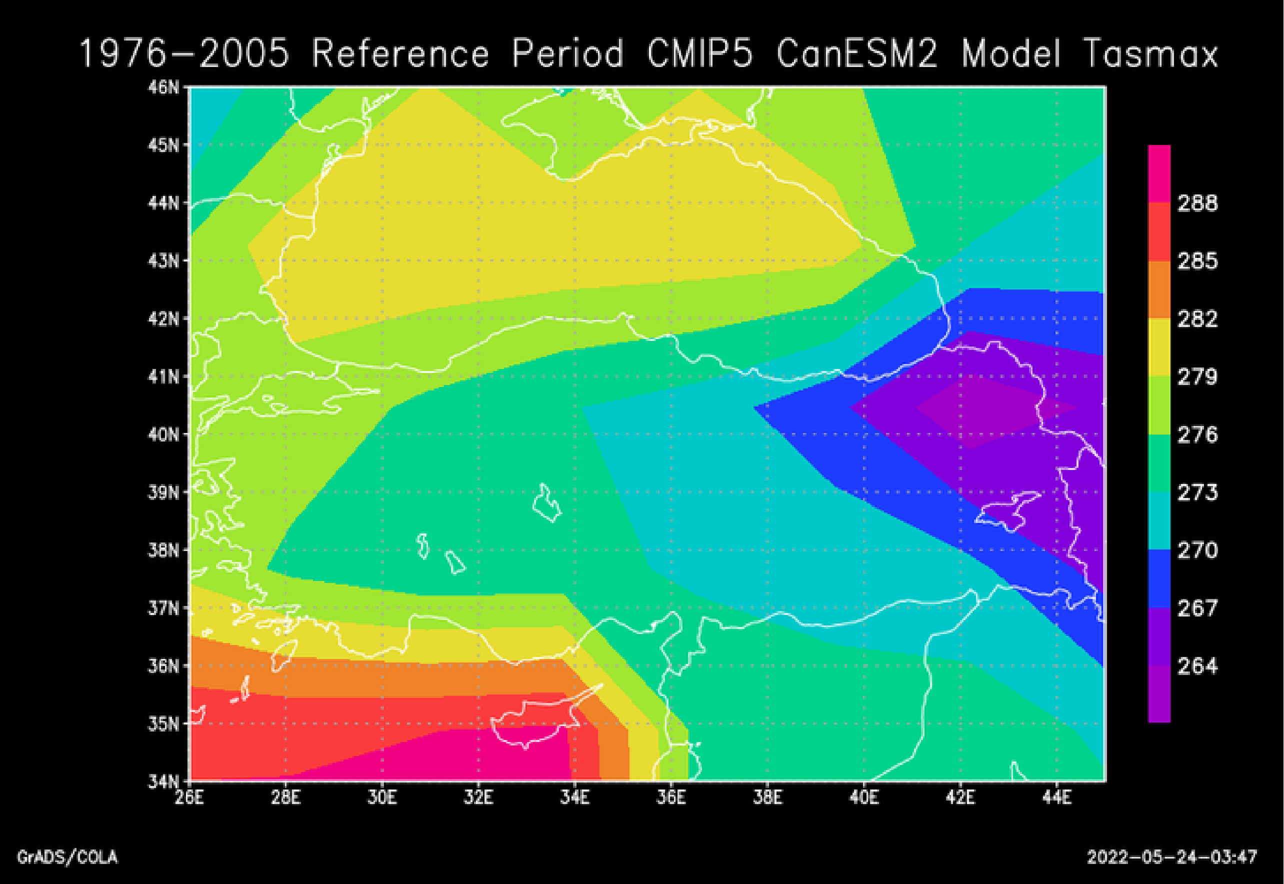
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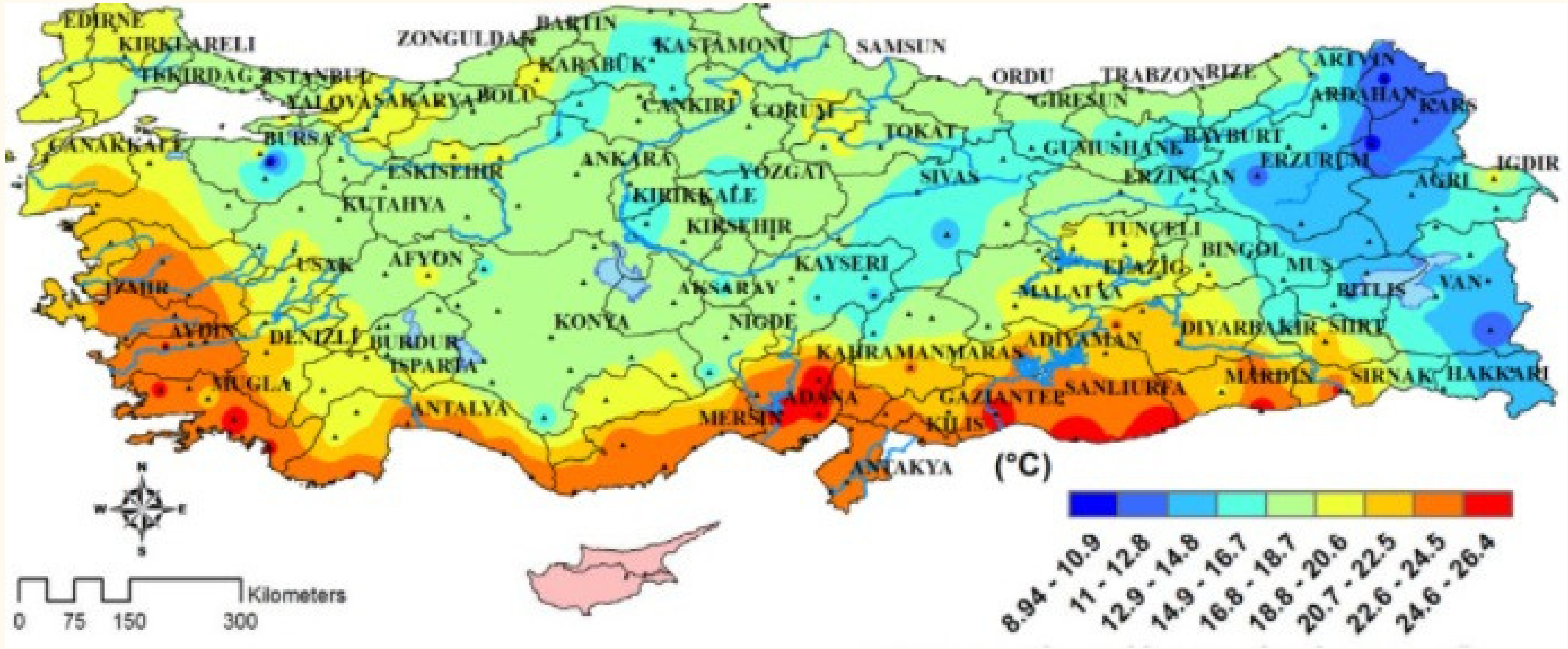
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MERSIN
GAZIANTEP
SANLIURFA
KILIS
ANTAKYA
(°C)
8.94 - 10.9
11 - 12.8
12.9 - 14.8
14.9 - 16.7
16.8 - 18.7
18.8 - 20.6
20.7 - 22.5
22.6 - 24.5
24.6 - 26.4
Kilometers
0
75
150
300

Thank You For Listening

Questions and Comments

Contact: aksual18@itu.edu.tr

MetBee
Istanbul Technical University

References

01 Schulzweida U., Kornblueh, L., Max Plank Institut for Meteorology

02 TUTEN, TURKISH STATE METEOROLOGICAL SERVICES, n.d

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04 CMIP6 data search | CMIP6 | ESGF-cog - ESGF-LLNL - home. (n.d.). Retrieved May 24, 2022, from https://esgf-node.llnl.gov/search/cmip6