

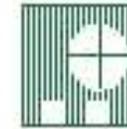
FIG

Presented at the FIG Working Week 2017,  
May 29 - June 2, 2017 in Helsinki, Finland

# FIG WORKING WEEK 2017

Surveying the world of tomorrow -  
From digitalisation to augmented reality

May 29 - June 2 Helsinki Finland



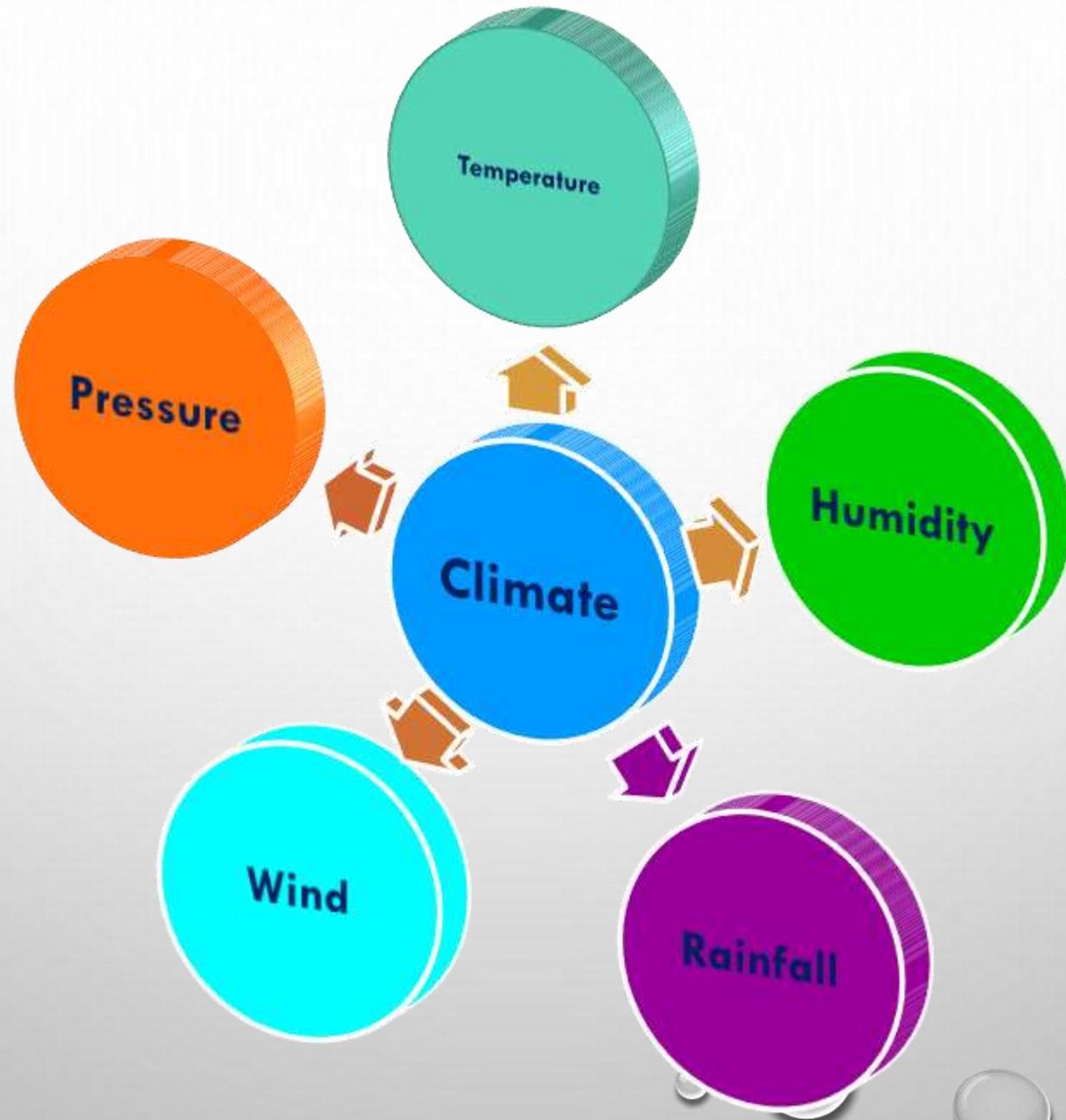
## SPATIAL AND TEMPORAL STUDIES ON CLIMATE CHARACTERISTICS BY GIS IN ISTANBUL, TURKEY

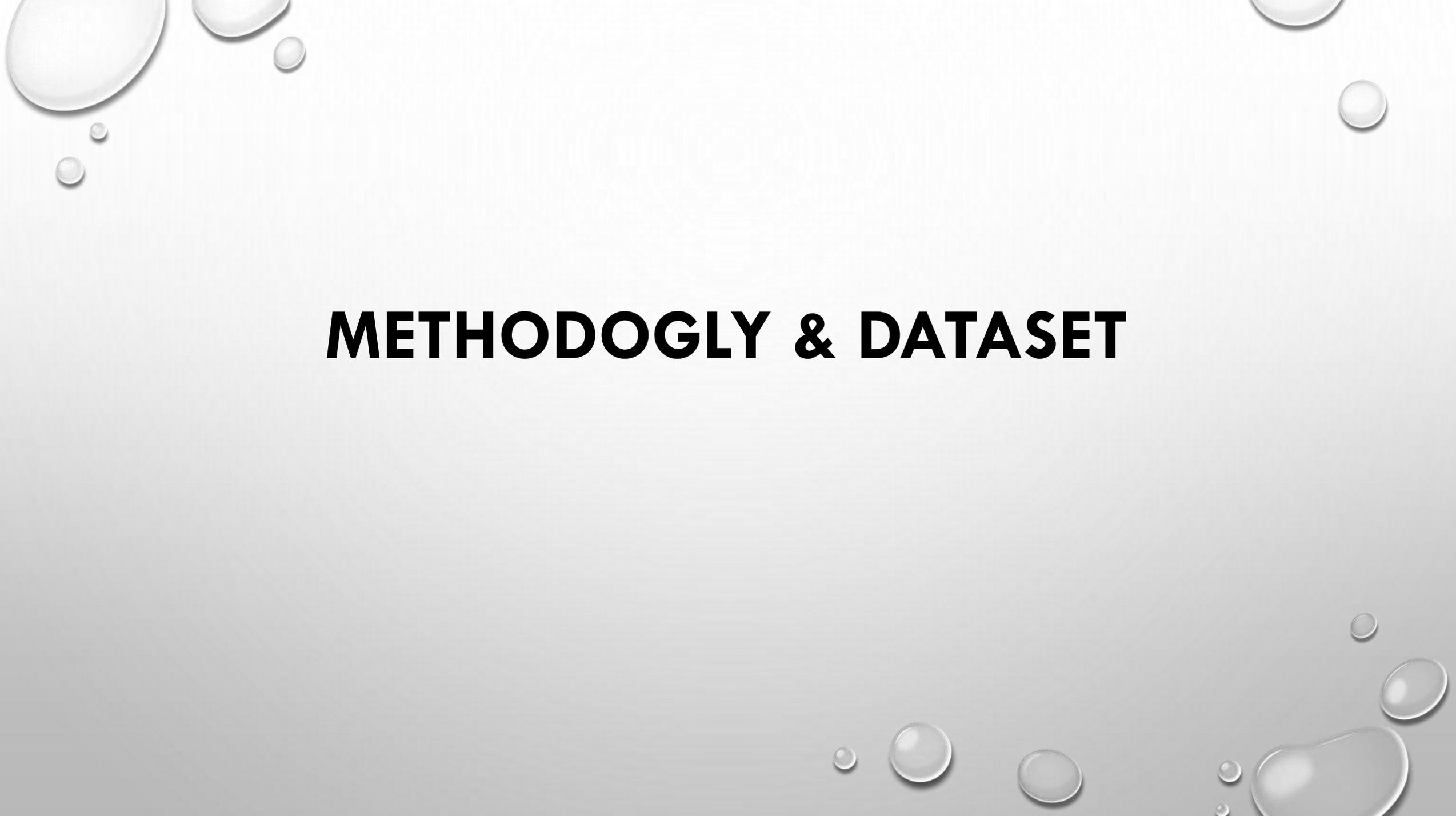
ASLI DOGRU, DENIZ OKCU, ASLI SABUNCU, HALUK OZENER



# **MOTIVATION**

This study motivation is to create distribution maps using interpolation techniques with different meteorological data and to examine relationship to each other between spatial information.



The background features a light gray gradient with several realistic water droplets of various sizes scattered in the corners. The droplets have highlights and shadows, giving them a three-dimensional appearance.

# **METHODOLOGY & DATASET**

- In this study, Bahceköy, Florya, Göztepe, Kandilli, Kartal, Kirecburnu, Kumkoy, Sile meteorology stations data were used. These stations were situated in the border of Istanbul.
- The changes of meteorological parameters (air temperature, total rainfall and relative humidity) of ground observation stations used in the study were statistically analyzed by using EXCEL, SPSS and MATLAB software.
- All data were transferred GIS environment via ArcGIS software and generated distribution maps by using interpolation methods.
- Creating climate maps, meteorological regime, geographical location and characteristics are significant parameters as well as statistical approaches are adopted in recent years.

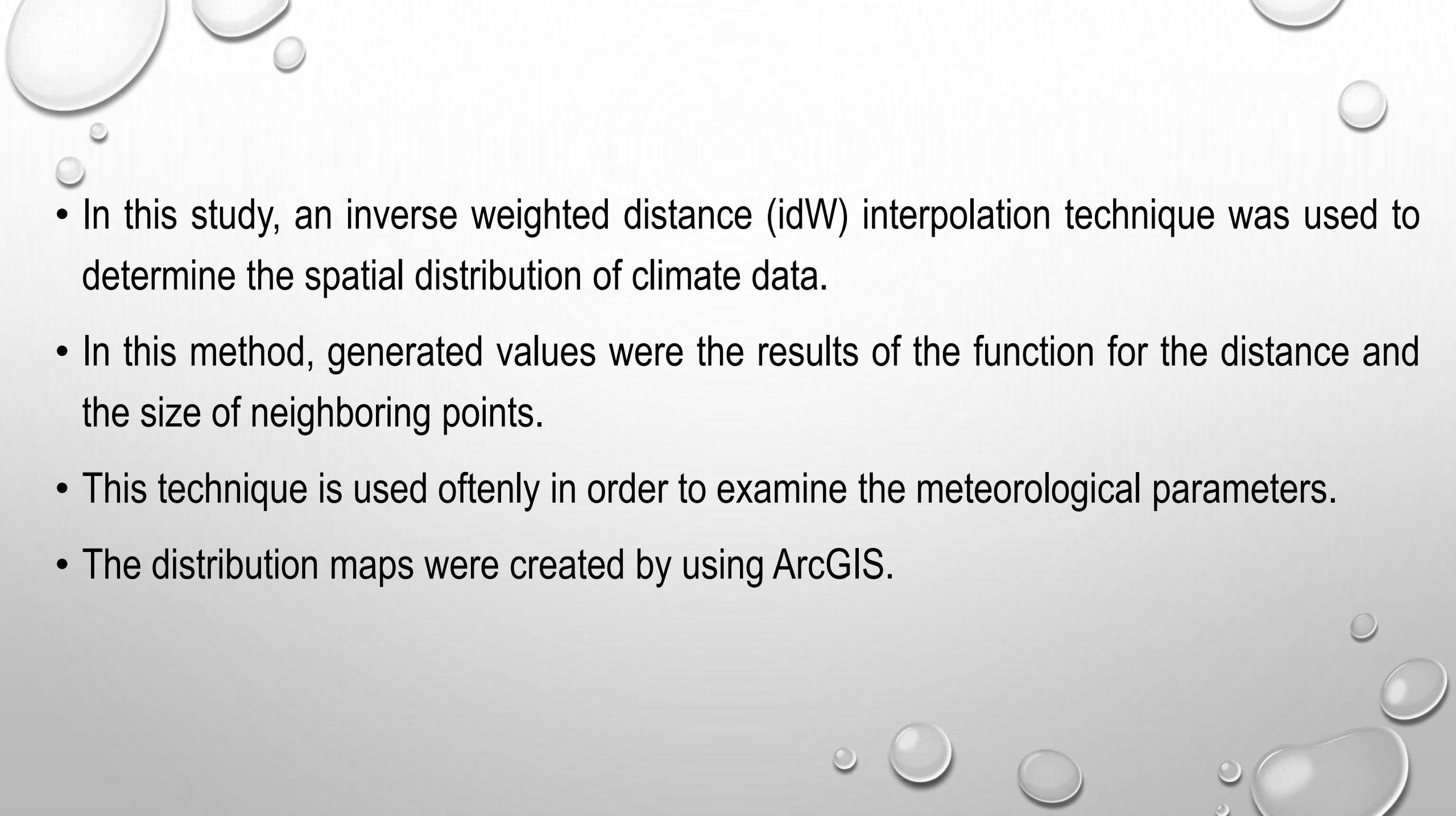
## METHOD & DATASETS



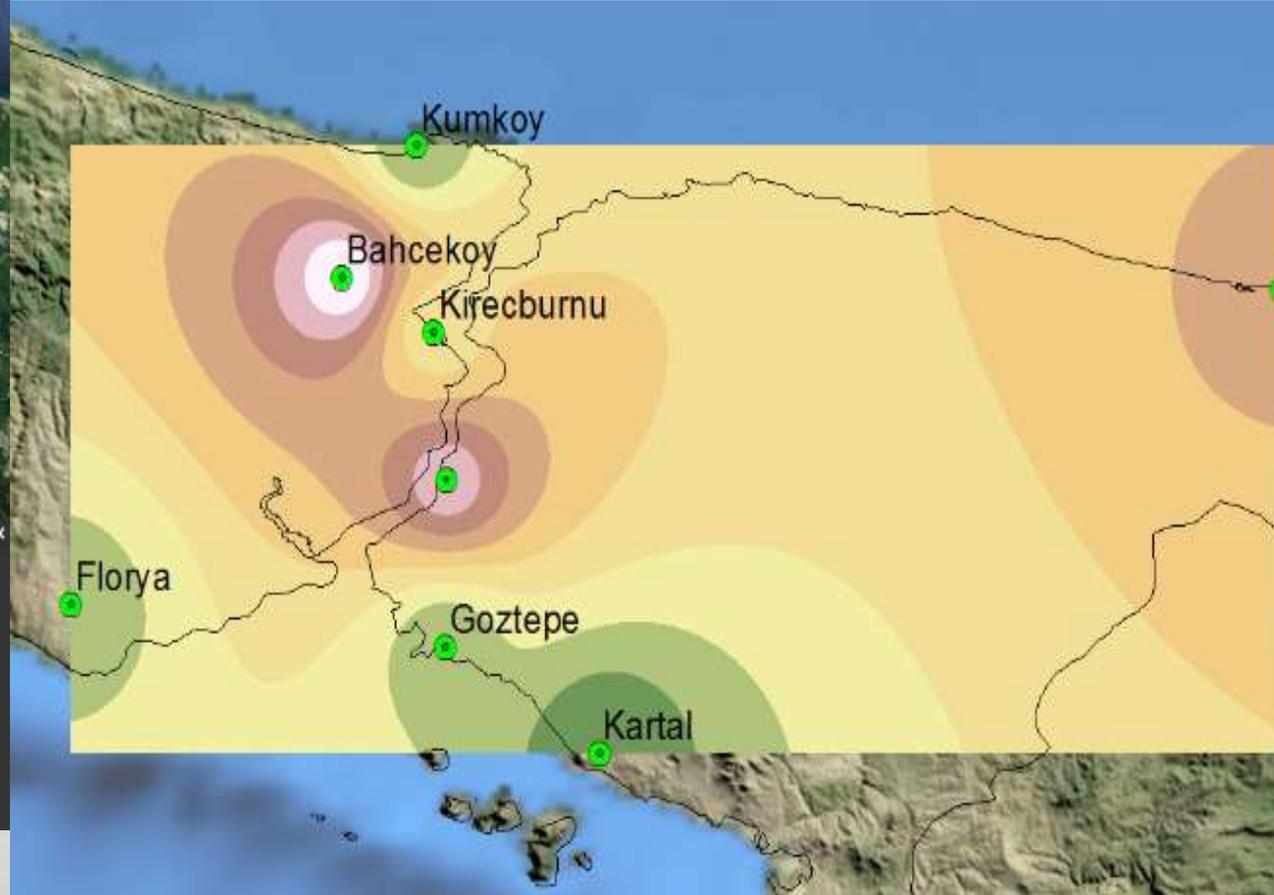
Meteorological parameters for the seven stations were obtained from General Directorate of Meteorology (GDM) except from Kandilli station

# Station Informations, Meteorological Parameters & Periods

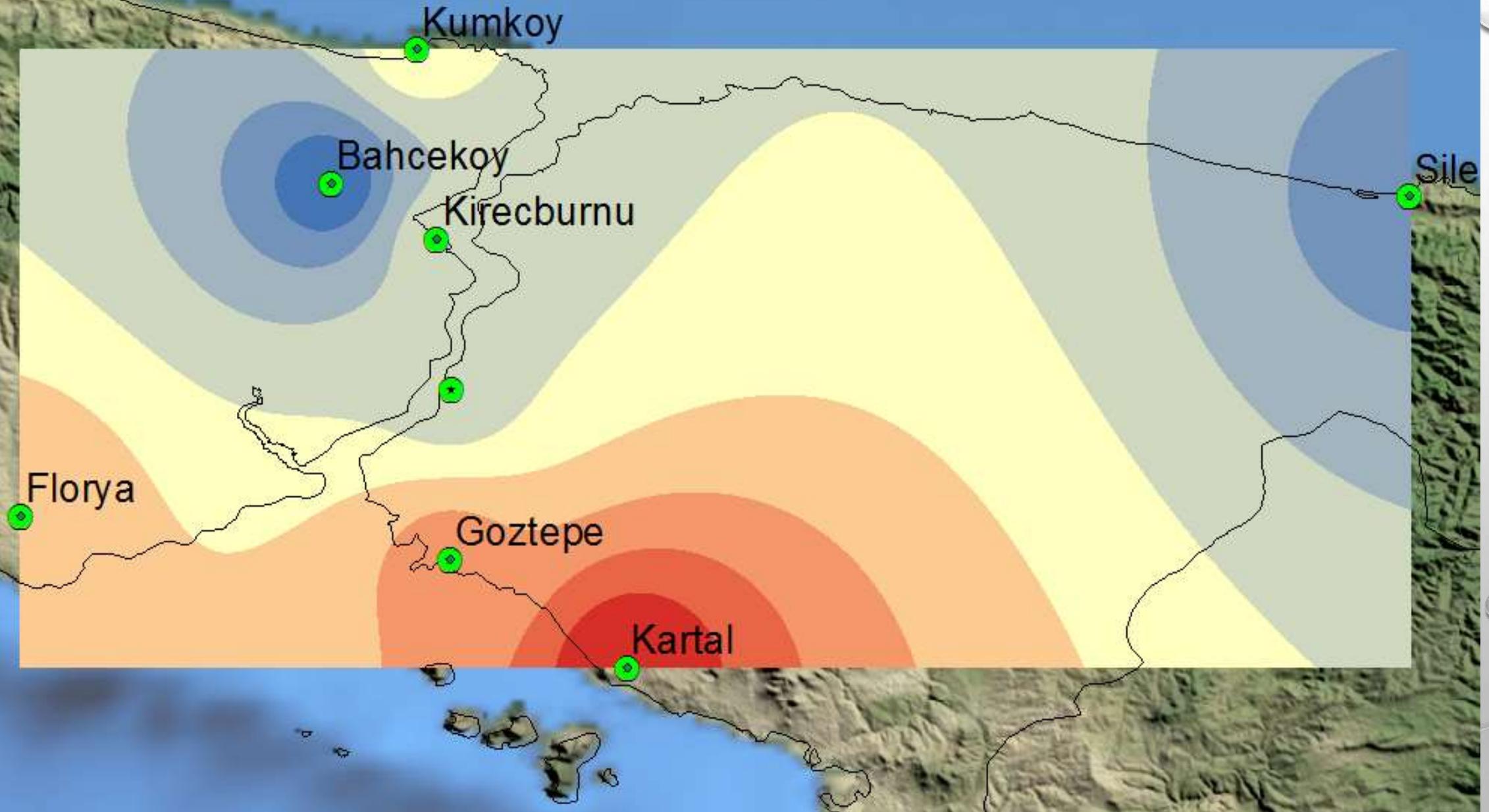
Station no	GDM Station No	Station Name	Latitude (N)	Longitude (E)	Height (m)	Meteorological parameters period	Meteorological parameters
1	17619	Bahçeköy	41° 10'	28° 59'	130		
2	17636	Florya	40° 59'	28° 45'	36		
3			40° 58'	29° 03'			Monthly
	17062	Göztepe			33		
4	B.U.	Kandilli	41° 04'	29° 04'	114	(1976-2016)	Avr. Temperature
5			40° 54'	29° 09'			Total Precipitation
6	17638	Kartal			18		
			41° 08'	29° 03'			Relative Humidity
7	17061	Kireçburnu			58		
	17059	Kumköy	41° 15'	29° 02'	30		
8	17610	Şile	40° 47'	30° 25'	83		

- 
- In this study, an inverse weighted distance (idW) interpolation technique was used to determine the spatial distribution of climate data.
  - In this method, generated values were the results of the function for the distance and the size of neighboring points.
  - This technique is used oftenly in order to examine the meteorological parameters.
  - The distribution maps were created by using ArcGIS.

# Case study profile & Height changes

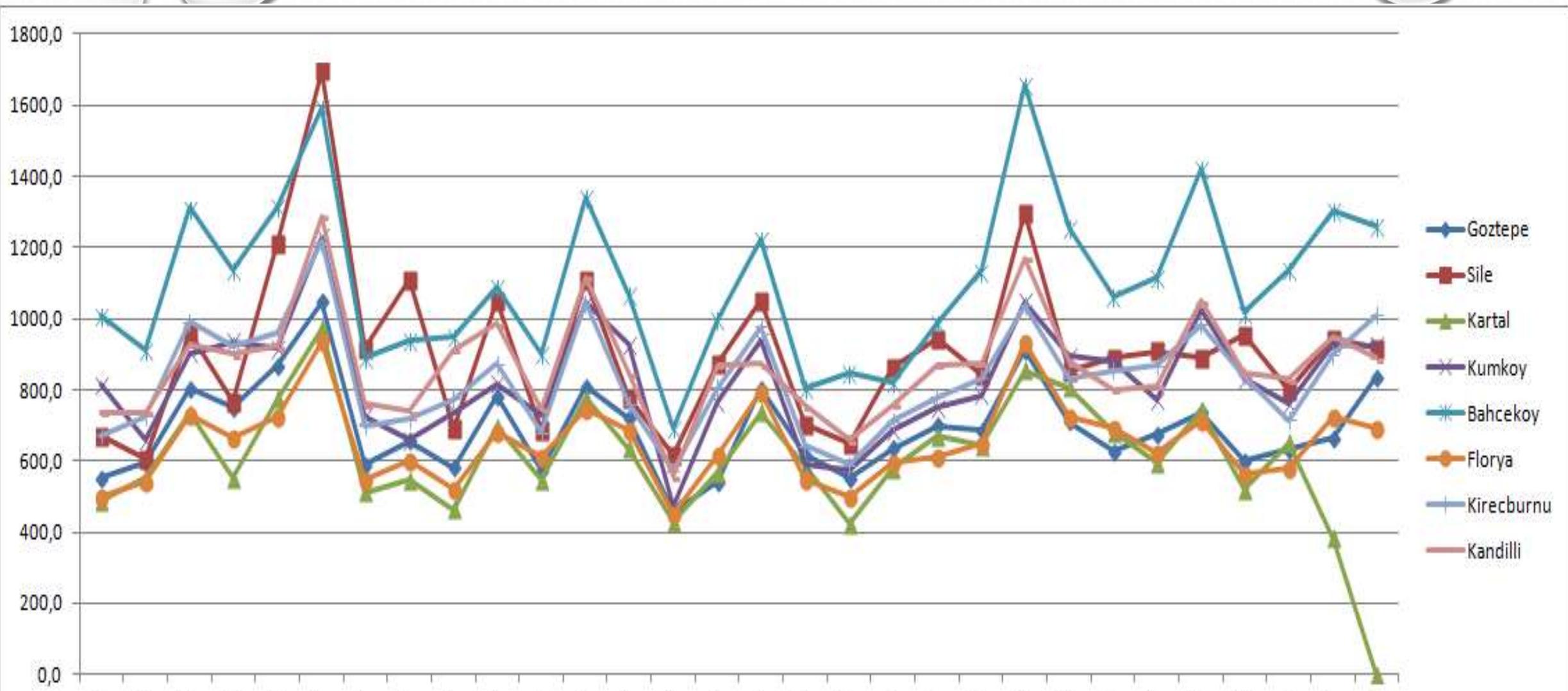


# *Distribution of mean annual temperature for Istanbul*

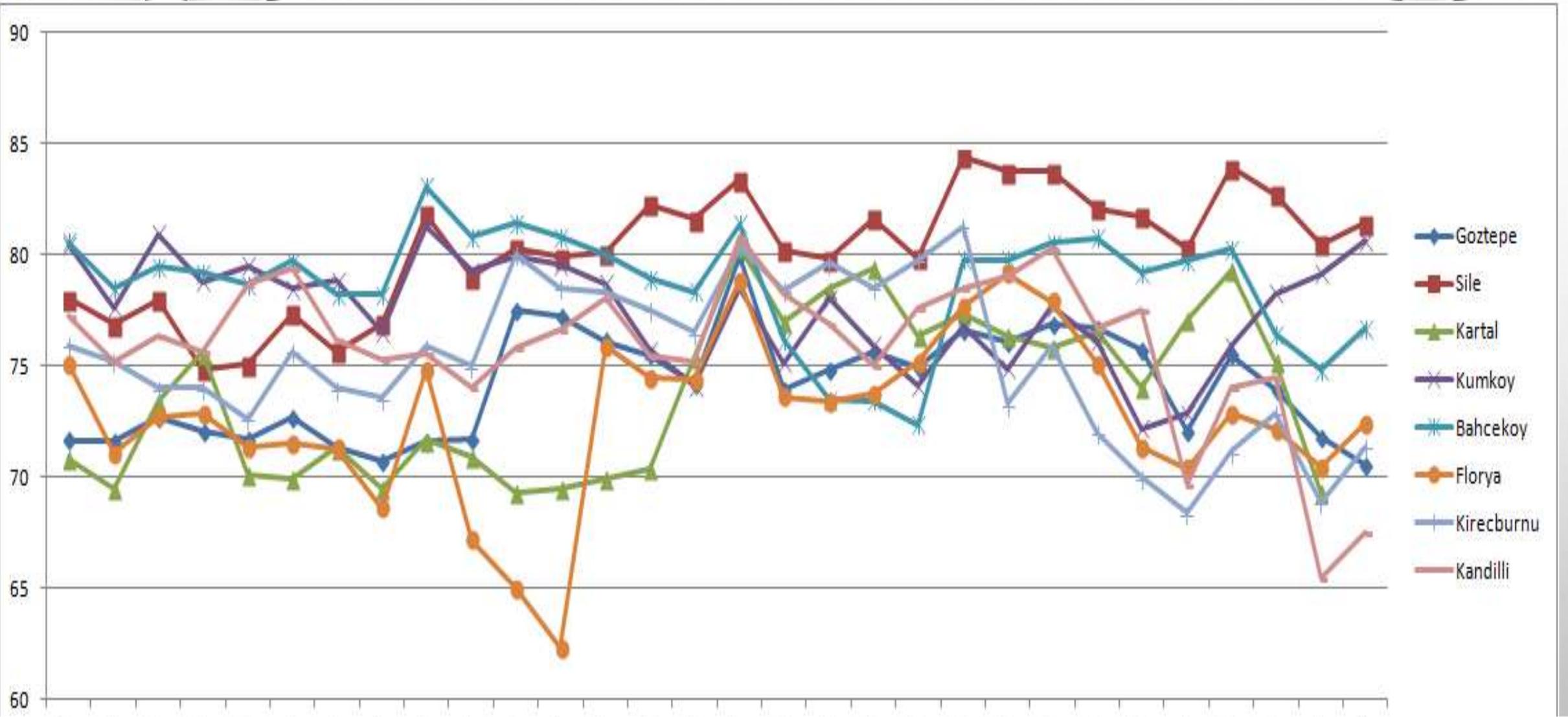


The background of the slide is a light gray gradient. It is decorated with several realistic water droplets of various sizes, scattered in the corners. The droplets have highlights and shadows, giving them a three-dimensional appearance. The text "RESULTS & CONCLUSION" is centered in the middle of the slide.

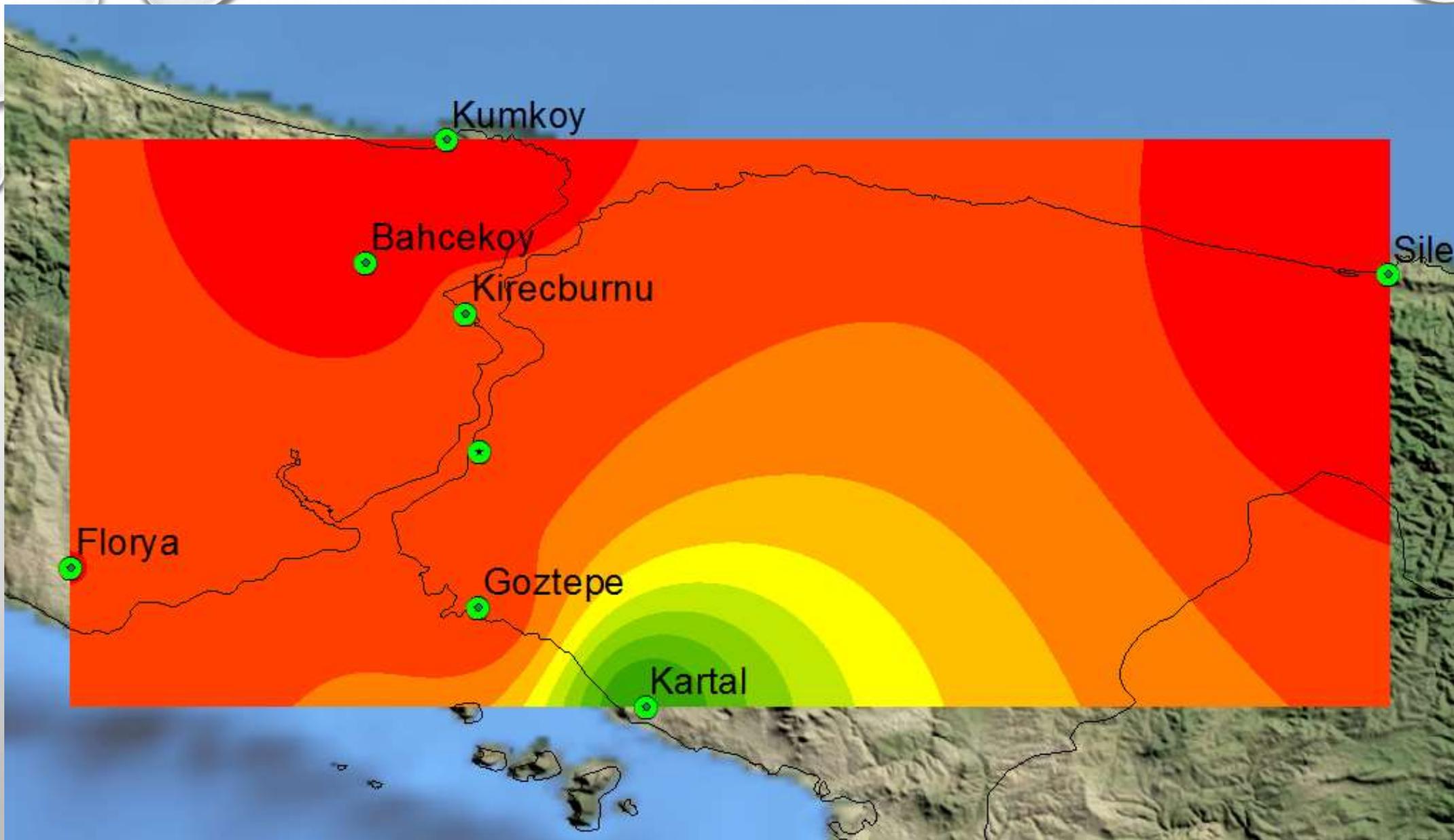
# **RESULTS & CONCLUSION**



The total annual precipitation change chart for the long term period (1976-2016), for stations, Bahçeköy, Florya, Göztepe, Kandilli, Kartal, Kireçburnu, Kumköy, Şile was displayed in above figure.



Variations in annual mean relative humidity (%) based on long-term (1976-2016) observations of Bahçeköy, Florya, Göztepe, Kandilli, Kartal, Kireçburnu, Kumköy, Şile Meteorology Stations were displayed above figure.



Annual humidity distribution of Istanbul 1976-2016.

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**THANK YOU FOR YOUR  
ATTENDANCE**