

**WEATHER  
AND  
CLIMATE**

# WEATHER AND CLIMATE

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## **Main Objectives:**

1. To use climate graphs and tables to describe the climate of Madrid and other regions of Spain.
2. To differentiate between climate and weather.
3. To follow, read and interpret the weather.
4. To make comparison between the climate in Spain with that of other world regions.
5. To convert information from climate tables into a climate graph.

## *Useful Websites on Weather and Climate*

<http://www.bbc.co.uk/weather/weatherwise/factfiles/>

*The BBC weather website is a fabulous resource for building up climate profiles.*

<http://www.eastbourne.gov.uk/environment/weather/children/web sites>

*A UK local authority site, with good links and suggested activities.*

<http://www.metoffice.gov.uk/education/primary/teachers/dandt.html>

<http://www.metoffice.gov.uk/education/primary/students/index.html>

*The Meteorological Office website is an excellent information resource for teachers and students.*

<http://www.weatherwizkids.com/>

*Beware! This is an American site and has temperatures in Fahrenheit. However, it has a good interactive temperature converter.*

<http://www.nationalgeographic.com>

*Click on "kids" and search weather.*

**weather**

**climate**

climatic zone

hot

**cold**

**dry**

wet

tropical



**desert**

warm

temperate

cool

temperate

**polar**

**temperature**

rainfall

## Vocabulary Cards

<p><b>weather</b></p>	<p>n. the conditions in the air above the Earth such as wind, rain and temperature, especially at a particular time and in a particular place</p> <p>"The weather in Scotland is very changeable; you need to be ready for all sorts of weather"</p>
<p><b>climate</b></p>	<p>n. the general weather conditions found in a particular place</p> <p>"The Mediterranean has a warm temperate climate good for growing citrus fruit and grapes for wine."</p>
<p><b>climatic zone</b></p>	<p>adj. used to describe an area that shares the same climatic characteristics.</p>

<p><b>tropical</b></p>	<p><b>adj.</b> describes the climate and region found between the Tropic of Cancer and the Tropic of Capricorn.</p> <p>"The Amazon river basin contains the world's largest tropical rainforest."</p>
<p><b>desert</b></p>	<p><b>n.</b> an area often covered in sand or rock, where there is very little rain and very few plants.</p> <p>"We crossed an arid, featureless desert."</p>
<p><b>warm temperate</b></p>	<p><b>adj.</b> describes a climate or region where the summers are warm and the winter is mild.</p> <p>"Southern Europe, California and Florida are warm temperate zones."</p>

<p><b>cool temperate</b></p>	<p><b>adj.</b> describes a climate or region where the summers are warm and the winter is cold. Northern Europe and Canada are in cool temperate zones.</p>
<p><b>polar</b></p>	<p><b>adj.</b> the polar climate is dominated by low temperatures, frequent strong winds and year round snow and ice. In all months, temperatures are near or below freezing point.</p> <p>"The Arctic and Antarctic are in polar regions."</p>
<p><b>temperature</b></p>	<p><b>n.</b> the measure of the amount of heat in a place or around the body.</p> <p>"The summer in Spain is characterised by high temperatures and little rainfall."</p>



<p><b>rainfall</b></p>	<p>n. the amount of rain that falls.</p> <p>"The rainfall chart helps us to determine the climate of an area."</p>
<p><b>continent</b></p>	<p>n. one of seven large land masses that make up the Earth's crust, usually surrounded by sea.</p> <p>"Spain is part of the European Continent."</p>
<p><b>climate graph</b></p>	<p>n. a climate graph shows the average rainfall and temperature for a region over a year.</p>

## Glossary

**climate n.** the general weather conditions found in a particular place.

**climatic zone adj.** used to describe an area that shares the same climatic characteristics.

**climate graph n.** a climate graph shows the average rainfall and temperate for a region over a year.

**cool temperate adj.** describing a climate or region where the summers are warm and the winters are cold.

**continent n.** one of seven large land masses that make up the Earth's crust and is usually surrounded y sea.

**desert n.** an area often covered in sand or rock , where there is very little rainfall and where very few plants grow.

**polar adj.** the polar climate is dominated by low temperatures, frequent strong winds and year round snow and ice. In all months, temperatures are near or below zero.

**rainfall n.** the amount of rain that falls in a particular area.

**temperature n.** the measure of the amount of heat in a place or around the body.

**tropical adj.** describing the climate and region found between the Tropics of Cancer and Capricorn.

**warm temperate adj.** describing a climate or region where the summers are warm and the winter is mild.

**weather n.** the conditions in the air above the Earth such as wind, rain and temperature, especially at a particular place.

**What is the  
difference  
between weather  
and climate?**

How do we  
measure and  
record the  
weather?

**What does a  
meteorologist do?**

How many  
different climates  
are there in the  
Iberian Peninsula?

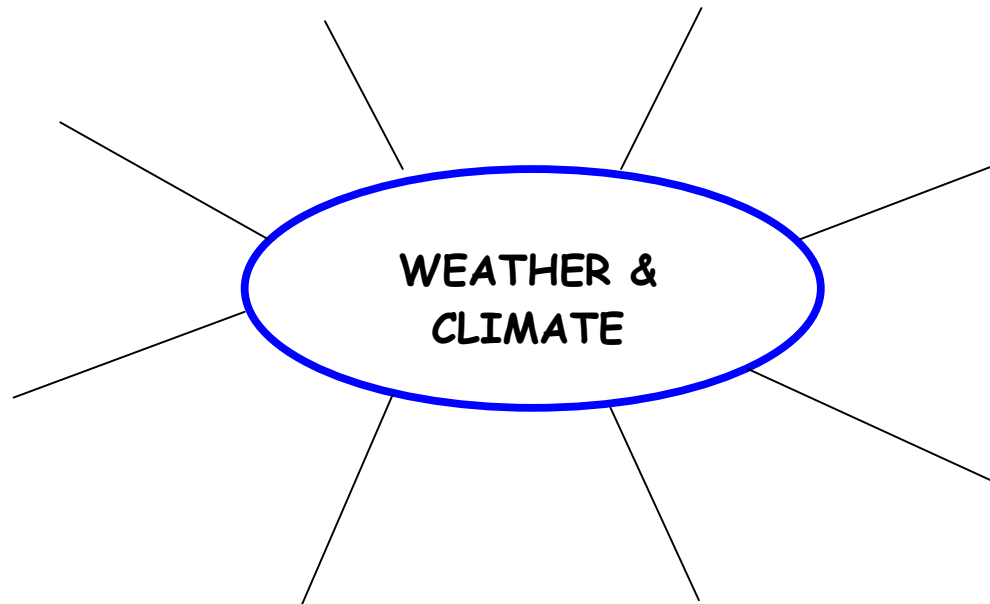
**What do we mean  
by climate change?**



**What impact do  
humans have on  
the world's  
climate?**

**What do you already know about weather and climate?**

**With a partner, fill in the brainstorm with as many things you can remember about weather and climate**



## Practical Activity 1

### What is the weather and how do we record it?

#### Main Objective:

1. To differentiate between weather and climate;
2. To follow, read and interpret the weather

#### Resources needed:

A large map of the Iberian Peninsula

A Large map of the British Isles

Internet access

Symbol sheets (see 8a.1).

Glue sticks

#### Introduction:

This activity focuses on what we mean by weather. It is essential that you have internet access so as to download weather information using the BBC weatherwise website:

<http://www.bbc.co.uk/weather/weatherwise/factfiles/>

This activity should be continued for the duration of the unit of study. The teacher should encourage discussion about weather patterns, where weather comes from, the effects certain weather may have in specific areas e.g. farmland, coastal resort etc..

Using the symbols provided, ask the children to identify their meaning. Then, using a printout or, if possible an online computer network, show the children the weather chart for the Iberian Peninsula for today. Look at each area and elicit descriptions of the weather for each area e.g. *it is overcast on the Valencian coast. It is warm and sunny in the centre of the peninsula etc.*

### ***Development***

Elicit from the children what we are measuring on the weather chart - cloud cover, sunshine, rain, wind speed, temperature, snow etc. Now, working in pairs or individually, the children should use the symbol sheet to simulate today's weather for the Iberian Peninsula. The children should write a short paragraph in English, describing today's weather, similar to the sentences given in the introduction. This could be glued into their books.

### **Plenary**

Using the map of the British Isles, provide the children with information about the weather in Britain, invite them to come out and stick the symbols on the map and encourage them to give a descriptive sentence about what the weather is like e.g. It is raining in the West of Scotland.

### **Suggestion**

This activity would lend itself to correspondence with your link school in the UK. Children could write or e-mail to find out what the weather and climate are like in that area of the UK.

**Hands on activity 2**  
**Climate and Climate Graphs**  
**Madrid**

**Main Objectives:**

1. To convert information from climate tables (rainfall and temperature) into a climate graph;
2. To differentiate between weather and climate
3. To use climate graphs and tables to describe the climate of Madrid.

**Introduction:**

Elicit from the children the different kinds of weather we can measure. Explain that in this activity we are going to look at two weather phenomenon, rainfall and temperature, and that by measuring these over the period of a year, we can determine the type of climate a region has. Emphasise that weather is always changing, but climate measures weather patterns for a particular area, which generally stay constant.

**Development**

Give out the worksheet - Madrid's Climate. Read through the instructions with the pupils and make sure they understand the task. They should work in pairs interpreting the table. Discuss as a class whether all of the information is relevant for the climate graph. The children should realise that in the temperature section of the table, there are minimum and maximum averages and record temperature. For the graph we want to use the minimum and maximum averages. They should use two different colours for this red and orange, for example.

The rainfall should be a continuous line in blue. Emphasise that the scale is written on the line not in the box.

### **Plenary**

Using the newly made climate graphs ask the children to write a few sentences to describe the climate in Madrid:

*"Madrid has hot, dry summers and cold, wet winters."*

*This type of climate is called a **Continental Mediterranean Climate**.*

# Madrid's Climate 1

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Month	Average Sunlight (hours)	Temperature					Relative humidity		Average Rainfall (mm) (ml/m <sup>2</sup> )	Wet Days (+0.25 )
		Average		Record			am	pm		
		Min	Max	Min	Max					
Jan	5	2	9	-10	18		86	71	390	8
Feb	6	2	11	-9	22		83	62	340	7
March	6	5	15	-4	26		80	56	430	10
April	8	7	18	-1	29		74	49	480	9
May	9	10	21	1	33		72	49	470	10
June	11	15	27	6	37		66	41	270	5
July	12	17	31	8	39		58	33	110	2
Aug	11	17	30	7	38		62	35	150	3
Sept	9	14	25	4	36		72	46	320	6
Oct	6	10	19	0	28		81	58	530	8
Nov	5	5	13	-3	22		84	65	470	9
Dec	5	2	9	-8	16		86	70	480	10

Answer these questions using the table:

1. What is the minimum average temperature in May? \_\_\_\_\_

2. What is the maximum average temperature in December?

\_\_\_\_\_

3. Which month has the most rainfall?

---

4. Which months have a maximum average temperature of  $30^{\circ}\text{C}$ ?

---

5. Which month has the least number of wet days?

---

6. Which Months have the lowest average temperature?

---

7. Write three questions of your own and swap with a friend.

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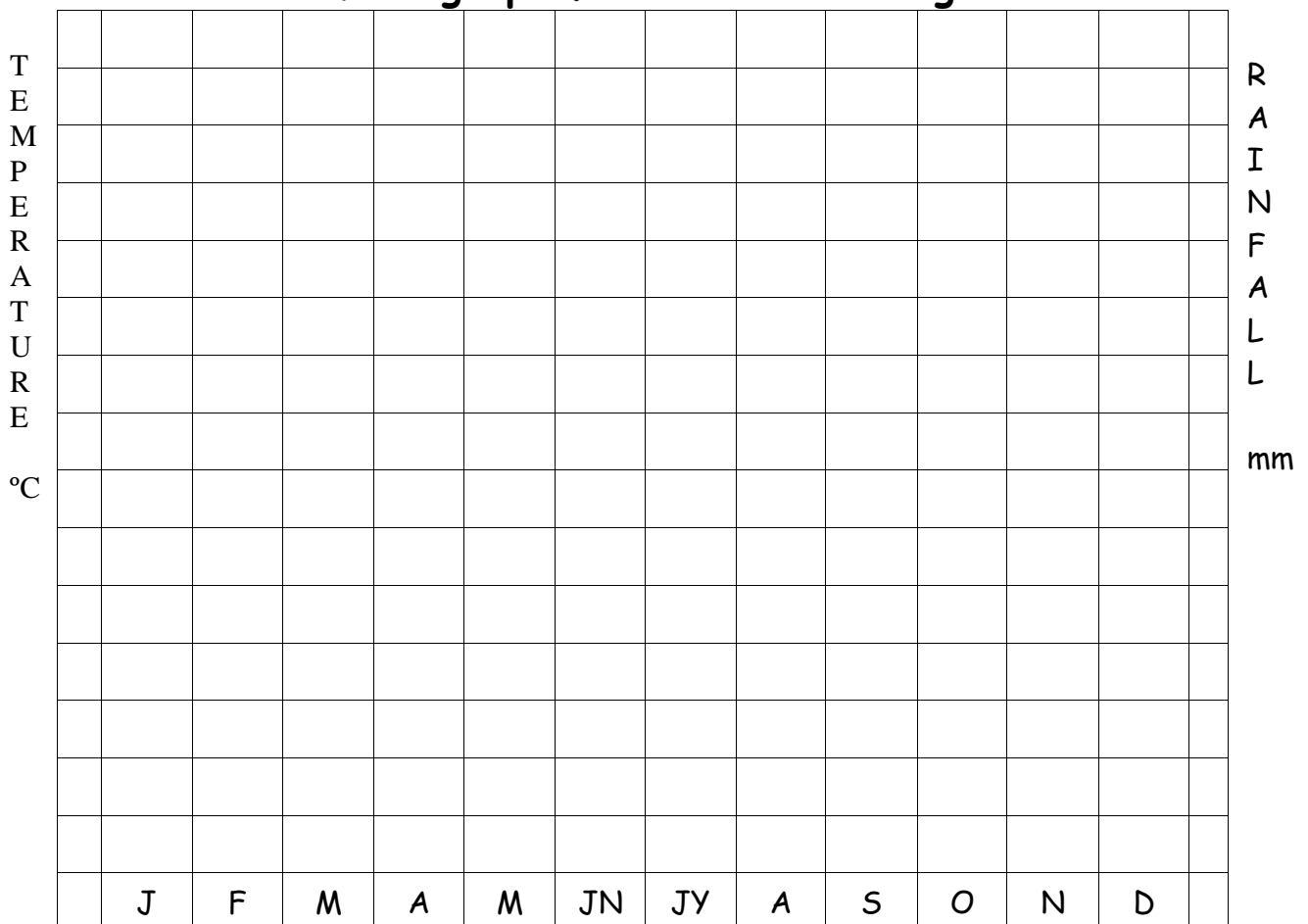


## Madrid's Climate 2

Transfer the information in the table onto the graph below. The left hand scale is for temperature, we use a line graph to record temperature because the information is always changing. This is called continuous data. The right hand scale is for rainfall.

Because it doesn't rain every day, the information is discontinuous, so we use a bar graph. Plot the graph out and ask a friend to check it for you. Not all of the information on the graph is relevant. Discuss with a friend.

**Climate graph for the Madrid Region**



(Each box equals 5°C and 5mm of rainfall. Write the correct scale on the graph. Remember the number goes on the line, not in the box.)

## **Hands on activity 3**

### **Climate and Climate Graphs**

#### **Spain**

#### **Main Objectives:**

1. To convert information from climate tables (rainfall and temperature) into a climate graph;
2. To differentiate between weather and climate
3. To use climate graphs and tables to describe the climate of Spain

#### **Introduction:**

Recap on the skills and knowledge learned in the previous activity. Look again and ask a few questions about how the children went about converting the table into a graph. Explain that they will be doing the same with temperature and rainfall tables for different cities in Spain. The children should work in pairs or groups, each child producing his or her own graph and writing sentence to describe the climate there.

#### **Development**

Give out the source sheet and allocate a city to each pair. The activity should be done on squared paper. The children should attempt to draw their own graphed modelled on the one from the previous lesson. Once the children have completed the climate graph and written the sentences, explain how we describe each in Spain.

There are five main climates in Spain:

**Atlantic Climate of Northern Spain - Galicia, Cantabria, País Vasco etc.**

Average temperatures here are 9°C in winter and 18°C in the summer. The wettest part of the peninsula with annual rainfall between 800 - 1500mm (800 - 1500 ml/m<sup>2</sup>), brought by successive depressions from the Atlantic, particularly in autumn and winter. Summers are cooler and wetter here than in the rest of Spain.

**Continental-Mediterranean Climate - Madrid, Castilla-La Mancha, Extremadura, Castilla-y-León**

The interior central plateau (mesetas). Low temperatures in the winter, with temperatures under -15°C not uncommon, and under -20°C regularly occurring. High temperatures in the Summer with an average of about 24°C. Dry climate with annual rainfall under 400mm (400 ml/m<sup>2</sup>). Heavy snowfalls in winter.

**Mediterranean Climate proper - Cataluña, Valencia, Murcia, Andalucía, Islas Baleares.**

Eastern and southern coast and much of the Gaudalquivir Valley. Average temperatures of 11°C in winter and 23°C in summer. Annual rainfall 250mm and 600mm (250 - 600 ml/m<sup>2</sup>), respectively. Warm and dry during most of the year.

**Alpine or Mountain climate - The Picos de Europa, Pyrenees, Sierra Nevada.**

This refers to high mountain climates, that is, above the tree-line. Low temperatures and permanent snow characterises this climate.

**Subtropical climate Canary Islands**

The average winter temperature above 14°C, summer around 22°C. Varied rainfall figures. Eastern islands are drier than western islands.

### **Source Sheet for Practical Activity Spain's Climate**



Climate map of Spain

### **Plenary**

Display the children's responses on a large map of Spain, including the Canary Is..

### **Average temperatures in La Coruña (°C)**

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

A Coruña 9 9 11 12 14 18 18 19 17 14 10 8

### **Average rainfall in La Coruña (mm)**

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

A Coruña 122 84 107 79 74 38 30 38 40 190 149 123

### **Average temperatures in Sevilla (°C)**

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Sevilla 11 12 15 17 20 25 26 27 23 19 14 11

### **Average rainfall in Sevilla (mm)**

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Sevilla 71 51 70 31 16 0 0 1 24 67 81 75

### **Average temperature in Murcia (°C)**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Murcia	11	11	15	17	20	25	27	28	24	20	14	11

### **Average rainfall in Murcia (mm)**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Murcia	18	24	22	44	29	9	0	7	21	24	38	45

### **Average Temperature in San Sebastián (°C)**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
San Sebastian	10	9	12	13	14	17	18	20	17	16	12	9

### **Average Rainfall in San Sebastián (mm)**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
San Sebastian	84	26	85	48	41	22	27	23	28	97	57	43

**Average temperatures in Las Palmas (°C)**

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Las Palmas 15 15 16 17 18 20 21 23 22 21 18 16

**Average rainfall in Las Palmas (mm)**

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Las Palmas 64 67 27 34 12 3 4 6 4 35 89 80

**Average temperatures in Mahón (°C)**

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

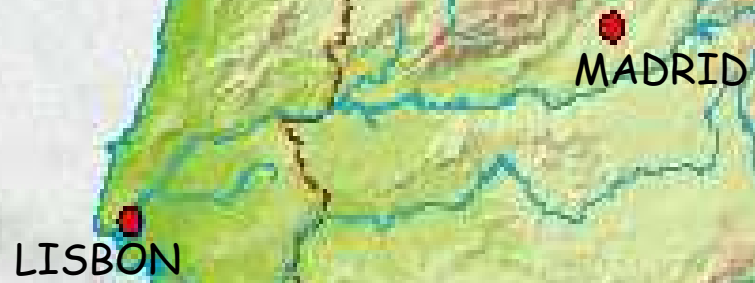
Mahon 11 10 13 14 17 23 25 26 22 20 15 12

**Average rainfall in Mahón (mm)**

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Mahon 49 75 31 38 52 6 8 24 63 35 154 61

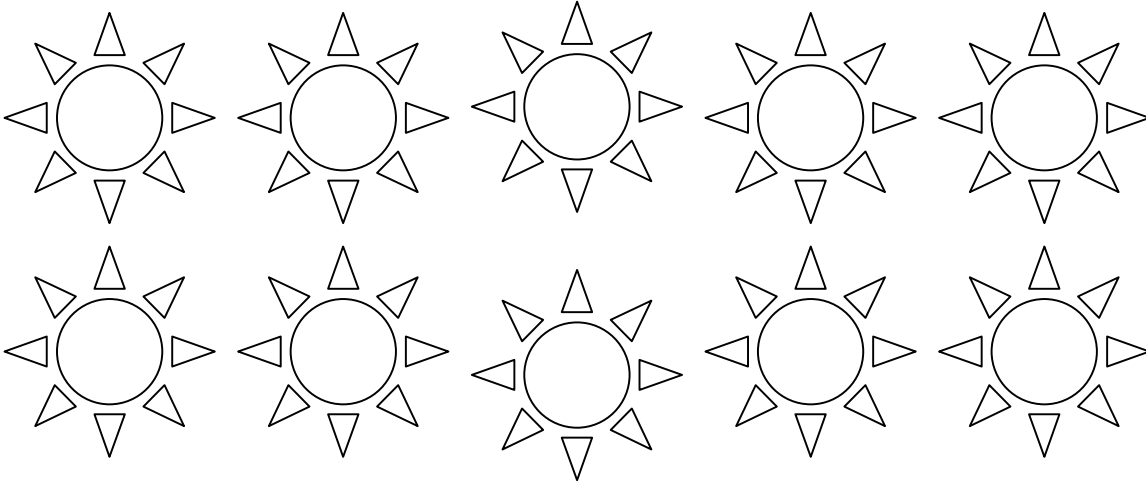
TODAY'S  
WEATHER ON THE  
IBERIAN  
PENINSULA



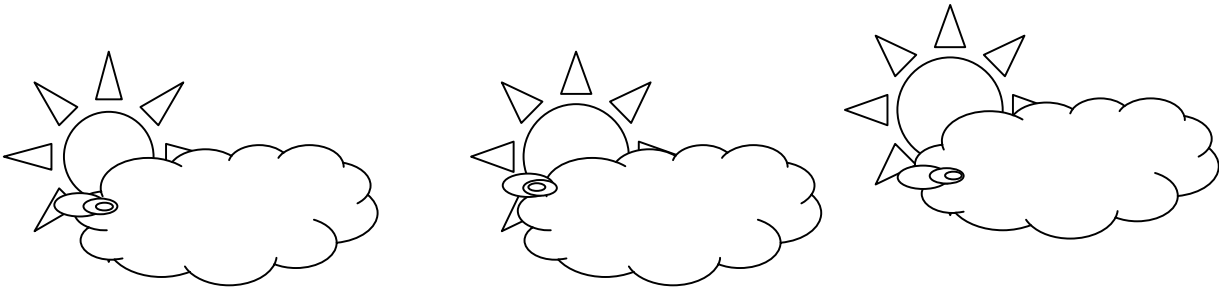


Weather symbol sheet. Colour, cut and stick on the map provided.

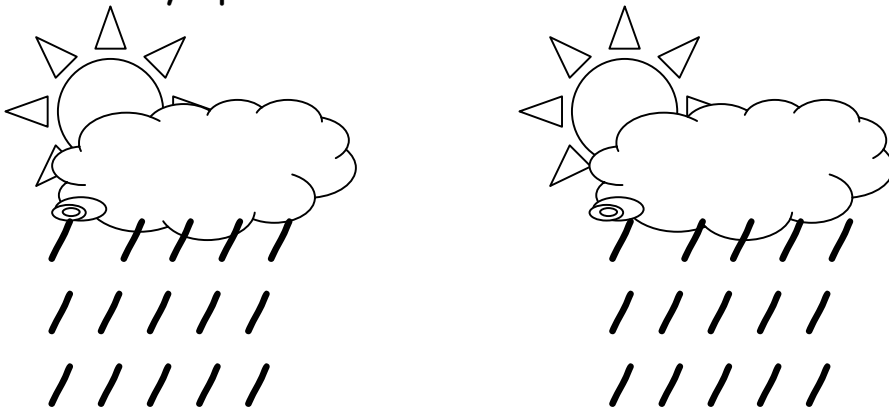
### Sunny



### Rain

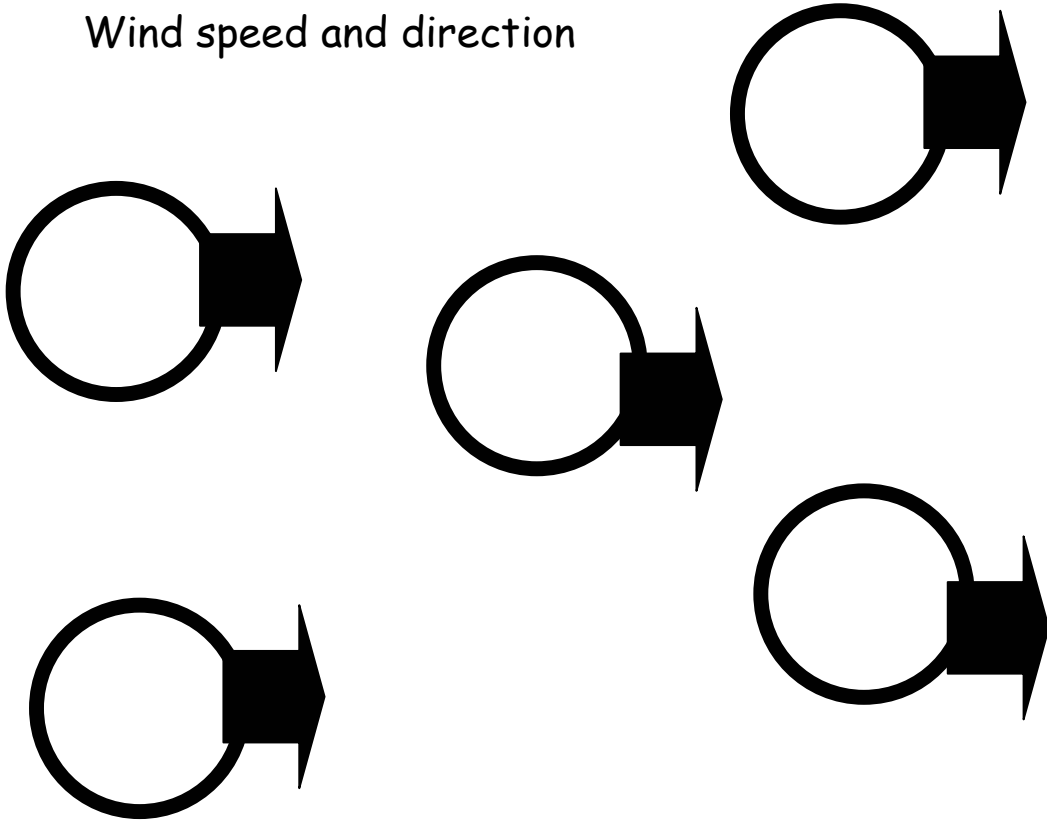


### Cloud with sunny spells

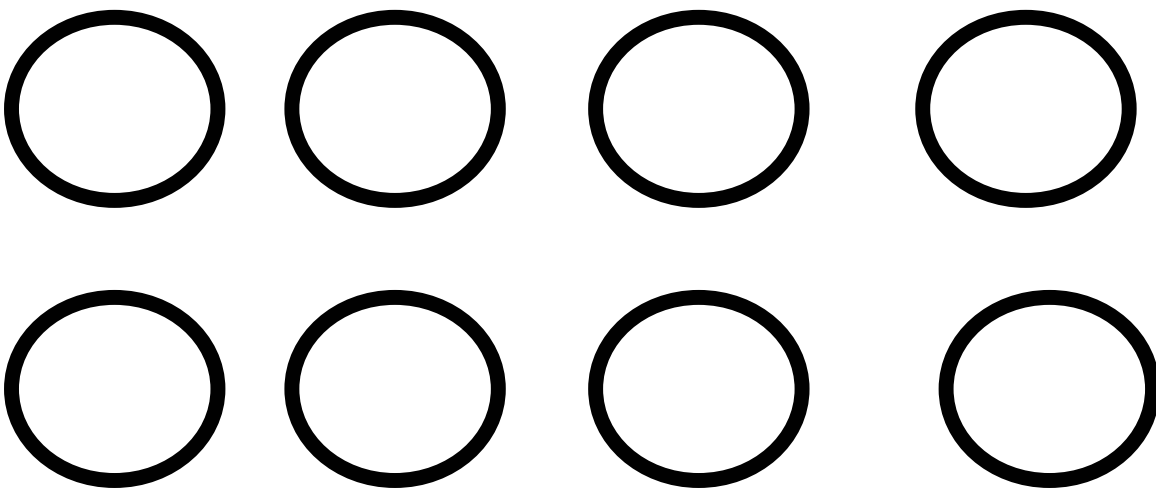


Weather symbol sheet. Colour, cut and stick on the map provided.

Wind speed and direction



Temperature



## **Major warning over climate change**

**Plans to stop climate change aren't enough, and the world will get warmer by 3C, a top scientist has warned.**

Research by Professor David King, who advises the government, said the increase would cause drought and famine and threaten millions of lives.

The temperature change could ruin crops and at least a billion people might not have enough water because deserts would get bigger.

The warmer weather could also destroy half the world's nature reserves.

The research also found that few ecosystems, such as natural forests, would be able to adapt to the new temperature, and a fifth of coastal wetland areas would also be lost.

### **Plans to cut emissions**

The government is trying to limit worldwide greenhouse gas emissions, which have been blamed for climate change.

But the research found these targets won't be enough to prevent global warming in the future.

Countries such as the USA have refused to cut emissions and emissions in India and China are rising.

Report from "Newsround" Monday January 30 2006

## Comprehension Questions

1. The text says that plans to stop climate change aren't enough, by how many degrees Celsius will the Earth get hotter?

---

2. What is the name of the Professor who carried out the research?

---

3. What will cause this increase in temperature?

---

4. What will its effects be?

---

5. What other harmful effect might the 'warmer weather' have?

---

6. What will happen to natural forests and coastal wetlands?

---

7. What is the government planning to do to cut emissions?

---

8. Which 3 countries have refused to co-operate with these plans?

---

9. What does it mean by "greenhouse gas"?

---

10. What is meant by "climate change"? Write down some ways Spain is being affected by climate change.

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