

Investigating Changing Climate Patterns - Activity Sheet Part 1

Student activity

Investigation

In the first part of this investigation we are going to ask you to write suitable questions for investigation and to use evidence to produce results and analysis which will help you to answer those questions.

In part two in the next edition you will look at the global systems that control weather and climate and how humans are changing those systems creating the climate issues that we have looked at in this edition of GITN.

We will use our normal investigation structure from past editions of GITN but we will not do any evaluation.

A. Introduction

- o In this section you will explain what it is that you are investigating.
- o You will **choose questions for enquiry** that you want to answer.
- o You will explain important background information.

B. Results

- o Use maps from the articles
- o Use photographs from the articles, online research & GIS.
- o Tabulate (put in tables) data.
- o Convert the data into easier forms to interpret:
 - Use graphs
 - Simplify data into rounded numbers or a representative mean.

C. Analysis

- o Show how your results answer your questions for enquiry:
 - Annotate graphs, photographs, maps and diagrams
 - Construct paragraphs.

D. Conclusions

- o For each of your enquiry questions what have you found out? What is the answer?

1. Use the Section heading **Introduction** before answering the following questions in the form of a **paragraph** (not separately):

- a. What are air masses?
- b. Draw a sketch map to show the main air masses that affect the UK.

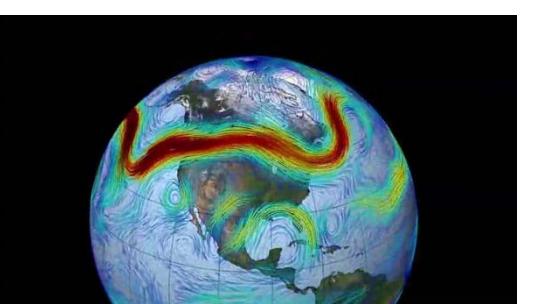


- c. How do air masses affect the UK weather?

- i. Polar Continental
- ii. Polar Maritime
- iii. Tropical Continental
- iv. Tropical Maritime
- v. Arctic

2. Answer the following questions in the form of a **paragraph** (not separately):

- a. What is the Polar Front?
- b. What is the Polar Front Jet Steam (PFJS)?
- c. Describe a jet stream.
- d. How does the PFJS affect storms?
 - i. Helps to start them.
 - ii. Carries them eastwards.

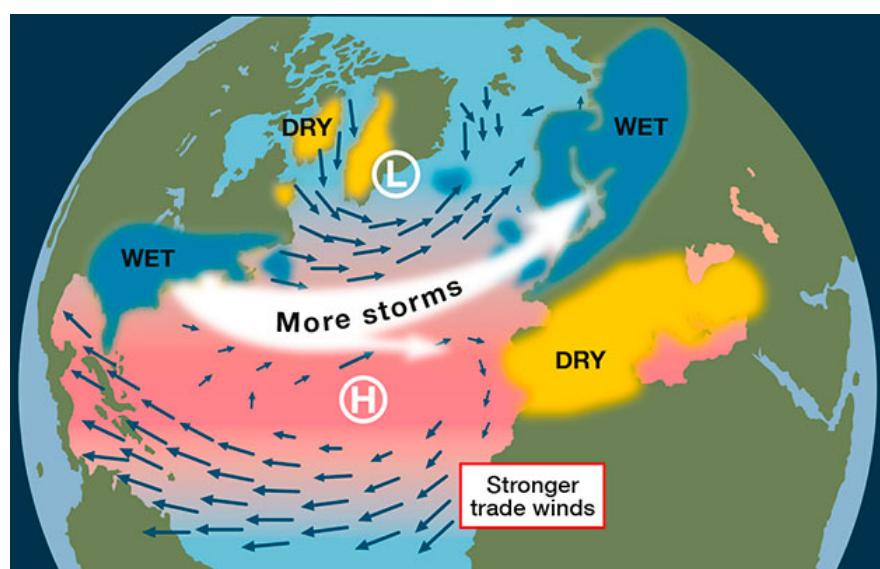


3. Answer the following questions in the form of a **paragraph** (not separately):

- a. What controls the path of the PFJS?
- b. What happens when the PFJS lies over the UK (this summer is a good example)?
- c. What has our weather been like this summer?
- d. Why have we had many days with cool showery weather?
- e. Why have we had many days with longer periods of rain?

4. Answer the following questions in the form of a **paragraph** (not separately):

- a. What is the North Atlantic Oscillation?
- b. What controls the N.A.O.?
- c. How might climate change affect the N.A.O.?
- d. Describe the map below showing the summer 2017 N.A.O. pattern.



5. This pattern causes possible summertime floods in Northern Europe and heatwaves droughts in Southern Europe. What problems might this cause people?

- a. Northern Europe/UK
- b. Southern Europe.

6. How has this been projected to change by the end of the century?

- a. How many deaths in total?
- b. How many deaths from floods?

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7. Use a subheading of 'Questions for Enquiry' before completing these activities:
8. Try to write 3 or 4 of your own questions for enquiry based on the NOAA report headlines into the 2016 climate.
- Greenhouse gases were the highest on record.
 - Global surface temperature was the highest on record.
 - Average sea surface temperature was the highest on record.
 - Arctic sea ice coverage was at or near record low.
 - Changes in the water cycle - Drought and Floods.
 - Tropical cyclones were above average overall.
9. Investigate these questions for Enquiry:
- How have monthly maximum temperatures for the UK changed between the 1961-1990 average and the 1981 -2010 average.
 - How have mean monthly temperatures for Wales changed over the past 100 years.
 - How have the annual temperatures for Wales changed over the past 100 years.
 - How have the annual temperatures for the UK changed over the past 100 years.
 - How has the winter temperature for Wales changed for the periods?
 - 1961-1990
 - 1971-2000
 - 1981-2010
10. Use the Section heading **Results** before answering the following activities:
- Use suitable graphs, maps and photographs to help you to answer your Questions for Enquiry.
11. Include maps, tables and graph data that you find in your research.
12. Describe how winter temperatures have changed over the past 50 years.
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13. Draw a graph to show how monthly maximum temperatures have changed over the past 50 years.
- | Year | Max Temperature °C | | | | | | | | | | | |
|-----------|--------------------|-----|-----|------|------|------|------|------|------|------|-----|-----|
| | J | F | M | A | M | J | J | A | S | O | N | D |
| 1961-1990 | 5.7 | 5.8 | 8 | 10.6 | 14.1 | 17 | 18.6 | 18.4 | 16 | 12.7 | 8.4 | 6.5 |
| 1981-2010 | 6.4 | 6.6 | 8.9 | 11.4 | 14.7 | 17.3 | 19.4 | 19.1 | 16.5 | 12.8 | 9.1 | 6.7 |
- | Year | Monthly Mean Temperature °C | | | | | | | | | | | |
|------|-----------------------------|------|-----|-----|------|------|------|------|------|------|-----|-----|
| | J | F | M | A | M | J | J | A | S | O | N | D |
| 1910 | 3.9 | 5.0 | 5.8 | 6.5 | 10.6 | 13.6 | 13.6 | 13.9 | 12.2 | 10.1 | 4.2 | 6.2 |
| 1956 | 3.8 | -0.4 | 5.8 | 6.4 | 10.5 | 12.1 | 14.5 | 12.6 | 13.4 | 9.0 | 6.0 | 5.6 |
| 2014 | 5.4 | 5.5 | 6.8 | 9.2 | 11.3 | 14.1 | 16.2 | 14.0 | 14.1 | 11.5 | 7.8 | 5.2 |
14. Draw a graph to show monthly mean temperatures for 1910, 1956 & 2014.
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15. Describe how mean annual temperatures for Wales have changed over the past 100 years.
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16. Describe how mean annual temperatures for the UK have changed over the past 100 years.
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17. Use other data sources to show how climate is changing in Wales and the UK. Try to use:
- Maps
 - Tables
 - Graphs.
18. Use the Section heading **Analysis** before answering the following question 19.
19. How has the climate of Wales & the UK changed?
- Over the past 50 years
 - Over the past 100 years