

# Extreme Weather Classroom activity

## Answers

### Section A

Site	Temperature (°C)			Rainfall (mm)		
	Min.	Max.	Range	Min.	Max.	Range
Boulmer	-6.8	25.9	32.7	0	61.4	61.4
Eastbourne	-6.5	29.0	35.5	0	42.9	42.9
Keswick	-14.5	30.7	45.2	0	100.2	100.2
London	-5.3	34.7	40.0	0	36.0	36.0
Wattisham	-10.9	31.4	42.3	0	54.0	54.0

2. Keswick
3. Latitude, near coast, local relief (mountainous), influence of gulf stream, influence of polar/arctic maritime air masses.
4. Boulmer
5. Coastal location, moderating influence of sea, polar/tropical continental air masses brings warmer air in winter, sheltered from prevailing wind on east coast.
6. Keswick
7. Orographic rainfall, prevailing wind bring warm and wet air, Longitude.
8. London
9. Longitude and latitude / location in South-East (driest part of UK), prevailing wind has lost moisture by the time it reaches London.
10. Keswick and Wattisham

### Section B

1. Rural location, lack of urbanisation. Pupils may talk about heat loss at night (radiative cooling).
2. Keswick: Higher latitude, relief – cool air descends down mountain sides, rural location  
London: Lower latitude, sea level, urban heat island/land use (tarmac/concrete absorbs heat during day).
3. Coolest to hottest - Eastbourne: cooling effect of coastal location (sea/wind). Wattisham: rural area, evapotranspiration/vegetation cools the air. London: Urban heat island effect/heat absorbed and re-emitted by concrete/tarmac.
4. 36mm / August. Thunderstorm. Hot August day.
5. All locations have a minimum rainfall of 0mm. One extreme can produce a large range, but the range doesn't tell you if this happened once or many times.

### Section C

1. Extreme values smoothed out – most values within a smaller range
2. Yes

3. Highest temperature range now Wattisham, not Keswick. Southerly location probably means Wattisham will have more higher daily temperatures than Keswick, so a higher average. Lowest temperature range now Eastbourne not Boulmer. Southerly location and moderating effect of coastal location warms cold days and cools hot days giving more stable weather

4.

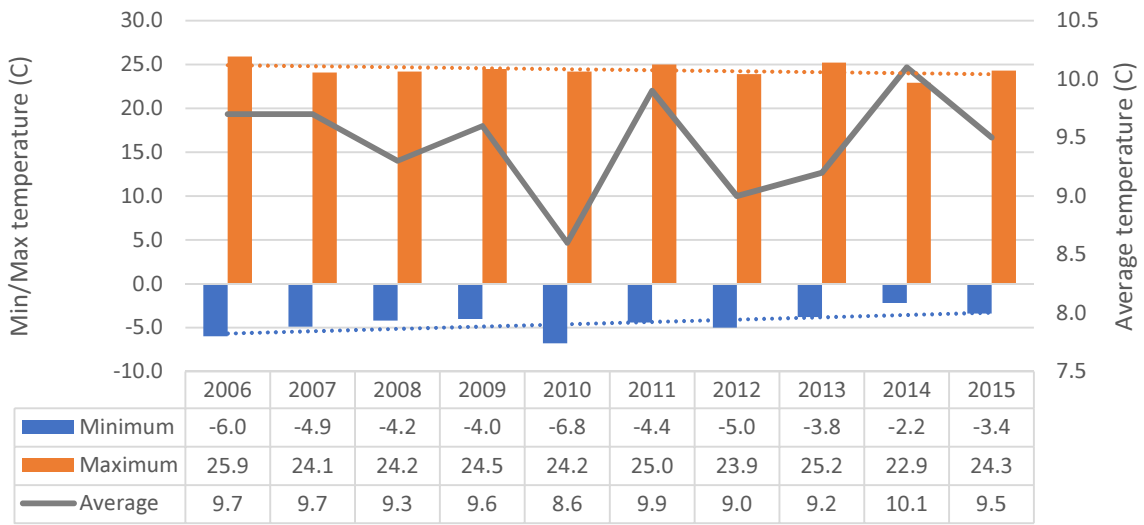
Site	Wettest		Driest	
	Month	Rainfall (mm)	Month	Rainfall (mm)
Boulmer	November	880	April	381
Eastbourne	November	1081	April	348
Keswick	December	2498	April	601
London	January	628	March	329
Wattisham	August	724	April	296

5. Wettest – Keswick, Driest – Wattisham.
6. Wattisham's wettest month is August – possibly due to Thunderstorms – whereas the other sites wettest months are all in the winter months.  
Keswick is much wetter than anywhere else – orographic rainfall, westerly location, gulf-stream, prevailing wind.  
Driest months are in Spring not in summer. In the hottest month's convective rainfall is higher.  
Value can be affected by extremes – not representative.

## Section D

1. The general pattern is similar – minimum temperatures have been increasing during the period 2006-2015. Exceptions were cold winters in 2006/2007/2010/2012. Without these years there is much less of an increase.
2. At Boulder maximum temperatures are quite consistent year to year, but are reducing slightly. At Keswick there is much more variation. There is a slight upward trend.
3. In Keswick 2006 was a particularly hot year, 2011 particularly cool.
4. Average temperature varies most in Keswick. Latitude, air masses, relief.

## Temperature extremes and average by year - Boulmer



## Temperature extremes and average by year - Keswick

