Restless climate: Lessons using data skills

Royal Geographical Society
with IBG

Advancing geography
and geographical learning

Lessons 1 to 5: Teacher notes and suggested instructions

Notes

The overall objective of these five lessons is to improve the confidence of students in accessing, inspecting, graphing and statistically analysing publicly available climate data.

Links are provided to online resources, including short videos, user-friendly data visualisation tools, and open data. Supporting data sets are provided in Excel format.

The choice of graphical, statistical and investigative activities has been carefully matched to the skills checklist of the Geography AS and A2 curricula. Some of the provided data tables are partially completed to emulate examination question formats.

The developed graphical skills are: scatter graphs (L1, L2, L3, L4); bar graphs (L1, L2); line graphs (L5); and best fit lines (L1, L3).

The statistical skills covered are: measures of central tendency and dispersion (L4); trend estimation (L1) and interpretation (L5); Spearman's rank correlation (L3); Mann-Whitney U-test (L4); Chi-squared test (L5); and application of significance level in inferential statistics (L3, L4, L5).

The investigative skills covered are: analysis and interpretation of evidence; drawing conclusions and evaluating the validity of conclusions; identification of opportunities for further research or analysis; interpretation of unexpected results or outliers; and critical use of data bases.

Background notes are provided for each lesson. A range of topical issues are covered, including global warming (L1), European teleconnection patterns (L2), and recent extreme events such as Storm Desmond (L4) and dangerous heatwaves in London (L5). In this way the lessons potentially offer supplementary resources for mini-case studies.

Suggested delivery

Each lesson can be customised to meet the learning needs of the group. However, the following four step pattern of delivery is suggested:

[1] Set the scene by elaborating and/or explaining the background information.

[2] Work through the first few tasks as a group to familiarise with the tools and techniques.

[3] Use latter tasks as a reinforcement activity and opportunity for individual study.

[4] Close with a group discussion that takes a broader view of the topic and task findings.