Water Quality in the River Clyde

A case study of statistical analysis with environmental data

Notes for students

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The question

The Scottish Environment Protection Agency has a statutory obligation to monitor the Scottish environment. This includes the River Clyde, where measurements of water quality, expressed in dissolved oxygen on a percentage scale, have been made over a long period. Measurements are available from sampling stations at two mile intervals down the river, from 0 to 26 miles from the city centre. In 1985, a sewage treatment plant at approximately 2 miles down the river was upgraded. Can you identify whether there is evidence that the water quality in the river has improved as a result of this upgrade?

Exploring the data

Some software is available to help you explore the data. This can be accessed through the rpanel package for the widely used statistical computing environment R. Both rpanel and R are freely available from www.r-project.org.

The R instructions

```
library(rpanel)
source("clyde.r")
```

launch the material described in this document.

Use this software to consider different models for the data and how they might be fitted. Follow the instructions from your teacher to help you do this.