Module 8: Plastic adrift

## Part A: Model analysis

The website, [PlasticAdrift](http://plasticadrift.org/index.html), provides a model of the movement of plastic waste in the oceans from any point on Earth after a particular number of years.

1. Follow the link and explore the model.
2. Assess the effectiveness of this model to raise awareness of the effect of dumping plastic wastes into the oceans.

## Part B: Working scientifically skills

The PlasticAdrift model was developed from the research paper, [Origin, dynamics and evolution of ocean garbage patches from observed surface drifters](https://iopscience.iop.org/article/10.1088/1748-9326/7/4/044040).  It includes an overview video by the author. Use the journal article to answer the following questions which are based on the Earth and Environmental Science Working Scientifically Skills. The questions are based on the original Nature article, although the other sources linked to this task can be used to help with your answers.

### Before the data is collected

#### Questioning and predicting

1. Outline the observations that would have been made that identified the need for this study.
2. Identify the inquiry question made by the researchers. Write a suitable hypothesis for this investigation.

#### Planning investigations

1. Outline how the technologies work that were used and why they would have been chosen by the researchers.
2. Identify the independent, dependent and controlled variables of this investigation.
3. Was the investigation modified at all in response to new evidence and data? Explain.

#### Conducting investigations

1. Design a risk assessment that could have been conducted before undertaking the investigation.
2. Assess the effectiveness of the technologies used to ensure accuracy in the investigation.
3. Assess the range and validity of sources cited in this investigation. This can be done by browsing the reference list, you don’t have to find or read the sources.

### After the data is collected

#### Processing data and information

1. Justify the suitability of the graph type used in Figure 2.
2. Identify the qualitative data used, the range of magnitude in the results and the units of measurement of the variables.
3. Propose ways in which the quality of data might be improved.

#### Analysing data and information

1. Outline the trends found in Figure 2.
2. Assess any errors, uncertainties or limitations in the data.
3. Assess the relevance, accuracy, validity and reliability of the data and suggest improvements to investigations.

#### Problem solving

1. Outline the predictions that can be made based on the conclusions of this investigation.
2. Critical thinking in science involves objective analysis and evaluation of an issue in order to form a judgement. Outline how critical thinking can be used to solve problems identified by this study.

#### Communicating

1. Justify the suitability of each of the three figures used in the report.
2. Assess the appropriateness of creating the model in Part A as an addition to this scientific report.
3. Write a suitable conclusion for this investigation. What further investigations can be undertaken based on this conclusion?