**ACTIVITY: Investigating data from *Tangaroa***

**Activity idea**

In this activity, students explore data on air and sea temperature and wind speed from *Tangaroa*’s 8-week voyage to Antarctica.

By the end of this activity, students should be able to:

* make graphs from data
* compare data they have plotted.

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**Introduction/background**

During the voyage of RV *Tangaroa*, scientists gathered data like water temperature and position. The following data points were collected each day for 8 weeks.

|  |  |
| --- | --- |
| Date | The day the data was collected. |
| Julian day | A continuous count of days of the year, starting on 1 January. This is useful for plotting annual data.  |
| Time | Time the data was taken – in this case, always at noon.  |
| Time type | NZDT stands for New Zealand Daylight Time. |
| Latitude | This is the distance north or south of the equator, always parallel to the equator, which is the zero line of latitude. A precise location on Earth can be given by quoting the longitude and the latitude. |
| Longitude | The distance measured east or west from the prime meridian, which has been located at Greenwich, England, at 0°. All lines extend from the North Pole to the South Pole intersecting the equator. A precise location on Earth can be given by quoting the longitude and the latitude. |
| Ship’s speed  | Measured in knots. |
| Ship’s heading | The direction in which the ship is going. This is a compass heading. |
| Barometer | Instrument for measuring atmospheric pressure, used especially in weather forecasting. |
| Air temperature | Measured in degrees Celsius. |
| Wind speed | Measured in knots. |
| Wind direction | A compass heading. |
| Sea temperature  | Measured in degrees Celsius. |

In this activity, students can view the data, make graphs, explore and make sense of various conditions and use a wind chill calculator to find out how wind affects temperature.

**What you need**

* Access to the Excel spreadsheet [Weeks 1–8 *Tangaroa* data and wind chill calculator](https://www.sciencelearn.org.nz/resources/1291-investigating-data-from-the-rv-tangaroa)

**What to do**

1. Open the Excel spreadsheet [Weeks 1–8 *Tangaroa* data and wind chill calculator](https://www.sciencelearn.org.nz/resources/1291-investigating-data-from-the-rv-tangaroa). It contains data from the *Tangaroa* for the 8-week voyage on the first sheet.
2. Have students plot data collected and make comparisons, for example, they could plot:
* sea temperature to see how it changes the further south the Tangaroa travels
* wind speed and compare it with the ship’s speed
* air temperature and compare it with the location of the ship
* plot the barometer reading and compare it with air temperature and sea temperature.

**Extension ideas**

* Use the wind chill calculator (on the second sheet of the Excel spreadsheet [Weeks 1–8 *Tangaroa* data and wind chill calculator](https://www.sciencelearn.org.nz/resources/1291-investigating-data-from-the-rv-tangaroa)) to find out how the wind affects the temperature.
* Students could investigate how sea navigators measure a ship’s speed ([www.physlink.com/Education/AskExperts/ae400.cfm](http://www.physlink.com/Education/AskExperts/ae400.cfm)).