

Cave Climate Graphs on the ACKMA Website

Rauleigh Webb, Andy Baker, Dave Gillieson and Andy Spate

During 2020, ACKMA instigated the deployment of data loggers to a number of cave sites throughout Australia and New Zealand. This was an attempt to capture the best baseline climate data for all of these caves, as visitation to the caves had been halted due to COVID-19 restrictions. The data collected currently starts from the 28/05/2020 and runs to 19/01/2021. Overall the number of data records is 33935 with Te Anau Cave providing the most continuous data set so far.

Andy Baker asked that interactive graphs be created online so as to provide ACKMA with a way of displaying the data. These graphs would enable the display of the data and allow visitors to interactively interpret the changes occurring in each cave site's temperature and relative humidity data. We propose to provide interpretation of the data beneath each of the graphs in the near future.

At present a webpage has been created that lists all of the sites that have provided data from the ACKMA data loggers, along with links to graphs that are generated online from the raw data.

The links page is shown in the above right table and is at <http://www.ackma.org/CaveClimate/index.asp>. When the Temperature or Relative Humidity link are clicked on at the website, then the relevant graph is prepared by loading the data from the website and thus generating the graph.

The graph shows all of the data that has been provided for each cave site. Each data point is tagged individually so as you move your cursor over the graph you can see the date and time of the point as well as the temperature or relative humidity value.

There are limitations on the number of data points that can be displayed in a graph so we may need to restrict each graph to one year of data. The graphs and data will be adjusted accordingly as required.

If you want to "Zoom In" to a particular range of points to see finer detail, you can use the cross appearing on the graph as your cursor to select a rectangular shape around the data you want to examine and the graph will re-draw on the data selected. You can "Zoom In" multiple times if required, depending on the size of the data selected.

A Reset Zoom button appears on the graph to allow the "Zoom In" to be reset back to the entire data set. Here is an example from Cathedral Cave at Wellington, NSW, with some interpretation by Andy Baker on the following page. The example below uses the Zoom feature to interrogate the data around Christmas day.

ACKMA Cave Climate Graphs 2020

[Click here for a map showing these cave locations](#)

Cave Name	Temperature Graph	Relative Humidity Graph
Calgardup	Calgardup Temperature Graph	Calgardup Relative Humidity Graph
Careys Cave	Careys Cave Temperature Graph	Careys Cave Relative Humidity Graph
Cathedral	Cathedral Temperature Graph	Cathedral Relative Humidity Graph
Cathedral Cave	Cathedral Cave Temperature Graph	Cathedral Cave Relative Humidity Graph
Crystal Cave	Crystal Cave Temperature Graph	Crystal Cave Relative Humidity Graph
Donna	Donna Temperature Graph	Donna Relative Humidity Graph
Footwhistle	Footwhistle Temperature Graph	Footwhistle Relative Humidity Graph
Gaden Cave	Gaden Cave Temperature Graph	Gaden Cave Relative Humidity Graph
Guillotine	Guillotine Temperature Graph	Guillotine Relative Humidity Graph
Gunns Plains	Gunns Plains Temperature Graph	Gunns Plains Relative Humidity Graph
Jersey	Jersey Temperature Graph	Jersey Relative Humidity Graph
Jewel Cave	Jewel Cave Temperature Graph	Jewel Cave Relative Humidity Graph
Jillabenan	Jillabenan Temperature Graph	Jillabenan Relative Humidity Graph
Kelly Hill	Kelly Hill Temperature Graph	Kelly Hill Relative Humidity Graph
King Solomon	King Solomon Temperature Graph	King Solomon Relative Humidity Graph
Lake Cave	Lake Cave Temperature Graph	Lake Cave Relative Humidity Graph
Mammoth	Mammoth Temperature Graph	Mammoth Relative Humidity Graph
Marakoopa	Marakoopa Temperature Graph	Marakoopa Relative Humidity Graph
Ngilgi	Ngilgi Temperature Graph	Ngilgi Relative Humidity Graph
Nikau	Nikau Temperature Graph	Nikau Relative Humidity Graph
Phosphate Mine	Phosphate Mine Temperature Graph	Phosphate Mine Relative Humidity Graph
Shades of Death	Shades of Death Temperature Graph	Shades of Death Relative Humidity Graph
Spellbound	Spellbound Temperature Graph	Spellbound Relative Humidity Graph
Te Anau	Te Anau Temperature Graph	Te Anau Relative Humidity Graph
Trezkinn	Trezkinn Temperature Graph	Trezkinn Relative Humidity Graph
Yonderup Cave	Yonderup Cave Temperature Graph	Yonderup Cave Relative Humidity Graph



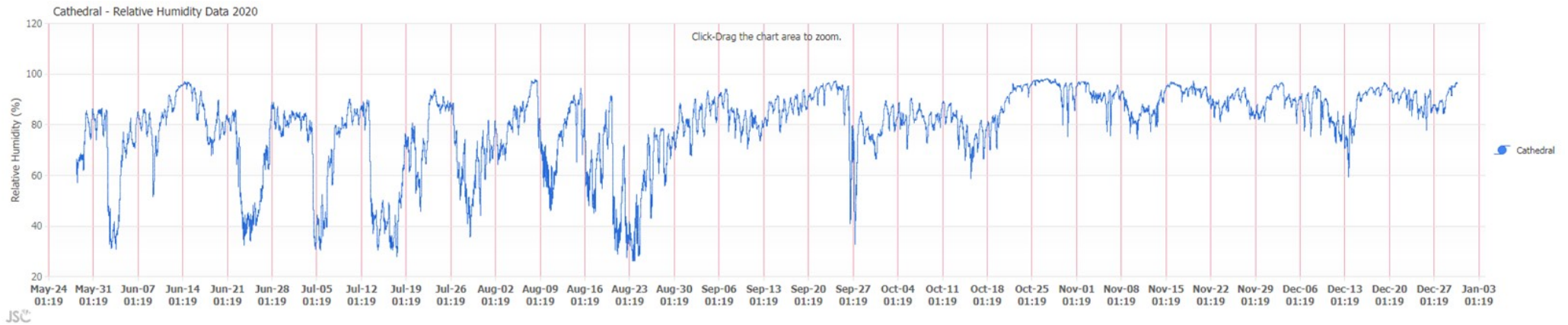
Temperature Graph Interpretation by Andy Baker

There are small temperature increases occurring after each cave tour, with larger peaks relating to higher visitor numbers, then the temperature drops between tours.

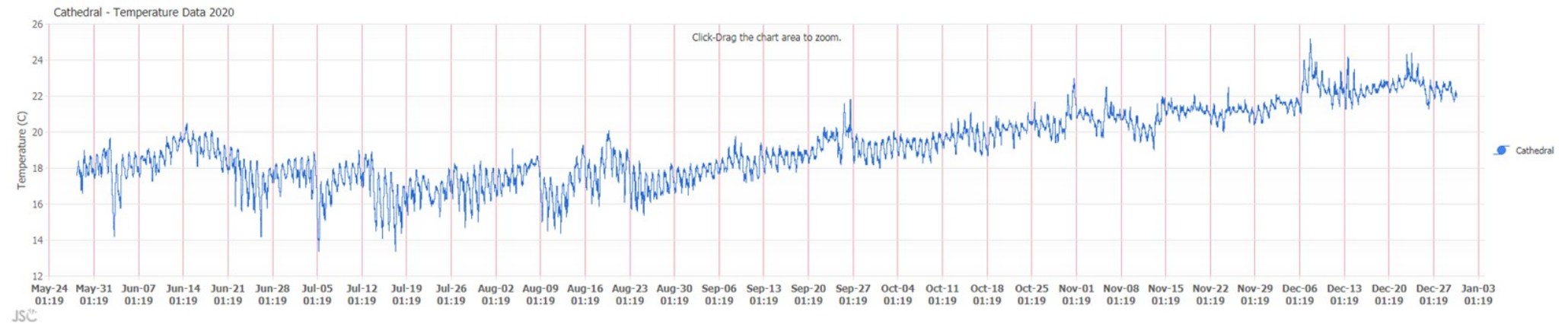
Overnight, the temperature falls back to the overnight temperature for that time of year, good evidence for no long-term effect on cave air temperature.

The daily temperature peaks were not there last June - it will be interesting to compare to this June.

Zoom in to see the Christmas Day data. There were no tours that day as the cave was closed.



This Relative Humidity Graph is for the Cathedral which is a large chamber in the Capricorn Caves at The Caves in Northern Queensland



This Temperature Graph is for the Cathedral which is a large chamber in the Capricorn Caves at The Caves in Northern Queensland