



national science week 2018

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Watching the clouds...

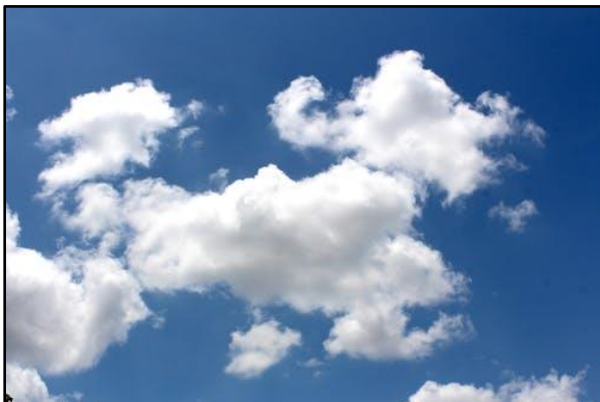
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Have you ever looked up, seen a cloud and wondered... “What on Earth is that cloud doing?”

It’s a simple question right? So we might expect the answer to be simple right? But then, do simple questions have to have simple answers? The constant variation in the shape of clouds is wonderful to stimulate wandering imaginations (“...What do you see? A wave? A whale? A horse’s head?...”) but horribly difficult to predict (“...there is a fifty percent chance of rain tomorrow afternoon...”). The cloud, which may seem so simple (it’s just a bunch of water vapour, right?) can express an almost infinite variation in form and behaviour. So why is that?

These are the kind of questions that motivate me in my research in applied mathematics. The research I have been doing recently, considers ways to simulate (that is, make computer models of) fluid flows. In particular, we look at methods that use the ideas behind musical synthesizers (Fourier series) to model fluid flows. These flows can be anything from water falling from a tap, the huge plasma jets spewed from the black holes in the centres of so-called active galaxies, or, of course, clouds.



There is still much to be done on my Honours research, however, I do now know an answer to the question: “Why do clouds so often look like horse’s heads?” (It’s due to the Kelvin-Helmholtz instability – but that isn’t really a good answer, is it?)

For more information:

www.utas.edu.au/math-physics