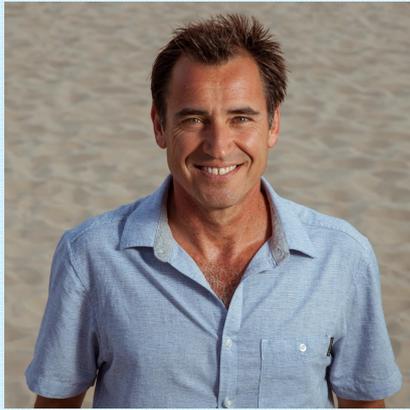


Ruben Meerman "The Surfing Scientist" presents....



# Climate Change

... fact or prediction, evidence or opinion, expert or amateur?

SCIENCE

## THE PERFORMANCE

Ruben explains the fundamental science behind climate change with spectacular live demonstrations, engaging slides bursting with stunning photographs and animations alongside the Scripps Institute's most up-to-date Keeling Curve and latest data from the Intergovernmental Panel on Climate Change. Using exciting experiments Ruben will break down some of the key concerns regarding climate change and what it means for us and the future.

Ruben begins his presentation by answering the most fundamental climate change question of all: why does the Earth have weather? Using liquid nitrogen, balloons and a kettle full of boiling water, he demonstrates how the Sun's heat, combined with the Earth's rotation, generates the wind, clouds, storms and waves. He explains the seasons, leading the audience to understand why day-to-day weather can be so incredibly difficult to predict while the year-to-year climate tends to be relatively stable over time.

Ruben delves into the scientific claim that human beings are warming the planet and changing the Earth's climate. Understanding this central claim requires an understanding of the natural greenhouse effect and the "enhanced greenhouse effect". Ruben uses a standard infrared television remote control and simple static electricity demonstrations to explain how invisible forms of light can interact with invisible gases to cause global warming. Human induced enhancement of the green house effect is the result of changes in the composition of atmospheric gases caused by human activities. Ruben makes this crucial distinction crystal clear with a transparent balloon, cooled to minus 196 degrees Celsius to reveal the invisible ingredients in air. The oxygen inside the balloon liquefies and becomes clearly visible. The carbon dioxide becomes solid 'dry ice' and also becomes visible. As these two substances boil and sublime back into thin air, the audience develops new, lifelong appreciation of the nature of the gases in the air they breathe.

Students are introduced to the famous Keeling Curve which first alerted the world's scientific community to the potential problem of climate change. Ruben explains the natural yearly fluctuations in atmospheric carbon dioxide concentrations as well as the observed long-term rise due to the combustion of fossil fuels by humans.

Ruben also presents evidence that leaves students feeling optimistic and enthusiastic about their own future and empowered to make choices that will make a real difference to the future of the planet.

**PERFORMANCE REQUIREMENTS (access to venue 15min prior):** 1 x trestle table, 1 x data projector & screen.

## THE PERFORMER

Ruben Meerman is a physicist, surfer, author and television presenter better known to a whole generation of Aussie kids as the ABC's "Surfing Scientist". His career took an unexpected turn to the science of weight loss and nutrition at the age of 42, after he lost a few kilograms and wondered where they had all gone. His ground-breaking research was published in the prestigious *British Medical Journal* in December 2014. As a result, Ruben now presents regular guest lectures about the biochemistry of fat metabolism at UNSW's School of Biotechnology and Biomolecular Sciences and speaks about weight loss at conferences. His latest book "Big Fat Myths" is published by Ebury Books (Random House Australia)

<b>DURATION:</b> 60 minutes + Q&A (90 mins upon request)	<b>SUITABILITY:</b> Years 5-12
<b>PERFORMANCE COST</b> \$6.00 per student <u>\$0.60 gst</u> <b>\$6.60 Total</b>	<b>PERFORMANCE MINIMUM - 130 STUDENTS*</b> \$780.00 per show <u>\$ 78.00 gst</u> <b>\$858.00 Total</b>

\*PLEASE NOTE EVERY STUDENT OVER 130 PAYS \$6.00 + GST