

# SPICE: Stratospheric Particle Injection for Climate Engineering

**Dr Hugh Hunt**  
Cambridge University, UK

1:00–2:00 pm, Tuesday, 19 April 2011  
MSI Seminar Room, Building 74, Clayton Campus

All welcome. No RSVPs necessary.

## Summary

The SPICE project investigates the benefits, risks, costs and feasibility of solar radiation management through the deployment of reflective aerosols in the stratosphere.

We propose that particles can be delivered to the stratosphere through a high-pressure pipe suspended by a balloon tethered at an altitude of 20 km. An ultra-high pressure pumping system would deliver a particulate slurry to be dispersed at altitude. The resulting particulate cloud would then lead to global cooling by increasing the albedo of the planet in just the same way as the planet cools after a large volcanic eruption.

The project falls under the general heading of “Geoengineering”, ie how to cool the planet if we fail to control global CO<sub>2</sub> emissions.

SPICE presents many novel engineering challenges, especially the design of the pipe and pumping systems to withstand pressures up to 4000 bar and tensions up to 500 tonnes.

In this presentation a number of these challenges will be discussed, including the challenge of preparing a 1 km test-bed to be

constructed in November this year. Preliminary wind tunnel test results will also be presented as an illustration of the complexity of the dynamic behaviour of the tether in high winds.

SPICE is funded by the UK Engineering and Physical Sciences Research Council. Our major collaborators are Bristol and Oxford Universities.

## Speaker Bio

Dr Hugh Hunt is a Senior Lecturer in Engineering at Cambridge University, a Fellow of Trinity College, and a Mechanical Engineering graduate of Melbourne University.

His principal research interests are dynamics of high-altitude tethered balloons, detection of damage in large wind turbine gearboxes, vibration of turbocharger wheels, vibration from underground railways, dynamics of towers due to bell-ringing, gyroscopic devices for extracting energy from ocean waves, and dambusters and the engineering behind the bouncing bomb

He is also actively involved in promoting science and engineering at schools.