

## Communicating the Chemistry of Climate Change with ICT and Paraffin

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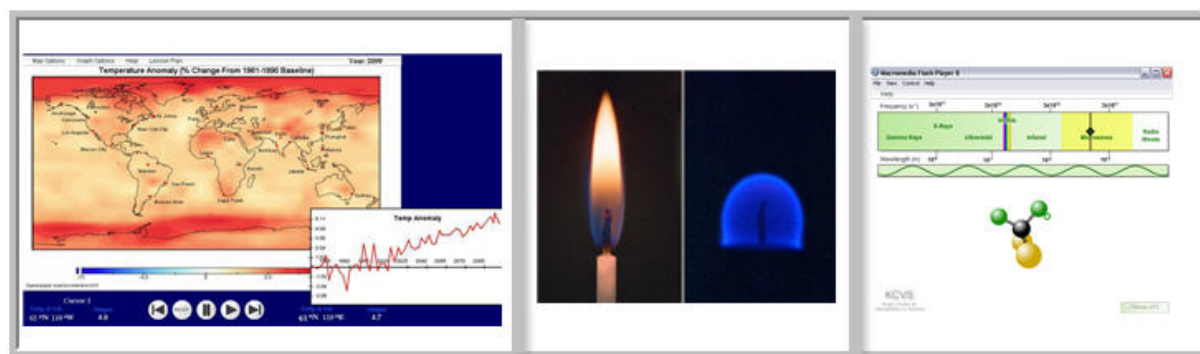
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Many objects of study in science are too big, too small, too complex, too far away, or too abstract to easily see. And seeing – developing a rich mental model – is a prerequisite to understanding complex ideas, structures, relationships, and processes in chemistry. Robust mental models are also needed to understand the scientific issues underlying complex global challenges, such as climate change. Trace substances we introduce into the atmosphere interact with each other and with electromagnetic radiation, causing fundamental changes in the atmospheric envelope that supports life and human activity.

How can the tools of the ICT age be used by chemistry educators to help equip the next generation to understand and address this and other challenging issues facing our planet, so they can make informed decisions based on scientific evidence? Much of the science underlying climate change builds on basic understanding of the interaction of invisible substances with invisible electromagnetic radiation, on the time scale for atmospheric processes, and on the nature of modeling.

At the King's University Centre for Visualization in Science (KCVS), we are interested in using computer based visualizations, haptic interfaces, and sound to exploit the perceptual power of the human senses and enrich student's conceptual understanding of topics in chemistry and other scientific disciplines. But non-technological tools also play an important role in seeing and understanding. Metaphors, stories, and simple demonstrations can be powerful ways to enrich our student's scientific understanding.

In this talk we will examine common student misconceptions about the science underlying climate change and introduce interactive Flash-based digital learning objects created at KCVS ([www.kcvs.ca](http://www.kcvs.ca)) to help students see and understand. And perhaps we can also learn about climate change from paraffin candles...



**Figure 1.** Using ICT and candles to facilitate understanding of chemistry underlying climate change