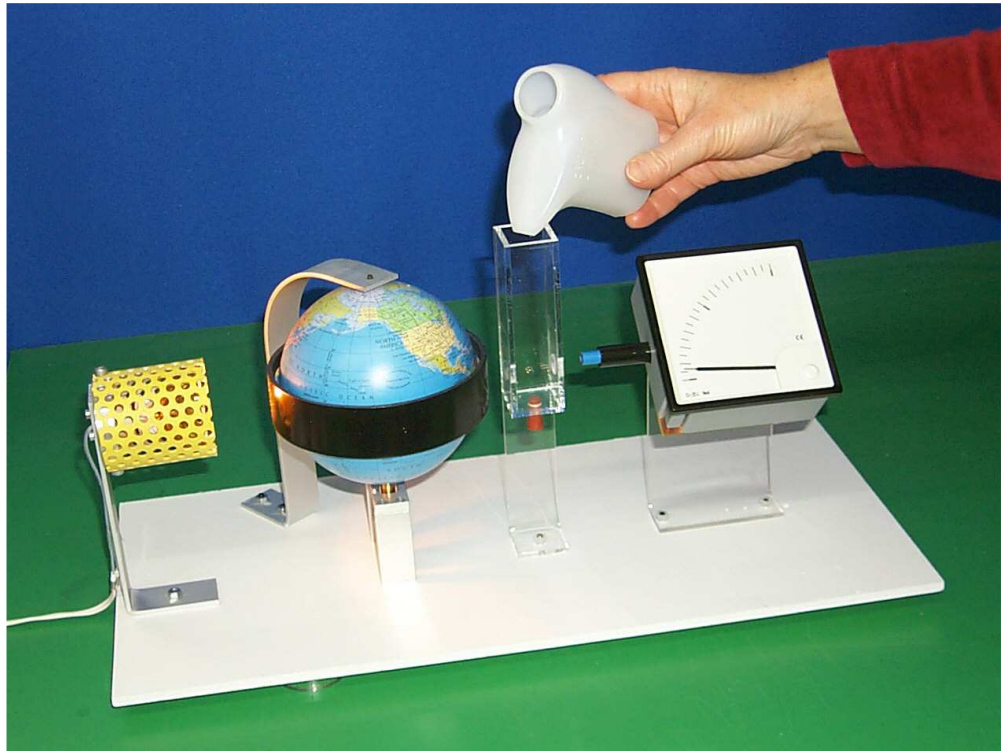
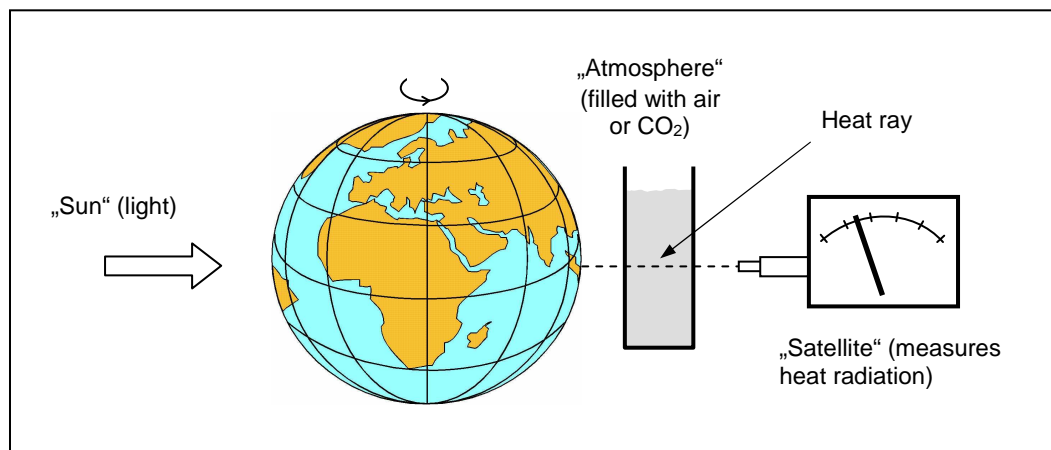


Greenhouse Effect Experiment



The surface of the rotating model earth is heated up by intense light from a lamp („sun“). The warm surface (in particular: a metal ring around the equator) emits invisible heat radiation in turn. Some of this passes through the acrylic glass container („atmosphere“) filled with air. A detector outside the atmosphere („satellite“) measures the amount of heat radiation arriving at this point („in space“). If CO₂ is poured into the container, less heat radiation arrives at the detector, as is readily verified by the instrument. Part of the radiation is obviously being held back by the CO₂ in the model atmosphere. This necessarily brings about a build-up of heat energy near the surface of the model earth.



The CO₂-gas in the atmosphere has the same effect as the glass roof of a greenhouse: it holds back the heat radiation emitted by the surface of the earth.

That is what experts say. But, frankly speaking, it sounds quite strange. How could a gas stop radiation? Nothing in our everyday experience supports such a notion. On the contrary, our common sense says: an invisible and almost immaterial thing like a gas cannot block rays. And thus many of us, though „informed“, are not really convinced. Direct evidence of the fact is possible only through physical experiments. So, given the importance of the phenomenon, we have concluded:

Greenhouse effect experiments must be made public!

This is what our simplified yet scientifically correct experiment is designed for. It is very easily conducted and understood. Everybody can immediately assure themselves of the fact that CO₂ holds back heat radiation. At the same time its geometry points to the global relevance of the phenomenon.

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Research background

Our interdisciplinary team (physics and learning psychology) has been supported by the University of Basel and the Swiss Federal Office of Energy (BFE). Results are published e.g. in:

- Huber, E. & Aeschbacher, U.: Die Problematik von Demonstrationsexperimenten zum Treibhauseffekt: Analyse und Lösungen. Der mathematische und naturwissenschaftliche Unterricht (MNU), 1995, 48/7, S.415-421.
- Aeschbacher, U., Calo, C. & Wehrli, R.: „Die Ursache des Treibhauseffektes ist ein Loch in der Atmosphäre“: Naives Denken wider besseres Wissen. Zeitschrift für Entwicklungs- und Pädagogische Psychologie, 2001, 3/33, S.230-241.
- Aeschbacher, U. & Huber, E.: Experimental demonstration of the greenhouse effect to lay people. Research conference of the Swiss Federal Office of Energy (BFE), February 2004, Conference proceedings.