

Clouded research

LAWRENCE SOLOMON, Financial Post

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Jasper Kirkby is a superb scientist, but he has been a lousy politician. In 1998, anticipating he'd be leading a path-breaking experiment into the sun's role in global warming, he made the mistake of stating that the sun and cosmic rays "will probably be able to account for somewhere between a half and the whole of the increase in the Earth's temperature that we have seen in the last century." Global warming, he theorized, may be part of a natural cycle in the Earth's temperature.

Dr. Kirkby was immediately condemned by climate scientists for minimizing the role of human beings in global warming. Stories in the media disparaged Dr. Kirkby by citing scientists who feared oil-industry lobbyists would use his statements to discredit the greenhouse effect. And the funding approval for Dr. Kirkby's path-breaking experiment -- seemingly a sure thing when he first announced his proposal-- was put on ice.

Dr. Kirkby was stunned, and not just because the experiment he was about to run had support within his scientific institute, and was widely expected to have profound significance. Dr. Kirkby was also stunned because his institute is CERN, and science performed at CERN had never before seemed so vulnerable to whims of government funders.

CERN is no fringe laboratory pursuing crackpot theories at some remote backwater. CERN, based in Geneva, is the European Organization for Nuclear Research, a 50-yearold institution, originally founded by 12 countries and now counting 20 country-members. It services 6,500 particle physicists -- half of the world's total -- in 500 institutes and universities around the world. It is building the \$2.4-billion Large Hadron Collider, the world's most powerful particle accelerator. And it is home to Jasper Kirkby's long-languished CLOUD project, among the most significant scientific experiments to be proposed in our time. Finally, almost a decade after Dr. Kirkby's proposal first saw the light of day, the funding is in place and the work has begun in earnest.

The CLOUD (Cosmics Leaving OUtdoor Droplets) laboratory experiment, CERN believes, will show the mechanisms through which the sun and cosmic rays can influence the formation of clouds and thus the climate. The CLOUD project will use a high-energy particle beam from an accelerator to closely duplicate cosmic rays found in the atmosphere. This will be the first time this technology will be brought to bear on global warming, the most controversial scientific question of the day.

Also for the first time, very basic answers about the drivers of climate change may surface to dispel the general paucity of data on the subject. "By studying the micro-physical processes at work when cosmic rays hit the atmosphere, we can begin to understand more fully the connection between cosmic rays and cloud cover," CERN explains. "Clouds exert a strong influence on the Earth's energy balance, and changes of only a few per cent have an important effect on the climate."

To accomplish all this, Dr. Kirkby has assembled a dream team of atmospheric physicists, solar physicists, and cosmic ray and particle physicists from 18 institutes around the world, including the California Institute of Technology and Germany's Max-Planck Institutes, with preliminary data expected to arrive this coming summer. The world of particle physics is awaiting these results with much anticipation because they promise to unlock mysteries that can tell us much about climate change, as well as other phenomena. The world of climate science, in contrast, is all but ignoring the

breakthroughs in climate knowledge that CERN is about to reveal.

In May, just months before the first CERN results are in, the UN's Intergovernmental Panel on Climate Change, the agency organizing most of the world's climate-change studies, will be releasing its much-anticipated report on the state of climate science. Oddly, the IPCC report -- now circulating in draft form -- has in effect decided not to wait for CERN's findings.

The IPCC draft report ranks the sun as an all-but-irrelevant factor in climate change. More oddly, it has come to this conclusion although it states that there is no consensus among solar scientists, meaning the IPCC admits it has no hard evidence to go on. Even more oddly, given the excitement and the anticipation that the CLOUD experiment is generating among the 6,500 particle physicists in CERN's community, the IPCC has decided to diminish the sun's estimated contribution to climate change by more than half, from its previously small contribution to one that is yet smaller.

Meanwhile, scientists who tout the manmade theory of global warming to the exclusion of others continue to disparage the CLOUD experiment. "This link is not properly established for the moment," said Dr. Urs Neu of the Swiss Forum for Climate and Global Change, a prominent critic. "The cosmic ray theory has been used by people who want to deny human influence on global warming."

Dr. Kirkby, in contrast, now 10 years older and wiser, has changed. In the past, he would unguardedly say: "There is certainly a greenhouse effect. The question is whether it is responsible for all the 0.6C warming in the past century, or two-thirds or a fifth -- or what?" Now, to head off attacks, and controversies that might once again derail the CLOUD product, he hides his hopes and downplays the significance of what CLOUD may find: "If there really is an effect, then it would simply be part of the climate-change cocktail," a perhaps less naive, more politic Dr. Kirkby now states.

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