

Ulrich Siegenthaler 1941–1994

Uli Siegenthaler was born in Frutigen, Switzerland in 1941.

The formal milestones of his scientific career are:

1960-66 Studies in physics at the Eidgenössische Technische Hochschule, Zurich.

1966 Diploma thesis (Master's degree) in physics.

1967-71 Doctorate studies at Physics Institute, University of Bern (Prof. H. Oeschger)

1971 Dr. phil. nat. (Ph.D.) summa cum laude. Thesis subject: Oxygen-18, deuterium and tritium in the water cycle.

1971-81 Assistant, then senior assistant at Physics Institute, University of Bern.

1981 Lektor, Physics Institute, University of Bern.

1983 Privatdozent, University of Bern.

1990 Associate Professor (nebenamtlicher Extraordinarius) for experimental physics, University of Bern.

1993 Elected as a Fellow of the American Geophysical Union.

Uli also spent time at:

Geoscience Group, Weizmann Institute, Rehovot, Israel;

Institute for Environmental Physics, Heidelberg, FRG;

Atmospheric and Oceanic Sciences Program, Princeton University.

Among the various committees and boards on which Uli served are

- International Commission on Atmospheric Chemistry and Global Pollution (1985-1990);
- Comité Scientifique du PNEDC (Programme National pour l'Etude de la Dynamique du Climat; French climate research programme)
- Expert for German Climate Research Programme (1990);
- International Scientific Steering Committee for JGOFS (Joint Global Ocean Flux Study);
- Chairman, Swiss National SCOPE Committee;
- Swiss National IGBP Committee;
- Eidg. Kommission Nukleare Entsorgung (Swiss Federal Commission on Nuclear Waste Disposal);
- Vorstand (committee) Bernische Naturforschende Gesellschaft;
- The advisory boards for Tellus B, Climate Dynamics, Radiocarbon.

His own description of his research activities was:

- Modelling of the global carbon cycle, in particular of the role of the ocean: anthropogenic CO₂ increase and isotopic perturbations (¹³C, ¹⁴C) due to human activities, natural perturbations of the carbon cycle (glacial-interglacial CO₂ variations; ¹⁴C variations),
3-dimensional modelling of the oceanic carbon cycle (with J. Sarmiento, Princeton);
- Greenhouse effect and climatic change;
- Build-up and supervision of a stable isotope laboratory for measuring ¹⁸O/¹⁶O, ¹³C/¹²C and (since 1990) ¹⁵N/¹⁴N in the environment;
- Experimental studies of the carbon cycle by means of stable isotope analyses: studies on concentration and isotopic composition of CO₂ in atmosphere and soils, dependence of ¹³C/¹²C fractionation of plants on environmental stress (ozone; water), in collaboration with botanists, stable isotopes in CO₂ from old polar ice cores as a constraint on the cause of glacial-postglacial CO₂ concentration variations;
- Palaeoclimate studies: rapid variations in the late glacial (Younger Dryas) as recorded in stable isotopes in lake sediments; stable isotopes in tree rings as climate records;
- Use of isotopes (tritium, ¹⁸O/¹⁶O) in hydrology: determination of age and origin of groundwater (till about 1983); stable isotopes in the atmospheric water cycle.

His university teaching included both introductory physics, atomic physics and advanced courses in a range of aspects of environmental physics.

Those of us in the carbon cycle community will appreciate the importance of Uli's work. For the work presented in this report, two items have proved to be key contributions:

- The box-diffusion model work from 1975. This is still used widely and it forms the basis of several of the model calculations presented in this report.
- The pioneering inversion calculation (Siegenthaler and Oeschger, 1987) in which the inverse calculations were used to deduce terrestrial fluxes from the CO₂ concentrations measured in ice-cores.

Uli leaves a wife and two children.

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