

## Nick Shackleton

### One of the most eminent geoscientists of all times

Professor Sir Nicholas Shackleton, "Nick", passed away on 24 January 2006, at the age of 69.

Since the late 1960s, when Nick had started to develop the techniques required for high-resolution isotope stratigraphy, he was at the forefront of research in paleoclimate and remained one of the most influential and brilliant scientists in this field. These techniques were fundamental in allowing us to obtain the first isotope records showing the history of ice-sheet fluctuations during the Quaternary. The reconstructed glacial-interglacial cycles were not only more numerous than previously supposed but also matched the long-term variations of the astronomical parameters. The paper he co-authored with Jim Hays and John Imbrie in *Science* in 1976, now a classic citation and one of the most important Quaternary research papers ever, showed that the variations in the Earth's orbit and axis of rotation are the pacemakers of the major climatic changes during the Quaternary. This paper, for the first time, validated the "Milankovitch" hypothesis.

Nick devoted most of his life to the investigation of the relationship between orbital forcing and climatic changes. He was particularly influential in the development of high-resolution astronomically tuned timescales for geological records, the re-evaluation of the Bruhnes-Matuyama geomagnetic polarity reversal and the investigation of high-frequency climate changes during the last glacial cycle. More recently, the success of the Quaternary isotope sequences convinced him to extend his research into the Neogene (and even the Paleogene). His effort contributed to the determination of an unprecedented continuous high-resolution timescale for the last fifteen million years. One of his last major contributions, published in *Science* in 2000, clarifies a long-standing puzzle of the phase-relationship between astronomical forcing, ice sheets, carbon dioxide concentration and ocean temperature. Throughout his career, Nick advised a large number of scientists at all levels and participated in numerous commissions in charge of clarifying Cenozoic stratigraphy. His role in INQUA, where he was President from 1999 to 2003, was particularly influential, leading to the Union becoming a full member of the International Council of Scientific Unions in 2005. Furthermore, he was one of the pioneers who launched the IMAGES program within PAGES in the mid 1990s, served as a member on the IMAGES SSC, and demonstrated in numerous papers how a new generation of high-resolution paleoceanographic sediment records from well-chosen high-rate deposition sites can uncover mechanisms of rapid climate changes.

In view of such accomplishments, it is not surprising that Nick received the most prestigious awards allocated to geosciences: the Blue Planet Prize of the Asahi Glass Foundation (2005) and the Crafoord Prize of the Royal Swedish Academy of Sciences (1995). He was Fellow of the Royal Society, Foreign Associate of the US National Academy of Sciences, and an Honorary Doctor of Dalhousie,

Stockholm and Padova Universities. He was invited to deliver many prestigious lectures and was awarded a knighthood by Queen Elizabeth II for "services in the Earth Sciences" in 1998. Nick was not only a renowned scientist but also a brilliant clarinetist. His collection of clarinets is unique in the world (even more so than his scientific work, he told me once!) One of his great pleasures was performing in dedication to his friends each time he had the opportunity.

Professor Sir Nicholas Shackleton was definitely one of the greatest geoscientists of all times, but most of us are also losing Nick, a good friend.

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*Nick Shackleton at the meeting on "Climate and Ozone at the Dawn of the Third Millennium" organized by Drs A. Ghazi and A. Berger in Brussels, 13-14 May 1996 in honor of Paul Crutzen (Nobel Prize 1995), B. Bolin (Blue Planet Prize 1995), W. Dansgaard and N. Shackleton (Crafoord Prize 1995). Photo by André Berger.*

