

## **Lewis Fry Richardson Medal** (*since 1997*)

This medal has been established by the Interdisciplinary Working Group (IWG) on Nonlinear Processes in Geophysics in recognition of the scientific achievement of [Lewis Fry Richardson](#). It is reserved for scientists for their exceptional contributions to nonlinear geophysics in general.

- 1998 – V. I. Keilis-Borok
- 1999 – R. Hide
- 2000 – B. Mandelbrot
- 2001 – J.C.R. Hunt
- 2002 – F.H. Busse
- 2003 – Uriel Frisch
- 2004 – Michael Ghil
- 2005 – Henk A. Dijkstra
- 2006 – Roberto Benzi



### **Citation of Benoit Mandelbrot**

*for his pioneering work in introducing the concepts of fractal geometry and discovering the underlying simplicity of scale-independent phenomena, and for demonstrating their application in a wide variety of fields in geophysics and other areas of physical science*

Dr Benoit Mandelbrot is now widely recognized as one of the 'giants of nonlinear science, who pioneered the ideas and application of scaling concepts in many areas of science, including those of geophysical interest. Indeed, in his seminal paper published by Science in 1967, Dr B. Mandelbrot made not only widely known the posthumous publication of the work of L.F. Richardson on the length of coasts, but he also demonstrated that the scaling exponent empirically discovered by L.F. Richardson was related to the rather abstract notion of the Hausdorff dimension. Similarly, in his JFM paper of 1974, Dr Mandelbrot showed the importance of this notion for characterising the intermittency of turbulent cascades, the latter being a paradigm originating in the celebrated poem by Richardson enclosed in his book on 'Weather prediction by numerical process' published in 1922.

The work of B. Mandelbrot encompasses other geophysical domains, in particular hydrology and geomorphology. Furthermore, the mushrooming interest in fractal and scaling notions has touched almost every geophysical field. In a general manner, it has been a milestone in the quest for simplicity defining complexity and as an impressive use of scale invariance in nonlinear phenomena: complex shapes, which are so common in geophysics (e.g. clouds, rivers, precipitation and pollution patterns, ice sheets, etc.), could be created and described by simple rules iterated over and over again.

Last but not the least, the use of the 'Fractal geometry' to deal with scale invariant geometric sets of points eventually lead to the consideration of the notion of multifractal fields, which turn out to be rather ubiquitous in geophysics. Thanks to these developments, we have another way of looking at Nonlinear Phenomena in Geophysics: the complexity of shapes could become related to the singularities of the nonlinear generating equations, and the latter could be also created and described by simple rules.