



K O N I N K L I J K E N E D E R L A N D S E
A K A D E M I E V A N W E T E N S C H A P P E N

Laudatio Buys Ballot Medal 2014

By Henk Dijkstra, chairman jury

Sir Brian Hoskins, Mrs. Hoskins, director of the Royal Netherlands Meteorological Institute, members of the Royal Netherlands Academy of Arts and Sciences, colleagues, ladies and gentlemen,

The importance of meteorology and, more general, atmospheric sciences can not be easily overstated.

As many of you remember, the previous winter was extremely mild in Western Europe. For example, at the Netherlands station of De Bilt, the mean temperature over the months December, January and February was 2.6 degrees above normal. Since measurements started in 1706, only the winter of 2007 was warmer. On the other hand, it was extremely cold over many parts of the US, in particular in the east and mid west, during the same period. The United Kingdom, France and Spain were hit by extreme rainfall which lead to extensive flooding, in particular in the UK. Estimates of damages range in the billions of euros and even effects of the winter weather on the growth of the GDP (Gross Domestic Product) were identified.

What was the reason for these very extreme phenomena in the previous winter? In short, these have been created by anomalous behaviour of the northern hemispheric jet stream so with relatively minor changes in the atmospheric flow. It has been recently suggested that this will this happen more frequently under future climate change.

The concepts of weather and climate are strongly connected. As Mark Twain a long time ago already stated: "Climate is what we expect, weather is what we get!" Weather forecasts play a more and more important role in human activities, in particular related to weather alarms. Projected climate changes in the near future play already a substantial role in long term planning, such as water management in the Netherlands, in particular in adaption scenario's.

Indeed, the importance of meteorology and, more general, climate science can not be easily overstated.

For weather forecasts and climate projections, we rely on mathematical models of atmospheric flow. The quality of these models is strongly coupled to a solid theoretical knowledge of atmospheric behaviour. A detailed understanding of



K O N I N K L I J K E N E D E R L A N D S E
A K A D E M I E V A N W E T E N S C H A P P E N

atmospheric phenomena, such as the behaviour of the jet stream, is centrally important to improve the quality of these models.

It is in this context that I am highly honoured to introduce Sir Brian Hoskins. Born in 1945 in Bristol, UK, he did his PhD in Cambridge, UK with Francis Bretherton as advisor. Between 1970 and 1976 he worked at Princeton and at the National Center for Atmospheric Research in Boulder, USA, both institutes with an outstanding reputation in dynamical meteorology. Returning to the UK in 1976, he was appointed Reader in Atmospheric Modelling and subsequently Professor of Meteorology at the University of Reading. Under his leadership (from 1990 to 1996) the Department of Meteorology at Reading University became one of the leading dynamical meteorology departments in the world. He is currently a Professor at the University of Reading and Director of the Grantham Institute for Climate Change at Imperial College London.

Based on a strong mathematical background, his research has focused on understanding the dynamics of atmospheric motion on spatial scales from fronts to the general circulation. He has made essential and pioneering contributions, most perhaps through his work on the theory of extra-tropical cyclones and frontogenesis. His use of the concept of isentropic potential vorticity has been an outstanding breakthrough and at the same time a practical innovation in operational meteorology. He has also carried out innovative and original work on the dynamics of the general circulation, atmospheric blocking and the impact of the stratosphere on the troposphere.

His important contributions are now part of the curriculum of courses on Dynamical Meteorology at universities all over the world. Furthermore, the spectral primitive equation atmospheric model, which he developed together with Adrian Simmons, is considered to be the ancestor of the current operational model of the European Centre for Medium-Range Weather Forecasts, one of the best models in the world.

Sir Brian Hoskins has been recognized many times for his outstanding contributions. These recognitions are too many to mention all, but here a short selection.

He received the Carl-Gustav Rossby Research Medal of the American Meteorological Society and the Vilhelm Bjerknes Medal of the European Geophysical Society. He is a Fellow of the Royal Society, a Fellow of the U.S. National Academy of Sciences and a Honorary Professor of the Chinese Academy of Sciences. He was appointed Commander of the most excellent Order of the British Empire (CBE) in 1998, followed by a Knighthood in 2007.



K O N I N K L I J K E N E D E R L A N D S E
A K A D E M I E V A N W E T E N S C H A P P E N

It is clear that Sir Brian Hoskins is an exceptional scientist. For his outstanding and ground-breaking work to understand the behaviour of weather systems and the large-scale atmospheric circulation, the jury has chosen Sir Brian Hoskins as the recipient of the Buys Ballot Medal 2014.