

Levallois Medal Laudation for Reiner Rummel

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The Levallois Medal was established in 1979 to honor Jean-Jacques Levallois for his long service from 1960 to 1975 as Secretary General of the International Association of Geodesy (IAG). It is usually awarded every four years at the IAG General Assemblies, and is presented “in recognition of distinguished service to the association and/or to the science of geodesy in general”.



Fig. 1 Handover of the Levallois Medal to Reiner Rummel (left) by the IAG President, Chris Rizos (right)

A committee of six past Presidents of the IAG (Gerhard Beutler, Helmut Moritz, Ivan Mueller, Fernando Sanso, Michael Sideris and Wolfgang Torge) recommended unanimously to award the Medal at the 2015 General Assembly in Prague to Reiner Rummel for his distinguished

service to the IAG and the science of geodesy in general, and in particular for his decisive role in the development of satellite gradiometry and the realization of the Gravity field and steady-state Ocean Circulation Explorer (GOCE) mission.

Right after his PhD degree in 1974, Reiner was invited as a post-doctoral researcher to the Department of Geodetic Science at the Ohio State University, where he had the chance to collaborate with distinguished colleagues and formulate his geodetic profile as an amalgam of European geodetic theory and US geodetic practice, as the now established space geodetic techniques were just coming into blossom at that time.

After a period of work as a researcher in Munich, first with the German Geodetic Research Institute and then with the Geodetic Commission of the Bavarian Academy of Sciences and Humanities, he was appointed Professor of physical geodesy at the Delft University of Technology, where he served for 13 very fruitful years. In 1993, he was appointed Professor and Head of the well-known Institute of Physical and Astronomical Geodesy at the Technical University of Munich, where he served until his retirement in 2011. Since his retirement, he is a Professor Emeritus at the same University and a Carl von Linde Senior Fellow of the Institute of Advanced Study. It was during his 18 years at the Technical University of Munich that Reiner Rummel made his greatest contributions as both an academic teacher and a pioneering researcher.

Reiner’s role in science is that of a visionary, whose ideas and originality greatly contributed to the status of contemporary geodesy. Among his many contributions, three should be pointed out that had the greatest impact on the geodetic community: his central role in the restructuring/modernization of the IAG, his protagonistic role in the realization of the GOCE satellite gradiometry mission, and his role as an initiator of the IAG’s Global Geodetic Observing System (GGOS).

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As President of IAG's Section II "Space Geodesy" in 1995-1999, Reiner was instrumental in initiating the process of restructuring the International Association of Geodesy. With the development of modern IAG Services like the IERS (International Earth Rotation and Reference System Service) and the IGS (International GNSS Service) it became clear that IAG had to take advantage of these promising initiatives in order to reform its structure, which was going back to the 1960s. Starting with an IAG Section II Symposium in Munich devoted to the restructuring of the IAG, a review was actually performed in the period 1999-2003. The new structure was accepted at the 2001 IAG Scientific Assembly in Budapest, and was finally realized at the 2003 Sapporo General Assembly.

The Global Geodetic Observing System (GGOS), originally labeled IGGOS (Integrated Global Geodetic Observing System) by Reiner Rummel, is devoted to the monitoring of the system Earth by geodetic methods and comprises the entire geodetic infrastructure – terrestrial and space, including satellite missions. The GGOS concept is scientifically based on Reiner's concept of the three pillars of geodesy, namely the (geometric) Earth's shape, the Earth's gravity field, and Earth's rotation, intersecting into the concept of reference systems. The GGOS concept is ambitious, its realization a major challenge, which, although already quite advanced, has not reached its pinnacle yet. Nevertheless, the original idea and the "grand design" are due to Reiner Rummel.

It has been a major undertaking to convince the space agencies of the necessity to realize dedicated gravity field missions. In retrospect, it is close to a miracle that three dedicated gravity field missions, namely CHAMP, GRACE, and GOCE, were launched into orbit in the first decade of our century. We would estimate that Reiner Rummel probably devoted more than ten years of his career to the development and realization of what is now known as the European Space Agency's Gravity field and steady-state Ocean Circulation Explorer (GOCE) mission. Reiner's most important contribution was to lead European geodesists to develop a consistent mission concept – a typical geodetic approach, which in essence measures (the second derivatives of) the gravitational potential in situ. Reiner Rummel was the Principal Investigator of the GOCE Mission and the Coordinator of the GOCE HPF (High-level Processing Facility) of ten European institutions collaborating to provide the official GOCE products and to scientifically exploit the applications enabled by GOCE, such as, for example, the Unification of Height Systems.

As it can be seen in his more than 170 publications, Reiner maintained through his research career, and despite his devotion to gravity gradiometry, a vivid interest in a wide spectrum of topics ranging from the purely theoretical to the more application oriented ones, covering both geometric and gravimetric aspects of geodesy. His view of geodesy as an interdisciplinary branch of science promoted the idea of seeking collaboration with other geoscientists – from oceanographers to seismologists to atmosphere physicists.

Reiner Rummel has been an outstanding teacher. His natural gift of lecturing helps him inspire his audience with stimulating and at times unconventional presentations. His initiative and ideas led to the formulation of the ESPACE Master Curriculum at TU Munich providing fundamental knowledge in space engineering and satellite applications related to navigation, remote sensing, and Earth system science. His students simply admired and adored him. Many of his Doctoral and Habilitation students hold high academic positions in Germany and worldwide.

His list of services to the academic community is too long to be mentioned here. They are best mirrored in his many medals and awards in recognition of his academic and research excellence, which include the Heiskanen Award of the Ohio State University (1977), the Vening Meinesz Medal of the European Geophysical Society (1998), and the Bavarian Order of Sciences and Arts (Maximiliansorden) (2010). He is a member of the Royal Netherlands Academy of Sciences (1989), the Bavarian Academy of Sciences (1997), an honorary member of the Hungarian Academy of Sciences (2001), of the Deutsche Akademie der Naturforscher Leopoldina (2004) and the Leibniz Sozietät Berlin (2008). He has been awarded the Honorary Doctor Degrees from the Technical University of Graz (2005), the University of Bonn (2005), the Ohio State University (2013) and the Aristotle University of Thessaloniki (2014).

In summary, it is appropriate to state that Reiner Rummel is one of few outstanding geodesists of the 20th – and 21st – century. His impact on geodesy, geodynamics, and on Earth sciences in general can hardly be overestimated.

He is happily married to Renate, a father of two children, Benno and Veronika, and a proud grandfather of four.

Finally, beyond his scientific contributions, a word must be said about the person Reiner Rummel. He has a pleasant personality and a mild, lovable character. Colleagues, collaborators and former students alike have found in Reiner a caring mentor and dear colleague. It has been our pleasure and honour to write this citation for Reiner Rummel – an outstanding geodesist and a dear friend.