

Levallois Medal Laudation for Christoph Reigber

Chris Rizos¹

The Levallois Medal was established in 1979 to honour *Jean-Jacques Levallois* for his long service as General Secretary of the International Association of Geodesy (IAG) from 1960 to 1975. It is awarded on the occasion of the IAG General Assembly to a distinguished geodesist "in recognition of distinguished service to the Association and/or to the science of geodesy in general".

An ad hoc committee of past presidents of the IAG has recommended to award the Medal at the 2019 IAG General Assembly to Emeritus Professor *Christoph Reigber*, for his sustained service and leadership over several decades to the IAG and to geodesy in general.



Professor Harald Schuh handing over the Levallois Medal to Professor Christoph Reigber at GFZ (Photo: Markus Bradke, GFZ)

Christoph Reigber was born in 1939 in Breslau, in today's Poland. He completed his Diploma in Surveying and Geodesy in 1965 at the Technical University Munich. In 1969 Christoph completed his doctoral thesis at TUM, and obtained his Habilitation in 1974, also from the TUM. His subsequent university career included Professor in the Department of Astronomical and Physical Geodesy TUM 1982-1992, and Professor at the Institute of Earth and Environmental Sciences, Potsdam University, 1993-2004. He was made Emeritus Professor upon his retirement in 2004.

Christoph Reigber's most significant contributions to the IAG and to geodetic science are best exemplified by his extraordinary, and far-sighted leadership of numerous projects and several institutions, over a period spanning four decades. It is not possible to mention many of these in this Laudation, hence just a few will be highlighted.

Christoph was appointed Director of the Department "Theoretical Geodesy" at the Deutsches Geodetisches Forschungs Institut (DGFI – in English, the German Geodetic Research Institute) in Munich, in 1980, a position he held until 1992. During this period Christoph had two major influences on the activities and contributions of DGFI. The first was an increased focus on the technology and earth science applications of satellite geodesy. The second was a dramatically increased engagement with ESA (and other space agencies) in projects, being a co-investigator or principal investigator, undertaking theoretical studies in support of new geodetic technologies, as well as direct participation in satellite missions. These projects included CI for NASA's Laser Geodynamics Program, the spaceborne laser study SPALT, several POPSAT system studies, PRARE tracking technology studies, being an analysis centre for MERIT and MEDLAS campaigns, several gravity field mission studies, PI on the ERS-1 mission, to name the most significant. This strong leadership in promoting

¹ University of New South Wales, Sydney, Australia

satellite geodesy, and a focus on developing cutting edge geodetic technologies and promoting new satellite missions, have been the dominant contributions of *Christoph Reigber* to geodesy, from his early days at DGFI, and subsequently at the GFZ.

Arguably Christoph's most important contributions to the IAG, and to geodesy in general, were made during his directorship at the Deutsches GeoForschungsZentrum (GFZ – German Research Centre for Geosciences). The GFZ is Germany's most significant investment in the geosciences in the latter half of the 20th century. Christoph was one of the handful of scientists with the courage and vision to imagine the total revitalization of the geosciences on Telegrafenberg, in Potsdam, shortly after the reunification of Germany. This included a new science-focused geodesy institute, the Department "Geodesy and Remote Sensing", one of five founding departments of the GFZ. This department could boast a heritage going back to the legendary Central Bureau established by Johann Jacob Baeyer following the first "General Conference of the Representatives to the Central European Arc Measurement" held in Berlin in 1864. This date and event is reckoned to be the foundation of the IAG, and it was fitting that we celebrated the 150th anniversary of the founding of the IAG in 2013 at the GFZ. This department was even located in the same building as the original bureau. Christoph was Director of the department from 1992 until his retirement at the end of 2004.

While at the GFZ Christoph was able to launch a number of initiatives, whose significance is still considerable. One was to establish a GPS Analysis Centre at the GFZ that became one of the first ACs for the IGS when it was formally launched as an IAG service on 1 January 1994. Christoph was also Project Manager for the GFZ-1 geodynamic satellite mission. Perhaps his most far-reaching contributions to geodetic science have been in the field of satellite gravity missions. Christoph was Project Manager of the German CHAMP mission from 1994-2000, and later Project Director of the CHAMP mission exploitation phase. He was Co-Principal Investigator for the US-German GRACE (Gravity Recovery and Climate Experiment) mission 1997-2007. Today the GFZ continues this vital role in the GRACE-FO mission.

Christoph Reigber retired from the GFZ in November 2004 not because he'd grown too old to continue playing a leadership role in international geodesy, but due to German Federal Government regulations on public service retirement at 65 years of age. During his whole career Christoph advocated for, and practiced, international coordination and collaboration to further the science and applications of modern geodesy. His role in the IAG spanned from being a member of numerous Working Groups, to being President of the CSTG (International Coordination of Space Techniques for

Geodesy & Geodynamics), President of the IAG's Commission 2 ("Advanced Space Technology"), Chair of the Directing Board of the IERS (International Earth Rotation & Reference Systems Service) 1995-2000, Chairman of the Governing Board of the IGS 1999-2002, and Chairman of the IAG's GGOS (Global Geodetic Observing System) pilot project 2003-2005.

Christoph also was a member of many committees, councils and working groups beyond the IAG, all of which reflect his interest in promoting space technology for the benefit of science and society. Several are worthy of mention. Christoph was a Member of the Board of Trustees of the Werner von Braun Foundation for Space Science Advancement 2002-2008; Member of the Scientific Advisory Board for the Space Research Institute of the Austrian Academy of Sciences 2008-2017; and Vice-chair and Member of the Scientific Advisory Board of the Central Asian Institute of Applied Geosciences in Bishkek, Kyrgyzstan 2011-2018.

Christoph's contributions have won him many honours and awards, which include the CNES "Médaille de Bronze" (1977), the Alexander von Humboldt Prize for Scientific Cooperation between Germany and France (1985), the NASA Group Achievement Award (Crustal Dynamics Project) (1986), Fellow of IAG (1991), ERS-1 Award of ESA (1992), AGU Fellow (1994), Honorary Doctorate (Dr.-Ing. E.h.), University Bonn (1998), the Vening Meinesz Medal of the European Geophysical Society (2002), Honorary Professorship of Wuhan University, China (2003), the DLR Werner von Braun Medal (2003), the NASA Earth Explorers Program Office GRACE Mission Award (2006), the William T. Pecora Award for the GRACE Team (2007), the State Award of the Republic of Kyrgyzstan (2008), the Grand Prix of the French Air & Space Academy (2010), Member of Academia Europaea (2014), and the William Nordberg Medal of COSPAR (2018), inclusive the renaming of asteroid 6314 to REIGBER.

In summary, *Christoph Reigber* has made an enormous contribution to the IAG, and geodesy in general, making him a most worthy recipient of the Levallois Medal. On a personal note, I have known *Christoph Reigber* since 1981, when I was awarded an Alexander von Humboldt Fellowship to undertake postdoctoral studies at DGFI. This was a life-changing experience, and I subsequently took a sabbatical at the GFZ in 1995. I am humbled by what he has achieved in his professional life, but I also treasure my personal friendship with Christoph, his wife Nunu, and their two children Astrid and Andreas. I am honoured to be asked to prepare this Laudation.