Leopold-von-Buch-Plakette verliehen an Prof. Dr. Gillian R. Foulger

More than 100 years ago, Alfred Wegener proposed the continental drift hypothesis. Although it's not the continents that drift but the whole lithospheric plates, this is the fundamental process, which shapes the Earth. However, the mechanisms and driving forces leading to continental breakup and seafloor-spreading are still not understood.

Prof. Gillian R. Foulger is a world leader of what may be the most significant potential paradigm shift in our understanding of mantle dynamics, culminating in the question whether deep mantle plumes exist or not. In her book "Plates vs. Plumes: A Geological Controversy", published in 2010, she develops the plate hypothesis, proposing that anomalous volcanism arises from shallow depth, and that eruption is permitted by lithospheric extension. This hypothesis thus relates "anomalous" volcanism ultimately to plate tectonics. It is now widely appreciated that the predictions of the plume hypothesis are not borne out by observation and the many adjustments to the plume model at each locality that were necessary in the past do not provide confidence in this hypothesis. Whatever in the future turns out to be the best explanation for mantle dynamics, it is Gillian's merit to have initiated and substantially contributed to this lively discussion. To maintain the debate she founded and manages the website "www.MantlePlumes.org", which is an international forum for the debate and it is used widely by researchers, students and the media.

Gillian studied Natural Sciences at the University of Cambridge and received her Bachelor and Master of Arts. She studied Geophysics at Durham University and received a M.Sc. and a Ph.D. there. She spent seven years at the University of Iceland as a research scientist, where she investigated seismicity of earthquakes and applied this to geothermal exploration and reservoir monitoring. Up until the 1980s, it was generally assumed that earthquakes are caused by shear slip on faults. Such slip is expected to generate so-called "double couple" physical source mechanisms. Working in Iceland, she achieved the first observation of earthquakes whose sources unambiguously involved explosive,

crack-opening components. This represented the discovery of an entirely new class of earthquakes. In 1986 she led the Iceland GPS survey, which was the first ever regional geodetic survey utilising mobile GPS satellite receivers. This was the first of eight GPS surveys in Iceland, Turkey and the U.S. Basin & Range Province to measure movements related to plate tectonics at the centimetre-level accuracy.

Before becoming Professor for Geophysics at Durham University in 2004, she worked at the USGS and had positions as post-doc, lecturer and reader. She is Emerita Professor since 2017. She supervised a high number of M.Sc. and Ph.D. students as well as post-doctoral research assistants. Gillian Foulger is member of AGU and SEG and a fellow of the Icelandic National Academy of Sciences, the Royal Astronomical Society and the Geological Society of America. She served as convener and chair of numerous conference sessions and she is editor of the journals Scientific Reports and Earth-Science Reviews. Gillian has an outstanding publication record with more than 100 peer-review publications in high-rank journals including three Nature articles. She is lead-author of the publication "A global review of human-induced earthquakes", a topic highly relevant to society.

Leopold von Buch was not afraid to challenge the current wisdom and Gillian Foulger is following the same path. The German Geological Society (DGGV) recognises these achievements by awarding the Leopold von Buch Medal in 2020 to Gillian R. Foulger. Congratulations!

Rüdiger Lutz, Hannover
Dieter Franke, Hannover