Review of W.Torge & J.Müller: Geodesy. 4.th edition, De Gruyter, 2012. ISBN 978-3-11-020718-7.

Finally the new edition of W.Torge's Geodesy is published. This time with he's successor as a professor in Hannover, Jürgen Müller as co-author. This reviewer has successfully used the earlier editions of "Geodesy" in teaching at the University of Copenhagen, and for sure this new edition will be as successful as the earlier version. It covers all of geodesy except "plane surveying", a subject covered by many other fine textbooks.

The book is thoroughly revised and extended with the important results achieved in the years since the last edition (2001). The section on Satellite Observations has been extended with descriptions of the current missions like GRACE and GOCE. Geodynamics is well treated in an extended chapter on "Structure and Dynamics of the Earth". The book contains an extensive bibliography with 500 references added since the edition of 2001. Look for your own name there. But what is extremely important is the index, which makes the book useful as a handbook for everyone. The book also includes many fine figures and illustrations, now also in color.

A few critical points for consideration for the 5.th edition. The free-air gravity anomaly is introduced twice. At first as a quantity referring to the geoid and then later as a quantity referring to the telluroid following the definition of Molodensky. These two definitions should be found together on the same page.
Normal gravity at the ellipsoid is the basic quantity with a free-air contribution added to get normal gravity. However with calculations in space in mind the use of the expansion in Legendre polynomials (described in the text) is a much more consistent way to calculate normal gravity at ground or in space.
Least-squares collocation is to the great satisfaction of the reviewer treated in a separate section. Here is missing reference to the equivalent mathematical model of Reproducing Kernel Hilbert Spaces used when creating analytic models of the covariance function. It is also mentioned that the method is (was) restricted, because as many equations as the number of unknowns have to be solved. Here the situation has dramatically changed due to the use of multiprocessing and faster computers.

What is missing now is information on available software and data (some internet-links are given however). But maybe this information ought to be collected and updated by the Outreach Branch of the International Association of Geodesy. A set of (solved) exercises would also be very useful. The authors should be encouraged to create a web-site with such material.

It is a wonderful book with so much important information covering all of modern geodesy. The authors are to be congratulated for this important work.

C.C.Tscherning, University of Copenhagen.