Handbook of Geomathematics

- Consolidates current knowledge on geomathematics through reference entries
- Includes definitions, biographies and summaries of concepts and theories in geomathematics
- All contributions were peer-reviewed
- Explores qualitative and quantitative properties for the current and possible structures of the system Earth
- Enables readers to identify key technology & to translate images of the real geo-world to models of the virtual geo-world, and vice versa

During the last three decades geosciences and geo-engineering were influenced by two essential scenarios: First, the technological progress has changed completely the observational and measurement techniques. Modern high speed computers and satellite based techniques are entering more and more all geosciences. Second, there is a growing public concern about the future of our planet, its climate, its environment and about an expected shortage of natural resources. Obviously, both aspects, viz. efficient strategies of protection against threats of a changing Earth and the exceptional situation of getting terrestrial, airborne as well as space borne data of better and better quality explain the strong need of new mathematical structures, tools and methods. Mathematics concerned with geoscientific problems, i.e., Geomathematics, is becoming increasingly important. The ‘Handbook of Geomathematics’ deals with the qualitative and quantitative properties for the current and possible structures of the system Earth. As a central reference work it comprises the following geoscientific fields: (I) observational and measurement key technologies (II) modelling of the system Earth (geosphere, cryosphere, hydrosphere, atmosphere, biosphere) (III) analytic, algebraic and operator-theorectic methods (IV) statistical and stochastic methods (V) computational and numerical analysis methods (VI) historical background and future perspectives.