

Exercises Overview

for Gravity and Magnetic Exploration: Principles, Practices, and Applications

William J. Hinze, Ralph R. B. von Frese, and Afif H. Saad 2013, Cambridge University Press, 512 pp.

This website is maintained by Geosoft, Inc. and introduces the computational gravity and magnetic exercises developed by the authors in collaboration with Geosoft, Inc. for users of Hinze et al. (2013). It permits access to these exercises and the instructions and the *Oasis montaj (OM)* software for performing them. These exercises supplement the Study Questions available for this book on the Cambridge University Press website: <http://www.cambridge.org/gravmag>.

The **Study Questions** provided for each of the first 13 chapters of Hinze et al. (2013) are largely informational and theoretical in nature. However, exploration geophysics using gravity and magnetic methods is a highly computational science involving the reduction to anomaly form, processing, modeling, interpretation, and presentation of observed and processed data. These computations require a suite of computer programs some of which are in the public domain, but comprehensive commercial software is primarily used by industry, governments, and research institutes for these purposes.

Accordingly, the authors have enlisted the assistance of a major supplier of the commercial software for gravity and magnetic exploration, *Geosoft Inc.*, to provide technical support for exercise development and supply professional-grade computational and presentation software for performing the exercises and illustrating the results. The use of this software will significantly expedite the computations involved in the exercises, permit a comprehensive, consistent format data processing procedure, and allow the user to obtain experience in using professional-grade computational software for the variety of tasks involved in gravity and magnetic data processing from observation to presentations of interpretation.

To simplify the procedure for using the computational software in the exercises and to preserve the integrity and confidentiality of the software, a protocol has been established for the book's users to access and conduct the exercises. This protocol is subscription based and limits the period of use for each user to one year. The subscription is renewable. The exercises comprise their stated objectives, sections of the book relevant to the exercise, instructions for using the software, products prepared, and questions related to the results of the processing as appropriate. Completion of the exercise will provide the user with experience in processing and interpretation of the gravity/magnetic data and insight into the principles of the methods and practices that are in use to process and interpret data.

Additional computational exercises are planned beyond those presented in this current release. The authors and *Geosoft Inc.* invite general or specific suggestions for additional exercises and improvements to the exercises.

Accessing and Performing the Geosoft-based Exercises

The exercises in the textbook require a special edition of Geosoft's *OM* software. Visit the [Gravity and Magnetic Exploration Textbook web page](#) to download the software, instructions, exercises and associated data.

To run the exercises, you will need to follow these steps on the web page:

Step 1: Software Registration

You will need to register with the Geosoft-based exercise site before you can proceed to download the special edition of *OM*, which is tailored to the **Gravity and Magnetic Exploration** book Exercises. To register you must provide your name, email address & affiliation. This information will not be used for any marketing purposes, or list distribution. It is intended for communicating with you in case updates are applied to the site, and also for statistical purposes.

Step 2: Download Oasis montaj - GravMag Exercise Edition

Download a specialized version of *Oasis montaj* - GravMag Exercise edition (*OMGME*); the *Geosoft* processing, mapping, and analysis software. This version is tailored to the *Geosoft*-based exercises of the book. The download is a compressed file that should be uncompressed and installed on your computer. You will be able to use the software upon validation of the installation. The installed *OMGME* is time-restricted to one year, and can be renewed if necessary.

Step 3: Download Tutorial, Exercises and Data

Download a zipped file containing the Tutorial manual, Exercise instruction, and accompanying data, to your local computer. Use the didactic tutorial to familiarize yourself with the software. The step-by-step tutorial explains and demonstrates the use of the *OM* software for the various components of the exercises through ample illustrated examples, completed with maps and profiles.

After completing the tutorial, you will work through a comprehensive set of exercises preferably using the computer on which the *OMGME* software has been installed. Questions concerning the exercises and use of the software should be directed to the course instructor. *Geosoft Inc.* does not provide software support for the special *OMGME* edition issued as a result of accessing the *Geosoft*-based exercises link.

The Tutorial uses magnetic and gravity data from an area of Minnesota (i.e. *Area A*) to illustrate the process, whereas data from 3 adjacent areas (i.e. *Areas B, C, and D*) are provided in supplemental subfolders.