
Preface

Azerbaijan occupies an area of about 87,000 km² in the unique tectonic environment (the Greater and Lesser Caucasus, Talysh Mts., Kur and Caspian Basins, etc.) that finds a corresponding reflection in the studied geophysical fields. Geological–geophysical data on the geological structure of Azerbaijan can shed light on the basic principles of evolution of the Earth, the distribution of economic minerals and seismic activity. Geodynamically, this region can be considered as a result of the interaction of several microplates—fragments of the Afro-Arabian and Eurasian lithospheric plates. The deep understanding of both near-surface and deep geological structure of Azerbaijan may be realized only on the basis of comprehensive combined analysis of tectonic, stratigraphic, morphological, lithological features and various geophysical fields (ground, shipborne, airborne and satellite observed) examination. A number of important mineral resources are concentrated there: besides well-known hydrocarbon reserves (Azerbaijan is the oldest hydrocarbon province in the world), here was found a number of large polymetallic, copper, gold-bearing, iron ore, and other deposits.

Separate attention was paid to stratigraphy and lithology, geomorphology, neotectonics, hydrogeology, petrophysical parameters, seismological monitoring, qualitative and quantitative geophysical field examination and modelling. Environmental and near-surface investigations reflect examination of mud volcanoes, solving different ecological, technical and hydrogeological problems. Many tens of developed models clearly illustrate application of advanced geophysical–geological methodologies.

This book not only generalizes all previous publications in Russian and Azerbaijani languages (and partially—in English), but reflects many unpublished materials and principally new geoscientific data obtained during the recent years. Our view is that only skillful aggregation of various geological and geophysical methods, supported by the latest advances in the analysis of satellite data and extensive use of unmanned vehicles will make a significant leap in all the areas of the geosciences in Azerbaijan.

The authors of this book have been working in Azerbaijan and adjacent areas for many years and developed a lot of new methodologies, approaches and different kinds of models (geological, paleontological, geochemical, geophysical, etc.) for this region.

In the book preparing was used the results of long-term work of the Institute of Geology and Geophysics of the Azerbaijan National Academy of Sciences, including eight volumes of “Geology of Azerbaijan” and numerous domestic and International publications. Many chapters and sections were significantly reduced since the book volume is limited. Nevertheless, we hope that the presented materials allow to obtain a bright impression about the main directions of the geological–geophysical studies in Azerbaijan.

Chapter VI in second Volume “Geodynamics and Seismology” is prepared in cooperation with scientists from the Massachusetts Institute of Technology. Authors of this chapter are F. Kadirov, S. Mammadov, M. Floyd, R. Reilinger, A. Alizadeh and L. Eppelbaum.

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This book may be useful for geoscientists and engineers working in Azerbaijan and similar regions, students of different specialties studying geology, geophysics and environment of complex tectonic regions, and for a wide range of readers who want to get acquainted with the unusual geological–geophysical phenomena of this beautiful country.

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