



Dr. M.R. Janardhana obtained his M. Sc., degree in Geology from the University of Mysore in the year 1984 with first class and second rank. He was awarded Ph.D., degree in 1993 for his studies on the Geologic setting, texture, mineralogy and genesis of manganese deposits of Shimoga district, Karnataka state under the guidance of Prof. B. Krishna Rao, a well known economic geologist of the University of Mysore. Dr. M.R. Janardhana joined the Department of Geology, Yuvaraja's College, Mysore in the year 2001 and continues to work there as the Head of the Department.

The major scientific contributions of Dr. M.R. Janardhana along with his team include

1. Structural study based on gravity and magnetic modelling in the Qamar Gulf, eastern Yemen
2. Geotechnical studies around Damar city, Yemen
3. Geochemistry of coal washery effluents in Kerman province, SE Iran
4. Hydrogeochemistry of Kalyadi area in Hassan district of Karnataka state
5. Geochemistry of lower Jurassic shales of Kerman province, SE Iran
6. Geochemistry of lower Jurassic sandstones of Kerman province, SE Iran
7. Petrographic, mineralogy and geochemistry of coals of Kerman province, SE Iran
8. Hydrochemistry and quality of groundwater of Mazandaran province of North Iran
9. Impact of anthropogenic activities on the chemistry and quality of groundwater
10. Conceptualization of the hydrogeological system in Mazandaran province, Northern Iran
11. Cenozoic eruptive stratigraphy and structure, Yemen
12. Landform studies, geomorphological mapping and drainage based morphometry in parts of Coorg district, Karnataka state
13. Groundwater quality assessment in Mysore city

14. Assessment of groundwater quality surrounding defunct copper mines in Karnataka state

Rock-water interaction studies have been carried out by Dr. M.R. Janardhana along with his co-worker in the copper mineralization areas of Kalyadi and Ingaldhal regions of Karnataka state. Their contributions are for better understanding of the physico-chemical characteristics of groundwater in sulphide mine area. The investigations brought to light the facts on quality of groundwater adjacent to two copper mine areas in Karnataka state. In addition water quality monitoring and assessment studies for various needs have also been carried out in and around Mysore city.

Dr. Janardhana with his research fellow studied the various morphometric characteristics of the Payaswini and Harangi watersheds by using spatial technologies to evaluate landslide incidences occurring in a part of Coorg district of Karnataka state. Further he identified the geomorphic units and carried out the mapping of the geomorphologic features in landslide locations of Coorg district of Karnataka state by classical and modern methods. The study brought to light that the landforms are the result of interaction of structure, lithology and runoff.

Dr. Janardhana with his Yemeni group carried out geological studies in parts of Yemen. The first study pertains to geotechnical investigations of Quaternary subsurface soil and rock masses in the western part of Dhamar City, Republic of Yemen. Based on their geotechnical properties, the area was assessed for planning future engineering constructions in and around the Dhamar city. Further they focused on the field description of a bimodal volcanic rock centre and fault types present in Taiz area located in the southern part of Yemen. The study brought to light that the area has been subjected to tensional tectonic regime throughout much of the Tertiary and extensions led to volcanism, granitic rock intrusions and formation of structural elements such as normal faults and deep joints. NW, NE, and E-W are the three major trends of faults recognized and these are related to the progressive rifting of Red Sea and Gulf of Aden.

Preliminary gravity results for Qamar Gulf in the eastern part of Yemen where no geophysical studies were available for this important area, regional and residual gravity components were obtained by a third-order polynomial surface fitting to the Bouguer anomaly and established subsurface structures which play an important role in the sealing of the oil traps. Gravity and magnetic signatures as well as seismic sections were used to

illustrate subsurface structures in sedimentary sequences. Combined gravity and magnetic modeling by Geomodel 2.5D inversion technique suggest the thickness of sediment to vary from 3.2 to 5.3 km in the Qamar basin (offshore), and the basement rocks are divided into blocks because of existence of several faults extending from basement rocks to sedimentary rocks owing to strong tectonic activities. It was concluded that the sedimentary processes were affected by basement tectonics as revealed by the seismic section.

Dr. M.R. Janardhana with his Iranian researchers has worked extensively on the various geological aspects of Mazandaran and Kerman provinces of Iran. In Kerman province, they carried out investigations on the coal deposits and the impacts of coal washery effluents on the chemistry and quality of groundwater. Further studies on the geochemistry of Jurassic shales and sandstones of Kerman led to infer the proximal and ultimate provenances of the shales and sandstones, palaeoweathering of source rocks and palaeotectonic setting of the region. In addition they carried out first comprehensive study regarding mineralogy and geochemistry of Pabedana coal deposits with an aim to understand the petrographic features of the coal deposits of the study region.

Hydrochemical characteristics of groundwater from coastal aquifer in Mazandaran area were studied in detail. Their work established a two tier coastal aquifer system and identified fresh and brackish water types. Salinization problem in the region was addressed and identified the localities of variously salinized zones of the groundwater, hydrochemical characteristics of fresh and saline groundwaters, sources of their solutes, percentage of saltwater fraction in the salinized groundwater, hydrochemical ionic changes in groundwater of the fresh groundwater –saltwater mixing zone, and chemical behaviour of ions and ionic pairs in fresh and saline groundwaters. The source of salinization was attributed to (1) lateral intrusion of Caspian seawater as a consequence of (a) excessive withdrawal of groundwater from closely spaced bore wells located in the eastern part of the coastal zone and (b) imbalance between recharge and discharge of the two-tier aquifer and (2) upconing of paleobrine along deep wells. Suitability of the groundwaters for drinking and irrigation were evaluated. A conceptual model for a groundwater system, encompassing the hydrologic processes taking place in the targeted groundwater system was developed by using General Modelling System (GMS).

Dr. M.R. Janardhana has published 27 research papers in reputed national and international journals. To his credit as a research Supervisor, he has successfully guided 4 candidates for Ph.D., and six students are working for their Ph.D. degree on various subjects. He was invited to Zilla Panchayath and many educational institutions to deliver popular lectures including sustainable water management.

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