http://journal.uir.ac.id/index.php/JGEET

E-ISSN : 2541-5794
P-ISSN : 2503-216X

Journal of Geoscience, Engineering, Environment, and Technology

Special Vol 04 No 02-2 2019

SPECIAL VOLUME

Geology, Geomorphology and Tectonics of India: Introduction

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Received: Dec 18, 2018; Accepted: Feb 22, 2019.
DOI: 10.25299/jgeet.2019.4.2-2.2447

The earth crustal growth since its formation still need in depth research is the conclusion of the three International Conferences on Precambrian Continental Growth and Tectonism, in 2005, 2009 and 2013, organised at the Institute of Earth Sciences of Bundelkhand University, Jhansi, India and its proceedings have valuable source for advance research published the great ideas and achievements from scientists (Chandra et al. 2007; Singh and Chandra, 2011 and Singh et al., 2015). Therefore, this thematic issue planned for consider of crustal growth and tectonic evolution of Indian shield which include 7 research articles on geodynamic evolution of earth, geomorphology, structural, petrologic, isotopic, tectonic, and geochemistry investigations related to the Indian shield and its economic importance (Fig. 1).

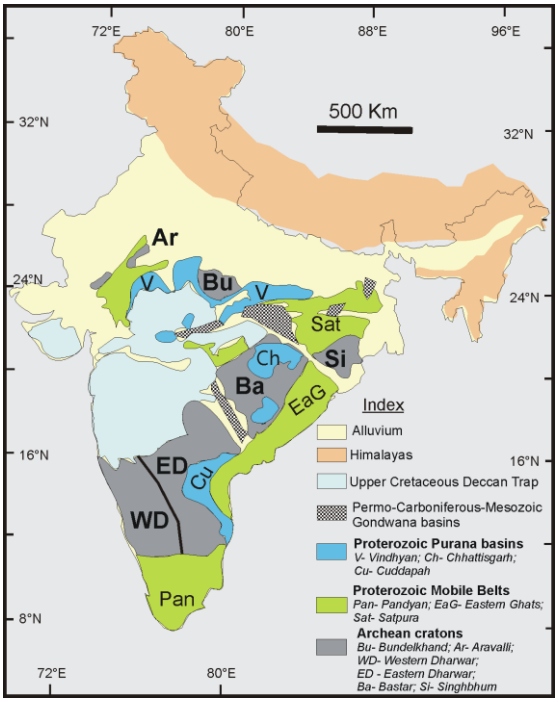

Fig. 1: Main tectonic division of Indian Shield (modified after Ramakrishnan and Vaidyanadhan, 2010 and Slabunov and Singh, 2018).

The first paper is by **M.M. Singh and V.K. Singh** reconstruct the tectonic evolution of supracrustal rocks from Babina and Mauranipur greenstone belts (i.e. known as central Bundelkhand greenstone complex) which mostly occur in hydrated mantle field and under arc setting conditions. The Archean mafic- ultramafic rocks mostly falls in the vicinity of oceanic island basalt field, indicate subduction tectonic setting for evolution of Bundelkhand Craton, India.

The contribution from **S.C. Bhatt and V.K. Singh** provides information about Neoarchean–Paleoproterozoic crustal shear zones and exercise for tectonic evolution of Bundelkhand Craton, India. Mostly these E–W trending

shear zones are traversed in Archean granitoids which have not involved on the Paleoproterozoic dolerite dykes and quartz veins in the craton. The NE–SW to ESE–WSW trending shear zones are also occur in the region which containing both dextral and sinistral antithetic and synthetic shears, formed during an N–S crustal subduction and its growth.

S. Lata et al., discuss the geometry of folds in Mandhali Formation rocks occur in Inner Sedimentary Zone of Lesser Himalaya, which exposes complexly folded and refolded structures. They indicate that the shearing and strain patterns are most dominant folding mechanism, has been the flexure-shear for the folds which are overprinted by the fold flattening and other subsequent deformations, on the basis of geometric analysis using dip isogons and orthogonal thickness parameters.

S. Mishra et al., present geochemistry and geodynamic setting of Paleoproterozoic granitic rocks from the Lesser Garhwal Himalaya, India, which suggests syn-collision origins and typical collisional granite. These granites suggest a possible linkage with 1800–1900 Ma magmatism hydrothermal activity in Bundelkhand Craton, required more data for solving the problem of the melting and recrystallization of Archean continental crust of Bundelkhand Craton. Primary Sm–Nd data indicate a Neoarchean protolith for these Lesser Himalayan granites, may be link to Bundelkhand Craton as source material existing in south.

R. Kumar et al., focuses on the geology and mineral potential in Kulu district of Himachal Pradesh, India in particular for Copper-Silver mineralization. The Naraul Formation of the Larji Group contains the major strata bound Copper mineralization at many places in Sainj Valley of Kulu district exposing the Proterozoic Northwestern Himalayan belt where Silver mineralisations also occur around Manikaran. These ore mineralization seems to be alike the copper silver deposit of the Revett Formation of Montana and Idaho, USA.

A. Singh and V.K. Singh studied potential zone of metallic and non-metallic deposits and Tin mineralizations hosted in the acid magmatic rocks in the Katekalyan area, Bastar Craton. The evolution differentiating granitic magma shows residual melt enrichment where end products intruded as pegmatites into the rocks. Cassiterite is most important Tin-ore mineral which associated with pegmatites and have significant amounts of Sn, Nb, Ta with minor W. The association of cassiterite, lithium mica (lepidolite) and fluorite in the pegmatites may be possible that the tin transported in the gaseous stage as SnF_4 or $SnCl_4$ and precipitate with the addition of water mainly in the condition of aqueous volatile solutions.

G.K. Dinkar et al., documents the geology and mineral deposits of south and southwestern part of Uttar Pradesh which is mainly covered with Gangatic Alluviums. The alluvium cover belongs to Holocene age and is mainly dominated by Varanasi older sediments consisting fine grained, well compacted and more mature sediments. The Peninsular part of Uttar Pradesh is covered by the rocks of Archean to Mesozoic age. The hard rocks are mainly igneous and metamorphic rocks and are exposed as isolated hills. The oldest rocks of the Peninsular belong to Bundelkhand Craton, beside this the Bijawar Group, Mahakoshal Group and Ajabgarh Group rocks are equivalent to Delhi Supergroup.

Acknowledgements

I gratefully acknowledge Prof. Husnul Kausarian, Editor in Chief of Journal of Geoscience, Engineering, Environment, and Technology for his help and also to journal that providing the opportunity to publish this thematic issue. I express my sincere thanks to Prof. M.M. Singh, Head of the Department of Geology, Bundelkhand University, Jhansi, India for providing the necessary facilities to complete this thematic issue and all contributors in this issue and very well-wishers for their help in many ways. This special issue will be useful for geologists, academics, research scholars and also for those interested in problems of the earth crust evolution history of India.

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