Crustal Evolution of Bundelkhand Craton in Archean and Comparison with Other Indian Cratons

A. I. Slabunov and Vinod K. Singh

Abstract

Indian Shield consists of Bundelkhand, Aravalli, Singhbhum, Bastar, Western and Eastern Dharwar Cratons. The crustal evolutions of these cratons (except Singhbhum Craton) show that geodynamic mechanisms, similar to modern plate-tectonic and mantle-plume mechanisms, were active during Paleo-Neoarchean time. The Mesoarchean crustal evolution of the Bundelkhand Craton show subduction–accretion processes, which is different from other cratons of Indian Shield, whereas in other cratons, plume processes were more active during this period. During the Neoarchean period (2.7–2.5 Ga), all the cratons exhibit subduction–accretion processes. Each of the cratons demonstrates its own crust formation model. It gives the impression that the cratons of Indian Shield were parts of the Kenorland Supercontinent in Mesoarchean time, rather than one block.

Keywords

Archean • Earth crustal evolution • Geodynamics • Indian shield • Bundelkhand craton • Western Dharwar craton • Eastern Dharwar craton • Aravalli craton • Singhbhum craton • Bastar craton

A. I. Slabunov
Institute of Geology, Karelian Research Centre, Russian Academy of Sciences, Petrozavodsk, Russia
e-mail: slabunov@krc.karelia.ru

A. I. Slabunov
Petrozavodsk State University, Petrozavodsk, Russia

V. K. Singh (✉)
Department of Geology, Bundelkhand University, Jhansi, India
e-mail: vinodksingh@bujhansi.ac.in

1 Introduction

Archean cratons are continuously studied for understanding geodynamics of continents around the world, which were formed prior to 2500 Ma ago (de Wit 1998, 2001; Condie 2004; Brown 2007; Windley et al. 2021). It generally consists of tonalite–trondhjemite–granodiorite (TTG); greenstone belts; and K-rich granitoid rocks. The distinctive structures of Archean cratons contain sedimentary and volcanogenic rocks consider as greenstone belts. Now, it has been recognized that plate-tectonic and mantle plume-tectonic processes were operational since ca. 3.0 Ga or earlier (e.g. Cawood et al. 2006; Witze 2006; Windley et al. 2021). While some workers (Hamilton 1998; Sharkov et al. 2000; Bedard 2018) believe that they had not been active until the Paleoproterozoic (ca. 2.0 Ga).

The Indian Shield also reveals early Earth's crust formation which consists of two groups of Archean cratons: a northern (Bundelkhand and Aravalli) and a southern (Dharwar, Bastar and Singhbhum) group separated by the Central Indian tectonic zone (Fig. 1; Ramakrishnan and Vaidyanadhan 2010; Radhakrishna et al. 2013; Jain et al. 2020). The important Bundelkhand Craton contains the fragmented evidence of geological events from the early Archean ca. 3.5–2.7 Ga (TTG-associated granitoids) up to the Paleoproterozoic (2.5–2.4 Ga; for several phases of granite) (Sarkar et al. 1995; Mondal et al. 2002; Kaur et al. 2016; Verma et al. 2016; Singh et al. 2021a). The existence of Banded Iron Formation (BIF) along greenstone belts (GB) and 3.3 Ga TTG rocks in the craton support it as a distinctive Archean Bundelkhand Craton. The oldest TTG-gneissic rocks and basic–ultrabasic rocks in the central part of the Bundelkhand Craton are possibly occur at 3.6–3.4 Ga and resemble other cratonic rocks of Indian Shield. The well-established crustal structural ensue of Western and Eastern Dharwar, Singhbhum and Bastar Cratons are suitable to compare the geological associations globally. Thus, we present this document through comparative analysis of the Archean crustal evolution of the Bundelkhand Craton with southern group of Indian Shield.

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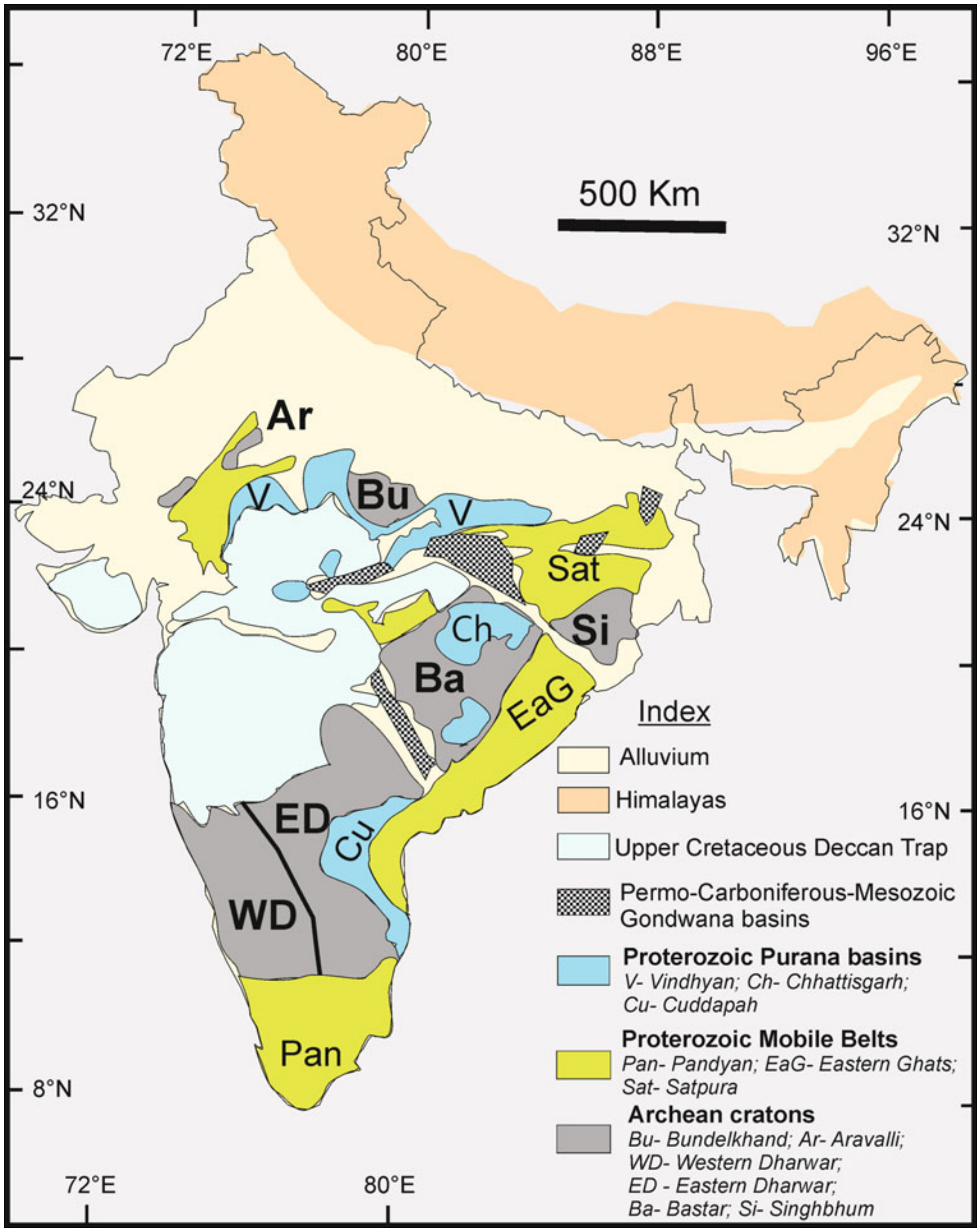

Fig. 1 Main Archean cratonic blocks of Indian Shield (after Ramakrishnan and Vaidyanadhan 2010)

2 Geology of Bundelkhand Craton

The typical TTG gneisses, supracrustal (greenstone and schist), sanukitoids, mafic–ultramafic layered and gabbroids intrusions, and K-rich granites are recognized in the Bundelkhand Craton (Mondal et al. 2002; Malviya et al. 2006; Singh and Slabunov 2013, 2015a, 2015b, 2016; Verma et al. 2016; Slabunov et al. 2017; Joshi et al. 2017; Singh et al. 2019a, 2019b, 2020, 2021a; Slabunov and Singh 2019a, 2019b; Pati 2020). The oldest TTG complexes in the craton are dated at 3.6–3.2 Ga (Mondal et al. 2002; Kaur et al. 2014, 2016; Saha et al. 2016; Singh et al. 2021a). These granitoids are associated with amphibolites. In the Babina and Mauranipur greenstone belts, the amphibolites inferred as the earliest mafic–ultramafic association of the Central Bundelkhand greenstone complex and its Sm–Nd isochron age is estimated at 3435 ± 161 Ma (Singh et al. 2019a); hence, it is similar in age to early TTG. The Bundelkhand craton notable into Central, Northern and Southern Bundelkhand terranes (Slabunov and Singh 2019b; Singh et al. 2021b).

The Central Bundelkhand greenstone complex consists association of two major assemblages of rocks, i.e. (i) an early (Mesoarchean) assemblage that contains basic–ultrabasic, felsic volcanic (2810 ± 13 Ma) and BIF rocks; and (ii) a late (Neoarchean—ca. 2.54 Ga) assemblage composed of felsic volcanic rocks. The Archean polymetamorphic evolution pattern amphibolite/granulite facies, eclogite facies metamorphism revealed and possibly associated with metasomatic events in the craton. The BIFs of the Mauranipur belt formed in a back-arc basin and BIFs of the Babina belt occur in a fore-arc basin (Slabunov and Singh 2019a). Neoarchean ca. (ca 2.7 Ga) metamorphic events in Central Bundelkhand greenstone complex under amphibolite facies and metasomatism associated are result of accretional tectonic (Sibelev et al. 2021).

The Southern Bundelkhand schist/metasedimentary complex formed the Girar belt which consist from two groups of rocks, i.e. (i) quartzite, (ii) BIFs and traces chlorite schist lenses near the quartzite/BIF boundary are of Archean age (Singh and Slabunov 2016; Slabunov et al. 2017). The foliated rocks of the Girar metasedimentary belt with 3.43–3.25 Ga detrital zircon are overlain by gently dipping undeformed sediments of Paleoproterozoic Bijawar Group (Slabunov et al. 2017). This is indirect evidence for older, most probably Meso/Neoarchean age for quartzite and BIF rocks of the Girar belt. Archean age has inferred for Ikauna peridotite–gabbro–diorite layered intrusive rocks which located near Girar belt too (Slabunov et al. 2017, 2018; Ramiz et al. 2019). The Girar belt and Ikauna layered intrusive formed under mantle plume activity at Meso/Neoarchean time apparently (Slabunov et al. 2017, 2018).

Neoarchean (2.58–2.56 Ga) sanukitoid massifs was revealed in craton as one of indicator of subduction style tectonic in this time (Joshi et al. 2017; Joshi and Slabunov 2019; Singh et al. 2019b, 2020). Late- to post-kinematic Neoarchean (2.53–2.51 Ga) granites are most common and the melting of granitoids is associated with post-accretionary processes in the crust (Verma et al. 2016; Singh et al. 2019b; Slabunov et al. 2020).

3 Aravalli Craton

Aravalli Craton is the north-western part of the Indian Shield represents the Archean granitiods mostly. They are exposed among the Paleoproterozoic rocks of the Aravalli Supergroup, which experienced tectonothermal events during ca 1.7 Ga orogeny (Buick et al. 2006; Jain et al. 2020). So this Archean rock is a part of the Paleoproterozoic Aravalli Fold Belt. Archean rock of this belt (which is called craton too) is separated from the Bundelkhand Craton by the Paleo-Mesoproterozoic Vindhyan basin. Archean rocks in the craton are represented by migmatized TTG granitoids (known as the Banded Gneissic Complex (BGC)), fragments of greenstone complexes and granites (Ramakrishnan and Vaidyanadhan 2010; Roy and Purohit 2018; Kaur et al. 2019). The BGC (TTG granitoids) display oldest rocks dated ca 3.31–3.28 Ga mostly, but have protolith with age up to 3.7 Ga (Kaur et al. 2013). Meso–Neoarchean TTG granitoids of 2.88 Ga and 2.56–2.54 Ga were also noticed in the region (Roy and Kröner 1996; Kaur et al. 2019) and conclude new continental crust formation events.

The fragments of greenstone complexes occur among BGC (e.g. the Rakhiawal greenstone belt) (Roy and Jakhar 2002; Roy and Purohit 2018). The greenstone belts have not been dated, but Mesoarchean metadykes (2828 ± 46 Ma; Gopalan et al. 1990) cut quartzites, which are a fragment of a greenstone belt and can thus be used to date the upper age boundary of the greenstone belts. This greenstone complex and dykes indicated Mesoarchean mantle plume activity in this area. Neoarchean (2562–2450 Ma) granodiorite–granite–leucogranites and K-rich granites are interpreted as having been derived by melting of basement rocks during accretion–collision processes.

4 Singhbhum Craton

The Singhbhum Craton is typical granite–greenstone terrane which consisting of TTG, greenstone belts and granite (Saha 1994; Mukhopadhyay et al. 2012; Das et al. 2017; Olierook et al. 2019). Singhbhum mobile belt occurs in the north side of craton with minor amount of supracrustal rocks (Mukhopadhyay et al. 2006; Mazumder et al. 2015; De et al. 2016). Singhbhum Craton commonly show association of the Older Metamorphic Tonalite Gneiss (OMTG) include biotite–hornblende tonalite, trondhjemite and granodiorite gneisses with enclaves of amphibolite-grade pelitic schists, arenites and calc-silicates (Older Metamorphic Group) and Iron Ore Group comprise low metamorphic-grade mafic volcanic, banded iron formation and argillaceous sedimentary rocks (Mukhopadhyay et al. 2008; Basu et al. 2008; Acharyya et al. 2010; Upadhyay et al. 2014; Dey et al. 2017; Olierook et al. 2019).

The age of the Older Metamorphic Tonalite Gneiss estimated as 3.52–3.3 Ga, but tonalite gneiss of from the Champua area have 4.24–4.03 Ga xenocrystic zircons (Chaudhuri et al. 2018), indicated the oldest (Hadean age) matter in the Indian Shield. The Iron Ore Group contains predominantly BIF with pillow basalt, dacite, pyroclastics and ultramafics in the lower parts. This group was deposited under deep marine conditions in spreading centres in arc systems (Mukhopadhyay et al. 2012). There is no precise age estimation of this group, but it brackets between 3.5 and 3.1 Ga.

The Singhbhum granite (SG) occurs as major part of the craton and divided for the three groups of pluton, i.e. 3.35 Ga (SG I), 3.1 Ga (SG II) and 2.9 Ga (SG III) (Dey et al. 2017; Nelson et al. 2014). Mesoarchean gabbro-anorthosite units (ca 3.12 Ga) and Mayurbhanj Granite intrudes (ca 3.09 Ga) are existing in the eastern and western parts of the Singhbhum Craton (Saha 1994; Misra et al. 2002; Augé et al. 2003; Mondal et al. 2007; Nelson et al. 2014; Sunder-Raju et al. 2015). Mesoarchean (ca 2.8 Ga) metabasalts, komatiites or picrites and fluvial–marginal marine sedimentary successions are exposed as the Simlipal, Dhanjori, Dalma, Ongarbira, Jagannathpur, Malangtoli Volcanics. The Simlipal basin, for example, undeformed and unmetamorphosed remains unaffected by any granitoid intrusion. They formed most probably under mantle plume activity.

Significant Neoarchean (ca. 2758 Ma) magmatism occurred along the southern margin of the Singhbhum Craton, including the Pal Lahara Gneiss and other Rengali Province granitoids (Das et al. 2017; Olierook et al. 2019). There are three Neoarchean mafic dykes Swarm as root a large igneous province exists in craton, i.e. Keshargaria swarm with age 2800 Ma and Ghatgoan Swarm of 2764–2760 Ma and ca. 2750 Ma (Kumar et al. 2017; Olierook et al. 2019).

Kolhan Basin unconformably overlies OMTG, Iron Ore Group, Singhbhum granite and consists of conglomerate, sandstones, shale and limestone. They formed in half graben-type intracratonic basin and its age estimated as 2.6–2.5 Ga (Roy and Purohit 2018), but it should be Proterozoic.

5 Bastar Craton

The Bastar Craton located between Singhbhum and Eastern Dharwar Cratons and separated from Bundelkhand Craton by Proterozoic Satpura Mobile Belt. It consists of TTG gneisses, granitoids, ca. four generations of greenstone belt and mafic dykes rocks occurring from Archean to Paleoproterozoic (Mondal et al. 2006; Roy and Purohit 2018). The TTG granitoids (Sukma I, II, Amgaon Complexes) are exposed in the south and west parts of craton. These gneisses have trondhjemitic character and dated at 3.6–3.5 Ga (Sarkar et al. 1993; Mohanty 2013, 2015; Dora et al. 2019; Asokan et al. 2020; Santosh et al. 2020; Meshram et al. 2021). Ca 3.0 Ga Granitoid plutons (Sukma granite III) are more common also which intruded into the gneisses and metasupracrustals rocks throughout the craton (Sarkar et al. 1993; Mohanty 2015).

The NW–SE trending mafic dykes and dyke swarms have cross-cut the older rocks in the craton. Mondal et al. (2006) conclude that the felsic magmatism is dominant during Archean in the Bastar Craton which changed to bimodal (acidic–basic) magmatism in the Proterozoic time. The Neoarchaean (Ca 2.6 Ga) intrusive leucocratic granite includes the Malanjkhand Granite hosting Andean-type Porphyry Copper–Molybdenum deposits. One of the oldest granulites in the craton are the Kondagaon complex indicates Neoarchaean (Ca 2.6 Ga; Roy and Purohit 2018).

The four generations of greenstone complexes are noted, i.e. Sukma, Bengpal, Bailadila and Kotri–Dungargarh–Sakoli–Sonakhans in the craton (Ramakrishnan and Vaidyanadhan 2010; Roy and Purohit 2018). The former consist mostly from quartzite, paragneiss and amphibolite, schist (included cordierite–garnet), ferruginous quartz and BIF interlayered with basalt and tuff. Kotri–Dungargarh–Sakoli–Sonakhans greenstone belts formed with volcano-sedimentary, meta-basalts with meta-chert, conglomerate and BIF. The most part of these greenstone complexes formed under mantle plume activity. Although there are basalt–andesite–dacite–rhyolite (BADR) series, rocks in Sonakhan greenstone belt which marked subduction setting in Neoarchean (Mondal and Raza 2009; Jain et al. 2020). There is very poor geochronology reported from these complexes, but Sukma, Bengpal, Bailadila complexes estimated as Meso–Neoarchean, and Kotri–Dungargarh–Sakoli–Sonakhans as Neoarchean (2530 Ma age of felsic from Dungargarh belt).

6 Dharwar Craton

The Dharwar Craton has been considered now into two cratons: Western and Eastern, based on their evolution patterns and crustal structures (Fig. 1). Each of them is 3–4 times the size of the Bundelkhand Craton.

6.1 Western Dharwar Craton

The Western Dharwar Craton consists of mainly Paleoarchean (3.36–3.2 Ga) TTG complex (Peninsular gneisses). But there are the oldest detrital zircons (3.58 Ga) in quartzites in Dharwar Group of rocks also noted. Three generations of greenstone complexes (Sargur, Bababudan and Chitradurga, agreeably) and several granitoid massifs are reported from Western Dharwar Craton (Radhakrishna and Ramakrishnan 1990; Jayananda et al. 2013). The Sargur greenstone belt is composed of mafic–ultamafic rocks (metabasalts, komatiites and their intrusive comagmates and metaanorthosites) which often predominate, and metasediments (kyanite/sillimanite–staurolite–biotite gneisses, quartzites, BIF, local marble, calc-silicate rocks, bedded barite); with limited exposures of felsic volcanics. The age of the complex is estimated at 3.1–3.3 Ga, based on the Sm–Nd whole-rock isochron age of komatiites of 3352 ± 110 Ma (Jayananda et al. 2008) and the U–Pb age of zircon from felsic volcanics of 3298 ± 7 Ma (Peucat et al. 1995). It forms small greenstone belts where dominated by mafic–ultramafics (e.g. Ghatti Hosahalli, Krishnarajapet and Nagamangala) and those with abundant sediments (e.g.

Sargur and Hole Narasipura). The Sargur greenstone complex was formed presumably in both rift-related structures on an early continental crust (3.58–3.23 Ga zircons in quartzites have been found, suggesting the existence of an older crust) and an oceanic plateau-type setting. The occurrence of 3.2 Ga TTGs in the region suggests subduction processes of that age.

A second generation of greenstone complexes in the Western Dharwar Craton is the Meso–Neoarchean Bababudan Group at the base of the Dharwar Supergroup in Bababudan, Chitradurga schist belts. The base of the Bababudan Group sequence consists of cross-bedded quartz conglomerates with ripple marks (Kalasapura Formation). These sediments rest with angular unconformity on Peninsular gneisses and Sargur Group rocks. In addition to quartz conglomerates, the Bababudan Group comprises phyllites and BIF. Mafic (metabasalts and gabbroic rocks) and ultramafic bodies seem to occur among them as sills. Felsic volcanics, occurring as part of the Santaveri Formation, are scarce. The mafic–ultramafic are dated at 2.9–2.85 Ga (Sm–Nd whole rock isochron ages are 2911 ± 49 and 2848 ± 70 Ma, (Kumar et al. 1996). The formation of the Bababudan greenstone complex was associated with plume activity and took place in an intracontinental basin.

A third greenstone/schist complex of the craton corresponds with the Chitradurga Group of the Dharwar Supergroup, which makes up the largest exposures around Shimoga and Chitradurga area. This Group consists dominantly of sediments (quartz and polymictic conglomerates containing TTG and Bababudan Group rock fragments, chert-phyllite, manganese and iron formation and stromatolitic carbonates) with pillow basalt and lesser felsic volcanic intercalations. The complex is dated at 2.75–2.58 Ga result as the Sm–Nd whole rock isochron age is 2747 ± 15 Ma (Kumar et al. 1996); the U–Pb age of zircon from the felsic volcanic is 2677 ± 2 to 2576 ± 20 Ma (Jayananda et al. 2013). The sedimentation basin of the Chitradurga Group seems to have been controlled by mantle plume activity (Hokada et al. 2013).

6.2 Eastern Dharwar Craton

The Eastern Dharwar Craton is separated from the Western Dharwar Craton by a large fault, the Chitradurga shear zone, and differs from the latter in deep geophysical structure (a thinner earth crust (Gupta et al. 2003) and the compositions and ages of Archean granitoid and greenstone complexes (Ram Mohan et al. 2013; Yang and Santosh 2015). The Eastern and Western Dharwar Cratons consists dominantly of commonly migmatized TTG granitoids, although in contrast to the Eastern Dharwar Craton, they are dominated by 2.7–2.55 Ga rocks with minor fragments of 3.0–3.38 Ga crust (Jayananda et al. 2013 and references therein). Moreover, the contribution of older crustal material to granitoid composition decreases markedly Nd T_{DM} up to 2.8–3.0 Ga in the eastern part (Dey 2013), but 2.56–2.5 Ga juvenile (εNd = +3.3) calc-alkaline to potassic granitoids are widespread here. The 2.51–2.53 Ga sanukitoid-like Closepet Granite batholiths N–S-trending occur in the western part of the Eastern Dharwar Craton, which cross-cuts the entire craton.

The greenstone belts of the Eastern Dharwar Craton are small narrow N–S and NW–SE trending linear structures, e.g. Kolar, Hutti, Kushtagi, etc. They consist mainly of metabasalts (often pillowed) associated with komatiites and BIF; felsic volcanics, associated with greywacke and polymictic conglomerates (Kolar GB), are more common; and metasediments, occurring as schists, are less common. An early association (beginning probably with 2.75 Ga, but mainly arise at ca. 2.7 Ga) of basalts and komatiites was formed in an oceanic setting under the influence of plumes, i.e. oceanic plateaus), but this stage was also terminated by subduction processes (Sangur GB). However, the main episode in the subduction processes, which gave rise to continental crust, occurred at 2.58–2.52 Ga, when felsic volcanics and various granitoids (including sanukitoids) originated. Ca. 2.5 Ga granulite facies metamorphism, widespread in the southern part of the Eastern and Western Dharwar Cratons, was associated with accretion–collision processes (Slabunov and Singh 2018, 2020).

7 Discussions and Conclusions

All cratons of Indian Shield have old (Paleoarchean) core (Fig. 2). The Singhbhum Craton has extreme older (Hadean; up to 4.2 Ga) protolith. While the old core of Eastern Dharwar Craton have Paleo-Mesoarchean age. The oldest rocks on all cratons are TTG gratitoids but with enclaves of amphibolites and gneisses.

Plate-tectonic and mantle plume mechanisms are operating for lithospheric formation during Paleo-Neoarchean in the Bundelkhand, Aravalli, Singhbhum, Bastar, Western and Eastern Dharwar Cratons, as common for World (Windley et al. 2021). The subduction–accretion processes are more responsible for crustal evolution of the Bundelkhand Craton during Mesoarchean. While other Indian cratons considerably different for crustal evolution in general, dominated by plume processes (Fig. 2). But at this time, the crustal evolution of the southern part of Bundelkhand Craton, i.e. formation of a sedimentary basin consisting quartzites and BIFs as metasedimentary complex (Singh and Slabunov 2016; Slabunov et al. 2017) and peridotite–gabbro–diorite layered intrusive rocks (Slabunov et al. 2018) might have affected by mantle plume. It should be noted that other point of view on

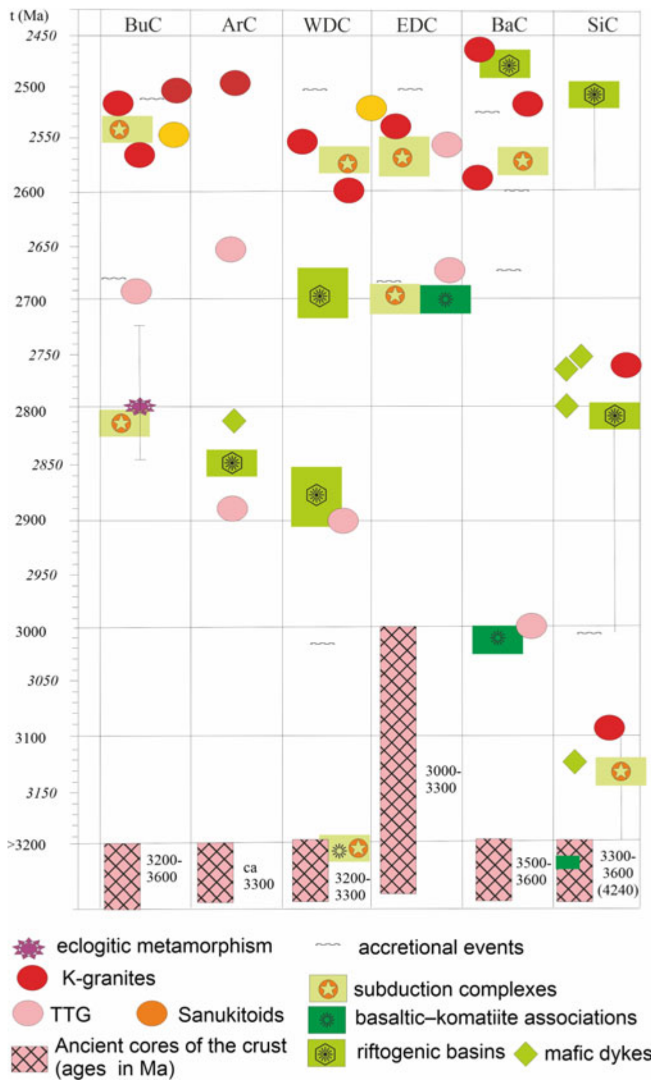

Fig. 2 Correlation of Meso–Neoarchean crustal evolution in the cratons of Indian Shield (BuC: Bundelkhand; ArC: Aravalli; WDC: Western Dharwar; EDC: Eastern Dharwar; BaC: Bastar; SiC: Singhbhum Craton) (data used as interpretation after Hokada et al. 2013; Jayananda et al. 2013, 2015; Kaur et al. 2014, 2016; Kumar et al. 2017; Mondal et al. 2002; Ramakrishnan and Vaidyanadhan 2010; Ram Mohan et al. 2013; Saha et al. 2016; Slabunov and Singh 2019a, 2020; Singh et al. 2021a)

formation of the southern part of a craton exists; it provides the leading role of subduction processes at this time (Ramiz et al. 2019). This complex has the certain features of similarity with Chitradurga Group of Dharwar Supergroup, Western Dharwar Craton. Mafic magmatisms marks mantle plume activity exists in Aravalli, Western Dharwar and Singhbhum Cratons in Mesoarchean (Fig. 2). At ca. 2.7–2.6 Ga the subduction processes are noted in the Bundelkhand, Eastern Dharwar and Bastar Cratons (Fig. 2).

In Bundelkhand Craton subduction process noted in the Babina belt, as signified by Neoarchean (2542 Ma; Singh and Slabunov 2015a), felsic volcanic formed in an active continental margin, sanukitoid massif similar in age (2577–2559 Ma; Joshi et al. 2016; Singh et al. 2019b) and meta-dacites (2557 Ma; Slabunov and Singh 2019a) in the Mauranipur belt. It means an accretion stage in the evolution of the greenstone in Bundelkhand Craton took place at about 2.53 Ga, after the youngest 2542 Ma felsic volcanics and prior to the formation of the earliest post-kinematic granites (2531 Ma; Verma et al. 2016). At this stage its Meso- and Neoarchean constituents are combined to form one greenstone complex. The melting of large volumes of granitoids in the period 2.53–2.51 Ga is associated with post-accretionary processes in the crust (Fig. 2).

Therefore, the Paleo-Neoarchean crustal evolution of the Bundelkhand Craton provides a basis for comparing with other Indian cratons (Fig. 2). It noted that the mafic–ultramafic rocks of Central Bundelkhand greenstone complex have derived from thick oceanic crust in a subduction processes in Paleoarchean (3.44 Ga; Singh et al. 2019a) and first arc-forming felsic volcanics in Mauranipur greenstone belt proceeded during the Mesoarchean (ca. 2.81 Ga; Slabunov and Singh 2019a) time. Similar processes also involved, i.e. the interaction of plumes with old cores in other cratons in the Indian Shield at that time. Thus, the formation of sedimentary rock complexes with bimodal magmatism occur (Fig. 2), in the Bababudan Group (Western Dharwar craton), the Koira (ca 3.1 Ga) and Simlipal (ca. 2.8 Ga) Groups (Singhbhum Craton) and the Sukma Group (ca 3.0 Ga; Bastar Craton). The old supracrustal enclaves in Aravalli Craton granitoids look like to be part of similar characters. The existences of metamorphosed Mesoarchean mafic dykes in Indian Shield point out the relic of the old continental core (Fig. 2). Therefore, subduction–accretion processes took place only in the Bundelkhand Craton for the formation of a new continental crust during Mesoarchean in Indian Shield. While other cratons of the shield more favourable for the transformation of the old cores by plumes mechanism at that time. During the Neoarchean the formation of the continental crust of the Bundelkhand Craton is very similar to other cratons of the Indian Shield and is different from that in the Karelian Craton and in the Superior Province (Lubnina and Slabunov 2011, 2017; Slabunov and Singh 2020). The subduction–accretion processes were more common in the Western and Eastern Dharwar and in the Bastar and Aravalli Cratons at 2.6–2.5 Ga (Fig. 2), while the situation in the Laurasian group of cratons, preceding a split-up which began at ca. 2.5 Ga, had stabilized at that time.

The observed correlation of the crustal evolution of the Bundelkhand Craton can be explained, assuming that in Mesoarchean time the craton was probably in the northern part of the Neoarchean Kenorland Supercontinent near the Karelian Craton and the Superior Province (Lubnina and Slabunov 2011, 2017; Slabunov and Singh 2020). As the model projected is based on only geological evidence, it should also be tested by paleomagnetic data.

During Neoarchean (2.7–2.5 Ga), most part of the Indian cratons (except Singhbhum) displays subduction–accretion processes. However all cratons exhibit its own crustal evolution pattern in Mesoarchean (Fig. 2). Crustal evolution in Neoarchean of Bundelkhand and Aravalli Cratons, Western and Eastern Dharwar Cratons have many similar features therefore it assumed as part in Meso–Neoarchean time elements of the Kenorland Supercontinent, but not in a single block.

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