CERTIFICATE

This is to certify that the record of field work done by Ms. Ishita Ankush Paliekar of class MSc Applied Geology Part-I 2022-23 contained in this report has been examined and signed at the course of fieldwork in Geology as prescribed by the School of Earth, Ocean and Atmospheric Science of Goa University has been carried out satisfactorily.

Place:
Date:

Head of Department

Examiner's Signature

Dr. Anthony Viegas
Vice Dean (Academic),
School of Earth, Ocean
& Atmospheric Sciences,
Goa University.
Goa - 403 206.

REPORT ON THE GEOLOGICAL FIELD WORK CARRIED IN AND AROUND BAGALKOT, KARNATAKA, INDIA

ISHITA PALIEKAR
MSc Applied Geology Part-I

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ACKNOWLEDGEMENT

Words cannot express my gratitude to my professors Dr. Anthony Viegas, Dr. Poornima Sawant, and Dr. Nicole Sequeira who generously provided their knowledge and guidance throughout the fieldwork.

This field work wouldn't have been possible without the support from administrative staff, SEOAS, Goa University who provided the necessary facilities needed.

I am also grateful to my classmates for their help, discussion sessions, and moral support.

Lastly, I would like to thank my parents for believing in me and providing financial and emotional support.

CONTENTS

INTRODUCTION

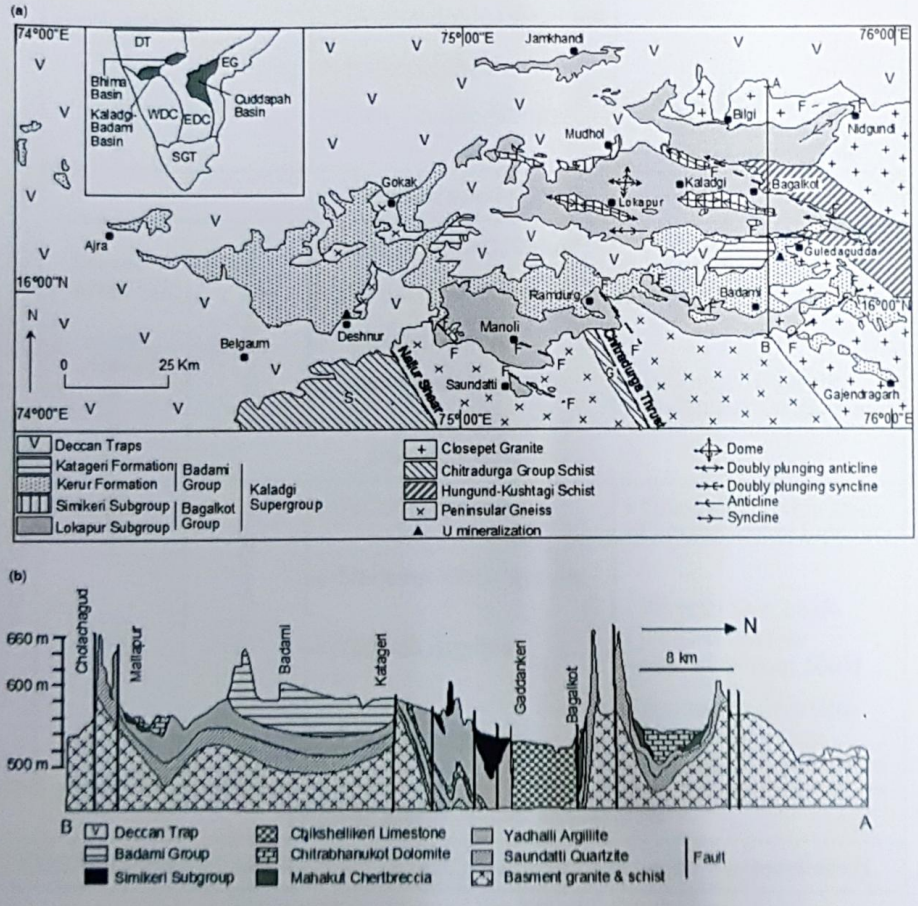
Indian Proterozoic geology includes a group of less disturbed and unmetamorphosed sediment packages hosted within cratonic nucleii of Peninsular India and offers scope to study profound and irreversible changes in the atmosphere, hydrosphere and biosphere during the early history of the planet. These seven basins are (i) Vindhyanchal (Aravalli-Bundelkhand Craton), (ii) Chattisgarh, (iii) Khariar-Indravati (Bastar Craton), (iv) Cuddapah, (v) Bhima, (vi) Kaladgi (Dharwar Craton) and (vii) Pranhita-Godavari (intercratonic between Bastar and Dharwar cratons) basins. The objective of this field trip was to study the Kaladgi Basin which is present at the northern edge of the Dharwar craton.

GEOLOGY OF KALADGI BASIN

Kaladgi Basin is an E-W trending irregular basin. It is underlain by the basement granitoids i.e. Peninsular Gneiss and Dharwar Batholith. The basin covers an area of 8300 sq.km. The entire thickness is 4500m. The basin is made up of older Bagalkot sequence and younger Badami sequence occurring in separate sub-basin areas. The Kaladgi Basin consists of 3 cycles: Quartzite-Shale-Limestone. Unlike other basins, the Kaladgi Basin is not marginally deformed as it is not spatially associated with either mobile belts or with terrane boundaries. Deformation is affected only in the center of the basin and the periphery remains fairly unaffected. The basin is important as it contains vast resources of limestone and dolomite along with minor traces of Fe ore.

The Bagalkot Group is divided into older Lokapur and younger Simikeri Subgroups. Lokapur Subgroup is made up of quartzites, conglomerates, limestones, shales, dolomites and argillites. The Simikeri Subgroup is made up of argillites,

conglomerates, quartzites and hematite bed. It occurs in the center of the basin and is exposed in doubly plunging anticlines and synclines. The Bagalkot Group is intruded by numerous pegmatite and quartz veins, and dolerite dykes. Structurally, the group shows tight to isoclinal folds, doubly plunging anticlines and synclines with WNW-ESE trace that were later refolded by N-S trending folds. The rocks have been metamorphosed. Deposition occurred along transgressive coast with a NW paleoflow. The rocks contain algal mats and stromatolites.



The Badami Group is horizontal to low dipping. The prominent lithologies are

limestones, shales, conglomerates, arenites. Prominent sedimentary structures are ripple marks, cross bedding, parting lineation and convolute laminations. The rocks show open folds and E-W trending faults. Deposition occurred along coastal to shallow shelf with SW paleoflow. The rocks contain trace fossils.

	Group	Subgroup	Formation	Member
	Deccan traps			
	Angular and erosional unconformity			
KALADGI SUPERGROUP	**Neo-Proterozoic** BADAMI		⇒ Konkankoppa Limestone ⇒ Halkurki Shale ⇒ Cave Temple Arenite	• Gokak Sandstone • Kendur Sandstone • Torgal Conglomerate
	Angular unconformity			
	Meso-Proterozoic BAGALKOT	SIMIKERI	⇒ Lakshanhatti Dolomite ⇒ Niralkeri Chertbreccia ⇒ Arlikatti Argillite ⇒ Muchkundi Quartzite	• Tulasigeri Quartzite • Bevinmatti Conglomerate
		Disconformity		
		LOKAPUR	⇒ Petlur Carbonates ⇒ Mahakut Chertbreccia ⇒ Yadhalli Argillite ⇒ Saundatti Quartzite	• Chikshellikeri Limestone • Chitrabhanukot Dolomite • Yargatti Calc. Shale • Jalikatti Phyllite • Manoli Ferrug. Shale • Timmapur Quartzite • Almatti Quartzite • Salgundi Conglomerate
	Angular and erosional unconformity			
	PRECAMBRIAN BASEMENT COMPLEX (PBC) Granitoids, Gneisses & Metasediments			

Table: Stratigraphy of the Kaladgi Basin

DAY 1 – 10/12/2022
Location: Belagavi-Bagalkot Road

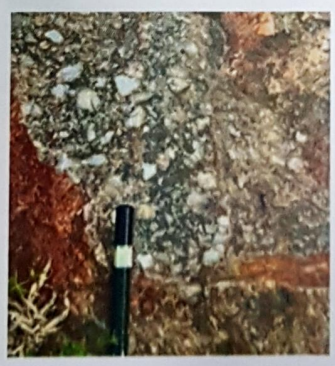
Spot 1: Karadigudda
Lat Long: N 15°52'55'' E 74°41'42''

The rocks exposed at this outcrop along the left side of the Belagavi- Bagalkot Road belong to the Kundargi Formation of the Simikeri Sub-group of the Bagalkot Group. The dominant rock type here is conglomerate, called the Bevinmatti Conglomerate. Presence of conglomerate marks the unconformity between the Simikeri Sub-group and Lokapur Sub-group of the Bagalkot Group.

The conglomerate is made up of clasts of size varying from 1-2 cm to 5-6 cm as we move from the base towards the top. The clasts are primarily made up of quartz; identified by its vitreous luster and high hardness. The conglomerate also varies with respect to the matrix; the conglomerate at the base is made up of siliceous matrix and is made up of ferruginous matrix at the top. At the base, it is clast supported and becomes matrix supported at the top.

The height of the ridge is >820m and trends N130°.

(a-smaller clasts)



(b-larger clasts)

Photos: Bevinmatti Conglomerate

Spot 2: 1 km from Spot 1

Lat Long: N 15°52'49" E 74°41'17"

This outcrop along the right side of the Belagavi- Bagalkot Road is approximately 9m in length. The outcrop shows bulbous structure, presence of vesicles and fractures. The rock has undergone spheroidal weathering. The rock also showed alteration of minerals that gave it a green appearance. The rock was thus identified to be a Basalt, possibly the Deccan Trap Basalts.

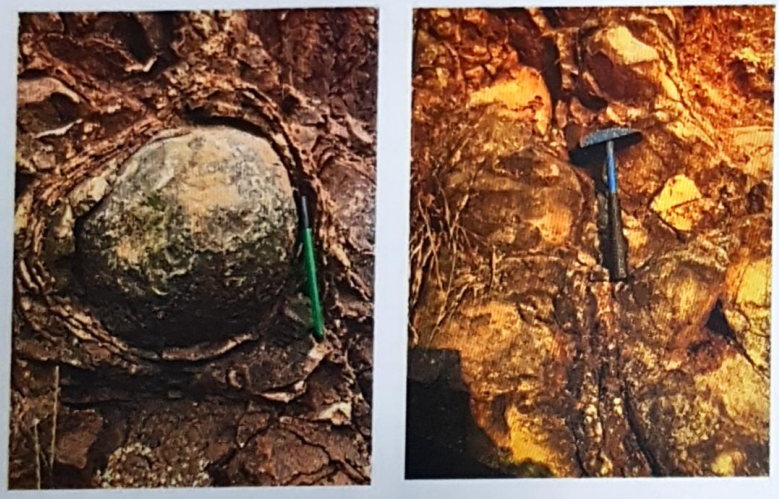


Photo: Spheroidal Weathering in Basalt

DAY 2 – 11/12/2022
Location: Ramthal

Spot 1:

Lat Long: N 16°06'36" E 75°92'45"

Located along the banks of the Malaprabha River, the rocks here form the basement of the Kaladgi Basin. The basement, called the Hungund Schist Belt, consists of metavolcanics with ultramafics that are metamorphosed, metasediments with some acid volcanics, graywackes with BIFs.

Here, there was $CaCO_3$ deposition (indicated by effervescence on contact with HCl) along the trenches.

The metasediments were in the form of chipped phyllites. The following structural data was collected:

Strike direction	N 163°	N 166°	N 143°	N 168°
Dip direction	NE	NE	SW	NE
Amount of dip	76°	67°	40°	4°

Structural data collected on folded series of BHQ:

Strike direction	N 161°	N 133°	N 155°	N 148°
Dip direction	SW	SW	SW	NE
Amount of dip	38°	75°	40°	20°

There are layers of competent and incompetent beds with shallow plunge with the dip amount of 24° dipping in the direction of N333°. Conglomerates with BIF's clasts were present. The clasts were 9 cm in length and 3.5 cm in width. The basal

part of Badami has an unconformity. This conglomerate, made up of ferruginous matrix and clasts of BIF and quartz, is called the Salgundi Conglomerate.

Micro folds were also present with a class of chevron folds. Sn is parallel to the axial plane and Sn+1 is the Intrafolial fabric which indicates that the 2 events of folding has taken place.

Along a road cut section (Lat Long: N 16°08'45" E 75°87'56"), we find an outcrop that is red in colour, shows cross bedding, made up of quartz (vitreous luster and high hardness). The rock was identified to be Ferruginous Quartzite; stratigraphically called the Saundatti Quartzite. Structural data: N285°/36° towards NNE.

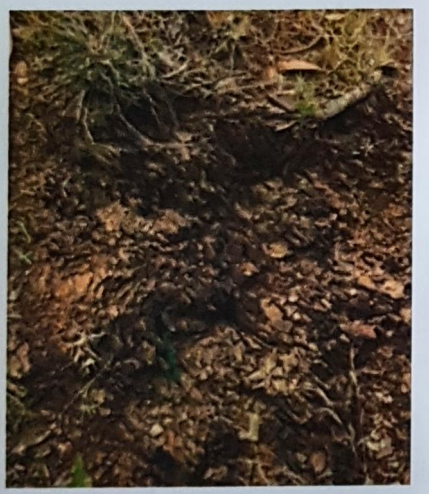


Photo: Chipped Phyllite

Photo: Folded BHQ

Spot 2: Caliche Deposits
Lat Long: N 16°04'53'' E 75°52'29''

A low-lying exposure of weathered material on the LHS of the road. The deposit was light in colour, made up of soily particles. It contained smoky quartz, epidote, gypsum, amorphous forms of $CaCO_3$. Presence of calcium carbonate was confirmed with HCl. The deposit was identified as Caliche, formed in dry conditions.

Photos: Caliche Deposits

Spot 3: On LHS of the road ahead of Calishe Deposits

Lat Long: N 16°08'45'' E 75°87'56''

The prominent lithology observed here is alternating bands of phyllites and BHQ.

General trend of the roadside section: N 355°/62° towards SW.

Warping in layers was also observed. Intrafolial folds are also observed.

Strike direction	N 40°	N 306°	N 320°
Dip direction	NW	NE	NE
Amount of dip	34°	40°	74°

DAY 3 – 12/12/2022
Location: Nargund

Lat Long: N 15°44'23" E 75°22'28"

Spot 1: At the base of the hill

The outcrop is of phyllite intercalated with BIF. The exposure is of metamorphic type as alignment of minerals i.e. foliation along the stress directions is observed. There is a broad warp observed in between the foliation that changes the strike direction and the dip direction. This foliation has a penetrative nature. Structural data for the foliation planes of the outcrop is as follows:

Strike direction	N 150°	N 148°	N 160°	N 168°	N 153°
Dip direction	SW	SW	SW	SW	SW
Amount of dip	76°	79°	76°	85°	86°

Quartz veins are also present that are parallel to the foliation. Since the phyllite does not undergo more than greenschist facies of metamorphism, it was easy enough for quartz to intrude. The intrusion is synchronous with the deformation of the rocks.

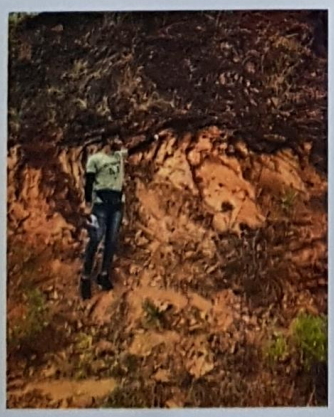


Photo: Phyllitic outcrop; shows warping in rocks

It was observed near the warping in foliation, there is a horizontal shear zone which could be another reason for variation in structural data. S_n is penetrative and S_{n+1} is spaced indicative of a sinistral shear zone.

Photo: Pen pointed part towards N; shows sinistral sense of shear

Spot 2: 20m ahead of spot 1

It was observed that there is a steeper weathered foliation at bottom that is overlain by soil in a horizontal manner indicating an angular unconformity. The soil may have been transported from elsewhere and deposited here. Also, the horizontal layer is made up of cobbles and pebbles indicating they are recent deposits and not of Proterozoic Kaladgi. Structural data recorded here is as follows:

Strike direction	N 145°	N 150°	N 150°
Dip direction	SW	SW	SW
Amount of dip	65°	46°	84°

Photo: Angular Unconformity

Spot 3: On Top of the Hill, near windmills

The outcrop situated at 800m above Sea Level. The rock is highly jointed, made up of hard mineral like quartz. Herringbone structure, ripple marks and cross bedding structure are also observed. This exposure is an outlier as the younger rocks are surrounded by older rocks that have been eroded away. The rock exposure is identified as Saundatti Quartzite.

Structural data for the joints is as follows: N 60°, N 154°, N 152°, N 84°, N 105°, N155°, N 114°, N 163°, N 91°, N 100°, N 75°, N 51°, N 110°, N 71°

Photo: Ripple marks

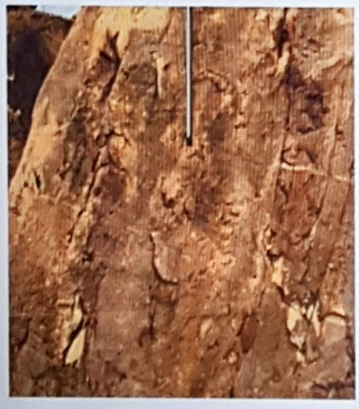


Photo: Herringbone structure

The top of the hill is also a site for a windmill field of Bhoruka Powerplant Corporation Limited. There are 9 windmills generating around 8 MW power.

DAY 4 – 13/12/2022

Location: Aihole

Lat Long: N 16°00'49" E 75°93'05"

The exposure is 1 km ahead of the famous heritage temples of Aihole. It is an expansive outcrop where the rocks belong to different groups to the north and south of the road. The rocks to the north of the road are horizontal whereas the rocks to the south are inclined. This area marks the unconformity that separates the Bagalkot and Badami Groups.

To the south of the road, the exposed rocks are pinkish coloured. The dominant rock type here is ferruginous quartzite. There are intercalations of intraformational conglomerate. 7 layers of such conglomerate are identified. The conglomerate is made up of clasts of quartz, BIF, feldspar, jasper. These clasts vary in size from 1 to 6 cm. Cross bedding structure is also observed. Structural data for the inclined series is as follows:

Strike direction	N 117°	N 114°	N 116°	N 107°
Dip direction	SSW	SSW	SSW	SSW
Amount of dip	46°	36°	38°	38°

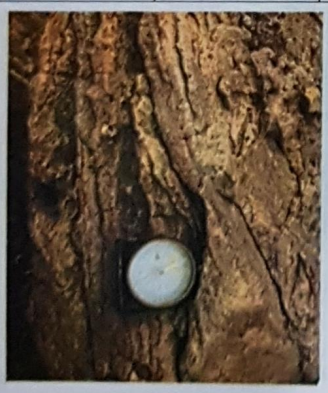
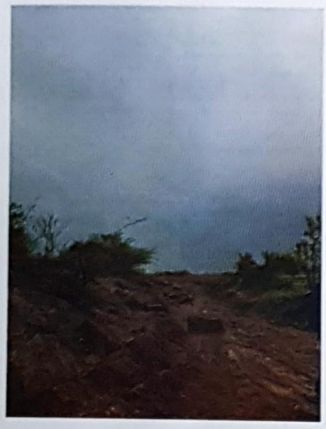


Photo: Cross bedding in quartzite

Photo: Intraformational conglomerate

To the north of the road, the rock exposure is grey and brown in color. The elevation is >712m. The rock shows sand sized particles, is hard and compact, shows primary sedimentary structures like cross bedding, herringbone pattern. The rock is thus identified as sandstone. It shows shallow dips and is an almost horizontal series of rocks.

A.



B.

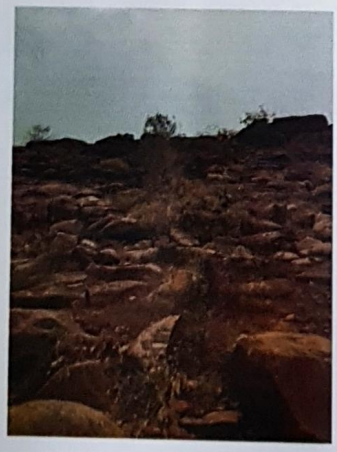


Photo: inclined series (A) and horizontal series (B)

Location: Sirur (next to the temple)

Lat Long: N 16°05'06" E 75°46'59"

The expansive exposure is entirely made of quartzite. Striations (surface lineation) were observed on the bedding. This lineation is indicative of a fault plane. No secondary mineral precipitation was observed along the fault plane. Since no offset markers were present, the fault type couldn't be determined. But applying the Anderson's Theory of Faulting, we could interpret it to be a reverse type fault. Intraformational conglomerate and en echelon joints were also observed.

Photo: En echelon joints

Photo: Surface lineation

Day 5 – 14/12/2022

Location: Amingad

Lat Long: N 16°03'31" E 75°56'54"

The rock exposure along the stairway to the Hanuman Temple is pink in colour, boulders, coarse grained, made up primarily of quartz and feldspar and contains accessory mineral biotite. The pink colour is given by the K-feldspars present. The rock is identified as a granite. Stratigraphically found as basement of the Kaladgi Basin, called the Closepet Granite.

The granite also contained some xenoliths that varied in size from 7-12 cm and were made of fine grained mafic minerals.

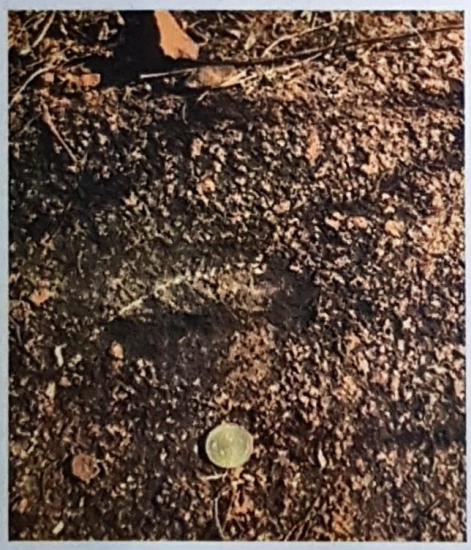


Photo: Xenolith in Closepet Granite

As we moved further up, contact between the basement and the basin was marked by conglomerate that was intercalated with BIF. The BIF clasts are more in this location than in Ramthal.

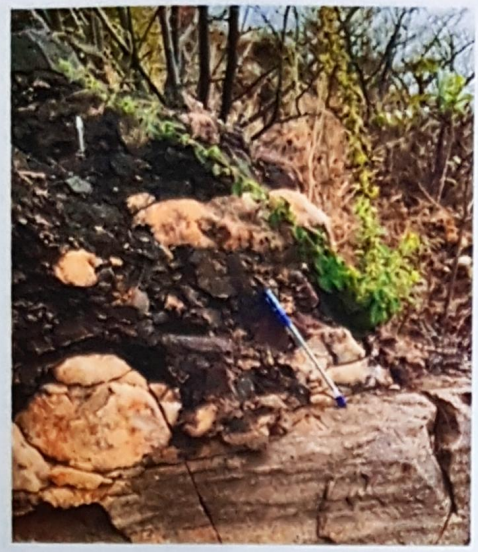


Photo: Conglomerate intercalated with BIF

Structural data is as follows:

Strike direction	N 120°	N 116°	N 125°
Dip direction	NNW	NNW	NNW
Amount of dip	21°	21°	25°

As we move further up, chert breccia was observed

Location: Type Area for Hungund Schist Belt

Lat Long: N 16°04'08" E 76°03'33"

The area is located between the Social Welfare building and high school building. The rocks are one of the basements for the Kaladgi basin. There are alternate bands of BIF and phyllite. We also observed shear lenses that contained intrafolial fold. Structural data for the intrafolial fold is: N 142°/85° towards NNE.

Day 6 – 15/12/2022

Location: Bilgi

Spot 1: to the RHS of the road (Bagalkot to Bilgi)

Lat Long: N 16°20'43" E 75°37'02"

The outcrop is grey in colour indicating its felsic nature. The rock is made up of quartz and alkali feldspar. Thus, the rock is identified as a Granite. The granitic body contains xenoliths of varying size. Three types of xenoliths are identified: xenoliths with alignment of mafic minerals (maybe hornblende), resitic xenoliths and an exotic xenolith (xenolith within xenolith). The xenoliths trend N73°. The granite has undergone exfoliation and has been intruded by pegmatite (very coarse size) veins. Trend of veins is N 62°, N48°, N52°, N62°. Displacement is observed in some veins.

Photo: xenolith within xenolith

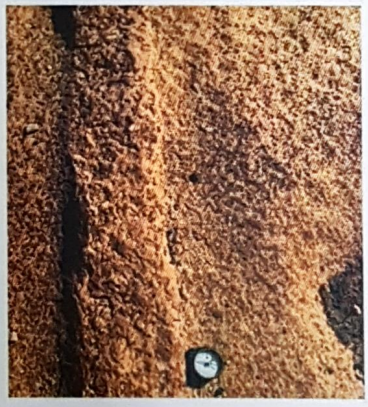


Photo: Pegmatite vein in granite

Geological history of the area: Granite was deformed and recrystallized, following which the pegmatite intruded forming the veins, and then the jointing took place that also affected the veins.

Spot 2: Quartzite quarry, opposite Siddheshwar Temple

Lat Long: N 16°20'14" E 75°36'43"

This is an inactive quartzite quarry. The quartzite shows alternate red and white coloured bands. This variation is due to the different matrix of the protolith. The quartzite is broken into blocks as a result of the dominant joint sets. Structural data for the bedding is as follows:

Strike direction	N 88°	N 125°	N 114°	N 110°
Dip direction	NS	NS	NS	NS
Amount of dip	11°	9°	6°	5°

Photo: Closer view of ferruginous and siliceous bands in quartzite

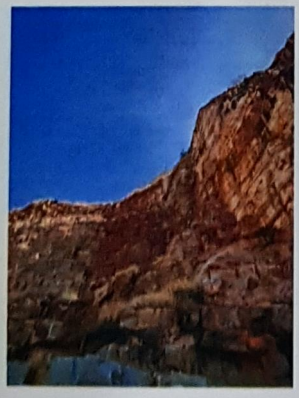


Photo: Quartzite Quarry

Location: Durgavamma Temple

Lat Long: N 16°20'29" E 75°36'59"

The outcrop is of intraformational conglomerate in an exposure of sandstone. The conglomerate is made up of quartz clasts so it is oligomictic. It was matrix supported. The clasts vary in size from 3 to 8 cm. there had been cyclic deposition of conglomerate. Graded bedding and cross bedding are observed. Structural data of the bedding is as follows:

Strike direction	N 129°	N 135°	N 260°	N 91°
Dip direction	SSW	SSW	SSW	SSW
Amount of dip	14°	14°	10°	13°

Photo: Intraformational Conglomerate in Sandstone

Day 7 – 16/12/2022

Location: Budangad, NH 367

Spot 1

Lat Long: N 16°06'46" E 75°47'07"

The study area shows highly fractured and jointed rocks. The rocks are bluff in colour. Some joints are continuous while others are not. Numerous joint sets have similar strike but different dip. Shorter joints are not penetrative. The outcrop doesn't show well defined grain boundary, indicating that the rock has undergone metamorphism. The constituent minerals are quartz and feldspar. Thus, the rock is identified as ferruginous quartzite. Presence of cross cutting veins that vary in size from 1-15cm.

An important feature present is a gash vein. These are formed because of extension of fracture within which a secondary mineral is precipitated and grows. The precipitated mineral here is elongated perpendicular to the vein wall. Such structure is called the 'Comb Structure."

Formation of the vein: Fluid plays an important role in fault zone. Fluid gets pathway to traverse through the rock and form veins.

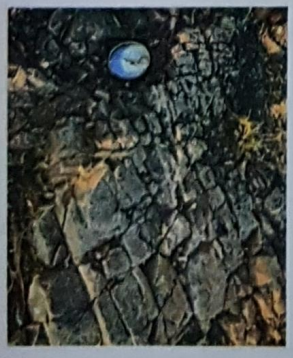


Photo: Highly jointed & fractured quartzite

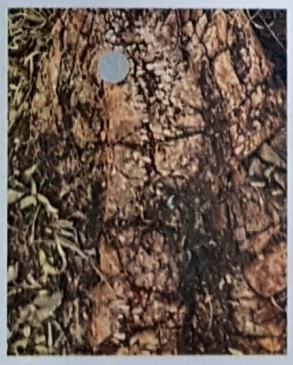


Photo: Quartz Gash Vein

Spot 2: 1.5 km from spot 1

Lat Long: N 16°05'08" E 75°48'46"

Granitic boulders were observed in the area. The rock was coarse grained, hornblende rich, showed foliation and is highly weathered. The rock is intruded by quartz veins with width of 10-12 cm while some were 5-7 cm. The contact between igneous and metamorphic rocks was also encountered. The granite had large porphyroclasts of feldspar. Thus, the rock was identified as porphyry syenite.

Trend of veins: N275°, N60°, N189°

Photo: Quartz vein in Granite

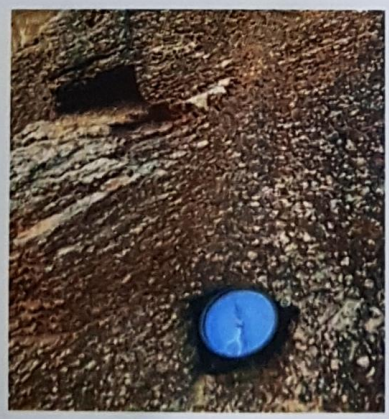


Photo: Hornblende rich granite showing foliation

Location: Murudi

Spot 1

Lat Long: N 16°02'07" E 75°45'26"

An expansive exposure of quartzite is exposed. The rock shows reddish appearance. The rock is fractured and highly weathered. It shows orthogonal and conjugate joints. Cross bedding and herringbone structure are also observed. The quartzite has clasts of jasper, quartz, feldspar, and some other amorphous variety of minerals. Thus, the rock is identified as Saundatti Quartzite.

Spot 2: Kerkalmatti, Rajyogi

Lat Long: N 16°04'01" E 75°41'26"

A small exposure of phyllitic folded layers were exposed along the road cut section of Rajyogi Road. Structural data taken on limbs and hinge of the folded layer is as follows:

Strike direction	N 95°	N 81°	N 145°	N 103°	N 105°	N 85°
Dip direction	S	NNW	S	S	N	N
Amount of dip	35°	26°	23°	19°	10°	20°

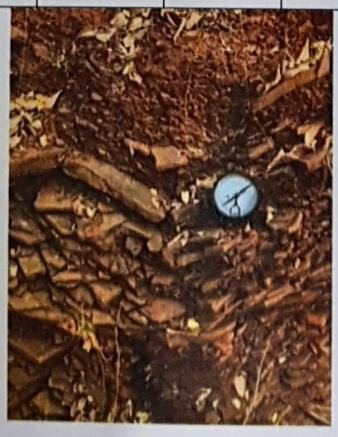


Photo: Phyllitic Folded Rock

Location: Niralakeri Dolomite Mine

Lat Long: N 16°07'03" E 75°41'55"

It is an open cast mine. The benches are very steeply dipping. The width of benches will be around 5m and the height of the face will be around 6-7m.

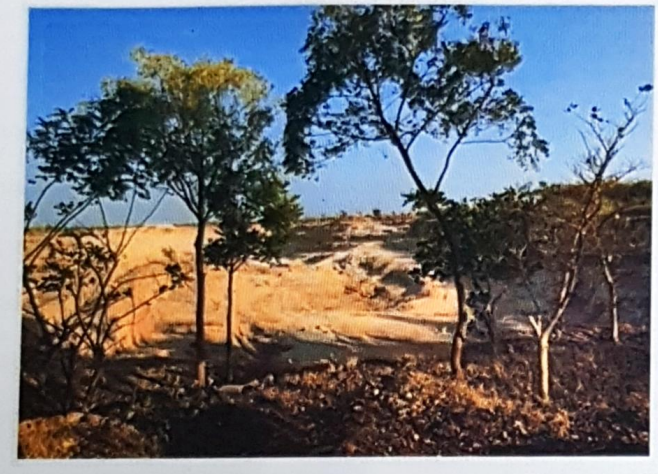


Photo: Niralakeri Dolomite Mine

Day 8 – 17/12/2022

Location: Kagalcomb

Lat Long: N 16˚72'09'' E 75°35'46''

A huge body of milky quartz is found about 60-70m away from the road. The body was earlier quarried for the glass industry. The quartz exhibits the following properties: vitreous, no cleavage, conchoidal and some perfectly hexagonal crystals found in cavities. The trend of the body is N 100° and the width is about 48m. The body also has 2 major joints that trend N105° AND N151°. A whopping structure is also seen. The body shows localized radial joints developed due to blasting. The body has undergone brittle deformational therefore it has developed tensional fractures trending in N 40° and N 38°. To accommodate this, extensional fractures develop in N 120° and N 132°.

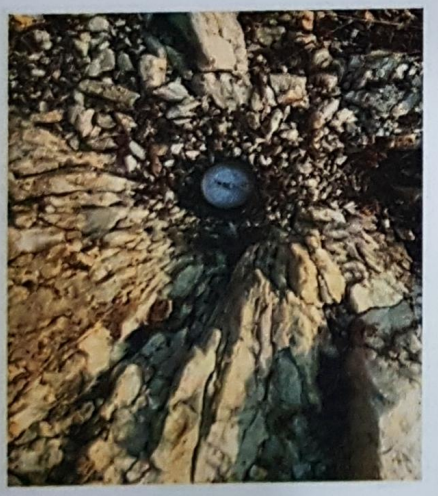


Photo: Radial joints in quartz

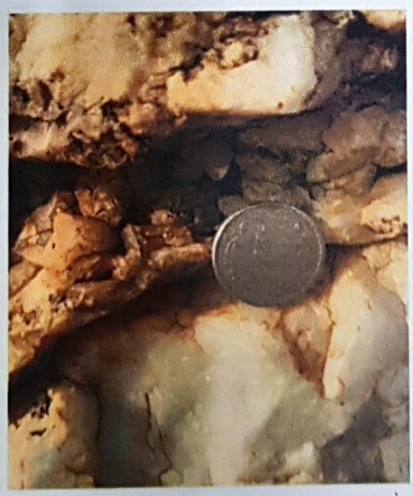


Photo: Hexagonal quartz crystals

Photo: Extensional and Tensional Fractures in quartz

As we move towards the road, we encounter inclined dolomite. The dolomite is confirmed by HCl. The series has a joint trending in N 102°. It was earlier formed in continental shelf environment. Structural data for the dolomite is as follows:

Strike direction	N 106°	N 105°	N 95°	N 114°	N 104°
Dip direction	SW	SW	SW	SW	SW
Amount of dip	54°	53°	55°	45°	44°

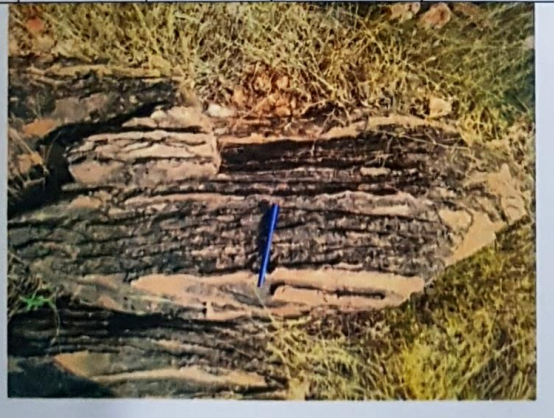


Photo: Inclined Dolomite

Location: Katageri Dolomite Mine

Lat Long: N 16°06'33" E 75°38'47"

This is an active open cast mine. It trends N 100°. The mining is carried out along the strike direction. The height of the bench face is about 5m and width of the bench is about 5.5m.

Photo: Katageri Dolomite Mine

Location: Below the bridge in Konkankappa village

Lat Long: N 16°03'19" E 75°38'45"

The rock exposed is grey in colour. Warping is observed. The strike direction is changing while the dip is almost always 10°>. The rock is identified as Konkankappa Limestone, indicated by the HCl test for $CaCO_3$. Structural data for the bedding is as follows:

Strike direction	N 96°	N 85°	N 82°
Dip direction	SSW	SSW	SSW
Amount of dip	4°	1°	1°

Location: Below the bridge on the way to Halkurki

Lat Long: N 16°01'15" E 75°38'60"

The rock exposed is reddish in colour, fine grained i.e. <1/256 mm, very finely laminated and composed of clayey minerals. The rock is identified as ferruginous shale, exhibiting the characteristic slaty cleavage. Stratigraphically, it is known as the Halkurki Shale that belongs to the Katageri Formation of the Badami Group. Shale is a deep-water sedimentary rock. We are moving deeper into paleo-ocean. Structural data for the shallow dipping beds is as follows:

Strike direction	N 140°	N 120°	N 125°
Dip direction	SSE	SSE	SSE
Amount of dip	2°	6°	4°

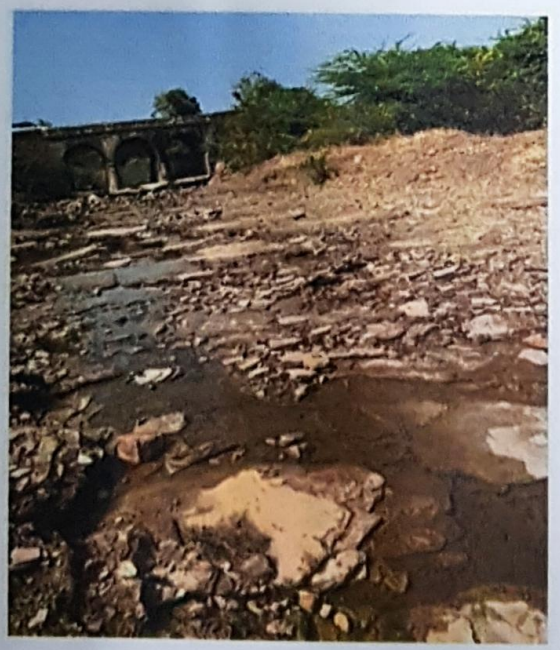


Photo: Halkurki Shale Exposure

Location: Behind HP Petrol Pump, opposite Court Hotel, Badami

Lat Long: N 15°56'18" E 75°40'45"

Observations were made from a distance. The rock exposed here is made of sand sized grains, clasts of quartz and feldspar. The rock is identified as Badami Arenite or Arkosic sandstone. The rocks are discolored vertically by water flow. Cross bedding structure is also seen.

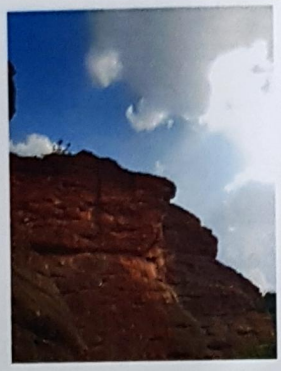
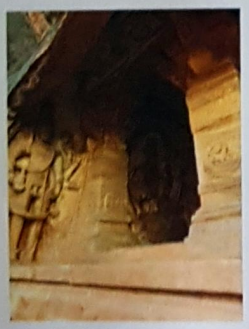


Photo: Arkosic Sandstone Outcrop

Location: Badami Cave Temples

Lat Long: N 15°55'06" E 75°41'3"

The heritage cave temples are carved in the Badami arenites which are bluff in colour. The site is a UNESCO world heritage site candidate.



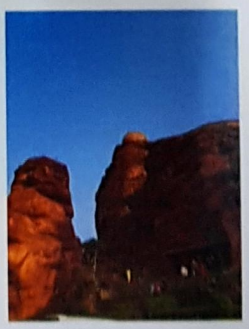


Photo: Badami Cave Temples

Day 9 – 18/12/2022

Location: Lokapur

Spot 1: Naganapur

Lat Long: N 16°10'05" E 75°21'32"

The exposure is towards the south of the road. There are intercalations between impure limestone and shale. The beds are hosts to deformed stromatolites. The beds are steeply dipping shown by the data as follows:

Strike direction	N 121°	N 125°	N 120°
Dip direction	SSW	SSW	SSW
Amount of dip	75°	71°	71°

Photo: Deformed Stromatolites in Marl

Spot 1: Jalikatti mine

Lat Long: N 15°09'36'' E 73°22'58''

This is an active mine for the limestone used in the cement industry. 3 benches were observed. Trend is N125°.

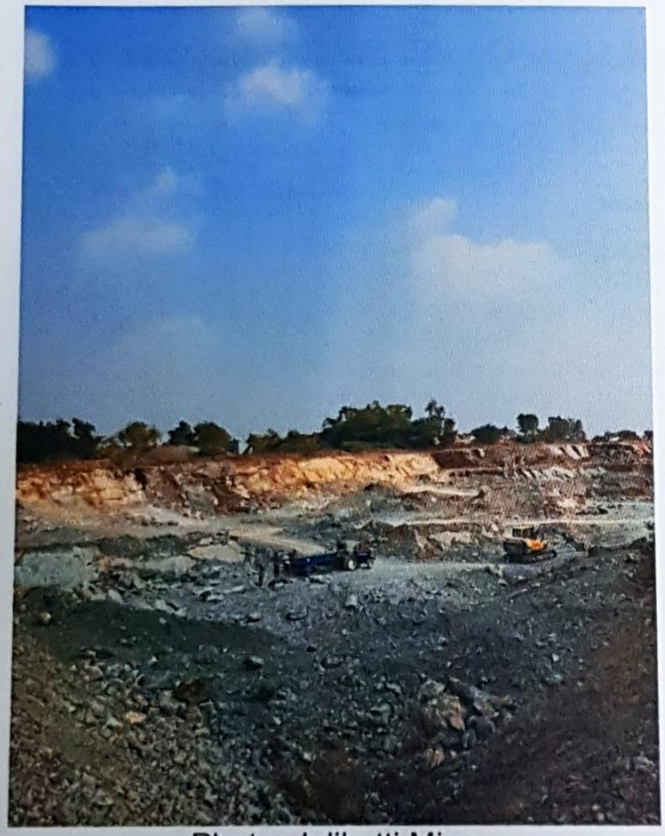


Photo: Jalikatti Mine

Day 10 – 19/12/2022

Location: Almatti Dam

Lat Long: N 16.331° E 75.888°

Also known as the Lal Bahadur Shastri Dam. Built over the Krishna River. The main purpose is for power generation. About 290MW power is generated. It is a mixed type of dam. About 60% of the water is used for irrigation. The construction of the dam led to submergence of parts of Bagalkot and thus, civilians had to be rehabilitated. There are 6 turbines. The backwaters of the dam host several migratory birds during their migration season.

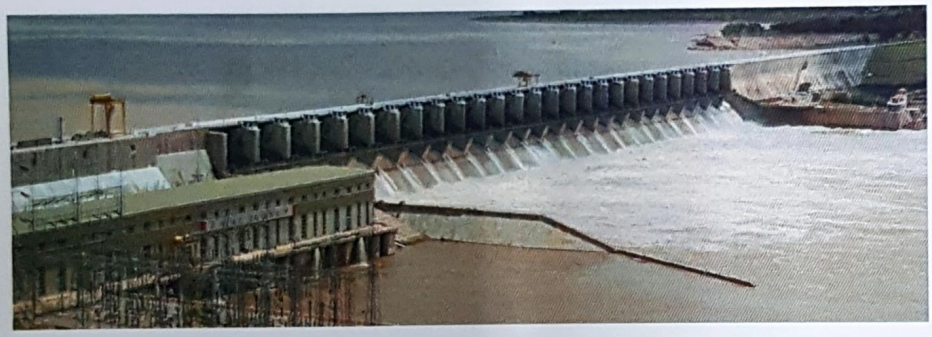


Photo: Almatti Dam (source: Wikipedia)

Location: Vijayapura

Lat Long: N 16°20'28" E 75°55'34"

At this location, the outcrop is of Archean age. Several generations of melts were produced to form 6 different rock types. The geological history and characteristics of each rock type is as follows:

Pegmatite	It is the youngest indicated by its cross-cutting nature through all the earlier rocks. Made up of quartz and feldspar that are coarse grained. May have formed synchronous with the pink

	granite. Shows displacement.
Pink Granite	The rock is coarse grained. Dominantly made of K-feldspar giving it the pink appearance.
Grey Granite	It is grey due to the presence of mafic minerals.
White Granite	It is the purest granite in the area.
Banded Gneiss	The gneiss shows banding that might have been a syntectonic activity as there is no visible breakage in the rock.
Mafic rock	It is the oldest indicated by the presence of xenoliths of the rock in younger rocks.

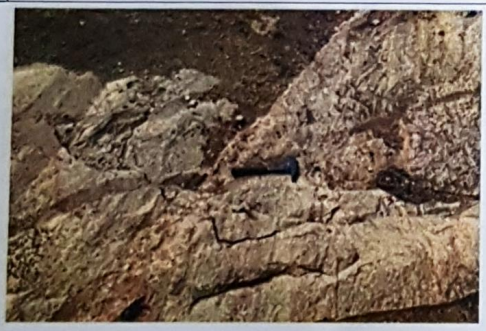


Photo: Cross cutting relationship in rock of various rock types

Photo: Displacement in pegmatite vein

SUMMARY

From the field visit, it can be inferred that the Hungund Schist Belt and Closepet Granite serves as the basement rocks for the Kaladgi Supergroup.

The oldest rock of the Kaladgi sequence is the Salgundi Conglomerate of the Ramdurg formation. It is overlain by the Saundatti Quartzite. Over these, we find the Chikselliкere Limestone of the Yendigere Formation. These formations are part of the Lokapur Subgroup of the Bagalkot Group.

Bevinmatti Conglomerate of the Kundargi Formation is the oldest of the Simikeri Subgroup marking the disconformity between the Lokapur and Simikeri Subgroups.

The Bagalkot and Badami groups are separated by an angular unconformity. The oldest is the Cave Temple Arenite, followed by Halkurki Shale and Konkankappa Limestone.

The Kaladgi Supergroup is overlain by the Deccan Trap Basalts.

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