Eastern Ghat Mobile belt (EGMB):

- It extends from Ongole in A.P. in south to Brahmani river in Orissa in north.
- It occurs along the eastern margin of Deccan proto continent consisting of Archean Dharwar, Bastan and Singhbhum cratons.
- EGMB is dissected by prominent grabens of Mahanadi and Godavari.
- EGMB separated from Antarctica during the break up of Gondwana supercontinent.
- This belt is associated ultrahigh temperature metamorphism of ~1000^0 C at 9-10 kbar pressure corresponding to 3-35 km crustal depth.
- Granulite facies rocks like Charnokites, Khondalites and Leptynites dominate the belt.
- EGMB is well known for Bauxite deposits.
- This is main provenance of Th, Ti rich placers along the East coast of India.

Zonation of EGMB:

- Ramakrishnan et al. (1988) divided the EGMB into 4 zones based on dominant rock types:
  - Western Charnockite zone (WCZ) – consists of enderbites with layers and lenses of basic granulites (gt-pyx granulites). BIF bands are associated with enderbites near Ongole.
  - Western Khondalite zone (WKZ)-dominates near Koraput and Kalahandi, immediately east of WCZ and Sileru Shear Zone (SSZ). Besides khondalites, sil-gt quartzites are also found.
  - Eastern Khondalite zone (EKZ)—zone developed around Vishakhapatnam;
  - Central Migmatite zone (CMZ)—middle of EGMB sandwitched between WKZ and EKZ; khondalites occur as enclaves in granitic rocks.

Marginal/transition zone:

- A marginal/transition zone exists between EGMB and the three cratons of Deccan protocontinent-Dharwar, Bastar and Singhbhum.
- In Dharwar and Bastar craton the marginal/transition zone begins at the faulted eastern margin of Proterozoic platforms/purana basins-Cuddapah, Pakhal, sabari, Indravati, Ampani, Khariar and Chattishgarh.
- The marginal zone includes WCZ and its eastern boundary is Sileru shear zone (SSZ).
- East of SSZ is EGMB.

Tectonic evolution:

1. Western margin of EGMB is situated at the eastern margin of Dharwar and Bastar cratons and the northern margin is placed at the southern boundary of Singhbhum craton.
2. The contact is marked by transition/marginal zone extending from platform basins of Cuddapah, Chattishgarh, Indravati etc.
3. Contact is sharp near Kharier area and marked by parallel shear zones with Rengali.
4. Craton-Mobile belt contact is marked by a gradual metamorphic transition.
5. Bhopalpatnam and Karimnagar granulite together with Sukma and Warangal enclaves are jusxtaposed against NNE trending EGMB at Konta and Khammam respectively, Bengpal from Bastar is truncated against EGMB near Jeypur.

6. In south the Nellore-Khammam schist belt is parallel with EGMB.
7. WCZ is seen all along the margins of EGMB. WKZ and CMZ overlie the cratonic gneisses. WCZ is consisted of enderbites with bands and enclaves of granulites.
8. Sedimentation in EGMB commensed with rifting of at the passive margin of the Deccan protocontinent which consisted of amalgamated cratons Dharwar, Bastar and Singhbhum.
9. Just after that, the platform basins (Cuddapah, Chattishgarh) evolved as epi-cratonic basins.
10. Major rifting took place in ~1500Ma and evidenced by the alkali magmatism at the shoulders of the rift close to Sileru shear zone (SSZ) and converted into nepheline syenite due to orogenic processes.
11. Alkali magmatism initiating the rift is followed by continental margin sedimentation of Khondalite group consisting of quartzites, pelites, minor carbonates, marls. Mg-Al sediments are subordinate and have been produced by denudation of mafic rocks and affected by ultra high temperature (UHT) metamorphism in the contact aureoles of basic intrusions.
12. Most striking feature of EGMB is the gross parallelism of compositional layering and lithological contacts with the general trend of the belt. The trend is resulted due to early coaxial isoclinal folding.
13. 2nd major event is the development of reclined folds with steep E dipping axial planes having downdip lineations. Extensive migmatization with folding and shearing especially in CMZ are evidenced.
14. Ultra-high temperature metamorphism of ~1000^{0}C/8-10 kbar pressure was recorded at several places in EGMB and a second major metamorphic event at 850^0 C at 8-8.5 kbar pressure followed by near isothermal decompression to 5 kbar. Metamorphism took place between 950-1100 Ma.
15. Massif anorthosites, late tectonic granitoids and charnokites intruded the EGMB by about ~800-850 Ma during the waning phase of orogeny.

Tectonic model:

1. NW-SE Cross section shows that the Charnokites basement are trusted up onto the Bastar craton in the west.
2. Two khondalite belts are separated by the the anatectic migmatite sone and also thrusted westward which indicate the compression is NW oriented probably from the East Antarctica, especially from the Arcehan Enderby land.
3. Gravity anomaly shows dense crust immediately to the east of Cuddapah boundary thrust and DSS suggests moho upwarps in the east.
4. Western margin of the EGMB is marked by alkali rocks and carbonetites which are deformed later on during the EGMB orogeny. These bodies are called as DARC (deformed alkaline rocks and carbonetites) that mark the ancient suture zone during continent-continent collision.
5. Western margin of WCZ disappears into Bay of Bengal near Ongole.
6. Lithotectonic polarity of Pandhyan mobile belt (PMB) does not match with EGMB. Marbles are abundant in Pandhyan mobile belt whereas these are scarce in EGMB. On the other hand, manganese formations are scattered in EGMB but these are absent in PMB. Quartzites are subordinate in EGMB but they are more widespread in PMB. Principal age of EGMB is 1.6-1.0 Ga whereas the PMB has a significant Pan-African (500-650Ma) impress