

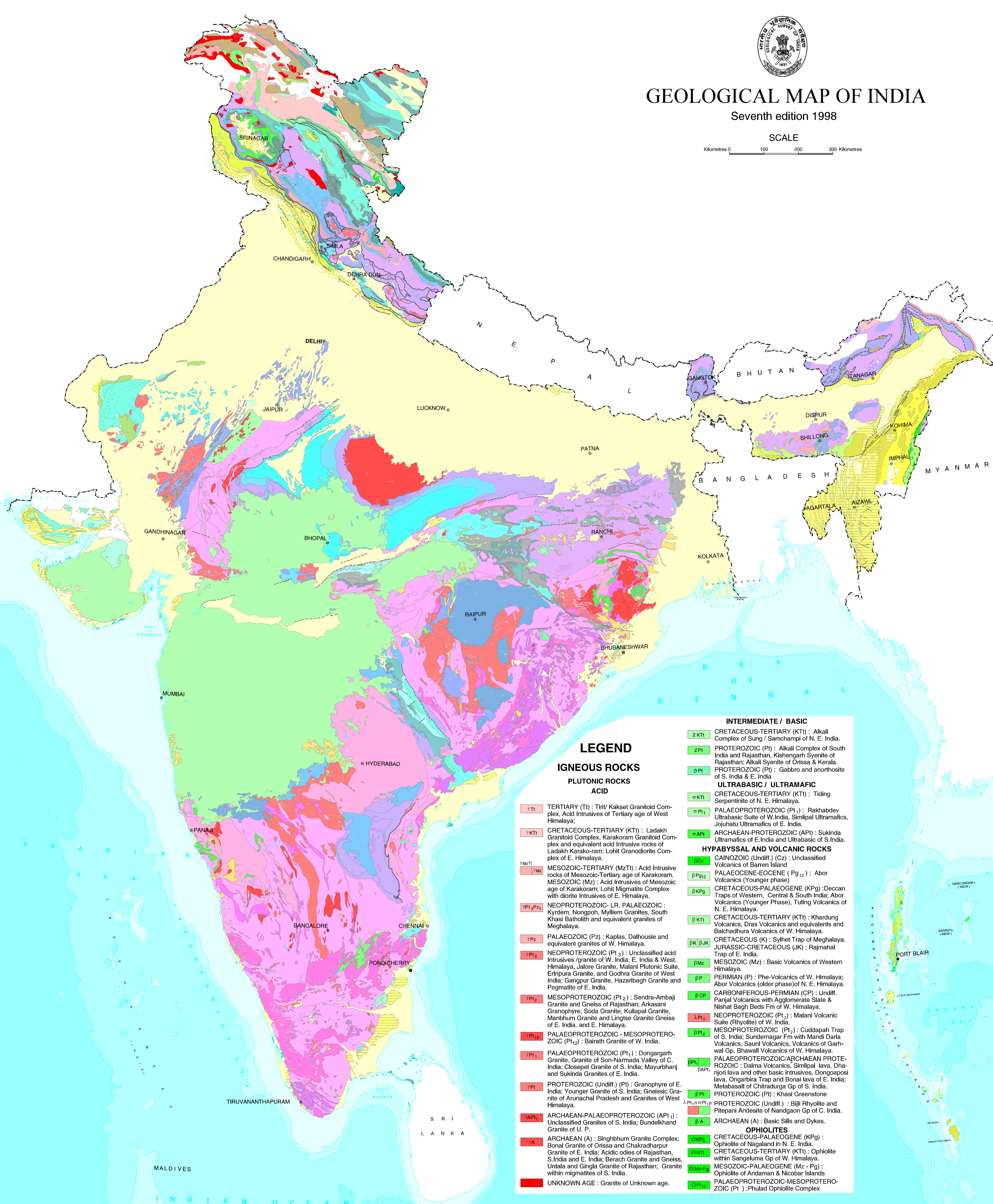


GEOLOGICAL MAP OF INDIA

Seventh edition 1998

SCALE

Kilometres 0 100 200 300 Kilometres



LEGEND

IGNEOUS ROCKS

- PLUTONIC ROCKS**
- ACID**
- TERTIARY (T1)**: Tirit/ Kakset Granitoid Complex, Acid Intrusives of Tertiary age of West Himalaya;
- CRETACEOUS-TERTIARY (KT1)**: Ladakh Granitoid Complex, Karakoram Granitoid Complex and equivalent acid Intrusive rocks of Ladakh Karako-ran; Lohit Granodiorite Complex of E. Himalaya.
- MESOZOIC-TERTIARY (MzT1)**: Acid Intrusive rocks of Mesozoic-Tertiary age of Karakoram.
- MESOZOIC (Mz)**: Acid Intrusives of Mesozoic age of Karakoram; Lohit Migmatite Complex with diorite Intrusives of E. Himalaya.
- NEOPROTEROZOIC-LR, PALAEOZOIC**: Kyrdem, Nongphoh, Mylliem Granites, South Khasi Batholith and equivalent granites of Meghalaya.
- PALAEOZOIC (Pz)**: Kaplas, Dalhousie and equivalent granites of W. Himalaya.
- NEOPROTEROZOIC (Pt1)**: Unclassified acid Intrusives (granite of W. India, E. India & West Himalaya, Jalore Granite, Malani Plutonic Suite, Elnpura Granite, and Godhra Granite of West India; Gangpur Granite, Hazaribagh Granite and Pegmatite of E. India.
- MESOPROTEROZOIC (Pt2)**: Sendra-Ambaji Granite and Gneiss of Rajasthan; Arkasani Granophyre, Soda Granite, Kullapal Granite, Manbhurn Granite and Lingtise Granite Gneiss of E. India, and E. Himalaya.
- PALAEOPROTEROZOIC - MESOPROTEROZOIC (Pt1,2)**: Bairath Granite of W. India.
- PALAEOPROTEROZOIC (Pt1)**: Dongargarh Granite, Granite of Son-Narmada Valley of C. India; Closepit Granite of S. India; Mayurbhanj and Sukinda Granites of E. India.
- PROTEROZOIC (Pt)**: Granophyre of E. India; Younger Granite of S. India; Gneissic Granite of Arunachal Pradesh and Granites of West Himalaya.
- ARCHAEO-PALAEOPROTEROZOIC (AP1)**: Unclassified Granites of S. India; Bundelkhand Granite of U. P.
- ARCHAEOAN (A)**: Singhbhum Granite Complex; Bonal Granite of Orissa and Chakracharpur Granite of E. India; Acidic dykes of Rajasthan, S. India and E. India; Berach Granite and Gneiss, Untala and Gingla Granite of Rajasthan; Granite within migmatites of S. India.
- UNKNOWN AGE**: Granite of Unknown age.

- INTERMEDIATE / BASIC**
- CRETACEOUS-TERTIARY (KT1)**: Alkali Complex of Sung / Samchampi of N. E. India.
- PROTEROZOIC (Pt)**: Alkali Complex of South India and Rajasthan, Kishenghar Syenite of Rajasthan; Alkali Syenite of Orissa & Kerala.
- PROTEROZOIC (Pt)**: Gabbrro and anorthosite of S. India & E. India
- ULTRABASIC / ULTRAMAFIC**
- CRETACEOUS-TERTIARY (KT1)**: Tiding Serpentinite of N. E. Himalaya.
- PALAEOPROTEROZOIC (Pt1)**: Rakhabdev Ultrabasic Suite of W. India, Srinipal Ultramafics, Joghjatu Ultramafics of E. India.
- ARCHAEOAN-PROTEROZOIC (AP1)**: Sukinda Ultramafics of E. India and Ultrabasic of S. India.
- HYPABYSSAL AND VOLCANIC ROCKS**
- CENOZOIC (Undiff.) (Cz)**: Unclassified Volcanics of Barren Island.
- PALAEOCENE-EOCENE (Pg1,2)**: Abor Volcanics (Younger phase)
- CRETACEOUS-PALAEOGENE (KPg)**: Deccan Traps of Western, Central & South India; Abor Volcanics (Younger Phase), Tuting Volcanics of N. E. Himalaya.
- CRETACEOUS-TERTIARY (KT1)**: Khardung Volcanics, Dras Volcanics and equivalents and Balchadhura Volcanics of W. Himalaya.
- CRETACEOUS (K)**: Sylhet Trap of Meghalaya.
- JURASSIC-CRETACEOUS (JK)**: Rajmahal Trap of E. India.
- MESOZOIC (Mz)**: Basic Volcanics of Western Himalaya.
- PERMIAN (P)**: Phe-Volcanics of W. Himalaya; Abor Volcanics (older phase) of N. E. Himalaya.
- CARBONIFEROUS-PERMIAN (CP)**: Undiff. Panjal Volcanics with Agglomerate Slate & Nishat Bagh Beds Fm of W. Himalaya.
- NEOPROTEROZOIC (Pt1)**: Malani Volcanic Suite (Rhyolite) of W. India.
- MESOPROTEROZOIC (Pt1)**: Cuddapah Trap of S. India; Sundemgar Fm with Mandi Darla Volcanics, Saunil Volcanics, Volcanics of Garhwal Gp, Bhawal Volcanics of W. Himalaya.
- PALAEOPROTEROZOIC/ARCHAEOAN PROTEROZOIC**: Dalma Volcanics, Simlipal lava, Dhanjori lava and other basic intrusives, Dongoposi lava, Ongarbia Trap and Bonal lava of E. India; Metabasalt of Chitradurga Gp of S. India.
- PROTEROZOIC (Pt)**: Khasi Greenstone Belt
- PROTEROZOIC (Undiff.)**: Biji Rhyolite and Pitepani Andesite of Nandgaon Gp of C. India.
- ARCHAEOAN (A)**: Basic Sills and Dykes.
- OPHOLITES**
- CRETACEOUS-PALAEOGENE (KPg)**: Ophiolite of Nagaland in N. E. India.
- CRETACEOUS-TERTIARY (KT1)**: Ophiolite within Sangeluma Gp of W. Himalaya.
- MESOZOIC-PALAEOGENE (Mz-Pg)**: Ophiolite of Andaman & Nicobar Islands
- PALAEOPROTEROZOIC-MESOPROTEROZOIC (Pt1)**: Phulad Ophiolite Complex

- SEDIMENTARY AND METAMORPHIC ROCKS**
- QUATERNARY (Q)**: Undiff. fluvial/aeolian/coastal and glacial sediments; Millolite Limestone of Gujarat; Hapoli Fm of N. E. India.
- CENOZOIC (Cz)**: Laterite and Bauxite; Calcareous clay and sandstone of S. India; Gravel and sandstone of E. India.
- PLIO-PLEISTOCENE (N₃,Q₁)**: Undiff. Siwalik Gp. of E. Himalaya; Dihing Fm, Dupitila and Namsang Fm of N. E. India; Upper Siwalik Gp., Karewa Gp. of W. Himalaya.
- PLIOCENE (N₂)**: Kankawati Fm; Dwarka Beds of W. India; Rajdanda Fm of E. India.
- MIO-PLIOCENE (N_{1,2})**: Tipam Gp and Chengapara Fm of N. E. India; Quilon, Warkhali and Rajahmundry Fms of S. India; Katni Fm of C. India; Archipelago Gp of Andaman & Nicobar Islands; Middle Siwalik Gp of W & N. E. Himalayas.
- MIOCENE (N₁)**: Surma Gp, Bokabil Fm; Bhuvan Fm and Baghmara Fm of N. E. India; Cuddalore Fm of Tamilnadu; Khari and Gaj Fms of Gujarat; Baripada Fm of Orissa; Lower Siwalik Gp of W. Himalaya.
- EOCENE-MIOCENE (Pg_{2,3}N₁)**: Upper Murree Gp, Lower Murree Gp, Undiff Murree Gp, Dhamsala Gp, Dagshai, and Kasauli Fm of W. Himalaya.
- OLIGOCENE (Pg₃)**: Bermotli Fm of Gujarat; Andaman Flysch of Andaman & Nicobar Islands.
- EOCENE-OLIGOCENE (Pg_{2,3})**: Barail Gp and Simsang Fm of N. E. India.
- EOCENE (Pg₂)**: Disang Gp, Phokphur Fm of N.E. India; Kapurdi Fm, Bandah Fm, Jogira Fm and Undiff. Eocene Fm of Rajasthan, Undiff. Eocene Fm; Berwalli Fm of Gujarat; Yingkong Fm of N. E. Himalaya; Kanji Gp of W. Himalaya.
- PALAEOCENE-EOCENE (Pg_{1,2})**: Mithakari Gp of Andaman & Nicobar Islands; Subathu Fm and Nummulitic Fm of W. Himalaya; Jaintia Gp of N. E. India.
- PALAEOCENE (Pg₁)**: Niniyur and Manaveli and Karasur Fms of S. India; Palana Fm, Akli Fm, Marh Fm, Sanu Fm, Khuiala Fm and Mandai Fm of Rajasthan and Madh Fms of Gujarat.
- TERTIARY (Tt)**: Undiff. Tertiary (Tt) Fms of W. Himalaya.
- CRETACEOUS-PALAEOGENE (KPg)**: Oceanic Pelagic Sediments of N. E. Himalaya; Undiff. Cretaceous to Palaeogene Fms of W. Himalaya.
- CRETACEOUS-EOCENE (KPg_{1,2})**: Undiff. Manikot Shell Limestone and Subathu Fm of W. Himalaya.
- CRETACEOUS-TERTIARY (KT1)**: Indus Gp. and Sangeluma Gp. of W. Himalaya.
- CRETACEOUS (K)**: Tiruchirapalli, Ariyalur and Uttatur- Patti Fms of S. India; Jabalpur Fm, Lameta & Bagh Gps, Bhuj, Fatehgarh and Abu Fms, Wagad Sandstone of W. India; Khasi Gp. of Meghalaya; Cretaceous Fms of Ladakh-Karakoram, Undiff. Giurnal and Chikkim Fms of W. Himalaya.
- JURASSIC-CRETACEOUS (JK)**: Pariwar and Himmatnagar Fms of W. India; Athgarh Fm of E. India; Jurassic-Cretaceous Fms of Karakoram.
- JURASSIC (J)**: Badesar, Baisakhi, Jaisalmer, Lathi and Mayakar Fms of Rajasthan, Jhuram - Jumara Fms, Middle Jurassic of Gujarat, Chikiala Fm, Kota Fm of S. & C. India; Durgapur bed (Jdu) of E. India, Spiti Shale, Burtisa Fm and Jurassic Fm of W. Himalaya.
- TRIASSIC-JURASSIC (TJ)**: Mahadeva and Dubrajpur Fms of E. India; Lilang Gp, Undiff. Laphal, Koto, Kufi, Kalapani and Chocolate Fms of W. Himalaya.
- TRIASSIC-CRETACEOUS (TK)**: Undiff. Maleri, Kota, Chikiala, Jabalpur, Dubrajpur, Parsora, Bogra Fms of Gondwana Sgp (Upper) of East, Central and S. India.
- PERMIAN-JURASSIC (PJ)**: Undiff. Kuling Fm and Lilang Gp of W. Himalaya.
- TRIASSIC (T)**: Maleri Fm, Panchet/Pachmarhi and Bogra Fms of Gondwana Sgp of East, Central and S. India, Undiff. Bishtot and Kaihel Fms of W. Himalaya; Tso-Lhamo Fm of E. Himalaya.
- MESOZOIC (Mz)**: Undiff. Mesozoic Fms of W. Himalaya.
- CARBONIFEROUS - PERMIAN and EOCENE Undiff. (CP-Pg₂)**: Undiff. Agglomerate Slate, Panjal Volcanics, Punch-Mandi and Rajpura Fms of W. Himalaya.
- PERMIAN-TRIASSIC (PT)**: Kamthi Fm of Gondwana Sgp of South & Central India; Vihi Gp, Murga Fm and Undiff. Permian-Triassic Fms of W. Himalaya.
- CARBONIFEROUS - TRIASSIC (CT)**: Undiff. Talchir, Karharbari, Barakar, Barren Measure, Ranigani, Pali, Motur, Bijori, Panchmarhi, Denwa and Panchet Fms of Gondwana Sgp (Lower) of E. C. and S. India; Carboniferous-Triassic Fms of W. Himalaya.
- PERMIAN (P)**: Barakar Fm, Ranigani Fm, Barren Measure Fm, Karharbari Fm of Gondwana Sgp of E. India; Bijori and Motur Fms of C. India, Badhaura Fm of W. India, Bhareli Fm, Garu Fm, Bichom Fm of N. E. Himalaya; Damuda Fm of E. Himalaya; Kuling, Gangul-Salooni, Undiff. Zewan and Mamal Fms of W. Himalaya.
- PALAEOZOIC - TERTIARY Undiff. (Pz-Tt)**: Shyok Gp of W. Himalaya.
- CARBONIFEROUS-PERMIAN (CP)**: Bap boulder bed of Rajasthan, Talchir Fm of Gondwana Sgp, Lower Gondwana of Meghalaya, Lachi Fm of E. Himalaya; Carboniferous-Permian Fms, Agglomerate Slate Fm, Boulder Slate Fm of W. Himalaya.
- CARBONIFEROUS (C)**: Undiff. Carboniferous Fms, Kanwar Gp, Undiff. Kanwar Gp, Lipak, Po and Ganmachidam Fm, Yapchan Fm of W. Himalaya.
- DEVONIAN-CARBONIFEROUS (DC)**: Pungmarla Fm, Saser Brangsa Fm of W. Himalaya.
- ORDOVICIAN-CARBONIFEROUS (OC)**: Undiff. Morgan, Muth, Aismuqom, Syringothyris, and Fenneslella Fms.
- ORDOVICIAN-DEVONIAN (OD)**: Undiff. Ralam, Garbyang, Shiala, Varietated, Fnanago, Takche, Muth, Taglangla Fms of W. Himalaya.
- ORDOVICIAN (O)**: Everest limestone of E. Himalaya.
- CAMBRIAN-ORDOVICIAN (CB)**: Rokchung Fm of W. Himalaya.
- CAMBRIAN (C)**: Tal Fm, Undiff. Kanjuh and Lolab Fm, Kunzanla Fm of W. Himalaya.
- PALAEOZOIC (Pz)**: Miri Fm, Undiff. Miri and Bichom Fm of Arunachal Pradesh, Pangong Metamorphic Complex, Undiff. Palaeozoic fms of W. Himalaya.
- NEOPROTEROZOIC (Upper) (Pt₃)**: Bhandar Gp of Vindhyan Sgp of Central and North India, Birmania Fm, Randa Fm and Jodhpur Gp, Bilara Gp, and Nagar Gp of Marwar Sgp of W. India; Undiff. Krol, Infrakrol & Blaini Fms, Ramsu Fm, Machhal Fm, Bhimdasa & Sincha Fm of W. Himalaya.
- NEOPROTEROZOIC (Lower) (Pt₁)**: Rewa of Vindhyan Sgp of C. and E. India, Silli Gp, Jaunsar Gp, Morar-Chakkrata Fm, Amri Fm, Banali - Setaral Gp and Bijri Fm of W. Himalaya.
- NEOPROTEROZOIC (Undiff.) (Pt₁)**: Kurnool Gp, Penganga Gp, Sullaval Gp, Bhims Gp, Badami Gp of C. & S. India, Manjir Fm, Gatal Fm, Undiff. Chamba & Bhaderwah Fm, Undiff. Batai, Manjir and Katargali Fm, Undiff. Gamir, Balia, Ramban and Sincha Fm and Martoli Fm of W. Himalaya.
- MESOPROTEROZOIC - NEOPROTEROZOIC (Undiff.) (Pt₂)**: Chattisgarh Gp, Indravati Gp of C. India, Kaladgi Sgp of S. India, Kullu Fm and Tanawal Fm of W. Himalaya.
- MESOPROTEROZOIC (Pt₂)**: Kaimur Gp and Semri Gp of Vindhyan Sgp of C. and N. India; Cuddapah Sgp; Papagni Gp, Chitravati Gp comprising Puliwenda, Tadpatri and Gandikota Fms, Nallamala Gp comprising Bairenkonda Fm, Cumbum Fm and Srisallem Fm of S. India; Pakhal Gp of S. India; Mungur Gp of E. India; Sirban Gp, Shali Gp, Rampur Gp, Larji Gp, Dharagarh Fm, Deoban Gp, Garhwal Gp and Bhitral Fm of W. Himalaya.
- PALAEOPROTEROZOIC - MESOPROTEROZOIC (Pt_{1,2})**: Sindreh, Kumbhalgarh, Gogunda, Alwar, Ajabgarh, Purnagarh and Sirahi Gps of Delhi Sgp and Undiff. Delhi Sgp of W. India; Khairagarh Gp, Abujmar Gp, Gwalior Gp, Bijawar Gp and Chipli Gp of C. India; Metamorphics of Chhotanagpur belt and Kolhan Gp of E. India; Shillong Gp of N. E. India.
- PALAEOPROTEROZOIC (Pt₁)**: Udaipur, Kankroll, Barilake, Debari, Doyda, Jharol, Lunavada, Champaner and Nathdwara Gps of Aravalli Sgp of W. India, Jahajpur, Pur-Banera, Rajpur-Dariba, Sawar, Ranthambhor and Rialo Gps of W. India; Sausar, Sakoli and Mahakosal Gps, Unclassified metamorphics of Bilaspur-Raigarh-Ambikapur region & Sonakhan Gp of Central India, Simlipal, Gangpur, Dhanjori and Singhbhum Gps of E. India.
- PROTEROZOIC (Undiff.) (Pt)**: Paro Fm and equivalents, Lumla Fm, Dirang Fm, Khetabari Fm, Tiding Fm; Gorbuthang Fm of Daling Gp and equivalents, Potin Fm, Tengra Fm, Reyang Fm and Undiff. Potin and Khetabari Fm, Buxa Fm and equivalents, Naimi Fm, Dedja Fm and Everest pelite of N. E. and E. Himalaya; Balfour Chondritor / Buniyar and Kalanund Fms, Undiff. Kibar, Lopara and Dul Fms and Undiff. Proterozoic Fms of W. Himalaya.
- PROTEROZOIC (Undiff.) (Pt)**: Kanchoinjunga augen gneiss, Darjeeling gneiss and equivalents, Chungthang Fm, Sela Gp; Naga metamorphics of E. and N.E. Himalaya, Jutogh Gp, Ramgarh Fm, Almora Crystallines, Baijnath Crystallines, Salkhala Fm/Vaikrita Fm, Central Crystallines, Undiff. Nanga Parbat Crystallines, Suru Crystallines, Bhilangana Fm, Tsomorari Gneissic Complex, Agastamani Fm and Bijni Fm of W. Himalaya.
- ARCHAEOAN (?) PROTEROZOIC (Undiff.) (A?)**: Chhotanagpur Gneissic Complex of E. India and Gneissic Complex of Meghalaya.
- ARCHAEOAN-PROTEROZOIC (AP1)**: Peninsular Gneiss (Younger phase) of S. India, Chitradurga Gp of Dharwar Sgp and Undiff. Dharwar Sgp of S. India; Bailadila Gp of C. India, Bonai Gp and Unclassified metamorphics of E. India.
- ARCHAEOAN (A)**: Bababudan Gp, Eastern Greenstone & Vengad Gp of Dharwar Sgp, Wynad Schist Complex, Sargur Gp and Satyamangalam Schist Complex of S. India, Gorumahisini Gp and Older Metamorphics of India, Bengpal Gp, Armgao Gp and Gopad-Banas Metamorphic Complex of C. India.
- ARCHAEOAN (A)**: Peninsular Gneiss (older phase) and Migmatite Complex of S. India, Sandmata Complex, Mangalwar Complex and Hindoli Gp of Bhillwara Sgp of W. India, Unclassified Gneiss of C. India
- ARCHAEOAN (A)**: Charnockite Gp (Ac) and Khondalite Gp (Ak) of S. & E. India. Charnockite Gp of Orissa and A. P. show widespread Proterozoic reactivation;