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Paleozoic Paleoclimate of the Himalaya and the Global Climate Change.

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The global paleoclimate cycles of the earth recorded in the Neoproterozoic cryosphere are also recurred in the Paleozoic Gondwana supercontinent in the Himalaya,India [1,2,3]. It is quite obvious to understand the recent climate change on the planet based on the past global climate change are of utmost importance.The marine and terrestrial records of past life on earth and climate change are invaluable to understand how the Earth responded to climate change.Extreme climatic changes in the past may provide analogs for future climate models.We have reviwed the Paleozoic fossil records from the Himalaya and compared the major events of the global paleoclimate change.

The Lower Cambrian succession of the Lesser and Tethyan Himalaya is characterized by the occurrence of trace fossils of arthropods and annelids.The shallow marine (subtidal-intertidal)trace fossils are horizontal and branching assemblage.The main trace fossils associated with the trilobites are Rusophycus, Cruziana ,Diplichnites, Planolites,Monomorphichnus , Skolithos and burrows in the siltstones of the Middle Tal Formation of the Mussoorie syncline.This Lower Cambrian transgression is also represented in the Tethyan sequence. The sea regressed from the Lesser Himalaya after the deposition of the Tal Formation due to Pan African event.The Cambro – Ordovician boundary age fossils are not known from the Himalayan Lesser and Tethyan basins and the contact is marked by an unconformity in the Spiti- Zanskar region.The Upper Cambrian is mainly characterized by the trilobites , however , the brachiopods occur in the Ordovician.The Ordovician- Lower Silurian succession is well developed in the Spiti –Zanskar sections, Himachal Himalaya and the Garhwal Tethys Himalaya.The main fossil assemblage include algae,corals,bryozoans,trilobites,and brachiopods. The Ordovician –Silurian boundary is also marked by a sedimentological break.The carbonate ramp sedimentary facies and carbon isotope excursion from Garbyang- Shiala –Yong formations in Garhwal Tethys section indicate a shallow marine high energy tidal flat depositional environment.However, the Middle Ordovician conodont biostratigraphy has not been done so far and the Late Ordovician glacial event is not recognized in the Himalaya.The complete succession from Cambrian to Triassic is developed in the shallow Tethyan sea of the Kashmir,NW Himalaya. The Late Permian carbonate sequence (Zewan Fornation) is well exposed in the Kashmir Himalya and can be correlated with the Changhsingian stage of China.In the NE Himalaya, the Late Carboniferous- Permian succession is found in the Arunachal and Sikkim Lesser Himalaya with well preserved brachiopods , gastropods and Lower Gondwana plant fossils Glossopteris, Gangamopteris and Vertebraria in the Namchi Formation.This represents the Himalayan Gondwana sedimentation.The Permian global glaciation is recorded in this section as Rangeet Glacial Boulder Beds underlying the Namchi Formation.In Asia,end Permian mass extinction based on c-isotopes

is established in Meishan section in China.High resolution detailed C-isotope chemostratigraphy is essentially required from the Tethyan Ordovician and P/T sections of the Himalaya for global correlation of the paleoclimatic events.

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[3] Tewari V.C. and Sial, A.N. (2007)Chem. Geol.,237,64-88