

CONCLUSIONS

1. The supercontinent Gondwana and three major continental plates: Baltica (NE Europe), Laurentia (N. America) and Siberia were distinguished at the beginning of the Phanerozoic. Laurentia and Baltica drifted apart from Gondwana during the latest Vendian to earliest Cambrian time at the beginning of the Sauk supersequence. The breakup of the Rodinia-Pannotia supercontinent led to the formation of oceans, which widened significantly during the Sauk Supersequence. Sauk was the time of the disassembly of continents.
2. The Tappan was the time of assembly of continent leading to the formation of the Oldredia supercontinent. The Caledonian Orogeny during the Silurian and Early Devonian was the result of the collision of Baltica, Laurentia, and Avalonian terranes. These plates were sutured together to form the large Laurussia continent. The transpressional collision between Gondwana and Laurussia occurred during the early Devonian time. Siberia was perhaps sutured to Laurentia at this time.
3. The Kaskaskia was a time of plate reorganization and formation of the supercontinent Pangea. Oldredia was disassembled during the Devonian time. The series of orogenies during the Carboniferous time (Hercynian, Alleghenian and others) resulted in suturing of Gondwana and Laurussia and onset of Pangea.
4. The Absaroka was a time of Pangea reorganization and final suturing. Almost all parts of Pangea were sutured together for a brief time during Early Jurassic. The large Tethys Ocean was formed between the Laurasian and Gondwana part of Pangea. The Pangean Rim of Fire from North America through South America, Antarctica was active through all Absaroka time slices. The break-up of the main part of Pangea began with the stress release at the Permian-Triassic boundary; extensive rifting occurred during the Triassic-Early Jurassic time, spreading began at the Middle Jurassic time.

5. The Tethyan realm was tectonically active during Absaroka, Zuni and Tejas . The dominant driving forces were north-dipping subduction along the Eurasian margin and mantle upwelling, causing rifting and drifting on the Gondwana margin. Several plates drifted away from Gondwana and docked to Eurasia during Late Carboniferous-Middle Jurassic.
6. Zuni was the time of disassembly of Pangea. This disassembly began with the origin of the Central Atlantic Ocean and breakup between Laurentia and Gondwana during the Jurassic time. Gondwana was fragmented during the Jurassic-Cretaceous time. The main stages of the Gondwana breakup are opening of the oceanic seaway between Africa, India and Antarctica, opening of the South Atlantic and, finally northward drift of Australia and India. The Indian Ocean was formed as result of the Gondwana break-up.
7. The initial opening of the Arctic Ocean took place in the Canadian basin during the Early Cretaceous and was followed by the Late Cretaceous opening of the Makarov Basin and Tertiary of the Eurasian Basin. This opening is related to the orogenic events in the Northeast Asia and northwest North America. These events sutured Asian and American in the Chukotka-Alaska area.
8. Tejas is the time of the assembly of the continents into modern „Pangea”. The Alpine Orogeny formed numerous orogenic belts in Europe, North Africa, and the Middle East. This orogeny was most intense during the Miocene. It involved numerous plates and terranes between Africa, Arabia and Central Asia. The Himalayan orogeny occurred as a result of the continental collision, which took place in the Tertiary between India and Eurasia. It formed Himalayas and adjacent mountain belts and strike-slip systems in Asia. This orogeny has had the major impact on Southeast Asian plate tectonic development during the Tertiary. Influencing the widespread formation of extensional basins. The collision of Australia and the Philippines with Eurasia during the Neogene initiated compressional tectonics in Southeast Asia.

9. The Earth's climate reflects the plate tectonic phases of the continental breakup and assembly. The warm times are related to breakups, the icehouse conditions are related to assembly. The climate changed from the greenhouse with short icehouse interlude through icehouse with warming interludes, another greenhouse, to the present day icehouse.

10. Carbonate sedimentation during the Early Paleozoic is related to the existence of the large continental platform. The Mesozoic is the time of the equatorial Tethyan realm with the abundant fragmented carbonate platforms. Carbonate sedimentation prevailed in the Southeast Asia, Pacific realm and on the narrow continental margins during the Cenozoic Tethyan time.