

The Initiation of the Rift Phase of the Amerasia Basin (Arctic Ocean)

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Abstract

The timing of the initiation of the rift phase of the Amerasia Basin of the Arctic Ocean has been debated for many years. To help constrain the age of this event, ages of detrital zircons from Triassic-earliest Cretaceous sandstones from northern Sverdrup Basin have been compiled. Pre-Rhaetian sediment supply from a land area to the north of Sverdrup Basin was relatively high and included numerous zircons with a near depositional age. Such zircons indicate that the pre-Rhaetian sediments were in part derived from a distal, active margin and that a large integrated drainage system was present over the northern land area upon which the Amerasia Basin subsequently formed.

Following early Rhaetian uplift, sediment supply from the north was greatly reduced and the detrital zircons are all substantially older than the depositional age of the strata in which they occur. These data suggest that starting in early Rhaetian the northern land area was dissected by rift valleys and only local drainage from a rift shoulder reached northern Sverdrup Basin. Thus, we interpret that the rift phase of the Amerasia Basin started in earliest Rhaetian.

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