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## Asymmetric distribution of marine heat flow in the Chukchi Basin (Chukchi Abyssal Plain) as possible evidence for asymmetric rifting

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The Chukchi Basin, a sub-basin of the Amerasia Basin in the Arctic Ocean, remains enigmatic regarding its formation age and tectonic processes. Among the various hypotheses proposed, seafloor spreading or hyper-extended rifting during the Cretaceous are currently prominent, both supported by gravity and deep seismic survey data. Recent marine heat flow (MHF) observation efforts using the IBRV Araon from 2018 to 2024 have resulted in a comprehensive dataset covering the basin along and across the inferred N-S oriented spreading axis in the basin center. The formation age inferred from the newly observed MHF was the Early to Late Cretaceous, which is slightly older than the timing of Northwind Basin to the east. Notably, the MHF distribution revealed an asymmetric increase toward the eastern margin perpendicular to the axis and toward to southern margin parallel to the axis. Because MHF distribution often reflects deep tectonic structure such as the Moho depth or the lithosphere-asthenosphere-boundary, this asymmetric pattern suggests a difference in the depth of these boundaries within the basin. The observed discrepancy between the inferred spreading axis and the MHF distribution indicates that the Chukchi Basin may have undergone asymmetric rifting, challenging the conventional notion of symmetric rifting. Our future research will integrate gravity and magnetic anomaly data with numerical modeling to better constrain the deep structure and formation processes of the basin.