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The heat flow data assessment project: Transformation of the global heat flow database

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Since its establishment in 1963, the International Heat Flow Commission (IHFC) has fostering and curating the Global Heat Flow Database (GHFDB). The dynamic nature of techniques and methodologies used in heat-flow density determination has necessitated regular updates to the database. Despite its widespread utility, the GHFDB faces challenges arising from variations in measurement techniques and data quality. Ongoing efforts are dedicated to overcoming these challenges, aiming to elevate the database's accuracy and reliability, thus solidifying its value within the scientific community. Multiple iterations of the GHFDB exist, primarily focused on characterizing the quality of individual heat-flow data points. However, the establishment of a new, authenticated GHFDB demanded the development of a fresh reporting standards for heatflow data submitted to the IHFC. This new framework, derived from a collaborative global initiative, incorporates 62 metadata fields. This comprehensive approach became imperative due to the escalating volume of data and the diverse methodologies employed, necessitating a standardized scheme to evaluate the quality of heat-flow density determinations consistently. This update provides insights into the community-driven initiative initiated in 2021, targeting the reassessment of approximately 1,414 publications containing 73,033 global heat-flow data points. A noteworthy aspect of this initiative is the introduction of a novel quality scheme, unifying three independent criteria into a combined score. This score encompasses quantified uncertainty, methodological quality, and the status of overruling effects. The integration of these criteria facilitates a swift comparison of heat-flow data, instantly revealing any missing data or inadequately documented information. The introduction of this quality scheme empowers users to efficiently select reliable heat-flow values tailored to their specific research purposes.

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