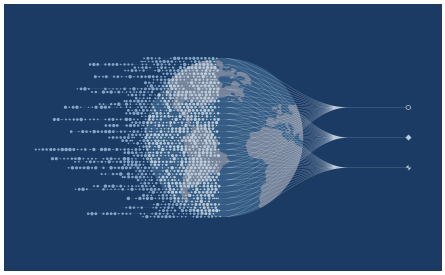

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Five M's of Seismic Station Quality: Machines, Methods, Metadata, Monitoring, Maintenance

For data generated by seismic monitoring networks to be useful and trustworthy, they must be sufficiently accurate and precise. While it is necessary that seismic instruments comprising networks be appropriately accurate and precise, that is not sufficient, as there are additional factors that determine seismic station accuracy. To help network operators compile and manage a set of necessary and sufficient conditions for seismic station quality, we advance five categories for station operators to consider, along with a useful mnemonic device: the "Five M's": Machines, Methods, Metadata, Monitoring, and Maintenance. "Machines" refers to the instruments, "Methods" to how instruments are deployed and installed, "Metadata" to the critical importance of documenting the nature of the data so it can be properly interpreted, "Monitoring" to the need to regularly inspect the station quality, and "Maintenance" to the need to keep the station in proper running order. We introduce and define all five categories, and elaborate on the first three in more depth. "Machine" quality touches on instrument accuracy, precision, calibration, and certification. We elaborate on the nature of proper installation and operation "Methods", and review the relevance and methods for creating and managing station "Metadata".

E-mail

brucetownsend@nanometrics.ca

In-person or online preference

Primary authors: TOWNSEND, Bruce (Nanometrics, Inc.); BAINBRIDGE, Geoffrey (Nanometric Inc)

Co-author: JUSKO, Marián (Nanometrics)

Presenter: TOWNSEND, Bruce (Nanometrics, Inc.)

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