Letter

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Dear Editor,

We write to encourage GSA journals to conform to the Sisteme International (SI) regarding units of time. The SI unit of time, the second (s), is impractical for earth scientists, astronomers and nuclear physicists alike. In such cases, the SI tolerates other units, and for geological applications the annum (a) is used, where $1 \text{ a} = 3.16 \times 10^7 \text{ s}$ (Holden, 2001). As with other units, thousands, millions, and billions of these are appropriately designated ka, Ma, and Ga, respectively. So far, so good—these derived units are in widespread use in earth science literature. The departure lies in the use of different units (e.g., m.y.) for time differences such that the interval between 90 Ma and 100 Ma, for example, would be designated as 10 m.y. in, e.g., *Geology*. Following correct SI usage (Nelson, 2002) units must follow algebraic rules such as the distributive law: 100 Ma – 90 Ma = (100 – 90)Ma = 10 Ma, and so on. Similarly, rates and decay constants should be expressed in $(\text{ka})^{-1}$, $(\text{Ma})^{-1}$or $(\text{Ga})^{-1}$. Analogies are useful: we would all agree that the interval between 100 m and 200 m depths in a borehole is 100 m, or that a magma at 1000 °C is 100 °C hotter than one at 900 °C. Why should we treat time units any differently? We urge GSA to abandon the policy of expressing time differences in k.y., m.y., or g.y., and thereby achieve compliance with the SI standard.

Sincerely,

Paul R. Renne and Igor M. Villa, co-chairs
IUGS Working Group on Decay Constants in Geochronology

References Cited

Holden, N.E., 2001, Table of the Isotopes, *in* CRC Handbook of Chemisry and Physics: CRC Press, Boca Raton, section 11, p. 50–197.

Nelson, R.A., 2002, Guide for metric practice: Physics Today 55, p. BG15–BG16.