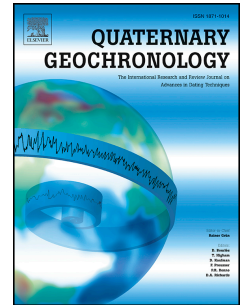


Accepted Manuscript

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PII: S1871-1014(15)30059-5

DOI: [10.1016/j.quageo.2015.09.005](https://doi.org/10.1016/j.quageo.2015.09.005)

Reference: QUAGEO 727

To appear in: *Quaternary Geochronology*

Received Date: 27 January 2013

Revised Date: 12 June 2015

Accepted Date: 7 September 2015

Please cite this article as: Marrero, S.M., Phillips, F.M., Borchers, B., Lifton, N., Aumer, R., Balco, G., Cosmogenic Nuclide Systematics and the CRONUScalc Program, *Quaternary Geochronology* (2015), doi: 10.1016/j.quageo.2015.09.005.

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Cosmogenic Nuclide Systematics and the CRONUScale Program

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Abstract

As cosmogenic nuclide applications continue to expand, the need for a common basis for calculation becomes increasingly important. In order to accurately compare between results from different nuclides, a single method of calculation is necessary. Calculators exist in numerous forms with none matching the needs of the CRONUS-Earth project to provide a simple and consistent method to interpret data from most commonly used cosmogenic nuclides. A new program written for this purpose, CRONUScale, is presented here. This unified code presents a method applicable to ^{10}Be , ^{26}Al , ^{36}Cl , ^3He , and ^{14}C , with ^{21}Ne in testing. The base code predicts the concentration of a sample at a particular depth for a particular time in the past, which can be used for many applications. The multi-purpose code already includes functions for calculating surface exposure age for a single sample or for a depth profile containing multiple samples. The code is available under the GNU General Public License agreement and can be downloaded and modified to deal with specific atypical scenarios.

Keywords: cosmogenic nuclide, exposure age calculator, beryllium-10, chlorine-36, aluminum-26, helium-3, carbon-14

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