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Examining the relationship between portable luminescence reader measurements and depositional ages of paleowetland sediments, Las Vegas Valley, Nevada

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10 **Highlights:**

- 11 • Portable luminescence readers offer potential as an age profiling tool for sediments in a  
12 variety of depositional settings.
- 13 • We found a strong relationship between portable luminescence reader measurements  
14 and depositional age in paleowetland deposits in southern Nevada, USA.
- 15 • Scatter in the relationship can be reduced significantly by using a simple, field-  
16 accessible pretreatment routine.

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18 *Trade disclaimer: This draft manuscript is distributed solely for purposes of scientific peer*  
19 *review. Its content is deliberative and pre-decisional, so it must not be disclosed or released by*  
20 *reviewers. Because the manuscript has not yet been approved for publication by the U.S.*  
21 *Geological Survey (USGS), it does not represent any official USGS finding or policy.*

22  
23 **ABSTRACT**

24 Portable luminescence readers are exciting new tools that have the potential to rapidly  
25 determine the age structure of late Quaternary stratigraphic columns. This is important because  
26 high-resolution age profiling can reveal details about the temporal dynamics of climate cause  
27 and ecosystem effect, often while researchers are still in the field. In this paper, we compare  
28 new portable luminescence reader measurements of total photon counts with a suite of robust,  
29 highly resolved ages from middle to late Pleistocene-age paleowetland deposits in the Las  
30 Vegas Valley of southern Nevada. Our results show that total photon counts correlate with age,

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