

## **Evaluation of Minor and Trace Elements of the Wilson Creek Formation, Mono County, California**

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Daniel Lee, CSU Fullerton, Department of Geological Sciences, Fullerton, CA

Elmira Wan, US Geological Survey, Tephrochronology Project, Menlo Park, CA

David Wahl, US Geological Survey, Tephrochronology Project, Menlo Park, CA

Andrei M. Sarna-Wojcicki, US Geological Survey, Tephrochronology Project, Menlo Park, CA

Jeffrey R. Knott, CSU Fullerton, Department of Geological Sciences, Fullerton, CA

The Pleistocene Wilson Creek Formation is composed of interbedded mudstones and 19 tephra layers at the type locality for the Mono Craters tephra along Wilson Creek, north of Mono Lake, California. These tephra layers range in age from 32,000 to 13,000  $^{14}\text{C}$  years BP. The identifications and ages of the Wilson Creek ash layers are particularly difficult to assess because the major and minor oxide compositions of the volcanic glass shards in the various ash beds are virtually indistinguishable. A possible exception is ash bed #15 which is stratigraphically equivalent with the Mono Lake (paleomagnetic) excursion (MLE). In this study, we present similarity coefficient calculations comparing single-shard Electron Microprobe analysis and bulk Instrumental Neutron Activation Analysis (INAA) data for 18 of these tephra layers. Focusing on ash bed #15, the Electron Microprobe major and minor element data show that ash bed #15 is geochemically highly similar to seven ~~other~~ Wilson Creek ash beds. However, ash bed #15 can be separated and is distinct when minor and trace elements are measured by INAA. Moreover, Time of Flight – Laser Ablation - Inductively Coupled Plasma - Mass Spectrometry (TOF-LA-ICP-MS) shows that volcanic glass in ash bed #15 has a unique light rare earth element ( $\text{La}_N/\text{Sm}_N$ ) fractionation signature. Employing more accurate TOF-LA-ICP-MS data will further distinguish individual Wilson Creek Formation ash beds or groups of beds, and make these ash layers more valuable as late Pleistocene marker beds in the western United States.