

1. Overview

Introduction

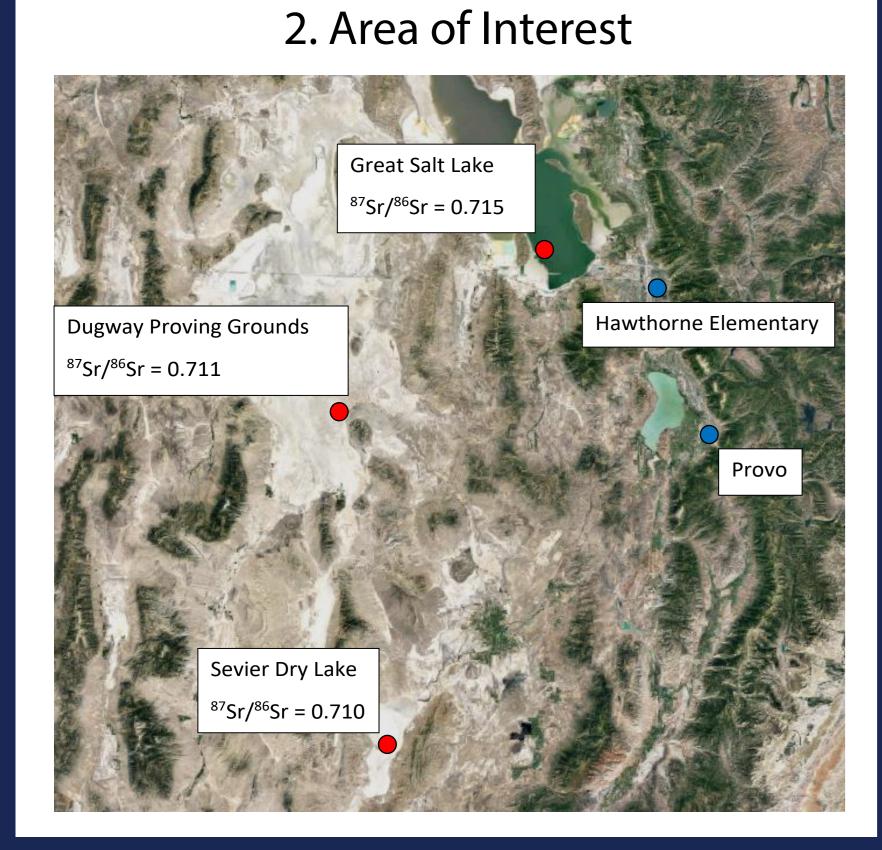
- Dust sources such as the Great Salt Lake and Sevier Dry Lake can be harmful to human health
- Sr isopte ratios may be used to fingerprint playa dust from source to sink

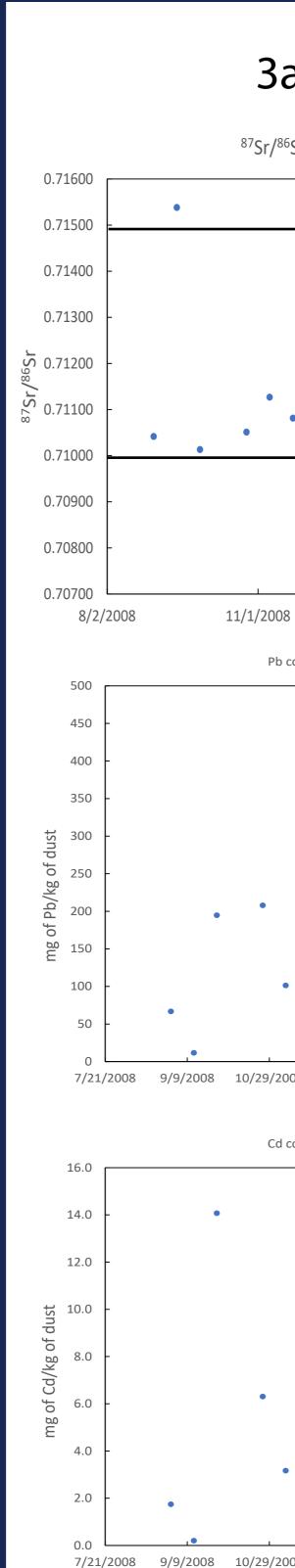
Methods

- PM 2.5, PM 10, and total suspended particles (TSP) were collected biweekly using MiniVol auto-samplers
- Historic PM 10 provided by Utah Department of Air Quality (UDAQ) were collected daily
- Filters were analyzed for ⁸⁷Sr/⁸⁶Sr ratios and trace element concetrations
- Backward trajectory models were made using NOAA HYSPLIT model

Results

- 7 August 2009 dust event had a similar ⁸⁷Sr/⁸⁶Sr to the Great Salt Lake
- 22 March 2009 event had a similar ⁸⁷Sr/⁸⁶Sr ration to Sevier Dry Lake





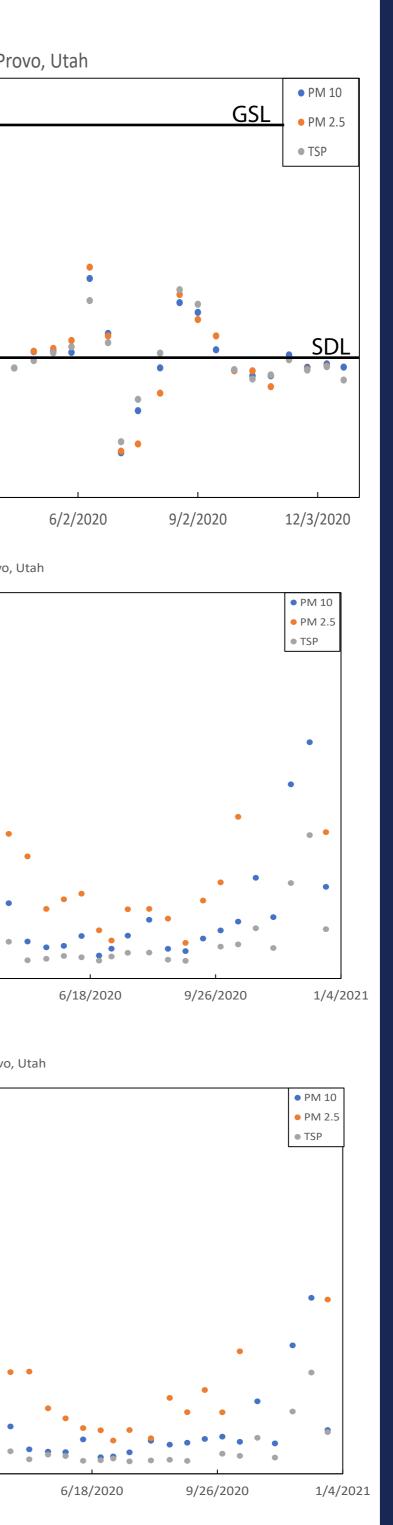
Using strontium isotopes to identify dust sources to the Wasatch Front

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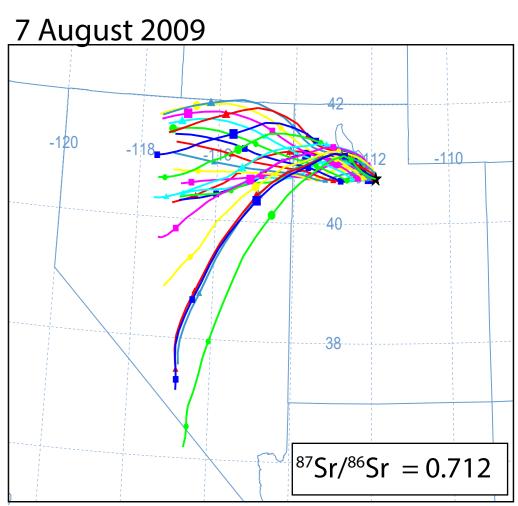
(1) BRIGHAM YOUNG UNIVERSITY (2) UNIVERSITY OF UTAH

3a. Results - Hawthorne 3b. Results - Provo ⁸⁷Sr/⁸⁶Sr Time series for Hawthorne near Salt Lake City ⁸⁷Sr/⁸⁶Sr Time series for Provo, Utah 0.71600 • PM 10 GSL 0.71500 0.71400 0.71300 **0.71200** August 7 0.71100 SDL 0.71000 March 22 0.70900 0.70800 0.70700 5/31/2019 8/31/2019 10/31/2009 12/1/2019 1/31/2009 5/2/2009 8/1/2009 Pb concentration in dust for Provo, Utah Pb concentration in dust for Hawthorne near Salt Lake City 700.0 • PM 10 600.0 500.0 400.0 300.0 200.0 100.0 10/29/2008 12/18/2008 2/6/2009 3/28/2009 5/17/2009 7/6/2009 8/25/2009 10/14/2009 5/15/2019 8/23/2019 12/1/2019 3/10/2020 Cd concentration in dust for Hawthorne near Salt Lake City Cd concentration in dust for Provo, Utah • PM 10 30.0 25.0 5 20.0 15.0 10.0 5.0 9/9/2008 10/29/2008 12/18/2008 2/6/2009 3/28/2009 5/17/2009 7/6/2009 8/25/2009 10/14/2009 5/15/2019 8/23/2019 12/1/2019 3/10/2020



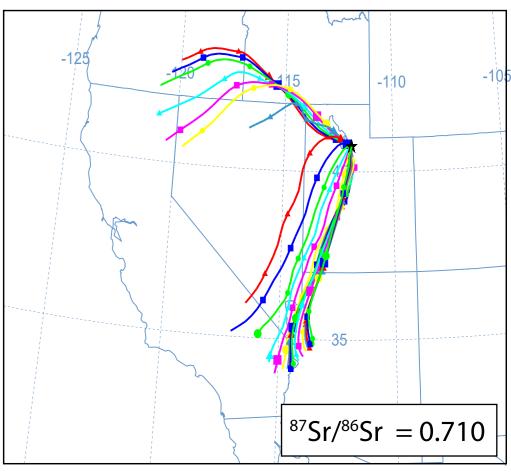


4. Discussion - Dust sources



• Dust from west wind matches more closely to GSL

22 March 2009



• Dust from south wind matches more closely to SDL

Acknowledgements

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