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Yen-Po Lin (林彥伯)

Research Center for Environmental Changes (RCEC), Academia Sinica

No. 128, Sec. 2, Academia Rd., Nankang, Taipei, Taiwan 115

Office Tel: +886-2-2787-5863

Email: yenpolin@gate.sinica.edu.tw

EDUCATION

2015/09 – 2023/06 Ph.D. Department of Earth Sciences, NCKU, Taiwan

2012/02 – 2014/08 M.S. Department of Earth Sciences, NCKU, Taiwan

2007/09 – 2011/06 B.S. Department of Earth Sciences, NCKU, Taiwan

EMPLOYMENT

2023/10- present Postdoctoral Researcher Fellow RCEC, Academia Sinica, Taiwan

2023/09 - 2023/09 Postdoctoral Researcher Fellow Department of Earth Sciences, NCKU, Taiwan

HONORS & AWARDS

2023 國家公園學報 111 年度最佳論文獎項。

2022 Wiley Top Cited Article 2021-2022

RESEARCH INTEREST

The focus of my research is to estimate paleo-seawater pH using the boron isotopic ratio of the marine carbonate. Boron isotope was widely used for seawater pH but there is still limited understanding of boron isotope fractionation in different materials. from various regions ocean. We have analyzed modern foraminifera and corals to establish local boron isotope fractionation curves, and participated in international standardization projects, measuring new synthetic marine carbonate reference materials, NIST RM 8301 (Coral) and NIST RM 8301 (Foram). We also investigated the boron isotope of the carbonate fractions in the Doushantuo Formation to evaluate the seawater pH and partial pressures of atmospheric CO₂ under ultra-greenhouse conditions in the Neoproterozoic Era. We provide new evidence and relatively low *p*CO₂ estimates for the Snowball Earth hypothesis.

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RESEARCH HIGHLIGHTS

1. Evaluation of Boron oceanic pH change and its environmental significance recorded in the Doushantuo formation nearby Precambrian-Cambrian boundary

We investigated the boron isotope of the carbonate fractions in the Doushantuo Formation to evaluate the seawater pH and partial pressures of atmospheric CO₂ under ultra-greenhouse conditions in the Neoproterozoic Era. The $\delta^{11}\text{B}$ values from the Chuanyandong section with a negative $\delta^{11}\text{B}$ excursion during the Marinoan deglacial period. The global and synchronous $\delta^{11}\text{B}$ offset were intercepted in global ocean acidification events in previous studies. We modified the traditional method to precisely estimate ocean pH from the $\delta^{11}\text{B}$. We excluded the pH error caused by terrigenous weathering and the artificial estimation $\delta^{11}\text{B}$ of Neoproterozoic oceans. We re-evaluate the pH of seawater and $p\text{CO}_2$ in the aftermath of the Marinoan glaciation. These $p\text{CO}_2$ values are much lower than those reported in previous studies. In this study, we provide new evidence and relatively low $p\text{CO}_2$ estimates for the Snowball Earth hypothesis.

2. Boron Isotopic Analysis of Representative Atmospheric Aerosols on an Islet Offshore NE Taiwan, Peng Chia Yu

To identify pollutant origins and their potential sources from either long-range transported (LRT) or local emissions, the Boron (B) concentrations and the B isotopic compositions ($\delta^{11}\text{B}$) in the water-soluble fraction of aerosols were determined. These aerosols were collected from an islet offshore in northeastern Taiwan, Peng Chia Yu (PCY), a nonresidential islet, from January 1998 to March 2000. This islet may be influenced by various pollutants or chemical transport during monsoon periods, but suffers minimal human perturbation locally. A two end-member mixing scenario is proposed to explain our observations using the obtained $\delta^{11}\text{B}$ and 1/[B] results. The ocean endmember is characterized by high 1/[B] and high $\delta^{11}\text{B}$; while other endmember is from continental endmember or anthropogenic contributions that are characterized by of 1/[B] and low $\delta^{11}\text{B}$ ($\delta^{11}\text{B} < 10\%$). Based on these chemical and isotopic results, we found aerosol emissions in northern Taiwan are characterized as low B with nearly constant $\delta^{11}\text{B}$, when compared with long-range transported continental endmembers derived from nearby regions. This study provides preliminary B and $\delta^{11}\text{B}$ levels in aerosols derived from LRT/local emissions and discusses potential monsoonal effects on aerosols offshore of NE Taiwan.

PUBLICATIONS (*: corresponding author)

1. 林彥伯、游鎮烽、鍾全雄。澎湖南方四島國家公園微孔珊瑚骨骼硼同位素組成及海洋酸化速率之評估。《國家公園學報》 32(2), 30-41, 2022。
2. Lin, Y.P., You, C.F*, Kao, T.Y., Chung, C.H., Hung, C.C. Boron isotopic analysis of representative atmospheric aerosols derived from long-range transported/local emission on an islet Offshore NE Taiwan. *Frontiers in Environmental Science* Vol 9, 1-11, 2021.
3. Stewart, J.A., Christopher, S.J., Kucklick, J.R., Bordier, L., Chalk, T.B., Dapigny, A., Douville, E., Foster, G.L., Gray, W.R., Greenop, R., Gutjahr, M., Hemsing, F., Henahan, M.J., Holdship, P.,

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Hsieh, Y.T., Kolevica, A., **Lin, Y.P.**, Mawbey, E.M., Rae, J.W.B., Robinson, L.F., Shuttleworth, R., You C.F., Zhang S., Day, R.D. NIST RM 8301 Boron isotopes in marine carbonate (Simulated Coral and foraminifera solutions): Inter-laboratory delta B-11 and trace element ratio value assignment B and trace element ratio value assignment. *Geostandards and Geoanalytical Research* **45 (1)**, 77–96, 2020.

4. Wang, T.H., You C.F*., Chung, C.H., Liu, H.C., **Lin, Y.P.** Macro-sublimation: Purification of boron in low-concentration geological samples for isotopic determination by MC-ICP MS. *Microchemical Journal* **152**, 2019.
5. **Lin, Y.P.**, Chen, Y. C., You, C.F*., Liu, H.C., Chung, C.H., Wang, T.H. Isotopic Compositions of Pb in river water, sediments, and bedrock soils in the Erren River, southwestern Taiwan. *Soil Pollution: Sources, Management Strategies and Health Effects (Nova Science Publishers)*, **Chap. 3**, 2018.
6. Wu, S.F., You, C.F*., **Lin, Y.P.**, Eugenia, V. J., Emmanuel B. New boron isotopic evidence for sedimentary and magmatic fluid influence in the shallow hydrothermal vent system of Milos Island (Aegean Sea, Greece). *Journal of Volcanology and Geothermal Research* **310** , p. 58-71, 2016.