



Dr. Ritika Kaushal

Postdoctoral Fellow

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Research Interests: Stable isotope biogeochemistry, palaeoclimatology

Education:

2018: Ph.D, Centre for Earth Sciences, Indian Institute of science, Bangalore, India

Thesis title: "Stable isotopic composition of rice grain organic matter as an archive of monsoonal climate", Supervisor: Prof. Prosenjit Ghosh.

2010: M.Sc, Environment Management, Forest Research Institute University, Dehradun, India

2008: B.Sc Botany (Honours), Lady Brabourne College, University of Calcutta, India

Research Experience:

Jan 2019-
ongoing

Postdoctoral Fellow Institute of Earth Sciences, Academia Sinica, Taiwan

- Investigating oxygen and silicon isotope composition of biogenic silica in rice using laser fluorination system and MC-ICP-MS for paleoclimate application.
- Determined nitrate dynamics in a subtropical lacustrine system using the cutting-edge method of ^{17}O anomaly in dissolved nitrates.

April 2018-
Dec 2018

Research Associate Divecha Centre for Climate Change, Indian Institute of Science, Bangalore, India

- Carried out measurements of seasonal variation in concentration, and carbon and oxygen isotopic compositions of greenhouse gas: CO_2 over Bangalore city using state of the art laser-based instrument: Delta Ray isotope ratio infrared spectrometer.
- Calibrated Elemental Analyser for nitrogen isotope ratio analysis in plant organic matter and conducted analysis of both modern-day rice and archaeological rice remains. This experiment aimed to investigate the role of environmental factors in controlling nitrogen isotopic variation.

Publications:

1. **Ritika Kaushal**, Chao-Chen Lai, Fu-Kuo Shiah, Mao-Chang Liang (2020). Utilization of $\Delta^{17}\text{O}$ for nitrate dynamics in a subtropical freshwater reservoir. **Science of the Total Environment**, 753, 141836. <https://doi.org/10.1016/j.scitotenv.2020.141836>.
2. **Ritika Kaushal**, Prosenjit Ghosh and Anil K. Pokharia (2019). Stable isotopic signature in rice grains marking a rapid hydroclimatic shift during the structural transformation of Harappan civilization. **Quaternary International**. <https://doi.org/10.1016/j.quaint.2019.04.017>.
3. **Ritika Kaushal**, Prosenjit Ghosh (2018b). Oxygen isotope enrichment in rice (*Oryza sativa L.*) grain organic matter captures signature of relative humidity. **Plant Science**, 274, 503-513. <https://doi.org/10.1016/j.plantsci.2018.05.022>.
4. **Ritika Kaushal**, Prosenjit Ghosh (2018a). Stable oxygen and carbon isotopic composition of rice (*Oryza sativa L.*) grains as recorder of relative humidity. **Journal of Geophysical Research: Biogeosciences**, 123(2), 423-439. <https://doi.org/10.1002/2017JG004245>.
5. **Ritika Kaushal**, Prosenjit Ghosh & Heike Geilmann (2016). Fingerprinting environmental conditions and related stress using stable isotopic composition of rice (*Oryza sativa L.*) grain organic matter. **Ecological Indicators**, 61, 941–951. <https://doi.org/10.1016/j.ecolind.2015.10.050>.
6. Arpita Biswas, **Ritika Kaushal** & Prosenjit Ghosh (2020). Effect of charring on rice grain morphology and carbon isotopic composition. **Current Science**, 117 (7), 1052-1059. doi: 10.18520/cs/v118/i7/1052-1059.
7. Yu-Hsin Hsueh, **Ritika Kaushal**, Chiling Chen, Mao-Chang Liang. Using stable isotopes for assessing soil N_2O emission from varying levels of N-fertilizer. Manuscript under preparation.

Oral and Poster presentations at Conferences

1. Water Future Conference 2019, Bengaluru, India (Oral presentation).
Ritika Kaushal, Chao-Chen Lai, Fuh-Kwo Shiah, Mao-Chang Liang. Investigating nitrate dynamics in a sub-tropical water reservoir using $\Delta^{17}\text{O}$ method.
2. Goldschmidt Meeting 2019, Barcelona, Spain (Poster presentation).
Thamizharasan Sakthivel, Aniket Dhar, **Ritika Kaushal**, Rahul Peethambaran, Prosenjit Ghosh. Record of atmospheric inversions trapping signature of CO_2 emission from sugarcane industry around urban setup; a case study using high-resolution Delta-Ray IR Spectrometer. <https://goldschmidt.info/2019/abstracts/abstractView?id=2019005120>.
3. Goldschmidt Meeting 2018, Boston, USA (Oral presentation).
Ritika Kaushal, Prosenjit Ghosh, Yue-Ie Hsing. Assessing the accuracy of relative humidity prediction using an empirical relationship based on rice (*Oryza sativa L.*). <https://goldschmidt.info/2018/abstracts/abstractView?id=2018003542>

4. Goldschmidt Meeting 2017, Paris (Oral presentation). **Ritika Kaushal**, Prosenjit Ghosh, Anil K. Pokharia. Reconstructing palaeo-hydroclimate using rice (*Oryza sativa* L.) grains. <https://goldschmidtabstracts.info/2017/1950.pdf>.
5. AGU Fall Meeting 2015, San Francisco, USA (Poster presentation). **Ritika Kaushal**, Prosenjit Ghosh. Fingerprint of seasonal relative humidity in rice (*Oryza sativa* L.): potential for palaeoclimate archive. <http://adsabs.harvard.edu/abs/2015AGUFMPP11B2242K>.
6. Goldschmidt Conference 2015, Prague (Poster presentation). **Ritika Kaushal**, Prosenjit Ghosh. Stable isotope composition of rice grain organic matter: an indicator of growing season stress. <https://goldschmidt.info/2015/program/programViewAuthor?authorId=10997>
7. AGU Fall Meeting 2013, San Francisco (Poster presentation). **Ritika Kaushal**, Prosenjit Ghosh. Determination of fractionation of oxygen isotopes between rice grain and environmental water.. <http://adsabs.harvard.edu/abs/2013AGUFMPP23C2002K>
8. 12th ISMAS Triennial International Conference on Mass Spectrometry 2013, Goa, India. **Ritika Kaushal**, Prosenjit Ghosh, Anil K. Pokharia. Reconstruction of climate using stable oxygen isotope composition of rice organics.
9. Goldschmidt Conference 2012, Montreal, Canada (Oral presentation). **Ritika Kaushal**, Prosenjit Ghosh, Willi A. Brand, Heike Geilmann. Rainfall induced isotope effects in rice (*Oryza Sativa* L.) grain organics: a palaeo perspective. [V.Mhttps://goldschmidtabstracts.info/2012/1923.pdf](https://goldschmidtabstracts.info/2012/1923.pdf).

Awards and Fellowships

1. **Academia Sinica Post-Doctoral Research Fellowship 2019-2020.**
2. Grant (abstract and registration fees waiver) from **Geochemical Society** for attending Goldschmidt Meeting 2018, Boston, USA.
3. International Travel Support Grant by **DST- Science and Engineering Research Board (SERB)** for attending Goldschmidt 2017, Paris, France.
4. Grant (abstract and registration fees waiver) from **Geochemical Society** for attending Goldschmidt Meeting 2017, Paris, France.
5. **American Geophysical Union (AGU) General Student Travel Grant** award for attending AGU Fall Meeting 2015, San Francisco, USA.
6. Grant (abstract and registration fees waiver) from **Geochemical Society** for attending Goldschmidt Meeting 2015, Prague.
7. Grant from **National Science Foundation, USA** for attending SPATIAL short course on Isotopes in Spatial Ecology and Biogeochemistry conducted at the **University of Utah, USA**, June, 2014.
8. **Berkner Fellowship** by **American Geophysical Union** for attending AGU Fall Meeting 2013, San Francisco, USA.
9. **Travel grant by Geochemical Society** for attending Goldschmidt Meeting 2012, Montreal, Canada.
10. **Indian Institute of Science scholarship** (2010-2015) for doctoral research.