

SANJEEV KUMAR

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Personal

Citizenship : India
Place of Birth : Patna (India)

Educational Background

2005 Ph.D. Geology Physical Research Laboratory, Ahmedabad, India / M.S.
University of Baroda, Vadodara, India.
1999 M.Tech. Applied Geology Indian Institute of Technology – Roorkee {erstwhile
University of Roorkee}, Roorkee, Uttaranchal, India.
1996 B.Sc. Geology Science College, Patna University, Patna, India.

Thesis / Dissertation

Ph.D. : Biogeochemistry of nitrogen isotopes in Northern Indian Ocean.
(Advisor: Prof. R. Ramesh)

M.Tech. : Application of GIS for delineating Landslide prone areas using Fuzzy operations.
(Advisor: Prof. R. Anabalgan)

General Research Interests

- *Biogeochemistry of bioavailable elements (mainly C, N, O) and their isotopes.
- *Interrelationships of elemental cycles and climate.
- *Nutrient dynamics and simple models.
- *Particle flux studies.
- *Trace gas emissions from forested soils and related biogeochemical processes.

Professional Background

1999 - 2001 Junior Research Fellow, Physical Research Laboratory, Ahmedabad, India
2001 - 2004 Senior Research Fellow, Physical Research Laboratory, Ahmedabad, India.
2005- 2006 Postdoctoral Associate, University of Minnesota (Twin Cities), MN, USA.
(Research topic: Biogeochemistry of Lake Superior
Advisors: Prof. Robert W. Sterner and Prof. Jacques Finlay)
2007- Present Postdoctoral Fellow, St. Francis Xavier University, NS, Canada.
(N₂O emission from soil and related biogeochemical processes
Advisors: Prof. Lisa Kellman and Prof. Hugo Beltrami)

Awards and Scholastic Achievements

- *University Scholarship during M.Tech.
- *Ph.D. Studentship by Department of Space, Govt. of India (1999-2004).
- *Best paper award and certificate of merit during 11th Indian Society for Mass Spectrometry (ISMAS) workshop on mass spectrometry (2004), Shimla, India.
- * European Association of Organic Geochemists (EAOG) Travel award 2004 (Declined due to time constraints)
- * University of Minnesota Postdoctoral Associate Fellowship (2005-2006)

Professional memberships:

- * American Geophysical Union (AGU Membership number: 10183541)
- * Geochemical Society (Reg. No: 20041101-004)
- * Indian Society for Mass Spectrometry (Life Membership-642)
- * American Society of Limnology and Oceanography (P316521)

Professional Responsibilities:

Reviewer for: Current Science.

Experimental Skills

- *Worked on Continuous Flow Isotope Ratio Mass Spectrometer (Finnigan Delta^{Plus}) interfaced with Elemental Analyzer (Carlo Erba) Via Con Flo III.
- * Planning and executing tracer experiments.
- * Nutrient Analysis.
- * CHN analysis.
- * Core sampling and experimental set up for nutrient efflux experiments in the water column.
- * Isotopic analysis on low-level chemical species in water column.

Cruise Experience (partial Listing)

* 2002	ORV Sagar Kanya	11Sep - 11Oct	Bay of Bengal (SK-182)
* 2003	ORV Sagar Kanya	02Jan - 20 Jan	Arabian Sea (SK-186)
* 2003	FORV Sagar sampada	26 Feb - 06March	Arabian Sea (SS-212)
* 2003	ORV Sagar Kanya	12April - 07May	Bay of Bengal (SK-191)
* 2005	RV Blue Heron	6 – 9 June	Lake Superior (NILS 4)
* 2005	RV Blue Heron	20 –24 July	Lake Superior (NILS 5)
* 2005	RV Blue Heron	27 July –1 Aug	Lake Superior (NILS 6)

As Chief Scientist

* 2005	RV Blue Heron	2 October	Lake Superior (NILS 8)
* 2006	RV Blue Heron	31 January	Lake Superior (NILS 9)

Geological Field Experiences

- *Geological and structural mapping around shivpuri-Rishikesh, Tehri-Garhwal Himalaya, UP. India, 1996.
- *Study of mineral deposits in and around KCC khetri, Rampura Agucha (Hindustan Zinc Limited), Rajasthan, India, 1998.
- *Practical mine training in Agnigundala Lead Project, Guntur, A.P., India, 1998.

Training courses and workshops attended

- * International training course on ocean colour remote sensing organized by ISRO-IOCCG-POGO at Space Application Centre (ISRO), Ahmedabad, India, 2001.

*Workshop on trace gas fluxes from canadian forest soils – 8-9 June 2007, McGill University, Montreal, Canada.

Presentation in conferences and symposia

*Indian Society of Mass Spectrometry (ISMAS) silver jubilee symposium, 27-31 January 2003, National Institute of Oceanography, Goa, India.

*International workshop on biogeochemical processes in the northern Indian Ocean, 24-25 February 2003, Goa, India.

*13th V.M. Goldschmidt Conference, 7-13 September 2003, Kurashiki, Japan.

*73rd Annual Session of The National Academy of Sciences from 10-12 October 2003, Ahmedabad, India.

* Indian Society of Mass Spectrometry (ISMAS) Workshop, October 7-12 2004, Shimla, India.

*American Society of Limnology and Oceanography – summer meeting, 4-9 June 2006, Victoria, British Columbia, Canada.

Invited Talk: St. Francis Xavier University, Antigonish, Nova Scotia, Canada.

Publications

Articles in Refereed Journals

*Kumar S., R.Ramesh, S.Sardesai and M. S. Sheshshayee (2004) High new production in the Bay of Bengal: possible causes and implications, **Geophysical Research Letters**, 31, L18304, doi: 10.1029/2004GL021005.

{<http://www.agu.org/journals/gl/gl0418/2004GL021005/2004GL021005.pdf/>}

*Kumar S., R. Ramesh, N.B.Bhosle, S Sardesai and M. S. Sheshshayee (2004) Natural isotopic composition of nitrogen in suspended particulate matter in the Bay of Bengal, **Biogeosciences**, 1, 63-70. {<http://www.copernicus.org/EGU/bg/bg/1/63/bg-1-63.pdf>}

*Kumar S., R.Ramesh, M. S. Sheshshayee, S.Sardesai and P.P. Patel (2005) Signature of terrestrial influence on nitrogen isotopic composition of suspended particulate matter in the Bay of Bengal, **Current Science**, 88 (5), 770-774. {<http://www.ias.ac.in/currsci/mar102005/770.pdf>}

*Kumar S. and R.Ramesh (2005) Productivity measurements in the Bay of Bengal using ¹⁵N tracer: Implications to the global carbon cycle, **Indian Journal of Marine Sciences**, 34 (2), 153-162.

{http://www.niscair.res.in/ScienceCommunication/ResearchJournals/rejour/ijms/ijms2k5/ijms_jun05.asp#p1 only abstract available online}

* Sterner R.W., E. Agnoustou, S. Brovold, G.S. Bullerjahn, J.C. Finlay, S. Kumar, R.M.L. McKay and R. M. Sherrell (2007) Increasing stoichiometric imbalance in North America's largest lake: Nitrification in Lake Superior, **Geophysical Research Letters**, 34, L10406, doi: 10.1029/2006GL028861.

* Kumar S., R.W. Sterner, J.C. Finlay and S. Brovold: Spatial and temporal variation of ammonium in Lake Superior (In Press: **Journal of Great Lakes Research**).

* Finlay J.C., R.W. Sterner and S. Kumar: Isotopic constraints on the source of long term nitrate accumulation in Lake Superior (In Press: **Ecological applications**).

Articles in Non-Refereed Journals

* Ramesh R., M.Tiwari, S. Kumar and M.G. Yadava (2004) Applications of stable isotope ratio mass spectrometry: some recent studies, "Proceedings of 11th ISMAS workshop on mass spectrometry", 7-12 October 2004, Shimla, India.

Articles under review:

Kumar S., R. Ramesh, R.M. Dwivedi, M. Raman, M.S. Sheshshayee and W.D'souza: Effect of winter cooling on nitrogen uptake in the northeastern Arabian Sea.

* Kumar S., R. Ramesh, S. Sardesai and M.S. Sheshshayee: Effect of incubation time and substrate concentration on N-uptake rates by phytoplankton in the Bay of Bengal.

*Kumar S., R. Ramesh and R.M. Dwivedi: Comparison of *in situ* ¹⁵N based biological productivity in the Bay of Bengal with that estimated from OCEANSAT-I ocean colour monitor.

Articles under preparation:

* Kumar S., R.W. Sterner and J.C. Finlay: Nitrogen and Carbon uptake dynamics in Lake Superior.

* Kumar S., J.C. Finlay and R.W. Sterner: Isotopic composition of PON in Lake Superior.

* Kumar S. and R. Ramesh: Increased $\delta^{15}\text{N}$ of surface PON from middle to waning phase of winter monsoon in the NE Arabian Sea: Different possible reasons.

Published Abstracts

* Sanjeev Kumar and R.Ramesh (2003) A new model for fractionation of nitrogen isotopes during uptake by marine phytoplankton, Indian Society of mass spectrometry (ISMAS) silver jubilee symposium-2003 from 27-31st January 2003, National Institute of Oceanography, Goa, India.

* Sanjeev Kumar and R.Ramesh (2003) New Production measurements in the Bay of Bengal Using ¹⁵N Tracer, International workshop on Biogeochemical processes in the northern Indian Ocean from 24-25th February 2003, Goa, India.

* Sanjeev Kumar, R.Ramesh, M.S.Sheshshayee and S.Sardesai (2003) New Production measurements in the Bay of Bengal, *Geochimica et Cosmochimica Acta Supplement*, Vol. 67, Issue 18, 13th V.M. Goldschmidt Conference from 7-13th September 2003, Kurashiki, Japan.

*R.Ramesh and Sanjeev Kumar (2003) Variation of new production with time and concentration of the substrate in the Bay of Bengal, *Geochimica et Cosmochimica Acta Supplement*, Vol. 67, Issue 18, 13th V.M. Goldschmidt Conference from 7-13th September 2003, Kurashiki, Japan.

* Sanjeev Kumar and R.Ramesh (2003) Primary productivity measurements in the Bay of Bengal: Role in Carbon Cycle, 73rd annual session of The National Academy of Sciences from 10-12th October 2003, Ahmedabad, India.

* Sanjeev Kumar, R.Ramesh, R.M.Dwivedi and W. D'Souza (2004) New Production in the Northeastern Arabian Sea during northeast monsoon (January 2003), XIII National Space Science Symposium (NSSS-2004) from 17-20 February 2004, Kottayam, Kerala, India.

* Sanjeev Kumar, R. Ramesh and R.M. Dwivedi (2004) New Production in the Northeastern Arabian Sea during Winter Bloom (February-March 2003), 2004 AGU-CGU-SEG- EEGS Joint assembly from 17-21 May 2004, Montréal, Canada.

*Sanjeev Kumar, R.Ramesh, S.Sardesai and M.S.Sheshshyae (2004) Evaluating Carbon Fixation potential of the Northern Indian Ocean: Relevance to Global Carbon Cycle, 11th ISMAS workshop on mass spectrometry from 7-12 October 2004, Shimla, India.

* Sanjeev Kumar, R. Sterner and J. Finlay (2006) Nitrogen uptake in Lake Superior, American Society of Limnology and Oceanography –summer meeting from 4-9 June 2006, Victoria, British Columbia, Canada.

References

1. Dr. Robert Sterner
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