CURRICULUM VITAE

1. Name : Dr. KIRAN GANGADHAR SHIRLAL

B.E., M.Tech., Ph.D

2. Address : Professor Dept. of Applied Mechanics & Hydraulics National Institute of Technology Karnataka, (NITK) Surathkal. P.O. Srinivasnagar-575 025, INDIA.



3. e-mail : kshirlal@gmail.com

4. Date of birth: 15-01-1963

5. Research Publications: 135

a) Journals	: 37
National Journals	: 12
International Journals	: 25
b) Conferences/Seminars	: 98
National Conferences	: 58
International Conferences	: 40

c) Co-authored a Manual titled" Manual on Coastal Erosion", Sept., 2001, Dept. of Applied Mechanics, KREC, Surathkal, Sep, 2001.

d) Contributed a chapter on "Breakwaters-An innovative hard option for coastal erosion mitigation measures", for the book titled "Coastal Environments", edited by K. S. Jayappa and A.C. Narayana, I.K. International Publishing House Pvt Ltd, New Delhi, ISBN: 9787-81-80026-28-2, 2009. pp 199 – 211.

6. Research Guidance:

5 Completed + 4 Ongoing and 72 M.Tech Dissertations

- 7. Countries Visited UK, Japan, Oman, UAE. Germany, Taiwan, Mauritius
- 8. Conducted a 2 week Short Term Training Programme on "Planning, Development and Management of Modern Urban Core Infrastructure Solutions for India", from 20th-31st Dec, 2004 for academicians and field engineers.

9. Conducted National Conference INCHOE-07, Dec, 2007 at NITK, Surathkal.

10. No. of National/International Conferences attended: 48

11. No. of AICTE-ISTE STTPs and Other Short Term Courses attended : 30

12. Membership of Professional Bodies: (Type & year)

- 1) Institution of Engineers (India), IE(I) (AM 5271-5, 1985)
- 2) Indian Society for Technical Education, ISTE (LM 4219, 1989)
- 3) Indian Society for Hydraulics, ISH (LM 660, 2007)

- 1. Institute Staff research project on "Effect of submerged breakwater on stability of conventional rubble mound breakwater", 2002.
- National level project titled "Management of Tidal Inlets along West Coast" worth Rs.6.5 million sponsored by Integrated Coastal and Marine Area Management (ICMAM) Project Directorate under Ministry of Earth Sciences, Govt. of India. 2007
- A project titled `Studies on Tandem Breakwater", worth Rs. 1.627 million sanctioned by Indian National Committee on Hydraulics (INCH), Ministry of Water Resources, Govt. of India, 2008
- 4. Joint research interaction with Dept of Ocean Civil Engg, Kagoshima University, Japan, 2008.
- 5. A project titled 'Studies on Berm Breakwater", worth Rs. 1.488 million sanctioned by Indian National Committee on Hydraulics (INCH), Ministry of Water Resources, Govt. of India, 2010.
- 6. A joint SPARC Project (Project Code : P262) titled "Environmental innocuous pile head breakwater for the mitigation of coastal erosion" worth INR48,28,560/ has been sanctioned on 15.03.2019 along with Norwegian University of Science and Technology. Indian PI : Dr. Pruthviraj Umesh (NITK, Surathkal) Indian Co-PI(s) : Prof. Kiran Gangadhar Shirlal (NITK, Surathkal) International PI : Dr. Hans Bihs (Norwegian University of Science and Technology).
- 7. A joint R&D Project (Project Code : P262) titled " Comprehensive investigation of coastal processes along Karnataka coast" worth INR48,492,000/- has been proposed (no: NITK/AMD/2020/PU-163 dated 10/02/2020) along with Karnataka Engg Res. Station (KERS), RO, Coastal Engg Sub Div, KERS, Mangaluru. Indian PI : Dr. Pruthviraj Umesh (NITK, Surathkal) Indian Co-PI(s) : Prof. Kiran Gangadhar Shirlal (NITK, Surathkal)

14 Awards / recognitions :

- 1. Conferred the prestigious award of "Jal Vigyan Puraskar" for best research paper published in the Journal of Indian Society for Hydraulics, 2003.
- Won the "Best Paper Certificate" for the paper titled "Wave transmission of submerged inclined serrated plate breakwater" presented at the Intl Journal Conf. on Environment and Biological Sciences (IJCEBS'13), Oct 4-5, Dubai (UAE), organised by Intl. Sc.Academy of Engg and Tech.
- 3. Consistently rated as Good Teacher by the students.
- 4. Senate member of NITK, Surathkal.

- 5. Reviewer of Ocean Engineering International Journal of Research & Development, Pergamon, Elsevier Science Ltd., New York, USA.
- **6.** Reviewer of International Journal of Earth Sciences and Engineering, A Cafet-Innova Technical Society, indexed in Elsevier Publication.
- 7. Reviewer of the International Journal of Ecology and Development (IJED), IIT Roorkee.
- 8. Reviewer for the Journal of Institution of Engineers, IE (India), Civil Engineering Division,
- 9. Reviewer of the Journal of Indian Society for Hydraulics (ISH), Pune.
- 10. Member, of Centre of Excellence for Disaster Management, NITK Surathkal.
- 11. Member of proposed Ocean & Atm. Sc. & Tech Cell at NITK.
- 12. Delivered a no. of special lectures at STTP courses and for GoK officials.
- Chaired a session as Rappotieur during National Conference HYDRO 2006", 8-9th Dec, 2006, at Bharati Vidyapeeth Univerwsity, Pune.
- Chaired a session as Rappotieur during National Conference on "Sustainable Water Resources Management" –SwaRM 2010, 7th -9th Jan, 2010, NITK Surathkal.
- **15. Delivered a number of Special/Guest Lectures** at various training programmes of officers of various departments of GoK and GoI.

15. List of Research Guidance

a) Ph.D : 07 (5 Completed + 3 Ongoing)

- 1. Study of coastal processes & solution to environmental problems in the vicinity of Netravathi-Gurpur river estuary A modeling approach (**Completed Jan, 2010**)
- Performance characteristics of submerged plate breakwater A physical model study (Completed Jan, 2011)
- Hydraulic performance of protected breakwater system constructed with artificial armour units – A physical model study(Completed Jan, 2012)
- Hydraulic performance of berm breakwater constructed with artificial armour units A physical model study (2014)
- 5. Modeling of Artificial vegetation (2018)
- 6. Design of Cylindrical pile head breakwater (Ongoing)
- 7. Conical pile head breakwater (Ongoing)
- 8. Geotextile sand bag breakwater (Ongoing)
- 9. Geotextile sand bag reef breakwater (Ongoing)

b) M.Tech: (71)

- 1. Geomorphological studies, 1990
- 2. Static and dynamic analysis of marine riser, 1991
- 3. Impact of breakwater at Beypore harbour on coastal geomorphology, 1992
- 4. Studies on geomorphology of Kerala coast, 1993

- 5. Studies on stability of rubble mound breakwaters, 1994
- 6. Performance of overtopping rubble mound breakwater, 1997
- 7. Performance of overtopping rubble mound breakwater with reduced armour weight, 1999
- 8. Affect of mini-breakwater on performance of rubble mound breakwater, 1999
- 9. Tandem breakwater system, 2000
- 10. Sediment trend matrix, 2000
- 11. Laboratory investigation on the stability of tandem breakwater, 2001
- 12. Sensitivity analysis of new design formula for breakwater, 2001
- 13. Effect of breakwater spacing on performance of tandem breakwater, 2002
- 14. Effect of crest width of submerged reef on performance of tandem breakwater, 2003
- 15. Planning of transshipment container terminal at New Mangalore Port, 2004
- 16. Effect of reef crest width on stability of tandem breakwater, 2004
- 17. Long term and spectral analysis of waves off Mangalore coast, 2005
- 18. Performance of tandem breakwater with reduced armour weight, 2005
- 19. Hydraulic performance of tandem breakwater using concrete cubes as artificial armour units, 2006.
- 20. Hydrodynamic and wave modeling at Netravathi Gurpur river mouth, 2006.
- 21. Hydraulic performance of tandem breakwater using concrete cubes as artificial armour units, 2007.
- 22. Infrastructure planning for New Mangalore Port for 2020 2022. 2007
- 23. Critical analysis of dredging scenario at New Mangalore Port. 2007
- 24. An experimental study on Tandem Breakwater, 2008
- 25. Conceptual plan for developments of coastal shipping & inland water transport, 2008
- 26. Experimental verification of performance characteristics of horizontal & inclined plate breakwater, 2008
- 27. Laboratory investigation on berm breakwater using concrete cubes as artificial armour units, 2009
- 28. Comparative study of hydrodynamic performance of submerged horizontal & vertical plate breakwaters, 2009
- 29. Comprehensive Planning for Port Facility for Handling LNG at New Mangalore Port, 2009
- 30. Numerical modeling of Tsunami run-up & inundation along the central Kerala coast, 2009
- 31. An experimental study on reef protected breakwater using concrete cubes, 2009.
- 32. Planning and design of multipurpose berth for western dock arm at New Mangalore Port, 2010.
- 33. Physical model studies on combined plate breakwater, 2010.
- 34. Hydrodynamic performance characteristics of porous and rough plate breakwater, 2011

- 35. Experimental Studies on rough plate breakwater, 2011
- 36. Numerical model studies of coastal process of Kerala coast, 2011
- 37. Planning & design of new fishery harbour along D.K coast,2012
- 38. Risk assessment of coastal inundation due to sea level rise in North-Eastern coast of Chennai, 2012
- 39. Physical modeling of submerged inclined rough plate breakwater, 2012
- 40. Physical modeling of the effect of submerged vegetation upon wave damping _ An exptl study, 2013
- 41. Performance evaluation and analysis of New Mangalore Port, 2013
- 42. Wave run up and run down control using beach vegetation _ An exptl study, 2013
- 43. Hinterland and traffic study for New Mangalore Port, 2013
- 44. Experimental studies on submerged geotextile container reef, 2014
- 45. Planning of LNG facility at New Mangalore Port, 2014
- 46. Design of multipurpose terminal at New Mangalore Port, 2014
- 47. Experimental studies on Geotextile Container Breakwater 2015
- 48. Design of Offshore Container Terminal 2015
- 49. Expasion of Kollum Port, Kollum, Kerala 2015
- 50. Design of land based Mega Container Terminal 2015
- 51. Performance of fragmented heterogeneous vegetation on wave height attenuation A physical model study,2018
- 52. Analysis of underwater rock blasting methodology and the protection of marine structures, 2018
- 53. Performance of fragmented heterogeneous vegetation on wave height attenuation A physical model study 2018
- 54. Analysis of underwater rock blasting methodology and the protection of marine structures 2018
- 55. An experimental investigation on wave attenuation in heterogeneous artificial vegetation 2018
- 56. A laboratory investigation on performance of enlarged pile head breakwater 2019
- 57. Physical model studies on porous pile head breakwater 2019
- 58. Physical model studies on enlarged cylindrical head pile breakwater, 2020
- 59. Physical model studies on breakwaters with geotextile armour units. 2020
- 60. Physical model studies on non-perforated conical pile head breakwater2020
- 61. Numerical investigation on performance characteristics of cylindrical pile head breakwater,2020
- 62. A laboratory investigation on performance of innovative breakwater 2021
- 63. Physical model studies on sand bag solutions for coastal protection 2021
- 64. Experimental investigation on sand based structures for beach defense 2021

- 65. Soft solutions for beach protection 2021
- 66. Simulating pile structures in a numerical wave tank 2021
- 67. Studies on sediment trend analysis and vulnerability for the Udupi shoreline 2022
- 68. Study of sediment movement in and estuaries of DK and Udupi districts 2022
- 69. Investigation on performance characteristics of single row of perforated rectangular pile head breakwater 2022
- 70. Physical model studies on single row of non-perforated rectangular pile head breakwater 2022
- 71. Study of sediment transport during post monsoon season and development of CVI for the DK shoreline 2022

16. Research Publications

a) Papers published in Journals : 37

National Journals – 12

- Subba Rao, Kiran. G. Shirlal and Habeeb Khan P (2001) " An interpretation of sediment trends along D.K.Coast" ISH Journal of Hydraulic Engineering, The Indian Society for Hydraulics, CWPRS, Pune., Vol. 7(1), pp 33 - 39.
- Subba Rao, Kiran G. Shirlal and N.B.S Rao (2002), "Wave transmission and reflection for two rows of perforated hollow piles", Indian Journal of Marine sciences, NISCOM, CSIR, New Delhi, Vol. 31(4), Dec, pp 283 - 289.
- Subba Rao, Kiran G. Shirlal and N. B. S. Rao, (2003), "Sediment Trend Matrix Analysis Along Shore Normal Transects off Surathkal Beach, Karnataka", Journal of Geological Society of India, Bangalore Vol. 61 Feb, pp 215 – 219.
- 4. Kiran G. Shirlal and Subba Rao, (2003), "Laboratory studies on the stability of tandem breakwater", ISH Journal of Hydraulic Engineering, The Indian Society for Hydraulics, CWPRS, Pune, Vol. 9, No.1, March, pp 36 45.
- Subba Rao, N. B. S. Rao, Kiran G. Shirlal and Raja Reddy, (2003), "Energy dissipation at single row of suspended perforated pipe breakwaters", Journal of Institution of Engineers (India) - Civil Engineering Division, Calcutta, Vol. 84, Aug, pp 77 -81.

- Kiran.G.Shirlal, Subba Rao and Mahalingeshwara Prasad, S. K., (2003), "Stability of Tandem Breakwaters", Journal of Institution of Engineers(India) - Civil Engineering Division, Calcutta, Vol. 84, Nov, pp 159 – 164.
- Kiran G Shirlal, Subba Rao and Manu (2007), "Stability Equation for Breakwater Sheltered by a Seaward Submerged Reef", ISH Journal of Hydraulic Engineering, The Indian Society for Hydraulics, CWPRS, Pune.No1 Vol13, March, pp18 – 31.
- Manu, K. G. Shirlal, S. Rao, and P. Bharadwaj (2009), "Hydraulic performance of tandem breakwater with concrete cube as artificial armour units", Journal of Institution of Engineers (India) - Civil Engineering Division, Vol. 90, Nov, pp. 7-12.
- Subba Rao Kiran G. Shirlal, Prashanth S and Roobin V. Varghese (2010) "Laboratory investigation on horizontal and vertical plate breakwaters", ISH Journal of Hydraulic Engineering, The Indian Society for Hydraulics, CWPRS, Pune. No2, Vol16, pp88 – 98.
- 10. Kiran G. Shirlal, Subba Rao and Madhu M (2011) "Concrete cubes as armour unit-An experimental study for berm breakwater", ISH Journal of Hydraulic Engineering, The Indian Society for Hydraulics, CWPRS, Pune. No1, Vol 17, pp12 17.
- Manu, Subba Rao, Kiran G. Shirlal, Prashanth J and Balakrishna Rao K (2011) "Physical model studies on stability of concrete armoured breakwaters", ISH Journal of Hydraulic Engineering, The Indian Society for Hydraulics, CWPRS, Pune. No3, Vol 17 Special Issue, pp 51 – 60.
- 12. Beena Mary John, Kiran G. Shirlal and Subba Rao. (2019). Laboratory investigations of wave attenuation by simulated vegetation of varying densities, ISH Journal of Hydraulic Engineering/ Vol. 25 Issue No.2, Pages 203-213/2019.

International Journals - 25

- Vittal Hegde A and Kiran G. Shirlal (1992) "Comparison of wave statistics obtained by using continuous and digitized form of random waves" Vol. 19. No. 2., Ocean Engineering Journal, Maryland, USA, pp 209 – 213.
- 2. Subba Rao, N.B.S.Rao and Kiran G.Shirlal, (2003), "Energy dissipation in suspended porous pipe breakwaters in laboratory" Journal of "Water and Energy International", CBIP, New Delhi. April-June, pp 24-31.

- Kiran G. Shirlal, Subba Rao, Venkata Ganesh and Manu (2006), "Stability of breakwater defenced by a seaward submerged reef" Ocean Engineering, An international journal of Elsevier Science Ltd. New York, USA.NO. 33, April, pp 829 – 846
- Kiran G. Shirlal, Subba Rao, and Manu (2006), "Ocean wave transmission by submerged reef – A physical model study", Ocean Engg, An international journal of Elsevier Science Ltd. New York, USA. No.34, April, pp 2093 – 2099.
- Kiran G. Shirlal, Subba Rao, and Manu (2008), "Performance of a submerged reef A physical model study", International Journal of Ecology and Development. India, Vol 11, No. F 08, Fall 2008, pp 90 – 98.
- Kiran G. Shirlal, Subba Rao and Manu (2009), "Design of sheltered breakwater", International Journal of Earth Sciences and Engineering, India, Vol 2, No 2, June, pp 95 – 103.
- Subba Rao, Kiran G. Shirlal, Roobin V. Varghese and S. Prashanth (2009), "Experimental investigation of hydraulic performance of horizontal plate breakwater", International Journal of Earth Sciences and Engineering, India, Vol 2, No 5, Oct, pp 424 –432.
- Subba Rao, Kiran G. Shirlal, Roobin V. Varghese and K. R. Govindaraja (2009)," Physical model studies on wave transmission of a submerged inclined plate breakwater", Ocean Engg, An international journal of Elsevier Science Ltd. New York, USA, No.36, November, pp 1199 – 1207.
- 9. Radheshyam B., Subba Rao and Kiran G. Shirlal (2010), "On modeling of waves, currents and sediment movement around Gurpur-Netravathi river mouth", International Journal of Earth Sciences and Engineering, Hyderabad, India, Aug, pp 538 552.
- 10. Manu, Subba Rao and Kiran G. Shirlal (2011), "Development of concrete armoured protected breakwater structure", International Journal of Earth Sciences and Engineering, India, Vol 4, No 5, Sp. Issue Sep, pp 253 –260.
- 11. Kiran G. Shirlal, Subba Rao and Roobin V. Varghese (2011), "Comprehensive physical model study on wave transmission at plate structure", International Journal of Earth Sciences and Engineering, India, Vol 4, No 5, Sp. Issue Sep, pp 261 –265.
- 12. Prashant J, Subba Rao, Kiran G. Shirlal, Balakrishna Rao K and Vishwanath N (2012), "Wave run-up, run-down studies on reshaped berm breakwater with artificial armour

units", International Journal of Earth Sciences and Engineering, India, Vol 5, No 4 (02), Aug, pp 1052 –1056.

- Manu, Kiran G. Shirlal and Subba Rao (2013), "Performance of submerged reef of concrete cubes", International Journal of Transport and Civil Engg (IJCTCE), Vol 1, Issue 4 (2013) ISSN 2320-4079; EISSN 2320-4087, pp 651 –654.
- 14. Kiran G. Shirlal (2013), "Wave transmission of submerged inclined serrated plate breakwater", International Journal of Chemical environmental and Biological Sciences (IJCEBS), Vol 1, Issue 4 (2013) ISSN 2320-4079; EISSN2320-4087, pp 665 –668. Shirlal, K.G., and Mallidi, R.R. (2018). "Submerged Geotextile Sand Containers for Coastal Defence", Water Resourses Management. Water Science and Technology Library Vol 98, Springer, Singapore. (http://dx.doi.org/10.1007/978-981-10-5711-3_23). (http://dx.doi.org/10.1007/978-981-10-5711-3_23).
- 15. Beena Mary John, Mohit Babu I, Kiran G. Shirlal and Subba Rao, "Experimental Investigations of Wave Height Attenuation by Submerged Artificial Vegetation.". In: Singh V., Yadav S., Yadava R. (eds). Hydrologic Modelling, Water Science and Technology Library, 81 (2018). Springer, Singapore. DOI: 10.1007/978-981-10-5801-1_34.
- Beena Mary John, R.T. Arun Vignesh, Kiran G. Shirlal and Subba Rao, "Experimental Study on Role of Emergent Artificial Coastal Vegetation in Controlling Wave Runup.". In: Singh V., Yadav S., Yadava R. (eds). Hydrologic Modelling, Water Science and Technology Library, 81 (2018). Springer, Singapore. DOI: 10.1007/978-981-10-5801-1_37.
- 17.Praveen S Suvarna, Arunkumar hunasanahallySathyanarayana, Pruthviraj Umesh and Kiran G. Shirlal, (2020), "Laboratory investigationon hydraulic performance of enlarged pile head breakwater", Ocean Engineering, Scopus indexed journal, An International Journal of research and development, Pergamon, Elsevier Science Ltd. New York, N.Y., U.S.A, Ocean Engg 217(2020) 107989,8 September, 2020, , (http://doi.org/10.1016/j.oceaeng.2020.107989).
- 18. Beena Mary John, Kiran G Shirlal and Subba Rao (2020), "Wave Attenuation characteristics of simulated heterogenous vegetation", Current Science, a Multidisciplinary Journal, published by Current Science Association in collaboration with the Indian Academy of Sciences (India)., IISc., Bengaluru, vol 119, No.8, 25 Oct, 2020, doi. 10.18520/cs/v119/i8/1322-1333.
- Praveen S Suvarna, Arunkumar Hunasanahally Sathyanarayana, Pruthviraj Umesh and Kiran G. Shirlal, (2020), "Laboratory investigationon hydraulic performance of enlarged pile head breakwater", Ocean Engineering, Scopus indexed journal, An International Journal of research and development, Pergamon, Elsevier Science Ltd. New York, N.Y., U.S.A, Ocean Engg 217(2020) 107989,8 September, 2020, , (http://doi.org/10.1016/j.oceaeng.2020.107989).
- 20. Elias T., Shirlal K.G. (2021) Coastal Protection Using Geosynthetic Containment Systems—An Indian Timeline. In: Sundar V., Sannasiraj S.A., Sriram V., Nowbuth M.D.

(eds) Proceedings of the Fifth International Conference in Ocean Engineering (ICOE2019). Lecture Notes in Civil Engineering, vol 106. Springer, Singapore. https://doi.org/10.1007/978-981-15-8506-7_38

- 21. Beena Mary John, I Mohit Babu, Kiran Gangadhar Shirlal, and Subba Rao (2018). Experimental investigations of wave height attenuation by submerged artificial vegetation, Pub. by Springer Nature Singapore Pvt Ltd. 2018. V. P. Singh et al. (eds.), Hydrologic Modeling, Water Science and Technology Library 81, pp 499-508. <u>https://doi.org/10.1007/978-981-10-5801-1_34</u>,
- 22. Beena Mary John, R T Arun Vignesh, Kiran Gangadhar Shirlal, and Subba Rao (2018). Experimental study on role of emergent artificial coastal vegetation in controlling wave run-up, Pub. by Springer Nature Singapore Pvt Ltd. 2018. V. P. Singh et al. (eds.), Hydrologic Modeling, Water Science and Technology Library 81, pp 535-542. <u>https://doi.org/10.1007/978-981-10-5801-1 37</u>,
- 23. Kiran Gangadhar Shirlal, and Ramesh Reddy Mallidi (2018). Submerged geotextile sand containers for coastal defence, Pub. by Springer Nature Singapore Pvt Ltd. 2018. V. P. Singh et al. (eds.), Water Resources Management, Water Science and Technology Library 78, pp 339-349. <u>https://doi.org/10.1007/978-981-10-5711-3_23</u>,
- 24. T. P. Dhanya and Kiran G. Shirlal (2018). Numerical modeling and design of a fishery port near Ezhimala promontory, Pub. by Springer Nature Singapore Pvt Ltd. 2018 V. P. Singh et al. (eds.), Water Quality Management, Water Science and Technology Library 79, pp 317-325. <u>https://doi.org/10.1007/978-981-10-5795-3_27</u>.
- 25. Prashanth J, Subba Rao, and Kiran G. Shirlal (2018). Reshaping berm breakwater. Indian Journal of Geo Marine Sciences, Vol 47 (05), May 2018, pp 1050-1057.

b) Papers published in Conferences/Seminars- 98

National Conferences - 58

- Kiran G Shirlal, M.C.Deo, S. Narasimhan, P.K.Panth (1989), "Long term estimation of waves", IIIrd National Conference on Dock & Harbour Engineering (DHEC), held at KREC, Surathkal, December, pp 57 - 64.
- Vittal Hegde A, Kiran G. Shirlal and P.S. Rao (1997), "Effect of fines in core on stability of rubble mound breakwater - State of Art, 2nd National Conference on Harbour and Ocean Engineering (ICHOE-97), Trivendrum, Dec.97.pp 261 - 268.
- Subba Rao, Kiran G. Shirlal and Sapthagirinath K. (2000), "Effect of submerged breakwater on conventional breakwater stability", National Conference on Recent Advances in Hydraulics and Water Resources Engineering, HYDRO - 2000, held at REC -Kurukshetra under ISH Pune and Haryana Irrigation Research and Management Institute., pp 321 - 326.

- 4. Subba Rao, Kiran G. Shirlal and D. Venkat Reddy, (2000), "Grain size measures of beach sand near KREC beach", National Conference on Hydraulics, National Seminar on Management of Coastal Resources and its Environs, Civil Engg. Dept., SDM College of Engineering & Technology, Dharwad, pp 36.
- Subba Rao and Kiran G. Shirlal (2001) "Sediment movement in the vicinity of Netravathi-Gurupur river mouth" National seminar on four decades of marine geosciences in India – A retrospective SEAGEO40, Geological Society of India, Mangalore, pp 24
- Subba Rao, N.B.S.Rao, Kiran G. Shirlal and Naveen Chakravarthy (2001), "Energy losses at single row of porous pipe breakwaters", Proc.of National Conference on Hydraulics and Water Resources – HYDRO 2001, under ISH, CWRS, Pune, pp 298 - 303.
- Kiran G. Shirlal and Subba Rao (2001) "Laboratory investigation on stability of overtopping rubble mound breakwater", Proc.of National Conference on Hydraulics and Water Resources – HYDRO 2001, under ISH, CWRS, Pune, pp 291 - 297.
- Kiran G. Shirlal and Subba Rao, (2002), "Stability of overtopping rubble mound breakwater with reduced armour weight", Proc. of National Conference on Hydraulics and Water Resources and Ocean Engg – HYDRO 2002, IIT-Bombay, pp 256 – 259.
- Subba Rao, N.B.S Rao, Kiran G. Shirlal and Subramanya K (2002), "Wave reflection characteristics of semi-submerged perforated pipe breakwater ", Proceedings of National Conference on Hydraulics and Water Resources and Ocean Engg – HYDRO 2002, IIT-Bombay, pp 252 – 255.
- 10. Kiran G Shirlal, Subba Rao & Radheshyam B, (2003), "Breakwaters An innovative hard option for coastal erosion mitigation measures", Proc. of National Seminar on Coastal Dynamics & Use of Geoinformation with Special Reference to Indian Peninsula, Dept. of Marine Geology, Mangalore University, Mangalagangotri, July.
- Kiran G Shirlal, Subba Rao, Sudhindra & Radheshyam B, (2003), "Wave transmission at submerged reef breakwater", Proceedings of National Conference on Hydraulics and Water Resources and Ocean Engg – HYDRO 2003, CWPRS, Pune, Dec – 2003, pp 297-300.
- Subba Rao, Kiran G Shirlal, Subrahmanya K, Radheshyam B & Chandramohan V R, (2003), "Wave attenuation characteristics of two rows of perforated pipe breakwaters", Proceedings of National Conference on Hydraulics and Water Resources and Ocean Engg – HYDRO 2003, CWPRS, Pune, Dec – 2003, pp 276-279.
- Kiran G Shirlal, Subba Rao & Bhaskar Dharani, (2004), "Tandem breakwater An economical concept of harbour protection", Proceedings of 17th National Convention of Marine Engineers, The Institution of Engineers (India), Mangalore, Feb, pp 26-34.
- Kiran G. Shirlal and Radheshyam B. (2004), "Marine Pollution", Proceedings of National Workshop on "Downsizing technologies for rural and coastal area development", NITK, Surathkal, 28-29th April, 2004.

- 15. Kiran G Shirlal, Bhaskar Dharani and Venkata Ganesh (2004), "Influence of crest width on hydraulic performance of submerged reef", Proceedings of 3rd National Conference on Harbour and Ocean Engg, NIO, Goa, Dec, pp73-80.
- 16. Subba Rao, Kiran G Shirlal, Radheshyam and Mahaganesha K (2004), "Study of littoral transport along Dakshina Kannada Coast, Karnataka", Proceedings of 3rd National Conference on Harbour and Ocean Engg, NIO, Goa, Dec,pp 90-95.
- 17. Kiran G Shirlal, Bhaskar Dharani and T. R. Bhat (2004), "Development of Transshipment container terminal at New Mangalore Port", Proceedings of 3rd National Conference on Harbour and Ocean Engg, NIO, Goa, Dec,pp 631-637.
- Subba Rao, Kiran G. Shirlal & Yagnheswaran. B, (2005), "Privatisation of port- Setbacks and Challenges", Proceedings of All India National Seminar on Ports and Ships – Partners in Marine Transport, The Institution of Engineers (India), Mangalore, Nov, pp 60-63.
- Subba Rao, Kiran G. Shirlal, Rajesh P.R. & Gurubasavaraya Y. S. (2005), "Modeling the oil spill for pollution control in marine environment", Proceedings of All India National Seminar on Ports and Ships – Partners in Marine Transport, The Institution of Engineers (India), Mangalore, Nov, pp 54-59.
- 20. Kiran G Shirlal, Subba Rao, Dreekar Reddy G & Manu (2005), "Defenced breakwater-Can it be a solution for Tsunami wave attack", Proceedings of National Conference on Hydraulics and Water Resources– HYDRO 2005, SIT Tumkur, Dec, pp 61-67.
- 21. Kiran G Shirlal, Subba Rao and Manu (2006), "Performance of a submerged reef A physical model study", Proceedings of 5th National Conference on "Hydraulics and Water Resources with special emphasis on Interlinking of rivers HYDRO 2006" at Bharati Vidyapeeth University, Pune, Dec, pp 540 548
- 22. Subba Rao Kiran G Shirlal, Subramanyam B.R Radheshyam, Govindraja K.R. and Praveen Suvarna (2006), "On modeling the sediment dynamics using MIKE- 21-ST of Gurupur-Netravati river mouth", Proceedings of 5th National Conference on "Hydraulics and Water Resources with special emphasis on Interlinking of rivers- HYDRO 2006" at Bharati Vidyapeeth Univerwsity, Pune, Dec, pp 467 – 474.
- 23. Kankara R.S. Madhubabu, Subba Rao, Kiran G Shirlal, Radheshyam, and Govindraja K.R. (2006), "On modeling the the tides and currents using MIKE- 21-HD for Gurupur-Netravati river mouth", Proceedings of 5th National Conference on "Hydraulics and Water Resources with special emphasis on Interlinking of rivers HYDRO 2006" at Bharati Vidyapeeth Univerwsity, Pune, Dec, pp 475 486.
- 24. Kiran G. Shirlal and Sumana K. N. (2007), "Infrastructure planning of new MANGALORE PORT for General Cargo and dry bulk upto 2021-22", Proceedings of 4th Indian National

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- 33. Subba Rao, Kiran G Shirlal, Roobin V. Varghese and Govindraja K.R. (2008), "Plate breakwater: A comparative study of regular and reverse inclinations", Proceedings of 2nd National Conference on Focusing on Advances in Civil Engg -FACE 08, TKM College of Engg, Kollam, Kerala, Feb, pp 159 - 165.
- 34. Kiran G. Shirlal, Subba Rao, Manu (2008), "Physical modeling as a methodology in furthering research in civil engg.", Proceedings of National Conference on Advances in Civil Engg., Anjuman Engg College, Bhatkal, Karnataka, Mar, pp 14 - 17.

- 35. Subba Rao, Kiran G. Shirlal, Roobin V. Varghese and Govindraja K.R. (2008), ":Performance of submerged plate breakwater with reverse inclination", Proceedings of National Conference on Advances in Civil Engg., Anjuman Engg College, Bhatkal, Karnataka, Mar, pp 38 -41.
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- 37. Subba Rao, Kiran G. Shirlal, S. Prashanth and Roobin V. Varghese (2009), ":Comparative study of hydrodynamic performance of submerged horizontal and vertical plate breakwater", Proceedings (Abstracts) of National Workshop on Present and Future Trends in Marine Geology and Geophysics., Ocean and Atmospheric Science and Technology Cell, Mangalore Unv., April, pp 25 - 26.
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- Subba Rao, Kiran G. Shirlal, S. Prashanth and Roobin V. Varghese (2010), "Experimental study of hydrodynamic performance of submerged horizontal and vertical plate breakwaters", National Conference on "Sustainable Water Resources Management" – SwaRM 2010, 7-9 Jan, 2010, NITK Surathkal.
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- 44. Subba Rao, Kiran G. Shirlal, Balakrishna Rao and Prashanth J (2011), "Stability analysis of berm breakwater with concrete cubes as armour units", Proceedings of National

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- 46. Manu, Kiran G. Shirlal and Subba Rao (2011), "Physical model study on submerged reef of concrete cubes", Proceedings of National Conference on Hydraulics, Water Resources Coastal and Environmental Engg- HYDRO -2011, Dec 13-14, Dec, 2011, SVNIT Surat pp 509-516.
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- Manu, Kiran G. Shirlal and Subba Rao (2012), "An experimental study on stability of concrete cube armoured tandem breakwater", Proceedings of National Conference on Hydraulics and Water Resources - HYDRO -2012, Dec 7-8, Dec, 2012, IIT Bombay, pp 1525-1534.
- 50. Prashanth J, Subba Rao, Kiran G. Shirlal, Geeta Kuntoji and Balakrishna Rao K (2012), "Reshaped berm breakwater with artificial armour units - Studies on wave runup and rundown", Proceedings of National Conference on Hydraulics, Water Resources - HYDRO -2012, Dec 7-8, 2012, IIT Bombay, pp 1589-1596.
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- 52. Kiran G. Shirlal and Hashim V. Meeran (2013), "Impact of submerged vegetation on wave field-An experimental approach", Proceedings of National Conference on Emerging Trends in Environment and Energy Management (NCEEM-2013), Oct 18-19, 2013, Shri Madhwa Vadiraja Institute of Technology & Management, BANTAKAL, Udupi Dist, Karnataka, pp 83-86.
- 53. Subba Rao, Kiran G. Shirlal, Prashanth J and Danny Thomas(2013), "A Study on Reshaping Breakwaters", Proceedings of National Conference on Emerging Trends in Environment and Energy Management (NCEEM-2013), Oct 18-19, 2013, Shri Madhwa Vadiraja Institute of Technology & Management, BANTAKAL, Udupi Dist, Karnataka, pp 87-88.

- 54. Kiran G. Shirlal and Ramesh Reddy Mallidi (2013), "Geosynthetics-A soft Option for Coastal protection", Proceedings of National Conference on Emerging Trends in Environment and Energy Management (NCEEM-2013), Oct 18-19, 2013, Shri Madhwa Vadiraja Institute of Technology & Management, BANTAKAL, Udupi Dist, Karnataka, pp 109-112.
- 55. Beena Mary John and Kiran G. Shirlal (2013), "Role of Bioshields as a Shelter from Tsunamis and Storm Surges-A Review", Proceedings of National Conference on Emerging Trends in Environment and Energy Management (NCEEM-2013), Oct 18-19, 2013, Shri Madhwa Vadiraja Institute of Technology & Management, BANTAKAL, Udupi Dist, Karnataka, pp 113-116.
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 - 57. Zaid M Sayyad, Praveen Suvarna, Kiran G. Shirlal and Pruthviraj Umesh. (2019) Physical model studies on enlarged porous pile head breakwater. National Conference on Emerging Trends in Science and Engg (NCETSE-2019), Shri Madhwa Vadiraja Institute Of Technology and Management, Bantkal, Udupi District, Karnataka, 26, 27 April 2019.
- 58. Vooha Challagulla, Praveen Suvarna, Kiran G. Shirlal and Pruthviraj Umesh (2019). Laboratory investigations on performance of enlarged pile head breakwater. National Conference on Emerging Trends in Science and Engg (NCETSE-2019), Shri Madhwa Vadiraja Institute Of Technology and Management, Bantkal, Udupi District, Karnataka, 26, 27 April 2019.

International Conferences – 40

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- Subba Rao, Kiran G.Shirlal and N. B. S. Rao (2001), "Laboratory investigation on single row of suspended porous pipe breakwater" Intl. Conf. in Civil Engineering, ICCE -2001, IISc, Bangalore, pp 625 - 631.
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- Kiran.G.Shirlal, Subba Rao and Mahalingeshwara Prasad, S. K.(2001), "Studies on the stability of tandem breakwater", Proc. of Intl. Conf. in Civil Engineering, ACE –02, IIT, Kharagpur, pp 392 - 399.
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- 11. Subba Rao, N. B. S. Rao, Kiran G. Shirlal and Raja Reddy G. (2002), "Laboratory Investigation on Semi-Submerged Perforated Pipe Breakwater", International Conference on Ship and Ocean Technology SHOT-2002, Department of Ocean Engineering and Naval Architecture, Indian Institute of Technology Kharagpur, Dec 2002.
- 12. M. K. Nagaraj and Kiran G. Shirlal.(2002) "Sensitivity analysis of new breakwater design formulae", Intl. Conf. on Ship and Ocean Technology SHOT-2002, Department of Ocean Engineering and Naval Architecture, Indian Institute of Technology Kharagpur, Dec 2002.
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- 15. Subba Rao, Kiran G Shirlal Radheshyam B, (2004), "Beach studies along Thannirubavi area D.K Dist, west coast of India", Proc. of Intl Seminar Earth Resources Management, Kuvempu University Shankarghatta, Shivamogga, Jan.
- 16. Kiran.G.Shirlal and Subba Rao (2004), "Reef- an ecofriendly and cost effective hard option for coastal conservation", Proc. Int. Conf. on Conservation, Restoration and Management of Lakes and Coastal Wetlands, LAKE 2004, Bhubaneshwar, India, Dec, 2004.Absrtact Volume, OR06_01, pp 57.
- 17. Subba Rao, Kiran G. Shirlal, Satyanand K and Radheshyam B. (2006), "Spectral analysis of waves ff Mangalore coast", Proc. Of 15th Congress of Asia and Pacific Division of Intl. Assn. of Hydraulic Engg and Research and Intl. Symposium on Marine Hydraulics (IAHR) to be held at IIT Madras, 7-10 Aug. pp. 1003 1013.
- 18. Kiran G Shirlal, Subba Rao, Manu, Roobin V. verghese and Govindaraja K. R. (2008), "Recent R&D works in the areas of coastal engineering undertaken at Department of Applied Mechanics and Hydraulics", Proc. of INDO-JAPAN Workshop on Recent Advances in Geotechnical Engg. 4th March, 2008, NITK, surathkal, India,
- 19. Kiran G Shirlal, Subba Rao and Roobin V. Verghese (2008) "Physical model studies on inclined plate breakwater", Proc. of KU-NITK Joint Seminar on "Recent Advances in Engg and Technology" organized by Department of Ocean Civil Engg, Kagoshima University, Japan during 27-28 Nov, 2008, pp 138-144.
- 20. Manu, Kiran G Shirlal and Subba Rao (2008) "Hydraulic performance of tandem breakwater with concrete cubes as armour units", Proc. of KU-NITK Joint Seminar on "Recent Advances in Engg and Technology" organized by Department of Ocean Civil Engg, Kagoshima University, Japan during 27-28 Nov, 2008, pp153-160.
- 21. Subba Rao, Kiran G Shirlal and Roobin V. Verghese (2009) "Physical model studies of plate breakwater" Proc. of 3rd Intl Conf. in Ocean Engineering, ICOE-2009, Dept. of Ocean Engineering, IIT Madras, Chennai, during 1st to 5th Feb.
- 22. Subba Rao, Kiran G Shirlal and Manu (2009) "Experimental investigation of reef protected breakwater with concrete armour" Proc. of 3rd Intl Conf. in Ocean Engineering, ICOE-2009, Dept. of Ocean Engineering, IIT Madras, Chennai, during 1st to 5th Feb.
- 23. Subba Rao, Kiran G Shirlal and Roobin V. Verghese and Santhosh D. C. (2010) "Physical model studies of inclined twin plate submerged breakwater" Proc. of 9th Intl Conf. on Hydro-Science and Engg, ICHE-2010, Dept. of Ocean Engineering, IIT Madras, Chennai, during 2 -5 Aug.

- 24. Manu, Kiran G Shirlal and Subba Rao (2010) "Physical model study on tandem breakwater with concrete cube armour" Proc. of 9th Intl Conf. on Hydro-Science and Engg, ICHE-2010, Dept. of Ocean Engineering, IIT Madras, Chennai, during 2 -5 Aug.
- 25. Kiran G. Shirlal, Subba Rao and Roobin V. Varghese (2010) "Physical model study of combined plate submerged breakwater", Proc. of 2nd Intl. Conf. on Coastal Zone Engg. and management (Arabian Coast 2010) at Sulthan Qaboos University Muscat, Oman, Nov 1-3.
- 26. Kiran G. Shirlal, Subba Rao and Roobin V. Varghese (2011) "Comprehensive physical model study on wave transmission at plate structure", Proc., of 1st Intl. Engg. Symposium, held at Kumamoto University, Japan during 3-5 March, pp C5-3-1 – C5-3-6.
- 27. Manu, Subba Rao and Kiran G Shirlal (2011) "Development of concrete armoured protected breakwater structure", Proc., of 1st Intl. Engg. Symposium, held at Kumamoto University, Japan during 3-5 March, pp C5-2-1 C5-2-8.
- 28. Subba Rao, Kiran G. Shirlal, Balakrishna Rao and Prashanth J (2011), "Concrete cubes as artificial armour units: A laboratory study on berm breakwaters", Paper No: W001, Proceedings of International Conference on Advances in materials and techniques for infrastructure development (AMTID, 2011), 28-30, Sep, 2011, NIT Calicut, India pp 224-229.
- 29. Subba Rao, Kiran G. Shirlal, Balakrishna Rao K and Prashanth J (2011), "Wave runup, rundown studies on berm breakwater with Concrete cubes as artificial armour units", Proc., of Sixth International Conference on Asia and Pacific Coasts (APAC 2011), Dec 14-16, Hong Kong, China pp 534-540.
- 30. Prashanth J, Subba Rao, Kiran G. Shirlal, Balakrishna Rao and Vishwanath N (2012), "Wave run up, run down studies on reshaped berm breakwater with artificial armour units ", Proc., of 2nd Intl. Engg. Symposium, held at Kumamoto University, Japan during 5-7 March, pp C3-3-1 – C3-3-5.
- 31. Subba Rao, Kiran G. Shirlal, Balakrishna Rao K and Prashanth J (2011), "Concrete cubes as artificial armour units: A laboratory study on berm breakwaters", Proc., of International Conference on Advances in Materials & techniques for Infrastructure Development (AMTID 2011), Sep 28-30, NIT Calicut, Paper No: W001, pp 1-7.
- 32. Manu, Kiran G. Shirlal and Subba Rao (2013), "Performance of submerged reef of concrete cubes", International Journal Conference on Transport and Civil Engg (IJCTCE'13), Oct 4-5, Dubai (UAE), pp 94 –97.
- 33. Kiran G. Shirlal (2013), "Wave transmission of submerged inclined serrated plate breakwater", International Journal Conference on Environment and Biological Sciences (IJCEBS'13), Oct 4-5, Dubai (UAE), pp 108-111.

- 34. Dilba R. K and Kiran G. Shirlal (2013), "Planning and design of a new fishery harbour along Dakshina Kannada coast", Proceedings of HYDRO 2013 INTERNATIONAL, Dec 4-6, 2013, IIT Madras, pp 71-79.
- 35. Sherin Shihabudeen and Kiran G. Shirlal (2014), "Planning of a LNG import facility at NMP", Proceedings of international conf. emerging trends in engg (ICETE 2014) on, May 15-17, 2014, NMAIT, Nitte, pp 37-43.
- 36.Kiran G. Shirlal (2014), "Efficacy of beach vegetation in controlling wave run up and run down- An experimental investigation", Proc. of Intl Conf. on Hydro-Science and Engg, ICHE-2014, University of Hamburg, Germany, during 28 Oct -2nd Nov, 2014, pp 479 485, ISBN 978-3-939230-32-8.
- 37.Subba Rao, Kiran G. Shirlal Beena Mary John and Rajashekaran C. (2014), "Validation of wave attenuation over artificial sea grass meadow", Souvenir and book of Abstracts of International Conference on A Decade after the Indian Ocean Tsunami: Status and Experiences, Dec 10-13, 2014, Pondicherry Engg College, Puducherry, p 57.
- 38. Tom Elias and Kiran G. Shirlal (2019). Geosynthetic containment systems for coastal protection An Indian perspective, 5th International Conference in Ocean Engineering (ICOE-2019) organized by Univty of Mauritius and IIT Madras at Mauritius from 28th July to 1st August 2019.
- 39. Dilba R. K and Kiran G. Shirlal (2013), "Planning and design of a new fishery harbour along Dakshina Kannada coast", Proceedings of HYDRO 2013 INTERNATIONAL, Dec 4-6, 2013, IIT Madras, pp 71-79.
- 40. Sherin Shihabudeen and Kiran G. Shirlal (2014), "Planning of a LNG import facility at NMP", Proceedings of international conf. emerging trends in engg (ICETE 2014) on, May 15-17, 2014, NMAIT, Nitte, pp 37-43.

List of Consultancy Projects

- 1. The problem of silting near the fisheries jetty costing Rs. 100 Lakhs under construction at Hejamadi Kodi, Udupi Dist., has been studied and the suitable remedial measures to prevent silting has been suggested during 1999.
- Participated in the Consultancy Project on "Feasibility Studies, Planning and Design of a Fishing Jetty at Koderi Port", for Port Division, Minor Irrigation Dept., Govt. of Karnataka, July-Aug 1999.

- 3. Participated in the preparation of "Feasibility report on proposed coastal protection work at Kotepura, Ullal of Mangalore Taluk, Dakshina Kannada District" for Port Division, Minor Irrigation Dept., Govt. of Karnataka, March 2001.
- 4. Proof consultancy of fisheries harbour at Amadalli, near Karwar: To check the appropriate orientation and the best alternative among the designs submitted by CICEF, Bangalore and CWPRS, Pune, April 2002.
- 5. Feasibility studies of proposed fishery harbour at Vanalli, Kumta, U.K. district for Port division, Karwar, GOK, May 2002.
- 6. Actively involved in the departmental consultancy works such as testing of materials, field tests etc.
- 7. Technical Feasibility Report For Dredging Work at Hejamadi Fish Landing Centre, Ports & Fisheries Div., Udupi, GoK, Feb 2004.
- 8. Tannirbavi Barge Mounted Power Project Mangalore, "Estimation of Wave Force on FRP BOUY", March, 2004.
- 9. Tannirbavi Barge Mounted Power Project Mangalore, "Estimation of Wave Force on Chorination Docing PVC Pipe", March, 2004.
- 10. Participated in the preparation of "Report on performance evaluation of coastal protection works at, Dakshina Kannada and Udupi Districts" for Port and Fisheries Division, Udupi, Govt. of Karnataka, April, 2005.
- 11. Participated in the preparation of "Proof Consultancy Report on stability of new iron ore jetty at Belekeri Port Ankola, uttara Kannada District" for M/s Adani Exporters Ltd. Belekeri Port Ankola , August, 2005.
- 12. Participated in the preparation of "Proof Consultancy Report on stability of new berthing wharf at Oman Port Project " for M/s Howe (India) Pvt Ltd., New Delhi, June, 2006.
- 13. Third Party Inspection on "Emergent Coastal Protection Works in Ullal and Surathkal" Submitted to deputy Commissioner DK Dist. Mangalore, NoV, 2006.

- 14. Inspection and Technical Expert Opinion on "Construction od Diaphragm Wall and Auction Hall at Gangolli Fishing Harbour" Submitted to Port and Fisheries Division, Udupi, Govt. of Karnataka, May, 2007.
- 15. Design of Marine Jetty at Kodi Kanyana and Hangarakatte, Udupi District, Submitted to Port and Fisheries Division, Udupi, Govt. of Karnataka, May, 2008.
- 16. Alternate solution to piling problem at cargo wharf II stage at Mangalore Port-Mangalore, D.K. District, Submitted to Port and Fisheries Division, Udupi, Govt. of Karnataka, July, 2009.
- 17. The Proof checking of design calculation of Oil Jetty (Berth No. 13) at NMPT Panambur, October, 2010.

Number of Seminars/Conferences/Workshops attended: 50

- 1. 3rd conference of Dock and Harbour Engg., 6-9 Dec-1989, KREC, Surathkal
- 2. 23rd ISTE Annual Convention, 26-28, Dec 1993 at KREC Surathkal.
- National Workshop on Maritime Development along Karnataka Coast, 30.03.1999 to 01.04.1999, KREC, Surathkal
- National conference on Four Decades of Marine Geosciences in India- A Retrospective, Seageo-40, Geological Survey of India, Mangalore14-16, March,2001.
- National workshop on Coastal Erosion –Protection and Management, 7-8, Sep, KREC Surathkal, 2001.
- 6. International Conference in Civil Engineering, ICCE 2001, IISc, B'lore, 23-25th July-2001.
- National Conference on "Hydraulics and Water Resources HYDRO 2001", 6-8, CWPRS, Pune, Dec, 2001.
- International Conference on "Ocean Engineering, ICOE 2001", 11-14, Dec; 2001, IIT, Madras.
- National Conference on "Hydraulics and Water Resources and Ocean Engg HYDRO 2002", 16-17 Dec 2002, IIT, Bombay, Mumbai.
- 10. National Seminar on "Coastal Dynamics & Use of Geoinformation with Special
- Reference to Indian Peninsula", 24 25 July, 2003, Dept. of Marine Geology, Mangalore University, Mangalagangotri.
- 12. International Seminar "Earth Resources Management", Kuvempu University Shankarghatta, Shivamogga, 28-30 Jan. 2004.

- 13. National Workshop on "Downsizing technologies for rural and coastal area development", NITK, Surathkal, 28-29th April, 2004
- 14. Workshop on "Wetland Monitoring and Management", 2nd Feb, 2005, NITK, Surathkal.
- All India National Seminar on "Ports and Ships Partners in Marine Transport", The Institution of Engineers (India), Mangalore, 12- 13 Nov,2005.
- Workshop on "Sustainable development of water resources in coastal regions", 26 Nov, 2005.
- Workshop on "Coastal erosion measures for west coast region of India ", Depts. Of Civil and Applied Mechanics & Hydraulics, NITK, 7 March 2006.
- National Conference on "Hydraulics and Water Resources with special emphasis on Interlinking of rivers – HYDRO 2006", 8-9 Dec, 2006, at Bharati Vidyapeeth Univerwsity, Pune.
- 6th R & D Session of Indian National Committee on Hydraulics Research (INCH) at Water & Land Mangmt. Training Institute, Hyderabad, 28th-29th March, 2007.
- 20. National Conference on "Advances in Civil Engg.", Anjuman Engg College, Bhatkal, Karnataka, 9-10 Mar, 2008.
- 21. INDO-JAPAN Workshop on "Recent Advances in Geotechnical Engg.", 4th March, 2008, NITK, surathkal, India,
- 22. 7th R & D Session of Indian National Committee on Hydraulics Research (INCH) at National Water Academy, Khadakvasla, Pune, 28-29 March, 2008.
- 23. INDO-JAPAN Theme Meeting & Workshop on Disaster Risk reduction-Earthquakes, Landslides, Tsunami, 28-29 August 2008 held at CPRI Bangalore
- INDO-JAPAN Theme Meeting & Workshop on Concrete for Coastal Environment,7-8 October 2008, NITK, Surathkal
- KU-NITK Joint Seminar on "Recent Advances in Engg and Technology" organized by Department of Ocean Civil Engg, Kagoshima University, Japan during 27-28 Nov, 2008.
- 26. Seminar on "Uses of high performance concrete in port construction", organized by NMPT on 30 January,, 2009 at Mangalore.
- 3rd Intl. Conf. in Ocean Engineering, ICOE-2009, Ocean Engineering Centre, IIT Madras, Chennai, during 1- 5 Feb, 2009.
- 28. 24th Indian Engg congress, 11-13 Dec 2009, NITK, Surathkal.
- 29. 39th ISTE Annual Convention, 18-20 Dec 2009, NITK, Surathkal.
- National Conference on "Sustainable Water Resources Management" –SwaRM 2010, 7-9 Jan, 2010, NITK Surathkal.
- 31. National Conference on Coastal processes, Resources and Management, CESS Thiruvananthapuram, 5-7 Feb, 2010.

- 32. 9th Intl Conf. on Hydro-Science and Engg, ICHE-2010, Dept. of Ocean Engineering, IIT Madras, Chennai, during 2 -5 Aug, 2010.
- 2nd Intl. Conf. on Coastal Zone Engg. and management (Arabian Coast 2010) at Sulthan Qaboos University Muscat, Oman, Nov 1-3. 2010.
- 34. Intl. Engg. Symposium, at Kumamoto University, Japan during 3-5 March, 2011.
- National Conference on "Hydraulics and Water Resources HYDRO 2012", 7-8 Dec, 2012, at IIT, Bombay.
- National Workshop on "Conservation of water resources of west flowing rivers in coastal Karnataka", 14-15 Dec, 2012 NITK, Surathkal.
- 37. Workshop on "Disaster management of floods and consequences thereof in coastal region and food and water security", 4-5 Feb, 2013, NITK, Surathkal.
- 2nd Intl Workshop on "Geosynthetics and modern materials in coastal protection and related applications", Dept. of Ocean Engineering, IIT Madras, Chennai, 4 -5 March, 2013.
- 39. Intl Coastal Symposium at Plymouth University, U.K, 8 -12 April, 2013.
- 40. Workshop on "NBA-Accreditation awareness", organised under TEQIP-II, NITK Surathkal, 23-24 Aug, 2013.
- 41. Workshop on "Geoinformatics for water and coastal Engg", Dept. of Applied Mechanics & Hydraulics, NITK Surathkal, 23-24 Sept., 2013.
- 42. National Seminar on "Explosives & blasting techniques for mining, quarrying & infrastructure industry", NITK Surathkal, 23-24 Sept., 2013.
- 43. International Journal Conference on Environment and Biological Sciences (IJCEBS'13), Oct 4-5, Dubai (UAE) Organised by Intl. Scientific Academy of Engg and Technology.
- 44. National Conference on "Emerging trends in environment and energy management" (NCEEM-2013) held at Shri Madhwa Vadiraja Institute of Technology and Management, Bantakal, Udupi, Karnataka, 18-19 Oct, 2013.
- 45. Symposium on "Outstanding issues for hydrological research in India", Under MoES, GOI, NITK Surathkal, 21 Oct, 2013.
- 46. Intl Conf. on Hydro-Science and Engg, ICHE-2014, University of Hamburg, Germany, during 28 Oct -2nd Nov, 2014.
- 47. International Conference on A Decade after the Indian Ocean Tsunami: Status and Experiences, Pondicherry Engg College, Puducherry, Dec 10-13, 2014.
- 48. Workshop on "Recent trends in system applications as applied to Civil Engg", Dept. of Applied Mechanics & Hydraulics, NITK Surathkal, 9th Jan., 2015.
- 49. 4th Intl. Conf. in Ocean Engineering, ICOE-2018, Ocean Engineering Centre, IIT Madras, Chennai, 2018.
- 50. 5th Intl. Conf. in Ocean Engineering, ICOE-2019, University of Mauritius, 28 July-1 Aug, 2019.

a. . a) Number of Short term courses / Conferences conducted - 02

- AICTE ISTE Short Term Training Programme on "Planning, Development and Management of Modern Urban Core Infrastructure Solutions for India", Dept. of Applied Mechanics and Hydraulics, NITK, Surathkal, 20th - 31st Dec, 2004.
- 2. 4th Indian National Conference on Harbour and Ocean Engg (INCHOE 2007), NITK, Surathkal, 12 14 Dec, 2007.

b) Number of AICTE-ISTE/ QIP Short term courses attended - 18

- 1. Design of Coastal and Offshore Structures at IIT, Madras June 1989.
- 2. Microprocessors at KREC, Surathkal June 1990.
- 3. Analysis, Computation and Management of Floods at IIT Madras Dec. 1990.
- 4. Analysis & Design of Foundations for Static & Dynamic Loads at IIT, Madras, Nov, 91.
- 5. Dynamics of Offshore Structures at IIT Bombay Dec. 1991.
- 6. Latest Techniques in Modelling of Surface and Ground water systems at J.N.T.U. College of Engineering Anatapur (A.P.) Dec. 1991.
- 7. Geotextiles and their applications in Civil Engg. Structures at KREC, Surathkal Dec. 92.
- 8. Innovative Applications of Steel in the Construction of Industrial Structures at KREC, Surathkal Dec. 1993.
- 9. Environmental Impact Assessment of Transportation System at KREC, Surathkal, Dec.1994.
- 10. Institutional Planning and Management at KREC, Jan 1997.
- 11. Site Investigation Techniques for Civil Engineering Construction at KREC, Dec. 1997.
- 12. Engineering Geology and Its Role in Country Planning at KREC, Dec 1999.
- 13. Remote sensing and Geographic Information System for resources management, conducted by Applied Mechanics Dept., KREC Surathkal, January, 2002.
- 14. Engineering Applications of Remote Sensing and Geographical Information Systems conducted by Applied Mechanics Dept., NITK, Surathkal, Dec., 2002
- 15. Advances and Latest Trends in Engineering Geology and Geotechnology Dept. of Civil Engineering, NITK, Surathkal, Dec- Jan., 2002-03.
- 16. Coastal erosion areas-Protection & Management, Dept of Applied Mechanics, NITK, Surathkal, Jan, 2003.
- 17. Advances in Non-destructive Testing, Dept. of Metallurgical and Materials Engineering, NITK, Surathkal, June-July, 2003.
- 18. Planning, Development and Management of Modern Urban Core Infrastructure Solutions for India, Dept. of Applied Mechanics and Hydraulics, NITK, Surathkal, Dec, 2004.

c) Number of other Short Term courses attended – 12

1. Industrial training in Analysis of Photo Elastic Data, Stress Analysis, Coastal Engg. Problems for 6 weeks in 1986 at CWPRS. Pune.

- 2. Professional Development (HRD) Programme for one week, July 1991 at KREC.
- 3. Word and data processing at CCE, one week in Jan 1996, KREC. Surathkal.
- 4. Remote Sensing Technology and Applications Workshop on 08.04.99 at KREC,
- 5. Ocean Dynamics for Offshore & Coastal Engg Applications under the QIP programme at IIT, Madras, 5-9, June 2000.
- 6. GIS and its Applications, from 24-28 July 2000 at RRSSC, ISRO, Bangalore.
- 7. Engg applications of RS & GIS, Dept of Applied Mechanics, NITK, Surathkal, Dec, 2002.
- 8. Introduction to Statistics Using SPSS, NITK, Surathkal, 19th Jan, 2005.
- 9. Workshop on Wetland monitoring and Management, 2nd February, 2005, NITK Surathkal.
- 10. Workshop on Sustainable development of water resources in coastal regions, 26th November, 2005, NITK Surathkal.
- 11. IUCEE course on Effective teaching, Cooperative learning, Effective faculty Development, outcomes based education , Quality & Accreditation , 26-28 May 2008 at Infosys, Mysore
- 12. IUCEE course on Preparation for India's Membership in Washington Accord, 29-30 May 2008 at Infosys, Mysore

14. a) No. of Sponsored Research Projects completed: 04 (03 + 1 Ongoing)

- National level project titled "Management of Tidal Inlets along West Coast" worth Rs.6.5 million sponsored by Integrated Coastal and Marine Area Management (ICMAM) Project Directorate under Ministry of Earth Sciences, Govt. of India. 2007. Solution for coastal erosion was evolved- Accepted by GoK.
- A project titled 'Studies on Tandem Breakwater", worth Rs. 1.627 million sanctioned by Indian National Committee on Hydraulics (INCH), Ministry of Water Resources, Govt. of India, 2008
- A project titled `Studies on Berm Breakwater", worth Rs. 1.488 million sanctioned by Indian National Committee on Hydraulics (INCH), Ministry of Water Resources, Govt. of India, 2010.
- A joint SPARC Project (Project Code : P262) titled "Environmental innocuous pile head breakwater for the mitigation of coastal erosion" worth INR 48,28,560/ has been sanctioned on 15.03.2019 along with Norwegian University of Science and Technology. (Ongoing)

b) Consultancy work undertaken/Industry Interaction

Offered consultancy services for Port & Fisheries Department, Minor irrigation Department, Govt. of Karnataka in Feasibility Studies, Planning and Design of fisheries harbour and Coastal protection works, (details are given below)

- 1. The problem of silting near the fisheries jetty costing Rs. 100 Lakhs under construction at Hejamadi Kodi, Udupi Dist., has been studied and the suitable remedial measures to prevent silting has been suggested during 1999.
- Participated in the Consultancy Project on "Feasibility Studies, Planning and Design of a Fishing Jetty at Koderi Port", for Port Division, Minor Irrigation Dept., Govt. of Karnataka, July-Aug 1999.
- Participated in the preparation of "Feasibility report on proposed coastal protection work at Kotepura, Ullal of Mangalore Taluk, Dakshina Kannada District" for Port Division, Minor Irrigation Dept., Govt. of Karnataka, March 2001.
- 4. Proof consultancy of fisheries harbour at Amadalli, near Karwar: To check the appropriate orientation and the best alternative among the designs submitted by CICEF, Bangalore and CWPRS, Pune, April 2002.
- 5. Feasibility studies of proposed fishery harbour at Vanalli, Kumta, U.K. district for Port division, Karwar, GOK, May 2002.
- 6. Actively involved in the departmental consultancy works such as testing of materials, field tests etc.
- Technical Feasibility Report For Dredging Work at Hejamadi Fish Landing Centre, Ports & Fisheries Div., Udupi, GoK, Feb 2004.
- 8. Tannirbavi Barge Mounted Power Project Mangalore, "Estimation of Wave Force on FRP BOUY", March, 2004.
- 9. Tannirbavi Barge Mounted Power Project Mangalore, "Estimation of Wave Force on Chorination Docing PVC Pipe", March, 2004.
- 10. Participated in the preparation of "Report on performance evaluation of coastal protection works at, Dakshina Kannada and Udupi Districts" for Port and Fisheries Division, Udupi, Govt. of Karnataka, April, 2005.
- Participated in the preparation of "Proof Consultancy Report on stability of new iron ore jetty at Belekeri Port Ankola, uttara Kannada District" for M/s Adani Exporters Ltd. Belekeri Port Ankola, August, 2005.
- 12. Participated in the preparation of "Proof Consultancy Report on stability of new berthing wharf at Oman Port Project " for M/s Howe (India) Pvt Ltd., New Delhi, June, 2006.
- 13. Third Party Inspection on "Emergent Coastal Protection Works in Ullal and Surathkal" Submitted to deputy Commissioner DK Dist. Mangalore, NoV, 2006.
- Inspection and Technical Expert Opinion on "Construction od Diaphragm Wall and Auction Hall at Gangolli Fishing Harbour" Submitted to Port and Fisheries Division, Udupi, Govt. of Karnataka, May, 2007.
- 15. Design of Marine Jetty at Kodi Kanyana, Udupi District, Submitted to Port and Fisheries Division, Udupi, Govt. of Karnataka, May, 2008.

- 16. Design of Marine Jetty at Hangarakatte, Udupi District, Submitted to Port and Fisheries Division, Udupi, Govt. of Karnataka, May, 2008.
- 17. Feasibility report on Harnessing of Wave Energy, October, 2008.
- Alternate solution to piling problem at cargo wharf II stage at Mangalore Port-Mangalore, D.K. District, Submitted to Port and Fisheries Division, Udupi, Govt. of Karnataka, July, 2009.
- 19. The Proof checking of design calculation of Oil Jetty (Berth No. 13) at NMPT Panambur, October, 2010.

18. Any other information

a) Books Published

- 1. Co-authored a book titled" Manual on Coastal Erosion", Sept., 2001, Dept. of Applied Mechanics, KREC, Surathkal, Sep, 2001.
- Contributed a chapter on "Breakwaters-An innovative hard option for coastal erosion mitigation measures", for the book titled "Coastal Environments", edited by K. S. Jayappa and A.C. Narayana, I.K. International Publishing House Pvt Ltd, New Delhi, ISBN: 9787-81-80026-28-2, July, 2009. pp 199 – 211.

b) Delivered Special/Guest lectures on: 17

- 1. "Coastal Zone Regulation Act" at Workshop on Maritime Development of Karnataka Coast – March, 1999, KREC, Surathkal.
- 2. "Principles of Coastal Engineering" at Training Programme for Port Engineers at N.M.P.T., Panambur, 10-18 May 2000.
- "Coastal Processes" at National Workshop on Coastal Erosion Protection and Management, 07.09.2001 to 08.09.2001, in the Department of Applied Mechanics, KREC Surathkal.
- "Environmental Legislation and Coastal Zone Regulation", at Training Programme for Personnel of Dredging Corporation of India on Marine Survey, 15-23 July, 2002, at NITK, Surathkal.
- "Origin of Coasts and Coastal Geology", at AICTE ISTE short term programme on Coastal Erosion Areas – Protection and Management, 06-18 Jan, 2003 at NITK, Surathkal.
- "Coastal Protection Hard Options" at AICTE ISTE short term programme on Coastal Erosion Areas – Protection and Management, 06-18 Jan, 2003 at NITK, Surathkal.
- "Environmental Legislation and Coastal Zone Regulation", at AICTE ISTE short term programme on Coastal Erosion Areas – Protection and Management, 06-18 Jan, 2003 at NITK, Surathkal.

- "Issues in Infrastructure Development and Privatisation", at AICTE ISTE short term programme on Planning, Development and Management of Modern Urban Core Infrastructure Solutions for India, Dept. of Applied Mechanics and Hydraulics, NITK, Surathkal, Dec, 2004.
- "Environmental Legislation and Coastal Zone Regulation", at AICTE ISTE short term programme on Planning, Development and Management of Modern Urban Core Infrastructure Solutions for India, Dept. of Applied Mechanics and Hydraulics, NITK, Surathkal, Dec, 2004.
- "Recent R&D works in the areas of coastal engineering undertaken at Department of Applied mechanics and Hydraulics", Proceedings of INDO - JAPAN Workshop on Recent advances in Geotechnical Engg. 4th March, 2008, NITK, Surathkal, India,
- "Monsoons and Climate Classification", at AICTE –MHRD sponsored Summer school on Water Resources development and Management, Dept. of Applied Mechanics and Hydraulics, NITK, Surathkal, 28th July to 8th August 2008.
- "Accreditation Moving on from NBA to ABET, Washington Accord", 10th September 2008, NITK Surathkal.
- 13. Presented a special talk on "Infrastructure Planning of New Mangalore Port for 2021-22" on 20th Nov, 2008 at Dept. of Ocean Civil Engg, Kagoshima University, Japan.
- "Environmental Legislation and Coastal Zone Regulation", at AICTE ISTE short term programme on Geoinformatics in Coastal Zone Management Planning, Dept. of Applied Mechanics and Hydraulics, NITK, Surathkal, 19th to 31st Jan, 2009.
- "Coastal Erosion Mitigation & Protection", at Training programme for Officials of GoK, at District Training Institute Mangalore, 24th Nov, 2011.
- "Integrated Coastal Zone Management", at Training programme for Officials of GoK, at District Training Institute Mangalore, 19th Dec, 2012.
- 17. "Experimental investigation on the wave attenuation characteristics of coastal vegetation", at Int. Seminar on Computational and Physical Modelling Techniques in Coastal and Ocean Engineering, Online Seminar NITK, Surathkal, 18th Mar, 2022.

c) Chairing sessions : 04

- a. Chaired a session as Rappotieur during National Conference on "Hydraulics and Water Resources with special emphasis on Interlinking of rivers – HYDRO 2006", 8-9th Dec, 2006, at Bharati Vidyapeeth Univerwsity, Pune.
- b. Chaired a session as Rappotiuer during National Conference on "Sustainable Water Resources Management" –SwaRM 2010, 7-9 Jan, 2010, NITK Surathkal.

- c. 4th Intl. Conf. in Ocean Engineering, ICOE-2018, Ocean Engineering Centre, IIT Madras, Chennai, 2018.
- d. 5th Intl. Conf. in Ocean Engineering, ICOE-2019, University of Mauritius, 28 July-1 Aug, 2019.

d) Institutions visited: 17

- 1. Central water and Power Research Station, Khadakvasla, Pune, 1986, 1998, 2001, 03.
- 2. IIT Madras, 1989, 90, 91, 2000, 01, 09, 10, 2013.
- 3. IIT Bombay, 1991,2002,2012.
- 4. RRSSC, ISRO, Bengaluru, 2000.
- 5. Indian Institute of Science, Bengaluru, 2001
- 6. Kuvempu University Shankarghatta, Shivamogga, 2004.
- 7. Bharati Vidyapeeth Univerwsity, Pune, 2006
- 8. Infosys, Mysore Campus, 2008
- 9. Kagoshima University, Japan, 2008
- 10. CESS, Thiruvananthapuram, 2010.
- 11. Sulthan Qaboos University Muscat, Oman, 2010
- 12. Kumamoto University, Japan, 2011.
- 13. Plymouth University, UK, 2013
- 14. Hamburg University, 2014
- 15. Tainan Hydraulics laboratory, Taiwan, 2016
- 16. IIT Madras, 2018
- 17. University of Mauritius, 2019.

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 Effect of armour unit layers and placement mode in the determination of stability of geotextile sand container (GSC) breakwaters
 (2022) Geotextiles and Geomembranes, 50 (3), pp. 444-454.
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2) Elias, T., Shirlal, K.G.
Experimental Investigation of the Hydraulic Performance of Breakwater Structures with Geotextile
Armor Units
(2022) Journal of Waterway, Port, Coastal and Ocean Engineering, 148 (3), art. no.
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2) https://www.scopus.com/inward/record.uri?eid=2-s2.085127033439&doi=10.1061%2f%28ASCE%29WW.1943-5460.0000708&DOI:
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3) Suvarna, P.S., Sathyanarayana, A.H., Umesh, P., Shirlal, K.G.
Hydraulic performance of perforated enlarged pile head breakwaters through laboratory investigation
(2021) Ocean Engineering, 241, art. no. 110089, . Cited 1 time.
3) https://www.scopus.com/inward/record.uri?eid=2-s2.085118223129&doi=10.1016%2fj.oceaneng.2021.110089&partnerID=40&md5=DOI:
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Document Type: Article
Publication Stage: Final
Source: Scopus

4) Sathyanarayana, A.H., Suvarna, P.S., Umesh, P., Shirlal, K.G. Performance characteristics of a conical pile head breakwater: An experimental study (2021) Ocean Engineering, 235, art. no. 109395, . Cited 1 time.
4) https://www.scopus.com/inward/record.uri?eid=2-s2.0-85109043320&doi=10.1016%2fj.oceaneng.2021.109395&partnerID=40&md5= Terms and conditions Privacy policy Copyright © 2022 Elsevier B.V. All rights reserved. Scopus® is a registered trademark of Elsevier B.V. DOI: 10.1016/j.oceaneng.2021.109395 Document Type: Article Publication Stage: Final Source: Scopus

5) Elias, T., Shirlal, K.G., E.V., K.
Physical model studies on damage and stability analysis of breakwaters armoured with geotextile sand containers
(2021) Geotextiles and Geomembranes, 49 (3), pp. 604-618. Cited 6 times.
5) https://www.scopus.com/inward/record.uri?eid=2-s2.085098636852&doi=10.1016%2fj.geotexmem.2020.12.001&partnerID=40&DOI: 10.1016/j.geotexmem.2020.12.001
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6) Elias, T., Shirlal, K.G. Coastal Protection Using Geosynthetic Containment Systems—An Indian Timeline (2021) Lecture Notes in Civil Engineering, 106 LNCE, pp. 439-450. Cited 3 times. 6) https://www.scopus.com/inward/record.uri?eid=2-s2.0-85098656374&doi=10.1007%2f978-981-15-8506-7_38&partnerID=40&md5=DOI: 10.1007/978-981-15-8506-7_38 Document Type: Conference Paper Publication Stage: Final Source: Scopus

7) Suvarna, P.S., Sathyanarayana, A.H., Umesh, P., Shirlal, K.G.
Laboratory investigation on hydraulic performance of enlarged pile head breakwater (2020) Ocean Engineering, 217, art. no. 107989, . Cited 3 times.
7) https://www.scopus.com/inward/record.uri?eid=2-s2.085090353985&doi=10.1016%2fj.oceaneng.2020.107989&partnerID=40&md5=DOI: 10.1016/j.oceaneng.2020.107989
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8) John, B.M., Shirlal, K.G., Rao, S.
Wave attenuation characteristics of simulated heterogeneous vegetation (2020) Current Science, 119 (8), pp. 1322-1332.
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Publication Stage: Final
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9) John, B.M., Shirlal, K.G., Rao, S.
Laboratory investigations of wave attenuation by simulated vegetation of varying densities (2019) ISH Journal of Hydraulic Engineering, 25 (2), pp. 203-213. Cited 3 times.
9) https://www.scopus.com/inward/record.uri?eid=2-s2.0-85032784472&doi=10.1080%2f09715010.2017.1398112&partnerID=40&DOI: 10.1080/09715010.2017.1398112
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10) Shirlal, K.G., John, B.M., Rao, S.
Laboratory investigations on the effect of fragmentation and heterogeneity of coastal vegetation in wave height attenuation
(2019) Lecture Notes in Civil Engineering, 23, pp. 13-23.
10) https://www.scopus.com/inward/record.uri?eid=2-s2.085060246518&doi=10.1007%2f978-981-13-3134-3_2&partnerID=40&md5=DOI:
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11) Janardhan, P., Rao, S., Shirlal, K.G.Reshaping berm breakwaters: A physical model study(2018) Indian Journal of Geo-Marine Sciences, 47 (5), pp. 1050-1057.

11) https://www.scopus.com/inward/record.uri?eid=2-s2.0-85047168801&partnerID=40&md5=3a68fdc384e8465b1967e742d61835f4 Document Type: Article Publication Stage: Final Source: Scopus 12) John, B.M., Shirlal, K.G., Rao, S. Effect of artificial vegetation on wave attenuation - An experimental investigation (2015) Procedia Engineering, 116 (1), pp. 600-606. Cited 9 times. 12) Terms and conditions Privacy policy Copyright © 2022 Elsevier B.V. All rights reserved. Scopus® is a registered trademark of Elsevier B.V. https://www.scopus.com/inward/record.uri?eid=2-s2.0-84941217141&doi=10.1016%2fj.proeng.2015.08.331&partnerID=40&md5=DOI: 10.1016/j.proeng.2015.08.331 Document Type: Conference Paper Publication Stage: Final Access Type: Open Access Source: Scopus 13) Shirlal, K.G., Mallidi, R.R. Physical model studies on stability of geotextile sand containers (2015) Procedia Engineering, 116 (1), pp. 567-574. Cited 2 times. 13) https://www.scopus.com/inward/record.uri?eid=2-s2.0-84941204356&doi=10.1016%2fj.proeng.2015.08.327&partnerID=40&md5=DOI: 10.1016/j.proeng.2015.08.327 **Document Type: Conference Paper** Publication Stage: Final Access Type: Open Access Source: Scopus 14) Rao, S., Shirlal, K.G., Balakrishna Rao, K., Janardhan, P. Wave run-up, run-down studies on berm breakwater with concrete cubes as armour units (2011) Asian and Pacific Coasts, 2011 - Proceedings of the 6th International Conference, pp. 534-540. 14) https://www.scopus.com/inward/record.uri?eid=2-s2.0-85066746952&doi=10.1142%2f9789814366489 0062&partnerID=40&md5=DOI: 10.1142/9789814366489 0062 Document Type: Conference Paper Publication Stage: Final Source: Scopus 15) Manu, Rao, S., Shirlal, K.G., Prashanth, J., Rao, K.B. Physical model studies on stability of concrete armoured breakwaters (2011) ISH Journal of Hydraulic Engineering, 17, pp. 51-60. Cited 2 times. 15) https://www.scopus.com/inward/record.uri?eid=2-s2.0-85015733774&doi=10.1080%2f09715010.2011.10515060&partnerID=40&DOI: 10.1080/09715010.2011.10515060 Document Type: Article Publication Stage: Final Source: Scopus Terms and conditions Privacy policy

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16) Shirlal, K.G., Rao, S., Madhu, M.

Concrete cubes as armour unit—an experimental study for berm breakwater (2011) ISH Journal of Hydraulic Engineering, 17 (1), pp. 12-17. Cited 1 time. 16) https://www.scopus.com/inward/record.uri?eid=2-s2.0-85015727048&doi=10.1080%2f09715010.2011.10515028&partnerID=40&DOI: 10.1080/09715010.2011.10515028 Document Type: Article Publication Stage: Final Source: Scopus

17) Manu, Rao, S., Shirlal, K.G.
Development of concrete armoured protected breakwater structure
(2011) International Journal of Earth Sciences and Engineering, 4 (5), pp. 253-260.
17) https://www.scopus.com/inward/record.uri?eid=2-s2.084959278051&partnerID=40&md5=1e9f277370437aba9ab643304a5c278f
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18) Shirlal, K.G., Rao, S., Varghese, R.V.
Comprehensive physical model study on wave transmission at plate structure
(2011) International Journal of Earth Sciences and Engineering, 4 (5), pp. 261-265.
18) https://www.scopus.com/inward/record.uri?eid=2-s2.084959262298&partnerID=40&md5=58ea6fb51fa27b0a2abbc826c2bd19c1
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19) Radheshyam, B., Rao, S., Shirlal, K.G.
On numerical modelling of waves, currents and sediment movement around Gurupur-Netravathi river mouth
(2010) International Journal of Earth Sciences and Engineering, 3 (4), pp. 538-552. Cited 3 times.
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20) Rao, S., Shirlal, K.G., Prashanth, S., Varghese, R.V.
Laboratory investigation on horizontal and vertical plate breakwaters
(2010) ISH Journal of Hydraulic Engineering, 16 (2), pp. 88-98.
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