# Curriculum vitae: Caston Sigauke


**CONTACT**

University of Venda
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**PROFILE** My research focuses on predictive modelling, with applications in probabilistic load forecasting, renewable energy systems (solar and wind), and environmental systems.

### NRF RATING

- South African National Research Foundation C2 Rated Researcher (2025–2030)
- https://www.nrf.ac.za/information-portal/nrf-rated-researchers/

### PROFESSIONAL AFFILIATIONS

- **SACNASP:** Professional Natural Scientist in Statistical Science. Registration Number: 157375. https://www.sacnasp.org.za/
- **IIF:** International Institute of Forecasters. Member ID: 7178. https://forecasters.org/blog/2023/10/09/member-profile-caston-sigauke/
- **SASA:** South African Statistical Association. Members ID: 1504211.
- Peer Reviewer: 100+ journal articles. https://orcid.org/0000-0002-7406-5291
- Editorial Board: Journal of Graphic Era University (2024–Date) https://www.journal.riverpublishers.com/index.php/JGEU/eb; Production Journal (2024–Date) https://prod.org.br/board

## Professional Experience

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| May 2023–Present | **Associate Professor**, Department of Mathematical and Computational Sciences, University of Venda. https://www.univen.ac.za/faculties/science-engineering-and-agriculture/mathematical-and-computational-sciences/ |
| Oct 2015–Apr 2023 | **Senior Lecturer**, Department of Mathematical and Computational Sciences, University of Venda. |
| Jun 2018–Feb 2020 | **Board Member**, Institute of Certificated and Chartered Statisticians of South Africa (ICCSSA). |
| Oct 2015–Dec 2018 | **Honorary Research Associate**, School of Statistics and Actuarial Science, University of the Witwatersrand, South Africa. |
| Sep 2013–Sep 2015 | **Lecturer**, School of Statistics and Actuarial Science, University of the Witwatersrand, South Africa. |
| May 2009–Aug 2013 | **Lecturer**, Department of Statistics and Operations Research, University of Limpopo, South Africa. |
| Apr 2002–Apr 2009 | **Lecturer**, Department of Applied Mathematics, National University of Science and Technology, Zimbabwe. |
| Jan 2000–Dec 2008 | **Part-time Lecturer**, Zimbabwe Open University, Zimbabwe. |

## University Administrative Duties

- Departmental Higher Degrees Committee chairperson (Department of Mathematical and Computational Sciences) (January 2024 – July 2025)
- Faculty Higher Degrees Committee – Non-Examining Chairs (FHDC – NEC) Subcommittee member (June 2022 – April 2024)
- Faculty Research and Innovation Integrated Committee (FRIIC) member (Faculty of Science, Engineering and Agriculture) (April 2024 – Date)

## Academic Citizenship & Community Engagement

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| 2025 | **Panel Member**, Adjudication of DSTI/NRF Research Chairs in Basic Sciences. |
| 2024–Date | **Chairperson**, Forecasting Interest Group (FIG), South Africa Chapter of the International Institute of Forecasters. https://forecasters.org/programs/communities/forecasting-interest-group-south-africa/ |
| 2024–Date | **Chairperson**, Forecasting Interest Group (FIG), South African Statistical Association. https://www.sastat.org/groups/forecasting |
| 2023 | **Panel Member**, Mathematics, ICT, Physics and Astronomy-CPRR, CSUR & Y-Rated 2023 NRF funding proposals. |

### EDUCATION

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|---|---|---|
| PhD | University of the Free State, South Africa | 2014 |
| MSc | National University of Science and Technology, Zimbabwe | 2000 |

### PROFESSIONAL QUALIFICATIONS

- Institute of Chartered Secretaries and Administrators in Zimbabwe (ICSAZ) Intermediate Certificate (1990–1992)

### COMPUTER SKILLS

- **Statistical Software:** R, Eviews
- **Applications:** MS Office, LaTeX
- **Learning Management:** Moodle, Microsoft Teams, Sakai
- **Operating System:** Windows
- **Reference Management:** BibTeX

### SPECIALISATION

- Statistics

### ACADEMIC INTERESTS

- Spatial extremes modelling
- Statistical learning and modelling
- Time series analysis
- Exploratory data analysis

**REFEREES** To be provided upon request.

## Honours & Awards

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| 2026 | Nominated for NSTF Data for Research Award https://nstf.org.za/current-nominees/ |
| 2026 | CoE-MaSS grant for a capacity development workshop on AI and Machine Learning in Banking. Grant Ref No.: CoE-MaSS 2026-031-MSI. Value: R100,000.00 |
| 2025 | CoE-MaSS grant for the Univen-UL joint symposium. Grant Ref No.: 2025-022-MEC Limpopo Symposium 2025. Value: R111,600.00 |
| 2025 | University of Venda Vice Chancellor's award for the 2023 research outputs |
| 2024 | CoE-MaSS grant for a writing retreat. Grant Ref No.: 2024/060-MEC-Maths and Computational Sciences Retreat. Value: R49,200.00 |
| 2024 | University of Venda Vice Chancellor's award for the 2022 research outputs |
| 2023 | University of Venda Vice Chancellor's award for the 2021 research outputs |
| 2022 | University of Venda Vice Chancellor's award for the 2020 research outputs |
| 2019 | World Bank Trust Fund for Statistical Capacity Building (WB TFSCB) to participate in the 62nd ISI World Statistics Congress, Kuala Lumpur, Malaysia |
| 2019 | University of Venda research grant in the niche area: Sustainable Rural and Regional Development. Value: R147,754.00 |
| 2018 | Knowledge Share award: SASA/NRF Academic Statistics in Crisis. Value: R20,000.00 |
| 2016 | Knowledge Share award: SASA/NRF Academic Statistics in Crisis. Value: R15,000.00 |
| 2016 | DST-NRF Centre of Excellence in Mathematical and Statistical Sciences (CoE-MaSS) for funding a Workshop on Quantile Regression. Value: R30,000.00 |
| 2015–2017 | National Research Foundation (NRF) grant for Competitive Support for Unrated Researchers (CSUR). Project: "Probabilistic Load Forecasting". Value: R728,500.00 |
| 2015 | Faculty of Science Research start-up grant, University of Witwatersrand. Value: R30,000.00 |
| 2014 | Faculty of Science Research start-up grant, University of Witwatersrand. Value: R30,000.00 |
| 2014 | Dean's Research grant, University of Witwatersrand. Value: R25,000.00 |
| 2014 | Vice Chancellor's research support, University of Witwatersrand. Value: R15,000.00 |
| 2012 | Excellence award for being the best researcher in the School of Mathematical and Computer Sciences, University of Limpopo. Value: R10,000.00 |
| 2011 | Knowledge Interchange Collaboration (KIC) travel grant, National Research Foundation (NRF) of South Africa to attend IFORS conference in Melbourne, Australia. Value: R15,000.00 |

## Postgraduate Supervision

I have supervised students' dissertations at undergraduate and post-graduate levels in statistics. I have supervised more than 30 honours projects, 31 Master's students (18 as main supervisor, 13 as co-supervisor), and 8 PhD students (4 as main supervisor, 4 as co-supervisor) to completion. I currently supervise 5 PhD students (2 as main supervisor, 3 as co-supervisor).

### MSc by Research Dissertation (Main Supervisor)

1. Predicting price volatility of cryptocurrency Ethereum. Vhukhudo R Rambevha (University of Venda) 2025. https://univendspace.univen.ac.za/items/

47f3e09c-ce65-4c8c-9676-4d0aefa1f752/full

2. Forecasting wavelet de-noised global horizontal irradiance using attention-based long short-term memory network. Ndamulelo I Nelwamondo (University of Venda) 2022. https://univendspace.univen.ac.za/items/aefe917c-fcca-43f0-b9bf-f861ed79ff3e/full
3. Hierarchical forecasting of monthly electricity demand. Ignitious Chauke (University of Venda) 2022. https://univendspace.univen.ac.za/items/a7771d13-6591-49db-ac0d-a5a2abb1edc0/full
4. Renewable energy forecasting in South Africa. Mamphaga Ratsilengo (University of Venda) 2021. https://univendspace.univen.ac.za/items/bd40862e-d4c2-4093-8f62-d9ec7e5016a6/full
5. Forecasting hourly solar irradiance in South Africa using machine learning models. Tendani Mutavhatsindi (University of Venda) 2020. https://univendspace.univen.ac.za/items/db24bdcd-f97b-4801-9aa4-821cf7a8a65b/full
6. Short-term wind power forecasting in South Africa using neural networks. Lucky Oghenechodja Daniel (University of Venda) 2020. https://univendspace.univen.ac.za/items/9665c097-ce09-49e7-82a3-ad4cae8c8b84/full
7. Forecasting hourly electricity demand in South Africa using machine learning models. Maduvhahafani Thanyani (University of Venda) 2020. https://univendspace.univen.ac.za/items/8a7fd0c2-85cd-4a87-bdaf-295b1e7f3800/full
8. Hierarchical forecasting of electricity demand in South Africa. Rofhiwa Netshiomvani (University of Venda) 2020. https://univendspace.univen.ac.za/items/6e452a85-e19d-44c2-b4b6-66a9f3086a21/full
9. Modelling the extremal dependence structure of equity returns: A survey of four African equity markets. Richard Taiwo Abayomi Samuel (University of Venda) 2019. https://univendspace.univen.ac.za/items/cfc68cbe-2c55-4b7e-b232-7178039a811a/full
10. Forecasting foreign direct investment in South Africa using nonparametric quantile regression models. Nyawedzeni Netshivhazwaulu (University of Venda) 2019. https://univendspace.univen.ac.za/items/8bcbd99b-eb43-4455-81cf-95f81ba29d2d/full
11. Probabilistic solar power forecasting: An application to South African data. Phathutshedzo Mpfumali (University of Venda) 2019. (NRF project on Probabilistic Load Forecasting 2015-2017) https://univendspace.univen.ac.za/items/ab317d0c-e8c9-47d4-9d90-10fc6891891f/full
12. Short-term load forecasting using quantile regression with an application to the unit commitment problem. Moshoko Emily Lebotsa (University of Venda) 2018. (NRF project on Probabilistic Load Forecasting 2015-2017) https://univendspace.univen.ac.za/items/e1340e72-485d-49c3-8476-4bee4e72f0c3/full
13. Medium-term load forecasting using generalised additive models with tensor product interactions. Thakhani Ravele (University of Venda) 2018. https://univendspace.univen.ac.za/items/de22694e-458c-4519-b79d-f28424bdb3a0/full
14. Stochastic modelling of daily peak electricity demand using extreme value theory. Jerry Boano Danquah (University of Venda) 2018. (NRF project on Probabilistic Load Forecasting 2015-2017) https://univendspace.univen.ac.za/items/dc949695-148e-42f9-b5d0-357a604ff647/full
15. Short-term hourly load forecasting in South Africa using neural networks. Elvis Tshiani Ilunga (University of the Witwatersrand) 2018. https://wiredspace.wits.ac.za/items/1068069c-d8da-4f7f-a971-ba6c5194abd3/full
16. Modelling temperature in South Africa using extreme value theory. Murendeni Maurel Nemukula (University of the Witwatersrand) 2017. (NRF project on Probabilistic Load Forecasting 2015-2017) https://wiredspace.wits.ac.za/items/1caf75c6-04ee-4a0b-8bc4-945a50e7296f/full
17. Modelling annual flood heights of the Limpopo river at Beitbridge border post using extreme value theory. Robert Kajambeu (University of Venda) 2017. https://univendspace.univen.ac.za/items/0c32e9b4-c527-4b94-98f5-bea1980233c1/full
18. Modelling short-term probabilistic electricity demand in South Africa. Molete Mokhele (University of the Witwatersrand) 2016. (NRF project on Probabilistic Load Forecasting) https://wiredspace.wits.ac.za/items/b470575a-6e60-441f-86f7-7550d11acac5/full

## MSc by Research Dissertation (Co-Supervisor)

1. Modelling Extreme Forecast Errors in Wind Energy Using South African Wind Farms. Vhonani Mushadu (Universwity of Venda) 2026.
2. Application of explainable AI and uncertainty quantification in credit risk assessment. Mulavhelesi Rambauli (University of Venda) 2026.
3. A comparative evaluation of machine learning models for stock price prediction and uncertainty estimation. Vhukhudo Nengovhela (University of Venda) 2026.
4. Exploring the dynamics of the ZAR/USD exchange rate volatility using the fGARCH and First-Order Beta-Skew-T-EGARCH models. Dzulani Mashavhela (University of Venda) 2026.
5. Short-term forecasting of global horizontal irradiance using stacked ensemble machine learning algorithms. Fhulufhelo Walter Mugware (University of Venda) 2025. https://univendspace.univen.ac.za/items/bc8940f4-fd7d-48a9-9cfc-d3ee76558f2a/full
6. Forecasting minute averaged solar irradiance using machine learning for solar concentrator applications. Ronewa Collen Nemalili (University of Venda) 2022. https://univendspace.univen.ac.za/handle/11602/2494?show=full
7. Multilevel modelling of determinants of contraceptive method choice among women in South Africa. Nematswerani Phumudzo (University of Venda) 2021. https://univendspace.univen.ac.za/items/4a5a2095-b990-41ce-a813-eb561b91b8e5/full
8. A Bayesian multilevel model for women unemployment in South Africa. Vutshilo Ramarumo (University of Venda) 2021. https://univendspace.univen.ac.za/items/26aa213d-4f1b-49e3-8b09-46e7ddce691c/full
9. Variable selection in discrete survival models. Coster Mabvuu (University of Venda) 2020. https://univendspace.univen.ac.za/items/6ca3baf7-285a-490a-976f-eea4fe599694/full
10. Variability and long-term trends of climate extremes over the Limpopo, South Africa. Thendo Sikhwari (University of Venda) 2019. http://univendspace.univen.ac.za/handle/11602/1485?show=full
11. A comparison of some methods of modelling the baseline hazard function in discrete survival models. Mahlageng Retang Mashabela (University of Venda) 2019. https://univendspace.univen.ac.za/items/33b3d725-e782-4cb0-a02d-f91cf040ad12/full
12. Discrete survival models with flexible link functions for age at first marriage among women in Swaziland. Thambeleni Portia Nevhungoni (University of Venda) 2019. https://univendspace.univen.ac.za/items/74b56340-c2d7-4b17-9340-854b5a9e9700/full
13. Modelling Volatility and Financial Market Risks of Shares on the Johannesburg Stock Exchange. Monnye Rhoda Makhwiting (University of Limpopo) 2014. http://ulspace.ul.ac.za/handle/10386/1389

## PhD Completed

### *PhD (Main Supervisor)*

1. Thakhani Ravele - Probabilistic renewable energy modelling in South Africa. University of Venda, 2024. https://univendspace.univen.ac.za/items/07930251-efab-4d0f-84eb-9d1b8f639c0e/full
2. Norman Maswanganyi - Long term peak electricity demand forecasting in South Africa using quantile regression. University of Venda, 2024. https://univendspace.univen.ac.za/items/6814456d-8da6-4ad6-aa3e-49d7e1a262cb/full
3. Edina Chandiwana - Solar power forecasting using Gaussian process regression. University of Venda, 2023. https://univendspace.univen.ac.za/items/30d97325-b89a-45d9-a6eb-699cb67441fe/full
4. Rosinah M Mukhodobwane - Modelling volatility, equity risk and extremal dependence of the BRICS stock markets. University of Venda, 2021. https://univendspace.univen.ac.za/items/a62652ed-93b2-42ce-a038-fb4b625d66f1/full

### *PhD (Co-Supervisor)*

1. Richard A. Samuel - Stochastic modelling of volatility, leverage effects, long-memory and extremal dependence of financial markets. University of the Witwatersrand, Johannesburg, 2024.

2. Ndava Constantine Mupondo - Modelling Zimbabwean stock market liquidity and volatility. National University of Science and Technology, Zimbabwe, 2022. http://www.nust.ac.zw
3. Fhumulani I Mativha - Drought in Luvuvhu river catchment: Assessment, characterisation and forecasting. University of Venda, 2020. https://univendspace.univen.ac.za/items/944eb62e-f60e-40a8-a7ec-2ef703cc7a91/full
4. Daniel Nheta - Entrepreneurship gaps framework: An investigation into expectations vs. realities of entrepreneurship. University of Venda, 2020. https://univendspace.univen.ac.za/items/d0ca518d-f3fd-4482-915f-ee49e8a17fd4/full

## PhD Current Students

### *Main Supervisor*

1. Thinawanga Tshisikhawe - Spatio-temporal Modelling of Wind Energy Data Using Bayesian Inference (2024-). University of Venda.
2. Godfrey Mtunzi - Modelling of Empirical Stylised Facts and Robust Parameter Estimation for Portfolio Optimisation in Unstable Financial Markets: The Case of Zimbabwe Stock Exchange (2024-). National University of Science and Technology, Zimbabwe.

### *Co-Supervisor*

1. Susan Maposa - A comparison of the predictive accuracy of the Pareto and power logit families of link functions in discrete survival models (2018-). University of Venda.
2. Kholofelo M Metwane - Renewable energy production enhancement through extreme value theory modelling of complex natural disasters (2024-). University of Limpopo.
3. Costa Muthai - Uncertainty aware decision systems in financial and operational risk environments (2026-). University of Venda.

# Examination of Masters' Dissertations and PhD Theses

I have examined more than 16 Master's dissertations and 9 PhD theses.

## PhD Theses Examined

- 2025: On the Development of New Generalized Heavy-Tailed and Bivariate Families of Distributions with Applications. Botswana International University of Science and Technology, Botswana.
- 2024: Development and Assessment of Generalized and New Families of Lifetime Distributions with Applications. Botswana International University of Science and Technology, Botswana.
- 2022: Stochastic Modelling of the Spread of Infectious Diseases. University of the Witwatersrand, Johannesburg, South Africa.
- 2021: Statistical and deep learning methods in causal inference. University of the Witwatersrand, Johannesburg, South Africa.
- 2020: Exact methods for single and multi-objective integer programming problems. RMIT University, Melbourne, Australia.
- 2019: On the use of the bootstrap methods in uncovering the sampling distribution of threshold value estimates. University of the Witwatersrand, Johannesburg, South Africa.
- 2019: Efficiency of the Structural Equation Model and Related Models in Validating the Theory of Planned Behaviour. North-West University, South Africa.
- 2017: Inspection and replacement models for reliability and maintenance: Filling in gaps. University of the Witwatersrand, Johannesburg, South Africa.
- 2016: The relationship between electricity supply and economic growth in South Africa. Nelson Mandela University, South Africa.
- 2014: Contributions to Accelerated Reliability Testing. University of Witwatersrand, Johannesburg, South Africa.

## Symposiums, Seminars, Workshops & Invited Talks

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| 2025 | UNIVEN-UL Mathematical and Computational Sciences symposium, 23-24 June 2025. https://www.univen.ac.za/news/univen-ul-mathematical-and-computational-sciences-symposium-promote |
| 2025 | Keynote speaker at the West Africa Young Statisticians Association, Use of Statistical Models and Artificial Intelligence for Modern Research, 8-11 September 2025, University of Ibadan, Nigeria. https://waysas.org/waysasv2/event-detail?id=30 |
| 2025 | Mathematics and Statistics article writing retreat at Tshipise Forever Resort, 10-12 September 2025, University of Venda |
| 2024 | A Research Retreat Uniting Master's and PhD Students in Mathematical and Computational Sciences at 2Ten Hotel, 08-09 October 2024, University of Venda |
| 2023 | Black Heroes of Statistical Research, 1-3 November 2023. https://blackheroesstatistics.wordpress.com/speakers/ https://www.youtube.com/channel/UCndecF_05icOL4fd-4YOZ-w |
| 2023 | Modelling spatio-temporal drought risk in a changing world, Spatial Statistics Interest Group webinar, South African Statistical Association, 24 October 2023. https://app.glueup.com/event/modelling-spatio-temporal-drought-risk-in-a-changing-world-90257/ |
| 2023 | Faculty of Science and Agriculture research conference, University of Limpopo, 20-22 September 2023. https://www.linkedin.com/feed/update/urn:li:activity:7120808523248103424/ |
| 2020 | Forecasting lecture to Eskom's Combined Forecasting Forum (CFF) on 8 December 2020. |
| 2016 | Research Seminar at Eskom on transmission and distribution network demand forecasting. |
| 2016 | Research visit to Eskom National Control Centre in Johannesburg, South Africa. |
| 2016 | ICCSSA/ORSSA/SASA breakfast seminar at Council for Scientific and Industrial Research (CSIR), Pretoria. "Short term hourly load forecasting during the peak period using quantile regression with an application to the unit commitment problem". |
| 2014 | Public seminar "Winter peak electricity demand modelling in South Africa". Wits University. |
| 2013 | Data validation workshop for the National Development Plan of South Africa, Vision 2030 in Pretoria. |
| 2010 | Eskom workshop on Energy, Economics Statistics and Data mining: Heritage Conference Centre, South Africa. |
| 2009 | Workshop on Forecasting and Modelling in Energy and Finance: Department of Statistics and Centre for Energy Research, Nelson Mandela Metropolitan University, Port Elizabeth, in partnership with Eskom, South Africa. Title: "A GARCH modelling approach to hourly electricity load forecasting". |

## International Research Visits

1. Research collaboration visit: Department of Statistics, University of Ibadan, Nigeria, 14-28 September 2024. "Application of max-stable processes on modelling the spatio-temporal dependence of some weather variables"
2. Research collaboration visit: Department of Statistics, National University of Science and Technology, Zimbabwe, 23 June 2024 to 8 July 2024. "Modelling complex systems in the era of big data, data sharing and collaboration and Some Good Research Habits"
3. Research collaboration visit: Department of Mathematics, University of Agostinho Neto, Angola, 26 May - 10 June 2023. "Complex climate extremes: Application of max-stable processes on modelling the spatio-temporal dependence"
4. Research collaboration visit: Department of Statistics, University of Lagos, Nigeria, 6-26 March 2023. "Modelling complex systems in the era of big data" https://unilag.edu.ng/

?p=20072 https://unilag.edu.ng/?p=20404

5. Research collaboration visit: Department of Mathematical Sciences, University of Malawi, 30 October 2017 to 3 November 2017. "Impact of temperature extremes on electricity demand: A case study"
6. Research collaboration visit: Lancaster Centre for Forecasting, Lancaster University, Management Science, 5-9 December 2016. "Short-term electricity demand forecasting using quantile regression with an application to the unit commitment problem". http://www.research.lancs.ac.uk/portal/en/people/search.html?search=Caston+Sigauke&uri=&filter=

## Papers Presented at International Conferences

1. **Sigauke, C.** Understanding Spatio-Temporal Extremes: Max-Stable Models in Climate Change Research. The 45th International Symposium on Forecasting Beijing, China, June 29-July 2, 2025. https://isf.forecasters.org/ https://isf.forecasters.org/wp-content/uploads/BookOfAbstracts-ISF2025a_FINAL.pdf https://isf.forecasters.org/wp-content/uploads/isf_202506_agenda.pdf
2. **Sigauke, C.** International Symposium on Current Trends in Modelling and Software Development in Data Science and Statistics, 20-23 February 2024, South African Medical Research Council, Cape Town. https://erbiostat.wixsite.com/itp0
3. **Sigauke, C.** Estimation of extreme conditional quantiles of global horizontal irradiance: An application using South African data. The 41st International Symposium on Forecasting, virtual, 27-30 June 2021. https://www.youtube.com/watch?v=9Wm7Orq7Qpc&list=PLUxduCQo6_X396goCKSfuZQ9XK145XMum&index=66
4. **Sigauke, C.**, Nemukula, M.M. and Maposa, D. Probabilistic hourly load forecasting. 62nd ISI World Statistics Congress, Kuala Lumpur, Malaysia, 18-23 August 2019.
5. **Sigauke, C.**, Nemukula, M.M. and Chikobvu, D. Impact of temperature extremes on electricity demand: A case study. 21st Conference of the International Federation of Operational Research Societies, Quebec, Canada, 17-21 July 2017.
6. Nemukula, M.M. and **Sigauke, C.** Modelling average maximum daily temperature using *r* largest order statistics: An application to South African data. 61st ISI World Statistics Congress, Marrakech, Morocco, 16-21 July 2017.
7. Nemukula, M.M. and **Sigauke, C.** Modelling average minimum daily temperature using extreme value theory with a time-varying threshold. 10th International Conference on Extreme Value Analysis, Delft University of Technology, The Netherlands 26-30 June 2017.
8. **Sigauke, C.** Modelling the effect of heatwaves on electricity demand: A case study. The 3rd International Conference on Energy and Environment Research, Barcelona, Spain, 7-11 September 2016.
9. **Sigauke, C.** Modelling extreme non-winter peak electricity demand: An application to South African data. The 36th International Symposium on Forecasting, Santander, Spain, 19-22 June 2016.
10. **Sigauke, C.** and Dowdeswell, M., Modelling peak electricity demand using extreme value theory with time-varying parameters: An application to South African data. The 35th International Symposium on Forecasting, Riverside, California, USA, 21-24 June 2015.
11. Dowdeswell, M. and **Sigauke, C.**, Non-stationary point processes and their extremes: an exploration of electricity demand in South Africa. The 9th International Conference on Extreme Value Analysis at the University of Michigan, Ann Arbor, June 15-19, 2015, USA.
12. Mokhele, M. and **Sigauke, C.**, Modelling summer daily peak load demands in South Africa using discrete-time Markov chain analysis. The 9th International Conference on Extreme Value Analysis at the University of Michigan, Ann Arbor, June 15-19, 2015.
13. **Sigauke, C.** and Chikobvu, D., A Markov chain analysis of daily changes to peak electricity demand in South Africa. The 34th International Symposium on Forecasting, Economic Forecasting Past, Present and Future, Rotterdam, The Netherlands, 29 June to 2 July 2014.
14. Chikobvu, D., **Sigauke, C.** and Verster, A., Winter peak electricity load forecasting in South Africa using extreme value theory with a Bayesian flavour. Poster presented at the International Society for Bayesian Analysis, June 2012 Conference, Kyoto, Japan.
15. **Sigauke, C.** and Chikobvu, D., Modelling daily peak electricity load forecasting in South Africa using a multivariate nonparametric regression approach. 19th Triennial Conference of the International Federation of Operations Research Societies, Melbourne, Australia, July10-15 2011. Chaired the invited session FC-1: OR, Energy, and Africa in stream OR

Applications in Energy.

16. Chikobvu, D. and **Sigauke, C.**, Modelling daily peak electricity demand in South Africa using SARIMA and RegSARIMA models. Second Isibalo Young African Statisticians' Conference, 1-3 December 2010, Pretoria, South Africa.
17. **Sigauke, C.**, An econometric study of currency crises in developing economies: the Zimbabwean case. 18th Triennial Conference of the International Federation of Operations Research Societies, Sandton Convention Centre, South Africa, July 13-18, 2008. Chaired the session MC-13 Finance Applications.

## International Conferences Attended without a presentation

1. **Sigauke, C**. The 42nd International Symposium on Forecasting, virtual, July 10-13, 2022 in Oxford, England.
2. **Sigauke, C**. The 40th International Symposium on Forecasting, virtual, 26-28 October 2020. https://isf.forecasters.org/overview/about/locations/
3. 26-30 July 2015: IEEE Power & Energy Society General Meeting, Powering up the next generation, Denver, Colorado, USA. Attended a full-day tutorial on Energy Forecasting in the Smart Grid Era.

## Publications

Research Lab: https://www.researchgate.net/lab/Forecasting-Caston-Sigauke

### PhD Thesis

1. Sigauke, C. (2014). Modelling Electricity Demand in South Africa. PhD thesis. University of the Free State, South Africa. https://scholar.ufs.ac.za/items/bb3b43cc-382c-42af-b08f-dfeae6a73524/full

### Publications on Renewable Energies (Solar, GHI, Wind)

1. Tshisikhawe, T.H., **Sigauke, C.**, Darikwa, T.B. and Nadarajah, S. (2026). A Hybrid Linear–Gaussian Process Framework with Adaptive Covariance Selection for Spatio-Temporal Wind Speed Forecasting. Forecasting, vol. 8, no. 3, pp. 1–37. https://doi.org/10.3390/forecast8030036
2. Nthangeni, R.I., **Sigauke, C.**, Ravele, T. and Tshisikhawe, T.H. (2026). Enhancing Short-Term Wind Energy Forecasting with XGBoost and Conformal Prediction for Robust Uncertainty Quantification. Computation, vol. 14, no. 3, pp. 1–27. https://doi.org/10.3390/computation14030056
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## Book Chapters

1. **Sigauke, C.** and Ravele, T. (2025). Estimating Concurrent Probabilities of Compound Extremes: An Analysis of Temperature and Rainfall Events in the Limpopo Lowveld Region of South Africa. In Extreme Weather Events in a Warming Climate. Edited by Masoud Rostami, Atmosphere, MDPI. https://doi.org/10.3390/books978-3-7258-5216-1
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## Refereed Research Papers in Accredited Conference Proceedings

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