Curriculum vitae with track record (for researchers)

Role in the project   Project manager ☐   Project participant ☒

Personal information

First name, Surname:	Randi Valestrand		
Date of birth:	12.03.1974	Sex:	Female
Nationality:	Norwegian		

Education

Year	Faculty/department - University/institution - Country
2002 (dissertation defended)	Ph.D. Department of Physics, University of Bergen, Norway.
1999	Master. Department of Physics, University of Bergen, Norway

Positions - current and previous
(*Academic sector/research institutes/industrial sector/public sector/other*)

Year	Job title – Employer - Country
2018-	Research Director, heading the Data Assimilation & Optimization group at the Energy Department, NORCE Norwegian Research Centre, Norway
2015-2021	Research Director Theme 2, The National IOR Centre of Norway, Norway
2014-2018	Research Director, Energy Department, International Research Institute of Stavanger, Norway
2008-2014	Senior Research Scientist, Energy Department, International Research Institute of Stavanger, Norway
2002-2008	Research Scientist, Energy Department, International Research Institute of Stavanger, Norway

Career breaks

Year	Reason
2002	Maternity leave 6 months
2005	Maternity leave 8 months
2008	Maternity leave 8 months

Project management experience
(*Academic sector/research institutes/industrial sector/public sector/other. Please list the most relevant.*)

Year	Project owner - Project - Role - Funder
2022-	Work package leader in the National Centre for Sustainable Subsurface Utilization of the Norwegian Continental Shelf (NCS2030 PETROSENTER). Lead WP5 on "Digital subsurface for decisions" which has an annual budget of about 9 MNOK a year. The Centre is funded by the RCN, the user partners (several companies) and in addition some in-kind from the four research institutions in the Centre.
2022-	Work package leader ImpactWind SouthWest (Interdisciplinary capacity lift for effective licensing processes in and outside of Norway). Lead WP2 on "Open-access database: Open data and reports relevant for offshore wind". The project is funded by the RCN, the user partners (several companies) and in addition some in-kind from the four research institutions in the Centre.
2015-2021	Headed Theme 2 "Mobile oil: Reservoir characterization to improve volumetric sweep" at The National IOR Centre of Norway. This Centre was one of the previous PETROSENTER in Norway. Theme 2 included the three following Tasks: "Tracer technology", "Reservoir simulation tools" and "Field scale evaluation and history matching". The annual budget for the Centre was about 50 MNOK a year where about half belonged to Theme 2. The budget included education of 29 PhD's and 21 post docs' over the eight years of the Centre. The Centre is funded by the RCN, the user partners (several companies) and in addition some in-kind from the three research institutions in the Centre.
2015-2018	IRIS project manager for JIP Petromaks2 project "4D Seismic History Matching". IRIS budget of 12,6 MNOK. Cooperation between IRIS and Uni-CIPR. Funding from RCN and industry partners.
2012-2015	Project manager of IRIS-CIPR consortium, which includes Petromaks2 project "Reservoir Data Assimilation for Realistic Geology". Total budget of 24,9 MNOK. Funding from RCN and industry partners.
2006-2009	IRIS project manager for JIP Petromaks project "Improved reservoir forecasting through natural and injected tracer modelling" IRIS budget of 5,5 MNOK. Cooperation between IRIS and IFE. Funding from RCN and industry partners.
2005-2006	Project leader JIP Petromaks project "Cost efficient reservoir characterization". Total budget of 5.400KNOK over three years. IRIS project. Funding from RCN and industry partners.

Other relevant professional experiences
(E.g. institutional responsibilities, organisation of scientific meetings, membership in academic societies, review boards, advisory boards, committees, major research or innovation collaborations, other commissions of trust in public or private sector)

Year	Description - Role

2018-present	Member of the leader group at the Dept. of Energy, NORCE Norwegian Research Centre. Financial responsible Research Director with an annual budget of about 25 MNOK.
2014-2018	Member of the leader group at the Dept. of Energy, International Research Institute of Stavanger. Financial responsible Research Director with an annual budget of about 23 MNOK.
2015-2021	Member of the leader group of The National IOR Centre of Norway
2010-2019	Organizer annual International EnKF Workshop, about 50 participants each year, Norway
2019	Co-organizer IOR Norway 2019, about 200 participants, Norway
2018	Co-organizer IOR Norway 2018, about 250 participants, Norway
2017	Co-organizer IOR Norway 2017 in collaboration with EAGE, about 350 participants, Norway
2016	Co-organizer IOR Norway 2016, about 250 participants, Norway
2010	Co-organizer SPE ATW on Tracer Technology for Reservoir Management, about 150 participants, Tunisia.

Track record

Total number of publications: 32 publications, 250 citations and h-Index 8 (Google Scholar)

A list of up to *ten* publications:

Lorentzen, R.J., Bhakta, T., Grana, D., Luo, X., Valestrand, R., Nævdal, G., "Simultaneous assimilation of production and seismic data: application to the Norne field" Computational Geosciences (2019). First Online: 19 November 2019. https://doi.org/10.1007/s10596-019-09900-0

Lorentzen, R.J., Luo, X., Bhakta, T., Valestrand, R. (2019, August 1). "History matching the full Norne field model using seismic and production data". SPE Journal, Vol 24, DOI: https://doi.org/10.2118/194205-PA

Luo, X., Lorentzen, R. J., Valestrand, R., & Evensen, G. (2018, October 1). "Correlation-Based Adaptive Localization for Ensemble-Based History Matching: Applied To the Norne Field Case Study". Society of Petroleum Engineers. DOI: https://doi.org/10.2118/191305-PA

Chang, Y., Stordal, A.S., Valestrand, R., "Integrated work flow of preserving facies realism in history matching: Application to the Brugge field", SPE Journal, Volume 21, number 04, pp 1–413, 2016, Society of Petroleum Engineers. DOI: https://doi.org/10.2118/179732-PA

R. Valestrand and D.R. Renard, "Estimating Geo-modeling Control-parameters from Historical Data by Means of the EnKF". ECMOR XIV - 14th European Conference on the Mathematics of Oil Recovery, 08 September 2014. DOI:10.3997/2214-4609.20141812

Valestrand, R., Khrulenko, A., Hatzignatiou, D.G., "Smart Wells for Improved Water Management in the Presence of Geological Uncertainty", SPE Bergen One Day Seminar, 2014, Society of Petroleum Engineers. DOI: https://doi.org/10.2118/169223-MS

Valestrand, R and Nævdal, G and Stordal, A.S., "Evaluation of EnKF and Variants on the PUNQS3 Case", Oil & Gas Science and Technology–Revue d'IFP Energies nouvelles, vol 67, number 5, pp 841–855, 2012. DOI: 10.2516/ogst/2012044

Stordal, A.S., Valestrand, R., Karlsen, H. A., Nævdal, G., Skaug, H.J. "Comparing the adaptive Gaussian mixture filter with the ensemble Kalman filter on a synthetic reservoir model". Computational Geoscience, Vol. 16, Number 2, pp. 467-482. DOI: https://doi.org/10.1007/s10596-011-9262-2

Huseby, O., Valestrand, R., Nævdal, G., Sagen, J, "Natural and Conventional Tracers for Improving Reservoir Models Using the EnKF Approach". SPE Journal, Vol. 15, No. 4, pp.1047-1061. SPE -121190. 2010. DOI: https://doi.org/10.2118/121190-PA

Valestrand, R., Sagen, J., Nævdal, G., Huseby, O. "The effect of Including Tracer Data in the Ensemble Kalman Filter Approach". SPE Journal, Vol. 15, No. 2, pp.454-470. SPE-113440. 2010. DOI: https://doi.org/10.2118/113440-PA

Contribution to open-source software

At the Energy department in NORCE, and especially at the Data Assimilation & Optimization Group, we have more than 20 years' experience with developing digital methodology for petroleum reservoir management. The methods are based on using an ensemble of models to better represent the uncertainty of the underground, and to update the ensemble using information from measurements, taking the uncertainty of the measurements into account. This leads to improved understanding of the underground processes, and calibrated models are used to predict future production and field developments. The improved models are utilized to compute strategies for optimal operation and development of the petroleum field. The calibration part and the optimization part are integrated seamlessly through use of the ensemble of models, and the developments has led to the Python-Ensemble-Toolbox (PET), that is now published as open source at GitHub, https://github.com/Python-Ensemble-Toolbox/PET.

The methodology has changed the traditional reservoir management when it comes to decision making, and has led to increased and accelerated production, better energy and cost efficiency, and considerable reduction of greenhouse gas emissions (Rystad Energy, 2019). The technology has huge potential beyond today's use, and in 2022 NORCE decided to publish this background, developed over 20 years, as open-source code. This is aligned with the NORCE strategy: use the advanced digital methods developed for petroleum, towards the green shift and contribute to accelerate worldwide growth of renewable energy, alongside with the continued developments for producing cleaner fossil fuels throughout the transition period we are in. We believe better utilization of models and large datasets is the key to achieve this, and open code will benefit both the industry and NORCE when developing new ideas and projects for the future.