Stanford



Celine Scheidt

Sr Res Engineer, Energy Science & Engineering

Bio

BIO

Céline Scheidt has worked extensively in uncertainty modeling, sensitivity analysis, geostatistics and in the use of distance-based methods in reservoir modeling. She obtained her PhD at Strasbourg University and the IFP (France) in applied mathematics, with a focus on the use of experimental design and geostatistical methods to model response surfaces.

ACADEMIC APPOINTMENTS

- Sr Res Engineer, Energy Science & Engineering

PROFESSIONAL EDUCATION

- Ph.D, ULP Strasbourg and IFP (France) , Applied Mathematics (2006)
- MS, ULP, Strasbourg (France) , Mathematics for Industry – Specialty in Quality/Reliability (2003)

Publications

PUBLICATIONS

- **Quantifying uncertainty in subsurface systems**
  Scheidt, C., Li, L., Caers, J.
  Washington, D.C. : American Geophysical Union ; Hoboken, NJ : John Wiley and Sons, Inc., 2018..2018
- **Stochastic Inversion of Geophysical Data by Sequential Bayesian Updating Under a Non-Stationary Gaussian Process Prior** *MINERALS*
  Caers, J., Li, P., Kloeckner, J., Daza, J., Yin, D., Scheidt, C.
  2026; 16 (7)
- **A Python Package for Distance-Based Generalized Sensitivity Analysis (DGSA)** *JOURNAL OF OPEN RESEARCH SOFTWARE*
  Ding, J., Scheidt, C., Li, P., Yin, D., Caers, J.
  2026; 14 (1)
- **Geomodelling of multi-scenario non-stationary reservoirs with enhanced GANSim** *PETROLEUM EXPLORATION AND DEVELOPMENT*
  Song, S., Tapan, M., Celine, S., Hisham, M., Man, F.
  2026; 53 (1): 205-220
- **Optimizing Drilling in Brownfield Ni-Cu Depositional Systems Based on the Integration of Geochemical, Geophysical and Drill-Hole Data** *MINERALS*
  Scheidt, C., Neto, F., Yin, D., Caers, J.
  2026; 16 (1)
- **Masked Autoregressive Flow for Geochemical Anomaly Detection with Application to Li-Cs-Ta Pegmatites Exploration of the Superior Craton, Canada** *NATURAL RESOURCES RESEARCH*

Scheidt, C., Mathieu, L., Yin, Z., Wang, L., Caers, J.
2024

- **Constructing Priors for Geophysical Inversions Constrained by Surface and Borehole Geochemistry** *SURVEYS IN GEOPHYSICS*
  Wei, X., Yin, Z., Scheidt, C., Darnell, K., Wang, L., Caers, J.
  2024
- **A geostatistical implicit modeling framework for uncertainty quantification of 3D geo-domain boundaries: Application to lithological domains from a porphyry copper deposit** *COMPUTERS & GEOSCIENCES*
  Fouedjio, F., Scheidt, C., Yang, L., Achtziger-Zupancic, P., Caers, J.
  2021; 157
- **Conditional simulation of categorical spatial variables using Gibbs sampling of a truncated multivariate normal distribution subject to linear inequality constraints** *STOCHASTIC ENVIRONMENTAL RESEARCH AND RISK ASSESSMENT*
  Fouedjio, F., Scheidt, C., Yang, L., Wang, Y., Caers, J.
  2020
- **Assessing and visualizing uncertainty of 3D geological surfaces using level sets with stochastic motion** *COMPUTERS & GEOSCIENCES*
  Yang, L., Hyde, D., Grujic, O., Scheidt, C., Caers, J.
  2019; 122: 54–67
- **Exploring viable geologic interpretations of gravity models using distance-based global sensitivity analysis and kernel methods** *GEOPHYSICS*
  Phelps, G., Scheidt, C., Caers, J.
  2018; 83 (5): G79–G92
- **Quantifying Uncertainty in Subsurface Systems PREFACE** *QUANTIFYING UNCERTAINTY IN SUBSURFACE SYSTEMS*
  Scheidt, C., Li, L., Caers, J., Scheidt, C., Li, L., Caers, J.
  2018; 236: VII-IX
- **Direct forecasting of reservoir performance using production data without history matching** *COMPUTATIONAL GEOSCIENCES*
  Satija, A., Scheidt, C., Li, L., Caers, J.
  2017; 21 (2): 315-333
- **DGSA: A Matlab toolbox for distance-based generalized sensitivity analysis of geoscientific computer experiments** *COMPUTERS & GEOSCIENCES*
  Park, J., Yang, G., Satija, A., Scheidt, C., Caers, J.
  2016; 97: 15-29
- **Quantifying natural delta variability using a multiple-point geostatistics prior uncertainty model** *JOURNAL OF GEOPHYSICAL RESEARCH-EARTH SURFACE*
  Scheidt, C., Fernandes, A. M., Paola, C., Caers, J.
  2016; 121 (10)
- **Probabilistic falsification of prior geologic uncertainty with seismic amplitude data: Application to a turbidite reservoir case** *GEOPHYSICS*
  Scheidt, C., Jeong, C., Mukerji, T., Caers, J.
  2015; 80 (5): M89-M100
- **Updating joint uncertainty in trend and depositional scenario for reservoir exploration and early appraisal** *COMPUTATIONAL GEOSCIENCES*
  Scheidt, C., Tahmasebi, P., Pontiggia, M., Da Pra, A., Caers, J.
  2015; 19 (4): 805-820
- **Prediction-Focused Subsurface Modeling: Investigating the Need for Accuracy in Flow-Based Inverse Modeling** *MATHEMATICAL GEOSCIENCES*
  Scheidt, C., Renard, P., Caers, J.
  2015; 47 (2): 173-191
- **Quantifying Asymmetric Parameter Interactions in Sensitivity Analysis: Application to Reservoir Modeling** *MATHEMATICAL GEOSCIENCES*
  Fenwick, D., Scheidt, C., Caers, J.

2014; 46 (4): 493-511

- **History matching and uncertainty quantification of facies models with multiple geological interpretations** *COMPUTATIONAL GEOSCIENCES*
  Park, H., Scheidt, C., Fenwick, D., Boucher, A., Caers, J.
  2013; 17 (4): 609-621
- **A multi-resolution workflow to generate high-resolution models constrained to dynamic data** *COMPUTATIONAL GEOSCIENCES*
  Scheidt, C., Caers, J., Chen, Y., Durlofsky, L. J.
  2011; 15 (3): 545-563
- **Bootstrap confidence intervals for reservoir model selection techniques** *COMPUTATIONAL GEOSCIENCES*
  Scheidt, C., Caers, J.
  2010; 14 (2): 369-382
- **Uncertainty Quantification in Reservoir Performance Using Distances and Kernel Methods-Application to a West Africa Deepwater Turbidite Reservoir** *SPE JOURNAL*
  Scheidt, C., Caers, J.
  2009; 14 (4): 680-692
- **Representing Spatial Uncertainty Using Distances and Kernels** *MATHEMATICAL GEOSCIENCES*
  Scheidt, C., Caers, J.
  2009; 41 (4): 397-419
- **Toward a reliable quantification of uncertainty on production forecasts: Adaptive experimental design** *IFP International Conference on Quantitative Methods for Reservoir Characterization*
  Scheidt, C., Zabalza-Mezghani, I., Feraille, M., Collombier, D.
  EDITIONS TECHNIP.2007: 207–24