

GUILLAUME CAUMON : CV

Université de Lorraine – ENSG
Géoressources (UMR 7359)
2, Rue du Doyen Marcel Roubault
F-54 518 Vandoeuvre_lés Nancy Cedex, France
Office: +33 383 59 6440 ; mobile : +33 679 81 8575

Born 12/28/1976

Guillaume.Caumon@univ-lorraine.fr
www : <http://www.gocad.org/~caumon>

CURRICULUM

- 02/2011- **Professor in Geomodeling at Université de Lorraine, Teaching at** École Nationale Supérieure de Géologie (ENSG) where I head the Numerical Geology Major
Research at GéoRessources (UMR7359), where I am responsible of the Geological and Geochemical Models Team.
- 04/2015- **Visiting Professor**, Center for Wave Phenomena, Colorado School of Mines
07/2015
- 10/2009 **Habilitation diploma (HDR):** *Towards integration of uncertainties and processes in numerical geology.*
- 01/2007- **Director of the Gocad Research Consortium.** The objective of this joint industry program (www.gocad.org; budget ~500 KEUR/year) is to methodological research in subsurface data integration, visualization and modeling.
- 09/2004- **Maitre de Conférences in Numerical Geology (Associate Professor) at INPL (now**
01/2011 **Université de Lorraine)**, École Nationale Supérieure de Géologie (ENSG) and Centre de Recherches Pétrographiques et Géochimiques (CRPG-CNRS-UPR 2300).
- 08/2003- **Postdoctoral Scholar, Petroleum Eng. Dept.,** Stanford, CA, USA, with Prof. Andre
08/2004 Journal.
- 03/2003 **PhD in Geosciences** from Institut National Polytechnique de Lorraine (INPL) : *Representing, visualizing and modifying geoscientific solid models* (advisor: Prof. Jean-Laurent Mallet)
- 2000-2003 **Research Assistant** at Institut National Polytechnique de Lorraine (INPL) in the Gocad Research Group.
- 1999 **DEA and Diplôme d'Ingénieur de l' École Nationale Supérieure de Géologie (MSc) :** *Rendering of discrete geological models in two and three dimensions.*

TEACHING

Courses:

Teaching ~230 contact hours annually at Université de Lorraine / Nancy School of Geology (ENSG). The level (Undergrad – L) or Masters (M) and semester is indicated after the course title:

- Field mapping and Numerical Geology: 3D modeling of geological structures from field observations (L3-S6)
- Petroleum Geoscience field trip: connecting field observation with exploration and reservoir modeling strategies (M1-S8)
- Geostatistics: Stationarity and geology, spatial variability, estimation, simulation. (M1-S7)

- C++ programming (M1-S8 and M2-S9)
- Static reservoir modeling methodologies: from seismic interpretation to dynamic simulation. (M1-S8)
- 3D modeling of ore deposits: definition of deep exploration targets and resource assessment (M2-S9)
- Geomathematics: differential geometry, meshes, 3D structural restoration (M2-S9)
- Petroleum Field Case (in partnership with Total, M2-S9): integrated study of a petroleum field.

Responsibilities:

- Responsible of the Numerical Geology specialty (S9) since 2006: definition of the academic program in conjunction with industry needs, choice of instructors, personalized monitoring of students.
- Director of International Relations at ENSG (Nancy School of Geology) in 2011-2012: Management of the processes for studies abroad and welcoming foreign students.
- Elected Member of the ENSG council (2005-2009 and 2014-2018).

Supervision:

Supervision of over 30 MSc students since 2004.

Supervised PhD students:

1. Luc Buatois (Visualization and general purpose algorithms on GPU for unstructured meshes, 2007), co-advised with Bruno Lévy and Jean-Claude Paul. Now with Paradigm
2. Pauline Durand-Riard (Management of geological complexity in 3D geomechanical restoration, 2010), co-advised with Mary Ford. Did postdoc at Harvard and is now with Total
3. Thomas Viard (GPU algorithms for uncertainty visualization, 2010), co-advised with Bruno Lévy. Now with Chevron
4. Vincent Henrion (Pseudo-genetic methods for the simulation of the 3D geometry of fracture and karstic networks, 2011), co-advised with Judith Sausse. Now with Total
5. Nicolas Cherpeau (Structural uncertainties in geomodeling : sampling and inverse approach, 2012). Co-advised with Bruno Lévy. Now with Paradigm
6. Florent Lallier (Stochastic stratigraphic well correlation, 2012). Co-advised with Sophie Viseur and Jean Borgomano. Now with Total E&P UK
7. Romain Merland (Numerical Approaches in Unstructured Grid Generation for Flow Simulation in Geological Formations, 2013), co-advised with Bruno Lévy. Now with Paradigm
8. Gautier Laurent (Compatibility of geological structures in 3D modeling, 2013), co-advised with Mark Jessell. Now at Monash University
9. Jeanne Pellerin (Accounting for geological complexity of structural models in Voronoi-based gridding, 2014), co-advised with Bruno Lévy. Now at Weirstrass Institute in Berlin
10. Théophile Gentilhomme (Integration of seismic and production data in reservoir characterization, 2014), co-advised with Dean Oliver and Jean-Jacques Royer. Now with CGG.
11. Francois Bonneau (Indirect data and genetic principles during stochastic DFN simulation, 2014), co-advised with Judith Sausse and Philippe Renard. Now with ASGA.
12. Charline Julio (Stochastic structural modeling in the presence of dense data, 2015), co-advised with Mary Ford. Now with PDS.
13. Jérémy Ruiu (object-based interpretation of sedimentary bodies in 2D and 3D raster data, 2015), co-advised with Sophie Viseur. Now with Total and UPPA.

Ongoing PhD students:

1. Gaetan Bardy (Usage of proxies for fast model ranking in reservoir studies, 2015), co-advised with Philippe Renard and Peter King.
2. Arnaud Botella (Conformable Hybrid gridding of geological objects by minimization, 2015), co-advised with Bruno Lévy.
3. Jonathan Edwards (Stochastic well correlation in diverse sedimentological environments, 2016), co-advised with Cedric Carpentier.
4. Benjamin Chauvin (Uncertainty management and reduction in 3D structural restoration, 2016), co-advised with John Shaw.
5. Gabriel Godefroy (Integration of kinematic concepts in structural modeling, 2017), co-advised with Mary Ford.
6. Marion Parquer (Data and trend conditioning in pseudo-genetic simulation of sedimentary bodies, 2017), co-advised with Pauline Collon.

Served as external member in the following PhD Committees:

1. John Manchuck (Univ. Alberta, 2010)
2. Jonathan Gallon (Univ. Pau, 2011)
3. Alessandro Comunian (Univ. Neuchâtel, 2011)
4. Cédric Guyonnet-Benaize (Univ. Provence, 2011)
5. Danitza Aburto (Mines Paris Tech, 2012)
6. Mark Lindsay (Univ. Toulouse and Monash Univ., 2012)
7. Andrea Borghi (Univ. Neuchâtel, 2013)
8. Caroline Planteblat (Univ. Lausanne and Univ. Grenoble, 2013)
9. Maria José Ramón (Univ. Zaragoza, Jun. 2013)
10. Fanny Bastide (Univ. Lausanne and Univ. Grenoble, Mar. 2014)
11. Caroline Gardet (Univ. Pierre et Marie Curie, Paris, Nov. 2014)
12. Pierrick Altwegg (Univ. Neuchâtel, Jan. 2015)
13. Caroline Dubois (Univ. Mons, Mar. 2015)

RESEARCH

Research themes:

My research interests concern the development of methodologies to integrate geological and physical observations in a common theoretical and numerical framework. To that respect, I work on defining appropriate geological parameterizations useful to solve possibly joint inverse problems. This requires in particular to look for answers to the following questions:

- How to find proper formalism to translate qualitative geological concepts into rigorous modeling algorithms and rules while honoring quantitative observations?
- How to sample and visualize geological uncertainty in 3D models?
- How to adapt and possibly simplify 3D descriptive geological models to extract the main relevant parameters to solve a given physical problem?
- How to implement these methods into useful technologies for natural resource management? In this frame, I am involved in partnerships with the petroleum industry (**Gocad Consortium**) and with the mineral industry (**EU FP7 Promine Project**).

Distinctions:

2015: Computers & Geosciences Best Paper Award (Computational Category) for Pellerin *et al.* (2014).

2014: IAMG / Computers & Geosciences Award to former PhD student Jeanne Pellerin, on her PhD and postdoctoral research.

2011: Merit Award from Society of Exploration Geophysicists (SEG) to PhD student Nicolas Cherpeau for his presentation at SEG annual conference.

2011: MSc Presentation Award from Society of Petroleum Engineers (SPE) at the European Contest to MSc student Antoine Bouziat.

2009: Vistelius Award of the International Association of Mathematical Geosciences (IAMG).

2009: Significant Achievement Award from Society of Exploration Geophysicists (SEG), to the Gocad Research Consortium.

2007: Texas Instrument Student paper award to PhD student Luc Buatois, for his presentation at the High Performance Computing Conference.

Professional services and memberships:

- 2015: Guest editor of special section in SEG Interpretation (*Building complex and realistic geologic models from sparse data*).
- 2012-2014: Deputy Editor of Mathematical Geosciences
- 2008-2012 and 2015-2017: Board member of Mathematical Geosciences
- 2014: Guest Editor for a Special Issue of Mathematical Geosciences on 3D structural Modeling
- Since 2012: Member of the Scientific Advisory Board of the Advanced Mining Technology Center at Universidad de Chile, Santiago (www.amtc.cl)
- Convener / Committee member at international congresses:
 - IAMG (International Association of Mathematical Geosciences) 2015 (Freiberg)
 - EAGE Integrated reservoir Modeling Conference (Dubai) 2014
 - IAMG 2011 ()
 - IAMG 2009 (Stanford)
 - ECMOR 2008 (Bergen)
 - International Geological Congress 2008 (Oslo),
 - IAMG 2006 (Liège).
- 2010-to-date: Faculty advisor of the SPE student chapter of Université de Lorraine
- 2010-to-date: Co-advisor of the ENSG team participating to the AAPG's *Imperial Barrel Award*.
- 2014: Served in the Jury of the SPE *Student Paper Constest* de la SPE at the Annual Technical Conference and Exhibition in Amsterdam.
- Reviewer for Computers & Geosciences, Mathematical Geosciences, Ore Geology Reviews, Basin Research, Geostatistics Congress, Computers and Graphics.
- Member of Society of Petroleum Engineers (SPE), European Association of Geoscientists and Engineers (EAGE), Society of Exploration Geophysicists (SEG), International Association of Mathematical Geology (IAMG) and *Société Géologique de France* (SGF).

PUBLICATIONS

Bibliometrics (as of July 15, 2015)

Orcid: 0000-0002-7828-4600

ResearcherID: C-5454-2012

28 accepted journal publications, 20 peer-reviewed conference papers, 2 book chapters

Citations : 190 (WoS w/o self-citations) / 248 (Scopus w/o self-citations) / 880 (Google scholar)

h-index : 8 (WoS) / 9 (Scopus) / 16 (Google Scholar)

Submitted papers.

1. *Bardy, G., Biver, P., Caumon, G. and Renard, P. (submitted). Predicting reservoir flow simulation curves from proxies responses : an ensemble distance-based approach. SPE Journal.*
2. *Gentilhomme, T., Oliver, D.S., Mannseth, T., Caumon, G., Moyen, R. and Doyen, P (in rev.). Ensemble-based multi-scale history matching using second generation wavelet transform. Computational Geosciences.*
3. *Ruiii J., Caumon G., Viseur S. (in rev.). Modeling channel forms and related sedimentary objects using a boundary representation based on Non Uniform Rational B-Splines. Mathematical Geosciences*
4. *Ruiii J., Caumon G., Viseur S. (in rev.). Semi-automatic interpretation of 3D-sedimentological structures on geological images: an object-based approach. Interpretation.*
5. *Lallier, F., Caumon, G., Borgomano J., Viseur, S., Royer, J.-J. (in rev.). Uncertainty assessment in stratigraphic well correlation of a carbonate ramp: method and application to the Beausset Basin, SE France. CR Géosciences.*
6. *Julio, C., Caumon, G., Ford, M. (in rev.). Impact of the en-echelon fault connectivity on reservoir flow simulations. Interpretation.*

Peer-reviewed journals

1. *Cherpeau, N., Caumon, G. (in press). Stochastic Structural Modeling in Sparse data situations. Petroleum Geoscience. DOI:10.1144/petgeo2013-030.*
2. *Botella, A., Levy, B., Caumon, G. (in press). Indirect unstructured hex-dominant mesh generation using tetrahedra recombination. Computational Geosciences.*
3. *Philippon, M., de Veslud, C.L.C., Gueydan, F., Brun, J.-P., Caumon, G. (in press). 3D geometrical modelling of post-foliation deformations in metamorphic terrains (Syros, Cyclades, Greece). Journal of Structural Geology. doi:10.1016/j.jsg.2015.07.002*
4. *Collon-Drouaillet, P., Steckiewicz-Laurent, W., Pellerin, J., Laurent, G., Caumon G., Reichart, G, Vaute, L. (2015). 3D geomodelling combining implicit surfaces and Voronoi-based remeshing: A case study in the Lorraine Coal Basin (France). Computers & Geosciences. DOI:10.1016/j.cageo.2015.01.009.*
5. *Pellerin, J., Caumon, G., Julio, C., Mejia, P. and Botella, A. (2015). Elements for measuring the complexity of 3D structural models: connectivity and geometry. Computers & Geosciences 76:130-140.*
6. *Julio, C., Caumon, G., Ford, M. (2015). Stochastic downscaling for segmented normal faults. Tectonophysics 639:56-67. DOI:10.1016/j.tecto.2014.11.013*
7. *Laurent, G., Caumon, G., Jessell, M. (2015). Interactive editing of 3D geological structures and tectonic history sketching via a rigid element method. Computers & Geosciences 74:56-67*
8. *Merland, R., Caumon, G., Lévy, B. and Collon-Drouaillet, P. (2014). Voronoi grids conforming to 3D structural features. Computational Geosciences, 18(3-4):373-383. DOI:10.1007/s10596-014-9408-0*
9. *Pellerin, J., Levy, B., Caumon, G., Botella, A. (2014). Automatic Surface Remeshing of 3D Structural Models at Specified Resolution: a Method Based on Voronoi Diagrams. Computers & Geosciences 62:103-116.*
10. *Mejía-Herrera, P., Royer, J. J., Caumon, G., and Cheilletz, A. (2014). Curvature attribute from surface-restoration as predictor variable in Kupferschiefer copper potentials. Natural Resources Research, 1-16. DOI:10.1007/s11053-014-9247-7*
11. *Giuliani, G., Caumon, G., Rakotosamizany, S., Ohnenstetter, D. and Rakotondrazafy, M. (2014). Classification chimique des corindons par analyse factorielle discriminante : Application à la typologie des gisements de rubis et saphirs. Revue Française de Gemmologie 188:14-22.*
12. *Laurent, G., Caumon, G., Bouziat, A. and Jessell, M. (2013). A parametric method to model 3D displacements around faults with volumetric vector fields. Tectonophysics. 590:83-93. DOI:10.1016/j.tecto.2013.01.015*
13. *Caumon, G., Gray, G.G., Antoine, C. and Titeux M.-O (2013). 3D implicit stratigraphic model building from remote sensing data on tetrahedral meshes: theory and application to a regional model of La Popa Basin, NE Mexico. IEEE Transactions on Geosciences and Remote Sensing 51(3):1613 – 1621. DOI:10.1109/TGRS.2012.2207727.*
14. *Lallier, F., Antoine, C., Charreau, J., Caumon, G. and Ruiii, J. (2013). Management of ambiguities in magnetostratigraphic correlation. Earth and Planetary Science Letters 371-372:26-36*
15. *Durand-Riard, P., Guzowski, C. A., Caumon, G. and Titeux, M.-O. (2013). Handling natural complexity in 3D geomechanical restoration, with application to the recent evolution of the outer fold-and-thrust belt, deepwater Niger Delta. AAPG Bulletin, 97(1):87-102.*
16. *Bonneau, F., Henrion, V., Caumon, G., Renard, P. and Sausse, J. (2013). A methodology for pseudo-genetic stochastic modeling of discrete fracture networks. Computers & Geosciences 56:12-22.*
17. *Lallier, F., Caumon, G., Borgomano J., Viseur, S., Fournier F., Antoine, C. and Gentilhomme, T. (2012). Relevance of the stochastic stratigraphic well correlation approach for the study of complex carbonate settings: Application to the Malampaya buildup (Offshore Palawan, Philippines). Geological Society, Special Publication 370: 265-275.*

18. *Cherpeau, N., Caumon, G., Caers, J. and Lévy, B. (2012). Method for stochastic inverse modeling of fault geometry and connectivity using flow data. Mathematical Geosciences, 44(2):147-168.*
19. *Durand-Riard, P., Salles, L., Ford, M., Caumon, G., Pellerin, J. (2011). Understanding the evolution of syn-depositional folds: Coupling decompaction and 3D sequential restoration. Marine and Petroleum Geology, 28(8):1530-1539*
20. *Viard, T., Caumon, G., Lévy, B. (2011). Adjacent versus coincident representations of geospatial uncertainty: Which promote better decisions? Computers and Geosciences, 37 (4):511-520.*
21. *Henrion, V., Caumon, G., Cherpeau, N. (2010). ODSIM: An Object-Distance Simulation Method for Conditioning Complex Natural Structures. Mathematical Geosciences, 42 (8):911-924.*
22. *Cherpeau, N., Caumon, G., Lévy, B. (2010). Stochastic simulations of fault networks in 3D structural modeling [Simulations stochastiques de réseaux de failles en modélisation structurale 3D]. Comptes Rendus - Geosciences, 342 (9):687-694.*
23. **Caumon, G.** (2010). Towards stochastic time-varying geological modeling. *Mathematical Geosciences, 42 (5):555-569.*
24. *Durand-Riard, P., Caumon, G., Muron, P. (2010). Balanced restoration of geological volumes with relaxed meshing constraints. Computers and Geosciences, 36 (4):441-452.*
25. *Buatois, L., Caumon, G., Levy, B. (2009). Concurrent number cruncher: a GPU implementation of a general sparse linear solver. Int. J. Parallel Emerg. Distrib. Syst. 24 (3):205-223. DOI=10.1080/17445760802337010.*
26. **Caumon, G., Collon-Drouaillet, P., Le Carlier De Veslud, C., Viseur, S., Sausse, J. (2009). Surface-based 3D modeling of geological structures. Mathematical Geosciences, 41 (8), pp. 927-945.**
27. *Fetel, E. and Caumon, G. (2008). Reservoir Flow Uncertainty assessment using response surface constrained by secondary information. Journal of Petroleum Science and Engineering. 60(3-4): 170-182.*
28. *Suzuki, S., Caumon, G. and Caers, J. (2008). Dynamic data integration for structural modeling: model screening approach using a distance-based model parameterization. Computational Geosciences. 12(1): 105-119.*
29. **Caumon, G., B. Lévy, Castanié, L. and Paul, J.-C. (2005). Visualization of grids conforming to geological structures: a topological approach. Computers and Geosciences. 31(6):671-680.**
30. **Caumon, G., Lepage, F., Sword, C. H., and Mallet, J.-L. (2004). Building and editing Sealed Geological Models. Mathematical Geology, Vol. 36 (4), p. 405-424.**

Peer-reviewed Conference proceedings:

1. *Ruiu J., Caumon G., Viseur S. & Antoine C. (2014). Modeling channel forms using a boundary representation based on Non-Uniform Rational B-Splines. Pardo-Igúzquiza E.,Guardiola-Albert C. et al.(Eds.), Mathematics of Planet Earth: 581-584, Springer. DOI:10.1007/978-3-642-32408-6_127*
2. *Bardy, G., Biver, P., Caumon, G., Renard, P., Corpel, V. & King, P.R. (2014). Proxy Comparison for Sorting Models and Assessing Uncertainty on Oil Recovery Profiles. ECMOR XIV-14th European Conference on the Mathematics of Oil Recovery. DOI:10.3997/2214-4609.20141901*
3. *Botella, A., Lévy, B. & Caumon, G. (2014). Indirect Unstructured Hex-dominant Mesh Generation Using Tetrahedra Recombination. ECMOR XIV-14th European Conference on the Mathematics of Oil Recovery. DOI:10.3997/2214-4609.20141857*
4. *Bonneau, F., Caumon, G., Renard, P. & Sausse, J. (2013). Hybrid Discrete Fracture Network Simulation Driven by Statistics, Tectonic History and Geomechanics. Second EAGE Workshop on Naturally Fractured Reservoirs. DOI:10.3997/2214-4609.20132013*
5. *Julio, C. & Caumon, G. (2013). Spatial Constraints for the Stochastic Modeling of Fault Networks in the Presence of Large Structural Uncertainties. EAGE Annual Conference & Exhibition Incorporating SPE Europec. Society of Petroleum Engineers. DOI:10.2118/164899-MS*
6. *Julio C., Lallier F., & Caumon G. (2012). Accounting for Seismic Trends in Stochastic Well Correlation. Abrahamsen P., Hauge R., Kolbjørnsen O. (Eds.), Geostatistics Oslo - Quantitative Geology and Geostatistics 17: 251-262, Springer. DOI: 10.1007/978-94-007-4153-9_20*
7. *Gentilhomme, T., Mannseth, T., Oliver, D., Caumon, G. & Moyen, R. (2012). Smooth Multi-scale Parameterization for Integration of Seismic and Production Data Using Second-generation Wavelets. ECMOR XIII-13th European Conference on the Mathematics of Oil Recovery. DOI:10.3997/2214-4609.20143175*
8. *Laurent, G., Caumon, G., Jessell, M. & Royer, J.J. (2012). A Rigid Element Method for Building Structural Reservoir Models. ECMOR XIII-13th European Conference on the Mathematics of Oil Recovery. DOI:10.3997/2214-4609.20143164*
9. *Merland, R., Lévy, B. & Caumon, G. (2012). Voronoi Grids Conformal to 3D Structural Features. ECMOR XIII-13th European Conference on the Mathematics of Oil Recovery. DOI:10.3997/2214-4609.20143224*
10. *Cherpeau, N., Caumon, G. Caers, J. K. & Levy, B. (2011). Assessing the impact of fault connectivity uncertainty in reservoir studies using explicit discretization. Proc. SPE Reservoir Characterization and Simulation Conference and Exhibition. DOI:10.2118/148085-MS*
11. *Pellerin, J., Lévy, B. & Caumon, G. (2011). Topological control for isotropic remeshing of non-manifold surfaces with varying resolution: application to 3D structural models. Proc. IAMG, Salzburg:678-688.DOI:10.5242/iamg.2011.0158*
12. *Bonneau, F., Caumon, G. Sausse, J. & Renard, P. (2011). Genetic-like modeling of fracture network honoring connectivity data in the geothermal heat exchanger at Soultz-sous-Forêt (France). Proc. IAMG, Salzburg:286-293. DOI:10.5242/iamg.2011.0094*

13. Merland, R. Levy, B. & Caumon, G. (2011). Building PEBI Grids Conforming To 3D Geological Features Using Centroidal Voronoi Tessellations. *Proc. IAMG*, Salzburg:286-292. DOI:10.5242/iamg.2011.0064
14. Merland, R., Lévy, B., Caumon, G. & Collon-Drouaillet, P. Building centroidal Voronoi tessellations for flow simulation in reservoirs using flow information (2011). *Proc. Reservoir Simulation Symposium*, The Woodlands, Texas, USA. DOI:10.2118/141018-MS
15. Laurent, G., Caumon, G., Jessell, M. & Royer, J.J., 2011. 3D Chronostratigraphic Coordinate System Based on Geomechanical Restoration. *73rd EAGE Conference & Exhibition*. DOI:10.3997/2214-4609.20149112
16. Cherpeau, N., Caumon, G. & Levy, B. (2010). Stochastic simulation of fault networks from 2D seismic lines. *SEG Technical Program Expanded Abstracts* 29:1(2366-2370). DOI:10.1190/1.3513325
17. Lallier F., Viseur S., Borgomano J. & Caumon G. (2009). 3D stochastic stratigraphic well correlation of carbonate ramp systems. *International Petroleum Technology Conference*. DOI:10.2523/14046-ABSTRACT
18. Viard T., Caumon G., Gringarten E., Hugot A. & Levy B. (2009). New perspectives for 3D visualization of dynamic reservoir uncertainty. *International Petroleum Technology Conference*. DOI:10.2523/13740-ABSTRACT
19. Henrion, V., Pellerin, J. & Caumon, G. (2008). A stochastic methodology for 3D cave systems modeling. J.M. Ortiz and X. Emery (Eds), *Eighth Geostatistical Congress* 1:525-533. Gecamin Ltd, Santiago
20. Kedzierski, P., Caumon, G., Mallet, J.-L., Durand-Riard, P. & Royer, J.-J. (2008). 3D Marine Sedimentary Reservoir Stochastic Simulation Accounting for High Resolution Sequence Stratigraphy and Sedimentological Rules. J.M. Ortiz and X. Emery (Eds), *Eighth Geostatistical Congress* 2:657-666. Gecamin Ltd, Santiago
21. Bertonecello, A., J. Caers, Caumon, G. & Biver, P. (2008). Geostatistics on Stratigraphic Grids. J.M. Ortiz and X. Emery (Eds), *Eighth Geostatistical Congress* 2:677-686. Gecamin Ltd, Santiago
22. Maharaja, A., Strébel, S., Journel, A.G. & Caumon, G. (2008). Assessment of Net-To-Gross Uncertainty at Reservoir Appraisal Stage: Application to a Turbidite Reservoir Offshore West Africa. J.M. Ortiz and X. Emery (Eds), *Eighth Geostatistical Congress* 1:525-533. Gecamin Ltd, Santiago
23. Caumon, G., Tertois, A.-L., & Zhang, L. (2007). Elements for stochastic structural perturbation of stratigraphic models. *EAGE Petroleum Geostatistics*. DOI:10.3997/2214-4609.201403041
24. Kedzierski, P., Mallet, J.L. & Caumon, G. (2007) Combining Stratigraphic and Sedimentological Information for Realistic Facies Simulations. *EAGE Petroleum Geostatistics*. DOI:10.3997/2214-4609.201403080
25. Caumon, G., Suzuki, S. & Caers, J. (2007). History Matching of Reservoir Structure Subject to Prior Geophysical and Geological Constraints. *EAGE Petroleum Geostatistics*. DOI:10.3997/2214-4609.201403076
26. Buatois, L., Caumon, G. & Lévy, B. (2007). Concurrent Number Cruncher: An Efficient Sparse Linear Solver on the GPU. R. Perrott et al. (Eds.). *Proc. High Performance Computation Conference (HPCC'07)*, Springer, Lecture Notes in Computer Science. 4782:358—371. DOI: 10.1007/978-3-540-75444-2_37. Texas instrument Student paper award
27. Buatois, L., Caumon, G. & Lévy, B. (2006). GPU Accelerated Isosurface Extraction on Tetrahedral Grids. *Proc. ISVC'06*, Lecture Notes in Computer Science, 4291:383-392. Springer, Berlin. DOI: 10.1007/11919476_39
28. Caumon, G., Strebelle, S., Caers, J. K. & Journel, A. G. (2004). Assessment of global uncertainty for early appraisal of hydrocarbon fields. *SPE Annual Technical Conference and Exhibition*. Society of Petroleum Engineers. DOI:10.2118/89943-MS
29. Caumon, G. & Journel, A. G. (2004). Early uncertainty assessment: application to a hydrocarbon reservoir appraisal. O. Leuangthong and C. Deutsch (Eds), *Seventh International Geostatistics Congress (Banff)*: 551-558. Springer. DOI:10.1007/978-1-4020-3610-1_56
30. Caumon, G., Grosse, O. & Mallet, J.-L. (2004). High resolution geostatistics on coarse unstructured flow grids. O. Leuangthong and C. Deutsch (Eds), *Seventh International Geostatistics Congress (Banff)*: 703-712. Springer. DOI:10.1007/978-1-4020-3610-1_71
31. Caumon, G., Sword, C.H. & Mallet, J.-L. (2003). Constrained modifications of non-manifold b-reps. G. Elber and V. Shapiro (Eds), *8th ACM Symposium on Solid Modeling and Applications*, Seattle:310-315. DOI:10.1145/781606.781657
32. Lévy, B., Caumon, G., Conreux, S. and Cavin, X. (2001). Circular Incident Edges Lists: a data structure for rendering complex unstructured grids. T. Ertl, A. Joy and K. Varshney (Eds), *IEEE Visualization*, San Diego:191-198. DOI:10.1109/VISUAL.2001.964511

Book Chapters, other papers:

1. Caumon, G. & Collon-Drouaillet, P. (2014). Special Issue on Three-Dimensional Structural Modeling, *Mathematical Geosciences*, 46(8), 905–908
2. Caumon G., Laurent G., Pellerin J., Cherpeau N., Lallier F., Merland R., Bonneau F. (2012). Current bottlenecks in geomodeling workflows and ways forward. Garner D., Thenin D., Deutsch C. (Eds.), *Closing the Gap: Advances in Applied Geomodeling for Hydrocarbon Reservoirs*. Canadian Society of Petroleum Geologists Memoir 20:43-52.
3. Caers, J. and Caumon, G. (2011). Modeling Structural Uncertainty. *Modeling Uncertainty in the Earth Sciences*, Chap.8, pp.134-151, Wiley-Blackwell.

Invited presentations:

1. Caumon, G. et al (2015). Accurate geological modeling for subsurface applications and the need for uncertainty assessment. GeoBerlin.

2. **Caumon, G.** et al (2015). Should subsurface interpretations be deterministic? The example of 3D geological structures. CWP Progress Meeting, Golden.
3. **Caumon, G.** et al (2011). Structural Framework and Reservoir Gridding: Current Bottlenecks and Way Forward. Proc. CSPG Gussow Conference. 8p.
4. **Caumon, G.** (2010). Geological structures and inverse problems. Workshop in homage to Albert Tarantola, IPGP, Paris.
5. **Caumon, G.** (2009). Towards 5D Geological Modeling, IAMG 2009, Invited Vistelius Presentation. Stanford.
6. **Caumon G.** (2008). Achievements and future challenges in geomodelling. Gocad Mining Users meeting, Mira Geosciences, Vancouver.
7. **Caumon G.,** Royer J.-J. (2008). Nouvelles technologies 3D et potentialités du géomodeleur Gocad appliquées à l'estimation de ressources minérales. 3ème Colloque De Launay, Nancy.
8. **Caumon, G.** (2007). Towards a Better Description of Subsurface Heterogeneities. 4th SPICE Research and Training Workshop, Cargèse, France.
9. **Caumon, G.** (2006). Handling Structural Uncertainty: What can Bayes do for us? Statoil Research Summit, Trondheim.