

# LEANDRO HARTLEBEN MELANI

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## SUMMARY

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Petrophysicist Postdoctoral Fellow at the Bureau of Economic Geology (University of Texas), driving research on energy transition. With previous experience in pre- and post- salt carbonate reservoir characterization projects, my research interests have been focused on petrophysical characterization (well and image log analysis), stratigraphic/cyclicality analysis, and reservoir/fracture modeling, and energy transition.

## EDUCATION

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### **Ph.D. Petroleum Engineering, University of Campinas (Unicamp), Brazil, 2019**

- Dissertation: Borehole based sedimentary cyclicality and structural analysis: applications for reservoir characterization studies in the post- and pre-salt carbonates of Santos and Campos basins, SE Brazil
- Award: CAPES Graduate Research Scholarship

### **M.Sc. Petroleum Engineering, University of Campinas (Unicamp), Brazil, 2015**

- Thesis: Petrophysical characterization of carbonate reservoir
- Award: CNPq Graduate Research Scholarship

### **B.S. Geology, Federal University of Paraná (UFPR), Brazil, 2013**

## EXPERIENCE

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### **Bureau of Economic Geology, University of Texas, Austin, TX - USA**

Petrophysicist Postdoctoral Fellow (02/2023 – Present)

- Petrophysical characterization addressing the heterogeneity of bedded salt formations in the Permian Basin for subsurface hydrogen storage.

### **CEPETRO, University of Campinas, Campinas, SP - Brazil**

Postdoctoral research assistant (09/2019 – 08/2022)

Research assistant (03/2013 – 08/2019)

- Research projects: (I) Characterization of Albian carbonates of the Campos Basin - Equinor; and (II) Development of pre-salt carbonate reservoir incorporating critical geological heterogeneities - Shell.
- Worked on the characterization of a pre-salt carbonate reservoir of the Santos Basin to establish a workflow able to incorporate multi-scale geological heterogeneities (faults, fractures, vugs/karsts) into 3D models. Analyzed small-scale features (fractures and vugs) from image logs, achieving a more accurate reservoir characterization while reducing time for future projects by the application of automated methods for fractures and vugs characterization.
- Performed petrophysical characterization using well logs and image logs.
- Interpreted stratigraphic and cyclicality analysis.
- Assisted in 3D modeling of fractured reservoirs (structural and stratigraphic interpretation, petrophysical properties distribution, DFN modeling).
- Collaborated with a multidisciplinary group in the application of AI techniques to improve well and seismic data interpretation.

- Prepared multiple technical reports and presentations to project sponsors (Equinor and Shell).

### **Petrobras, Macaé, RJ - Brazil**

Technical visit/Internship in carbonate reservoir geology (07/2014 – 08/2014)

- Research on the characterization of an Albian carbonate field of the Campos Basin (Brazil). Performed petrophysical analysis and reservoir modeling using well log and 3D seismic data.

### **SKILLS**

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- Languages: Portuguese (Native), English (Advanced), Spanish (Intermediate), German (Beginner).
- Software: PowerLog (Advanced user), Interactive Petrophysics (Advanced user), Techlog (Intermediate user), Petrel E&P (Intermediate user), Roxar's RMS™ (Basic user).
- Programming: Python (Entry level/basic user).

### **PUBLICATIONS**

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#### **Peer-Reviewed Journal Articles**

- Basso, M., Souza, J.P.P, Honório, B.C.Z., Melani, L.H., Chinelatto, G.F., Belila, A.M.P., Vidal, A.C., 2022, Acoustic image log facies and well log petrophysical evaluation of the Barra Velha Formation carbonate reservoir from the Santos Basin, offshore Brazil: Carbonates and Evaporites 37, <https://doi.org/10.1007/s13146-022-00791-4>
- Melani, L.H., Honório, B.C.Z., Correia, U.M.C., Vidal, A.C., 2020, The use of variational mode decomposition in assisting sedimentary cyclicity analysis: A case study from an Albian carbonate reservoir, Campos Basin, SE Brazil: Geophysics, <https://doi.org/10.1190/geo2019-0447.1>
- Correia, U.M.C., Honório, B.C.Z., Kuroda, M.C., Melani, L.H., Vidal, A.C., 2019, Geometric characterization of igneous intrusions: 3-D seismic insights from the Campos Basin, SE Brazil: Marine and Petroleum Geology, v.102, p.725-739, <https://doi.org/10.1016/j.marpetgeo.2019.01.022>

#### **Main Conference Abstracts**

- Melani, L.H., Correia, U.M.C., Honorio, B. C. Z., and Vidal, A. C., 2021, Integrated Reservoir and Stratigraphic Characterization Based on Sedimentary Cyclicity Analysis of a Pre-Salt Lacustrine Reservoir from the Santos Basin, Offshore Brazil: IMAGE (SEG | AAPG), Denver, CO, USA. (Oral).
- Melani, L.H., Correia, U.M.C., Souza, J.P.P. et al., 2021, Fracture and Vuggy Porosity Analysis of a Pre-Salt Carbonate Reservoir from the Santos Basin (Brazil) Using Acoustic Borehole Image Logs: IMAGE (SEG | AAPG), Denver, CO, USA.
- Melani, L.H., Kuroda, M.C., Souza, J.P.P. et al., 2019, Vuggy porosity analysis in dual-porosity carbonate reservoirs from borehole image logs using a machine learning-based method: 16th Bathurst Meeting - International Meeting of Carbonate Sedimentologists, Mallorca, Spain.
- Kuroda, M.C., Lima, L.M.G., Melani, L.H. et al., 2019, First results from using artificial neural networks to integrate image log information with seismic data to identify vuggy porosity areas in a presalt carbonate field: 16<sup>th</sup> Bathurst Meeting - International Meeting of Carbonate Sedimentologists, Mallorca, Spain.
- Melani, L.H., Schuab, F.B., Mingireanov Filho, I., Vidal, A.C., 2015, The impact of Archie's parameters in the calculation of water saturation for carbonate reservoir, Campos Basin, Brazil: SEG 85<sup>th</sup> Annual Meeting, SEG Technical Program Expanded Abstracts, p.2984-2989, New Orleans, LA, USA.
- Melani, L.H., Schuab, F.B., Kuroda, M.C., Vidal, A.C., 2014, Petrophysical characterization of fractured carbonate reservoir of Quissamã Formation, Campos Basin: 47<sup>a</sup> Brazilian Geological Congress, Salvador, Brazil. (Oral).