JUAN CARLOS **CERDA CHACÓN**

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LinkedIn Profile · **github**

EXPERIENCE

OCTOBER 2023 – PRESENT

SENIOR RESEARCH ASSOCIATE, CENTRO EURO-MEDITERRANEO SUI CAMBIAMENTI CLIMATICI (CMCC), LECCE, ITALY

Software developer for porting, re-coding, re-engineering, and development of operational procedures in the frame of ocean forecasting systems on Linux HPC. Ocean models include NEMO-OPA model for global, and SHYFEM model for coastal regions.

NOVEMBER 2021 – MAY 2024

SENIOR TECHNICAL SPECIALIST, CIGOM-CICESE, ENSENADA, BAJA CALIFORNIA, MEXICO

Implementation and operation of two forecast operational systems on linux HPC, one to analyze oil spill and drift in the Gulf of Mexico, and the second for early detection of sargassum arrival in the Mexican Caribbean, using open source coupled models (CiC-Oil) developed in Python.
It was necessary to upgrade the original code to run different scenarios in parallel and develop customized graphics to analyze outputs to forecast a plausible scenario.

SEPTEMBER 2016 – SEPTEMBER 2021

SENIOR TECHNICAL SPECIALIST, SYCEC, ENSENADA, BAJA CALIFORNIA, MEXICO

Running of the numerical wave models WAve Model (WAM) and Simulation WAves Nearshore (SWAN) to produce hindcast ocean wave behavior in the Gulf of Mexico.
Developing tools for oceanographic data analysis with different programming languages like Matlab, Python, MySQL, NCO routines, NCL, and bash scripts in Linux.
Elaborate technical reports of metocean data (winds, ocean waves, and oceanic currents) obtained by numerical simulators for PEMEX.
Support and maintenance of a Weather Forecast System and its validation.
Develop an analysis tool for record insertion in a MySql database of time logs of numerical model's execution and its web page presentation using Plotly.

JUNE 2014 – FEBRUARY 2019

TECHNICAL ANALYST, CEMIE-GEO CICESE, ENSENADA, BAJA CALIFORNIA, MEXICO

Administration and maintenance of a Linux supercomputer (HPC); technical support to users for submitting program execution in work queue using Portable Batch System (pbs).
Running numerical wave propagation models.
Running of multiphase flow and reservoir transport model using TOUGH2.
Development of tools for performance evaluation of Intel Xeon Phi coprocessors, in the execution of a wave propagation model.

Technical support for the construction of the geothermal reservoir engineering laboratory by visiting and collecting information from the Rocks and Geomaterials Lab at Stanford University, the Rock Dynamics and Imaging Lab at Lawrence Berkeley National Lab, and the US Geological Survey in Menlo Park.

MAY 2010 – MAY 2014

JUNIOR TECHNICAL SPECIALIST, INSTITUTO MEXICANO DEL PETROLEO, ENSENADA, BAJA CALIFORNIA, MEXICO

Provide technical support to PEMEX in supervising the work of the CICESE on the numerical simulation of ocean circulation.

Developing tools for data analysis in Matlab and NCO routines, and processing big data in netCDF format on Linux HPC.

Elaborate technical reports of metocean data (winds, ocean waves, and oceanic currents) produced by numerical simulators for PEMEX.

EDUCATION

OCTOBER 2003

M. SC. IN EARTH SCIENCES WITH SEISMOLOGY ORIENTATION, CICESE, ENSENADA, BAJA CALIFORNIA, MEXICO

Thesis: “Processing of volcanic seismicity: explosions and tremors in the Volcán de Fuego de Colima”

Development of a suite with a graphical interface in Matlab for the analysis and localization of volcanic earthquakes.

NOVEMBER 2000

B. SC. WITH MAJOR IN PHYSIC, UNIVERSIDAD DE COLIMA, COLIMA, MEXICO

Peña Colorada award, for the highest bachelor's score.

JULY 1996

TECHNICAL ANALYST PROGRAMMER, UNIVERSIDAD DE COLIMA, COLIMA, MEXICO

SKILLS

- Python
- Pandas
- MySQL
- C/C++
- HPC administration and support
- PBS and SLURM
- NetCDF and GRIB
- GitHub
- Matlab
- Plotly
- NCO routines
- Bash script
- Linux, MacOS and Windows OS

Fortran

- IBM Spectrum LSF Suite
- Scientific formation

ACTIVITIES

ABOUT ME

I love programming. Since high school, I have had the opportunity to learn different programming languages and develop many tools to analyze data in such different areas as seismology, physical oceanography, volcanology, and geothermal. I think that finding "things" like patterns, sequences, shapes, etc. known or unknown, "hidden" in the data is one of the most challenging tasks now; I believe this is the essence of Data Science.

Throughout my professional life, I have tried to share my experience with others and receive feedback from them to improve my skills, as they say, "the best way to learn is to teach".

Recently, I had the opportunity to collaborate with an old friend in developing a complete framework for volcanic data analysis, using old Matlab scripts and facing the challenge of implementing and improving them in Python.

SCIENTIFIC PUBLICATIONS

Cerda–Chacon, J.C., González-García, A and Wilson, M. “Fiber Optical Sensors for Geothermal Purposes” Geothermal Resources Council Transactions, 42, (2018), 1875-1879.

Zobin, V.M., Gonzáles Amezcua, M., Reyes-Dávila, G.A., Dominguez, T., Cerda-Chacón, J.C. and Chávez Alvarez, J.M. “The comparative characteristics of the 1997-1998 seismic swarms preceding the November 1998 eruption of Volcán de Colima, México”. J. Volcanol. Geotherm. Res., 117, (2002), 47-60.

COURSES AND WORKSHOPS

Workshop: "Modern programming for scientific data analysis using Python"
Telematics Department of CICESE and the Mexican supercomputing network (REDMEXSU) (2016)

Workshop: "Reservoir Stimulation Workshop"
40th GRC Annual meeting & GEA GeoExpo+ (2016)

Workshop: "The TOUGH2 simulator use and applications to geothermal energy"
CeMIE-Geo, CICESE (2014)

Course: "MPI Introductory Course".
Latin American High Performance Computing Conference and ABACUS High Performance Computing School (2016)

Course: "High Performance Scientific Computing on Distributed Platforms".
Latin American High Performance Computing Conference and ABACUS School of High Performance Computing (2016)

Course: "Geophysics applications to geothermal exploration and development using a resource conceptual model approach"
CeMIE-Geo, CICESE (2016)

Course: "TOUGH Short Course".
Lawrence Berkeley National Laboratory (2014)

Course: "Introduction to parallel programming with OpenMP, 2014"
CICESE (2014)

Attendance: “HPC + Big Data Technologies Workshop”
Telematics Department of CICESE and the Mexican supercomputing network (REDMEXSU) (2016)

Attendance: “40th GRC Annual meeting & GEA GeoExpo+”
Geothermal Resource Council (2016)

Attendance: “10th Workshop on Applications of Physics of Porous Media”
CICESE, (2014)