

CV of W. J. (Jim) Metcalf, III

metcalf.wj@gmail.com, 919-454-4895

Employment History

- Chief Data Scientist, Center for Genomic Medicine, Desert Research Institute, Reno, NV* 11/15 - present
Responsible for general data science and advanced analytic assessment of data from a one-of-its-kind population health study with Renown Health and sequencing partner Helix. This study merges environmental and genetic data with electronic healthcare records (EHR) to determine factors influencing health outcomes. Extensive use of SAS and ESRI platforms to gain greater insight into population health.
- R&D Senior Director of Validation and Testing, Advanced Analytics Division, SAS, Cary, NC* 03/11 – 10/15
Responsible for numeric validation of advanced analytics products that include [STAT](#), [ETS](#), [QC](#), [OR](#), [IML](#), [Enterprise Miner](#), [Text Miner](#), and [SAS Studio University Edition](#). Numerical accuracy of all output, functional testing, integration testing, regression testing and test automation were key focus areas to ensure software quality. Staff of 65 testers, most of whom were PhDs in their respective areas of expertise. A *significant* effort during this time period was validation of [SAS High Performance Analytics](#) (HPA) with eight releases delivered to market during a three year period. SAS HPA works in MPP (massively parallel processing) environments as well as on multi-core desktop environments. Large computational problems that were intractable are able to be solved in minutes with this product. Testing software in these multi-hundred node heterogenous environments required careful attention to test plan detail and execution. Extensive use of UNAVCO geophysical data products to stress test software.
- R&D Senior Director of Testing, BI Clients Division, SAS, Cary, NC* 12/07 - 03/11
Responsible for testing and validation of web and desktop clients in a division with \$500MM in annual revenue. Performance characterization, functional testing, integration testing and test automation were key focus areas to ensure quality. Staff of 43 testers. First senior director of testing in company history.
- R&D Director of Web Product Development, BI Clients Division, SAS, Cary, NC* 05/04 - 12/07
Responsible for market-driven requirements delineation, development planning, project management, software quality and ultimate delivery to market of SAS Web Products that ultimately accounted for nearly \$1B in total revenue. Staff of 28 developers. Significant development effort involved incorporating ESRI ArcGIS into the product to produce the first web-based GIS/OLAP query and reporting system in the market.
- Director of Technology Product Management and Strategy, Worldwide Marketing, SAS, Cary, NC* 12/02 - 05/04
Responsible for product management of 45 products representing \$950MM in revenue. Staff of 22 product managers. Delivered numerous products to market including two flag-ship products: SAS Data Integration Studio and SAS Web Report Studio. Also delivered six flag-ship technology product bundles to market including Enterprise BI Server and [Enterprise Data Integration Server](#). Key driver of [Pragmatic Marketing](#) product management inbound marketing methodology throughout 1200 person R&D organization to deliver market-driven requirements to R&D. Launched SAS 9 and delivered more than 30 keynote presentations to audiences around the world as part of the launch.
- Manager of Foundation Technology Product Management and Strategy, Worldwide Marketing, SAS* 07/02- 012/02
Responsible for product managing 30 SAS products representing more than \$700MM total revenue. Significant field support, product marketing, collateral creation, and interaction with SAS R&D. Significant number of technical presentations of the SAS vision to audiences large and small. Staff of four.
- Product Manager, SAS Foundation Technologies Product Management, Worldwide Marketing, SAS* 07/01-07/02
Responsible for product managing 10 SAS technology products, including the flagship product Base SAS. Advocated, used and drove Pragmatic Marketing product management process to deliver market-driven requirements to R&D.
- Product Strategist, SAS Technology Strategy, Worldwide Marketing, SAS, Cary, NC* 07/00-07/01
Worked on a team to create SAS Business Intelligence vision and requirements using Pragmatic Marketing process. Delivered the vision and requirements to executive management and R&D. Resulted in company-wide investment to build web-based query and reporting products to compete with Cognos, Business Objects and MicroStrategy. Also created and implemented 'open' platform strategy, message and collateral. Resulted in field and customers understanding that SAS is an open platform that adheres to commonly-accepted computing standards.
- Senior Applications Developer, Business Solutions Division, SAS, Cary, NC* 10/95-7/00
Designed, implemented, documented and supported features for the following SAS products: Open OLAP Server, CFO/Vision, Risk Dimensions and SAS/EIS.

CV of W. J. (Jim) Metcalf, III

Quality Assurance Analyst, Display Products Division, SAS, Cary, NC

10/93-10/95

Responsible for testing SAS/AF Screen Control Language components. Wrote Globe Oil Company demo for Saudi Aramco proof of concept that resulted in a significant sale. Reported numerous defects in SAS software. Created new technique to automate cross-host testing.

Leasehold Strategist/Lead Geophysicist, Deepwater Division, Shell Offshore, Inc., New Orleans, LA

11/91-10/93

Responsible for leading 20 earth science professionals searching for oil using Shell's 3D GIS seismic interpretation system. Responsible for developing deepwater leasehold strategy (what acreage to hold, drop, drill) for some 465 tracts in the Gulf of Mexico. Developed 'Tracker' application in SAS/FSP and ESRI's ARCInfo to optimize and manage this acreage (2.7 MM acres and \$1.3 billion of company leasehold). Tracker was used to devise a critical operating plan and strategy for the Shell Deepwater acreage portfolio. Further, the ESRI integration allowed Shell to more easily compute income tax for expensed seismic data versus capitalized seismic data based on the location of the seismic line.

Senior Geophysicist, Mars Operations Group, Shell Offshore, Inc., New Orleans, LA

5/91-11/91

Seismically calibrated 750 MM billion barrel "Mars" prospect oil pay using the Shell 3D GIS system. Received award from Shell company president for inventing and using this new technique of compensating acoustic rock properties for stress. Mars is the largest prospect discovered in the Gulf of Mexico in the last 35 years and represents some \$20 billion dollars in future cash flow for the company. Mission critical project to open up Shell Deepwater Gulf of Mexico play.

Workstation Systems Project Leader, Shell Offshore, Inc., New Orleans, LA

10/90-5/91

Responsible for devising and then implementing hardware and software deployment strategy for some 500 anxious users and 180 exploration workstations and then communicating this strategy to them and senior Shell management. Staff of 12. \$1.8MM annual budget

Geophysical Applications Project Leader, Shell Offshore, Inc., New Orleans, LA

10/89-10/90

Functioned as technical liaison between 70 end-users and 12 research developers for Shell's proprietary 3D GIS interpretation and mapping system. Gathered requirements/complaints/problems from users, prioritized them, validated the requirements, and then worked with development team to get them implemented. Had 35 major enhancements and numerous minor ones implemented. Staff of 7. Responsible for loading 3D seismic data to workstations from Cray Y-MP. Responsible for all geophysical applications at the company (licensing, support, training--more than 30 apps in all). Conducted user meetings with frustrated users to gather requirements. The Shell 3D GIS system is responsible for the discovery of literally tens of billions of dollars of hydrocarbons at Shell. Prior to my involvement it was considered buggy and unstable. Our group stabilized it.

Mapping and processing geophysicist, Shell Offshore, Inc.

8/85-10/89

Prospected for oil in the Gulf of Mexico. Exploration recognition award for 3-year mapping and prospecting effort. Generated 23 prospects resulting in 19 OCS blocks leased. Two wells drilled—one being a discovery. Gave hundreds of technical presentations regarding prospective drill sites. Responsible for bringing in-house the first 3D GIS interpretation system--GECO's Charisma--and fully supporting it to explore for hydrocarbons.

Research Assistant, Univ. of Oklahoma School of Geology and Geophysics

2/84-12/84

Entered, validated and then analyzed 1600 archeomagnetic hearth samples from around the world to determine age of the hearths based on polar wander curves. Culmination of nearly thirty years of data gathering by geophysics professor Robert L. DuBois that was previously featured in *National Geographic*. Used NCAR Graphics for polar plots.

Programmer, Jartran Corporation, Moore, OK

1984

Used SAS reporting capability to analyze 30 truck rental dealers in Oklahoma. Never before done. Presented to Jartran CEO as an example of how to use computers to assist in running the business by using detailed reporting.

Education

M. S. Geophysics, Univ. of Oklahoma, 1985, GPA 3.4/4.0; Thesis: "[Thermal Maturation by Vitrinite Reflectance of the Woodford Shale, Arbuckle Mountains, Oklahoma](#)", Cardott, BJ; Metcalf, WJ; Ahern, JL; 1985

B. S. Geophysics, Univ. of Oklahoma, 1983, 3.25/4.0; Thesis: "Apatite fission track dating of Tishomingo Granite, Southern Oklahoma Arbuckle Mountains"; Metcalf, WJ; Ahern, JL; Crowley, KD; 1983

Ten weeks field mapping the East Kaibab monocline. Jacob Lake, AZ, Summer 1983; measured fractures for structural geology PhD project under RJ Stein, University of Oklahoma Geology Field Camp Director

CV of W. J. (Jim) Metcalf, III

Computer Skills

SAS language programming. 39 years.

ESRI GIS products: 34 years

C: Primarily socket programming for Open OLAP Server. 4 years.

C++: Wrote administration console for Open OLAP Server inside of Microsoft Dev Studio. 4 years.

C#, Java and JavaScript based on EXTJS (Sencha) library in Microsoft Dev Studio: portfolio optimization product. 2 years.

SCL (SAS proprietary OO language): for SAS/EIS and CFO Vision and Risk Dimensions. 5 years.

Significant experience using VB/VBA to create custom plugins for a variety of uses in Office products. 12 years.

ZMAP+, Landmark's Zycor Mapping language and ZYCOR itself. 5 years.

EPIRUS, Shell proprietary kriging/contour mapping package. 8 years.

R: have used various R packages to cross-validate results from SAS. 2 years.

Python: used to explore integer partitioning problem from Ramanujam

Selected Papers

"SARS-CoV-2 test positivity rate in Reno, Nevada: association with PM_{2.5} during the 2020 wildfire smoke events in the western United States", D. Kiser, G. Elhanan, WJ Metcalf, B Schnieder, JJ Grzymiski, *Journal of Exposure Science & Environmental Epidemiology* volume 31, 797–803 (2021), <https://doi.org/10.1038/s41370-021-00366-w>

"Particulate matter and emergency visits for asthma: a time-series study of their association in the presence and absence of wildfire smoke in Reno, Nevada, 2013–2018" D Kiser, WJ Metcalf, G Elhanan, K Schlauch, A Joros, J Grzymiski. *Environ Health* **19**, 92 (2020). <https://doi.org/10.1186/s12940-020-00646-2>

"Acute associations between PM_{2.5} and ozone concentrations and asthma exacerbations among patients with and without allergic comorbidities", NA Rosenquist, WJ Metcalf, SY Ryu, *et al.* *J Expo Sci Environ Epidemiol* (2020).

"Genome-wide rare variant analysis for thousands of phenotypes in over 70,000 exomes from two cohorts", ET Cirulli, S White, RW Read, G Elhanan, WJ Metcalf, KA Schlauch, J Grzymiski, J Lu, NL Washington, *Nat Communications* **11**, 542 (2020). <https://doi.org/10.1038/s41467-020-14288-y>

"Population Genetic Screening efficiently identifies carriers of autosomal dominant diseases", J Grzymiski, G Elhanan, JA Morales Rosado, E Smith, KA Schlauch, R Read, C Rowan, N Slotnick, S Dabe, WJ Metcalf, B Lipp, H Reed, L Sharma, E Levin, J Kao, M Rashkin, J Bowes, K Dunaway, A Slonim, N Washington, M Ferber, A Bolze & J T Lu, *Nat Medicine*, **26**, 1235-1239(2020)

"A Comprehensive Genome-wide and Phenome-wide Examination of BMI and Obesity in a Northern Nevadan Cohort", KA Schlauch, RW Read, VC Lombardi, G Elhanan, WJ Metcalf, A Slonim, J Grzymiski, *G3: GENES, GENOMES, GENETICS*, February 1, 2020 vol. 10 no. 2 645-664; <https://doi.org/10.1534/g3.119.400910>

"GWAS and PheWAS of Red Blood Cell Components in a Northern Nevadan Cohort", RW Read, KA Schlauch, Gai Elhanan, WJ Metcalf, A Slonim, R Aweti, R Borkowski, J Grzymiski, June 2019, *PloS One* 14(6)

"Thermal Maturation by Vitrinite Reflectance of Woodford Shale near Washita Valley fault, Arbuckle Mountains, Oklahoma", BJ Cardott, WJ Metcalf and JL Ahern, 1990, in Nuccio, V.F., and Barker, C.E., eds., *Applications of thermal maturity studies to energy exploration: S.E.P.M. Rocky Mountain Section*, pp. 139-146.

"Pay Estimation at Mars", WJ Metcalf, CL West, 1991, Petrophysical report that doubled the size of Mars volumes

"EB165: A good thing in a small package", WJ Metcalf, NL Braunsdorf, 1987, internal Shell Quarterly Research Summary

"GB224: Debris flow deposits in Garden Banks", NL Braunsdorf, WJ Metcalf; 1988, internal Shell Quarterly Research Summary

"P3 Structure Map of High Island and Northern East Breaks", WJ Metcalf, 1988, internal Shell Quarterly Research Summary

CV of W. J. (Jim) Metcalf, III

Selected Abstracts and Posters

“Short-Term Sentinel Air Events in Relation to Health Care Utilization for Specific Health Conditions in Reno, Nevada”, CJ Rowan, WJ Metcalf, G Elhanan, AN Joros, JJ Grzymalski, 2018, American Thoracic Congress, San Diego, CA

“Short-term Air Quality Fluctuation and Pediatric Respiratory Disease in Reno, Nevada” A Field-Ridley, WJ Metcalf, G Elhanan, AN Joros, N Rosenquist, MJ Coppes, 2018, Pediatric Academic Societies Meeting, Toronto, CAN

“Hydromorphone Orders at Renown Hospital”, K Ward, A Porath, D Gillespie, S Clodfelter, WJ Metcalf, 2018, American Society of Hospital Pharmacists, Denver, CO

Selected Presentations

[“The Healthy Nevada Project”](#), Metcalf WJ, 2018

[“The Internet of Things through an Instrumented Earth”](#), Metcalf, WJ, November 2014

[“Numeric Validation: A Critical Component in Building Commercial Grade Software”](#), Metcalf, WJ, November 2014

[“The Practical Union of OLAP and Geographic Mapping: A Storybook Example from Mars”](#), Metcalf, WJ, 2008

Selected Blog Posts

More than 50 internal technical blog posts as “Metcaffeine” for internal consumption about scientific computing with SAS. Read by more than 10,000 employees. Third most widely-read blog inside of SAS firewall.

[“Shazam!”](#), Metcalf, WJ, March 2010

[“You can see the tsunami arriving at station B928”](#), Metcalf, WJ, May 2011

[“The Control of Nature: Redux”](#), Metcalf, WJ, August 2011

[“When a Hurricane Enters the Gulf of Mexico”](#), Metcalf, WJ, August 2008

[“Is there Oil off the North Carolina Coast?”](#), Metcalf, WJ, August 2008

[“Does the supply of gasoline fluctuate with regularity?”](#), Metcalf, WJ, April 2011

[“U. S. Crude oil prices correlate negatively with supply”](#), Metcalf, WJ, April 2011

[“Making a launch date by system integration testing Saturn V rockets”](#), Metcalf, WJ, September 2010

[“Crowdsourcing of Innovation: The Netflix Prize”](#), Metcalf, WJ, July 2009

[“Hurricane Ike and the Gas Price Spike”](#), Metcalf, WJ, September 2008

Other

Keynote Presenter at many SAS User Groups, 2000-2014: Presented to SAS customers in Whitehorse, Vancouver, Victoria, Toronto, Edmonton, Calgary, Halifax, Quebec City, Montreal, and Des Moines about SAS 9 features and functions.

Keynote Presenter, SAS Celebration of Shared Success Customer Retention campaign, 2000-2004; Presentations to hundreds of customers about new features in SAS 9.

Keynote Presenter, Internal SAS 9 launch, 2000-2003; numerous technology transfer presentations to technical staff on SAS 9 architecture. Click [here](#) to watch my presentation style.

Recruiter, Shell Oil Co, 89-93, 5 years recruiting/interviewing some 700 technical exploration candidates at universities around the country. Spent two weeks a year interviewing for new earth scientists.

Chairman, Supervisory Committee, 88-91, Shell Employees of New Orleans Federal Credit Union, \$30MM institution.

CV of W. J. (Jim) Metcalf, III

Academic Misconduct Board, University of Oklahoma, 1980-1982.

Summited Grand Teton, July 2009; Popocatepetl, 1981

Pikes Peak Marathon finisher, August 1980

Rock climbing instructor, Philmont Scout Ranch staff, 1979 and 1980

Eagle Scout