Curriculum Vitae



Name: Jamal Asfahani

Address: P.O.Box: 6091,

Damascus, Syria.

Title: Ph.D. Researcher Director and

Full Professor in Applied Geophysics.

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Place and Date of Birth: Damascus, Syria

9/3/ 1958

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Qualifications:

B.Sc.: in Applied Geology, Damascus University, Damascus, Syria. 1980.

DEA; in Geophysics, Faculty of Sciences, Landuc University, Montpellier, France, 1985.

Ph.D. in Applied Geophysics, Institute National Polytechnic de Loraine (INPL), France, 1989.

Language: French and English

Experience:

1989-1992: My interest was oriented toward developing quantitative interpretation methods for natural gamma ray well logging in uranium and phosphate exploration activities performed on Syrian territories,

applying mainly numerical analysis methods.

1992-1997: My scientific interest was directed toward developing quantitative interpretation methods using surface geolectrical methods for non metallic deposits such as sulfur, phosphate etc. depending primarily on quantitative interpretation methods in geophysics.

1997-to date: My scientific efforts were divided into the three following trends:

Sharing in the development of new nuclear well logging spectrometric gamma-gamma probes for determining the percentage concentration of Pb, Zn and Ash.

Advanced theoretical geophysical fundamentals serving for inventing new interpretative methods using nonlinear programming techniques for widely applied traditional geophysical methods such as SP, magnetic and gravity methods.

Inventing new geoelectrical configurations for measuring natural induced polarization in wells.

Geoelectric survey and three-dimensional interpretations to map and characterize geophysically subsurface geology and structures, hence delineate the different aquifers in semi-arid areas, (Khanasser valley, Northern Syria). Extended hydro-geophysical researches have been conducted by the author for characterizing and modeling the aquifers in arid and semi-arid regions, and in basaltic areas. Different methodological approaches have been also proposed for delineating the polluted and protected aquifers in Syria and other countries.

Teaching: Damascus University.

Symposia, Conferences and scientific visits

1992: One-month scientific visit to Mineral Atomic Division, Hyderabad, India.

1995: Two weeks training on new purchased well logging equipments, Robertson Geology Society, UK.

1996: Two weeks scientific visit to ICTP, Trieste, Italy

1997: Four-month scientific visit to CSIRO, Brisbane, Australia, contribution in developing new nuclear well logging spectrometric gamma-gamma probes for quantitative determination of Pb, Zn and Ash. three papers were published according to this visit.

2001: Two weeks scientific visit to CSIRO, Brisbane, Australia.

2019: Two weeks scientific visit to Atomic Energy Commission of Malaysia.

Prizes, Awards

1- Nobel Laureate Prof. SALAM Prize for young scientists in Syria, April 2004.

2- Scopus Award, 15-12-2008.

Occupation:

- Head of Geology and Nuclear Material Division, Department of Geology, Atomic Energy Commission, Syria.
- Head of Geology Department .
- Collaborative expert with ACSAD in hydro-geophysical domain and water resources.

Main interest

My main interest in applied geophysics is the inversion methods. We are currently developing new inversion approaches for interpreting SP, Geoelectrical, Gravity, and Magnetic data. Different approaches for

uranium prospecting have been also developed by using aerial and ground gamma-ray spectrometry and multifractal techniques.

Publications

1- **[Asfahani J 1985] :** Contribution a l'étude diagraphique nucléaire dans le domaine d'investigation uranifère dans le bassin de Lodève; Diplôme d'études approfondies (DEA). **Université de Montpellier, France.**

2- **[Asfahani J 1989] :** Méthodologies de prospection uranifère a grande profondeur par les mesures geoélectriques en surface et dans les trous de forage. Thèse de Docteur de INPL: **Institut National polytechnique de Lorraine, France.**

3- **[Asfahani J.,** Kamarji **Z 1996]**: The Automatic Interpretation of Natural Gamma ray in Well Logging at the Phosphatic Deposits in the Palmyra Region in syria. **J.** Applied Radiation and Isotopes, V 47, 591-598.**1996**

4- **[Asfahani J 1999] :** Optimization of spectrometric gamma-gamma probe configuration using very low radioactivity sources for lead and zinc grade determination in borehole logging. Applied Radiation and Isotopes, V 51, 449-459, **1999**.

5- **[Asfahani J 1999] :** Determination of radioactive and phosphatic layers by measuring gama-rays intensities in well logging in the south Al-Abter region in Syria, using numerical methods of analysis. Journal of KAU, V11,39-51, **1999**.

6- **[Asfahani J,** Mohamad R **2000] :** Investigation of Electrical Properties of Radioactive Phosphatic Layers in Al-Sharquieh Mine, Syria. Exploration and Mining Geology, Vol. 9, No.2, 141-148, **2000**.

7- **[Asfahani J,** Abdul-Hadi A **2001] :** Geophysical natural gamma ray well logging and spectrometric signatures of south AL-Abter phosphatic deposits in Syria.. Applied Radiation and Isotopes, 54, 543-557, **2001**.

8- **[Asfahani J and** Tlas M **2002] :** A Nonlinear Programming Technique for the Interpretation of Self- Potential Anomalies**..** Pure and Applied Geophysics, 159, 1333-1343, **2002.**

9- **[Asfahani J 2003] :** Optimization of low activity spectrometric gamma-gamma probes for ash determination in coal stockpiles**..** Applied Radiation and Isotopes, V 58, 643-649.

10- 10- **[Asfahani J** and Tlas **M 2004] :** Nonlinearly constrained optimization theory to interpret magnetic anomalies due to vertical faults and thin dikes.. Pure and Applied Geophysics, 161, 203-219, **2004**.

11 **- [Asfahani J 2004] J. Asfahani]:** New methodology for computation of Earth polarizability from telluric currents, measured at different frequencies.. Journal of PAGEOPH, V161, 1749-1775.

12- **[Asfahani J 2004] :** Phosphate prospecting using natural gamma ray well logging in the Khneifiss mine, Syria.. Journal of Exploration and Mining Geology, Vol, 11, Nos, 1-4, 61-68.

13- **[Asfahani J** and Mohamad R **2004] :** Geoelectrical investigation for sulfur prospecting in Teshreen structure in northeast Syria. Journal of Exploration and Mining Geology, Vol, 11, Nos, 1-4, 49-59.

14**- [Asfahani J** and Tlas M **2005] :** A constrained nonlinear inversion approach to quantitative interpretation of self-potential anomalies caused by cylinder, sphere and sheet like structures.. Pure and Applied Geophysics, 162, 609-624.

15- **[Asfahani J** *et al*, **2005] :** Statistical approach for uranium and phosphate exploration by aerial spectrometric technique in Al-Awabed area in Syria**.** Journal of Applied Radiation and Isotopes, 62, pp 649-661.

16- **[Asfahani J 2005] :** Directional borehole logging configurations using dc and telluric methods for detecting deep conductors not intersected by wells. Pure and Applied Geophysics, 162, pp 2523-2556.

17- **[Tlas M *et al*, 2005] :** A versatile nonlinear inversion to interpret gravity anomaly caused by a simple geometrical structures**..** Pure and Applied Geophysics, 162, pp 2557-2571.

18- **[Asfahani J** *et al*, **2005] :** In situ delineation of coal seams in dry blast holes with a low gamma ray activity logging tool. Presented in coal Symposium in Australia.

19- **[Asfahani J** and Tlas M **2005] :** A constrained nonlinear inversion approach to quantitative interpretation of self-potential anomalies caused by cylinder and sphere like structure**..** Journal of Geophysics,Vol. XXVI, No.2, PP 109-115.

20- **[Asfahani J** *et al*, **2006] :** Identifying spectrometric signatures of phosphate deposit and enclosing sediments in Al-Awabed Area, Northern Palmyrides, Central Syria by the use of statistical factor analysis.. Applied Radiation and Isotopes, 64, 1082-1090.

21- **[Asfahani J 2006] :** New spectrometric nuclear geophysical well logging techniques using low radioactivity sources and their several industrial and Mining applications,. Presented at Eighth Arab Conference on the Peaceful Uses of Atomic Energy, 3-7-December.

22- **[Asfahani J 2007] :** Geoelectrical investigation for characterizing saline ground-water in semi arid region in Khanasser valley in Syria**..** Journal of Arid Environment Vol.68, 31-52.

23- **[Asfahani J 2007] :** Electrical earth resistivity surveying for delineating the characteristics of ground water in semi arid region in Khanassr valley, Northern Syria.. Journal of Hydrological processes Vol.21, 1085-1097.

24- **[Asfahani J** and Borsaru M **2007] :** Low activity spectrometric gamma-Ray logging technique for delineation of coal/rock interfaces in dry blast holes**..** Journal of Applied Radiation and Isotopes, Vol 65, 748-755.

25- **[Asfahani J 2007] :** Neogens aquifer specified through the interpretation of vertical electrical sounding data, Salamieyeh region, Central Syria. Journal of Hydrological processes Journal Vol.21, 2934-2943.

26- **[Asfahani J** *et al,* **2007] :** Uranium migration in sedimentological phosphatic environments in Al-Awabed, Northern Palmyride, Syria.. Journal of Applied Radiation and Isotopes, Vol 65, 1078-1086.

27- **[**Tlas M and **Asfahani J 2007] :** Interpreting self- potential anomaly caused by two dimensional inclined sheet like structure using Maximization of a likelihood function.. Journal of Geophysics, XIX,No 4, pp. 219-224.

28- **[Asfahani J** and Tlas M **2007] :** A Robust nonlinear inversion for the interpretation of magnetic anomalies caused by faults, dikes and spheres like structures using stochastic algorithms. Pure and Applied Geophysics, 164, PP 2023-2042.

29-**[**Tlas M and **Asfahani J 2007] :** A best estimate approach for determining self-potential parameters related to simple geometric shaped structures. **.** Pure and Applied Geophysics, 164, PP 2313-2328.

30- **[Asfahani J** and Radwan Y **2007] :**Tectonic evolution of Khanasser valley through the interpretation of vertical electrical soundings. Pure and Applied Geophysics, 164, PP 2291-2311.

31- **[Asfahani J** *et al*, **2008] :** Aerial gamma spectrometric survey as a tool for evaluating the uranium remobilization degree. Case study from Al-Awabed area, Northern Palmyride, Syria. Applied Radiation and Isotopes, 66, PP1262-1274.

32- **[Asfahani J** and Tlas M **2008] :** An automatic method of direct interpretation of residual gravity anomaly profiles due to spheres and cylinders**.**. Pure and Applied Geophysics, 165, PP 981-994.

33- **[Asfahani 2008] :** The Role of solutions movement in forming uranium occurrences in Foroqlus and Abou Rabah regions, Northern Palmyrides, Syria, Presented at Ninth Arab Conference on the Peaceful Uses of Atomic Energy, 13-16 December.

34- **[Asfahani J** *et al,* **2009] :** Uranium statistical and geological evolution of airborne spectrometric data in Al-Awabed region and its surroundings (Area-3), Northern Palmyrides, Syria. Applied Radiation and Isotopes, 67, 654-663.

35 **– [Asfahani J** *et al,* **2010] :** The impact of the peculiar tectonic setting of Al-Lujj area on Qastoon dam lake, Northern eastern Ghab depression, Syria. Pure and Applied Geophysics, 167, 323-338.

36- **[Asfahani J 2010] :** Application of surfacial geoelectrical resistivity technique in hydrogeology domain for characterizing saline groundwater in semi arid regions.. (Benjamin Veress and Jozsi Szigethy, Editors) Horizons in Earth Science Research Series, Volume 1, NOVA Science Publishers, PP 351-381.

37- **[Asfahani J** *et al,* **2010] :** Geological and Hydrogeological Conditions for Forming Uranium Occurrences in Froqlos-J. Abou Rabah

Region, Palmyrides, Syria. Exploration and Mining Geology, Vol 19, Nos. 1-2, P.1-12.

38- **[Asfahani J 2010] :** Electrical Resistivity Investigations for Guiding and Controlling Fresh Water Wells Drilling in Semi Arid Region in Khanasser Valley, Northern Syria. Acta Geophysica, DOI: 10.2478/S11600-0010-0031-8. vol. 59, no. 1, pp. 139-154.

39- **[Asfahani J 2011] :** Basalt characterization by using nuclear and electrical well logging techniques, case study from southern Syria. Applied Radiation and Isotopes 69, 641-647.

40- **[Asfahani J 2011] :** The Role of Geoelectrical DC Methods in Determining the Subsurface Tectonics Features. Case Studies from Syria.Tectonics, Damien Closson (Ed.), ISBN: 978-953-307-545-7, InTech Available from: http://www.intechopen.com/articles/show/title/the-role-of-geoelectrical-dc-methods-in-determining-the-subsurface-tectonics-features-case-studies-f..

41- **[** Tlas M and **Asfahani J 2011] :** Fair Function Minimization for the Interpretation of Magnetic Field Anomalies Caused by Thin Dikes, Spheres and Faults-Like Structure. Journal of Applied Geophysics.,75, 237-243.

42- **[**Tlas M and **Asfahani J 2011] :** A new best-estimate methodology for determining magnetic parameters related to field anomalies produced by buried thin dikes and horizontal cylinders-like structures. Pure and Applied Geophysics., 168, 861-870.

43- **[Asfahani J** and Tlas M **2011] :** Fair Function Minimization for Direct Interpretation of Residual Gravity Anomaly Profiles Due to Spheres and Cylinders. Pure and Applied Geophysics. DOI 10.1007/s00024-011-0319-x.

44- **[Asfahani J 2011] :** Geophysical Case Study of Shallow and Deep Structures Based on Traditional and Modified Interpretation Methods: Application to Tectonic Studies and Mineral Exploration. Exploration and Mining Journal. Vol. 19, Nos. 3–4, p. 117–134.

45- **[Abdul-Wahed MK** *et al*, **2011] :** A combined Methodology of Multiplet and Composite Focal Mechanism Techniques for Identifying Seismological Active Zones in Syria. Acta Geophysica. vol. 59, no. 5, pp. 967-992.

46- **[Asfahani J 2012] :** Quaternary Aquifer Transmisivity Derived from Vertical Electrical Sounding Measurements in the Semi Arid Khanasser Valley Region, Syria. Acta Geophysica. DOI: 10.2478/s11600-012-0016-x. vol. 60, no. 4, Aug. 2012, pp. 1143-1158.

47- **[Asfahani J** and Abdul-wahed M **2012] :** Evaluation of the Instrumental Earthquake Activity Along the Serghaya Fault, Syria.. Acta Geophysica. DOI: 10.2478/s11600-012-0059-z.

48- **[Asfahani J** and Abou Zakhem B **2012] :** Geoelectrical and Hydrochemical Investigations for Characterizing the Salt Water Intrusion in the Khanasser Valley, Northern Syria. Acta Geophysica. DOI: 10.2478/s11600-012-0071-3.

49- **[**Tlas M and **Asfahani J 2012] :** An approach for Interpretation of Self-Potential Anomalies Due to Simple Geometrical Structures Using Fair Function Minimization. Pure and Applied Geophysics. DOi: 10.1007/s00024-012-0594-I.

50- **[Asfahani J** and Abdel Ghani B **2012] :** Automated Interpretation of Nuclear and Electrical Well Loggings for Basalt Characterization. Case study from Southern Syria. Applied Radiation and Isotopes. 70, 2500–2506.

51- **[Asfahani J** *et al,* **2012]** Radioactive and Geological Analysis for Identify and Locate Favorable Structures for Uranium Prospecting in Syrian Desert (Area-1), Syria**..** Applied Radiation and Isotopes. 70, 2317–2327.

52- **[Asfahani J 2013] :** Ground Water Potential Estimation by Using Geoelectrical Methods in the Semi Arid Khanasser Valley Region, Syria**..** Hydrological Science Journal, 58(2), DOi: org/10. 1080/02626667.2012.751109.

53- **[Asfahani J 2014] :** Statistical Factor Analysis Technique to Interpret Nuclear and Electrical Well Logging Measurements for Basalt Characterization. Case study from Southern Syria**..** Applied Radiation and Isotopes. 84, 33-39.

54- **[Asfahani J** *et al,* **2014] :** The use of nuclear prospecting measurements for characterizing the radioactive status of Al-Bayyarat and Sabkhet Mouh areas, southern Palmyrides, Syria. Radiation Measurements. 65, 18-28.

55- [Tlas M and **Asfahani J 2014**] : The Simplex Algorithm for Best-Estimate of Magnetic Parameters Related to Simple Geometric-Shaped Structures. Math Geosci.DOI 10.1007/s11004-014-9549-7.

56- [**Asfahani J** and Tlas M **2015**] **:** Estimation of Gravity Parameters Related to Simple Geometrical Structures by Developing an Approach Based on Deconvolution and Linear Optimization Techniques. Pure Appl. Geophys. DOI 10.1007/s00024-015-1068-z.

57- [**Asfahani J**, AbdulGhani B and Ahmad Z **2015**] **:** Basalt identification by interpreting nuclear and electrical well logging measurements using fuzzy technique (case study from southern Syria). Applied Radiation and Isotopes. 105, 92-97.

58- [Aretouyap Z, Nouayou R, Njandjock N P and **Asfahani J 2015**] : Aquifers productivity in the Pan-African context. *J. Earth Syst. Sci.* **124**, No. 3, pp. 527–539.

59- [Arétouyap Z, Njandjock Nouck P, Nouayou R, Méli'i JL, Kemgang Ghomsi FE, Piepi Toko AD and **Asfahani J 2015**] : Influence of the Variogram Model on an Interpolative Survey Using Kriging Technique. J Earth Sci Clim Change, 6:10, 2015. http://dx.doi.org/10.4172/2157-7617.1000316.

60- [**Asfahani J**, Aissa M andAl-Hent R **2016**] **:** Evaluation of radioactive environmental hazards in Area-3,Northern Palmyrides, Central Syria using airborne spectrometric gamma technique. Applied Radiation and Isotopes. 107, 259-271.

61- **[Asfahani J,** Al-Hent R and Aissa M **2016**] **:** Uranium Remobilization and Migration Evaluation Through Aerial Spectrometric Gamma Technique in Syrian Desert (Area-1), Syria. Applied Radiation and Isotopes. 107, 278-292.

62- **[Asfahani J,** Al-Hent R and Aissa M **2016**] **:** Favorable Uranium-Phosphate Exploration Trends Guided by the Application of Statistical Factor Analysis Technique On the Aerial Gamma Spectrometric Data in Syrian Desert (Area-1), Syria. Journal of Earth System Science, Indian Academy of Sciences.

63- [**Asfahani J 2016**] : Inverse slope method (ISM) for interpreting vertical electrical soundings in sedimentological phosphatic environments in the Al-Sharquieh mine, Syria. CIM Journal. Vol.7, No.2, 93-104.

64- **[Asfahani J,** Al-Hent R and Aissa M **2016**] **:** Regional total radioactivity and uranium distribution in Syria using gamma-ray spectrometric survey techniques. CIM Journal. Vol.7, No.4, 263-276.

65-[**Asfahani J 2016**] : Hydraulic parameters estimation by using an approach based on vertical electrical soundings (VES) in the semi-arid Khanasser valley region, Syria**.** Journal of African Earth Sciences. 117, 196-206.

66-[Zakari Arétouyap, Philippe Njandjock Nouck, Robert Nouayou, Franck Eithel Ghomsi Kemgang, Axel Dorian Piépi Toko and **Jamal Asfahani 2016**] : Lessening the adverse effect of the semivariogram model selection on an interpolative survey using kriging technique**.** *SpringerPlus 5:549*. DOI 10.1186/s40064-016-2142-4.

67- **[J. Asfahani** and M. Tlas **2016] :** Interpretation of self-potential anomalies due to simple geometric-shaped structures by developing an approach based on linear optimization. *Geosciences and Engineering, Vol. 5, No. 8 (2016), pp. 7–21.*

68- [Zakari Are´touyap, Njandjock Nouck Philippe, Robert Nouayou, William Teikeu Assatse1, and **Jamal Asfahani 2017**] : Aquifer porosity in the Pan-African semi-arid context. Environ Earth Sci (2017) 76:134, DOI 10.1007/s12665-017-6440-0.

69- [**J. Asfahani 2017**] **:** Porosity and hydraulic conductivity estimation of the basaltic aquifer in Southern Syria by using nuclear and electrical well logging techniques. Acta Geophys. DOI 10.1007/s11600-017-0056-3.

70- [**J. Asfahani 2017**] **:** Fractal theory modeling for interpreting nuclear and electrical well logging data and establishing lithological cross section in basaltic environment (case study from Southern Syria). Applied Radiation and Isotopes 123 (2017) 26–31.

71- [**J. Asfahani,** and M. Tlas **2017**] **:** Interpretation of self-potential anomalies by developing an approach based on linear optimization. *Geosciences and Engineering, Vol. 5, No. 8 (2017), pp. 7–21.*

72- [**J. Asfahani** and R. Darawcheh **2017**] **:** Seismicity assessment in and around Syria based on instrumental data: application of Gumbel distributions and Gutenberg-Richter relationship. Arab J Geosci (2017) 10:86,DOI 10.1007/s12517-017-2862-y.

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74- [Abdul-Wahed M. K.* and **J. Asfahani**, **2017**] : New insight on the recent instrumental seismic activity along the Serghaya fault, Syria**.** Geofísica Internacional (2017) 56-3: 243-253.

75- **[J. Asfahani, 2018] :** Multifractal approach for delineating uranium anomalies related to phosphatic deposits in Area-3, Northern Palmyrides, Syria. Applied Radiation and Isotopes 137(2018), 225-235.

76- [**J. Asfahani**, Z. Ahmad, B. Abdul Ghani**, 2018] :** Self organizing map neural networks approach for lithologic interpretation of nuclear and electrical well logs in basaltic environment, Southern Syria. Applied Radiation and Isotopes 137(2018), 50-55.

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82- [M. Kh Abdul-Wahed* and **J. Asfahani, 2018**] : The recent instrumental seismicity of Syria and its implications. Geofísica Internacional (2018) 57-2: 121-138.

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84- [**J. Asfahani, 2019**] **:** Heat production estimation by using natural gamma-ray well-logging technique in phosphatic khneifis deposit in Syria. Applied Radiation and Isotopes (2019) 145 (209-216).

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using airborne gamma-ray spectrometric technique. Applied Radiation and Isotopes 156, 108927.

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H. I. Chaminé et al. (eds.), Advances in Sustainable and Environmental Hydrology, Hydrogeology, Hydrochemistry and Water Resources, Advances in Science, Technology & Innovation, https://doi.org/10.1007/978-3-030-01572-5_85.

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91- **[**S. Gardi and **J. Asfahani**, **2019**] : Subsurface Tectonic Characterizations by the Use of Geo-electrical Resistivity Technique and Their Implications on Environmental Soil and Groundwater at Erbil Dumpsite, West of Erbil City-Iraqi Kurdistan Region. Accepted for publication in Contributions to Geophysics and Geodesy.

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well logging and multi-fractal techniques in Banting district, Malaysia. Applied Radiation and Isotopes 167(6) 109296. DOI: 10.1016/j.apradiso.2020.109296.

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