Curriculum Vitae of Prof. Hesham Hussein

PERSONAL

FULL NAME: **Hesham Hussein Mohamed Moussa (Hussein, H.M)**

E-mail: **<hesham@nriag.sci.eg>**

DATE OF BIRTH: **23-02-1963**

NATIONALITY: **Egyptian.**

ACADEMIC QUALIFICATIONS

-B.Sc. in Geophysics (1984)- Mansoura University with a very good grade.

-M.Sc. in Geophysics (1989) Mansoura University.
Title: Earthquake activities in Egypt and adjacent regions and its relation to geotectonic features in Egypt.

-Ph.D. in Geophysics (1993) Mansoura University.
Title: Earthquake mechanism and their seismotectonic implications in the Middle East Region.

-Dipolma in Seismolgy (1998) International Institute of Seismology and Earthquake Engineering, Tsukuba, Japan

TITLE OF THE PRESENT JOB:

Vice President of the NRIAG for Scientific and Cultural Relations

PRESENT PLACE OF EMPLOYMENT

Name: National Research Institute of Astronomy and Geophysics (NRIAG), Seismology Department.

Address: El marsad Street, Helwan 11421, Cairo, Egypt.

Present post: Vice President of the Institute for Scientific and Cultural Relations

Previous posts:

Assistant researcher: 8/1/1986-30/7/1989.
Assistant lecturer : 30/7/ 1989-23/10/1994.
Lecturer : 23/10/ 1994-19/11/2002.
Associate Professor: 20/11/2002
Head of the Induced Earthquakes Lab:8/3/2003- 3/8/2003
Head of General Seismology Lab : 17/8/2003- 9/7/2005
Professor: 20/10/2008
Professor, Community college, King Saudi University, Saudi Arabia:3/2010-5/2011
Director of the Egyptian National Data Center: 13/12/2011 till now
Head of the General Seismology Laboratory : 14/12/2014- 12/4/2017
Deputy Head of the Seismology Department :18-12-2013 till now.

Main Field: Seismology.

SCIENTIFIC EXPERIENCES AND PROJECT INVOLVED

-Reading and analyzing the records of the Helwan WWSSN seismological station.

-Installation of portable seismic stations around some active sites in Egypt and interpretation of their records.

-Locating epicenters of earthquakes in Egypt and estimation of their magnitudes.

- Took part in intensity surveys for some felt earthquakes in Egypt.

-Delivered lectures and practices during the INTERNATIONAL TRAINING COURSE FOR EARTHQUAKE OBSERVER FOR AFRICA organized by NRIAG in Cooperation with Japan every year from 1991 to 1999 (Focal Mechanism, Source parameters and Earthquake's Location).

-Research work in the field of Seismology specially Source parameters including focal mechanism, scaling relations, source processes and seismotectonics.

-I had taken part in the installation and operation of Hurghada Seismological Network around the southern part of the Gulf of Suez in cooperation with Japanese International Cooperation Agency (JICA).

-Seismological analysis of Digital Data recorded by KEG broadband station installed in cooperation with ING , Italy.

-Took part in the project of " The detailed study of the Cairo 1992 M_b=5.9 earthquake ".

-Took part in the project of "Accurate determination of seismic sources for hazard Assessment in Egypt, 1996. "

-Took part in the Seismic noise survey for selecting the best site from the seismological point of view for installing a broad band station in Hurghada region during the year 2007, Egypt.

-Participated in the Planning and establishment of a network of Strong Motion Accelerographs covering the Nile Delta in Northern Egypt during the year 2008.

- I supervised the following M.Sc thesis in seismology as described below:

A- Mr. Abdel Fattah, R. in the subject:
SEISMOTECTONICS STUDIES ON THE GULF OF SUEZ REGION, EGYPT, FACULTY OF SCIENCE, EGYPT, MANSOURA UNIVERSITY, 1998.

B- Mr. Megahed, S. A. in the subject:
A SEIMOLOGICAL STUDY OF THE SOUTHERN PART OF GULF OF SUEZ, FACULTOF SCIENCE, MANSOURA UNIVERSITY, 1998.

C- Mr. M.F Abdelwahed in the subject:
SEISMOLGICAL STUDY OF DAHSHOUR SOURCE REGION USING DIGITAL DATA ANALYSIS TECHNIQUE, FACULTY OF SCIENCE, CAIRO UNIVERSITY, 1998.

D- Mrs. Mona Abdelazim in the subject:
Focal Mechanism Catalogue of the Egyptian Earthquakes from 2004-2011.Zagazig University,2016.

E- Mr. Islam Hosni Hemdan El-Dessouki in the subject:
Analysis of IMS Infrasound data for source verification, Faculty of Science Mansoura University, 2017.

-I supervised Ph.D Thesis in seismology as described below:

A- Mr. Abdel Fattah, R. in the subject:
SEISMOTECTONICS OF SINAI PENINSULA, EGYPT AND THEIR IMPLICATIONS FOR SEISMIC HAZARD EVALUATION, Faculty of Science ,MANSOURA UNIVERSITY, 2006

B- Mr. Megahed, S. A. in the subject:
SEISMIC DEFORMATION STUDIES ON THE NORTHEASTERN PART OF EGYPT, Faculty of Science, MANSOURA UNIVERSITY, 2004.

C- Ms. Iman Abou Al Nader in the subject:
SEISMOTECTONICS OF NORTHERN EGYPT, Faculty of Science MANSOURA UNIVERSITY ,2010.

D-Mr. Asem Salama
TSUNAMI TRACES AND DEPOSITS ALONG THE MEDITERRANEAN COAST of Egypt: SEISMOTECTONIC CONTEXT AND MODELLING, Université de Strasbourg, 2017

PROFESSIONAL INTEREST

-Studying the focal mechanism and stress pattern in tectonically active regions of Egypt.

-Studying the source parameters of the local and regional earthquakes from the seismic spectra, including seismic moment, stress drop and estimation of scaling relations between different parameters.

- Studying the source complexity and characteristics using body wave inversion method.

Teaching

2010-2011 Community college, King Saudi University, Saudi Arabia

COURSES ATTENDED

A- 1. Institution: Central Institute for Physics of the Earth.
2. Country :Germany ,Potsdam
3. Period : From 5 Sep. 1989 To 5 Oct. 1989
4. Title : The International Training Course on Seismology, Tectonics and Seismic Hazard Assessment.

B- 1. Institution: Institute of Geophysics and Geodesy
2. Country : Italy ,Trieste
3. Period : From 15 May. 1995 to 30 Sep. 1995.
4. Title :Advanced Training Course in Seismology, Institute of Geophysics and Geodesy, University of Trieste

C-1. Institution: International Institute of Seismology and earthquake Engineering
2. Country : Tsukuba, Japan
3. Period : From 25 Aug. 1997 to 21 July 1998.
4. Title : Training Course in Seismology and Earthquake Engineering.

D- 1. **Institution:** Research Center for Urban Safety and Security (RCUSS), Kobe University.
2. Country : Kobe, Japan
3. Period : From 11 Oct. to 24 Nov., 2006.
4. Title : Mitigation Strategy for Mega-Urban Earthquake Disaster, Third JICA Training Course.

SHORT COURSES TAUGHT

1. Institution : National Research Institute of Astronomy and Geophysics (From 1995-1999).

2.Title: Training Seminar for Earthquake observers from Africa and Arabian Countries.

3. Subjects:
- **Analysis of local earthquakes.**
- **Streographic Projection and focal Mechanism of earthquakes.**
- **Moment tensor fault plane solution.**
- **Estimation of source parameters using spectral analysis Technique.**

JOINT RESEARCH PROGRAMS

Short visit for two weeks to the Institute of Geophysics, Academy of Scientific Research, Poland (8 to 22 May, 2005.

SCIENTIFIC CONFERENCES

Second Workshop on 3-D Modeling of Seismic Wave Generation, Propagation and their Inversion, ICTP, Trieste, Italy 7/11/1994- 18/11/1994.

Big Cities World Conference on Natural Disaster Mitigation, Cairo Univ.,Cairo, Jan., 5-10, 1996.

The Second Seientific Conference, Al -Azhar University, Faculty of Science, Cairo, 1997.

The Fifth International Conference on the Geology of the Arab World, Cairo University, February , 2000.

The 12th Symposium of Phanerozoic and Development in Egypt, Al -Azhar University, Faculty of Science, Cairo, May,2000.

Second International Symposium on Geophysics, Faculty of Science, Tanta University, Tanta, 19-20 Feb., 2001.

The Annual Meeting of the Egyptian Geophysical Society (E.G.S.).

The 3rd International Workshop on Seismic Risk in North Africa, Mansoura University, Faculty of Science, 20-22 May, 2003.

The sixth workshop :Earthquake Hazard Assessment in North Africa, organized by the Department of Geology at the Faculty of Science and Technology, Abdelmalek Saadi University, Kingdom of Morocco, December 10-14, 2007.

Meeting on the project for the establishment of the Seismotectonic map of Africa, 26-29 September 2001, Windhoek, Namibia.

The 11th International Geological Conference Riyadh-Saudi Arabia 15-20 May 2015.

The first general Conference of the African Seismological Commission, a Nile cruise between Luxor and Aswan 2-5 April 2016.

MEMBERSHIP

Member in the Egyptian Geophysical Society.

Member in the Northern Africa Seismological Group. NASG Ne t40/OEA/ICTP.

PROJECTS

Surface Wave Tomography of the South-East Mediterranean Domain. Joint Projects for the exchange of the researchers within the Executive Program Egypt-Italy,2007-2008.

Structure of the North-Eastern Part of Egypt Obtained from Rayleigh Wave Analysis. Joint Research Project, Egypt-Spain, 2008-2009.

Definition of Seismic and Tsunami Hazard Scenarios by Means of e-infrastructures. Executive Program for Scientific and Technological Cooperation between Egypt and Italy, 2013-2015.

Paleotsunami and seismic hazard assessment in Northern Egypt, Egyptian-French program "AMHOTOP", 21/1/2015-20/1/2017.

Advanced Seismic Hazard Assessment in the Nile Delta, Including Site Effect from Distant Earthquakes, Italy-Egypt, Joint Science and Technology Cooperation Project, ١٠/1/2016-09/1/2019.

Source Classification using waveform techniques, ACADEMY OF SCIENTIFIC RESEARCH AND TECHNOLOGY PROJECT, 18/5/2017 to 18/5/2019.

LIST OF PUBLICATIONS

A.K. Abdel Fattah, Hussein, H.M., Ibrahim, E.M. and Ahmed S. Abou El Atta (1997): Fault plane solution of the 1993 and 1995 Gulf of Aqaba earthquakes and their tectonic implications. Annali Di Geofisica, V=XL, N. 6,1555-1564.

Hussein, H.M (1999): Source process of October 12,1992 Cairo earthquake. Annali Di Geofisica, V=42, N. 4,665-675.

Dessokey, M.M, Hussein, H.M, El Sayed M. Abdelrahman and M.F Abdelwahed (2000): Local Magnitude, Duration Magnitude and seismic moment of Dahshour 1992 Earthquakes, Annali Di Geofisica, V=43, N. 1, 95-105.

Abou Elenean, K.M, Hussein, H.M, Abou El Atta, A. S and Ibrahim, E.M. (2000): Seismological aspects of the Cairo earthquake, 12Th October 1992, Annali Di Geofisica, V=43, N.3, 485-505.

Hurukawa, N. , Seto, N , Inoue, H., Nishigami, K ., Marzouk, I. , Meghahed, A., Ibrahim,E.M., Murakami, H., Nakamura, M. , Haneda, T., Sugiyama, S., Ohkura, T., Fujii, Y., Hussein H.M., Megahed , A.S., Mohammed , H.F., Abel-Fattah, Mizoue, M., Hashimoto, Kobayasi, M. and Suestsugu, D. (2001) Seismological observations in and around the Gulf of Suez, Egypt. Bull. Seismo. Soc.Am., 91,4,708-717.

El Sayed M. Abdelrahman, Dessokey, M.M , Hussein, H.M. and Abdelwahed, F.M. (2003) Estimation of seismic moments from local magnitudes and coda durations for the Cairo earthquake aftershocks recorded at Kottamyia (KEG) Broadband station. Annala of Geophysics, 46,6, 1209-1216.

El Sayed , A. , Korrat , I. and Hussein, H.M. (2004). Seismicity and seismic hazard in Alexandria (Egypt) and its surroundings. Pure and Applied Geophysics.,161, 1003-1019.

Korrat, I.M., N.L. El Agami, Hussein, H.M., El Gabry, M.N. (2005). Seismotectonics of the passive continental margin of Egypt. Journal of African Earth Science, 41,145-150.

Korrat, I.M., Hussein, H.M., Marzouk,I, Ibrahim, E.M., R. Abdel-Fattah and Hurukawa, N.(2006). Seismicity of the northern most part of the Red Sea (1995-1999). Acta Geophysica, 54, no.1,33-49.

Hussein, H.M., Marzouk,I, Moustafa, A. R. and N. Hurukawa. (2006). Preliminary seismicity and focal mechanisms in the southern Gulf of Suez: August 1994 through December 1997. Journal of African Earth Science, 45, 48-60.

A.K. Abdel Fattah ., Hussein, H.M. and El Hady, S. (2006). Another look at the 1993 and 1995 Gulf of Aqaba earthquakes from the analysis of the teleseismic waveforms. Acta Geophysica, 54, no. 3, 260-279.

Abou Elenean , K.M. and Hussein, H.M. (2007). Source mechanism and source parameters of May 28, 1998 earthquake, Egypt. Journal of Seismology, 11, 259-274.

Corchete, V, Chourak, M and Hussein, H.M. (2007).Shear wave velocity structure of the Sinai Peninsula from Rayleigh wave analysis. Survey of Geophysics,V. 28,299–324.

Hussein, H.M. (2007). Source Characteristics Associated with the December 5, 2005 (M_b = 6.8) Tanganyika Lake Earthquake. J. Applied Geophysics, Vol., 6, No. 1, 79-88.

Korrat, I.M., Gharib, A. A., Abou Elenean , K.M., Hussein, H.M. and El Gabry, M.N. (2008). Spectral characteristics of natural and artificial seismic events in the Lop Nor test site, China. Acta Geophysica, Vol., 56, No.2, 344-356.

Hussein, H.M., Abou Elenean, K.M., Marzouk,I., Peresan, A., Abu El Nader, Panza, G.F and El Gabry, M.N. (2008). Integration and magnitude homogenization of the Egyptian earthquake catalogue. Natural Hazard, 526, 546, DOI 10.1007/s11069-008-9237-3.

Hussein, H.M. (2007). Spectral P-wave magnitudes, magnitude spectra and other source parameters for the 1990 southern Sudan and the 2005 LakeTanganyika earthquakes. Journal of African Earth Sciences, 52, 89–96.

Hussein, H.M and Abou Elenean, K.M.(2008). Source parameters of the significant earthquakes in Egypt, 1992–1998 inferred from the P-waves magnitude spectra of teleseismic seismograms. GEOFIZIKA, V. 25 No. 1, 1-26.

Abou Elenean, K.M and Hussein, H.M. (2008). The October 11, 1999 and November 08, 2006 Beni Suef Earthquakes,Egypt. Pure. Appl. Geophys. 165, 1391–1410.

Abou Elenean, K.M., Aldamegh, K. S., Zharan, H. M., Hussein, H. M.(2009). Regional Waveform Inversion of February 11, 2004 and February 09, 2007 Dead Sea Earthquakes. Geophysical Journal International, Volume 176, Issue 3, pp. 185-199 DOI:10.1111/j.1365-246X.2008.03971.x.

Aldamegh, K.S., Abou Elenaen, K.M., Hussein, H.M. and A. J. Rodgers (2009). Source mechanisms of the June 2004 Tabuk earthquake sequence, Eastern Red Sea margin, Kingdom of Saudi Arabia. Journal of Seismology, DOI: 10.1007/s10950-008-9148-5.

Khalid S. Aldamegh , Hesham Hussein Moussa, Nasser S. Al-Arifi & Sayed S. R. Moustafa and Moustafa Hemeda Moustafa(2010). Focal mechanism of Badr earthquake, Saudia Arabia of August 27, 2009. Arab J Geosci. DOI :10.1007/s12517-010-0200-8.

Abou Elenean, K.M, Adel M. E. Mohamed, H. M. Hussein (2010) Source parameters and ground motion of the Suez-Cairo shear zone earthquakes, Eastern Desert, Egypt. Natural Hazards, 52,2, 431-451.DOI:10.1007/s11069-009-9481-1. DOI: 10.1007/s11069-009-9388-x.

Hussein, H. M., S. S. R. Moustafa,E. Elawadi, N. S. Al-Arifi, and N. Hurukawa (2011) *Seismological Aspects of the Abou Dabbab Region, Eastern Desert, Egypt.* Seismological Research Letters Volume 82, Number 1, 81-88. DOI: 10.1785/gssrl.82.1.81.

M. Morsy, H.M. Hussein, K.M. Abou Elenean and Sh. El-Hady (2011). Stress field in the central and northern parts of the Gulf of Suez area, Egypt from earthquake fault plane solutions. Journal of African Earth Sciences, 60, 5, 293-302.DOI: 10.1016/j.jafrearsci.2011.03.006.

Hussein , H.M. , K.M. Abou Elenean, I.A. Marzouk , I.M. Korrat , I.F. Abu El-Nader , H. Ghazala and M.N. ElGabry (2013). Present-day tectonic stress regime in Egypt and surrounding area based on inversion of earthquake focal mechanisms. Journal of African Earth Sciences 81, 1–15. http://dx.doi.org/10.1016/j.jafrearsci.2012.12.002.

Abu El-Nader, I.F.,M. N. El Gabry, H. M. Hussein, Hany M. Hassan and A. Elshrkawy (2013). Source Characteristics of the Egyptian Continental Margin Earthquake, 19 October 2012. Seismological Research Letters 84(6):1062-1065 .DOI: 10.1785/0220120172.

T. Mourabit , K. M. Abou Elenean , A. Ayadi , D. Benouar , A. Ben Suleman ,M. Bezzeghoud , A. Cheddadi , M. Chourak , M. N. ElGabry ,A. Harbi ,M. Hfaiedh , H. M. Hussein , J. Kacem , A. Ksentini , N. Jabour , A. Magrin ,S. Maouche , M. Meghraoui , F. Ousadou , G. F. Panza , A. Peresan , N. Romdhane , F. Vaccari and E. Zuccolo (2014). Neo-deterministic seismic hazard assessment in North Africa. Journal of Seismology 18(2), Issue 2, pp 301–318. DOI 10.1007/s10950-013-9375-2

Mona Abdelazim , Ahmed Samir , Iman Abu El-Nader , Ahmed Badawy and Hussein, H.M. (2016). Seismicity and focal mechanisms of earthquakes in Egypt from 2004 to 2011,NRIAG Journal of Astronomy and Geophysics, Volume 5, Issue 2, December 2016, Pages 393-402. http://dx.doi.org/10.1016/j.nrjag.2016.08.002.

I.F. Abu El-Nader , A. Shater , H.M. Hussein (2016). Mapping b-values beneath Abu Dabbab from June to August 2004 earthquake swarm. NRIAG Journal of Astronomy and Geophysics . Volume 5, Issue 2 , December 2016, Pages 403-412. http://dx.doi.org/10.1016/j.nrjag.2016.07.002.

I.F. Abu El-Nader and H.M. Hussein (2018). The present-day active deformation in the central and northern parts of the Gulf of Suez area, Egypt, from earthquake focal mechanism data. Natural Hazards, Volume 92, Issue 3, pp 1355–1369. DOI: 10.1007/s11069-018-3254-7.

Asem Salama1, Mustapha Meghraoui1, Mohamed El Gabry , Said Maouche, Moussa Hesham Hussein and Ibrahim Korrat (2018). Paleotsunami deposits along the coast of Egypt correlate with historical earthquake records of eastern Mediterranean. Nat. Hazards Earth Syst. Sci., 18, 2203–2219. https://doi.org/10.5194/nhess-18-2203-2018