

The curriculum vita of Dr. Ali K. Abdel-Fattah

Nationality: Egypt

Current address: Geology and Geophysics Department
Collage of Science
King Saud University

E-mail: ali_kamel100@yahoo.co.uk

Education

- ✚ Ph. D in Seismology (1997)
Ain-Shams University - Faculty of Science – GeolDepartment
Cairo - Egypt
- ✚ M.Sc. in Seismology (1993)
Al-Mansoura University – Faculty of Science – Geology Department
Al-Mansoura – Egypt
- ✚ B.Sc. in Geophysics (1988)
Al-Mansoura University – Faculty of Science
Al-Manoura – Egypt

Area of interest:

Physics of earthquakes

Awards

2008 [The state encouragement prize in geology, Egypt](#)

Professional Experience

Oct., 2010 ~ 2012	Full Professor King Saud University , Chair of Geohazard Geology & Geophysics Dept., Collage of Science, Kingdom of Saudi Arabia
Feb., 2010 ~ Oct., 2010	Full Professor National Seismic Network Lab. Department of Seismology National Research Institute of Astronomy and Geophysics (Observatory) 11421 Helwan – Egypt
2008 – 2009	Assistant Professor Department of Seismology

	National Research Institute of Astronomy and Geophysics (Observatory) 11421 Helwan – Egypt
2007 - 2008	Visiting Scientist Department of Geophysics Kangwon National University South Korea
2005 - 2007	Director of the Earthquake Disaster Reduction Data Center Department of Seismology National Research Institute of Astronomy and Geophysics (Observatory) 11421 Helwan – Egypt
2004 - 2005	Assistant Professor Department of Seismology National Research Institute of Astronomy and Geophysics (Observatory) 11421 Helwan – Egypt
2003 – 2004	Postdoctoral Researcher Department of Geophysics Kangwon National University South Korea
2000 - 2003	Researcher Department of Seismology National Research Institute of Astronomy and Geophysics (Observatory) 11421 Helwan – Egypt
8/2000 – 11/2000	Visiting Researcher Geophysics Institute - Academy of Science Prague - Czech Republic
1999 - 2000	Researcher Department of Seismology National Research Institute of Astronomy and Geophysics (Observatory) 11421 Helwan – Egypt
1999	Visiting Scientist Tokyo University - Earthquake Research Institute Tokyo – Japan
1998	Visiting Scientist Building Research Institute International Institute of Seismology and Earthquake Engineering Tuskoba – Japan
1993 - 1997	Associate researcher Department of Seismology

**National Research Institute of Astronomy and Geophysics (Observatory)
11421 Helwan – Egypt**

1990 - 1993

**Assistant researcher
Department of Seismology
National Research Institute of Astronomy and Geophysics (Observatory)
11421 Helwan - Egypt**

Statement of research Interests

My research interest is mainly concerning in the research field of earthquake physics throughout the determination of kinematic finite-source models in low and high frequencies for different size earthquakes using waveform data and multiple-time window method. Both theoretical and empirical Green's functions are used.

- ✚ **Waveform Modeling and Inversion**
- ✚ **Kinematic finite-source modeling**
- ✚ **Attenuation of Seismic Waves in tectonic and volcanic region**
- ✚ **Modeling amplitude spectrum to retrieve earthquake source parameters**
- ✚ **Moment and stress tensor inversions**
- ✚ **Simulate earthquake Ground motions**

Teaching Interests

- ✚ **Plate tectonics**
- ✚ **Physics of earthquakes** (e.g. basic equations of linear elasticity, Green tensor, representation theorem, moment tensor, kinematics of earthquake source, dislocation theory, fracture criterion, dynamic of earthquake source, ... etc)
- ✚ **Propagation of Seismic waves** (e.g. elasticity, equations of motion, simple solutions of wave equations, reflection and refraction of seismic waves, seismic ray theory, Surface waves, ... etc)
- ✚ **Introduction to seismology** (e.g. elasticity theory, seismology and earth interior, seismometry, earthquake and faults, earthquake location, magnitude,..... etc)
- ✚ **Mathematics in seismology** (e.g. Integration and partial derivatives, Matrix, propagator matrix, vector and tensor algebra, vector and tensor analysis, computation of epicentral distance and azimuths, complex number, Fourier series, Fourier integral and continuous spectra, Fourier transform, convolution, correlation functions, Laplace transform, instrumental responses)
- ✚ **Data Processing** (e.g. statistical background, fitting straight line, linear least square, how to solve a simultaneous linear equation, polynomial curve fitting, linear inversion under constraints, nonlinear inversion under constraints, applications using Gaussian elimination and singular value decomposition, applications to hypocenter determination and moment tensor, ... etc)

Teaching experiences

- ✚ **GPH 313: Earthquake Seismology, Geology and Geophysics Department, Faculty of Science, King Saud University, Kingdom of Saudi Arabia**

- ✚ GPH 317: Time Series Analysis, Geology and Geophysics Department, Faculty of Science, King Saud University, Kingdom of Saudi Arabia
- ✚ GPH 401: Physics of the Earth, Geology and Geophysics Department, Faculty of Science, King Saud University, Kingdom of Saudi Arabia
- ✚ GPH 416: Seismotectonics of the Middle East, Geology and Geophysics Department, Faculty of Science, King Saud University, Kingdom of Saudi Arabia
- ✚ GPH 414: Earthquake Seismology II, Geology and Geophysics Department, Faculty of Science, King Saud University, Kingdom of Saudi Arabia
- ✚ GPH 565: Seismotectonics of the Arabian Plate, Master course, Geology and Geophysics Department, Faculty of Science, King Saud University, Kingdom of Saudi Arabia
- ✚ GPH 517: Quantitative seismology, Master course, Geology and Geophysics Department, Faculty of Science, King Saud University, Kingdom of Saudi Arabia
- ✚ GEO282: Remote sensing, Geology and Geophysics Department, Faculty of Science, King Saud University, Kingdom of Saudi Arabia
- ✚ GPH321: **Geoelectric and Electromagnetic Exploration**, Geology and Geophysics Department, Faculty of Science of Saudi Arabia

- ✚ **Principles of seismology**, Petroleum Geology (AAPG), Alexandria University.
- ✚ **Spectral analysis in geophysics** , Department of Geology, Helwan University, Helwan – Egypt
- ✚ **Physics of earthquakes**, Department of Geophysics, Kangwon National University, Chuncheon - South Korea.
- ✚ **Theory of elasticity and propagation of seismic waves**, Al-Mnofiya University, Al-Mnofiya – Egypt

Practical experiences

- ✚ Member of the Seismological staff, National Research Institute of Astronomy and Geophysics since 1990
- ✚ Operating with the analogue and digital seismograph systems
- ✚ Analysis of digital waveform data and making the final reports
- ✚ Sharing the annual and monthly catalogues of local and regional earthquakes in and around Egypt
- ✚ Participating in the installation of the digital Seismic Network in Egypt, in cooperation with staff at INGV (Rome, Italy), and Staff at IISEE (Tuskuba, Japan)
- ✚ Participating in the installation of the Egyptian National Seismic Network Stations
- ✚ Participating in the strong motion acceleration network in Egypt
- ✚ Participating in many scientific projects in the field of seismology and geophysics in Egypt

Invited Talks

2009	Imaging rupture scenario of small earthquake sizes , Korea Meteorological Administration, Saul, South Korea
2008	Environmental disasters , Faculty of Science, Zagazig University,
2007	Intrinsic and scattering attenuation measurements using earthquake

	waveform data ; Department of Geophysics, Kangwon National University, South Korea.
2004	Empirical Green's function: Methods and Applications ; Korea Meteorological Administration, Saul, South Korea
2003	Earthquake source mechanisms using waveform inversion and advanced earthquake relocation: A case study of three small earthquakes in the southern part of the Korean Peninsula ; the Korea Ocean Research and Development Institute (KORDI), South Korea
2003	Seismic waves and Earth's interior ; Institute for Development of Earth Resources, Kangwon National University, South Korea

Fellowships

4/2010 - 5/2010	Seismology Department, Geophysical Institute, Prague, Czech republic
2007 – 2008	Geophysical Department, Kangwon National University, South Korea
2003 – 2004	Geophysical Department, Kangwon National University, South Korea
2000	Seismology Department, Geophysical Institute, Prague, Czech republic
1999	Earthquake Research Institute, Tokyo University, Japan
1998	Building Research Institute, International Institute of Seismology and Earthquake Engineering, Tuskoba, Japan

Conferences and workshops

2010	Thirty-Fourth session of Working Group B, Vienna, Austria
2009	Directed Exercise DE09 SAMS, August 4-12, Finland
2008	International Workshop for Tsunami Disaster Mitigation, 12 th of June, South Korea
2008	Geophysical Society of Korea, South Korea
2003	Geophysical Society of Korea, South Korea
2003	10 th Korea-China joint geology symposium, south Korea
1999	Japan earth and planetary science joint meetings, Yoyogi, Tokyo, Japan.
1998	The second international symposium on the effects of surface geology on seismic motion, 1Yokohama, Japan
1997	MedNet advanced school and workshop on broadband seismology in Northern Africa, INGV, Roma, Italy

Supervision

Recent thesis

- ✚ Ph.D. thesis in the title of “**Prediction of ground motion and its application to earthquake engineering for strategic zones in north Egypt**”, Al-mansoura University 2003
- ✚ Ph.D. thesis in the title of “**Source process and its tectonic implication in Dahshour area, Egypt**”, Ain

Shams University, 2005

- ✚ Ph.D. thesis in the title of “Prediction of the strong ground motion for large earthquake using Green function in Aswan, Egypt”, Asut University, 2006
- ✚ M.Sc. thesis in the title of “**Ground Motion Simulation of the Dahshour Dislocation Zone**”, Faculty of Science, Alexandria University, 2010
- ✚ Ph.D. thesis in the title of “**High frequency earthquake ground-motion scaling in northern Egypt**”, Faculty of Science, Ain Shams University, 2010
- ✚ M.Sc. thesis in the title of “**Attenuation Characteristics of Body Waves in the Upper Crust of Al-Ays Earthquake Swarm Zone 2009**”, King Saud University, 2014

PAPERS SUBMITTED TO PEER - REVIEWED JOURNALS

2016

Abdel-Fattah, A.K, 2016. Deterministic assessment of seismic hazards around the Gulf of Aqaba

earthquake source region, submitted to Soil Dynamic and Earthquake Engineering, 2016

Abdel-Fattah, A.K, 2016. Mapping b-value for 2009 Harrat Lunyyir earthquake swarm, SW Saudi

Arabia and Coulomb stress of its mainshock. Submitted to J. Volcanology and Geothermal Res.

Abdel-Fattah, A.K, 2016. Temporal variability of VP/VS ratio among the 2009 earthquake swarm,

NW Saudi Arabia. Submitted to Geothermics

Abdel-Fattah, A.K, 2016. Focal mechanisms and aseismic slip evidence associated with the 2009

earthquake Swarm, NW Saudi Arabia. Submitted to J. Geodynamics

Abdel-Fattah, A.K, and Salvatore de Lorenzo, 2016. A NOTHER LOOK AT THE 2009 M W 4.8 AL -

AYS EARTHQUAKE SWARM , HARRAT LUNAYYIR , SAUDI ARABIA . SUBMITTED TO GJI

Publications in peer-reviewed Journals

2016	Abdel-Fattah, A.K., S.M. Mogren, and S. Almadani, 2016. Seismicity constraints on stress regimes along Sinai subplate boundaries Stud. Geophys. Geod., 60, DOI: 10.1007/s11200-014-0968-1
2015	M. F. Abdelwaheed and <u>A.K. Abdel-Fattah</u> . Scattering and intrinsic attenuation in Cairo metropolitan area using Genetic Algorithm, SOILDYN 69, 93-102.
2014	<u>A.K. Abdel-Fattah</u> , K. Y. Kim, M. S. Fnais, and A. M. Al-Amri. Source process and Tectonic Implication of the January 20, 2007 Odaesan Earthquake, South Korea, PEPI 229, 72-81.
2013	<u>A. K. Abdel-Fattah</u> , A. M. Al-Amri, M. S. Fnais, K. A. and El-Sayed. ESTIMATION OF SOURCE PARAMETERS AND ATTENUATION USING DIGITAL WAVEFORMS OF AL-AYS 2009 EARTHQUAKE, SAUDI ARABIA. Arab J Geosci, DOI 10.1007/s12517-013-1021-3.
2013	<u>A. Abdel-Fattah</u> , M. S. Fnais, M. F. Abdelwahed, A. El-Nekhely, and W. Farid, 2011. TECTONIC IMPLICATIONS OF INTRAPLATE FAULTING IN THE UPPER CRUST OF AN ACTIVE DISLOCATION ZONE; NORTH OF EGYPT, EPS, 65 , 739-748.
2011	<u>Abdel-Fattah, A.</u> , Kim K. and Fnais, M., 2011. SLIP DISTRIBUTION MODEL OF TWO SMALL-SIZED INLAND EARTHQUAKES AND ITS TECTONIC IMPLICATION IN NORTH-EASTERN DESERT OF EGYPT. J. of African Earth Science , 61, 296-307.
2009	<u>Abdel-Fattah, A. K.</u> , 2009. Attenuation of body waves in the Crust beneath the vicinity of Cairo metropolitan area (Egypt) Using Coda Normalization Method. GJI, 176(3), 126-134.
2008	<u>Abdel-Fattah, A. K.</u> , Morsy, M., El-Hady, S., Kim, K. Y., and Sami, M., 2008. Intrinsic and scattering attenuation in the crust of Abu-Dabbab area, eastern desert of Egypt. Phys. Earth Planet. Interior 168, 103-122.
2008	A. Badawy, <u>Abdel-Fattah, A. K.</u> , Sh. M., Ali Sh. M. & Farid, W., 2008. Source parameters of the ML 4.1 earthquake of November 08, 2006, southeast Beni-Suef, northern Egypt. J. of Africa, <i>Volume 51, Issue 3</i> , 151-159.
2008	A. Badawy, El-Hady, Sh. & <u>Abdel-Fattah A. K.</u> , 2008. Microearthquakes and Neotectonics of Abu-Dabbab, eastern desert of Egypt. Seism. Res. Lett. 79(1), 55-67.
2007	<u>Abdel-Fattah, A. K.</u> , Badawy, A., & K. Y. Kim, 2007. Normal Faulting Mechanisms in the Western Desert of Egypt, J. Seismology, 11:27-38.
2006	A. Badawy & <u>Abdel-Fattah A. K.</u> , 2006. 2001 August earthquake swarm at Shadwan Island, Gulf of Suez, Egypt. Geophysical Journal International 167

(1), 288–296.

2006 **Abdel-Fattah, A. K.**, Hussein, H. & El-Hady, S., 2006. Another look at the 1993 Mw=6.1 and Mw=7.2 Gulf of Aqaba earthquakes from the analysis of teleseismic waveforms, *J. of Acta Geophysica*, 54(3), 260-279.

2004 **Abdel-Fattah, A. K.** & Badawy A., 2004. Source Characteristics and Tectonic Implications of Moderate Earthquake, Northeastern Cairo Prefecture, *Acta Geophysica Polonica*, 52(1), 29-43.

2003 **Abdel-Fattah A. K.**, 2003. An approach to investigate earthquake rupture processes, *Acta Geophysica Polonica*, Vo. 51 (3), 257-269.

2002 **Abdel-Fattah A. K.**, 2002. Source Characteristics of a moderate earthquake (M 4.9) using empirical Green's function technique. *Annals of Geophysics*, V. 45 (5), 575-586.

2002 **Abdel-Fattah, A. K.**, & Badawy A., 2002. Source process of the southeast Beni-Suef, Northern Egypt earthquake using EGF technique, *J. of Seismology*, 6:153-161.

2002 Badawy, A., & **Abdel-Fattah, A. K.**, 2002. Analysis of the southeast Beni-Suef, northern Egypt earthquake sequence, *J. Geodynamics* Vol 33, Issue 3, 219-234.

2001 Badawy, A., & **Abdel-Fattah, A. K.**, 2001. Source parameters and fault plane determinations of the 28th Dec., 1999 Northern Cairo earthquake, *Tectonophysics*, 334(1-2), 63-77.

1997 **Abdel-Fattah, A. K.**, Mousa, H. H., Ibrahim, E. M. & Abou El-Atta, A. E., 1997. Fault plane solutions of the 1993 and 1995 Gulf of Aqaba earthquakes and their tectonic implications, *Annals of Geophysics*, V. XL(6), 1555- 1564.

Abstracts and Publications in other Journals

2007 El-Khrepy, S. Ghazala, H., Korrat, I., Tealeb, A. A., El-Hadidy, S., **Abdel-Fattah, A. K.**, El-Hady, Sh., Deif, A. and Taha , Y. 2007. Velocity model and high precision earthquake location in northern Egypt. EGS twenty third annual meeting, Mar. 2007.

2006 Khalil, H., Becker, M., Abdel-Monem, S. M., Sakr, K., Al-Aydrus, A., Hussain, H., Abou Elenean, K., Abdel-Fattah, A. K., Mahmoud, S. & Rayan, A., 2006. Geodynamical studies in the near east Mediterranean and red sea regions using GPS and seismological data analysis. *Proc. 4th International Symposium on Geophysics*, Tanta, 317-339.

2006 El-Khrepy, S. Ghazala, H., Korrat, I., Tealeb, A. A., El-Hadidy, S., **Abdel-Fattah, A. K.**, El-Hady, Sh., Deif, A. and Taha , Y. 2006. Minimum 1-D velocity model using local earthquakes in the Gulf of Suez area (Egypt). *NRIAG eleventh general scientific meeting (Abstracts)*, Dec. 2006.

2003 **Abdel-Fattah, A. K.**, and K. Y. Kim, 2003, Spatiotemporal Slip Distribution of the Mw 4.5 Northeastern Egypt Earthquake Using Waveform Inversion”, *Abstract in the Geophysical Society of Korea*, Nov. 21, 2003.

2003 **Abdel-Fattah, A. K.**, K. Y. Kim, and **So Y. Lee**, 2003. Preliminary analysis on source mechanisms for three small earthquakes in the southeastern part of the Korean Peninsula, 10th Korea-China joint geology symposium, Nov. 18, 2003

1996 Mousa H. Hussein, Korrat, I. & **Abdel-Fattah, A. K.**, 1996. The Twelve-October 1992 Cairo earthquake: A complex multiple shock, *J. of IISSE, Japan*,

	9-21.
1996	Deif A. & Abdel-Fattah, A. K. , 1996. Preliminary return period based on moment rate released in Aswan area, NRIAG fifth scientific meeting (Abstracts), Nov. 1996.
1996	Abdel-Fattah, A. K. , A. E. Khalil and A. Deif, 1996. Rates of active deformation in Hellenic Arc inferred from the analysis of major earthquakes, NRIAG fifth scientific meeting (Abstracts), Nov. 1996.
1993	Abdel-Fattah, A. K. , E. M. Ibrahim and I. Korrat, 1993. Predicting future large earthquakes in Turkey using statistical methods. NRIAG fourth scientific meeting (Abstracts), Nov. 1993.
1993	Korrat I., Ibrahim, E. M. & Abdel-Fattah, A. K. , 1993. Seismicity and Fault plane solutions in Turkey and their Tectonic Implications. NRIAG fourth scientific meeting (Abstracts), Nov. 1993.

Computer Skills

I've executed some programs are written in FORTRAN Lang.

- Hypocenter location program: an iterative technique using singular-value decomposition (Geiger's method)
- Determination earthquake source parameters using iterative technique by SVD method and global search method by Genetic algorithm (a technical paper is under prepared)
- Determination average Vp/Vs ratio under a seismic network using wadati diagram
- Determination S wave attenuation using the ratio of S wave to coda wave amplitudes
- Cross-correlation (A. Frankel, BSSA, 72, pp. 1277-1294)
- Conversion format from ASCII and Y format to SAC ASCII and BINARY format
- Linear and non-linear least squares using singular-value decomposition
- A finite-fault model to discriminate the fault plane by waveform inversion (using synthetic Green's functions, parts of STINV program by S. Ide and Herrmann package are used)
- Scripts under linux for GMT, waveform modeling, locations, and other additional programs
- Platform/Operating System: LINUX, UNIX and Windows

Experience with various seismological software packages:-

- SAC (Seismic Analysis Code, Linux version)
- GMT (Generic Mapping Tool, Linux version)
- IASPI group
- SUDS utilities
- Some information on Seismic Handler (Linux version)
- SEISAN (Linux version)
- Computational programs in seismology (R. Herrman)
- Hypo71 (hypocentral location program)
- Hypoinv (hypocentral location program)
- HypoDD (Linux version)

Referees

(1) **Hatem Odah**

Director of National Research Institute, Egypt

Email: hatemodah@yahoo.com

(2) **Jan Sileny**

Professor of Seismology

Head of seismology dept., Academy of science, Czech Republic

Email: jsi@ig.cas.cz

(3) **Abdullah M. Alamri**

Professor of geophysics

King Saud University

Email: alamri@ksu.edu.sa