

Qualifications :

Dr. Khelifa Abbeche is a Professor of Civil Engineering at Batna2 University Algeria. Dr. Khelifa Abbeche earned his PhD in Civil Engineering from Batna University, Algeria in 2005. His major expertise is in the area of geotechnical and geo-environmental Engineering.

Dr. Abbeche has about 26 years of academic and practical experiences in conducting design, analysis, inspection, expertise and management of various projects such as domestic, commercial & industrial constructions, bridges, roads & railways, dams, sites rehabilitation, etc. He has published more than 45 papers and technical reports in refereed journals, international conference proceedings, and government (public) domains. He supervised and co-supervised many MSc and PhD theses. Dr. Abbeche is a founding member of the Algerian society of geotechnical ALGeos since 2013.

Dr. Abbeche's current research interest includes behavior of unsaturated and difficult soils, and foundations design on problematic soils; foundations, pile foundations and soil anchors; slope stability problems; instrumentations, methods and procedures for laboratory/field soil testing. He proposed many empirical formulae for predicting collapsible soils, and developed a mechanism concerning the causes of soil collapse.

Research Activities

Thesis : Doctorate of state

<u>Theme</u> :	Etude de l'influence de la densité relative et l'indice de consistance sur le taux et l'amplitude de l'affaissement des sols.
<u>Supervisor</u> :	Prof. BOUMÉKIK Ahmed (Univ- Constantine) Dr. T. Ayadat (Univ- Concordia Canada)
<u>Laboratory and date</u> :	Laboratory LNHC of Batna and CERMES École Nationale des Ponts et Chaussées Paris
<u>Mention</u> :	Very Honorable

International Papers :

1-H. Ziani, **K. Abbeche**, I. Messaoudene and LJA Pais(2019). Treatment of Collapsible Soils by Additions of Granulated Slag and Natural Pozzolan. KSCE Journal of Civil Engineering (2019) 23 (3) :1028-1042.

DOI : [10.1007/s12205-019-0051-0](https://doi.org/10.1007/s12205-019-0051-0)

2-B Mazouz, **K Abbeche**, A Abdi and M Baazouzi (2019). Model experiments to assess effect of eccentric loading on the ultimate bearing capacity of a strip footing near a dry sand slope ; International Journal of Geotechnical Engineering,. Published Online: 11 Sep 2019. DOI :<https://doi.org/10.1080/19386362.2019.1665385>

3-T. Mansouri, **K. Abbeche** (2019) Experimental bearing capacity of eccentrically loaded foundation near a slope ;Studia Geotechnica et Mechanica Vol. 41 (2019), No.1 PP 33-41.

DOI: <https://doi.org/10.2478/sgem-2019-0004>

4-A. Abdi, **K. Abbeche**, B. Mazouz and R. Boufarh(2019). Bearing Capacity of an Eccentrically Loaded Strip Footing on Reinforced Sand Slope. Soil Mechanics and Foundation Engineering Vol. 56, No.4 September 2019 PP, 232-238

DOI : [10.1007/s11204-019-09596-5](https://doi.org/10.1007/s11204-019-09596-5)

5-R. Boufarh, **K. Abbeche**, A. Abdi (2019). Experimental Investigation of Interference Between Adjacent Footings on Layered Cohesionless Soil. Soil Mechanics and Foundation Engineering, Vol. 56, No.2 May 2019 PP, 128-135

DOI: [10.1007/s11204-019-09580-z](https://doi.org/10.1007/s11204-019-09580-z)

6- O. Bahloul, **K. Abbeche** and Azzedine Bahloul(2019). Microstructure and geotechnical characteristics of highly plastic clay treated by magnesium chloride. Minnig science Vol. 26, 2019 , 249-262

DOI: [10.5277/msc192617](https://doi.org/10.5277/msc192617)

7-A. Abdi, **K. Abbeche**, D. Athmania and M. Bouassida(2019) Effective width rule in the analysis of footing on reinforced sand slope ; Studia Geotechnica et Mechanica Vol. 41 (2019), No.1 PP 42-55. DOI: <https://doi.org/10.2478/sgem-2019-0005>

8-S. Bellil, **K. Abbeche**, O.Bahloul(2018) Treatment of a collapsible soil using a bentonite–cement mixture Studia Geotechnica et Mechanica Vol. 40 (2018), No.4 PP 233-243.

DOI : <https://doi.org/10.2478/sgem-2018-0042>

9-H. Bekhouche, **K. Abbeche**, M .Duc, O .Bahloul and P Delage(2018). The swelling and shrinkage properties of clay-rich soils after cement treatment: a microstructural approach. Italian journal of engineering geology and environment 18 (2), 5-22

DOI: [10.4408/IJEGE.2018-02.O-01](https://doi.org/10.4408/IJEGE.2018-02.O-01)

10-A. Abdi, **K. Abbeche**, R. Boufarh, and B. Mazouz (2018).Experimental and Numerical Investigation of an Eccentrically Loaded Strip Footing on Reinforced Sand Slope. Electronic Journal of Structural Engineering 18(2) 2018.

11-A. Benbouza, L.Arabet and K.Abbeche. (2018) Numerical Study of the Failure Surface in Granular Soil Under Two Closely Spaced Strip Footings. In: Shehata H., Rashed Y. (eds) Numerical Analysis of Nonlinear Coupled Problems. GeOMEast 2017. Sustainable Civil Infrastructures. Springer, Cham

https://doi.org/10.1007/978-3-319-61905-7_14

12-**K. Abbeche**, A. Lahmadi and O .Bahloul(2018).Treatment of Collapsible Soils by Cement Using the Double Consolidation Method. " Sustainable Civil Infrastructures: Innovative Infrastructure Geotechnology", 76-88, 2018.

13-N.Bakir, **K.Abbeche**, and **G.Panczer**. (2017) Experimental study of the effect of glass fibers on reducing collapse of a collapsible soil. International journal of Geomechanics and engineering Vol.12 N°01 january 2017.

DOI: [10.12989/gae.2017.12.1.071](https://doi.org/10.12989/gae.2017.12.1.071)

14-**K. Abbeche**, and Ziani, H. (2014) Effect Study of the Hydraulic Gradient and the Vertical Load on the Collapse Potential of Soils. Soil Behavior and Geomechanics: pp. 173-183.

DOI : [10.1061/9780784413388.018](https://doi.org/10.1061/9780784413388.018)

15- O. Bahloul, **K.Abbeche**, A.Bahloul, and O.Halitim. (2014). **Effect of Sodium Chloride on the Wetting Induced Collapse Strain of Soils**. malaysian journal of civil engineering vol 26 n° 2 PP.119-135.

16-**K.Abbeche**, L.Mokrani ET A.Boumekik, Contribution à l'identification des sols effondrables, Revue Française de Géotechnique n° 110 , 85-90 1^{er} trimestre 2005

17-**K.Abbeche**, O. Bahloul, T.Ayadat, and A.Bahloul. Treatment of Collapsible Soils by Salts Using the Double Consolidation Method. In Experimental and Applied Modeling of Unsaturated Soils,ASCE Geotechnical Special Publication, American Society of Civil Engineering 2010 pp69-78

18- **K.Abbeche**, Laouar,M S.,and Messaoud,F Prediction of collapsible soils by cone penetrometer and ultrasonic tests. In Studia Geotechnica et Mechanica, Vol. XXXII, No2,(2010) pp.3-21.

19- Laouar,M S **K.Abbeche**.,and Messaoud,F Ultrasonic and Cone Penetrometer Tests for Predicting the Collapsible Soils In International Review on Modelling and Simulations Vol. 3. n. 2(2010), pp. 194-201

20-**K.Abbeche**, F.Hammoud and T.Ayadat. A Study of Atterberg Limits Effects on The Behavior of Collasing Soils. In Unsaturated Soils, pages 377-381. CRC Press, 2009.

21-**K.Abbeche**, F.Hammoud and T.Ayadat.Influence of Relative Density and Clay Fraction on Soils Collapse. In Experimental Unsaturated Soil Mechanics, volume 112 of Springer Proceedings in Physics, pages 3-9, 2007.

International Communications :

1-**K.Abbeche** ,O. Bahloul, , A.Bahloul. Study of the influence of the saline solution NaCl on the potential collapse of soil, 3rd European conference on unsaturated soil E-Unsat 2016. 12-14 september 2016.

2- O. Bahloul, **K.Abbeche**, A.Bahloul. Study of the microstructure of a collapsible soil flooded with NaCl saline. 3rd European conference on unsaturated soil E-Unsat 2016. 12-14 september 2016.

3-Laouar,M S., **K.Abbeche**, and Messaoud,F. Use of the ultrasound to predicting the collapsible soils. AGS'10, Third Euro Mediterrannen symposium on Advance in Geotechnical and Structures, Djerba, Tunisie, 10-12/05/2010

4- **K.Abbeche** T.Ayadat and L. Demagh. Finite element analysis on the factor of bearing capacity, N_y of a strip footing resting on top surface of a slope adjacent to another foundation. AGS'10, Third

Euro Mediterranean symposium on Advance in Geotechnical and Structures, Djerba, Tunisie, 10-12/05/2010

5-M.S Laouar, K.Abbeche et F. Messaoud. L'ultrason comme approche pour la prédiction des sols affaissables non saturés. Colloque International Sols non Saturés et Environnement TELEMEN 27-28 Octobre 2009

6-K.Abbeche, Laouar, M S., and Messaoud, F Prediction of collapsible soils by cone penetrometer and ultrasonic tests. International Symposium on Unsaturated Soil Mechanics and Deep Geological Nuclear Waste Disposal (UNSAT-WASTE 2009) Shanghai 24 to 26 August 2009.

7-K.Abbeche T.Ayadat et A. Lahmadi. La prédiction des sols à effondrement brusque basée sur les limites d'Atterberg. Journées Internationales des Géosciences de l'Environnement (JIGE-5) Fès 13-15 Mai 2009.

8-K.Abbeche T.Ayadat et A. Lahmadi. Traitement d'un sol à effondrement brusque par la chaux. Séminaire International Innovation et Valorisation Dans le Génie Civil Hammamet –Tunisie du 05 au 07 Février 2009.

9-K.Abbeche, S.Benmoussa et A Nezari. Calcul numérique du facteur de portance N_γ pour une fondation conique reposant sur un sol pulvérulent. Conférence Internationale Sur le Calcul Numérique en Géotechnique- NUCGE'08 Université de Skikda du 27 au 29 Octobre 2008

10-T.Ayadat K.Abbeche and A Hanna. Assessment of Some Factors Affecting Soil Collapse Behaviour. 60th Canadian Geotechnical Conference § 8th Joint CGS/IAH-CNC Ground Water Conference Ottawa, Ontario, Canada October 21-24, 2007.

11-K.Abbeche, F.Hammoud and T.Ayadat. Influence of Relative Density and Clay Fraction on Soils Collapse In the 2nd International Conference Mechanics of Unsaturated Soils 7th-9th March 2007, Bauhaus-Universität Weimar, Germany.

12- S.Bellil, k.Abbeche and O.Bahloul. Etude de l'effet du mélange bentonite ciment sur le potentiel d'affaissement des sols. 3^{ème} édition UNSAT Batna 2015 16-17 Novembre 2015.

13- H.Bekhouche, k.Abbeche and O.Bahloul. Traitement d'un sol gonflant par le ciment cas de la région de Tebessa Algérie. 3^{ème} édition UNSAT Batna 2015 16-17 Novembre 2015.

National Communications:

1-K.ABBECHE, T.AYADAT, Evaluation and new interpretations for collapse prediction *criteria*, 1er Séminaire national de génie civil, 15-16 Avr 2002, Laghouat, Algérie .

2-K.ABBECHE, T.AYADAT ET S.OUALI, Influence des limites d'Atterberg sur l'affaissabilité des sols, S.N.G.C 2003 ENSET ORAN, 28-29 Janvier 2003, Algérie.

3-K.Abbeche, S.Benmoussa et L. Demagh. Analyse numérique de la capacité portante sous l'influence mutuelle de deux semelles filantes reposant sur la surface libre d'un talus. 1^{ères} Journées d'Études sur la Modélisation Numérique et Expérimentales en Génie Civil Biskra 6 et 7 Mai 2008

4- M.S Laouar, **K.Abbeche** et F. Messaoud. Identification des sols affaissables en utilisant le penetrometre à cone et l'ultrason. Premier Symposium Méditerranéen de Géoengineering SMGE09 USTHB 20-21 MAI 2009 ALGER

Scientific animations:

- Chair of the Scientific Committee of the Civil Engineering Department
- Chair of the Scientific Council of the Institute of Civil Engineering Hydraulics and Architecture
- Chair of the Scientific Committee of the 3rd International Symposium UNSAT-BATNA 2015
- Chair of CFD Doctoral Training Committee
- Member of the scientific committee of the Civil Engineering Department 2007/2010
- Chair and Member of CP Magister
- Participation in scientific committees of several seminars (international and national)
- Participation in Jurys post graduation thesis

Affiliation :

- Association of Professional Engineers of Algeria since 1998.
- Algerian Council of Engineers, Batna Algeria, june 2007.
- Algerian Society of Geotechnical ALgeos), Algeria, since 2013

Research interest

Behavior of unsaturated and difficult soils, and foundations design on problematic soils; foundations, pile foundations and soil anchors; slope stability problems; instrumentations, methods and procedures for laboratory/field soil testing.