

CURRICULUM VITAE

1. **Family name:** TENU
2. **First name:** AUGUSTIN
3. **Date and place of birth:** 1936, November 24; Chişinău, Moldova Republic
4. **Nationality:** Romanian
5. **Civil status:** Married

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6. Education:

Institution (Date: from - Date to)	Degree(s) or Diploma(s) obtained:
University of Bucharest, 1976 - 1979	PhD in Geological Sciences, 1979
University of Bucharest, Faculty of Geology, 1955 - 1960	Geologist, Diploma "Magna cum laudae" 1960

7. Language skills *Indicate competence on a scale of 1 to 5 (1 - excellent, 5 - basic):*

Language	Reading	Speaking	Writing
Romanian	1	1	1
English	1	2	2
Italian	1	1	2
French	1	2	2
Russian	2	4	2
Spanish	3	5	4

8. Member in professional organizations:

- Romanian Association of Hydrogeologists (RAH), adviser of Council;
- International Association of Hydrogeologists (IAH);
- Société Internationale des Techniques Hydrothermale (SITH);
- Romanian Association of Hydrological Sciences (RAHS), head of Tracers Commission;
- Romanian Association of Geothermalism (RAG);
- International Association of Geothermalism (IAG).

9. Other skills (e.g. computer literacy, etc.): WINDOWS (Word, Excel, Power Point), and many professional software as: GWW, MULTIS, MODFLOW, Surfer, AQT SOLV, STEPTEST, FLOWPATH, CHEMFLOW, NETPATH, GWstat, Aquachem etc

10. Present position: Senior hydrogeologist, Individual Authorized Person as Expert of National Agency of Mineral Resources (see also <http://www.hidroizotopi.ix.ro>)

11. Years within the firm: 10

12. Key qualifications:

Specialized in **hydrogeology, geochemistry** and **application of environmental isotopic tracers in the study of water hydrologic cycle.**

- In the field of **classical hydrogeology and hydrochemistry** I carried out local and regional studies and syntheses for a better knowledge and **management of groundwater bodies** (e.g. Sarmatian and Barremian-Jurassic in South Dobrogea), for **assessment of pollution vulnerability** (Sâncrăieni, Tuşnad etc), for **delineation of groundwater protection areas** (Caragea - Dermen, Cişmea I & II, Constanţa Nord catchments etc) or for **mathematical modeling** in regional structures (South Dobrogea).

Coordinator of many hydrogeological studies regarding **drinking** (e.g. Romanian Plain, South Dobrogea), **geothermal** (e.g. Pannonian Depression, Moesian Platform) and **mineral groundwater** (e.g. Felix-1 Mai Spa, Herculane Spa, Geoagiu, Sângeorz, Călimăneşti-Căciulata, Moneasa, Miercurea Ciuc, Dorna etc).

Also in this field I have to mention the coordination (2002 – 2004) of the groundwater team of National Institute of Hydrology and Water Management - Bucharest in the **implementation of WFD 60/2000/EC in Romania**. I have a **good knowledge and experience in EC Directives especially for groundwater bodies included monitoring techniques and measurement standards.**

- In the field of **tracer's techniques** I used currently the entire range of environmental isotopes: tritium, radiocarbon, deuterium, carbon-13 and oxygen-18 in hydrogeologic, hydrologic, climatic changes and meteorological studies. I have coordinate some **international projects / research** contracts with Italy (1976 - 1979), IAEA (1983-1986; 1997-1999), Germany (1991-1994), took part to the IAEA project about groundwater in Romanian Plain (1969 -1971) and I have coordination of an international contract EU financed along the Danube (2013-2014).

13. Specific experience:

Country	Date from - Date to
Romania / hydrogeology	1960 - 1973
Italy / environmental isotope techniques in hydrology Univ Pisa	1974
Romania / hydrogeology / application of environmental isotopes techniques / environments impact studies, etc	1975 - 2013

14. Professional Experience:

Date from - Date to	Location	Company	Position	Description
2004-present	Bucharest, Romania	PFA	Expert hydrogeology	<ul style="list-style-type: none"> • Responsible of the EU financed contract "Research and detailed analysis by environmental isotopes of ground water located along the border Romania - Bulgaria". • Hydrogeology expert – during 2007 in the Cross Border Phare Project 122633/D/SER/BG named "Integrated management of transboundary groundwater between Bulgaria and Romania in Dobrogea area". • Hydrogeological and isotopic studies (Felix Spa zone, Miercurea Ciuc, Daia-Ploșoru, Dornelor basin, Dorna springs area, Bilbor, Tușnad Băi, etc) dealing with groundwater management (hydro-dynamic studies, monitoring programs, assessment of groundwater vulnerability conditions, etc). • Additional environmental field studies with stables isotopes (Brocken glacier in Nepal) or without isotopes (impact of a wind field turbines construction on environment in Bihar Mountains area).
2003 - 2004	Bucharest, Romania	National Institute of Hydrology & Water Management	Senior Scientist, Hydrogeologist	<p>1. The implementation of WFD 60/2000/EC in Romania.</p> <p>Were achieved the following:</p> <ul style="list-style-type: none"> ▪ identification, delimitation and characterization of groundwater bodies from the whole territory of Romania on the basis of some geological and hydrogeological criteria, of potential and existent anthropic influences upon the groundwater bodies, quantitative and qualitative status as well as of some water durable management criteria; ▪ anthropic impact evaluation upon the groundwater and establishing of risk bodies, for reach the good status until 2015 and their detailed characterization, in a further phase; ▪ establishing of the transboundary ground-water bodies and their detailed characterization ; ▪ presentation of the protected areas of the groundwater catchments used for water supply. <p><i>Two reports mentioned below refer to this problem.</i> <i>First, (BRETOTEAN, M., MACALEȚ, Rodica, TENU, A., MUNTEANU, M.T., RADU, E., RADU, Cătălina, DRĂGUȘIN, Doina – Studii privind corelarea metodologiilor de evaluare a</i></p>

				<p><i>resurselor de apă cu Directiva Cadru 60/2000/EC. Raport, arhiva INHGA, București, 2004) is regarding to the methodological part of the problem and the second one (BRETOTEAN, M., MACALEȚ, Rodica, TENU, A., MUNTEANU, M.T., RADU, E., RADU, Cătălina, DRĂGUȘIN, Doina – Roof Report for International Commission for the Protection of the Danube River, Vienna, 2004) refer to the integration of Romanian groundwater bodies in the whole Danube River Basin.</i></p> <p><i>Also, the 5 published papers mentioned at point 15.b. refer to the implement of WFD in Romania.</i></p> <p>Client: Romanian Water Authority</p> <p>2. Preparation of the project financed under LIFE ENVIROMENT “Sustainable Management of the Impact of Agricultural Practices on the Fratesti Aquifer Quality in the Bucharest Area” (FRATESTI-APA); cooperation with Schlumberger Water Services, National Research and Development Institute for Soil Science Agrochemistry and Environment and Romanian Waters – Argeș-Vedea Directorate.</p> <p>The main target of this project was to monitor the groundwater movement and its quality in the southern part of Bucharest following the noticeable piezometric level drawdown in the area of the city.</p> <p>Client: Ministry of Environment and Water Management</p>
1970 - 2003	Bucharest, Romania	National Institute of Hydrology & Water Management	Senior Scientist Head of Environmental Isotopes Lab	<p>1. Hydrogeological studies by classical methods in the main Romanian hydrostructures.</p> <p>In this category we must note as example a study carried out in South Dobrogea and published in “Regional Management of Water Resources” IAHS, publ. no. 268, Maastricht, 2001. The main target was the variation of resources in the lower aquifer due to anthropic and climatic causes.</p> <p>2. Hydrogeological studies by the aid of environmental isotopes techniques.</p> <p>We must note firstly in this category the paper “Long term survey of the karstic systems in S. Dobrogea by environmental isotopes” published in Water Resources and Environmental Problems in Karst, IAH, Belgrade, 2005. The isotopic monitoring was performed over the last 25 years and the features obtained were synthesized in a complex conceptual regional model.</p> <p>Also in this study category we can note some international contracts / cooperation:</p> <p><u>“Study of the geothermal waters from western part of Romania by isotopic means”</u> performed together IIRG, Pisa, Italy, in the 1976 - 1979 period.</p> <p><u>“Isotopic investigation on the evolution of groundwater dynamics in the principal aquifers of Dobrogea”</u>, IAEA research contract in the 1983 - 1986 interval.</p> <p>“Assessment of the pollution impact on the groundwater quality in South Dobrogea”, performed together three German partners in the 1991 - 1994 period.</p>
1960 - 1970	Bucharest, Romania	Hydrotechnical Studies & Res. Institute	Scientist, hydrogeologist	<p>Many local (for the implementation of national Romanian hydrogeological network) or regional studies in all the country & some hydrogeological syntheses.</p>

15. a. Other relevant information:

- Foreign experiences as fellow of:
 - International Atomic Energy Agency, Italy (1974 & 1995);
 - Israel (1991);
 - Commission of the European Communities, Italy (1993).
- Foreign experience in various international projects:
 - as expert in International European Aids projects (2007);
 - as coordinator in many international contracts:
 - IAEA Vienna (1983-1986 and 1997-1999);
 - Germany (1991-1994);
 - Italy (1976-1979).
- UN expert in hydrogeology, Romconsult 1984.
- Mentioned in “Specialists’ Dictionary - a Who’s who in Romanian Science and Technology” vol. 1, Ed. Tehn., Bucharest, 1996.
- Expert in hydrogeology of National Agency for Mineral Resources, 2004.
- Participant at many national and international workshops, colloquiums, conferences, symposiums (chairman at IAEA Symp. in Vienna, 1989), congresses and advisors groups.
- Romania’s branch office representative of Hydroisotop gmbh – Germany.
- Author or co-author of three books (one published in USA) and of more than 70 scientific papers.

15. b. Relevant publications:

▪ **Books**

ȚENU, A., (1981) - “Zăcămintele de ape hipertermale din nord-vestul României”. (Hyperthermal groundwater from North-Western part of Romania). *Edit. Acad., București*, 210 p.

PREDA, I., ȚENU, A., (1981) - “Resurse de ape minerale și termale”. (Mineral and geothermal resources). *Edit. Univ. din București*, 286 p.

ȚENU, A., (1987) - “Tracer investigations in geothermal systems”. Chapter 7 in “*Modern Trends in Tracer Hydrology*”, E. Gaspar Ed., C.R.C. Press, Boca Raton, Florida, USA, pp. 95-131.

▪ **Papers**

• **Related to groundwater quality**

ȚENU, A., (1968) - “Impurificarea apelor subterane” (Groundwater pollution). *Hidrotehnica*, **13**, pp.84-91.

ȚENU, A., DAVIDESCU, F., SIMIONAȘ, S., EICHINGHER, L., BERTLEFF, B., MICHEL, W., SECARĂ, E., CARADIMA, Z., PITU, N., (1994) - “Assessment of the pollution impact on the groundwater quality in South Dobrogea”. *Proc. of Intern. Hidrogeol Symp., May 1994, Constantza - Romania, Bucharest Univ. Press*, pp. 557-571.

ȚENU, A., DAVIDESCU, F., SIMIONAȘ, S., EICHINGHER, L., VOERKELIUS, S., MICHEL, W., BERTLEFF, B., (1996) - “Investigations of a possible groundwater pollution in the karstic system from South Dobrogea (Romania)”. *Isotopes in Water Resources Management, Proc. of Intern. Symp. IAEA 1995*, pp. 317-321.

ȚENU, A., DAVIDESCU, F., (1997) “Quality evaluation of groundwater in Southern Dobrogea”. *Theor. & Appl. Karstology*, vol.10, pp.63-77.

• **Related to isotopic studies of groundwater**

CONSTANTINESCU, T., ȚENU, A., (1972) - “Application of environmental isotopes in Romanian hydrogeological research”. *Meteorology and Hydrology*, **1**/1972, pp. 37-55.

ȚENU, A., NOTO, P., CORTECCI, G., NUTI, S., (1975) - “Environmental isotopic study of the Barremian-Jurassic aquifer in South Dobrogea (Romania)”. *Journ. of Hydrol.*, **26**, pp. 185-198.

ȚENU, A., DAVIDESCU, F., SLAVESCU, A., (1983) - “Quelques conclusions d’hydrogéologie isotopique dans la Dobroudja de Sud”. *Ann. Inst. Geol. Geofiz.*, **LXIII**, pp. 257-264.

ȚENU, A., DAVIDESCU, F., SLĂVESCU, ANA., (1987) - "Recherches isotopiques sur les eaux des formations calcaires dans la Dobroudja Meridionale (Roumanie)". *Isotopes Techniques in Water Resources Development, IAEA*, pp. 439-453.

ȚENU, A., SLAVESCU, A., DAVIDESCU, F., CUNESCU, M., (1992) - "Determination of the turnover time in a karstic hydrostructure by means of tritium". *Bull. AHR, București*, 1, no.1, pp. 43-46.

ȚENU, A., DAVIDESCU, F., (1996) - "Some considerations about radiocarbon method in carbonate fissured aquifers". *Acta Geologica Hungarica*, 39, Suppl. (Isotope Work-shop III), pp. 186 - 190.

ȚENU, A., IURKIEWICZ; A., DAVIDESCU, F., (2008) – Elemente hidrogeologice obtinute prin izotopi de mediu in carstul Muntilor Vâlcan.(Hydrogeologic elements obtained by environmental isotopic means in the Karst of Vâlcan Mountains). *Hidrogeologia - AHR, Vol. 8, Nr. 1*, pg 19 - 31.

- **Related to mineral & geothermal waters**

ȚENU, A., (1980) - "Elemente noi privind perspectiva de exploatare a acviferelor geotermale din vestul României". (New elements regarding geothermal aquifers from western part of Romania) *Hidrotehnica*, 25, pp. 277-281.

ȚENU, A., CONSTANTINESCU, T., DAVIDESCU, F., NUTI, S., NOTO, P., SQUARCI, P., (1981) - "Research on the thermal waters of the Western Plain of Romania". *Geothermics*, 10, pp. 1-28.

ȚENU, A., DAVIDESCU, F., SLAVESCU, A., (1983) - "Contributions a la connaissance de la recharge des aquifers thermaux a l'est de la Depression Pannonienne". *Ann. Inst. Geol. Geofiz.*, LXIII, pp. 265-274.

ȚENU, A., DAVIDESCU, F., MUSSI, M., SQUARCI, P., VAMVU, V., (1995) - "A low enthalpy geothermal system in the Moesian Platform". *Proc. of World Geothermal Congress, Florence, Italy 18-31 May 1995*, 2, pp. 1325 - 1329.

ȚENU, A., DAVIDESCU, F. (1998) - "Environmental isotopic studies on mineral and thermal waters in Romania: a review over the last 25 years". *Mineral and Thermal Groundwater, Proc. of Intern. RAH Symp., M.Ciuc 1998*, pp. 271-280.

ȚENU, A., DAVIDESCU, F., STĂNESCU, Gabriela (2006) – Considerații izotopice asupra zăcământului hipotermal Geoagiu Băi. (Isotopic considerations about hypothermal groundwater in Geoagiu Spa area). *Hidrogeologia-AHR, Vol. 7, Nr. 1*, pg 84 - 92. (Proc. of „Resursele de Ape Subterane din Romania - aspecte metodologice in contextul integrării in Uniunea Europeana”, Simpozion National Arcalia, 26-28 mai 2005).

ȚENU, A., DAVIDESCU, F., STĂNESCU, Gabriela (2006) – „Isotopic Considerations On The Geoagiu Băi Thermal Hydrostructure”. *On CD - Ohrid Balwois Symp*

- **Related to regional hydrogeology**

ENE, I., ȚENU, A., (1965) - "Studiul hidrogeologic al zonei orașului Giurgiu" (Hydrogeologic study of Giurgiu area). *Hidrotehnica*, 10, pp. 374-379.

CĂDERE, R., ȚENU SÂNZIANA, ȚENU, A., (1967) - "Considerații hidrogeologice privind valea Moldovei dintre Gura Humoului și Baia".(Hydrogeologic considerations in the Moldova Valley between Gura Humorului and Baia). *Hidrotehnica*, 12, pp. 457- 64.

ȚENU, A., ȚENU SÂNZIANA (1968) - "Hidrogeologia și regimul apelor freatice din zona Conțești-Titu".(Hydrogeology and regim of shallow aquifer in Conțești – țitu area). *Hidrotehnica*, 13, pp. 473-482.

ȚENU, A., (1975) - "Apele subterane de adâncime din Banat" (Deep groundwater from Banat). *Studii de Hidrogeol. IMH*, 12, pp. 59-74.

ȚENU, A., DAVIDESCU, F., (1984) - "Recherches isotopiques sur les eaux souterraines des formations poreuses de la partie orientale de la Depression Pannonienne". *Isotope Hydrology 1983, I.A.E.A.*, pp. 249-270.

ȚENU, A., DAVIDESCU, F., PETREȘ, R., STANESCU, Gabriela, (2001) – Variation des ressources souterraine du Dobrogea du Sud (Roumanie), effet conjugué des causes climatiques et anthropiques. *Regional Management of Water Resources, Proc. of Symp. Sixth IAHS, Maastricht*, 268, pp. 131-137.

ȚENU, A., DAVIDESCU, F., (2005) – Long term survey of the karstic system in South Dobrogea (Romania) by environmental isotopes. *Water Resources and Environmental Problems in Karst, Proc. of the Intern. Conf. Belgrade & Kotor / Serbia & Montenegro / 13-19 Sept. 2005*, pp. 465-470.

STĂNESCU, Gabriela, ȚENU, A., KARANJAC, J., PETREȘ, R., MACHKOVA, Marta., (2009) - Cooperarea transfrontalieră România – Bulgaria în zona Dobrogea – misiune europeană de monitorizare a apelor subterane (Romanian-Bulgarian transboundary cooperation in Dobrogea – an European project for monitoring of groundwater). *Hidrotehnica*, vol. 54, no. 3, pp. 57-65.(Ziua Mondială a Apei, 2009)

ȚENU, A., DIACONU, M., (2010) - Thermal aquifers in mesozoic karstified limestones from Oradea – Băile Felix & 1 Mai area, Western Romania. In *"Karst hydrogeology of Romania"*, pp. 415-429, I. Orasanu & A. Iurkiewicz Edts.,Oradea, Belvedere.

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- **Related to groundwater modelling**

ȚENU, A., (1992) - "Contribution des isotopes du milieu dans la modélisation mathématique des eaux souterraines. *Rencontres Hydrol. Franco-Roumaine*, **1**, UNESCO, Paris, pp. 87-98.

DANCHIV, A., CONSTANTINESCU, A., ȚENU, A., DAVIDESCU, F., (1996) - "Modélisation du bassin d'un lac littoral". *Rencontres Hydrol. Franco-Roumaine*, **2**, UNESCO, Paris, pp. 353-361.

- **Related to WFD 2000/60/EC**

BRETOTEAN, M., BALAT, Ruxandra, ȚENU, A., TOMESCU, G., MACALET, Rodica, RADU, Catalina, RADU, E., MUNTEANU, T., DRAUSIN, Doina (2004) – Proposed measures concerning Romanian groundwater bodies to be included in WFD Management Plan. *In Proceedings of "Groundwater and Water Framework Directive Management Plan", 3-4 May 2004, Gangemi Editore, Rome, Italy, pp. 16 – 17.*

Mihai BRETOTEAN, Rodica MACALET, Augustin ȚENU, Gabriel TOMESCU, Mihai Tudor MUNTEANU, Emil RADU, Doina DRAGUSIN, Catalina RADU (2005) – Delimitation and characterization of Romanian groundwater bodies, *Hidrotehnica*, vol. 50, pp.33 – 40.

Mihai BRETOTEAN, Rodica MACALET, Augustin ȚENU, Gabriel TOMESCU, Mihai Tudor MUNTEANU, Emil RADU, Doina DRAGUSIN, Catalina RADU (2006) - Corpurile de ape subterane la risc din România. (The groundwater bodies at risk in Romania). *Hidrogeologia-AHR, Vol. 7, Nr. 1, pg. 3 – 9. (Proc. of „Resursele de Ape Subterane din Romania - aspecte metodologice in contextul integrării in Uniunea Europeana”, Simpozion national Arcalia, 26-28 mai 2005).*

Mihai BRETOTEAN, Rodica MACALET, Augustin ȚENU, Gabriel TOMESCU, Mihai Tudor MUNTEANU, Emil RADU, Doina DRAGUSIN, Catalina RADU (2006) - Corpurile de ape subterane transfrontaliere ale României. (The Romanian transboundary groundwater bodies). *Hidrogeologia-AHR, Vol. 7, Nr. 1, pg. 9 – 16. (Proc. of „Resursele de Ape Subterane din Romania - aspecte metodologice in contextul integrării in Uniunea Europeana”, Simpozion national Arcalia, 26-28 mai 2005).*

Mihai BRETOTEAN, Rodica MACALET, Augustin ȚENU, Gabriel TOMESCU, Mihai Tudor MUNTEANU, Emil RADU, Doina DRAGUSIN, Catalina RADU (2006) - Implementarea Directivei Cadru a Apei 2000/60/EC in Romania, privind apele subterane. (The implementation of WFD 2000/60/EC, for groundwater, in Romania). *Simpozionul national „Resursele de Ape Subterane din Romania - aspecte metodologice in contextul integrării in Uniunea Europeana” Arcalia, 26-28 mai 2005.*

STĂNESCU, Gabriela, ȚENU, Augustin, , KARANJAC, J., PETREȘ, R., MACHKOVA, Marta (2009) - Cooperarea transfrontalieră România – Bulgaria în zona Dobrogea – misiune europeană de monitorizare a apelor subterane. *Hidrotehnica*, vol. 54, no. 3, pp. 57-65. (*Ziua Mondială a Apei, 2009*)

- **Related to other fields**

ȚENU, A., SLAVESCU, A., DAVIDESCU, F., (1989) - "Level and evolution of the tritium concentrations in the natural waters of Romania". *Meteorol. & Hydrol., Sp. Rep.*, pp. 41-48.

ȚENU, A., DAVIDESCU, F., (1991) - "Datation par radiocarbone dans la recherche spéologique". *Theor. & Appl. Karstology*, **4**, pp. 7-16.

ȚENU, A., DAVIDESCU, F., (1998) - "Carbon isotope composition of atmospheric CO₂ in Romania". *Isotope Techniques in the Study of Environmental Changes, Proc. of Intern. Symp IAEA 1997*, pp. 19-26.

VIFOREANU, A., ȚENU, A., LĂCĂTUȘU, C., T., (2006) – Date noi privind compoziția izotopică a ghețarilor din Himalaya: Brocken glacier, lanțul Jamal Himal / Nepal. (New data about isotopic composition of Hymalaian glaciers). *Hidrogeologia-AHR, Vol. 7, Nr. 1, pg 84 - 92. (Proc. of „Resursele de Ape Subterane din Romania - aspecte metodologice in contextul integrării in Uniunea Europeana”, Simpozion national Arcalia, 26-28 mai 2005).*

ENCIU, P., FERU, A., MITROFAN, H., ORASEANU, I., PALCU, M., ȚENU, A., (2008) – Un scurt istoric al hidrogeologiei romanesti (A short history of Romanian hydrogeology). *Hidrogeologia - AHR, Vol. 8, Nr. 1, pg 3 - 18.*

November, 2013