


ALESSANDRO CASASSO

Curriculum Vitae as of November 2nd, 2020

	Birth date and place:	Cuneo, 27 November 1984
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SHORT RESUME'

Alessandro Casasso is an assistant professor at Politecnico di Torino – Department of Environment, Land and Infrastructure Engineering (DIATI). He holds a PhD in Land and Environment Engineering (24th cycle, 2009-2011) at Politecnico di Torino, under the supervision of prof. Rajandrea Sethi, with a thesis on long-term performance modelling of Borehole Heat Exchangers, using a flow and heat transport simulation code.

His research field is shallow geothermal energy, both closed loop (Borehole Heat Exchanger, BHE) and open loop (Groundwater Heat Pump, GWHP). He developed a code called TRS (Thermal Recycling Simulator) to simulate the thermal short-circuit in GWHPs. He developed the mathematical method G.POT (Geothermal POTential) for the quantitative assessment of the geothermal potential with BHE.

He led a work package of the GRETA project (12/2015-12/2018), funded by the EU program INTERREG - Alpine Space with 2.3 M€, which was aimed at increasing the number of installed Ground Source Heat Pumps over the Alpine Regions

He is currently the PI of Politecnico di Torino in the PITER-Alpimed INNOV project (10/2018-10/2021), funded by the EU program INTERREG-Alcotra, coordinating a project action on the GHG emission reduction of ski resorts.

He worked on several consultancy projects concerning groundwater characterisation, modelling, and monitoring, and for trials on landfill groundwater contamination.

He has been supervising about 20 BC and MS theses in Environmental Engineering, Mechanical Engineering, Energy Engineering, and Architecture.

EDUCATION

- 2012:** PhD in Environmental Engineering (XXIV cycle) at Politecnico di Torino
Title of the thesis: *Low enthalpy geothermal systems: coupled flow and heat transport modelling of the long-term performances of Borehole Heat Exchangers*
Tutor: prof. Rajandrea Sethi
- 2010:** Civil/Environmental Engineer Qualification
- 2008:** M.S. in Civil Engineering at Politecnico di Torino.
Mark: 110/110.
Subject: groundwater flow and transport modelling of the phreatic aquifer at the Lido lagoon inlet
Advisors: prof. Antonio Di Molfetta and prof. Rajandrea Sethi

WORK EXPERIENCE

- Period:** December 2016 – December 2021
- Employer:** Politecnico di Torino – Department of Land, Environment and Infrastructure Engineering (DIATI)
- Position:** Assistant professor (RTDA 12/2016-12/2018, RTDB 12/2018-12/2021)
- Job type:** Research, teaching and consultancy
- Tasks (research):**
- Subject: contaminant transport modelling, Ground Source Heat Pump (GSHP) modelling;
 - Participation to the GRETA project, funded by the INTERREG - Alpine Space EU program (December 2015 – December 2018), further information at <http://www.alpine-space.eu/projects/greta>
Leader of WP4 – Assessment and mapping of Near-Surface Geothermal Potential;
 - Participation to the Italy-Quebec exchange project “Evaluation of geothermal potential for the agricultural production in northern Quebec and Italy”;
 - Participation to the PITER Alpimed-INNOV project, funded by the INTERREG – Alcotra EU program (October 2018 – October 2021). PI for the research unit of Politecnico di Torino;
- Tasks (teaching):**
- Teacher of the BC course “Environmental sustainability lab”
 - Teacher at the MS classes: groundwater engineering, hydrology, contaminant dynamics, renewable energy resources;
 - Advisor of BC and MS theses in Environmental, Energy and Civil Engineering.
- Tasks (consultancy):**
- Assessment and improvement of the water cycle at a sparkling wine industry in Canelli, Asti (January-June 2018).

- Period:** January 2012 – November 2016
Employer: Politecnico di Torino – Department of Land, Environment and Infrastructure Engineering (DIATI)
Position: Post-doc fellow
Job type: Research and professional consulting
- Tasks (research):**
- Ground Source Heat Pump (GSHP) modelling, both closed loop (BHEs - Borehole Heat Exchangers) and open loop (GWHPs Ground Water Heat Pumps). Mapping of the shallow geothermal potentiality of large territories.
 - Participation in the GRETA project, funded by the INTERREG - Alpine Space EU program (December 2015 – December 2018);
 - Assessment and mapping of the shallow geothermal potential in the province of Cuneo. Project funded by Fondazione Cassa di Risparmio di Cuneo. Further information at <http://bit.ly/geotermiaCN>);
- Tasks (consultancy):**
- Groundwater monitoring of the Mo.S.E. building sites in Venezia (up to November 2014);
 - Groundwater monitoring at the nuclear site of Saluggia (Piedmont) (up to June 2013);
 - Environmental forensics consultancy about MSW landfills.
- Tasks (teaching):**
- Support for exercises at the Groundwater Engineering course;
 - Lessons on GSHPs at PoliTO and other institutions;
 - Advisor of MS theses in Environmental Engineering, Mechanical Engineering, Energy Engineering and Architecture.

- Period:** January 2009 – December 2011
Employer: Politecnico di Torino – DITAG (Environmental Engineering Department)
Position: PhD Student
Job type: Research and professional consulting
- Tasks:**
- Groundwater monitoring of the Mo.S.E. building sites in Venezia;
 - Groundwater monitoring at the nuclear site of Saluggia (Piedmont);
 - Heat transport modelling of Ground Source Heat Pumps;
 - Informatic consultant of the research group of Groundwater Engineering;

- Period:** May-December 2008
Employer: Politecnico di Torino – DITAG (Environmental Engineering Department)
Position: Assistant researcher
Job type: Professional consulting
- Tasks:**
- Groundwater monitoring of the Mo.S.E. building sites in Venezia;

- Period:** May – June 2006
Employer: Cuneo Province administration
Position: Stage
- Tasks:**
- Hydraulic assessment of bridges with the software HEC-RAS;
 - Topographic surveys;
 - Assistance in office work.

PAPERS AND PROCEEDINGS

Scopus record as of November 2nd, 2020: 24 documents, 255 citations, h-index=9

Papers on International journals (Q1-Q2):

- Bartolini N., Casasso A., Bruno C., Sethi R., 2020, "Environmental and economic impact of the antifreeze agents in geothermal heat exchangers", *Energies*, vol. 13, issue 21, article no. 5653
- Casasso A., Ferrantello N., Pescarmona S., Bianco C., Sethi R., "Can borehole heat exchangers trigger cross-contamination between aquifers?", *Water*, vol. 12, issue 4, article no. 1174
- Velimirovic M., Bianco C., Ferrantello N., Tosco T., Casasso A., Sethi R., Schmid D., Wagner S., Miyajima K., Klaas N., Meckenstock R.U., von der Kammer F., Hofmann T., 2020, "A large-scale 3D study on transport of humic acid-coated goethite nanoparticles for aquifer remediation", *Water*, vol. 12, issue 4, article no. 1207
- Ravina M., Gamberini C., Casasso A., Panepinto D., 2020, "Environmental and health impacts of domestic hot water (DHW) boilers in urban areas: A case study from Turin, NW Italy", *International Journal of Environmental Research and Public Health*, vol. 17, issue 2, article no. 595
- Casasso A., Tosco T., Bianco C., Bucci A., Sethi R., 2020, "How can we make pump and treat systems more energetically sustainable?", *Water*, vol. 12, issue 1, article no. 67
- Böttcher F., Casasso A., Götzl G., Zosseder K., 2019, "TAP - Thermal aquifer Potential: A quantitative method to assess the spatial potential for the thermal use of groundwater", *Renewable Energy*, vol. 142, pp. 85-95
- Casasso A., Sethi R., 2019, "Assessment and minimization of potential environmental impacts of ground source heat pump (GSHP) systems", *Water*, vol. 11, issue 8, article no. 1573
- Casasso A., Capodaglio P., Simonetto F., Sethi R., 2019, "Environmental and economic benefits from the phase-out of residential oil heating: A study from the Aosta Valley region (Italy)", *Sustainability*, vol. 11, issue 13, article no. 3633
- Rivoire M., Casasso A., Piga B., Sethi R., 2018, "Assessment of energetic, economic and environmental performance of ground-coupled heat pumps", *Energies*, vol. 11, issue 8, article no. 1941
- Piga B., Casasso A., Pace F., Godio A., Sethi R., 2017, "Thermal impact assessment of groundwater heat pumps (GWHPs): Rigorous vs. simplified models", *Energies*, vol. 10, issue 9, article no. 1385
- Casasso A., Sethi R., 2017, "Assessment and mapping of the shallow geothermal potential in the province of Cuneo (Piedmont, NW Italy)", *Renewable Energy*, vol. 102, pp. 306-315
- Casasso A., Sethi R., 2016, "G. POT: A quantitative method for the assessment and mapping of the shallow geothermal potential", *Energy*, vol. 106, pp. 765-773
- Casasso A., Sethi R., 2015, "Modelling thermal recycling occurring in groundwater heat pumps (GWHPs).", *Renewable Energy*, vol. 77, pp. 86-93
- Casasso A., Di Molfetta A., Sethi R., 2014, "Groundwater monitoring at a tidal flood protection building site (MOSE project) in the Lagoon of Venice, Italy.", *Environmental Earth Sciences*, vol. 73, issue 5, pp. 2397-2408
- Casasso A., Sethi R., 2014, "Efficiency of closed loop geothermal heat pumps: a sensitivity analysis.", *Renewable Energy*, vol. 62, pp. 737-746

OTHER PROFESSIONAL EXPERIENCES

- Teacher at the course “Protection des ressources en eaux souterraines” (Protection of subsurface water resources) in Gaoua (Burkina Faso), for the NGO Hydroaid in the frame work of the project “Projet d’appui à la Maitrise d’Ouvrage Communale pour un accès durable et adéquat à l’eau potable et à l’assainissement dans 5 Provinces du Burkina Faso FED/2011/264-206”, July 28th – August 2nd 2014;
- Teacher at the course “Tecnico della bioedilizia – indirizzo impianti” (Bio-construction expert with specialization in technical plants): lesson and exercises on shallow geothermal systems (5+5 hours) in two editions of the course (April 2014 and April 2015);
- webmaster of the Groundwater Engineering research group website (<http://www.polito.it/groundwater>);

PERSONAL SKILLS

Foreign languages (CEFR)

	Written	Oral
English:	C1	C1
French:	B2	B1

PET (Preliminary English Test) with mark “Pass with merit” (June 2003).

Informatic skills

- Office:**
 - Microsoft Office (Word, Excel, Power Point) 2016;
 - Microsoft FrontPage (web pages) 2003;
- Graphics:**
 - Autocad 2010, Draftsight
 - Corel Draw X7;
- Engineering:**
 - FEFLOW 7.3 (finite-element flow and heat/contaminant transport modelling)
 - Visual Modflow 2011 (finite-difference flow and contaminant transport modelling);
 - SURFER 16 (modelling and representation of the spatial distributions of data);
 - MATLAB r2020a (computing language);
 - HEC-RAS 4.1 (river modelling);
 - QGIS 2.18 (Geographical Information System);
- Other informatic skills:**
 - Operating system installation and maintenance;
 - Hardware installation and maintenance;

Hobbies

Sport (cycling, running, cross-country skiing).

Volunteer for the in the digital inclusion project “Tutticonnessi”, refurbishing second-hand PCs to be donated to students.