

## Curriculum Vitae

Surname and name:	DEMATTEIS Antonio
Born:	10.05.1965
Nationality:	Italian
Education:	Ph.D. in Engineering Geology at the Swiss Federal Institute of Technology, Lausanne, Switzerland, 1995  M.Sc., Geology at the University of Turin, Italy, 1991
Current position:	Lead Geologist at Snowy 2.0 project
Professional associations:	Member of the Bolivian Association of Tunnelling (ABOTUNEL), since 2017  International Association of Hydrogeologists (IAH), since 1996. Member of the Italian executive committee (2012-2016), chairman of the IAH working group “study of sustainable water management in tunnels GESTAG (2012-2015)  European Geologist Title n° 1235, European Federation of Geologists, since 2014  International Association for Engineering Geology and the Environment (IAEG), since 1995. Member of the Italian executive committee (2007-2015), chairman of the IAEG Commission “Quantification of the geological model reliability for big civil works” (2008-2012).  Professional Geologist n° 400, National Council of Geologists, Piemonte, Italy, since 1994
Languages:	Italian            mother tongue  English            fluent  French             fluent  Spanish            fluent

## Specific Experience

### **Snowy 2.0 Pumped Storage Project (Australia) (2019–in progress)**

Preparation of preliminary & detailed design, technical assistance during construction of 2,000 MW pumped-storage project as EPC Contractor’s Engineer. Snowy 2.0 project connects two existing reservoirs of the Snowy Hydro Scheme in New South Wales, with some 26 km dia. 9.9 m waterway tunnels, and comprises a 800 m deep underground power station complex housing 6 pump-turbine units, intake/outlet structures for a design flow of 368 m<sup>3</sup>/s, two vertical surge shafts dia. 25 m and some 20 km of access tunnels and adits.

Resident Geologist. Client: Future Generation Joint Venture (Salini-Impregilo, Clough, Lane)

#### **Hydroelectric Multipurpose El Bala Project (La Paz – Beni) (2015–2018)**

The El Bala Multiple Hydroelectric Project, patronised by the National Electrical Company (ENDE), is envisaged for an installed capacity of 2,500 MW. While power generation is the main objective of the project, it also aims to enhance flood control, provide fluvial navigation, develop ecotourism and conservation of biodiversity. The Rio Beni is one of the most important rivers in Bolivia. Project Manager, Expert for engineering geology. Feasibility study, to identify potential suitable cascade solution for hydroelectric exploitation among 4 main dam sites in a section of 67 km of the river.

Final Design of Chepete Dam and Bala Dam. The Chepete hydroelectric power plant main elements are:

- Reservoir storage capacity of 31 cubic km;
- Two underground power houses;
- Assembly area and bridge;
- 16 vertical Francis turbines;
- Water intakes;
- 5 diversion tunnels;
- 4 Head race tunnels;
- 4 Head race pressure tunnels;
- RCC Dam of 183m maximum height;
- Upstream and downstream Cofferdams.

The Bala hydroelectric power plant main elements are:

- Power houses inside the dam body;
- Assembly area and bridge;
- 12 bulb-type turbines;
- Water intake;
- RCC dam;
- Upstream and downstream Cofferdams.

Client: ENDE Corporación (Empresa Nacional de Electricidad).

#### **Seminario and Santa Elena Tunnels on the Road connection Aburrá-Oriente (Colombia) (2012–2014)**

The road connection Aburrá-Oriente consists of a link between the Eastern part of the Department of Antioquia to the Western one, under the jurisdiction of the municipalities of Medellín, Envigado and Rionegro. The project will connect the cities of Medellín, Envigado and Rionegro to the José María Córdoba International Airport by means of the Las Palmas two-lane, dual-carriageway road. The alignment includes 2 twin-tube tunnels: the first one is the Seminario tunnel of 786.5m of length, while the second one is the 8,229m-long Santa Elena tunnel. Design Manager and Hydrogeological Expert. Hydrogeological assessment for the tunnelling impact on the hydrogeological surrounding environment during the updating and optimization of the detailed design. Hydrogeological investigations, groundwater flow numerical modeling and Client support for getting the Environmental Approval.

Client: Concesión Túnel Aburrá - Oriente S.A

#### **Hydrogeological study - Brenner Railway Base Tunnel (Italy/Austria) (2011–2013)**

The BBT consists of two tubes, each 8.1m wide, running 70m apart from one another. These tubes are each equipped with a single track, meaning that train traffic through the tubes is one-way. The two tubes are linked every 333m by cross passages. These can be used in emergencies as escape routes. This configuration conforms to the highest security standards for tunnels. A peculiar feature of the Brenner Base Tunnel (BBT) is the exploratory tunnel running from one end to the other. The excavations of the exploratory tunnel will provide information on the rock mass and thereby reduce construction costs and times to a minimum. The exploratory tunnel will be essential for drainage when the BBT becomes operational. Updating of the hydrogeological knowledge of the Project corridor, including new hydrogeological study of the BBT (54km), aimed at the final design completion. Member of GE-OTeam Expert Group. Design Manager and Hydrogeological Expert.

Client: Galleria di Base del Brennero – Brenner Basistunnel BBT SE.

### **Hydrogeological study. Lyon – Turin high speed railway line (France/Italy) (2005–2007)**

The new railway connection Lyon-Turin has a length of 74,2 km between Saint Jean de Maurienne, Savoy (France), and Bruzolo, Piedmont (Italy). The alignment includes both underground and surface complex infrastructures. The most important underground works (53 Km base tunnel + 12 Km Bus-soleno Tunnel + 510 m deep ventilation shaft + 5.6 Km Val Clarea ventilation tunnel). Coordination of the hydrogeological studies including aquifers characterization, 3D structural geology analysis, hydrogeological investigations, geochemistry, water point monitoring. Forecast of groundwater inflow into tunnels, aquifer recharge evaluation and comparison with other tunnels in similar hydrogeological conditions Impact of groundwater inflow on the environment. Project Manager and Senior Hydrogeologist. Client: Lyon Turin Ferroviaria SaS.

## **Teaching Activities**

- 2016 Invited professor in the Post Graduated Master Course “Gestión des Recursos Hídricos, Modulo Hidrogeología, Centro de Levantamientos Aeroespaciales y Aplicaciones SIG para el desarrollo sostenible de los recursos naturales (CLAS)”. Universidad Mayor de San Simón, Cochabamba, 19-21 Julio 2016
- 2016 Invited professor in the Post Graduated Master Course Tunnelling and Tunnel Boring Machines: Hydrogeological Aspects and Water Inflow into the Tunnel
- 2014 Invited professor in the Post Graduated Master Course Tunnelling and Tunnel Boring Machines: Hydrogeological Aspects and Water Inflow into the Tunnel
- 2011 Invited professor PhD Programme in hydrogeology applied to underground civil works. Prof. Massimo Civita. Politecnico di Torino, Italy.
- 2010 Invited professor to the International Research Institute (IIR), Milano, 23 Nov. 2010: Maintenance and safety in tunnels and galleries
- 2010 Invited for lecture at the Neuchatel University, Switzerland: Hydrogeology in tunnelling
- 2004 Invited professor for lecture to the PhD Programme in Analysis and Governance of Sustainable Development (DAGO), lecture on Water Resources. School of Advanced Studies in Venice International University, Italy.
- 2002 Invited professor for lecture to the applied geology course at the University of Parma: "groundwater inflow into underground works in alpine contest" (11/04/02)
- 2001 Invited for lecture at the Royal Institute of Technology in Stockholm: “Geological and hydrogeological characterization as a decision-aid tool for the evaluation of groundwater impact on tunneling: examples from the Alps and the Andes” (19/02/01).

## **Professional experience**

### **Since 2019**

Lead Geologist at Snowy 2.0 project for the Lombardi Engineering Ltd, Australia.

### **2017–2019**

Manager of Bolivia Branch and Project Manager, Geologist at GEODATA Engineering SpA.

### **2014–2016**

Manager of the Engineering Geology Sector at GEODATA Engineering SpA.

### **1999–2014**

Partner, Technical Director from 2000 to 2010 and Managing Director from 2011 to 2014, hydrogeologist and engineering geology, by SEA Consulting srl.

### **1995–1999**

Hydrogeologist, Engineering geologist, Geological survey, by GEODATA SpA.

### **1992–1995**

Assistant in the Laboratory of Geology GEOLEP, by EPFL Swiss Federal Institute of Technology, Switzerland (CH).

### **1992**

Geological survey, CNR-IRPI (National Research Council).

### **1992**

Geologist, field surveyor, GEOECOS.

## **Publications**

### **P. Notaro, G. Cianflone, D. Fontan, and A. Dematteis, 2018**

The importance of the geological reference model in the civil engineering projects: the example of Piscopio I tunnel (Southern Italy). Accepted on 2 Jul 2018 for publication on *Geingegneria Ambientale e Mineraria (GEAM)*.

### **A. Dematteis, J. Silva, J.L. Mancipe, 2017**

Hidrogeología aplicada a la excavación de obras subterráneas, el caso de estudio del túnel Santa Elena, corredor vial Aburra Oriente, Medellín, Colombia. International Conference on Groundwater - ICGW2017, Bogotá, Colombia, August 28th-31th 2017

### **L. Soldo, A. Dematteis, M. Barla, 2017**

Geothermal exploitation of urban tunnels. Feasibility Assessment and Design Guidelines. WTC 2017 (currently under preparation)

### **D. Rocha, A. Zuluaga, Luis Alberto Acuña, A. Dematteis, 2016**

Bala hydropower project new approach new challenge. HYDRO2016 - Montreux, Switzerland 10-12 October 2016.

### **P.H. Perazzo, A. Dematteis, A. Lavagno, G. Russo, 2016**

Probabilistic approach to the design supervision of the Miguillas EPC hydroelectric project in Bolivia. HYDRO2016 - Montreux, Switzerland 10-12 October 2016.

### **A. Dematteis, P. Gilli, M.E. Parisi, L. Ferrero, F. Furno, 2016**

Galleria geognostica La Maddalena: ritorno d'esperienza sugli aspetti idrogeologici e geotermici. *Acque Sotterranee - Italian Journal of Groundwater*. (currently under review.)

### **L. Soldo, A. Dematteis, F. Furno, M. Barla, 2016**

Istanbul metro: a possible example of energy geostructure. *newDist: SBE16 Towards Post-Carbon Cities*, July 2016 (ISSN 2283-8791).

### **A. Dematteis & L. Soldo, 2015**

The geological and geotechnical design model in tunnel design: estimation of its reliability through the R-Index. *Georisk: Assessment and Management of Risk for Engineered Systems and Geohazards*, DOI:10.1080/17499518.2015.1104547.

### **X. Liu, G. Russo, A. Dematteis, M. Fachino, 2015**

Analysis of TBM Advancement Data of The Frejus Tunnel Safety Gallery. *SEE Tunnel: Promoting Tunneling in SEE Region* "ITA WTC 2015 Congress and 41st General Assembly. May 22-28, 2015, Lacrova Valamar Congress Center, Dubrovnik, Croatia.

**A. Dematteis, 2015**

Methodological approach to evaluate water and heat flow within a deep tunnel. Session S2.4 - Aqua 2015 - 42nd IAH Congress, Rome.

**Ricci, Dematteis, Uttini, 2015**

Groundwater forecast in tunneling: a classification approach to assess water inflow evolution based on case histories. Session S3.10 - Aqua 2015 - 42nd IAH Congress, Rome.

2015. Methodological approach for a sustainable management of water inflow and geothermal energy in tunnels. Furno, Barla, Dematteis, Lo Russo. Acque Sotterranee - Italian Journal of Groundwater (2015) - AS14066: 037 – 043.

**Fontan, Dematteis, 2014**

L'importanza del monitoraggio idrogeologico per la comprensione della dinamica dei versanti nelle Langhe, l'esempio di Rodello. GEAM - Associazione Georisorse e Ambiente.

**R. Torri, N. Monin, L. Glarey, A. Dematteis, L. Brino, M.E. Parisi, 2014**

Methodological approach for the valorisation of the geothermal energy potential of water inflows within tunnels. IAEG XII Congress Engineering Geology for Society and Territory, Torino, 15-19 settembre 2014.

**Dematteis, Uttini, Ricci, 2014**

The WBT method: Water Balance approach to estimate long-term water inflow into Tunnels. Viterbo, Italy, June 18-20, 2014, pp 134-135.

**Fontan, Dematteis, 2014**

L'importanza del monitoraggio idrogeologico per la comprensione della dinamica dei versanti nelle langhe, l'esempio di Rodello. 2014 GEAM

**Notaro, Dematteis, Dell'Orto, Venturini, Lieto, Marazzita, Vaccaro, Gianvecchio, 2013**

Lavori di ammodernamento per la S.S. 106 "Jonica": lo studio e la realizzazione del Megalotto 1 della s.s. 106 da Marina di Gioiosa Jonica ad Ardore. Strade & Autostrade 1-2013.

**Preisig, Dematteis, Torri, Monin, Milnes, Perrochet, 2013**

Modelling Discharge Rates and Ground Settlement Induced by Tunnel Excavation. Rock Mech Rock Eng

**A. Dematteis, 2013**

Guidelines on sustainable water management in tunnels (GESTAG). IAEG XII International Congress, Torino

**A. Dematteis, 2012**

Presentazione dell'attività della commissione IAEG Italia: Raccomandazioni per la quantificazione dell'affidabilità del modello geologico applicato alla progettazione di grandi opere civili. Geingegneria Ambientale e Mineraria (GEAM), Anno XLIX, n. 3, dicembre 2012, 23-31.

**Dematteis, Gargini, Petitta, Tallini, Torri, Vincenzi, 2012**

Guidelines on groundwater and environmental issues in tunnelling. Experiences from Italy. Abstract in IAH2012 Congress, Niagara Falls.

**Damiano, A., Venturini G., Alzate M., Mancari G., Dematteis A., Soldo L., Vendramini M. Congrès, 2011**

The reference geological model for the corridor bioceanico Aconcagua project. AFTES Lyon 2011.

**Murgese D., Fontan D., Dematteis N., Filippi M.L., Dematteis A., 2011**

Valutazione del rischio da colate detritiche nell'ambito della pianificazione territoriale alla luce dei dati previsionali dei modelli climatici. Le modificazioni climatiche e i rischi naturali, Polemio M. (Ed.) 2011. CNR-IRPI, Bari, pp. 73-76

**Dematteis A., Filippi M.L., Dematteis N., Murgese D., 2011**

Scenari di cambiamento climatico locale a medio termine (50 anni) e possibili ricadute sui progetti mini idroelettrici. Le modificazioni climatiche e i rischi naturali, Polemio M. (Ed.) 2011. CNR-IRPI, Bari, pp. 105-108.

**Dematteis A., Torri R., Chereau B. and Ducrot M., 2011**

Groundwater in the Perthus Tunnel: feedback after excavation. AQUA mundi (2011) - Am03026: 27 - 34

**Surace I.R., Torri R., Murgese D., Dematteis A., 2011**

Management of disposals materials: evaluation of the presence of asbestos in rock and soils using Polarized Light Microscopy. Geingegneria Ambientale e Mineraria, Anno XLVIII, n. 2, agosto 2011, 27-46.

**Dematteis A., Dall'Acqua S., Sacchi E., 2009**

Misure di portata con metodo chimico per diluizione e calcolo del bilancio idrogeologico in torrenti alpine: esempio di applicazione nel vallone di Roj (Alpi Occidentali). Acque Sotterranee 18/2009, pp. 55-62.

**Bianchi G.W., Perello P., Venturini G., Dematteis A., 2009**

Determination of reliability in geological forecasting for tunnel projects: the method of the R-Index and its application on two case studies. Workshop IAEG Italy, Milan, 16 June 2009 (<http://www.iaeg.it/>).

**Dematteis A., Marchisio D., Meucci L., Morello G., 2009**

Water resource protection in mountain regions. Commission for Water Sustainability, International Geographical Union (IGU): Managing water in a changing world, International Conference, Torino, July 27 to 31, 2009

**Venturini G., Dematteis A., Bianchi G.W., Alzate M., 2009**

Geological reference model reliability variations according to study detail variability during the different design phases. VII Forum Italiano di Scienze della Terra. Rimini 9-11 September 2009.

**Dematteis, A., 2008**

Come prevenire e gestire venute d'acqua in galleria. Strade & Autostrade, Milano, 1/2008, XII, pp 66-70.

**Perrochet, P., Dematteis, A., 2008**

Modélisation analytique des venues d'eau dans un tunnel en cours de percement. Bulletin d'Hydrogéologie N°22 (2008), 8 pp.

**Dematteis, A., Mancari, G. Marini, M. Proc., 2007**

Reliability assessment in geological forecasts for a highway tunnel: the application of the R-index method in sedimentary rocks. FIST GEOITALIA 2007, Rimini 12-14 settembre 2007, 8pp.

**Perello, P., Venturini, G., Delle Piane, L., Dematteis, A. Felsbau, 2007**

Ground water inflows in tunnels excavated in faulted rock mass. vol 4, pp 28-34.

**P. Perrochet and A. Dematteis, 2007**

Modeling transient discharge into a tunnel drilled in dipping layered Formations, Ground Water, 45/6, pp 786-790.

**A. Dematteis, R. Torri, M. Looser, 2007**

Water Resources Management in Tunneling: insights in the decision-making process to improve tunnels environmental sustainability.

**Venturini G., Bianchi G.W., Delle Piane L., Dematteis A., Perello P., Botte J., 2005**

Les investigations géologiques indirectes : un outil économique et efficace mais sous-estimé dans le cadre de la planification et construction des ouvrages souterrains. Congrès AFTES 2005

**Perello P., Venturini G., Dematteis A., Bianchi G.W., Delle Piane L., Damiano A., 2005**

Determination of reliability in geological forecasts for linear underground structures: the method of the R-Index. Geoline Int. Symp.- Lyon 23-25 May 2005, pp.8

**Dematteis A., Perello P., Delle Piane L., Torri R., Thiery M., Darmendrail X., Venturini G., 2005**

Tunnels profonds et impact des aquifères : l'exemple du tunnel ferroviaire Lyon-Turin Geoline Int. Symp. Lyon 23-25 May 2005

**Dematteis A., Torri R., Looser M., Perello P., Venturini G., 2005**

Water Resources Management in Tunnelling: a procedure to improve tunnels environmental sustainability 2nd International Workshop on Aquifer Vulnerability and Risk, 4th Congress on the Protection and Management of Groundwater – Parma, Italy 21-22-23 September 2005

**Fontan, D. Stringa, I., Dematteis, A., 2004**

Valutazione della pericolosità dei conoidi alluvionali. 10° convegno Intrapraevent. La Difesa del territorio abitato da piene, colate detritiche, valanghe e frane Riva del Garda (Trento) Italia

**E. Sacchi, A. Dematteis, P. Rossetti, 2004**

Past and present circulation of CO<sub>2</sub>-bearing fluids in the crystalline Gran Paradiso Massif (Orco Valley, north-western Italian Alps): tectonic and geochemical constraints. Applied Geochemistry 19 (2004) 395–412.

**Dematteis, X. Darmendrail, P. Perello, A. Damiano, S. Pastorelli, J.P. Novel, L. Delle Piane, E. Baptdier, P. Perrochet, P. Renard, F. Gallarà, L. Brino, 2003**

The hydrogeological studies concerning the new international railway connection between Lyon and Turin: forecasting groundwater impact during tunneling. 1st International Conference on Groundwater In Geological Engineering ICGGE 2003, 22-26 sept. 2003, Bled, Slovenia.

**Pastorelli, Martinotti, Perello, Dematteis Marini, 2003**

Development of the Low Enthalpy Geothermal Resources of the Alpine Chain. 1st International Conference on Groundwater In Geological Engineering ICGGE 2003, 22-26 sept. 2003, Bled, Slovenia.

**Rossetti, A. Dematteis, E. Sacchi, G. Mancari. I. Vanzo, L. Delle Piane, P. Perello, A. Conti, 2002**

A multidisciplinary study of Late-Alpine hydrothermal fillings in the Gran Paradiso Massif (Orco Valley, North-Western Alps): an unconventional approach in hydrogeological studies for underground works. Atti dell'81esimo congresso della Società Geologica Italiana. Torino, 10-12 settembre 2002.

**Venturini G, Damiano A, Dematteis A., Delle Piane L., Fontan D., Martinotti G., Perello P., 2001**

L'importanza dell'affidabilità del modello geologico di riferimento negli studi per il tunneling. Geoitalia, riassunti del 3° forum Italiano di Scienze della Terra, Chieti, 5-8 September 2001, 426-427.

**Dematteis, A., Kalamaras, G., Eusebio, A., 2001**

A systems approach for evaluating springs drawdown due to tunnelling. AITES-ITA 2001 World Tunnel Congress, Milano, Italy 10-13 June 2001, II, 257-264.

**Delle Piane L., Dematteis A., Perello P., Fiamberti A., 2001**

The geological and hydrogeological study: "back to the past" as an innovative approach to preliminary feasibility studies for underground hydro-power plants in alpine environment. AITES-ITA 2001 World Tunnel Congress, Milano, Italy 10-13 June 2001, II, 249-256.

**Dematteis A., Eusebio A., Grasso P.G., Pittaluga F., 1996**

A methodology for forecasting the hydrogeological impact of tunnelling in mountainous regions. 1st Int. Conf.: The Impact of industry on groundwater resources, Cernobbio, Italy, 22-24 May 1996.

**Dematteis, A., 1995**

Typologie géochimique des eaux des aquifères carbonatés des chaînes alpines d'Europe centrale et méridionale. Extrait de la thèse de doctorat n° 1419 de l'EPFL, GEOLEP, Lausanne, 226 pp.

**Dematteis, A., Salvati, R., Tersigni, S., 1995**

Contributo alla caratterizzazione idrogeologica e idrogeochimica dell'acquifero della Montagna Grande (Abruzzo, Italia). 2° International Meeting of Young Reserch. in Applied Geology (2° IMYRAG), Peveragno, p. 314-320.

**Looser M.-O., Dematteis, A., 1995**

Aquifères des Préalpes romandes : la source des Avants (Lias) et les sources de Grandchamp (Malm/Dogger). 2° International Meeting of Young Reserch. in Applied Geology (2° IMYRAG), Peveragno, p. 344-349.

**Looser M.-O., De Coulon, S., Maréchal, J.-C., Dematteis, A., Hesske S., 1995**

Apport des traces minérales dans la typologie des eaux souterraines : le projet AQUITYP. 2° International Meeting of Young Reserch. in Applied Geology (2° IMYRAG), Peveragno, p. 338-343.

**Arrà, A., Crema, G.C., Dematteis, A., Pambianchi G., Pucciarelli R., 1994**

Idrogeologia della dorsale M.te Catria-M.te Acuto. International Meeting of Young Reserch. in Applied Geology (IMYRAG), Lausanne 21 April 1994, p. 5-10.

**Dematteis, A., 1994**

Dimensioni e dinamica di svuotamento del lago provocato dalla frana di sbarramento del M. Avi (Valle d'Aosta, Italia). International Meeting of Young Reserch. in Applied Geology (IMYRAG), Lausanne 21 April 1994, p. 85-89.

**Bauducco, F., Dematteis A., De Luca, D.A., Masciocco, 1994**

La valutazione delle potenzialità idriche di un bacino alpino: il metodo Kennessey applicato alla Valle Varaita (Alpi Cozie-CN). "L'evoluzione della Montagna italiana fra tradizione e modernità", coord. da R. Bernardi, S. Salgaro e C. Smiraglia, Patron ed., Bologna, p. 39-52.

**Tacher L., Mayoraz R., Parriaux A., Dematteis A., 1993**

Modélisation tridimensionnelle des structures géologiques complexes et des ouvrages du génie civil. Geotechnical Engineering of Hard Soils - Soft Rocks, Int. Symp., Athens 20-23 September 1993, p. 307-310.

**Dematteis A., Hesske S., 1993**

Elementi in traccia come traccianti geogenici, due esempi: acquiferi in rocce carbonatiche e in sedimenti molassici. Risultati preliminari. 3° convegno nazionale dei giovani ricercatori di geologia applicata, Potenza 28-30 ottobre 1993, p. 379-387.

**Bauducco F., De Luca D.A., Dematteis A., Masciocco L., 1992**

Valutazione delle potenzialità idriche di un bacino alpino: l'esempio della Valle Varaita. 2° convegno nazionale dei giovani ricercatori di geologia applicata, Viterbo.