

CURRICULUM VITAE DENITZA D. VOUTCHKOVA

PERSONAL DETAILS

name: Denitza Dimitrova VOUTCHKOVA
 date of birth: 05 August 1982
 nationality: Bulgarian
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INTERESTS

- Hydrology, hydrograph analysis of headwater watersheds, disturbance hydrology
- Water resources (incl. quality & quantity), inorganic hydrogeochemistry, freshwater acidification
- Time-series analysis, automation of data-analyses in R, GIS and geospatial statistics; exploratory multivariate data analysis (incl. PCA); Theory of Sampling
- Medical geology; Chronic human exposure and health implications; environmental science
- Science communication, data visualisation, social media, painting & photography

EXPERIENCE

- Jan. 2017 – Dec. 2018 (2 years) **Lecturer (Educator track)** at the Department of Geography (National University of Singapore, Singapore).
 Affiliated with Tropical Environmental Change research group (TEC) (the Physical Geography group). Teaching experience and project involvement:
- *Undergraduate module coordinator (100%)*: Earth Systems Science (1 sem.), Environmental Modelling (2 sem.), Advanced Hydrology and Catchment Management (1 sem), Water and the Environment (1 sem.)
 - *Graduate module coordinator*: Discussing Human-Environment Interactions (100%, 1 sem.), Dynamic Environments (co-teaching 50%, 1 sem.)
 - *Student supervision*: 3 honours students (4th year) and a master student
 - *Research projects* (co-PI): (1) "Drivers and Consequences of Stream Acidification in Natural Streams of Singapore" with main PI Alan D. Ziegler; funded by NParks, Singapore; (2) "Groundwater Research Programme" with main PI: Vladan Babovic, funded by NUSustainability Cluster Research Initiative
 - Service: Student & External Relations Committee (SERC) at NUS Geography;
- Jul. 2015 – Dec. 2017 (1 ½ year) **Postdoctoral researcher** at the Department of Ecosystem Science & Management (University of Wyoming, US); Affiliated with Wyoming Center for Environmental Hydrology and Geophysics (WyCEHG) & Spatial Analysis of Watershed & Landscape Systems Group (SAWLS):
- *Project*: "Uncovering the hidden signals in streamflow".
 - *Short description*: I was looking at streamflow variability/change at several snowmelt dominated headwater watersheds located in Wyoming. The goal of the study was to differentiate between streamflow responses due to climate and/or other local disturbances, e.g. Bark Beetle infestation, forest fires etc. The main focus of the study is on summer low flows. The work included preparation of SNOTEL data from

Wyoming (near 70 stations, ~30 years of data per station) for temporal and spatial analysis aiming at uncovering trends in snow-water equivalent magnitudes and timing.

- *Additional:* involvement in field work for other WyCEHG projects (e.g. intensive snow survey April 2016, hydrogeophysics and geotechnical field work, field season 2015 & 2016), preparation of short movie (<5 min) about irrigation return flow quantification and hydrogeophysical methods

Nov. – 31 Dec. 2014
(2 months)

Research assistant at the Department of Geoscience (AU, Denmark)

Job description: concluding project (data management), revising and submitting manuscripts based on the PhD work

2011-2014
(3 years)

PhD fellow at the Department of Geoscience (AU, Denmark)

- *Projects involvement:* “Iodine in the hydrological cycle in Denmark and implications for human health” and “Arsenic levels in Danish Groundwater and Drinking water: Historical Data Assessment 2001-2013”.
- *Teaching and student supervision:* field course in Hydrology and Geomorphology (in Danish: “Hydrologisk og Geomorfologisk Feltkursus, Klim”, 2012: 2 weeks, 2013: 6 days; 2014: 5 days); assisting with the course “Hydrology, soil and dynamic geomorphology” (in Danish: “Hydrologi, jordbund og dynamisk geomorfologi” (2012)); supervision of 2 small student projects.
- *Research visits:* 3-4 months at Department of Groundwater and Quaternary Geology (GEUS) working on the Arsenic project, and regular visits for supervisor meetings (once every (next) week); 3 months in Autumn 2013 at GIS Centre, Ryan Institute and School of Geography and Archaeology, National University of Ireland, Galway (NUI Galway, Ireland)

Apr. – 30 Apr. 2011
(1 month)

Engineer at Danish Nature Agency (Naturstyrelsen, Aalborg)

Job description: field measurements and data analysis, Lundgård Bæk Catchment Area

2008-2009
2006-2008

Freelancing civil engineer (geotechnical, hydrotechnical projects)

Civil engineer at “Plana –B” LTD (Bulgarian R&D company founded in 1992) (geotechnical, hydrotechnical projects)

Jul. – Sept. 2006
(3 months)

Trainee at Direction de l’Environnement et du Cadre de Vie, Service Aménagement des Rivières, Conseil Général du Haut-Rhin (Colmar, France); *internship description:* designing of fish ladders

Jul. – Aug. 2005
(2 months)

Trainee at bureau “Constructions”, GBS engineering (part of Glavbolgarstroy Holding, Bulgaria); *internship description:* designing concrete monastery wall (fence)

SKILLS

- **Software:** R & R Studio (statistics, data analysis & reporting), ArcMap, MS Office, Prezi, Illustrator & InkScape, Grapher, GeoScene3D & AutoCad (not used since 2011); I am comfortable with learning new programming languages and/or using other software.
- **Project management and organisational skills:** I managed successfully my own PhD and postdoctoral projects, including setting short-term goals and deadlines; during my experience at NUS, I managed four teaching assistants and co-managed the two research projects I was involved in.
- **Languages:** English (working proficiency), Bulgarian (native), Danish (currently refreshing), Russian (good reading & listening skills)

EDUCATION

- PhD** in Geoscience
(15 October 2014) **Aarhus University** (AU, Denmark), Faculty of Science and Technology, Department of Geoscience;
PhD Dissertation: Iodine in Danish Groundwater and Drinking water;
PhD Supervisors: Søren Munch Kristiansen (AU) and Birgitte Hansen (Geological Survey of Denmark and Greenland, GEUS);
Committee: Martin Rygaard (Technical University of Denmark, DTU), Olle Selinus (Linneaus University, Sweden), Bo Holm Jacobsen (chair, AU)
- MSc** in Engineering -
Water and
Environment
(22 June 2011) **Aalborg University** (AAU, Denmark), Faculty of Engineering and Science, Department of Civil Engineering;
Master thesis: Mapping of Nitrate Reduction Capacities on a Small Scale: Lundgårds Bæk Catchment Area;
Supervisors: Jacob Birk Jensen (NIRAS and AAU) and Morten Lauge Pedersen (AAU)
- MEng** in Hydraulic
(Hydrotechnic)
engineering
(13 July 2007) **University of Architecture, Civil Engineering and Geodesy** (UACEG, Bulgaria), Faculty of Hydraulic Engineering; *Major:* Hydraulic Engineering; *Professional qualification:* Civil/Construction Engineering;
Master thesis: Reconstruction of Pier 2 of Rosenets petrol port (Bulgaria);
Supervisor: Maria Girginova (UACEG)
- High school
(1996-2001) National High School in Finance and Business (Sofia, Bulgaria)

PHD DISSERTATION & MASTER THESIS

- Voutchkova, D.D.** **Iodine in Danish Groundwater and Drinking Water** (PhD thesis submitted to GSST, Aarhus University, on 31st of July 2014, defended on 9th of October 2014), p. 139
- Voutchkova, D.D.** **Mapping of Nitrate Reduction Capacities on a Small Scale: Lundgårds Bæk Catchment Area** (Msc thesis, Aalborg University, Denmark)
- Voutchkova, D.D.** Reconstruction of Pier 2 of Rosenets petrol port (Bulgaria); Supervisor: Maria Girginova (MEng thesis, UACEG, Bulgaria)

PEER REVIEW PUBLICATIONS

(From most to least recent)

- Voutchkova D.D.**, Miller SN, Gerow KG. **Parameter sensitivity of automated baseflow separation for snowmelt-dominated watersheds and new filtering procedure for determining end of snowmelt period.** In *Hydrological Processes* (2019) doi:10.1002/hyp.13369
- Voutchkova D.D.**, Hansen B., Ernstsens, V., Kristiansen S.M. **Nationwide Drinking Water Sampling Campaign for Exposure Assessments in Denmark.** In *International Journal of Environmental Research and Public Health* (2018) doi:10.3390/ijerph15030467
- Kessing, L.V., Gerds, T.A., Knudsen, N.N., Jørgensen, L.F., Kristiansen, S.M., **Voutchkova, D.D.**, Ernstsens, V., Schullehner, J., Hansen, B., Andersen, P.K., Ersbøll, A.K. **Association of Lithium in Drinking Water With the Incidence of Dementia.** In *JAMA Psychiatry* (2017) doi:10.1001/jamapsychiatry.2017.2362
- Kessing, L.V., Gerds, T.A., Knudsen, N.N., Jørgensen, L.F., Kristiansen, S.M., **Voutchkova D.D.**, Ernstsens, V., Schullehner J., Hansen B., Andersen P.K., Ersbøll A.K. **Lithium in drinking water and the incidence of bipolar disorder: A nation-wide population-based study.** In *Bipolar Disorders* (2017) doi: 10.1111/bdi.12524
- Voutchkova, D.D.**, Ernstsens, V., Kristiansen, S.M., Hansen, B. **Iodine in Major Danish Aquifers.** In *Environmental Earth Sciences* (2017) doi:10.1007/s12665-017-6775-6
- Knudsen, N.N., Schullehner, J., Hansen B., Jørgensen, L.F., Kristiansen S.M., **Voutchkova, D.D.**, Gerds, T.A., Andersen, P.K., Bihmann, K., Grønbæk, M., Kessing, L.V., Ersbøll, A.K. **Lithium in Drinking Water and**

- Incidence of Suicide: A Nationwide Individual-Level Cohort Study with 22 Years of Follow-Up.** In *International Journal of Environmental Research and Public Health* (2017) doi:10.3390/ijerph14060627
- Voutchkova, D.D.**, Schullehner, J., Knudsen, N. N., Jørgensen, L. F., Ersbøll, A. K., Kristiansen, S. M., Hansen, B. **Exposure to Selected Geogenic Trace Elements (I, Li, and Sr) from Drinking Water in Denmark.** In *Geosciences* (2015) doi: 10.3390/geosciences5010045
- Voutchkova, D.D.**, Ernstsens, V., Hansen B., Sørensen B., Chaosheng Z., Kristiansen, S.M. **Assessment of spatial variation in drinking water iodine and its implications for dietary intake: A new conceptual model for Denmark.** In: *Science of the Total Environment*, (2014) doi: 10.1016/j.scitotenv.2014.06.008
- Voutchkova, D.D.**, Kristiansen, S.M., Hansen, B., Ernstsens V., Sørensen, B., Esbensen, K. **Iodine concentrations in Danish groundwater: historical data assessment 1933-2011.** In: *Environmental Geochemistry and Health*, (2014) doi: 10.1007/s10653-014-9625-4

MANUSCRIPTS IN PREP

- Voutchkova, D.D.**, Miller S.N. Retrospective analysis of low flows at headwater watersheds in Wyoming: vegetation disturbance and climate variability
- Voutchkova, D.D.** Teaching Thiessen polygon at lower undergraduate level
- Voutchkova, D.D.** Technical note on using NIX PRO sensor for routine soil-color characterisation

PUBLISHED CONFERENCE ABSTRACTS

- 2017: **Voutchkova, D.D.**, Miller S.N. 50 years of change at 14 headwater snowmelt-dominated watersheds in Wyoming. Abstract and poster presentation, *AGU Fall meeting 2017*, New Orleans, US
- 2016: **Voutchkova, D.D.**, Miller S.N. Retrospective analysis of low flows at headwater watersheds in Wyoming. Abstract and poster presentation, *AGU Fall meeting 2016*, San Francisco, US
- 2016: **Voutchkova, D.D.**, Miller S.N. Characterization of Wyoming snow-water equivalent variability based on historical SNOTEL data, Abstract and poster presentation, *2016 CUAHSI Biennial Symposium: Finding Your Place in Big Data: Using Observations to Understand Hydrologic Processes for Predicting a Changing World*, Shepherdstown, WV, US
- 2015: **Voutchkova, D.D.**, Kristiansen, S.M., Hansen, B.2, Ernstsens, V. Governing factors and implications of spatially varying drinking-water iodine concentrations. Abstract and oral presentation, *6th International Conference on Medical Geology (MEDGEO 2015)*, Aveiro, Portugal
- 2015: Hansen, B., Schullehner, J., **Voutchkova, D.D.**, Kristiansen, S.M., Pedersen, C.B., Sigsgaard, T. Exposure of geogenic elements in drinking water and public health; Study possibilities in Denmark. Abstract, *6th International Conference on Medical Geology (MEDGEO 2015)*, Aveiro, Portugal
- 2015: **Voutchkova, D.D.**, Kristensen, S.M., Hansen, B., Ernstsens, V. Spatial variation of iodine in drinking water and groundwater in Denmark. Abstract and oral presentation, *9th annual meeting of Danish Water Forum (DWF2015)*, Copenhagen, Denmark.
- 2014: **Voutchkova, D.D.**, Hansen, B., Ernstsens, V., Esbensen, K., Sørensen, B, Kristensen, S.M.. High spatial variability of iodine in Danish groundwater and drinking water: geochemical factors and human health implications, **2014**. Abstract and oral presentation, *30th International Conference of the Society of Environmental Geochemistry and Health - European Section (SEGH2014)*, Newcastle, UK
- 2014: **Voutchkova, D.D.**, Ernstsens, V., Kristensen, S.M., Hansen, B., Spatial variability of drinking water iodine in Denmark: implications for future policy making. Abstract and poster presentation, *European Geoscience Union General Assembly 2014 (EGU2014)*, Vienna, Austria.
- 2013: **Voutchkova, D.D.**; Hansen, B.; Sørensen, B; Larsen, C.L.; Kristensen, S.M.. Arsenic Levels in Danish Groundwater and Drinking Water: Historical Data Assessment 2001-2013. Abstract and poster presentation, *5th International Conference on Medical Geology (MEDGEO2013)*, Arlington, Virginia, United States.
- 2013: **Voutchkova, D.D.**; Kristensen, S.M.; Hansen, B.; Ernstsens, V.; Sørensen, B.; Esbensen K., Dietary Iodine Intake from Drinking Water in Denmark. Abstract and oral presentation, *5th International Conference on Medical Geology (MEDGEO2013)*, Arlington, Virginia, United States.

- 2013: Kristensen, S.M., **Voutchkova, D.D.**, Sørensen, B., Hansen, B., Ernstsén, V., Esbensen, K., Iodine in Danish ground and drinking water – preliminary speciation results and design of a nationwide sampling campaign. Abstract, *7th annual meeting of Danish Water Research and Innovation Platform (DWRIP2013)*, DTU, Copenhagen, Denmark
- 2012: **Voutchkova, D.D.**, Kristensen, S.M., Hansen, B., Ernstsén, V., Sørensen, B., Esbensen, K. Multivariate Analysis of Danish Historical Hydrogeochemical Data with Respect to Iodine in Groundwater. Abstract and oral presentation, *SESEH 2012*, Galway, Ireland.
- 2012: **Voutchkova, D.D.**, Kristensen, S.M., Hansen, B., Sørensen, B., Ernstsén, V., Esbensen, K. Iodine in Groundwater in Denmark and Implications for Human Health. Abstract & oral presentation, *ATV Jord og Grundvand*, Gentofte, Denmark (oral presentation)
- 2012: **Voutchkova, D.D.**, Kristensen, S.M., Hansen, B., Ernstsén, V., Sørensen, B., Esbensen, K., Iodine in Groundwater in Denmark; Implications for Human Health. Abstract & oral presentation, *Medical geology workshop (GEUS)*
- 2011: Hansen, B., Ernstsén, V., Sørensen, B., Esbensen, K., Kristensen, S.M., **Voutchkova, D.D.** Iodine in groundwater and human health in Denmark; Issue of medical geology - relating natural geological factors and health. *MEDGEO 2011*

CERTIFICATES, AWARDS, GRANTS, AND INTERNATIONAL RELATIONS

Certification:

- 2018: Certification to NUS Safety & Health Management System for Academic Supervisor (Certification Number: OSHM/PI/18/FASS-008), 11th Sep 2018 (no expiry date)

Grants & other funding:

- 2018: **NUSustainability Cluster Research Initiative** (NUS) funded “Groundwater Research Programme”, role: co-PI; main PI: Vladan Babovic, period: 2 years, flexible (520,000 S\$)
- 2017: **National Parks Board** (NParks, Singapore) research grant “Drivers and Consequences of Stream Acidification in Natural Streams of Singapore” role: co-PI; main PI: Alan D. Ziegler, period: April 2017-April 2019 (248,520 S\$)
- 2017: **Department of Geography (NUS)** financial assistance to attend & present at AGU Fall meeting 2017 (3,700 S\$)
- 2016: **WyCEHG** (University of Wyoming) financial support to attend & present at AGU Fall Meeting 2016
- 2016: **Wyoming Women in Science and Engineering (WWISE) travelling grant** from EPSCoR Wyoming to attend and present research at AGU Fall Meeting (1,000\$)
- 2016: **CUAHSI travelling grant** to attend and present research at 2016 CUAHSI BIENNIAL SYMPOSIUM: Finding Your Place in Big Data: Using Observations to Understand Hydrologic Processes for Predicting a Changing World (500\$)
- 2016: **Wyoming Women in Science and Engineering (WWISE) travelling grant** from EPSCoR Wyoming to attend and present research at 2016 CUAHSI BIENNIAL SYMPOSIUM: Finding Your Place in Big Data: Using Observations to Understand Hydrologic Processes for Predicting a Changing World (750\$)
- 2013: **Student Travel Award (2013)** from the International Medical Geology Association (IMGA) for attending the 5th International Conference on Medical Geology in USA (1,000\$)
- 2013: **IMGA Gardner Research Grant (2013)** from the International Registry of Pathology (2,000\$) awarded for research grant application “Geographical distribution of drinking water iodine in Denmark as important factor for recognising population groups with low iodine intake”

International relations: member of the Danish chapter of International Medical Geology Association (IMGA); research collaborations with scientists from Denmark (Aarhus University, University of Southern Denmark, Geological Survey of Denmark and Greenland), Ireland (National University of Ireland, Galway), USA (Wyoming University), Singapore (National University of Singapore);

UNSUCCESSFUL GRANT APPLICATIONS

“Groundwater resources and unconventional oil and gas development”, funding body: Danish Council for Independent Research (DFF), instruments: DFF-mobilex and DFF individual post-doc funding (submitted April **2015, rejected**); applicant: Denitza D. Voutchkova, Denmark-Wyoming post-doc project with UWyo and GEUS (Denmark)

“Inorganic Trace Elements in Drinking Water and Implication for Public Health” application for post-doctoral scholarship, funding body: Carlsberg foundation (October **2014, rejected**); applicant: Birgitte Hansen (GEUS, Denmark); my involvement: application preparation, 2y post-doc position (continuation of PhD work)

“DanskVand: Surveillance of Quality, Health & Economy Related to Danish Drinking Water”, funding body: Programkomiteen for Bæredygtig Energi og Miljø (Denmark), instrument: Strategic research projects (submitted September **2014, rejected**); applicant: Torben Sigsgaard (AU, Denmark), 5 work packages with different PIs; my involvement: application preparation, 2y post-doc position in work package 1&2 (50:50%)