

Curriculum vitae

Name: Pedro Christopher RAU LAVADO

Resume: Hydrologist - Civil Engineer. Ph.D / M.Sc

Hydrologist for international scientific research networks with expertise in:

- Hydroclimatology, climate variability and change impacts on the hydrologic cycle.
- Hydrological processes at meso-scale in arid and semi-arid environments.

Author of publications in recognized refereed journals. Civil engineer with 10+ years of professional experience in water resources consulting for international engineering and environmental firms.

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Date of birth: 24/11/1982

Nationality: Peruvian

1. Education

PhD in Hydrology. 2017.

Université Toulouse III Paul Sabatier (UPS). Toulouse – France.

MSc (Master Recherche M2) in Hydrology, Hydrochemistry, Soil and Environment. 2011

Institut National Polytechnique de Toulouse (INPT). Toulouse – France.

MSc (Master in Sciences) in Water resources. 2009

Universidad Nacional Agraria La Molina (UNALM). Lima – Peru.

Civil Engineer 2007. Bachelor in Civil Engineering 2004

Universidad Nacional de Ingeniería (UNI). Lima – Peru.

2. Relevant research and academic experience

- Assistant professor and researcher

Institution: UTEC University of Engineering and Technology. Lima – Peru.

Dates: 2/2018 – Up to date.

Activities: Researcher in hydroclimatology. Lecturer in Hydrology and Environmental Engineering.

- Invited professor and visiting researcher

Institution: UNI National University of Engineering. Lima – Peru.

Dates: 10/2017 – Up to date; 11/2011 – Up to date.

Activities: Lecturer in Physical Hydrology and thesis supervisor in hydroclimatology and energy at Postgraduate Office in Hydraulic and Energy master and doctorate programs.

- Research assistant

Laboratory: Géosciences Environnement Toulouse GET (UPS/IRD/CNRS/CNES). Toulouse – France.

Dates: 02-09/2011; 10/2013 – in collaboration up to date.

Main project: Impacts of climate variability and change over South American Pacific coast hydrology.

Research topic: Rainfall and runoff regimes along the Peruvian Pacific Coast. Control mechanism associated with ENSO (El Niño Southern Oscillation) and sensitivity to climate variability.

- Research assistant.

Institute: Institut de recherche pour le développement (IRD). Lima – Peru.

Dates: 07/2008 to 05/2010.

Main project: Glaciers and Water Resources in the Tropical Andes: Indicators of Changes in the Environment.

Research topic: Spatio-temporal analysis of precipitation and temperature over Peruvian mountainous regions.

3. Relevant professional experience

- Company: **Knight Piésold Consultores**. Lima – Peru.
Dates: 06/2012 – 08/2013
Responsibilities: Staff Engineer. Hydrologic and hydraulic studies for mining and hydroelectricity projects.
- Company: **GRAMSA/Tetrattech/TierraGroup**. Lima – Peru
Dates: 08/2008 to 07/2010 & 10/2011 to 05/2012
Responsibilities: Consultant Engineer in Water Resources. Hydrologic and hydraulic studies for mining projects.
- Company: **Local Water Authorities**. Ministry of Agriculture. Arequipa, Moquegua, Huánuco, San Martín - Peru
Dates: 01-03/2006 & 01/2007 to 12/2008
Responsibilities: Consultant Engineer in Flood Control. Numerical river modeling. Risk assessment.

4. Relevant publications in refereed / indexed journals

Rau P, Bourrel L, Labat D, Frappart F, Ruelland D, Lavado W, Dewitte B, Felipe O, 2017. Hydroclimatic change disparity of Peruvian Pacific drainage catchments. *Theoretical and Applied Climatology*. <http://dx.doi.org/10.1007/s00704-017-2263-x>

Rau P, Bourrel L, Labat D, Melo P, Dewitte B, Frappart F, Lavado W, Felipe O, 2017. Regionalization of rainfall over the Peruvian Pacific slope and coast. *International Journal of Climatology*. <http://dx.doi.org/10.1002/joc.4693>

Bourrel L, **Rau P**, Dewitte B, Labat D, Lavado W, Coutaud A, Vera A, Alvarado A, Ordoñez J, 2015. Low-frequency modulation and trend of the relationship between precipitation and ENSO along the Northern to Center Peruvian Pacific coast. *Hydrological Processes*. <http://dx.doi.org/10.1002/hyp.10247>

Condom T, **Rau P**, Espinoza JC, 2011. Correction of TRMM 3B43 monthly precipitation data over the mountainous areas of Peru during the period 1998-2007. *Hydrological Processes*. <http://dx.doi.org/10.1002/hyp.7949>

5. Relevant publications in congress proceedings

Moquet JS, Guyot JL, Viers J, Crave A, Morera S, **Rau P**, Armijos E, Lagane C, Lavado W, Pombosa R, Fraizy P, Santini W, Timouk F, Vauchel P, Martinez JM. Climate control on silicate weathering and physical erosion rates in Young orogenic belts: Case study along a runoff gradient in Pacific and Amazonian Andean basins based on SNO-HYBAM Monitoring Program data. European Geophysical Union EGU General Assembly 2017. 2017, 23-28 April. Vienna, Austria.

Rau P, Bourrel L, Dewitte B, Labat D, Frappart F, Lavado W. Variación de baja frecuencia y tendencias en la relación entre el Fenómeno El Niño y las precipitaciones en la Vertiente del Pacífico Peruano. XXVII Congreso Latinoamericano de Hidráulica LADHI IAHR. 2016. 26-30 Septiembre. Lima, Peru.

Tupac Yupanqui R, Cabrera J, **Rau P**. Evaluation of TRMM precipitation data for estimation of daily stream flows. 36th IAHR World Congress. International Association for Hydro-Environment Engineering and Research. 2015, 28 June-3 July. Delft-The Hague, The Netherlands.

Rau P, Condom T, Lavado W. Spatio-temporal analysis of monthly temperature in the mountainous regions of Peru. An approach for NCEP NCAR Reanalysis data. 35th IAHR World Congress. International Association of Hydro-Environment Engineering and Research. 2013, 8-13 September. Chengdu, China.

6. Relevant chapter books

Rau P, 2015. El Fenómeno El Niño y su influencia sobre las precipitaciones en Perú, nuevas perspectivas. En Hidráulica, selección de principales artículos. Instituto para la Construcción y Gerencia ICG. Lima, Perú. 98-104 pp, ISBN: 978-612-46835-6-5

Dewitte B, Takahashi K, Goubanova K, Montecinos A, Mosquera K, Illig S, Montes I, Paulmier A, Purca S, Flores R, Bourrel L, **Rau P**, Labat D, Lavado W, Espinoza JC, 2014. Las diversas facetas de El Niño y sus efectos en la costa del Perú. En El Perú frente al cambio climático. Ministerio del Ambiente MINAM, IRD. Lima, Peru. 125-140 pp, ISBN: 978-2-7099-1906-7

Complete list of +30 publications and communications in journals, books, congress and conferences, please visit the website: <http://pedrorau.blogspot.com>

7. Languages

English (Highly proficient)

French (Fluent)

Spanish (Native speaker)

8. Technical skills and competences with software

Hydrologic tools and models

HEC HMS, HEC GeoHMS, SAMS, deterministic and probabilistic tools.

Hydraulics tools and models

HEC RAS, HEC GeoRAS, SMS FESWMS, SWMM, EPANET, HELP, DAM BREAK, SEDCAD

Hydrogeologic tools and models

Visual MOD FLOW, Whaem, VADOSE/W, SEEP/W, BIG FLOW, PHREEQC, hydrochemical tools.

Geographic Information Systems

ArcGIS 10.2, ArcView 3.2 and extensions.

AutoDesk and **CAD** platform, topographic and cartographic tools,

R, **Matlab** and **C++** programming languages at intermediate level.

9. Organizational skills and competences

Hydrologist for international research networks with a rigorous scientific approach.

Reviewer for refereed international journals (*Meteorológica, Int. J. Clim, J. Geophys. Res*).

Project responsible in the development of hydrologic and hydraulic studies over 10 years at consultancy level.

Innovation, job quality and constantly updated research.

Reliable team worker.

Fast problem-solving skills.

10. Membership of Professional Societies and Awards

Member of International Association of Hydrological Sciences (IAHS): #11984

Member of International Association of Hydro-Environment Engineering and Research (IAHR): #41723

Member of Professional College of Engineers of Peru (CIP) #98102

Certified researcher. Peru-CONCYTEC REGINA # 5703

Peruvian branch representative of the international Young Hydrologic Society (YHS).

Excellence scholarship awarded for MSc studies: Andrés del Castillo - Patronato UNI. Peru. 2010.

Excellence scholarship awarded for PhD studies: MINEDU - PRONABEC. 2013.

June 2018