

# **Jhan Carlo ESPINOZA**

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*Water Resources Engineer, M.Sc. in Hydrology and Ph.D. in Environmental sciences, with experience in research activity in Peru, France, Argentina and Brazil.*

*My current research goals are to better understand the climate evolution at different time-scales and how this influences our understanding of future climate change, particularly in the tropical regions. My work also focuses on climate impacts to hydrology of the Amazonian region.*

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## **Personal information**

Birthday: 30/06/1981  
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## **Educational background**

**2009: Ph.D.** Pierre et Marie Curie University. Doctoral school of Environmental sciences. Paris France.

IRD scholarship (Intitut de Recherche pour le Developpement. France).

***Thesis approved with the highest mark.***

**2005: Master of Sciences (MSc).** Agraria La Molina University (UNALM).

Speciality: Water resources.

CONCYTEC scholarship (Consejo Nacional de Ciencia, Tecnología e innovación tecnológica. Peru).

**2003: Agricultural Engineer.** UNALM.

**2002: Bachelor of Sciences.** UNALM. Faculty of Agricultural Engineering. Lima Peru. **Best average mark in 2002 promotion.**

## **Languages**

Spanish, French, English and Portuguese at intermediate level.

## **Research experience**

**From 2011:** Researcher in Peruvian Geophysical Institute (IGP). Specialist in climate and hydrology of the Amazon River basin.

**2010:** Post-Doctoral position in CNES-France (National Centre of Spatial Studies). Toulouse - France. Study about SWOT data assimilation on hydrological models in the Larger Rivers.

**2009:** Post-Doctoral position in CLARIS-LPB: A Europe-South America Network for Climate Change Assessment and Impact Studies in La Plata Basin. Buenos Aires University - Argentina. Study about Climate variability impact on hydrology of the Amazon Basin and La Plata Basin.

**2006 - 2008:** PhD Research in LOCEAN – Paris (Laboratory of Oceanography and Climate: Experiments and Numerical Analyses). Study about Climate variability impacts on hydrology of the Amazon Basin.

**2004 - 2005:** Research of the HYBAM program (Hydrology of the Amazon Basin). Cooperation between UNALM (Peru), SENAMHI (Peru) and IRD (France). Study about rainfall variability in the Peruvian Amazon Basin.

## **Services and community outreach**

**2013:** Expert reviewer of the Second Order Draft. Working Group II contribution to the IPCC Fifth Assessment Report. Climate change 2013. <https://www.ipcc.unibe.ch>.

**2012:** Expert reviewer of the Second Order Draft. Working Group I contribution to the IPCC Fifth Assessment Report. 2013. <https://www.ipcc.unibe.ch>

**2011:** Expert reviewer of the First Order Draft. Working Group I contribution to the IPCC Fifth Assessment Report. 2013. <https://www.ipcc.unibe.ch>

**From 2010: Reviewer in several Scientific Journals:** *Nature* • *Hydrological Sciences Journal* • *Hydrological Processes* • *International Journal of Climatology* • *Geophysical Research Letters (GRL)* • *Climatic Change* • *Journal of Climate* • *Meteorologica*.

**From 2009:** Scientist committee of Peruvian Geo-atmosphere Journal (<http://www.senamhi.gob.pe/rpga>).

**2010:** Training in Polytechnic school of Quito, Ecuador: Assessing the IPCC-GCMs in reproduces circulation patterns in South America.

**2009:** Training in SENAMHI Peru: Circulation patterns definition and related rainfall and meteorological extremes in Peru.

**2009:** First international workshop about the climate change on the Andes. Organized by the Andean Community of Nations – CAN (<http://www.comunidadandina.org/cambioclimaticoandes.htm>)

## **Most relevant peer-reviewed Publications**

- Espinoza JC., Chavez S., Ronchail J., Junquas C., Takahashi K., Lavado W. Rainfall hotspots over the southern tropical Andes: Spatial distribution, rainfall intensity and relations with large-scale atmospheric circulation. Submitted to Water Resources Res. Manuscript ID: 2014WR016273.
- Sicart JE., Espinoza JC., Queno L., Medina M. Radiative properties of clouds over a tropical Bolivian glacier: seasonal variations and relationship with regional atmospheric circulation. In revision for International Journal of Climatology.
- Espinoza JC. Marengo JA. Ronchail J. Molina J., Noriega L., Guyot JL. 2014. The extreme 2014 flood in south-western Amazon basin: The role of tropical-subtropical south Atlantic SST gradient. Environm. Res. Lett. 9 124007 doi:10.1088/1748-9326/9/12/124007. (PDF)
- Apaéstegui J, FW Cruz, A Sifeddine, Vuille M., JC Espinoza, JL Guyot, M Khodri, N Strikis, RV Santos, H Cheng, L Edwards, E Carvalho, W Santini. 2014. Hydroclimate variability of the north-western Amazon basin near the Andean foothills of Peru during the last 1600 years. *Climate of the Past*, 10, 1967-1981. doi:10.5194/cp-10-1967-2014.
- Marengo J A, L. M. Alves, J. C. Espinoza, and J. Ronchail, 2014: [Regional Climates] Tropical South America east of the Andes [in “State of the Climate in 2013”]. *Bull. Amer. Meteor. Soc.*, 95 (7), S170–S171.
- Lavado W and Espinoza JC. 2014. Impact of El Niño and La Niña events on Rainfall in Peru. *Revista Brasileira de Meteorologia*, v.29, 171 – 182.
- Espinoza JC., Ronchail J., Frappart F., Lavado W., Santini W., Guyot JL. 2013 The major floods in the Amazonas River and tributaries (Western Amazon basin) during the 1970 – 2012 period: A focus on the 2012 flood. *Journal of Hydrometeorology*. doi: 10.1175/JHM-D-12-0100.1.
- Espinoza JC., Ronchail J., Lengaigne M., Quispe, N., Silva Y., Bettolli, ML., Avalos G., Llacza A. 2013. Revisiting wintertime cold air intrusions at the East of the Andes: Propagating features from subtropical Argentina to Peruvian Amazon and relationship with large-scale circulation patterns. *Climate Dynamics*. doi: 10.1007/s00382-012-1639-y.
- Espinoza JC., Ronchail J., Guyot JL., Junquas C., Drapeau G., Martinez JM., Santini W., Vauchel P., Lavado W., Ordoñez J., Espinoza R. 2012. From drought to flooding: understanding the abrupt 2010-2011 hydrological annual cycle in the Amazonas River and tributaries. *Environmental Research Letters* 7 024008. doi:10.1088/1748-9326/7/2/024008.
- Espinoza JC., Lengaigne M. Ronchail J., Janicot S. 2012. Large-Scale circulation Patterns and related rainfall in the Amazon basin: a Neuronal Networks approach. *Climate Dynamics*. 38. 121-140. DOI. 10.1007/s00382-011-1010-8
- Gloor M, R. J. W. Brienen, D. Galbraith, T. R. Feldpausch, J. Schöngart, J.-L. Guyot, J. C. Espinoza, J. Lloyd and O. L. Phillips. 2013. Intensification of the Amazon hydrological cycle over the last two decades. *Geophysical Research Letters*. doi: 10.1002/grl.50377
- Guimberteau, M., Ronchail, J., Espinoza, J. C., Lengaigne, M., Sultan, B., Polcher, J., Drapeau, G., Guyot, J.-L., Ducharne A., Cialis, P. 2013. Future changes in

- precipitation and impacts on extreme streamflow over Amazonian sub-basins. *Environmental Research Letters* 8 01403. doi:10.1088/1748-9326/8/1/014035
- Labat, D., Espinoza, J.-C., Ronchail, J., Cochonneau, G., de Oliveira, E., Doudou, J.C. and Guyot, J.-L., 2012. Fluctuations in the monthly discharge of Guyana Shield rivers, related to Pacific and Atlantic climate variability. *Hydrological Sciences Journal*, 57 (6), 1–11.
- Lavado W., Labat D., Ronchail J., Espinoza JC., Guyot JL. 2013. Trends in rainfall and temperature in the Peruvian Amazon-Andes basin over the last 40 years (1965-2007). *Hydrological Processes*. doi: 10.1002/hyp.9418
- Lavado W., Ronchail J., Labat D., Espinoza JC., Guyot J.L. 2012. A basin-scale analysis of rainfall and runoff in Peru (1969-2004): Pacific, Titicaca and Amazonas drainages. *Hydrological Sciences Journal*. 57(4) 1-18. DOI:10.1080/02626667.2012.672985
- Guimberteau, M., Drapeau, G., Ronchail, J., Sultan, B., Polcher, J., Martinez, J.-M., Prigent, C., Guyot, J.-L., Cochonneau, G., Espinoza, J. C., Filizola, N., Fraizy, P., Lavado, W., De Oliveira, E., Pombosa, R., Noriega, L., and Vauchel, P. 2012. Discharge simulation in the sub-basins of the Amazon using ORCHIDEE forced by new datasets, *Hydrol. Earth Syst. Sci.*, 16, 911-935, doi:10.5194/hess-16-911-2012
- Espinoza J.C., Ronchail J., Guyot J.L., Junquas C., Vauchel P., Lavado W.S., Drapeau G., Pombosa R. 2011. Climate variability and extremes drought in the upper Solimões River (Western Amazon Basin): Understanding the exceptional 2010 drought. *Geophys. Res. Lett.*, 38(13), 1-6, doi:10.1029/2011GL047862.
- Condom T., Rau P., Espinoza JC. 2011. Validation of the TRMM 3B43 monthly precipitation data over the mountainous areas of Peru during the period 1998–2007. *Hydrological Processes*. DOI: 10.1002/hyp.7949
- Espinoza J.C., Guyot J.L., Ronchail J., Cochonneau G., Filizola N., Fraizy P., Labat D., de Oliveira E., Ordoñez J.J. and Vauchel P. 2009. Contrasting regional discharge evolution in the Amazon Basin. *Journal of Hydrology*, 375, 297-311.
- Espinoza J.C., Ronchail J., Guyot J.L., Cochonneau G., Filizola N., Lavado W., de Oliveira E., Pombosa R. and Vauchel P. 2009. Spatio-temporal rainfall variability in the Amazon Basin Countries (Brazil, Peru, Bolivia, Colombia and Ecuador). *International Journal of Climatology*, 29, 1574-1594.
- Getirana A.C.V., Espinoza J.C., Ronchail J., Rotunno Filho O.C. 2011. Effects of global and continental precipitation datasets on regional scale water balance in Amazon basin. *Journal of Hydrology*. doi:10.1016/j.jhydrol.2011.04.037.

### **Key note speaker**

- Espinoza JC. Extreme events and Climate Change issues for tropical South America. **(invited)** Side event: Observatories, a Key Tool to Tackle Climate Changes in Tropical Regions. December 10th 2014. In COP-20. Lima-Peru.
- Espinoza JC. The recent extreme hydrological events in the upper Amazon basin. **(Invited)** PARALLEL THEMATIC SESSIONS I. "Amazonia, Biodiversity and Sustainable Development". World Science Forum. Rio de Janeiro, November 2013.
- Espinoza JC., Ronchail J., Lavado W.S., Guyot J.L., Santini W. The recent extreme hydrological events in the Western Amazon Basin: The role of the Pacific and Atlantic

- Oceans. Meeting of the Americas. American Geophysical Union. **(Invited)** Cancun, Mexico 14-17 may 2013.
- Espinoza JC., Guyot J.L., Ronchail J. Variabilidad hidroclimática en la Cuenca amazónica. III Coloquio Internacional de la Red de Investigación sobre la Ictiofauna Amazónica – RIIA **(Invited)**. Leticia, Colombia. 8 a 12 de noviembre de 2011.
- Espinoza JC., Ronchail J., Guyot J.L., Junquas C., Vauchel P., Lavado W.S., Drapeau G., Pombosa R. Extreme drought in the upper Solimões River (Western Amazon Basin. Fires in Western Amazonia: The Effects of Climatic, Social, Demographic, and Land Use Changes on Fire Incidence and Fire Hazards **(invited)**. Pucallpa, Peru. 19-22 August 2011
- Espinoza JC, Ronchail J, Lavado W, Cochonneau G, De Oliveira E, Filizola N, Fraizy P, León JG, Molina J, Noriega L, Pombosa R, Vauchel P, Guyot JL. Toward a better comprehension of hydro-climatic variability in the Andean-Amazon basins **(Invited)**. The Meeting of the Americas. AGU. Foz do Iguaçu. 8-12 August 2010.

### **Reviewer in scientific journals (ISI)**

*Nature* •

*Nature of Geosciences*•

*Nature Climate Change*•

*Hydrological Sciences Journal* •

*Hydrological Processes* •

*International Journal of Climatology* •

*Geophysical Research Letters (GRL)* •

*Climatic Change* •

*Journal of Climate* •

*Meteorologica* •