

**From evaporation to precipitation:
the atmospheric moisture transport**

**8th EGU LEONARDO CONFERENCE
Ourense, Spain
25-27 October 2016**



SCIENTIFIC PROGRAMME

2016



08:30-09:00

Registration

09:00-09:30

Welcome Addresses

Chairman: Luis Gimeno

09:30-10:00

**SENIOR LEONARDO
LECTURE 2016**

What water vapor back-trajectory analysis can tell us about climate variability.
Paul A. Dirmeyer

10:00-10:15

L01- Constraining the Sources and Transport History of Atmospheric Water Vapour in Models.
Harald Sodemann (*Invited*)

10:15-10:30

L02- The Residence Time of Water in the Atmosphere and Contrasting Roles of Interception and Transpiration.
R. van der Ent,
O. Tuinenburg,
L. Wang-Erlandsson

10:30-10:45

L03- A Novel Mathematical Framework for Analysis of Numerical Water Tracers and the Aerial Moisture Source-Sink Relationship.
H. Singh, C. Bitz, A. Donohoe

10:45-11:00

L04- Global Atmospheric Moisture Budget.
S. Sahin, J. Lutherbacher,
E. Xoplaki, M. Turkes

11:00-11:30

Posters + Coffee

Chairman: Ricardo García-Herrera

11:30-11:45

L05- Global changes in relative humidity: connection with climate trends, humidity sources and moisture transport processes.
Sergio M. Vicente-Serrano,
R. Nieto, L. Gimeno,
C. Azorín-Molina (*Invited*)

11:45-12:00

L06- Factors influencing regional precipitation variability attributed using an airmass trajectory method.
H. de Leeuw, J. Methven,
M. Blackburn

12:00-12:15

L07- Moisture origin and transport processes in Colombia, Northern South America.
I. Hoyos, F. Domínguez,
J.E. Cañón-Barriga, R. Nieto,
A. Martínez, P.A. Dirmeyer,
L. Gimeno

12:15-12:30

L08- Variability in moisture transport and precipitation recycling over East Africa.
R. Maidment, E. Black,
M.E. Demory

12:30-12:45

L09- Moisture Transport to East Antarctica in Radiosoundings and Reanalyses.
A. Dufour, O. Zolina

12:45-13:00

L10- The relationship between column water vapor and climatic variables over East Asia in the summer.
L. Li, A.J. Dolman

13:00-15:15

LUNCH BREAK

Chairman: Sergio Vicente

15:15-15:45

YOUNG LEONARDO LECTURE 2016

On the role of evaporation during droughts and heatwaves.
Diego G. Miralles

15:45-16:00

L11- Bridging the gap between thermal remote sensing, physically-based evapotranspiration modeling and ecohydrology: An Ozflux synthesis.
E. Toivonen, K. Mallick, I. Trebs, E. Boegh, S. Arndt, J. Beringer, J. Cleverly, D. Eamus, L. Hutley, M. Liddell, W. Meyer

16:00-16:15

L12- Estimating surface evapotranspiration based on Remote Sensing and Meteorological data.
W. Zhu, B. Wu, N. Yan, Q. Xing

16:15-16:30

L13- The influence of local evapotranspiration on deep convection activity during the

North American Monsoon season.

A.I. Quintanar, C.A. Ochoa-Moya, J.C. Rodríguez, C. Lizarraga-Celaya, D.K. Adams, C. Minjarez-Sosa

16:30-17:00

Posters + Coffee

17:00-17:15

L14- Moisture recycling in Europe: analysis and impact on the precipitation in a changing climate.
R.M. Cardoso, P.M.M. Soares, A. Rios, R.M. Trigo

17:15-17:30

L15- Moisture balance over the Iberian Peninsula computed using a high resolution regional climate model. The impact of 3DVAR data assimilation.
S.J. González-Rojí, J. Sáenz, G. Ibarra-Berastegi

17:30-17:45

L16- Rankings of widespread extreme dry and wet events on the Iberian Peninsula using the multiscalar SPEI gridded dataset.
M.L.R. Liberato, I. Montero, C.M. Gouveia, A. Russo, A.M. Ramos, R.M. Trigo

19:15

OURENSE CITY TOUR

20:30

ICE-BREAKING

Chairman: David Lavers

09:00-09:15

L17- Major Mechanisms of Atmospheric Moisture Transport and their Role in Extreme Precipitation Events.

Raquel Nieto, L. Gimeno, F. Dominguez, R.M. Trigo, A. Drumond, C.J.C. Reason, A. Taschetto, A.M. Ramos, R. Kumar, J. Marengo (*Invited*)

09:15-09:30

L18- CHOCO-JEX: A Research Programme Focused on the CHOCO Low-level Jet over the Far Eastern Pacific and Western Colombia- First Results.
J. Yepes, G. Poveda, J.F. Mejía, L. Cabeza, C. Rueda

09:30-09:45

L19- The future evolution of the western Iberian Coastal Low level jet in a warming climate.
P.M.M. Soares, D.C.A. Lima, R.M. Cardoso, A. Semedo

09:45-10:00

L20- The lifecycle of an Atmospheric River – from Moisture Sources to Socioeconomic Impacts.
Francina Dominguez (*Invited*)

10:00-10:15

L21- Atmospheric Rivers as Lagrangian Coherent Structures.
D. Garaboa-Paz, J. Eiras-Barca, V. Pérez-Muñuzuri

10:15-10:30

L22- On the origin of the moisture in Atmospheric Rivers using a WRF tracers tool.
J. Eiras-Barca, H. Hu, D. Garaboa-Paz, F. Dominguez, G. Miguez-Macho

10:30-10:45

L23- Fidelity in Global Model Simulations and Predictions of Atmospheric Rivers.
D. Waliser, B. Guan, M. Deflorio

10:45-11:00

L24- Increased frequency and intensity of atmospheric rivers affecting Europe during the XXI Century.
A.M. Ramos, R. Tomé, R.M. Trigo, M.L.R. Liberato, J.G. Pinto

11:00-11:30

Posters + Coffee

Chairman: Ricardo Trigo

11:30-11:45

L25- Assessing the climate-scale behavior of Atmospheric Rivers and related precipitation extremes affecting California in the present and future climates.
A. Gershunov, T. Shulgina, M. Ralph, S. Polade, S. Chellappan, D. Lavers

11:45-12:00

L26- Atmospheric rivers moisture sources from a Lagrangian perspective.
A.M. Ramos, R. Nieto, R. Tomé, L. Gimeno, R.M. Trigo, M.L.R. Liberato, D.A. Lavers

12:00-12:15

L27- Aerial river passage over a forested Indian reservation in the Amazon explains increased grain harvest downwind.

A.D. Nobre, L. Vallejo, A. Cuartas, J. Santiago, D. Moreira

12:15-12:30

L28- The Role of Atmospheric Rivers in East Antarctic Rivers in East Antarctic Precipitation and Accumulation: Merging Modeling and Remote Sensing Techniques.

I. Gorodetskaya, M. Maahn, H. Gallée, J. Lenaerts, N. Souverijns, A. Gossart, M. van den Broeke, S. Crewell, N. van Lipzig

12:30-12:45

L29- Are the droughts busters in Iberian Peninsula associate with atmospheric rivers?

C. Gouveia, A.M. Ramos, A. Russo, R.M. Trigo

12:45-15:15

LUNCH BREAK

Chairman: Francina Domínguez

15:15-15:30

L30- Predictability and earlier awareness of extreme hydrological events across Europe.

David Lavers, F. Pappenberger, D. Richardson, E. Zsoter
(Invited)

15:30-15:45

L31- Variability and Changes in the Summertime Hydrological Cycle over European Regions.

I. Zveryaev, M. Zahn, R. Allan

15:45-16:00

L32- A thermodynamic Earth system's approach to the sensitivity of the water cycle to radiative change.

M. Renner, A. Kleidon

16:00-16:15

L33- Factoring global warming in design flood estimation.

A. Sharma, C. Wasko

16:15-16:45

Posters + Coffee

16:45-17:00

L34- Extreme Hot Events Associated to Drought Occurrence over the Southwest Mediterranean.

A. Russo, C. Gouveia, A. Ramos, P. Páscoa, R.M. Trigo

17:00-17:15

L35- Severe Convective Environments across South Africa.

R. Blamey, C. Middleton, C. Lennard, C. Reason

17:15-17:30

L36- Human alteration of moisture recycling through land-use change.

L. Wang-Erlandsson, P. Keys, R. van der Ent, I. Fetzer, H. Savenije, L. Gordon

20:30

DINNER

Chairman: Tercio Ambrizzi

- 09:00-09:15 **L37-** What causes the recent intensification of the Amazon hydrological cycle?
M. Gloor, J. Barichivich, P. Peylin, J. Baker, K. Pattnayak, J. Tindall, R. Brienen
- 09:15-09:30 **L38-** Integrated atmospheric water vapor in northern of South America and impacts in the regional climatology of rainfall.
R.P. da Rocha, L. Gimeno, A.M. Ramos, R. Nieto, N.M. Crespo
- 09:30-09:45 **L39-** Unraveling the Drivers of the Drought over São Paulo (Brazil) using HadAM3.
K.C. Pattnayak, M. Gloor, J.C. Tindall, J. Barichivich, R.J.W. Brienen, J. Baker, D.V. Spracklen, B. Ladvat, C.A.S. Coelho
- 09:45-10:10 **L40-** Reconstructing the past to understand the present: inferring Amazon climate from tree ring oxygen isotopes.
J. Baker, M. Gloor, D. Spracklen, S. Arnold, S. Clerici, S. Hunt, R. Newton, S. Bottrell, M. Leng, T. Heaton, A. Boom, J. Barichivich, R. Brienen

- 10:00-10:15 **L41-** Evapotranspiration under different methodologies.
C.I. Palencia-Aguilar, F. Nnadi
- 10:15-10:30 **L42-** Precipitation Regime for the Southeast Brazil: a case study analyses for future actions at Paraiba's Valley region.
G. Fisch, T. Adriano dos Santos, J.A. Marengo
- 10:30-11:00 Screen the award-winning film: Where have all the swallows gone? introduced by A.D. Nobre.
- 11:00-11:30 **Posters + Coffee**
- Chairman: Raquel Nieto**
- 11:30-11:45 **L43-** Recent decadal change of ocean evaporation and its association with the Hadley cell expansion.
Lisan Yu (Invited)
- 11:45-12:00 **L44-** The Contrast Between Atlantic and Pacific surface water fluxes.
P. Craig, D. Ferreira, J. Methven
- 12:00-12:15 **L45-** Data assimilation with stable water isotope information.
Kei Yoshimura (Invited)

12:15-12:30

L46- Global and long-term remote sensing of tropospheric {H₂O,δD} pairs: status and perspectives after the project MUSICA.

M. Schneider,
S. Barthlott, C. Berger,
E. Christner, Y. González,
A. Wiegeler, F. Hase,
O. García

12:30-12:45

L47- Presence of continental and Bay of Bengal moisture in the rainwater δ¹⁸O signature at Kolkata, India during South-West monsoon.

S. Shabir Dar, P. Ghosh

12:45-13:00

L48- Unveiling the nature of rain producing systems and drought drivers affecting Costa Rica from stable isotopic composition.

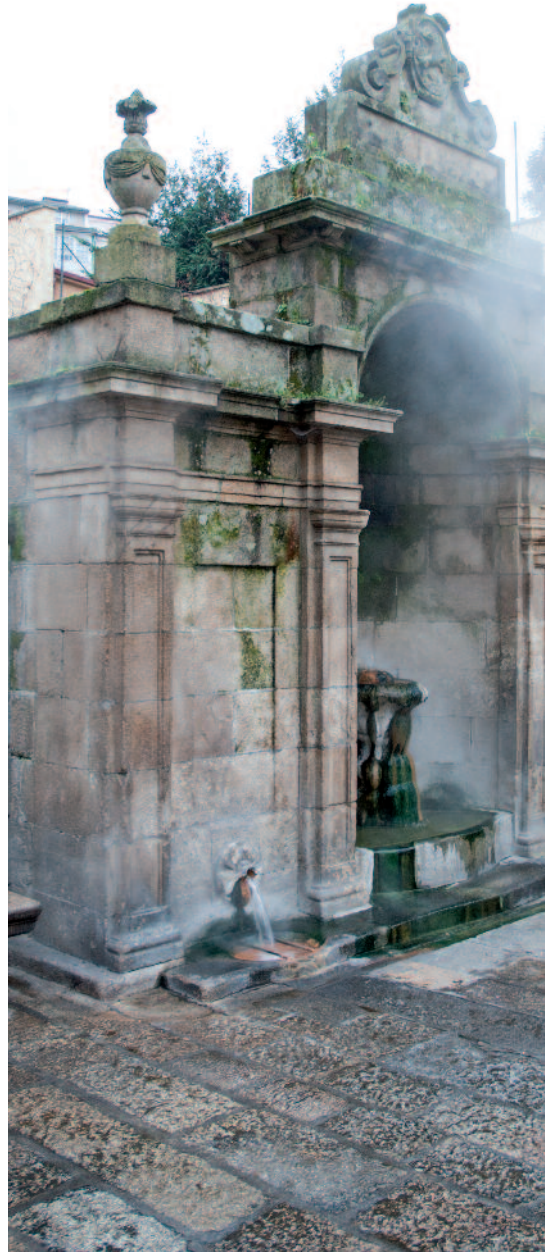
A.M. Durán-Quesada,
R. Sánchez-Murillo, D. Poleo

13:00-13:15

L49- From Advection to Precipitation: Reconstructing the Monsoons in Historical Times by Using Old Wind Measurements.

David Gallego,
P. Ordóñez, P. Ribera,
C. Peña-Ortiz,
R. García-Herrera, I. Vega,
F. de Paula-Gómez (Invited)

END



POSTER CONTRIBUTIONS

P01: Long-term variability of moisture transport over Europe as inferred from ships' logbook records.

David Barriopedro, David Gallego, **Ricardo García-Herrera**, Sergio Vicente-Serrano, Natalia Calvo

P02: Are the Mesoscale Convective Systems the Major Precipitating Sources in Amazon Basin?

Amanda Rehbein, **Tercio Ambrizzi**, Sergio Ibarra

P03: A Lagrangian Analysis of the Moisture Transport Associated with Drought Conditions in the Amazonas River Basin.

Anita Drumond, Rogert Sorí, Raquel Nieto and Luis Gimeno

P04: A Lagrangian Perspective of the Hydrological Cycle in the Congo River Basin.

Rogert Sorí, Raquel Nieto and Luis Gimeno

P05: Lagrangian hydrologic analysis for the Arctic region: source-receptor relationship and the role of atmospheric circulation.

Marta Vázquez, Raquel Nieto, Anita Drumond, Luis Gimeno

P06: Anomalies in the moisture transport during floods episodes in the Danube River Basin through a Lagrangian approach.

Danica Ciric, Raquel Nieto, Anita Drumond, Luis Gimeno

P07: A Lagrangian analysis of the moisture transport during drought episodes in the Danube River Basin.

Milica Stojanovic, Anita Drumond, Raquel Nieto, Luis Gimeno

P08: Moisture sources of East Asian hydrological cycle.

Liang Guo, Nicholas P. Klingaman, Marie-Estelle Demory, Pier Luigi Vidale, Andrew G. Turner, Claudia Stephan

P09: A Lagrangian analysis of the moisture budget over Fertile Crescent during strong drought episodes.

Zeinab Salah, **Anita Drumond**, Raquel Nieto, Luis Gimeno

P10: Residence Time of Atmospheric Moisture Sources in Colombia.

Isabel Hoyos, Francina Dominguez, Julio E. Cañón-Barriga, Raquel Nieto, Luis Gimeno

P11: Moisture sources for the North American Monsoon and their influence on Precipitation Events.

Paulina Ordóñez, Raquel Nieto, Luis Gimeno, Pedro Ribera, David Gallego, David K. Adams

P12: Investigating the Mechanisms Involved in the Sensitivity of Atmospheric Moisture Transport to Global Climate Models' Resolution.

Benoit Vanniere, **Marie-Estelle Demory**

P13: Analysis of Changes on Moisture Sources Contributions for Arctic Region in Future Climate Scenarios in CMIP5.

Luana A. Pampuch, Raquel Nieto, Luis Gimeno, Tercio Ambrizzi, Marta Vázquez

P14: Moisture transport and associated MJO prediction skill in a global model.

Takuya Komori, Akihiko Shimpo

P15: The role of the entrainment flux at the top of the boundary layer for the Amazonian evapotranspiration.

Thomas S. Kaufmann and **Gilberto Fisch**

P16: The role of evapotranspiration in spring precipitation in the Iberian Peninsula: recycling or amplification or precipitation dynamics?

Sabela Regueiro-Sanfiz, Gonzalo Miguez-Macho

P17: Real evapotranspiration evolution in the southern of Iberian Peninsula.

Matilde García-Valdecasas-Ojeda, Sebastiano de Franciscis, Sonia Raquel Gámiz-Fortis, Yolanda Castro-Díez, María Jesús Esteban-Parra

P18: Preliminary evaluation of the soil moisture in Taiwan.

Mei-Ling Tang, Chao-Hui Chiang, Ben-Jei Tsuang, Yu-Chi Lee, Pei-Hsuan Kuo, Jeng-Lin Tsai

P19: Comparison of Different Geostatistical Methods for Estimating Evaporation in Namak Lake Watershed.

Mehdi Vafakhah, Saeid Khosrobeigi Bozchaloei

P20: Spatial and Temporal Variabilities in Air Moisture Sources and Stable Isotope Compositions of Precipitation in Hungary.

György Czuppon, Emese Bottyán, László Haszpra, Tamás Weidinger, Krisztina Kármán

P21: Variability of Stable Isotope Composition of Precipitation at Different Location in Central Europe: Implication for Moisture Source Variability and the Effect of Evapotranspiration.

György Czuppon, Hajnalka Breuer, Emese Bottyán, Gergő Simon, Júlia Göndöcs, Zoltán Kern

P22: Climate Change Effects on Precipitation Extremes in Central Europe.

Jan Kyselý, Zuzana Rulfová, Romana Beranová, Ladislav Gaál

P23: Non-stationary Future Return Levels for Extreme Rainfall over Extremadura (SW Iberian Peninsula).

F. Javier Acero, Sylvie Parey, Didier Dacunha-Castelle, J. Agustín García

P24: A study on the applicability of atmospheric-hydrological coupled model for flash flood forecasting.

Young Ryu, Hee-sook Ji, Yoon-jin Lim, Baek-jo Kim

P25: Does evidence support the hypothesis of an intensification of Costa Rica hydrological cycle?

Ana María Durán-Quesada, Hugo Hidalgo, Jorge A. Amador, Eric Alfaro, Daniel Poleo

P26: Influence of Amazonian Convection Over Tropical North Atlantic SSTs.

Alejandro Builes-Jaramillo, Paola Arias, Germán Poveda

P27: Seasonal and Interannual Variations of Atmospheric Water Cycle in Siberia and Polar Regions.

Kazuhiro Oshima

P28: The East Asian Water Cycle and Monsoon Circulation in the Met Office Unified Model.

José M. Rodríguez, Sean F. Milton

P29: Wavetrains and South America Climate on Decadal Scale.

Maria Elisa Siqueira Silva, Carlos Batista Silva, Tércio Ambrizzi

P30: Validation of Integrated Water Vapor from GOME-2 satellite instrument against reference GPS data at the Iberian Peninsula.

Javier Vaquero-Martínez, Manuel Antón, Roberto Román, José P. Ortiz de Galisteo, Victoria E. Cachorro, Diego Loyola

P31: Future Central European Summer Drying in a High-Resolution Global Climate Model.

Rein Haarsma, Frank Selten

POSTER CONTRIBUTIONS

P32: Study of future changes in drought and soil patterns over Spain using WRF.

Matilde García-Valdecasas-Ojeda, Sebastiano de Franciscis, Sonia Raquel Gámiz-Fortis, Yolanda Castro-Díez, María Jesús Esteban-Parra

P33: Climate change signal on the Portuguese precipitation: high-resolution simulations using WRF and EURO-CORDEX RCMs.

Pedro M.M. Soares, Rita M. Cardoso, Daniela C.A. Lima, Pedro M.A. Miranda

P34: Modelling Pinus Pinaster wood radial growth in Portugal.

Célia M. Gouveia, Rita M. Cardoso, Ana Russo, José Lousada, Cathy Besson

P35: How recent spring precipitation changes compromised Maritime pine radial wood growth and density in southern Portugal.

Cathy Kurz-Besson, José Lousada, Rita M Cardoso, Ana Russo, Filipa Varino, Isabel Correia, Teresa David, Célia Gouveia

P36: Impact of irrigation over the California Central Valley on regional climate.

Zhao Yang, **Francina Dominguez**, Xubin Zeng, Huancui Hu, Hoshin Gupta, Ben Yang

P37: Determination by Isotopic method of the origin of mineralization of the costal aquifer North-eastern Tunisia.

Aroua Mzoughi, Mohamed Fethi Ben Hamouda, Salah Bouhleb

P38: Origin of mineralization in the groundwater of lower valley of Medjerda, Northern Tunisia.

Senda Karoui, Mohamed Fethi Ben Hamouda, Salah Bouhleb

P39: The importance of Atmospheric Rivers in the development of explosive cyclogenesis in the North Atlantic and North Pacific basins.

Jorge Eiras-Barca, Alexandre M. Ramos, Margarida R.L. Liberato, Gonzalo Miguez-Macho, Ricardo M. Trigo, Joaquim G. Pinto, Helen Dacre

P40: How does the interplay between atmospheric rivers and circulation weather types affect precipitation over the northwestern Iberian Peninsula?

María Nieves Lorenzo, Jorge Eiras-Barca, Juan Taboada, Swen Brands, Gonzalo Miguez-Macho

P41: Twentieth-century atmospheric river activity along the west coasts of Europe and North America: algorithm formulation, reanalysis uncertainty and links to atmospheric circulation patterns.

Swen Brands, José Manuel Gutiérrez, Daniel San-Martín

P42: Does ENSO affect atmospheric river activity in southwestern Europe?

Swen Brands, Valvanuz Fernández Quiruelas, María Eugenia Magariño, Juan José Taboada, José Manuel Gutiérrez

P43: The relationship between Atmospheric Rivers and Cyclones over Subtropical South America: a precipitation analysis.

Natália M. Crespo, Eduardo M. de Jesus, Rosmeri P. da Rocha, Luis Gimeno, Alexandre M. Ramos, Raquel Nieto, Luiz F. Gozzo

P44: Global Warming, New Climate, New Atmospheric Circulation and New Water Cycle in the North Atlantic Ocean.

Mohammed Said Karrouk

P45: Different regimes of the Western North Pacific Monsoon throughout the 20th Century.

Inmaculada Vega, Francisco de Paula Gómez-Delgado, David Gallego, Pedro Ribera, Cristina Peña-Ortiz, Ricardo García-Herrera

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