Curriculum Vitae

Name : FABIEN

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Position : Research Scientist (ICTP/UNESCO)

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Education information:

2001 : **PhD in Environmental Sciences** (atmospheric chemistry and physics). *Institut National Agronomique Paris-grignon / Université Pierre et Marie Curie Paris VI*. Modeling of biogenic volatile hydrocarbon emissions and study of their impact on regional tropospheric ozone formation in France (Director R.Rosset).

1997 : **M.S. in Environmental Sciences**: "Physical, chemical, and biological processes in the continental biosphere", prepared at *Université Pierre et Marie Curie PARIS VI.* Highest distinction. *Master Thesis:* "Rainfall interception by plants and ground water redistribution modeling", *Institut National de la Recherche Agronomique, Guadeloupe*.

1995-1996 : B.S. in fundamental Physics, *Besançon University*. *Research project*: "Study and modeling of optical tunnel effect*", Laboratoire d'Optique P.M Duffieux, CNRS UMR 6603.*

Professional information

May 2010 – Present: Research Scientist (long term position equivalent to Associate Professor) at the Abdus Salam International Center for Theoretical Physics (UNESCO/IAEA), Earth System Physics Section, Trieste, Italy.

Jan 2007- May 2010: Researcher (long term position in French public research) at Laboratoire d'Aerologie, (CNRS UMR 5560, Observatoire Midi-Pyrenées / Université Paul Sabatier), Toulouse, France.

Jan 2006-Jan2007: Post-doc at University of California Santa Cruz, Acidic processing of mineral dust iron by anthropogenic compounds and deposition over the North Pacific Ocean (Advisor P. Chuang).

Oct 2004-Jan2006: Visiting scientist at the Abdus Salam international Center for Theoretical Physics (UNESCO), Physics of Weather and Climate Section, Trieste, Italy. Aerosol modeling and regional climatic impact study.

Oct 2002-Oct 2004: Post-doc at the Abdus Salam international Center for Theoretical Physics (UNESCO), Physics of Weather and Climate Section, Trieste, Italy. Aerosol modeling and regional climatic impact study (Advisor F. Giorgi).

Apr 2001–Jun 2002: Post-Doc at Centre National de Recherches Atmosphériques, Meteo-France, Toulouse, France. Updating and improvement of the radiation scheme of the Meteo-France Meso-scale atmospheric model.

Nov 1997– March 2001: PhD student at Laboratoire d'Aérologie, Toulouse, France. "Modeling of biogenic volatile hydrocarbon emissions and study of their impact on regional tropospheric ozone formation in France".

Research projects and grants.

Co-Investigator: Megacities: Emissions, urban, regional and Global Atmospheric POLlution and climate effects, and Integrated tools for assessment and mitigation (MEGAPOLI). European Union (EU/FP7), 2008-2011.

Co-Investigator**:** CryosPheric responses to Anthropogenic PRessures in the HIndu Kush-Himalaya regions: (2010-2013) co-funded by French National Research Agency **(**ANR – CEP 2009**)** and Italian National Research Centre Ev-K2-CNR**.**

Co-Principal Investigator: Chemistry-Aerosol Mediterranean Experiment - Aerosol Direct Radiative Impact on the regional climate in the MEDiterranean region (ChArMex-ADRIMED) 2012-2015 funded by French National Research Agency.

Co-Investigator: Atopic diseases in a changing climate, land use and air quality (ATOPICA) European Union (EU/FP7) 2011-2014.

Co-Principal investigator: REQUA-Regional Climate-air quality interactions, International Research Staff Exchange Scheme under SP3 people- Support for training and career development of researchers (Marie Curie) FP7-PEOPLE-2013-IRSES, 2013-2017.

Selected invited talks

Solmon F. Aerosols and their Interaction with Climate. Climate change: marine and mountain ecosystems in the Mediterranean region XII International Conference on Science, Arts and Culture Veli Lošinj, Croatia, August 2012**.**

Solmon F. Regional climatic impact of dust aerosol over west Africa Conference on African Drought. Observations, Modeling, Predictability, Impacts. June 2008, ICTP/UNESCO, Trieste, Italy.

Solmon F. Regional climatic and biogeochemical impacts of dust aerosols over west Africa and North Pacific Ocean. Interactions between dust and anthropogenic compounds. Jan 2008. North Carolina State University.

+ Participation in international scientific conferences.

AGU, EGU, AAG etc.

Organizer of conferences and workshops.

4th International Workshop CHArMEx - the Chemistry-Aerosol Mediterranean Experiment, October 2014.

Capacity Building Workshop on Modelling of Regional Climate and Air Quality for West Africa", October 2013, Abidjan, Côte d'Ivoire.

Extreme Weather and Climate Events in the Southern Caucasus – Black Sea Region, Tbilisi, Georgia, June 2013.

Workshop on Atmospheric Deposition: Processes and Environmental Impacts, ICTP, May 2012.

ATOPICA Research project workshop, ICTP-SISSA, October 2012.

Sixth ICTP Workshop on the Theory and Use of Regional Climate Models, ICTP June 2012.

Workshop on Aerosol Impact in the Environment: from Air Pollution to Climate Change, ICTP, Trieste, August 2011.

UNESCO Climate Change Modeling Training to support Jordan Capacities, March 2011, Amman, Jordan.

Teaching activities

'Atmospheric Chemistry Modelling', master IUP Génie de l'Environnement (GDE), Université Paul Sabatier, Toulouse. 2008-2010.

'Earth System Thermodynamics', diploma program (Master Level) of the Abdus Salam international Center for Theoretical Physics.

'Introduction to Biogeochemical Cycles', diploma program (Master Level) of the Abdus Salam international Center for Theoretical Physics.

Publications

Refereed publications

1. Agacayak, T., Kindap, T., Unal, A., Pozzoli, L., Mallet, M., & **Solmon, F**. (2014). A case study for Saharan dust transport over Turkey via RegCM4. 1 Model. Atmospheric Research, 153, 392-403.

2. Ghorbel, M., Munoz, M., & **Solmon, F**. (2014). Health hazard prospecting by modeling wind transfer of metal-bearing dust from mining waste dumps: application to Jebel Ressas Pb–Zn–Cd abandoned mining site (Tunisia). Environmental geochemistry and health, 1-17.

3. Steiner, A.L., A. Tawfik, A.Shalaby, A.S Zakey, M.M. Abdel Wahab, Z. Salah., **F.Solmon**., S. Sillman, R.A. Zavery. (2014). Climatological Simulations of ozone and atmospheric aerosol in the Greater Cairo region, Climat. Res., Clim Res, 59, 207-228.

4. Adon M., C. Galy-Lacaux, V. Yoboue, C. Delon, **F. Solmon**, and A. T. Kaptue Tchuente, 2013, Dry deposition of nitrogen compounds (NO2, HNO3, NH3), sulfur dioxide and ozone in West and Central African ecosystems, Atmos. Chem. Phys. 13 (22), 11351-11374.

5. Nabat, P., Somot, S., Mallet, M., Chiapello, I., Morcrette, J. J., **Solmon, F.**, Szopa, S., Dulac, F., Collins, W., Ghan, S., Horowitz, L. W., Lamarque, J. F., Lee, Y. H., Naik, V., Nagashima, T., Shindell, D., and Skeie, R.: A 4-D climatology (1979–2009) of the monthly tropospheric aerosol optical depth distribution over the Mediterranean region from a comparative evaluation and blending of remote sensing and model products, Atmos. Meas. Tech., 6, 1287-1314, doi:10.5194/amt-6-1287-2013, 2013.

6. Nair, V.S., **Solmon** F., Giorgi F., Mariotti L., Babu S. S., and Moorthy K., K, 2012. Simulation of South Asian aerosols for regional climate studies, Journal of Geophysical Research 117, no. D4 (2012): D04209.

7. Nabat, P., **Solmon**, F., Mallet, M., Kok, J. F., & Somot, S. (2012). Dust emission size distribution impact on aerosol budget and radiative forcing over the Mediterranean region: a regional climate model approach. Atmos. Chem. Phys., 12, 17835-17886.

8. Shalaby, A. K., A. S. Zakey, A. B. Tawfik, F. **Solmon**, Filippo Giorgi, F. Stordal, S. Sillman, R. A. Zaveri, and A. L. Steiner. "Implementation and evaluation of online gas-phase chemistry within a regional climate model (RegCM-CHEM4)." Geoscientific Model Development 5 (2012): 741-760.

9. Giorgi, F., Coppola, E., **Solmon**, F., Mariotti, L., Sylla, M. B., Bi, X., ... & Branković, Č. (2012). RegCM4:

Model description and preliminary tests over multiple CORDEX domains. Climate Research.

10. **Solmon**, F., Elguindi, N., & Mallet, M. (2012). Radiative and climatic effects of dust over West Africa, as simulated by a regional climate model. Climate Research, 2, 97.

11. Mallet, M., Gomes, L., **Solmon**, F., Sellegri, K., Pont, V., Roger, J. C., ... & Piazzola, J. (2011). Calculation of key optical properties of the main anthropogenic aerosols over the Western French coastal Mediterranean Sea. Atmospheric Research, 101(1), 396-411.

12. Malavelle, F., Pont, V., Mallet, M., **Solmon,** F., Johnson, B., Leon, J. F., & Liousse, C. (2011). Simulation of aerosol radiative effects over West Africa during DABEX and AMMA SOP-0. Journal of Geophysical Research, 116(D8), D08205.

13. Liousse, C., Guillaume, B., Grégoire, J. M., Mallet, M., Galy, C., Pont, V., **Solmon F.**,... & Van Velthoven, P. (2010). Western african aerosols modelling with updated biomass burning emission inventories in the frame of the AMMA-IDAF program. Atmos. Chem. Phys., 10(3), 7347-7382.

14. Tummon, F., **Solmon,** F., Liousse, C., & Tadross, M. (2010). Simulation of the direct and semidirect aerosol effects on the southern Africa regional climate during the biomass burning season. J. Geophys. Res, 115, D19206.

15. Johnson, M. S., N. Meskhidze, F. **Solmon** et al. (2010), Modeling dust and soluble iron deposition to the South Atlantic Ocean, J. Geophys. Res., 115, D15202, doi:10.1029/2009JD013311.

16. Mallet, M. P. Tulet, D. Sera, F**. Solmon**, O. Dubovik, J. Pelon, V. Pont, and O. Thouron, Impact of dust aerosols on the radiative budget, surface heat fluxes, heating rate profiles and convective activity over West Africa during March 2006, Atmos. Chem. Phys., 9, 7143-7160, 2009.

17. **Solmon, F**., P.Y. Chuang, N. Meskhidze, and Y. Chen (2009), Acidic processing of mineral dust iron by anthropogenic compounds over the north Pacific Ocean., J. Geophys. Res., 114, D02305, doi:10.1029/2008JD010417.

18. Zhang D., A. Zakey, X. Gao, F. Giorgi, and **F. Solmon** (2009),Simulation of dust aerosol and its regional feedbacks over East Asia using a regional climate model, Atmos. Chem. Phys, Atmos. Chem. Phys.,9,1095-1110.

19. **Solmon, F.**, M. Mallet, N. Elguindi, F. Giorgi, A. Zakey, and A. Konaré (2008), Dust aerosol impact on regional precipitation over western Africa, mechanisms and sensitivity to absorption properties, Geophys. Res. Lett., 35, L24705, doi:10.1029/2008GL035900. ***Editor Highlighted paper***.

20. Todd, M. C., D. B. Karam, C. Cavazos, C. Bouet, B. Heinold, J.M. Baldasano, G. Cautenet, I. Koren, C. Perez, **F. Solmon**, I. Tegen, P. Tulet, R. Washington, and A. Zakey (2008), Quantifying uncertainty in estimates of mineral dust flux: An intercomparison of model performance over the Bodele Depression, northern Chad, J. Geophys. Res., 113, D24107, doi:10.1029/2008JD010476.

21. Konaré A., A. S. Zakey**, F. Solmon**, F. Giorgi, S. Rauscher, S. Ibrah, X. Bi (2008), A regional climate modeling study of the effect of desert dust on the West African monsoon, J. Geophys. Res., 113, D12206, doi:10.1029/2007JD009322.

22. Meleux F., **Solmon F**., Giorgi F., (2007), Increase in summer European Ozone amounts due to climate change Atmospheric Environment, 41 (35), p.7577-7587.

23. Pal J.S., F. Giorgi, X. Bi, N. Elguindi**, F. Solmon**, X. Gao, S. A. Rauscher et al. Regional Climate Modeling for the Developing World: The ICTP RegCM3 and RegCNET, Bulletin of the American Meteorological Society, Volume 88, Issue 9 (September 2007) pp. 1395\u20131409, DOI: 10.1175/BAMS-88-9-1395.

24. Dentener, F., J.Drevet, D.Stevenson, K.Ellingsen, T. Van Noije, M.Schultz, C.Atherton, N.Bell, I. Bey, T. Butler, B.Eickhou, A.Fiore, J. Galloway, C. Galy-Lacaux, **F. Solmon**, U.C. Kulshrestha, J.F.Lamarque, V.Montanaro, J.F.Müller, J.Rodriguez, M.Sanderson, N.Savage, S.Szopa, K.Sudo, O.Wild, G.Zeng, Nitrogen and Sulphur Deposition on regional and global scales: a multi-model evaluation, Global Biogeochemical Cycles, March 2006.

25. **Solmon F**., Giorgi F., Liousse C. Aerosol modeling for regional climate studies: Application to anthropogenic particles and evaluation over a European/African domain. Tellus B, 58, 51-72, 2006.

26. Zakey, A. S., **Solmon, F.**, and Giorgi, F.: Implementation and testing of a desert dust module in a regional climate model, Atmos. Chem. Phys., 6, 4687-4704, 2006.

27. Giorgi F., Pal J.,Bi X., Sloan L., Elguindi N. and **F. Solmon**, Introduction to the TAC special issue: The RegCNET network. Theor. Appl. Climatol. 86, 1\u20134 (2006) DOI 10.1007/s00704-005-0199-z.

28. Cortinovis, J., **Solmon, F.**, Serca, D., Sarrat, C., & Rosset, R. (2005). A simple modeling approach to study the regional impact of a Mediterranean forest isoprene emission on anthropogenic plumes. Atmospheric Chemistry and Physics, 5(7), 1915-1929.

29. **Solmon, F.**, Sarrat, C., Serça, D., Tulet, P., & Rosset, R. (2004). Isoprene and monoterpenes biogenic emissions in France: modeling and impact during a regional pollution episode. Atmospheric Environment, 38(23), 3853-3865.

30. Tulet, P., Crassier, V., **Solmon, F**., Guedalia, D., & Rosset, R. (2003). Description of the Mesoscale Nonhydrostatic Chemistry model and application to a transboundary pollution episode between northern France and southern England. Journal of geophysical research, 108(D1), 4021.

31. Tulet, P., Suhre, K., Mari, C., **Solmon, F**., & Rosset, R. (2002). Mixing of boundary layer and upper tropospheric ozone during a deep convective event over Western Europe. Atmospheric Environment, 36(28), 4491-4501.

32. Bussière, F., **Solmon, F.**, & Fouéré, A. (2002). Implementation and evaluation of DROP, a model for the simulation of rainfall distribution below plants described in 3D. Agronomie, 22(1), 93-103.

***Publications under review*:**

33. Elguindi N., **Solmon F.**, Turungoclu U.,, Quantifying the impacts of dust on the Caspian Sea using a regional climate model, **accepted, *Climate Dynamics***.

34. Laguel L, Vautard R., Liu L., **Solmon F.**, Viovy N. et al., Climate change and seed dispersal will escalate airborne ragweed pollen loads in Europe, ***in revision, Nature Climate Change***.

35. C. Yin, T. Wang, **F. Solmon**, M. Mallet, F. Jiang, S. Li, B. Zhuang, Assessment of direct radiative forcing due to secondary organic aerosol over China with regional climate model, ***in revision , Tellus B.***

36. Chiacchio M., **F Solmon**, F Giorgi, P Stackhouse Jr, M Wild, Evaluation of the radiation budget with a regional climate model over Europe and inspection of dimming and brightening, **under review Jour. Geophys. Res.**

37. **Solmon F.**, V.S. Nair, Mallet M., Increasing Arabian dust activity and the Indian monsoon, **under review *Atm. Chem. Phys. Disc*.** – submitted January, 2015.

Other publications

Galy-Lacaux, C., Delon, C., **Solmon, F.**, Adon, M., Yoboué, V., Mphepya, J., ... & Castera, P. (2014). Dry and Wet Atmospheric Nitrogen Deposition in West Central Africa. In Nitrogen Deposition, Critical Loads and Biodiversity (pp. 83-91). Springer Netherlands.

Barret, B.; **Solmon, F**.; 2013. La pollution, la pluie et le vent, *Pour la Science, Jan-Mar 2013 (in French).*