



With permission: [edmell1@cox.net](mailto:edmell1@cox.net)

## MILAF

### Microbes at the Interface of Land-Atmosphere Feedbacks

*2<sup>nd</sup> session: Consolidating partnerships for impact*

International early-career workshop sponsored by the  
US National Science Foundation



17-20 March 2016

European Academy of Bolzano (EURAC)

<http://www.eurac.edu/>

Bolzano, Italy



## PARTICIPANTS

### RAINS PIs

#### MILAF organizers

MORRIS Cindy Plant Pathology Research Unit, INRA, Montfavet, France and Plant Sci. & Plant Pathology Dept, MT State Univ., Bozeman

SANDS David Plant Sci. & Plant Pathology Dept, MT State Univ., Bozeman

#### other PIs

CHRISTNER Brent Dept. Microbiology & Cell Sciences, Univ. FL, Gainesville

### Other mentors

BRUNET Yves Interactions Soil-Plant-Atmosphere Research Unit, INRA, Bordeaux, France

COHEN Jane University of Texas School of Law, Austin, USA

CONEN Franz Environmental Sciences, University of Basel, Switzerland

GEORGIADIS Teodoro Institute of Biometeorology, CNR, Bologna, Italy

CAVALIERI Duccio Dept. of Biology, University of Florence, Italy

PHILLIPS Vaughan Dept. Physical Geography & Ecosystem Science, Lund University, Sweden

WOHLFAHRT Georg Institute of Ecology, University of Innsbruck, Austria

### Early career scientists

AMATO Pierre Institute of Chemistry, Clermont-Ferrand (CNRS), Aubière, France

BRYAN Noelle Biological Sciences Dept., Louisiana State Univ., Baton Rouge, USA

CAROTENUTO Federico University of Innsbruck, Biological Sciences, Austria & Institute of Biometeorology, CNR, Bologna, Italy

CARR Christopher MIT Dept. Earth, Atmospheric and Planetary Sciences, and Dept. Aeronautics and Astronautics, Cambridge, MA, USA and Massachusetts General Hospital Department of Molecular Biology, Boston, MA, USA

CREAMEAN Jessie NOAA Earth System Research Laboratory, Physical Sciences Division, Boulder, CO

DUEKER Elias CUNY Queens College, Flushing, NY; Environmental and Urban Studies, Bard College, Annandale-on-Hudson, NY

FELGITSCH Laura Inst. Materials Chemistry, Vienna Univ. of Technology, Austria

JOYCE Rachel Dept. Microbiology & Cell Sciences, Univ. FL, Gainesville

MIX Hari Environmental Studies and Sciences Dept., Santa Clara University, CA

O'SULLIVAN Danny Inst. Climate & Atmospheric Science, University of Leeds, UK

SANTL TEMKIV Tina Stellar Astrophysics Centre, Aarhus University, Denmark

SCHEEL Jan Frederik Max Planck Institute for Chemistry, Mainz, Germany

STOPELLI Emiliano Dept. Environmental Geosciences, Univ. of Basel, Switzerland

THOMSON Erik Department of Chemistry and Molecular Biology – Atmospheric Science, University of Gothenburg, Sweden

**PROGRAM**

	start	end	
<b>17 March</b>	09:45		Meet at the entrance of the South Tyrol Museum of Archeology ( <a href="http://www.iceman.it/en">http://www.iceman.it/en</a> ) Via Museo/Museumstraße 43
	10:00	12:00	Group visit of the South Tyrol Museum of Archeology
	12:00	12:30	Walk to EURAC
	12:30	13:30	Lunch at EURAC
	13:30	14:00	<b>Context, organization, objectives and introductions.</b> C.E. Morris & D.C. Sands Welcome by Roland Psenner, director of EURAC
	<i>Defining the challenges and goals of the thematic groups (presentations + discussion)</i>		
<b>Group 1</b>	14:00	14:30	<b>Emissions of bioaerosols into the atmosphere: Estimating microbial flux and its link to land use and other environmental parameters.</b> F. Carotenuto
<b>Group 2</b>	14:30	15:00	<b>Appropriate samplers to capture and quantify biological aerosols for diverse contexts and goals.</b> C. Carr
<b>Group 3</b>	15:00	15:30	<b>Defining the scope of "biological INPs", from whole organisms to residues.</b> D. O'Sullivan
<b>Group 4</b>	15:30	16:00	<b>Stalking biological INPs in the Arctic and their relevance for continental precipitation.</b> J. Creamean
	16:00	16:30	<i>PAUSE</i>
<b>Group 5</b>	16:30	17:00	<b>Making the most of the world's observatories of atmospheric particles.</b> E. Stopelli
<b>Group 6</b>	17:00	17:30	<b>What drives rainfall feedback?: Assessing rain-responsiveness of plant-borne ice nucleators.</b> C.E. Morris
<b>Group 7</b>	17:30	18:00	<b>Dissemination of scientific discoveries and knowledge to the public sector.</b> E. Dueker
	18:00	18:25	<b>Reconstruction of a 5,300-year-old <i>Helicobacter pylori</i> genome from the Iceman's stomach.</b> F. Maxiner, EURAC
	18:25	18:30	<i>info about organization for tomorrow and for restaurant</i>
	19:30		Dinner at Franziskanerstuben, Via dei Francescani 7. <a href="http://www.franziskanerstuben.com/it/">http://www.franziskanerstuben.com/it/</a>
<b>18 March</b>	8:30	8:55	<b>Land cover effects on surface properties that influence flux: from vegetation to urbanization.</b> T. Georgiadis
	8:55	9:15	<b>Arctic greening and trends in clouds - an open discussion.</b> F. Conen
	9:15	9:40	<b>Measuring ice nuclei in the atmosphere: results of inter-equipment comparisons.</b> E. Thomson
<i>coffee, tea, etc. available</i>	9:40	12:30	<b>Break-out into working groups 1, 2, 4</b>
	12:30	13:30	Lunch at EURAC
	13:30	15:30	<b>Break-out into working groups 1, 2, 4</b>
	15:30	15:50	<b>Parameterizing atmospheric models for bioaerosols - an opportunity for postdoctoral research.</b> V. Phillips
	15:50	16:10	<b>Influence of storm origin, type, and season on biological ice nuclei in precipitation.</b> R. Joyce
	16:10	16:30	<b>Immunofluorescent and molecular studies of INA single cells and INA proteins.</b> T. Santyl-Temkiv
	16:30	16:50	<i>PAUSE</i>
	16:50	17:10	<b>Deciphering Ice Nucleation Macromolecule Properties.</b> J. F. Scheel
	17:10	17:30	<b>Plant based IN: They are small, but they are many.</b> L. Felgitsch
	17:30	17:50	<b>Quantitative detection and characterization of bioaerosols in the troposphere and stratosphere.</b> N. Bryan
	17:50	18:10	<b>Structural and functional diversity of microbial communities in clouds by metagenomics/metatranscriptomics.</b> P. Amato
	18:10	18:30	<b>What role do plants play in driving changes to the hydrologic cycle? Insights from Cenozoic terrestrial paleoclimate records.</b> H. Mix
	19:30		Dinner at Paulaner Stuben, 16 Argenterier Street, +39 0471 980407, <a href="http://www.paulanerstuben.com">www.paulanerstuben.com</a>

<b>19 March</b>	9:00	9:30	<b>Ice cores as archives of climatic history and biological material including INPs.</b> B. Christner
	9:30	9:50	<b>Legal immigrants: Long range transport of Saharian dust microbiomes revealed by metagenomics analysis of snow.</b> D. Cavalieri
	9:50	10:10	<b>Atmospheric transport of bioaerosols: dispersal of bacteria and pollen across a range of scales.</b> Y. Brunet
	10:10	10:30	<i>PAUSE</i>
	10:30	10:50	<b>Biosphere-atmosphere exchange by means of micrometeorological methods.</b> G. Wohlfahrt
	10:50	12:30	<b>Plenary session for Group 3 (Scope of bio-INPs).</b> D. O'Sullivan, discussion leader
	12:30	13:30	Lunch at EURAC
	13:30	16:00	<b>Break-out into working groups 1, 2, 6</b>
	16:00	16:20	<i>PAUSE</i>
	16:20	17:20	<b>Plenary session for Group 5 (Networking observatories).</b> E. Stopelli, discussion leader
	17:20	18:30	<b>Plenary session for Group 7 (Knowledge to the public).</b> E. Dueker, discussion leader
	19:30		Dinner at Wirtshaus Vögele, 3 Goethestreet, +39 0471 973 938, <a href="http://www.voegele.it/">http://www.voegele.it/</a>
<b>20 March</b>			<b><i>Restitutions of thematic groups and general discussion</i></b>
	9:00	9:45	Summary of thematic break out groups and open discussion
	9:45	10:00	<b>Presentation of a policy brief for the Global Landscape Forum (Dec 2015) concerning bioprecipitation.</b> C.E. Morris
	10:00	10:30	<i>PAUSE</i>
	10:30	11:30	<b>Spontaneous presentation &amp; discussion: Minimal requirements for data collection for cloud models.</b> V. Phillips
	11:30	12:30	Take-home messages and new outlooks (all participants)
	12:30	13:30	Lunch at EURAC