



6-8 November 2019
Campus Beauchef, University of Chile
Santiago, Chile



19th GEIA Conference
*The Global Emissions Initiative and
Accelerating Social Transformations*

**How can emissions research keep pace with and anticipate societal and technological change?
Are we anticipating where big changes in technology and behavior are occurring, and what are the implications for emissions?**

Abstract Submission Confirmation

Thank you for submitting an abstract to the 19th GEIA Conference!

The below information was sent to the email address in your profile.

Today's Date: 2019-05-28

Your Abstract ID Number is 1.061

If the information below regarding your abstract needs to be edited, you can edit your abstract text until 10 June 2019 by logging into IGAC EASS (<http://www.igacproject.org/EASS>).

Your abstract was submitted to Session 1: General

We welcome abstracts addressing the following societal challenges and approaches to development of improved emissions information (select all that apply):: Agriculture, Food Production & Land Use Change, Natural Sources & Wildfires , Top-Down & Satellite-Based Emissions Approaches, Integrated Inventories for Multiple Sectors

Presenting Author:

Tomás Rafael Bolaño-Ortiz, CONICET / Universidad Tecnológica Nacional, Facultad Regional Mendoza, Mendoza, Argentina, tomas.bolano@frm.utn.edu.ar

Early Career Scientist

Applied for Travel Support

Abstract Title:

Analysis of open biomass burning using WRF-Chem model with FINN fire emissions in the Central Andes of Argentina and Chile

Co-Authors:

Pascual Flores Romina Maria, CONICET / Universidad Tecnológica Nacional, Facultad Regional Mendoza, Mendoza, Argentina

Lopez Noreña Ana Isabel, CONICET / Universidad Tecnológica Nacional, Facultad Regional Mendoza, Mendoza, Argentina

Berná Peña Lucas Luciano, ANPCyT / Universidad Tecnológica Nacional, Facultad Regional Mendoza, Mendoza, Argentina

Ruggeri María Florencia, Centro de Tecnologías Ambientales, Universidad Técnica Federico Santa María, Valparaíso, Chile | Grupo de Estudios Atmosféricos y Ambientales. Universidad Tecnológica Nacional, Facultad Regional Mendoza. - Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Argentina.

Lakkis Gabriela Susan, Pontificia Universidad Católica Argentina, Facultad de Ingeniería y Ciencias Agrarias. Unidad de investigación y desarrollo para la ingeniería, UIDI | Facultad regional Buenos Aires FRBA, Universidad Tecnológica Nacional. Ciudad Autónoma de Buenos Aires, Argentina

Abstract

Open burning biomass (OBB) and its aerosol emissions is a global problem as it can significantly affect air quality of regions without high concentrations of fine particles ($PM_{2.5}$). They also have multiple direct, indirect and semi-direct effects on the radiative properties of the atmosphere. OBB emissions were analyzed using the Weather Research and Forecasting model coupled with Chemistry (WRF-Chem) and a daily fire emissions product for atmospheric chemistry models, called Fire INventory from NCAR (FINN) of high resolution, for an important event of OBB and transport of its aerosols over the Central Andes of Argentina and Chile (CAAC). Two simulations were run (with FINN: *Fire_On* and without FINN: *Fire_OFF*) that occurred during the spring season of 2016, in order to characterize the atmospheric synoptic conditions of this event and estimate its contribution to air quality conditions in this area. Our results showed a reasonable representation of the smoke sources observed in images of the Moderate Resolution Imaging Spectroradiometer (MODIS) onboard the NASA Terra satellite, and the Visible Infrared Imaging Radiometer Suite (VIIRS) onboard the Suomi National Polar-orbiting Partnership (SNPP) satellite. Differences (*Fire_ON* - *Fire_OFF*) showed emissions due to OBB, in the west of the study area with emissions on the northeast and its superficial displacements in southwest direction. In the east (Chile side) several OBB sources were observed in the VI and VII regions. In comparison with data of the

Chilean air quality network, variations that suggest a contribution of $PM_{2.5}$ were observed coming from OBB emissions. In general, we observed clouds increase and precipitation decrease. And besides, surface albedo and snow cover decrease in the mountain range that indicate the OBB aerosols were associated to the cloud microphysics, precipitation and radiative changes on CAAC.