

Oral.1: 16:15-16:30. **Cold pools, mesohighs, and severe wind gusts: opportunities to assess the South American climatology of intense convectively-induced surface features with a convection-permitting regional climate simulation.**

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Abstract

Convective storms are capable of producing a myriad of severe weather phenomena, among which heavy convective rainfall outstands as the main cause of Natural Disasters in countries like Brazil. However, other manifestations of extreme convective weather also deserve attention given their potential to pose a threat to important social and economic sectors. In this context, damage caused by localized severe wind gusts is not a rare occurrence in many portions of South America. The dynamics of convective wind gusts is tightly associated with the dynamics and thermodynamics of convectively-induced surface cold pools and mesohighs. In turn, the size, depth and intensity of cold pools and mesohighs accompanying deep convection are sensitive to cloud microphysics mechanisms that are not necessarily well represented in parameterization schemes available in convection-permitting models. Hence, the assessment of the skill of convection-permitting regional climate simulations in representing distinct types of extreme convective weather also can profit from local observations of cold pools, mesohighs and accompanying wind gusts. This study aims at comparing the observed statistics of surface wind gusts, cold pools and mesohighs associated with deep convection in southern Brazil from 2005 to 2015 with the respective simulated statistics obtained from the WRF-4km climate simulations made available by SAAG-NCAR for the same region and period.