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Are heat waves increasing over Argentina?

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The study of the occurrence of heat waves needs an extended quality controlled data base containing daily data. Over Argentina there has been studies related to the variability of extreme temperatures, but the spells were analyzed during short periods because of the availability of data or because of incomplete data (Rusticucci, M. and Vargas, W., 2001). More recently, and over a larger area, Alexander at al. (2006) considered only the duration in the annual count of days with at least 6 consecutive days when TX>90th percentile (WSDI in days).They are warm spells over the year, without consideration of the absolute temperature value. Summer days (SU25) or Tropical nights are considered not consecutive. In Argentina, as all over the world, warm nights have been increasing and cold nights decreasing but the frequency of warm and cold days has been decreasing in some regions. So, the objective of this work is to find a definition of the heat waves that includes both variables together, and the associated warming excess, with focus on the warm period of the year. Strong heat waves are close related to mortality in Buenos Aires, so an alert system is trying to be implemented through the National Weather Service. These limits were considered to study the trends and variability of heat waves occurrence and intensity. Days with Tmax over 32oC and Tmin over 20oC for the warm season (October to April) for the period 1960-2010 show that 77% of the heat waves last less or equal to 3 days, but the extreme one lasted 12 consecutive days. The frequency of the 2-day, 3-day spells has been significantly increasing, with the longest heat waves in the last decade. As an example, 2009 had 26 days under these conditions in Buenos Aires. The intensity was considered as the sum of the degrees C over the threshold and it doesn't seem to have changed significantly. So, this exhaustive analysis allows a complete climatology of the observed variability and change of the heat waves over the region. Alexander L. ,X. Zhang, T. C. Peterson, J. Caesar, B. Gleason, A. Klein Tank, M. Haylock, D. Collins, B. Trewin, F. Rahimzadeh, A. Tagipour, P. Ambenje, K. Rupa Kumar, J. Revadekar, G. Griffiths, L. Vincent, D. Stephenson, J. Burn, E. Aguilar, M. Brunet, M. Taylor, M. New, P. Zhai, M. Rusticucci, J. L. Vazquez-Aguirre, 2006: Global observed changes in daily climate extremes of temperature and precipitation JOURNAL OF GEOPHYSICAL RESEARCH, VOL. 111, D05109 Rusticucci, Matilde, Vargas, Walter. Interannual variability of Temperature Spells over Argentina. AtmÛsfera, 2001, 14, 2, 75-86.