



ClimPACT: Software for quantifying climate extremes for sector applications

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<https://github.com/ARCCSS-extremes/climpact2>

Problem: Sectors such as agriculture, health and water resources desire information on how climate extremes affect their operations. However, information on extremes is often buried in meteorological data and are not directly applicable to specific sectors.

Solution: *ClimPACT* is an open source R software package that reads meteorological data (daily minimum and maximum temperatures, and precipitation) and calculates the frequency, duration and magnitude of various climate extremes directly relevant to sectors, at monthly and annual time scales.

The Expert Team on Sector-specific Climate Indices (ET-SCI)

The climate extremes indices calculated by *ClimPACT* have been recommended by the World Meteorological Organisation ET-SCI, in consultation with sector experts. *ClimPACT* currently calculates over 60 indices covering the agriculture, water resources and health sectors, and more indices are being sought.

Graphical User Interface

ClimPACT employs a simple GUI (Fig. 1) that allows users to calculate climate extremes from site data (in text format), not requiring any knowledge of programming. The GUI also allows the user to calculate custom indices and over 100 plots can be produced for each site (e.g. Fig. 2).

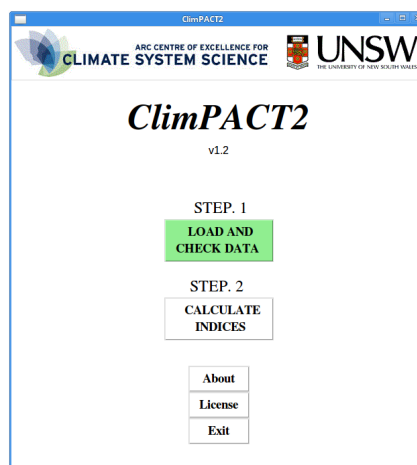


Fig. 1 The *ClimPACT* GUI.

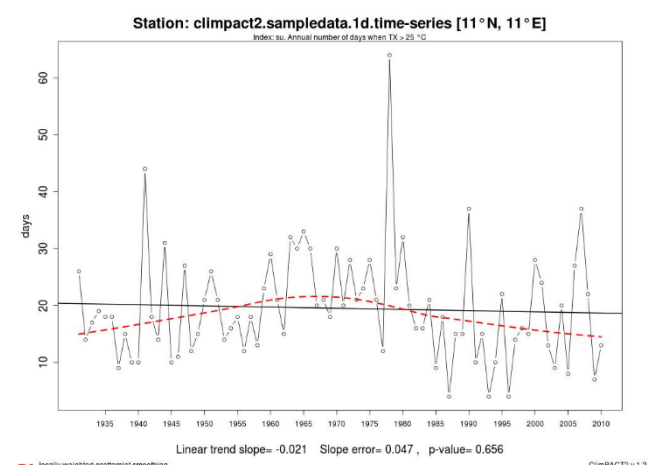


Fig. 2 A plot of a climate extreme for station data

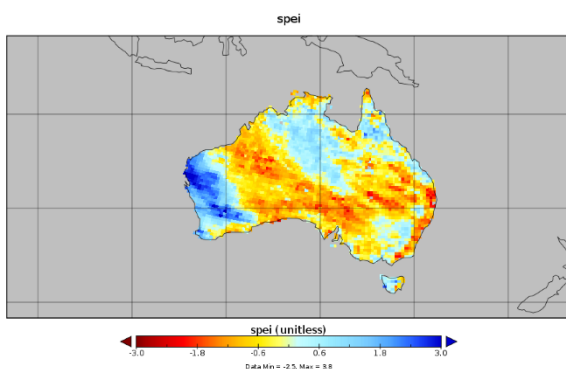


Fig. 3 an example climate index calculated on gridded data.

Gridded data

ClimPACT also allows users with a little Unix command-line experience to calculate the climate extremes indices on gridded data (netCDF; Fig. 3).

Quality Control

ClimPACT has quality control functionality that provides diagnostic plots to help the user detect erroneous values in their input meteorological data.

Large user base, documentation

ClimPACT is used in dozens of countries (Fig. 4) and has been substantially updated in response to user feedback. A comprehensive user guide is available along with Youtube tutorials covering basic topics such as installing *ClimPACT* and descriptions of the quality control functionality.

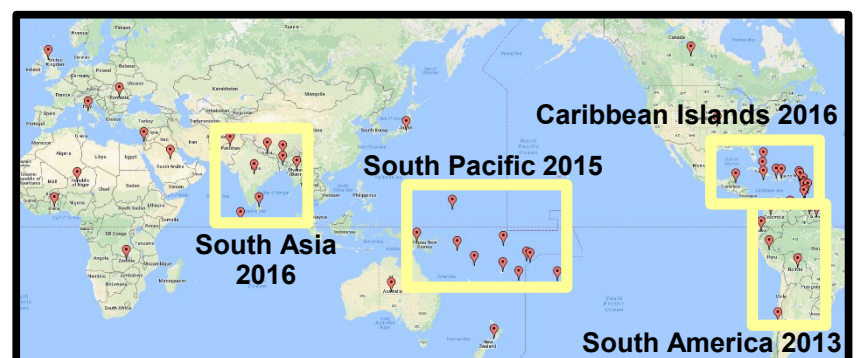


Fig. 4 Current *ClimPACT* user-base by country. Yellow boxes indicate regions where workshops on *ClimPACT* have been held.