HEAT-HEALTH EARLY WARNING IN THE CARIBBEAN

Why (now) and how?

Dr. Cedric J. VAN MEERBEECK, Dr. Roché MAHON, Adrian TROTMAN

Caribbean Institute for Meteorology and Hydrology

Dr. Simon MASON, Dr. Hannah NISSAN

International Research Institute for Climate and Society

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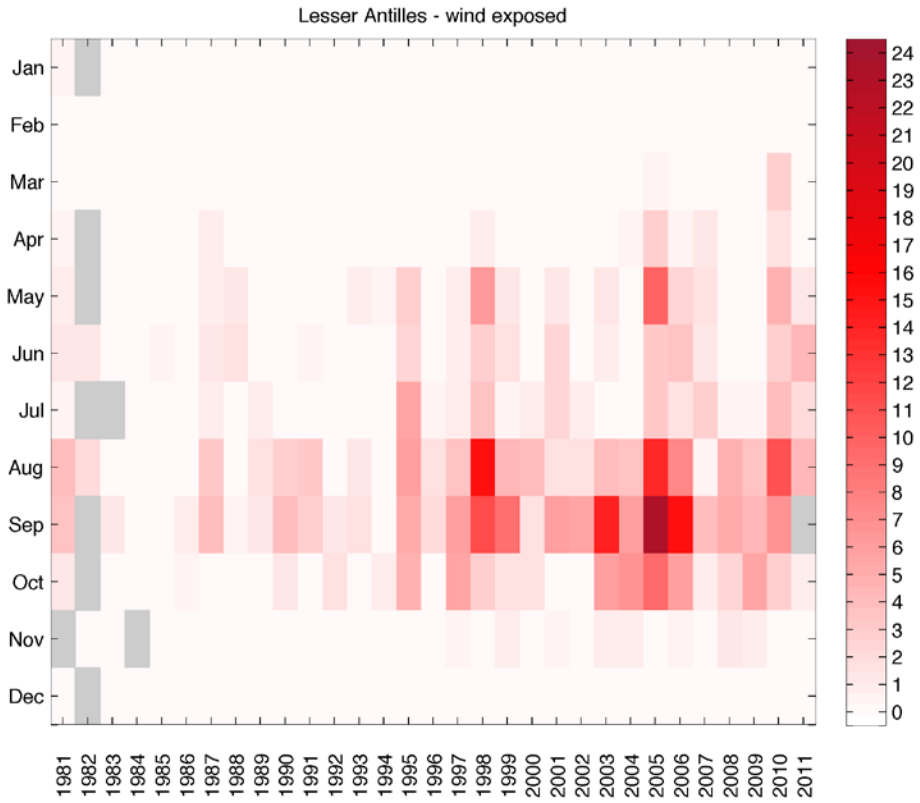
Heat Waves in the Caribbean: a challenging, new reality

- **Limited Early warning capacity** for heat waves to improve preparedness and response action;
- **Limited human, technological and financial resources** to build and sustain early warning capacity;
- **Limited knowledge of community vulnerabilities** to heat stress in humans and animals.
- **Nearly no data on health outcomes** (morbidity and mortality) of heat stress and heat waves, and only slowly growing awareness of public health practitioners.

A new reality?

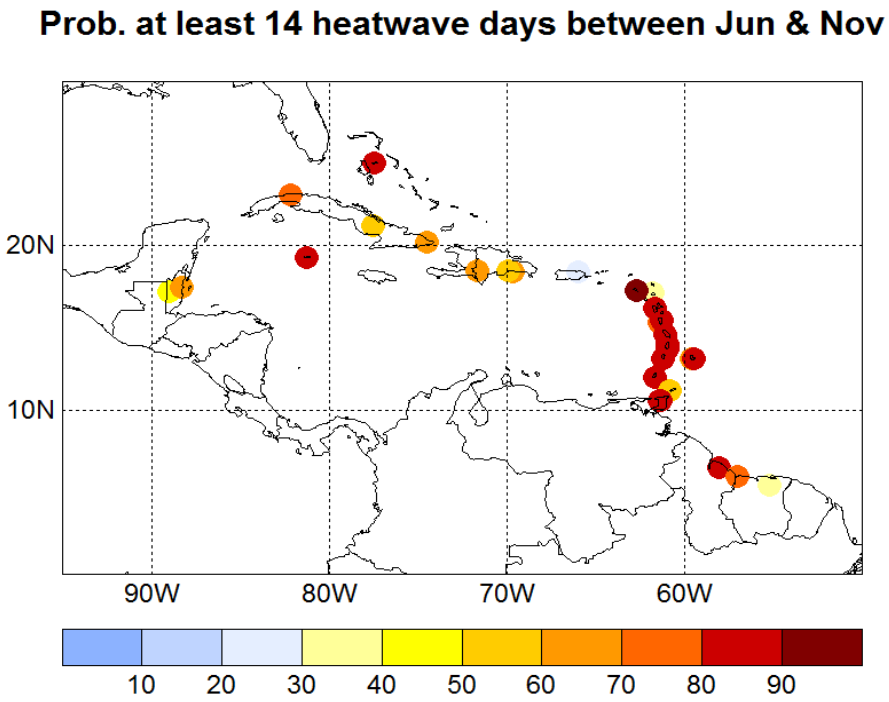
Local imprint of recent Global Warming



- >15% increase in frequency of warm days and nights; >7% decrease in frequency of cool days and nights; 1°C warming of hottest & coolest days and nights (Stephenson et al. 2014).
- Rapid increase in frequency of heatwaves since 1990s
- Season with heatwaves is expanding.

caricof@cimh.edu.bb

Phase 1: delivering (sub-)seasonal heatwave frequency forecast information



Forecasting the number of heatwaves within a season can **increase lead times** to support heat-health preparedness and heat stress mitigation.

Phase 1 roll out started under the USAID BRCCC Programme 2015-2017 and culminated in the monthly, experimental release of **Caribbean Heat Outlooks** during the hotter half year (rcc.cimh.edu.bb)

Phase 2: Leveraging regional & national sectoral partnerships to co-develop heat alerts (to begin in 2019)

- **Meteorological data needs**: Inventory hourly records of ambient and wet-bulb/dewpoint temperatures to produce historical time series of heat stress;
- **Health outcome data needs**: Creating national or within-country time series of morbidity and mortality related to heat stress to identify critical alerting thresholds.
- **Statistical modelling:** Building a seasonal heat stress forecast model.
- **Heat Alerting:** Co-develop an alerting protocol for heatwaves across timescales as part of a 'Weather and Climate Ready Nations' programme.

Thank you

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Servicio Meteorológico Nacional
Argentina

Warming signals over South America

Natalia Herrera – nherrera@smn.gov.ar

First Global Forum for Heat and Health. Hong Kong, 17-20 December 2018.

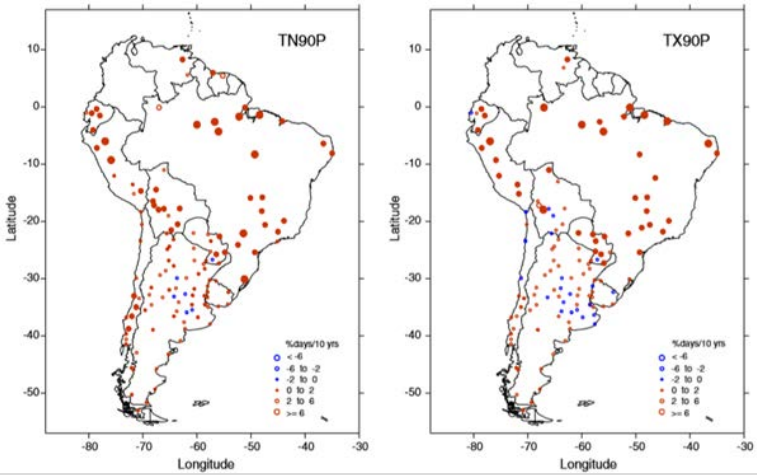
Warming and wetting signals emerging from analysis of changes in climate extreme indices over South America

María de los Milagros Skansi [a,*], Manola Brunet [b,c], Javier Sigró [b], Enric Aguilar [b], Juan Andrés Arevalo Groening [d], Oscar J. Bentancur [e], Yaruska Rosa Castellón Geier [f], Ruth Leonor Correa Amaya [g], Homero Jácome [h], Andrea Malheiros Ramos [i,j], Clara Oria Rojas [k], Alejandro Max Pasten [l], Sukarni Sallons Mitro [m], Claudia Villaroel Jiménez [n], Rodney Martínez [o], Lisa V. Alexander [p], P.D. Jones [c,q]

Global and Planetary Change 100 (2013) 295–307

ETCCDI (27 indices) ⇄ **TN90p** (Warm nights): %days TN>90th
TX90p (Warm days): %days TX>90th

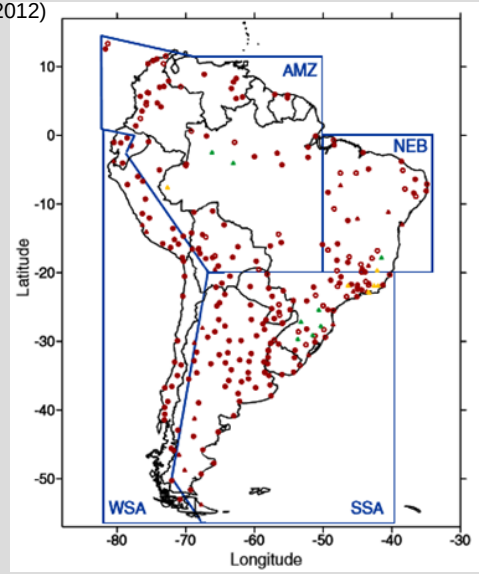
Local annual trends (1969-2009)



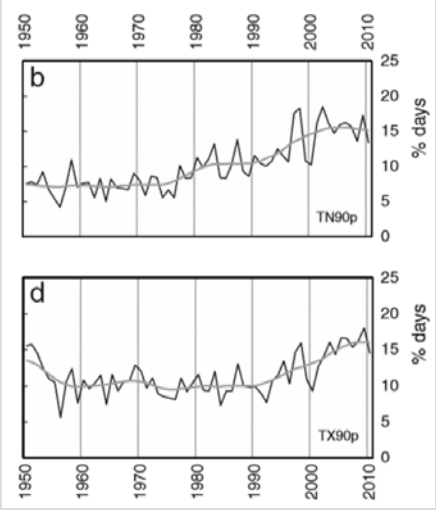
Both generalized increases in the frequency of warm nights and days over most of the SA locations are evident with a high spatial coherency of the signals.
- Warm nights: Strong increases in the north and weak in the southern parts of SA.
- Warm days: increase over the northern part of SA, while the southern part has mostly non-significant (both increasing and decreasing) trends.

Regional and subregional trends (1950-2010)

Sub-regions adapted from the SREX Report (IPCC, 2012)



Warming signal over the continent as a whole



-TN-based indices record faster rates of warming than TX-based indices.

- The largest trends have been estimated over NE Brazil for warm nights, followed by Amazonia.

- Increases in warm days are remarkable over NE Brazil: 18% more frequent and Amazonia with 7% more frequent.

- Moderate increments in warm nights and days are evident over WSA and SSA.

Annual trends (1950-2010)		
days/decade	TX90p	TN90p
All SA	0.62 (3.7%)	**1.54 (9.2%)**
AMZ	**1.20 (7.2%)**	**2.28 (13.7%)**
NEB	**3.05 (18.3%)**	**4.02 (24.1%)**
WSA	**1.18 (7.1%)**	**1.60 (9.6%)**
SSA	0.44 (2.6%)	**1.30 (7.8%)**

ES | EN | PT

Regional Climate Center Network for Southern South America

RCC - Network - SSA

www.crc-sas.org

Country: All

Station:

Index: Maximum temperature > 90th percentile

Time scale: (•) Annual ( ) Monthly

Notes:

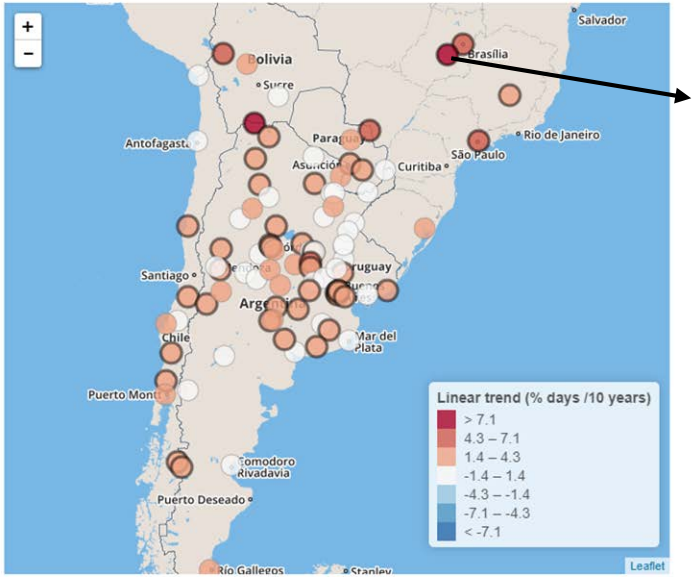
1. For each meteorological station the color of the dot indicates the magnitude of the slope of the linear fit for the period 1971-2010. This period can be changed (using the tool underneath the map) but keep in mind that trends based on short series (e.g., less than 30 years) can produce inconsistent results.

2. The slope is shown for a meteorological station only if the record includes at least 90% of all possible index values for the selected period.

3. Meteorological stations for which the fitted trend (positive or negative) is significant at the 95% level are indicated with a black border around the colored dot.

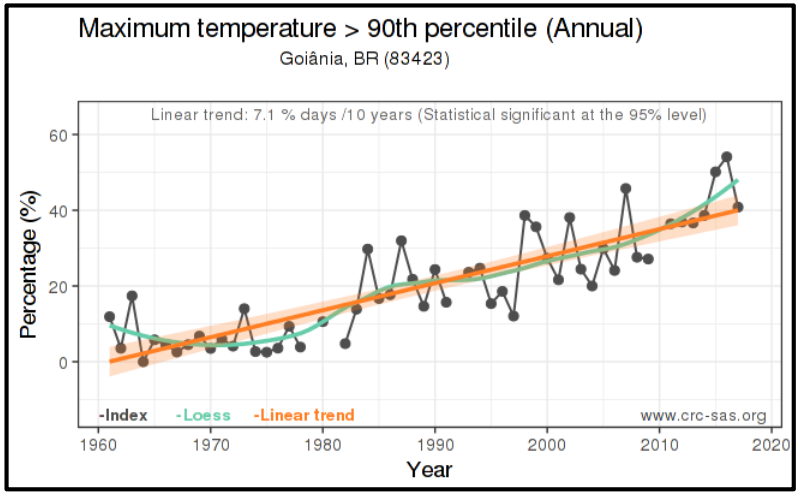
Map | Series

Linear trend (% days /10 years): Maximum temperature > 90th percentile - Annual



Period: 1,961 — 1,988 — 2,017

www.crc-sas.org/en/climatologia_extremos_climaticos.php



Servicio Meteorológico Nacional

Dorrego 4019 (C1425GBE)
Buenos Aires . Argentina
Tel: (+54 11) 5167-6712
smn@smn.gob.ar
www.smn.gob.ar

Thank you!