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Preface

Twenty-five years ago to this date, *Atmósfera* joined the already established journals in the field of the atmospheric sciences and provided a new venue for the dissemination of results of research in that area.

As part of the celebration of the 25th anniversary of *Atmósfera*, the Editorial Board decided to host a thematic issue soliciting contributions on the geographical region that includes the Caribbean, Central America, Mexico and the eastern Pacific, and that is sometimes referred to as Intra-Americas Sea. Specific topics that are relevant for this region, such as climate variability of precipitation, convection and tropical cyclones were targeted. Furthermore, we asked three colleagues to join us as Guest Editors: Drs. Tereza Cavazos, Henry Diaz and Víctor Magaña, who gladly accepted to be part of this project.

The resulting thematic issue includes five papers that cover different aspects of convection and tropical cyclones on the eastern Tropical Pacific basin. The topics range from the variability of the initial convection in the basin (Pozo *et al.*), to the interannual variability of tropical cyclone counts in relation to El Niño and the Pacific decadal oscillation (Gutzler *et al.*), to the impact of recent landfall events on population (Farfán *et al.*) and on landscape (Antinao and Farfán) and finally, to a historical reconstruction of landfalls back to 1850 (Raga *et al.*).

Gutzler *et al.* analyze the interannual variability of tropical cyclones from 1921 to 2006 determining the influence of the El Niño phenomenon, particularly early in the season, with more cyclones steered toward the Mexican coast during La Niña years. The results are important for cyclone landfall forecasts.

Farfán *et al.* evaluate the impacts of landfalls on populated areas located along the Pacific coast between 1970 and 2010. Out of the top 25 events based upon rainfall accumulation, 10 occurred during El Niño years and another 10 during neutral years. So while circulations during La Niña years may steer cyclones towards the coast, as reported by Gutzler *et al.*, Farfán *et al.*, report that the most devastating consequences of landfalls resulting from a combination of factors (including man-made), were observed during El Niño years (Liza in 1976, Pauline in 1997 and Lane in 2006).

Antinao and Farfán show evidence that upon landfall onto the Baja California Peninsula, Hurricane Juliette (2001) triggered 419 landslides due to the combined effects of total rainfall and intensity, geology and vegetation. A historical reconstruction indicates that the Juliette event was indeed extreme and can be expected to happen on average once every 100 years. Such studies highlight the importance of a long-term perspective that aid planning for civil defense authorities.

Raga *et al.* embarked on an historical reconstruction of landfalls from 1949 (the official start of the dataset from the National Hurricane Center) backwards in time to 1850. The sources of the historical data were found in national, state and local repositories and allowed a reconstruction of the time series of landfalls, for several states of the Pacific coast of Mexico. The Pacific decadal oscillation seems to play a part in the frequency of landfalls.

Pozo *et al.* present model simulations of convection in the eastern Pacific and compare their results with observations during the EPIC 2001 project in the region, an area that has had few *in situ* observations. The study highlights not only the role of thermodynamic forcing but also the presence of aerosol pollution from the continent as another factor to be considered for the forecast of precipitation.

The remaining three papers in this issue discuss topics in the Intra-America Seas and present observations of extreme precipitation (Curtis), an explanation of the mid-summer drought (Karnauskas *et al.*), and climate projections for the region (Karmalkar *et al.*).

Curtis presents results on the interannual variability of daily precipitation and finds a positive correlation between the size of the western hemisphere warm pool early in the season (May-June-July) and extreme precipitation events (> 50 mm) in October. The results are relevant for prediction of extreme precipitation.

Karnauskas *et al.* propose a simple mechanism for the midsummer drought (MSD) that relates the latitudinal dependence of the two climatological precipitation maxima to the biannual crossing of the solar declination, leading to two peaks in convective instability and rainfall. They also conclude that in addition to this underlying local mechanism, a number of remote processes tend to peak during the apex of the MSD, including the North American Monsoon, the Caribbean low-level jet, and the North Atlantic subtropical high, which may also act to suppress rainfall along the Pacific coast of Central America and Mexico and reinforce the MSD.

Finally, the work presented by Karmalkar *et al.* uses the regional climate model from the Hadley Center in the U.K. to estimate changes at small enough scales so as to be relevant for climate projections for the Caribbean islands. They point out the need for ensemble simulations given the large sensitivity of the regional to the driving global model.

We hope that the readers will enjoy this thematic issue and celebrate with us *Atmósfera's* 25th anniversary!

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Editor for the thematic issue