OTREC: Organization of Tropical East Pacific Convection[1]

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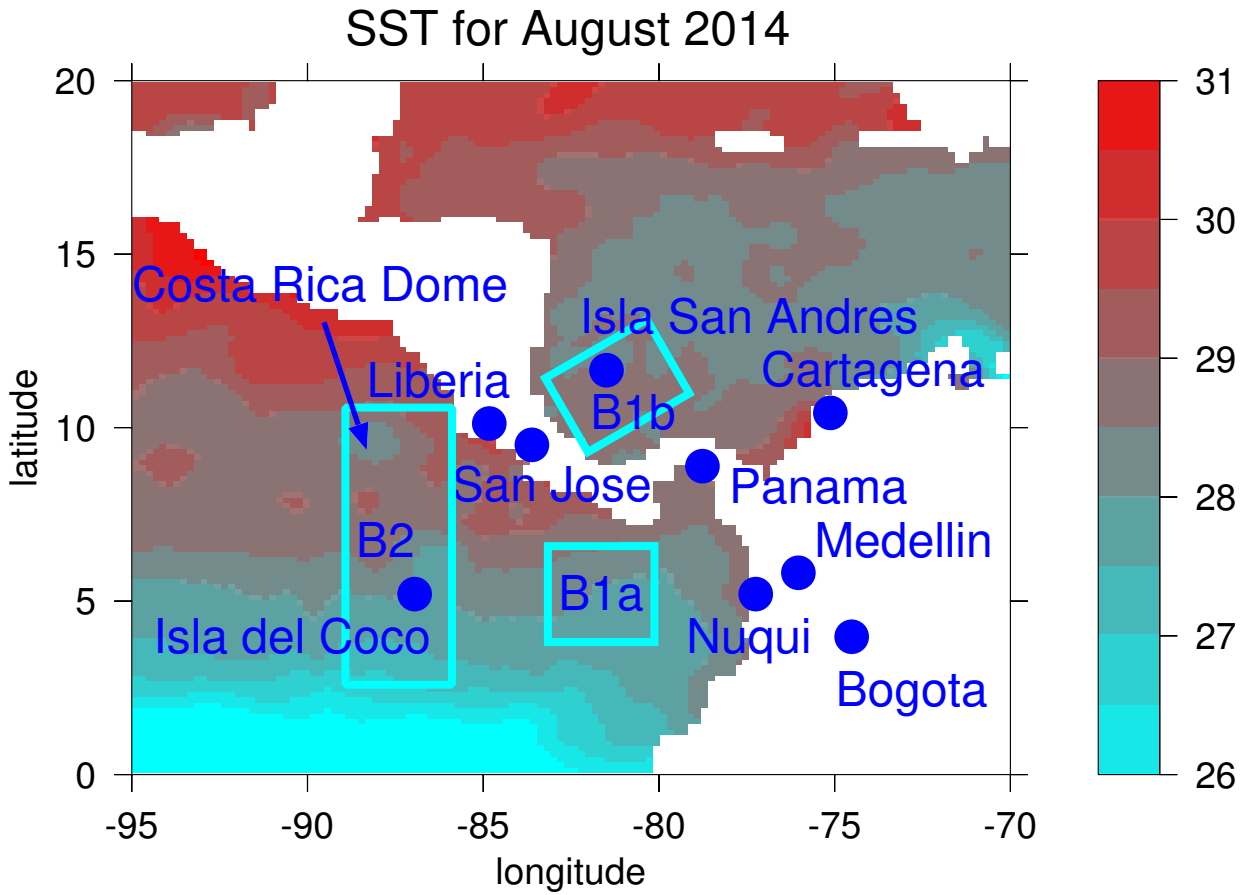
[1]Funded by the National Science Foundation

Why the East Pacific?

- The tropical East Pacific ITCZ is unique due to the existence of a strong cross-equatorial SST gradient. Both the form and the forcing of deep convection there are not understood because of this SST pattern.
- The mechanisms of easterly wave formation and intensification in the East Pacific are also not understood. These waves are responsible for the formation of most East Pacific tropical cyclones.
- The Chocó jet, which impinges on the Pacific coast of Colombia, produces massive rainfall there. The mechanisms governing this jet are uncertain.

OTREC Field Program

The NSF has funded the NSF/NCAR Gulfstream-V aircraft to study these issues. Dropsondes and a W-band radar will be used, with a base in Costa Rica. Study areas are shown below.



Scientific Impact

An improved treatment of deep convection in diverse environments is needed in global weather and climate models. OTREC will contribute to this goal in a number of ways:

- The vertical heating profiles of convection in the East Pacific are highly uncertain. OTREC measurements are crucially needed for this.
- A better understanding of the interaction of convection with easterly waves would aid tropical cyclogenesis forecasts.
- Significant uncertainties in ITCZ dynamics would be resolved.

OTREC Details

- Planned time frame: August-September 2019
- Location: Based in Costa Rica, either Liberia or San Jose
- 160 hours of Gulfstream-V flight time
- 660 dropsondes deployed in $\approx$ 1 degree grid over 20 flights