Tracking the latitude of the Intertropical Convergence Zone over time

The Intertropical Convergence Zone (ITCZ) is the climatological equator where the easterly trade winds from the Northern and Southern Hemispheres converge. It extends around the globe, over land and sea, typically just north of the equator.

The Intertropical Convergence Zone (ITCZ) has significant implications for global human, ecological, oceanographic and atmospheric systems.

Patterns in the latitude of the ITCZ

using the stream model on yearly mean SST over the past decade

The stream model is most accurate.

methods for determining the latitude of the ITCZ

To determine which model most accurately found the latitude of the ITCZ, I applied each model to the monthly mean SST in June and December of 2001. The ITCZ should follow the latitudinal shift of the sun, located north of the equator in June and south in December.

A comparison of models

Table 1. Mean latitude of ITCZ in June and December of 2001 as determined by each model.

<table>
<thead>
<tr>
<th>model</th>
<th>June</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>minimum temperature</td>
<td>2.40 S</td>
<td>2.11 S</td>
</tr>
<tr>
<td>slope convergence</td>
<td>0.00</td>
<td>0.47 S</td>
</tr>
<tr>
<td>stream model</td>
<td>0.56 N</td>
<td>0.48 S</td>
</tr>
</tbody>
</table>

Table 1: Mean latitude of ITCZ in June and December of 2001 as determined by each model.

The stream model is most accurate.

Data sources:

Monthly mean SST data was acquired from NOAA Extended Reconstructed Sea Surface Temperature (ERSSTv3.b).

Yearly global temperature mean data was acquired from NASA Goddard Institute for Space Studies Temperature Analysis.