ENSO (El Niño/Southern Oscillation) Investigation Worksheet

Objectives

- Contrast conditions in the equatorial Pacific during El Niño, La Niña and normal years
- Calculate and interpret correlation coefficients between Cold Tongue Index (CTI) and precipitation data
- Analyze precipitation data from the Pacific Northwest during El Niño and La Niña years

Part I: ENSO Background

©Textbook references: pages 221-225 (Garrison, Oceanography) and pages 92-96 (Kump, Earth System).

1. Watch the El Niño and La Niña animation (http://esminfo.prenhall.com/science/geoanimations/animations/26 NinoNina.html). Pay attention to the labels on the arrows. Describe the following factors during normal, El Niño and La Niña conditions.

Factor	Normal	El Niño	La Niña
Location of low pressure system, generating rainfall (eastern, mid or western Pacific)	;	2	
Coastal winds along the west coast of South America (compass direction and relative strength)	-		
Relative strength of upwelling off the coast of South America (weak, normal, strong)			
Position of thermocline (shallow, deep, normal)			
Location of warm surface water (eastern, mid or western Pacific)			

2. Analyzing PMEL Data

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- a. Click on the lat/lon plots tab. Click on Monthly for time range, and choose 2011, December. Click on the Make Plot button. Click on the plot to see a larger version. Focus on Temperature (color-coded). Two plots are produced: the upper plot shows mean temperature for December, 2011 and the lower plot shows temperature anomalies (deviations from the long-term mean). Based on your results and your work with the animation in part I, was 2011 a La Niña or El Niño year? Be sure to state your evidence.
- b. Perform the same analysis for December 1997. Based on your results, was 1997 a La Niña or El Niño year? How can you tell?

c. Do the same analysis for this (latest) year, this (latest) month. Is this a La Niña, El Niño or neutral year? State your evidence.