Zhang, Yancheng; Zhang, Xu; Chiessi, Cristiano Mazur; Mulitza, Stefan; Zhang, Xiao; Lohmann, Gerrit; Prange, Matthias; Behling, Hermann; Zabel, Matthias; Govin, Aline; Sawakuchi, André Oliveira; da Cruz Junior, Francisco William; Wefer, Gerold (2016): (Table S2) The reconstructed sea surface temperature (SST) over the eastern equatorial Pacific [dataset]. *PANGAEA*, https://doi.org/10.1594/PANGAEA.867293,

Supplement to: Zhang, Y et al. (2016): Equatorial Pacific forcing of western Amazonian precipitation during Heinrich Stadial 1. *Scientific Reports*, **6**, 35866, https://doi.org/10.1038/srep35866

Abstract:

Abundant hydroclimatic evidence from western Amazonia and the adjacent Andes documents wet conditions during Heinrich Stadial 1 (HS1, 18-15 ka), a cold period in the high latitudes of the North Atlantic. This precipitation anomaly was attributed to a strengthening of the South American summer monsoon due to a change in the Atlantic interhemispheric sea surface temperature (SST) gradient. However, the physical viability of this mechanism has never been rigorously tested. We address this issue by combining a thorough compilation of tropical South American paleorecords and a set of atmosphere model sensitivity experiments. Our results show that the Atlantic SST variations alone, although leading to dry conditions in northern South America and wet conditions in northeastern Brazil, cannot produce increased precipitation over western Amazonia and the adjacent Andes during HS1. Instead, an eastern equatorial Pacific SST increase (i.e., 0.5-1.5 °C), in response to the slowdown of the Atlantic Meridional Overturning Circulation during HS1, is crucial to generate the wet conditions in these regions. The mechanism works via anomalous low sea level pressure over the eastern equatorial Pacific, which promotes a regional easterly low-level wind anomaly and moisture recycling from central Amazonia towards the Andes.

Source:

Benway, Heather M; Mix, Alan C; Haley, Brian A; Klinkhammer, Gary P (2006): Eastern Pacific Warm Pool paleosalinity and climate variability: 0-30 kyr. *Paleoceanography*, **21(3)**, PA3008, https://doi.org/10.1029/2005PA001208

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Further details:

Supplementary information to: Equatorial Pacific forcing of western Amazonian precipitation during Heinrich Stadial 1 *(Excel files)*

Project(s):

Center for Marine Environmental Sciences (MARUM)

Coverage:

Median Latitude: 0.910359 * *Median Longitude:* -85.815121 * *South-bound Latitude:* -3.990000 * *West-bound Longitude:* -92.398000 * *North-bound Latitude:* 8.205500 * *East-bound Longitude:* -81.310000

Date/Time Start: 1963-04-05T00:00:00 * *Date/Time End:* 2002-06-23T05:05:00

Minimum Elevation: -3091.0 m * *Maximum Elevation:* -617.0 m

Event(s):

202-1240 * *Latitude:* 0.021850 * *Longitude:* -86.462630 * *Date/Time:* 2002-05-16T00:00:00 * *Elevation:* -2920.8 m * *Penetration:* 613.1 m * *Recovery:* 622.5 m * *Location:* Equatorial East Pacific * *Campaign:* Leg202 * *Basis:* Joides Resolution * *Method/Device:* Composite Core (COMPCORE) * *Comment:* 65 cores; 603.7 m cored; 9.4 m drilled; 103.1 % recovery

202-1242 * *Latitude:* 7.855867 * *Longitude:* -83.606967 * *Date/Time:* 2002-05-26T00:00:00 * *Elevation:* -1363.7 m * *Penetration:* 770.3 m * *Recovery:* 770.5 m * *Location:* North Pacific Ocean * *Campaign:* Leg202 * *Basis:* Joides Resolution * *Method/Device:* Composite Core (COMPCORE) * *Comment:* 80 cores; 743.8 m cored; 26.5 m drilled; 103.6 % recovery

CD38-17P * *Latitude:* -1.600000 * *Longitude:* -90.430000 * *Elevation:* -2580.0 m

Show more...

Parameter(s):

#	Name	Short Name	Unit	Principal Investigator	Method/Device	Comment
1	Event label	Event		Zhang, Yancheng		
2	Sample code/label	Sample label		Zhang, Yancheng		
3	Comment	Comment		Zhang, Yancheng		Approach
4	Species	Species		Zhang, Yancheng		
5	Sea surface temperature	SST	°C	Zhang, Yancheng		HS1 mean
6	Sea surface temperature	SST	°C	Zhang, Yancheng		LGM mean
7	Difference	Diff		Zhang, Yancheng		Difference (HS1-LGM)
8	Comment	Comment		Zhang, Yancheng		Difference (HS1-LGM)
9	Reference/source	Reference		Zhang, Yancheng		

License:

Size:

88 data points

Download Data

Download dataset as tab-delimited text — *use the following character encoding:*

UTF-8: Unicode (PANGAEA default)

View dataset as HTML

Datasets with similar metadata

Povea, P; Cacho, I; Moreno, A et al. (2019): Atmosphere-ocean linkages in the Eastern Equatorial Pacific over the early Pleistocene. https://doi.org/10.1594/PANGAEA.902531

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