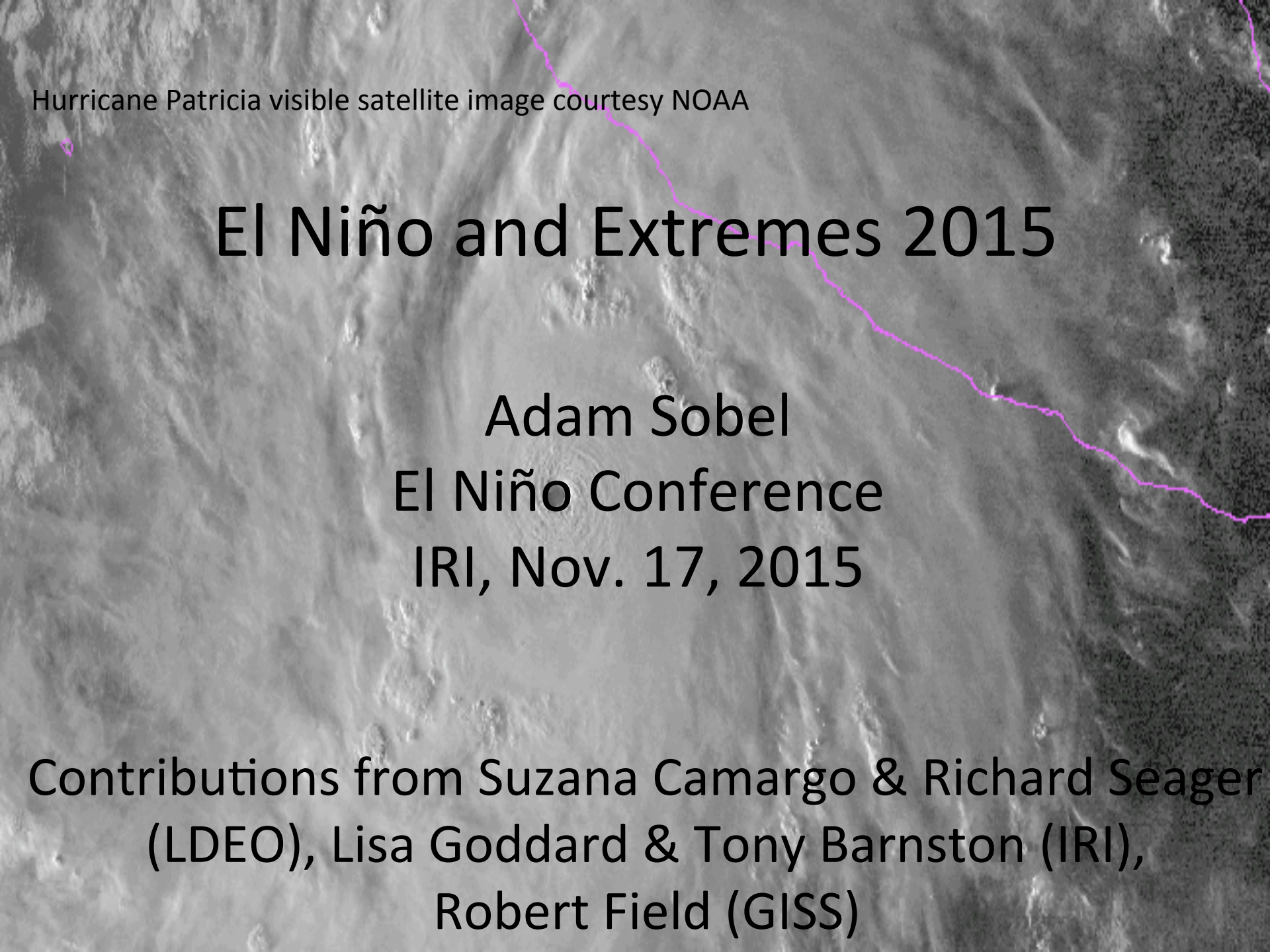


Hurricane Patricia visible satellite image courtesy NOAA

El Niño and Extremes 2015

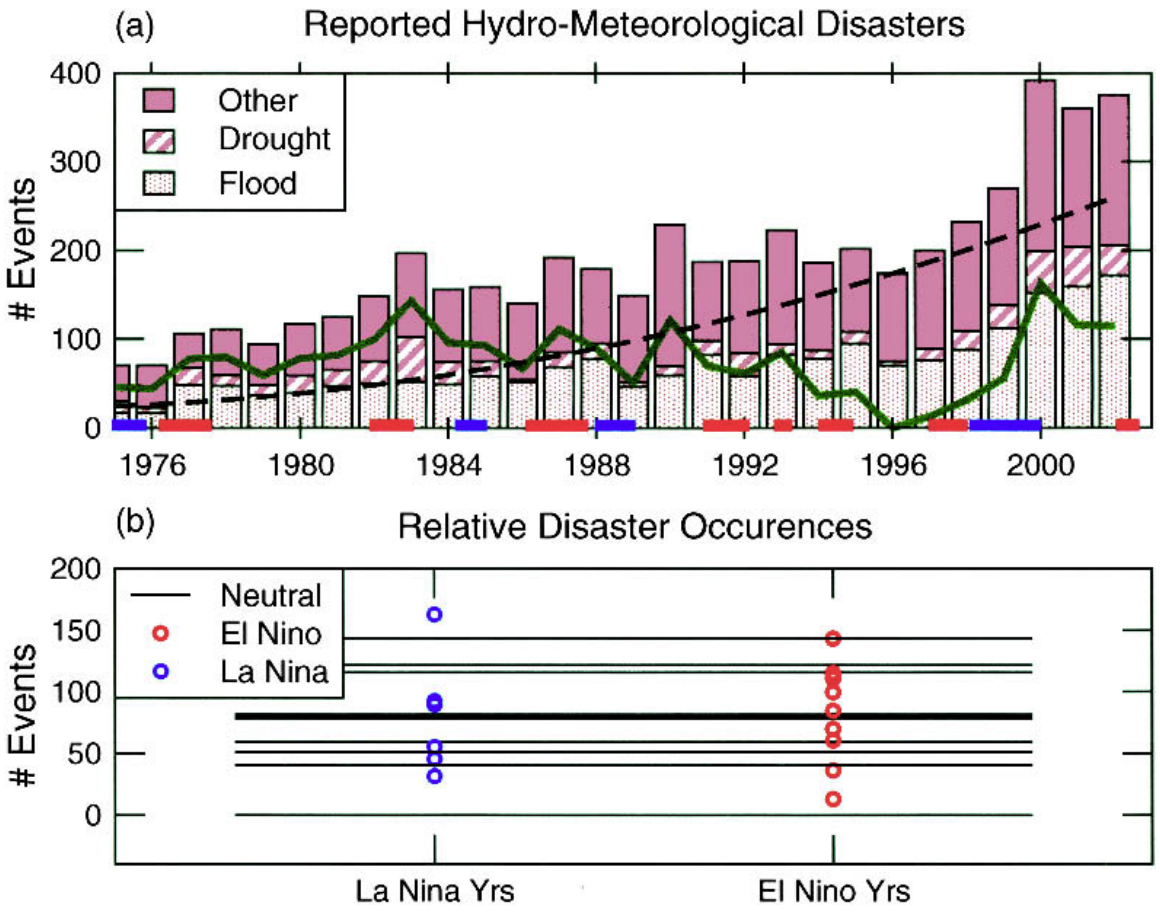
Adam Sobel

El Niño Conference

IRI, Nov. 17, 2015

Contributions from Suzana Camargo & Richard Seager (LDEO), Lisa Goddard & Tony Barnston (IRI), Robert Field (GISS)

There are not necessarily more disasters during El Niño years



Goddard and Dilley 2005

But the disasters are more predictable…

But the disasters are more predictable…

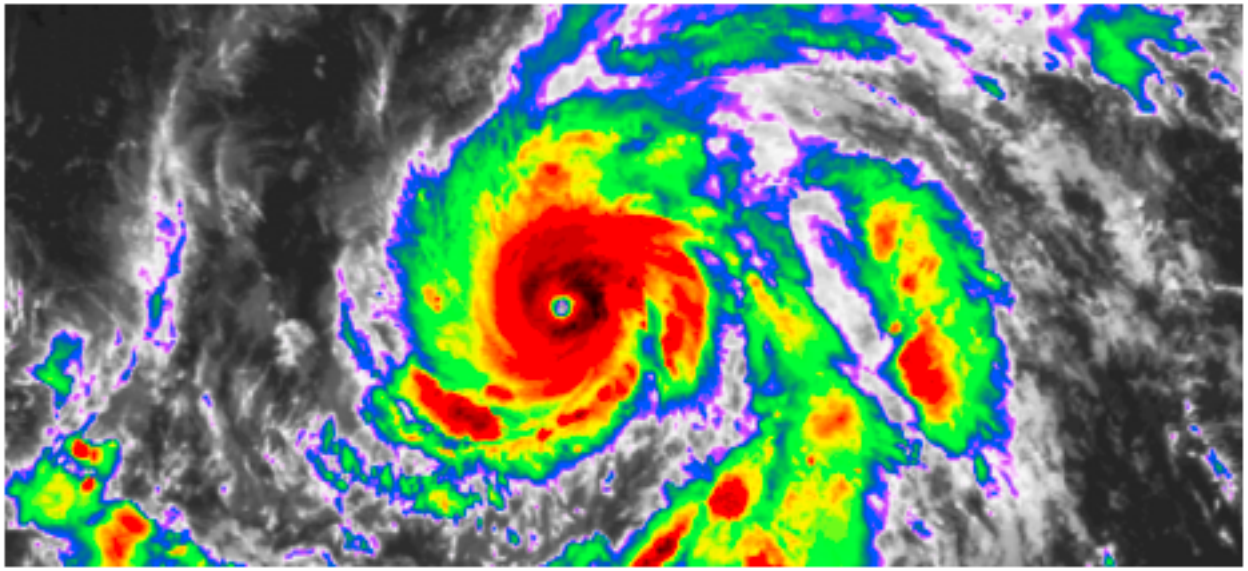
And ENSO definitely makes some extreme things happen that would be unlikely otherwise.

Capital Weather Gang

El Niño fueling most extreme tropical cyclone season on record in Northern Hemisphere

A | 52

By Jason Samenow October 20 | Follow @capitalweathe



Hurricane Olaf in the central Pacific Ocean, October 20, 2015. (NOAA)

Most Read

1 University of Missouri police arrest suspect in social media death threats

2 D.C. is the snobbiest city on the East Coast, a report says

3 On the front lines of the fight for free speech at Yale

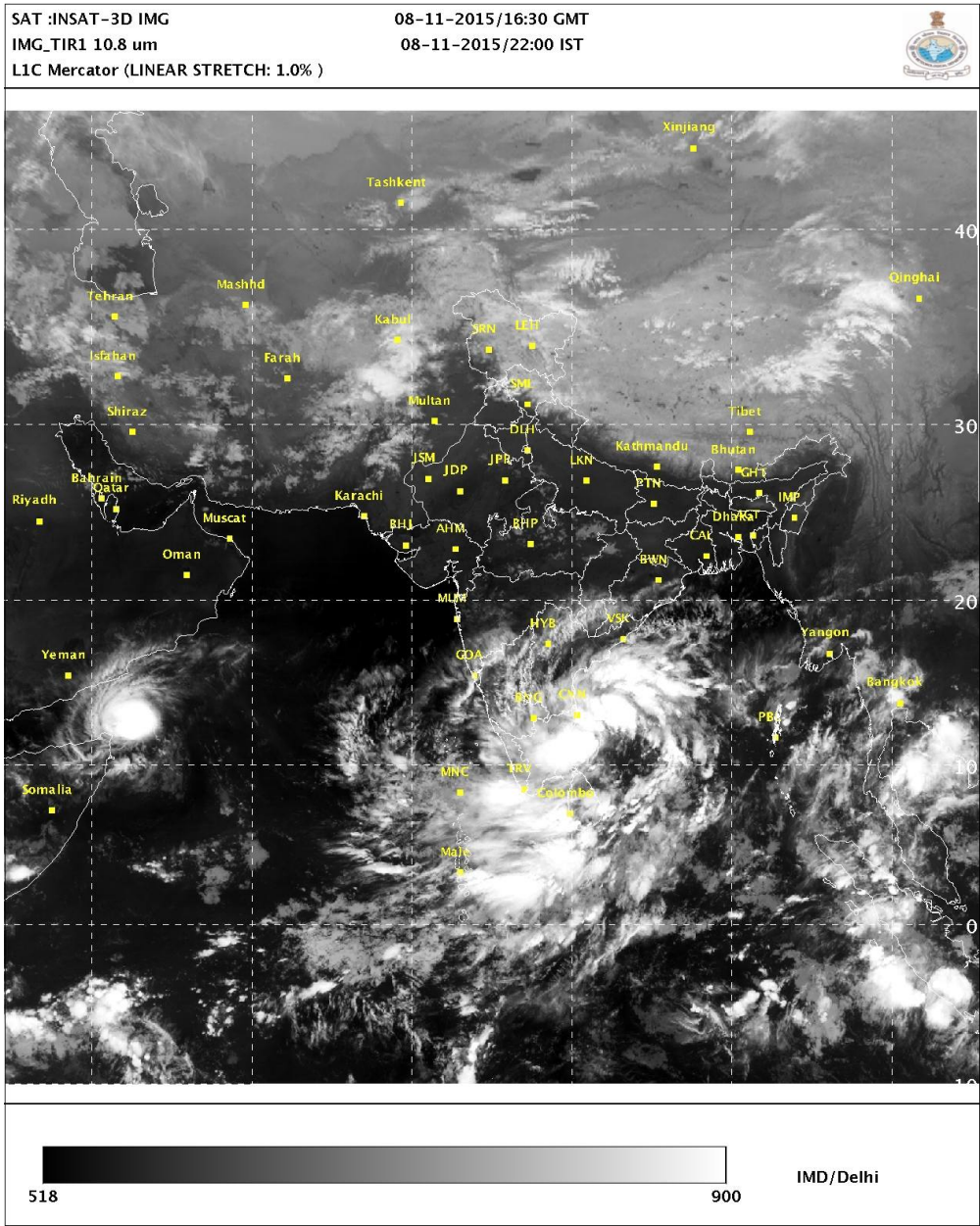
4 Surge in robberies on Capitol Hill alters residents' routines, lifestyles

North Pacific TC season 2015

- East Pacific: 10 storms > cat 3, tie for record with 1992; 24 named storms, most since 92; Patricia most intense hurricane on record
- Central Pacific: 5 storms > cat 3 (previous record 1994 with 3); 14 named storms in basin(previous record 1982 with 10); 8 named storms formed in basin (previous record 1982 with 4)
- NW Pacific: 14 storms > cat 3 (most since 1965); 17 typhoons, 8 super (most since 04 & 97)

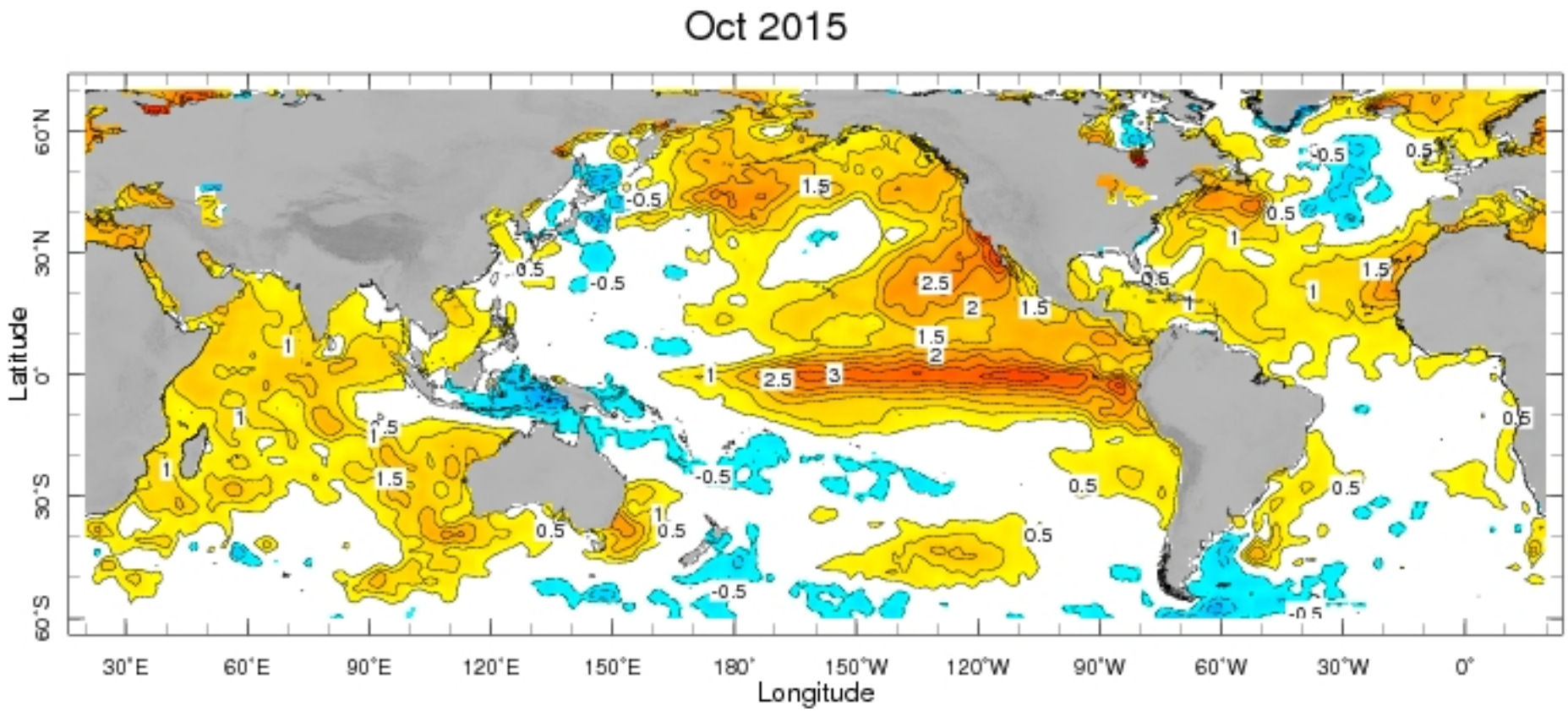
North Indian

- Arabian Sea in November: Chapala very rare cat 4 at peak, landfall in Yemen at cat 1; followed directly by Megh
- Twin TCs in AS & BoB, only once before in November, in 1986 (Evan and Camargo 2011)

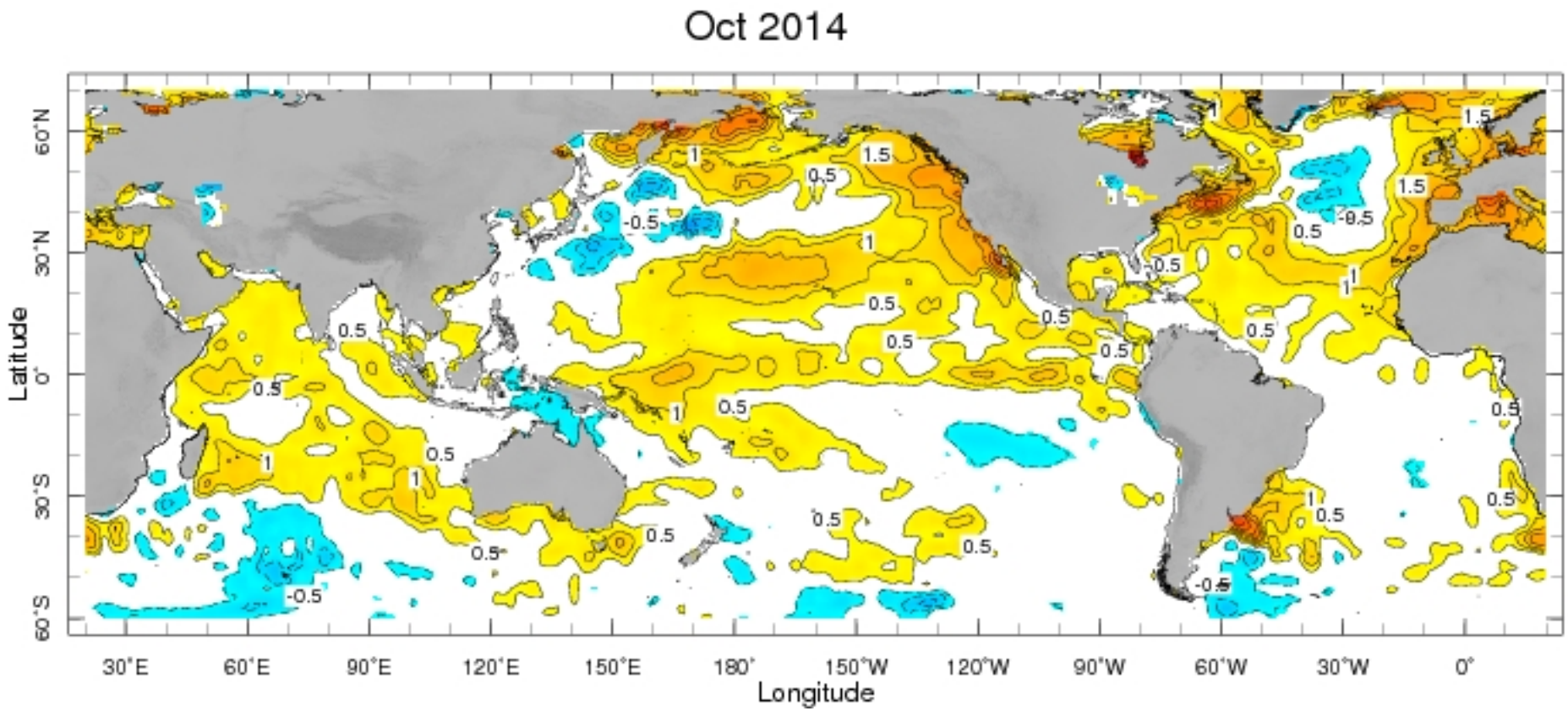


IR image Nov. 8, 1630 UTC courtesy IMD

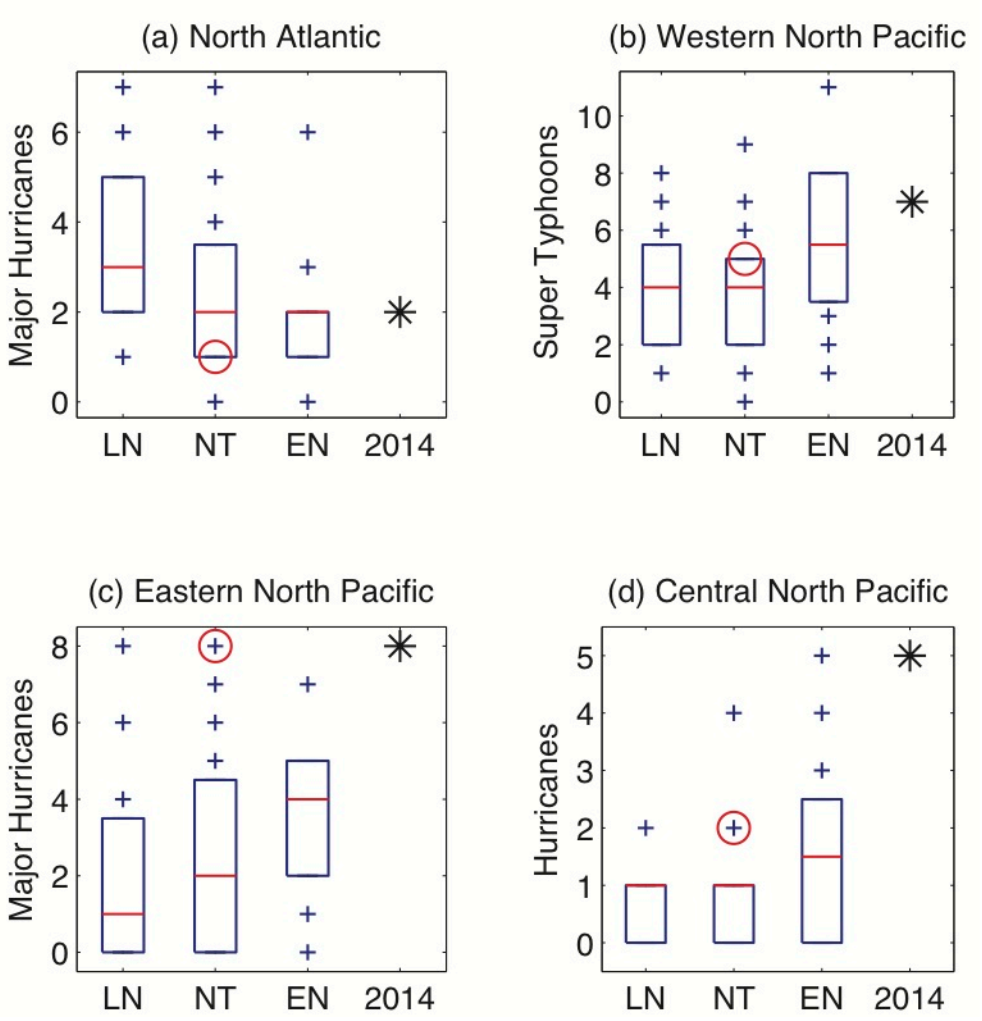
The hyperactive Pacific TC season may be not just ENSO per se, but extended NE Pac warmth



The extended NE Pac warmth has been around over a year, before the El Nino was strong.



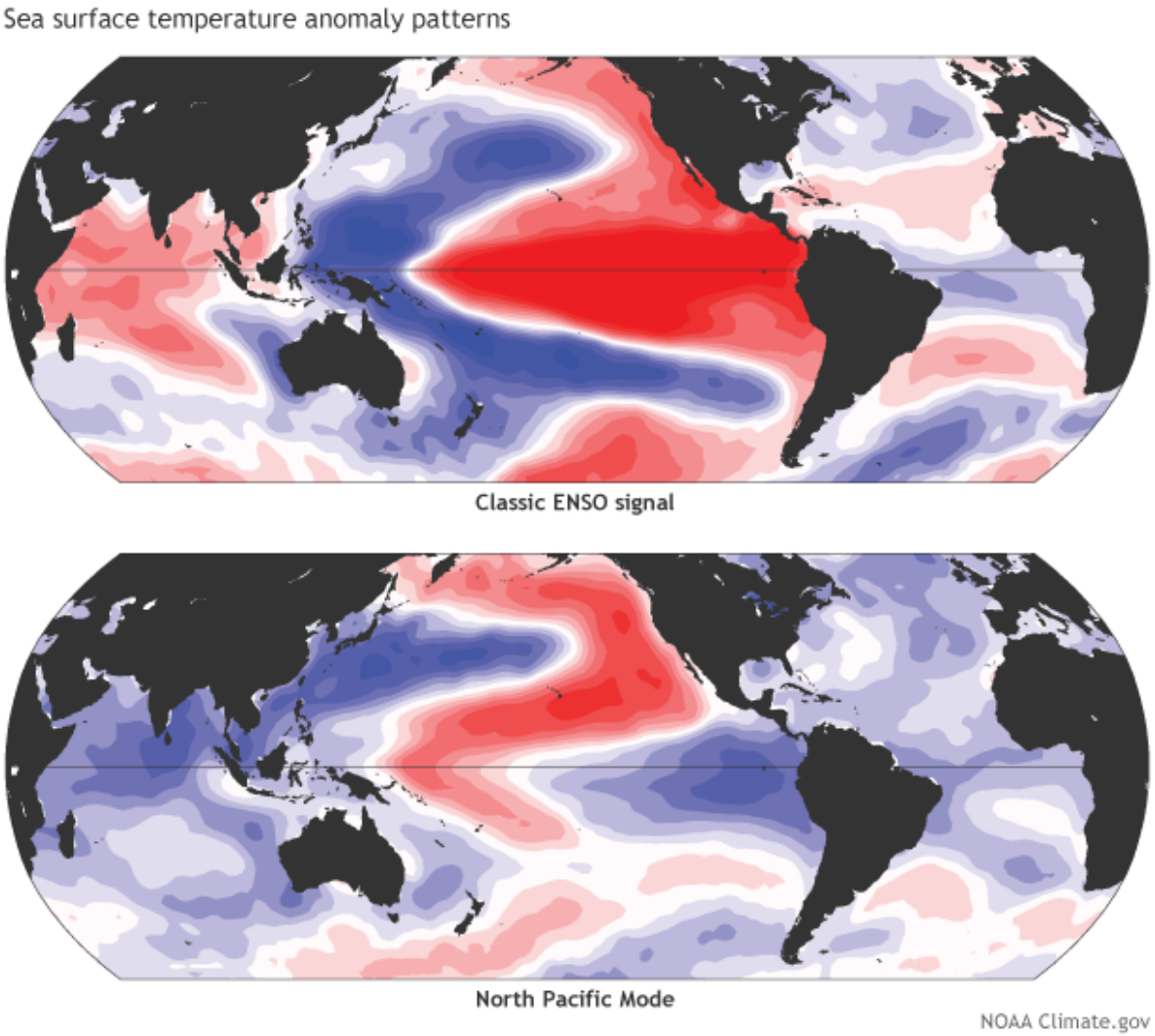
In some respects the 2014 NH TC season also was very Nino-like, although the El Nino itself was called marginal



Numbers of intense storms in N. Pac & Atl basins; red circle = 1992

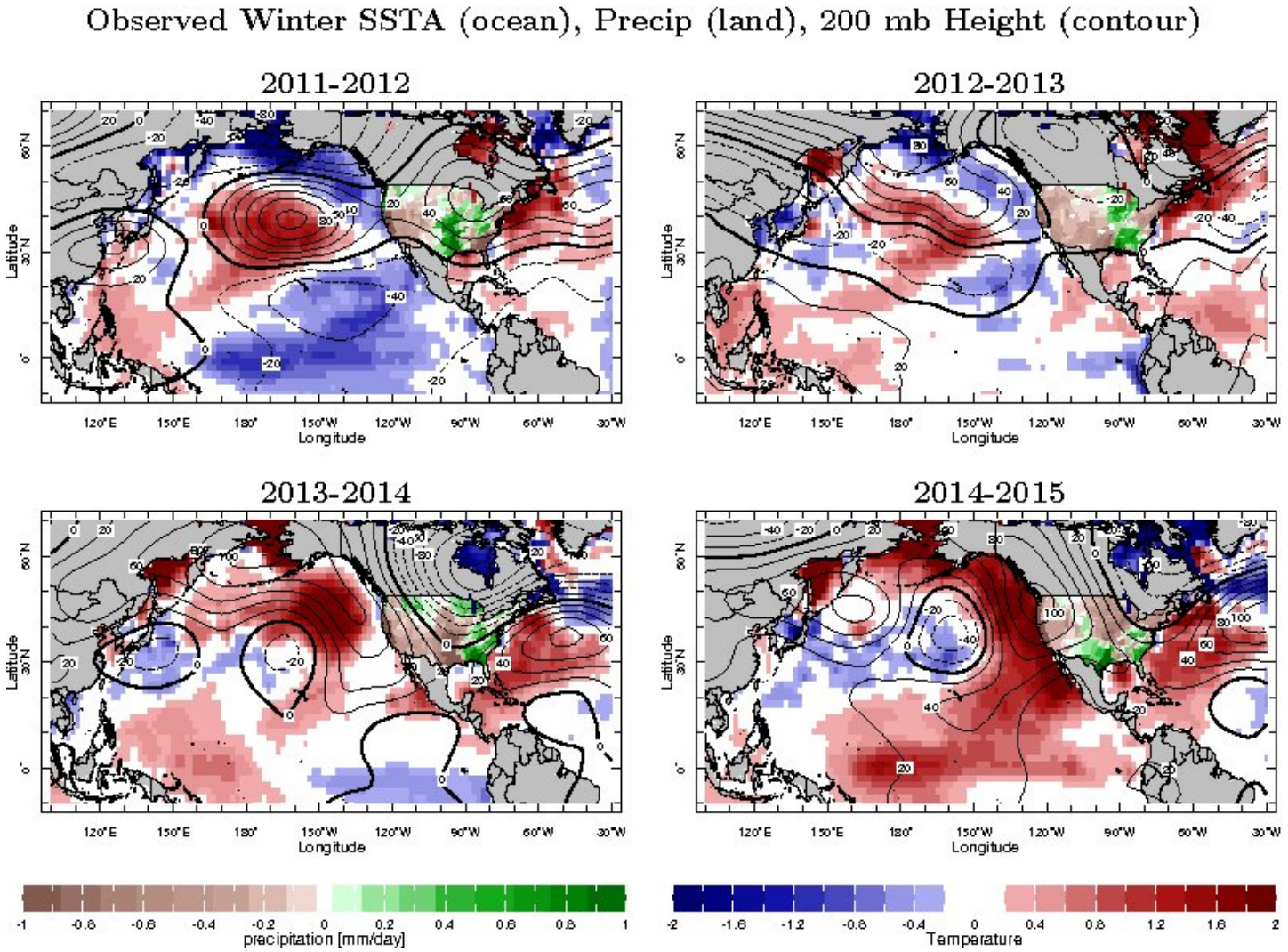
unpublished work with S. Camargo, A. Barnston, plot by S. Camargo

“North Pacific Mode” has been implicated in the warm east/cold west US pattern, including the California drought



Hartmann 2015; see also Seager et al. 2014, Seager and Hoerling 2014

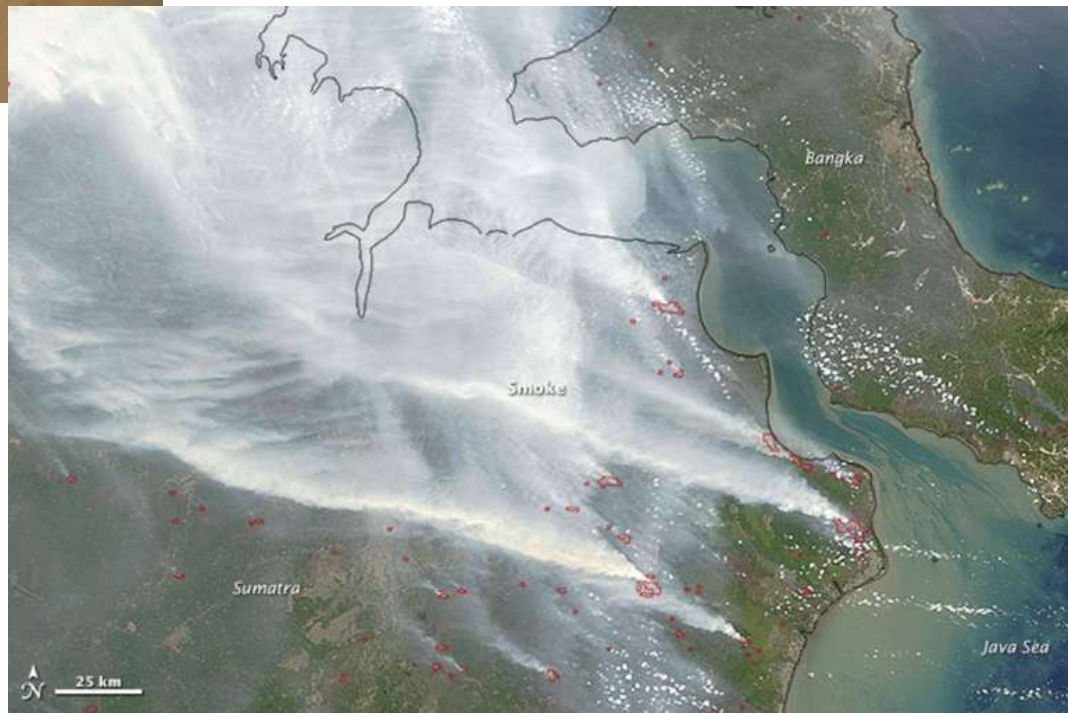
Most important for CA is warm west Pac. – colder east, & this has been present last 4 winters (Richard Seager) – is this predictable?



Nov.-Apr. averages of SST, 200 hPa height, US precip

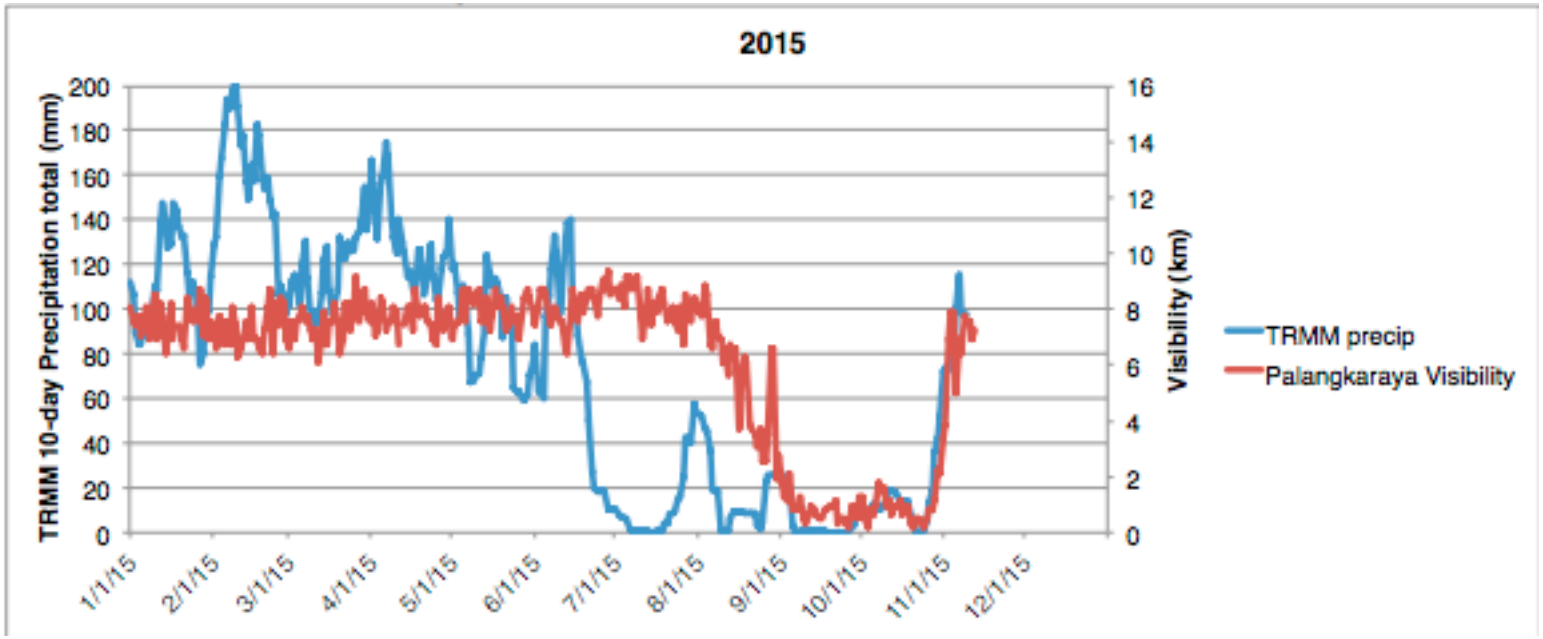
Indonesia's fires labelled a 'crime against humanity' as 500,000 suffer

The Guardian, Oct. 26



NASA TERRA image, Sep. 24
From www. straitstimes.com

Analysis and near-term outlook by Robert Field (NASA GISS)

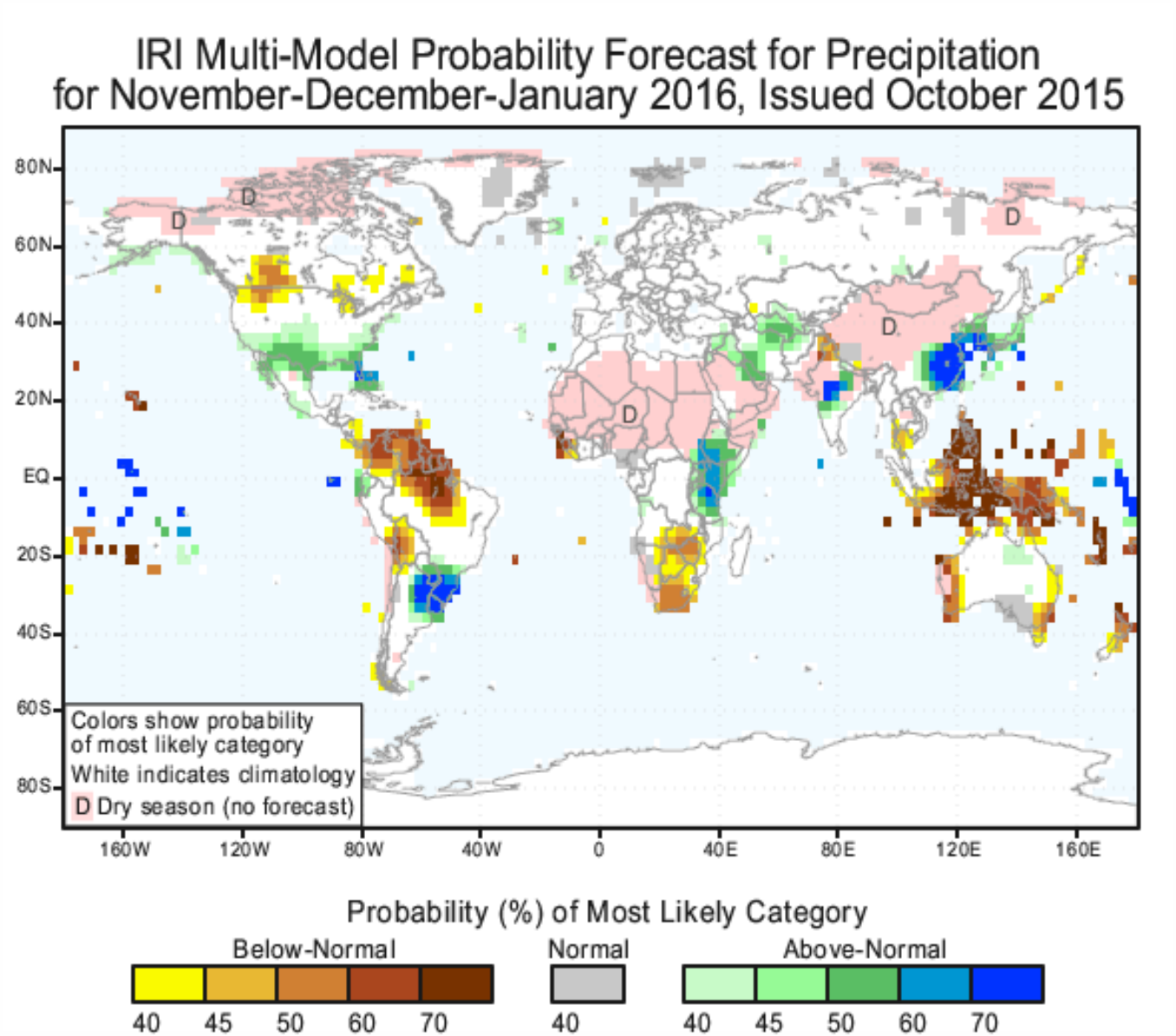


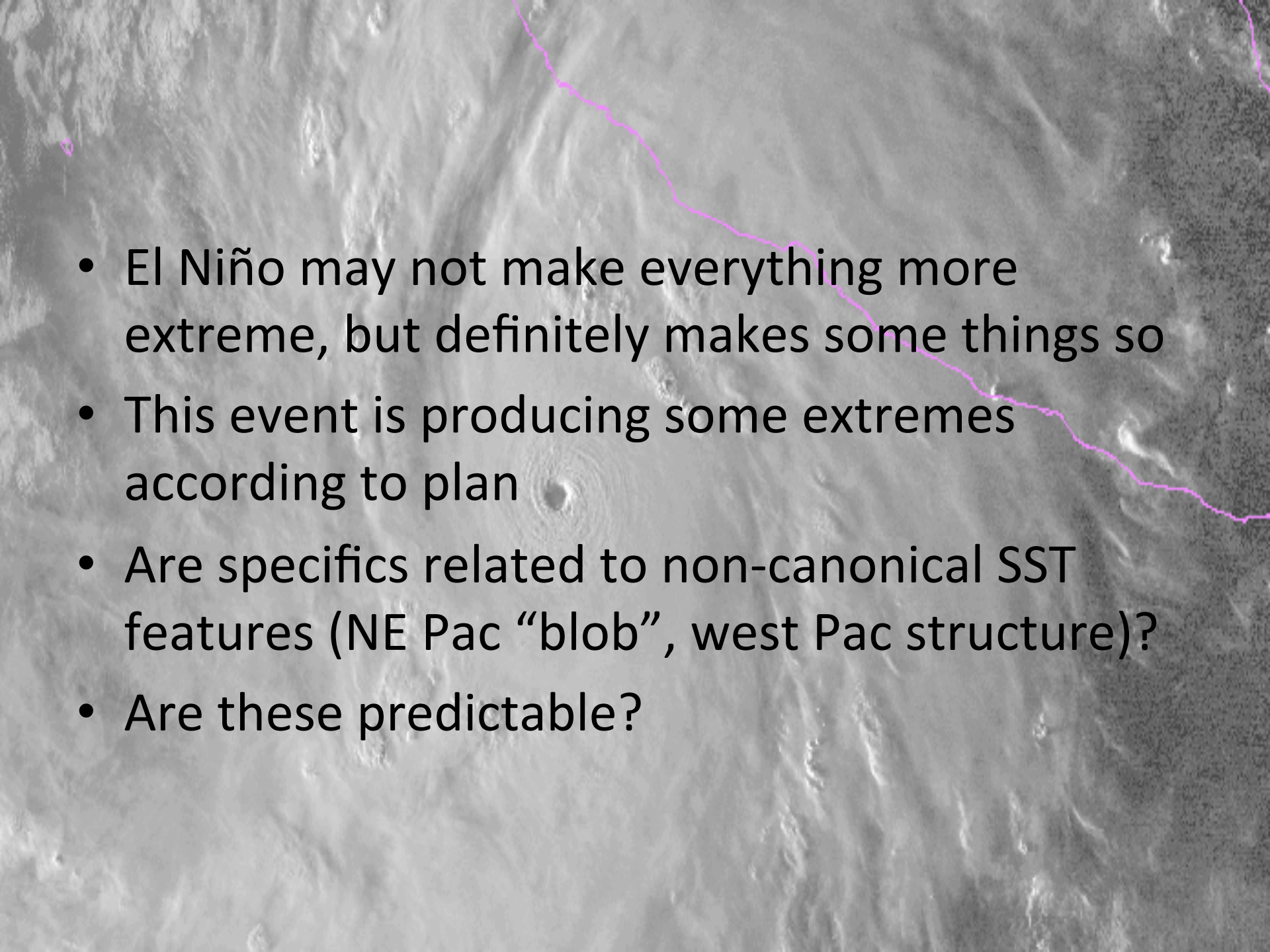
10-day 'back-total' GPM precipitation for 2015, averaged over 112E to 115E, 1S to 3S in Central Kalimantan, and visibility at Palangkaraya.

Based on recent precipitation patterns and current forecasts

- further severe fire and haze is unlikely in Kalimantan
- - conditions will continue to improve in southern Sumatra for the next two weeks.

However…


IRI Multi-Model Probability Forecast for Precipitation
for November-December-January 2016, Issued October 2015
80N
60N
40N
20N
EQ
20S
40S
60S
80S
160W
120W
80W
40W
0
40E
80E
120E
160E
D
D
D
D
D
Colors show probability
of most likely category
White indicates climatology
D Dry season (no forecast)
Probability (%) of Most Likely Category
Below-Normal
40
45
50
60
70
Normal
40
Above-Normal
40
45
50
60
70



- El Niño may not make everything more extreme, but definitely makes some things so
- This event is producing some extremes according to plan
- Are specifics related to non-canonical SST features (NE Pac “blob”, west Pac structure)?
- Are these predictable?

Atlantic was relatively quiet although the SST on the equator had some features between “Modoki” and La Niña (Kim et al. 2009)