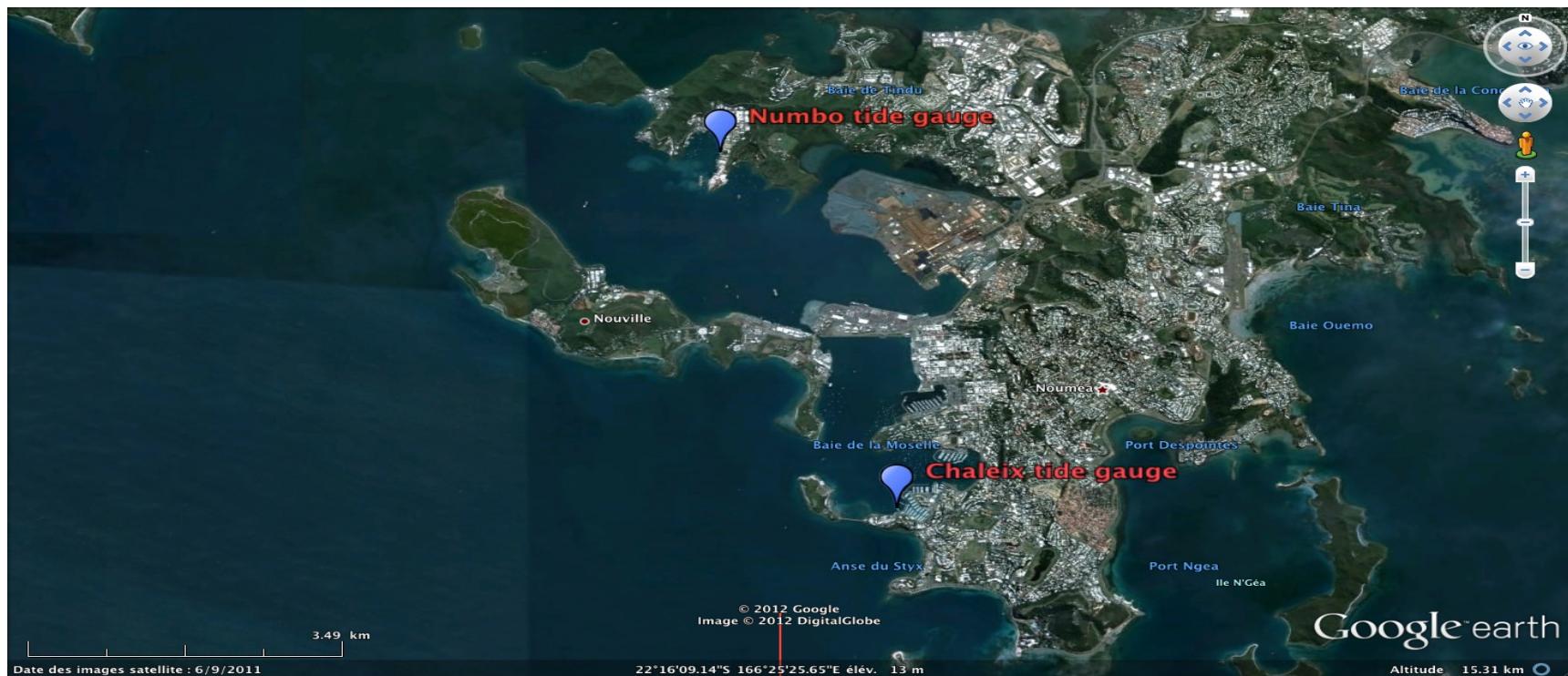


# Sea-Level observations in Nouméa 1967-present

Jérôme Aucan IRD/Nouméa  
Nicolas Pouvreau SHOM/Brest

# Data inventory

- « Pointe Chaleix » 1967-2005 : University of Hawaii Sea Level Center (UHSLC)
- « Numbo » 2005-present : Service Hydrographique et Oceanographique de la Marine (SHOM)

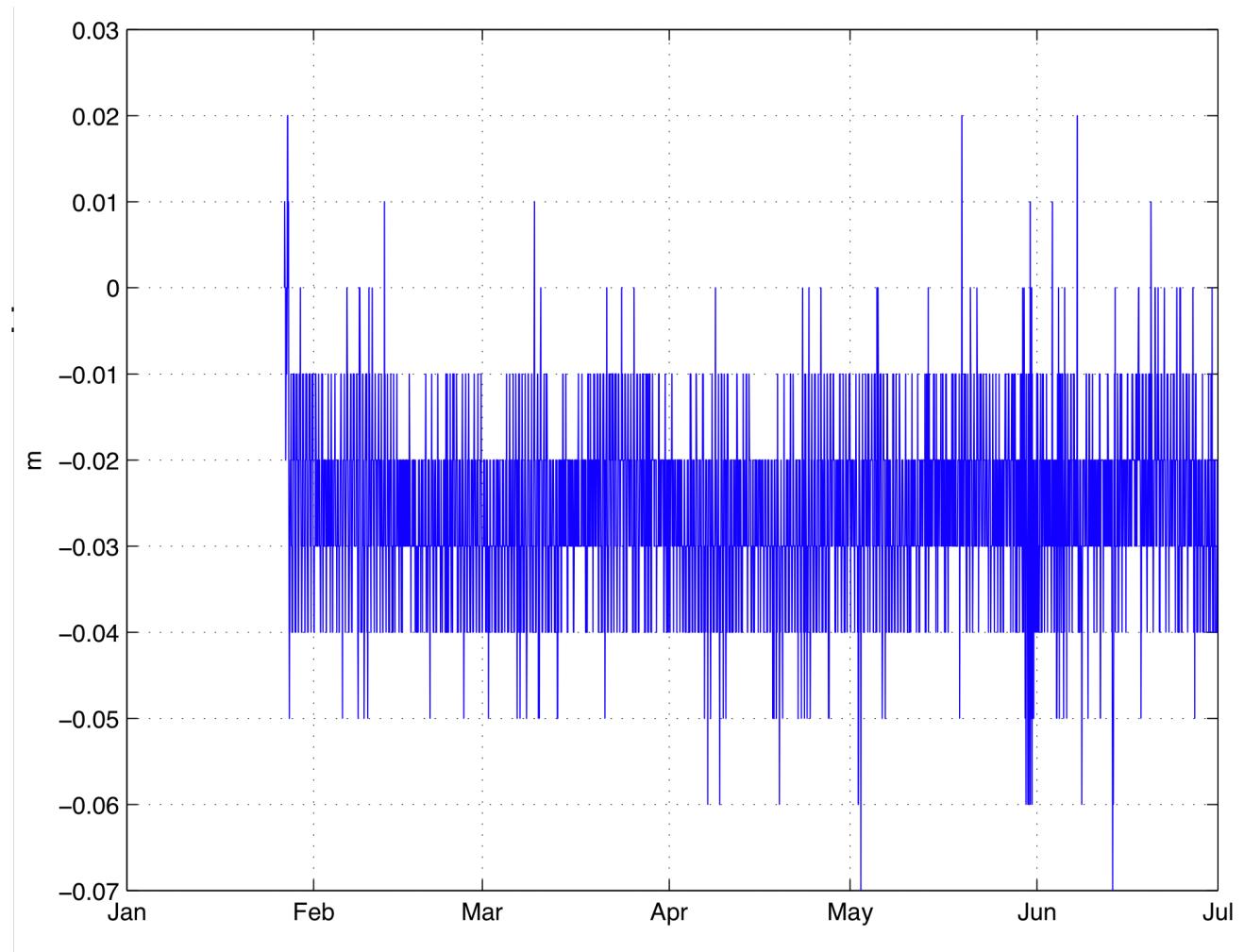


# Content

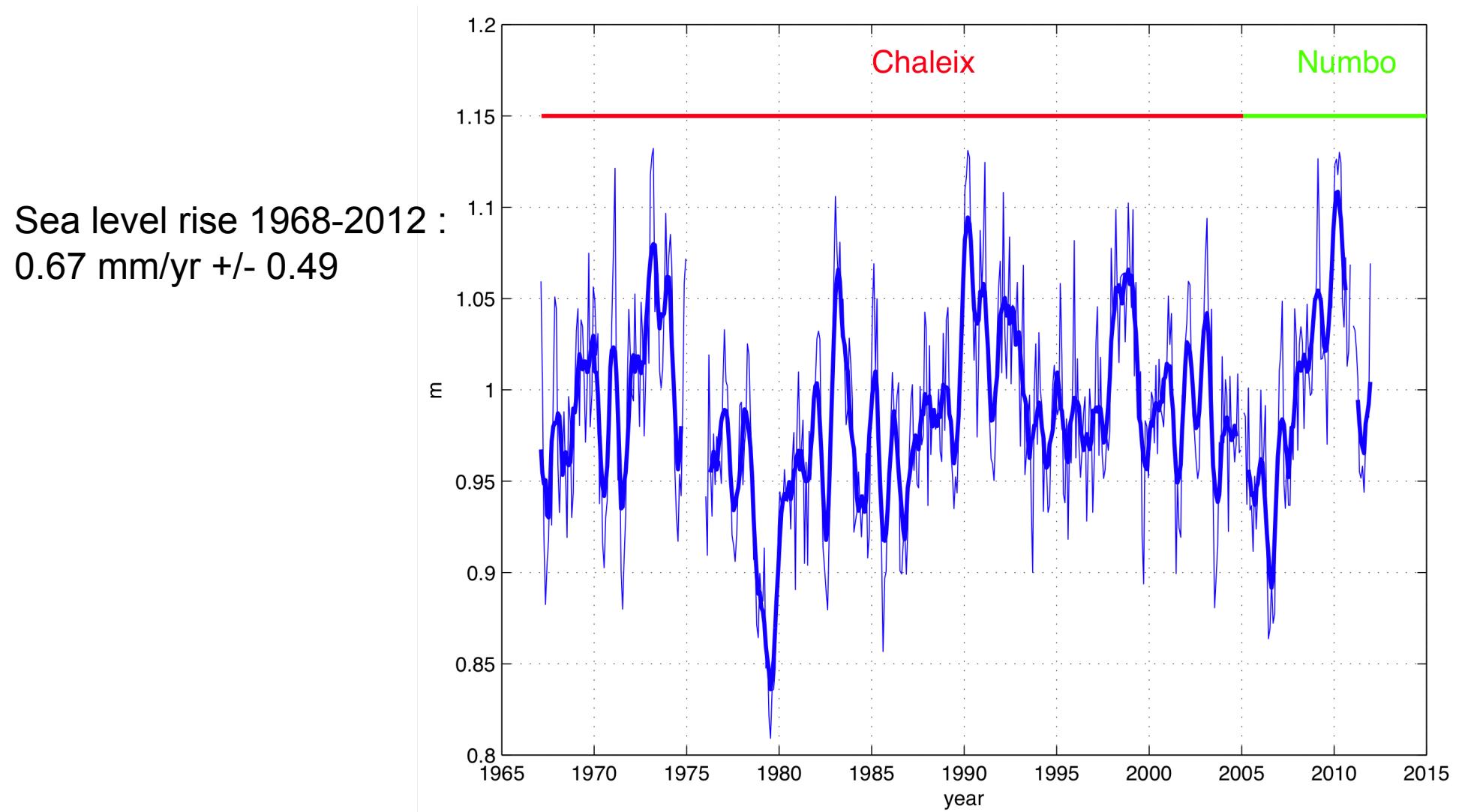
- Noumea tide gauge stations change and data alignment.
- Interannual variability.
- Regional sea level changes.
- Extreme events example : Cyclone Erika in Nouméa versus Hurricane Sandy in New York City.
- Key points.
- Future observation program.

# Overlap and time-serie concatenation

Difference Numbo/Chaleix :  
2.60 cm  $\pm$  1.01 cm,  
Correlation : 0.9997  
Lag : 30s

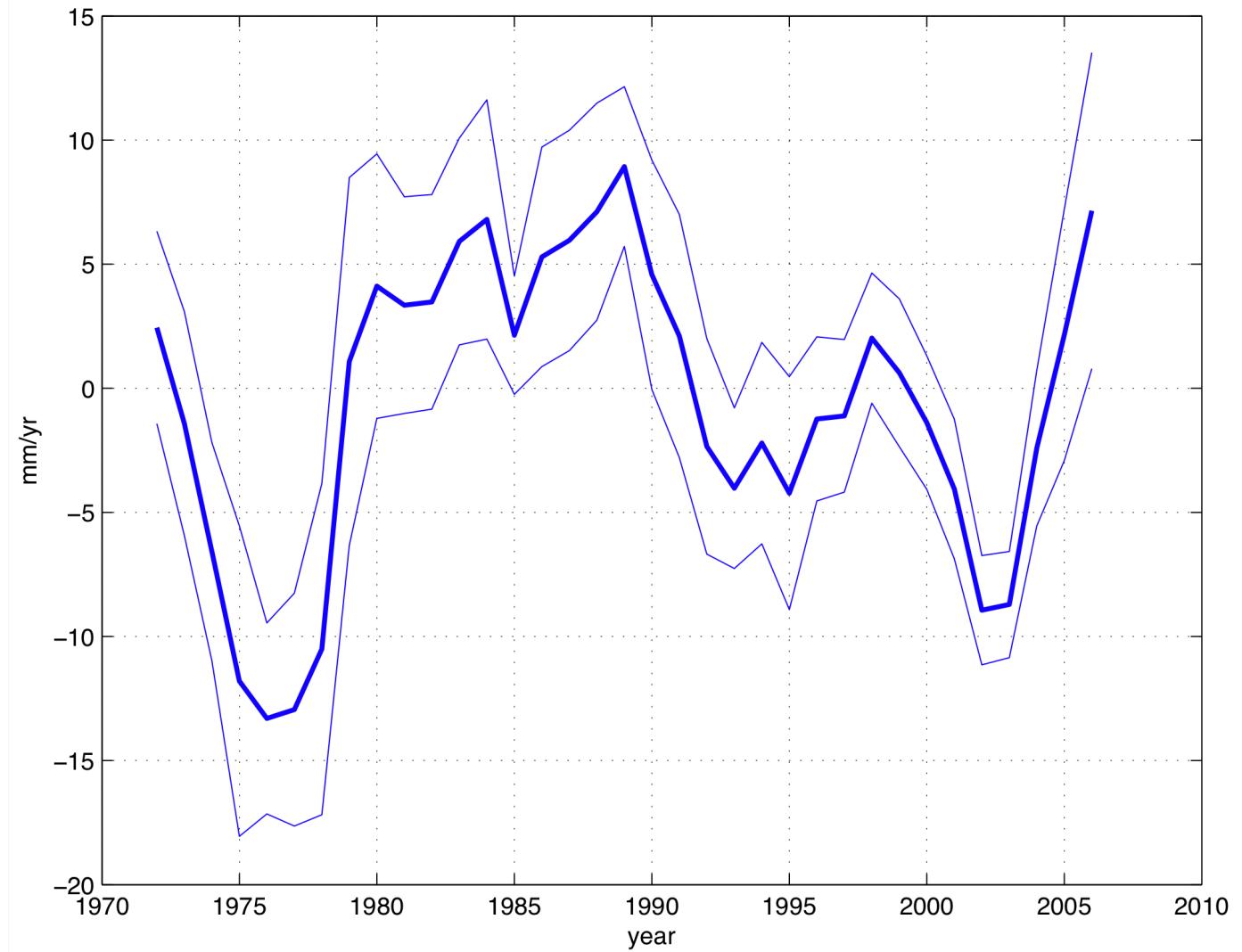


# Interannual variability



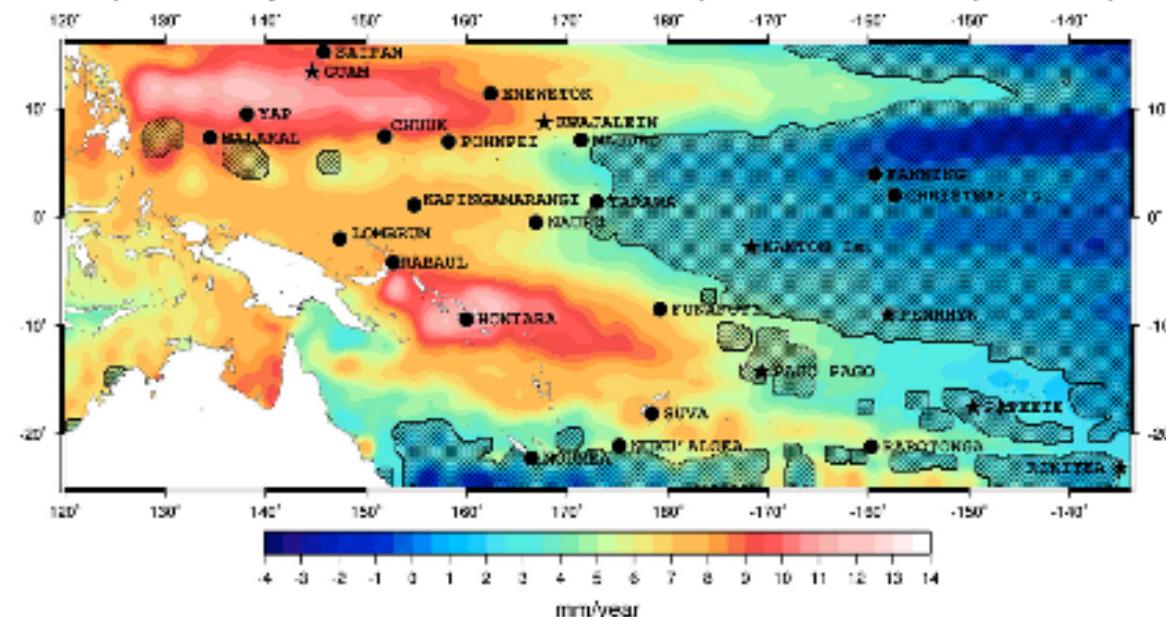
# Interannual variability

Decadal sea  
level rise rates :



# Regional Sea-Level rise

a) Map of altimetry-based sea level trends In the tropical western Pacific (1993-2009)

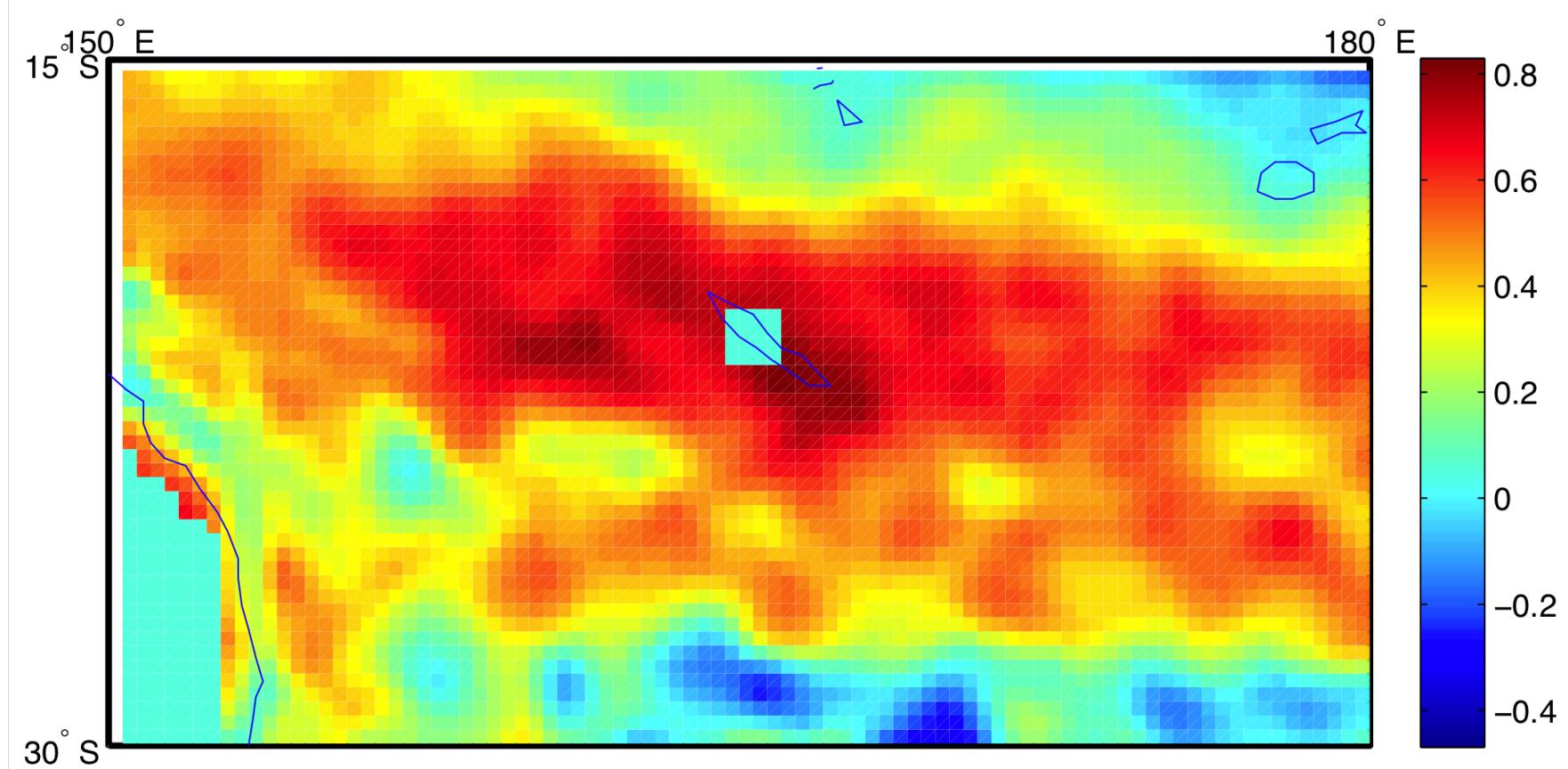


b)

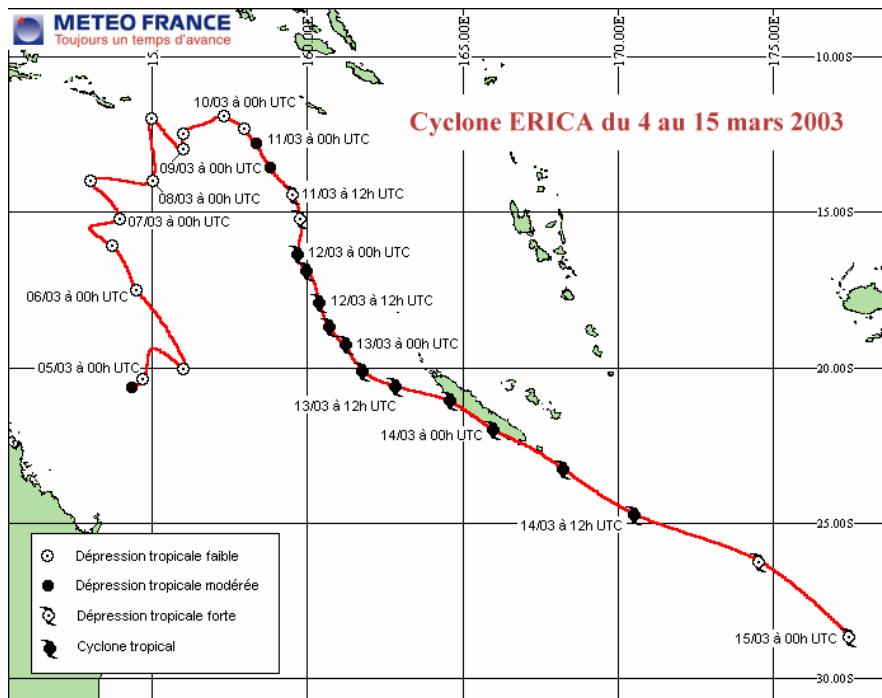
- From Becker et al. 2011

# Regional Sea level rise

- Correlation between satellite altimetry and the Nouméa tide gauge.

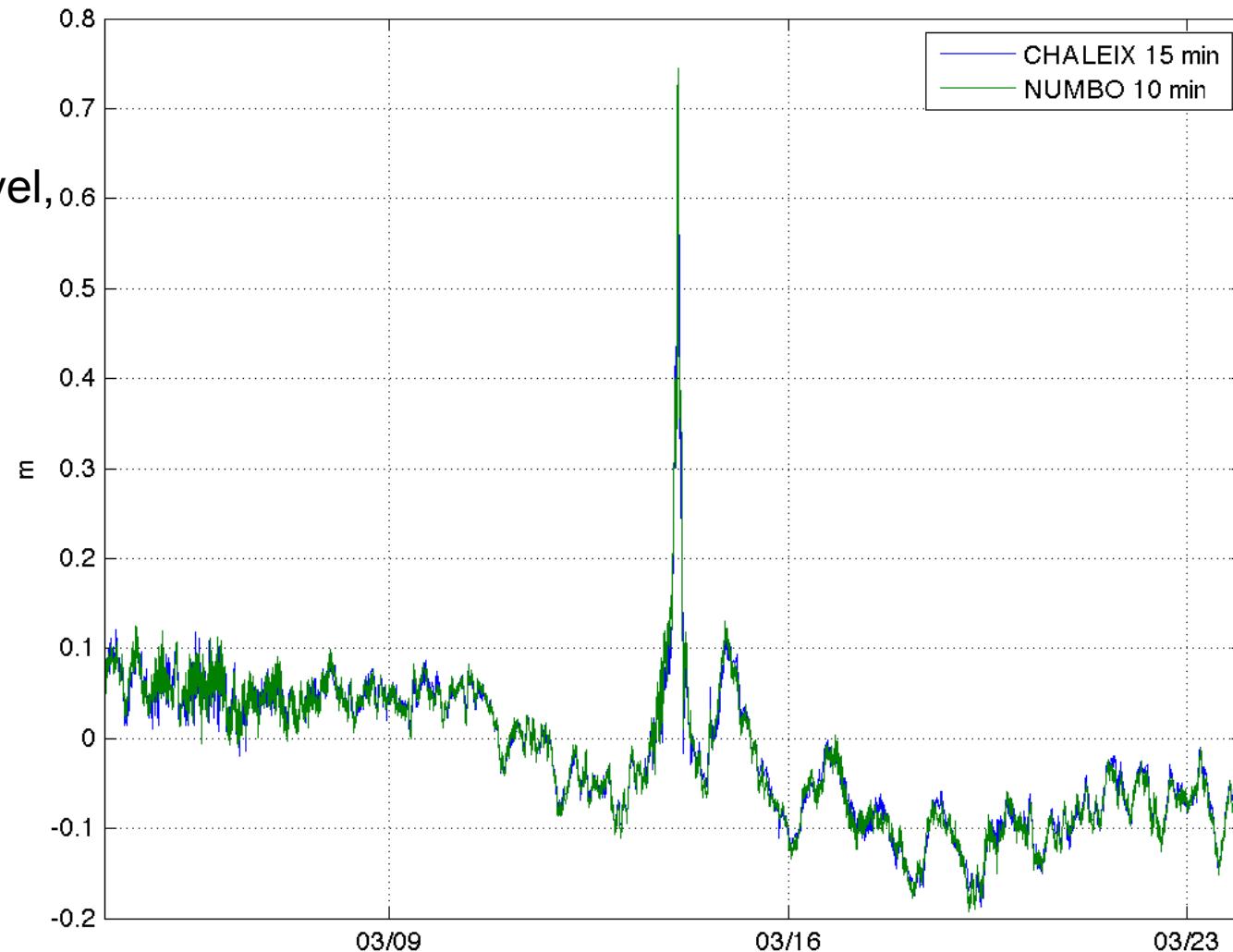


# Extreme events Cyclone Erica



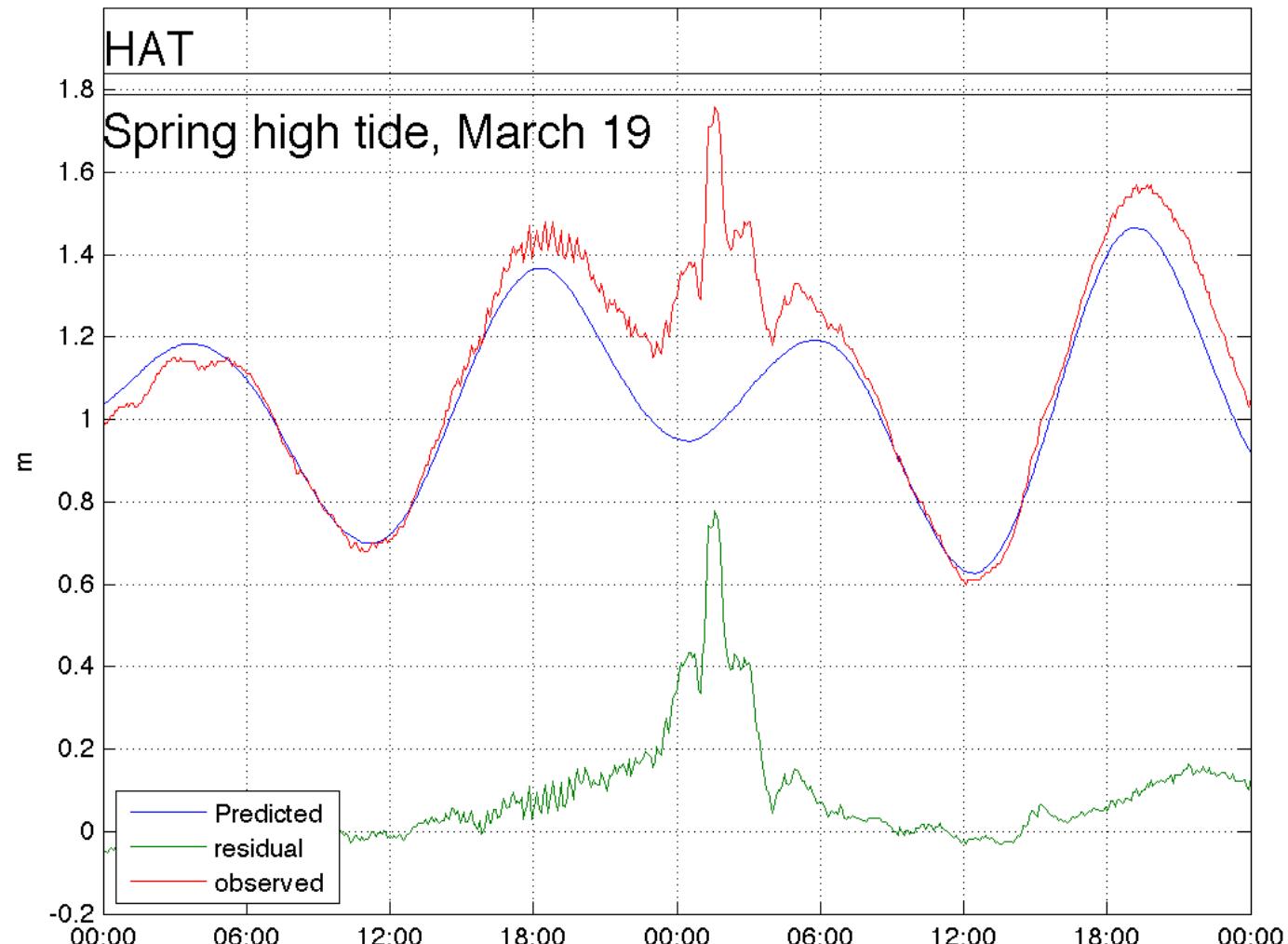
# Extreme events : Erica

Residual water level,



# Noumea, Cyclone Erika : Lucky

March 13-14 2003

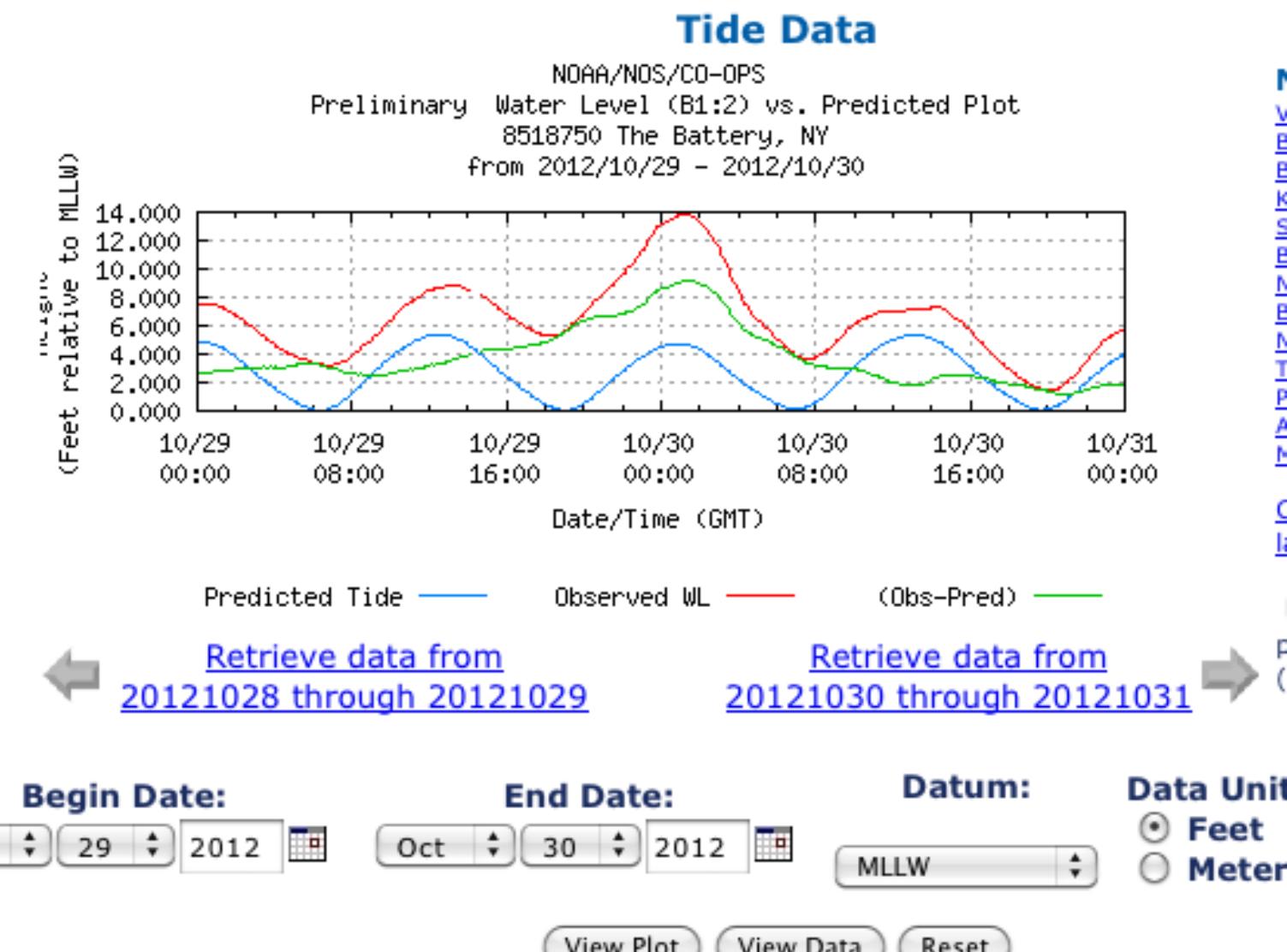


# Extreme events : Erica



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# New York City, Hurricane Sandy : Unlucky



# Key points

- Rates of sea-Level rise is highly variable in the Pacific region.
- Variation of mean sea-level at interannual time-scale can be much larger (in either direction) than long term sea-level rise.
- Short term inundation are caused by wind, waves and atmospheric pressure, but compounded by mid to long term regional sea-level.

# Extension of sea level observations:

- Extending local waves and sea-level measurements to the existing “Reeftemps” program, within GOPS.
- Develop sea –level observations at exposed locations to improve/create forecasts of wave and tide driven inundations
- Project to be submitted to Pacific funds in 2012 to develop inundation forecasts in exposed locations.