# Rhythm and theoretical perception of climate change during the 21<sup>st</sup> century using CMIP5 simulations



LSCE

Yann CHAVAILLAZ, Sylvie JOUSSAUME, Pascale BRACONNOT and Robert VAUTARD Laboratoire des Sciences du Climat et de l'Environnement, Institut Pierre Simon Laplace, France

> CEA-CNRS-UVSQ – Orme des Merisiers – Bâtiment 712 91191 Gif-sur-Yvette – France

- 1) Warming will be at least 2 times faster by 2080 than now and even 3 times
- 2) For the 2<sup>nd</sup> half of the century, at least 1 year out of 2 will be considered as
- 3) By 2080, the moistening and drying will be about 1,5 times faster than now,
- 4) There are more moistening regions than drying ones during the entire century with a constant ratio of 60/40%. They become more stable over
- The RCP4.5 moderate scenario could be a sufficient option to gradually weaken perception.

#### **MOISTENING/DRYING SPEED** ( $\Delta P_{20}^+$ and $\Delta P_{20}^-$ )

20-year running difference of cumulative precipitations where a yearly increase/decrease is displayed

- 0.180 **ΔP**+20



(CC)

Under the RCP8.5 scenario: By 2080, the moistening and drying will be about 1,5 times faster than now, with 2 times higher speeds in the tropics.

### **PROPORTION OF MOISTENING REGIONS (\Pi\_{\perp})**

- $\Pi_{\perp} \cong 60\%$  and constant during the entire century



## TEMPORAL STABILITY OF REGIONS ( $\Pi_{c}$ )

Proportion of regions changing from moistening to drying each year and vice versa

which could lead to persisting trends!

