

ENSO in a Changing Climate



*IPSL/UPMC, Paris, France
8-10 July 2015*

Agenda



With the support of:



Organised by the CLIVAR Research Focus "ENSO in a changing climate"
Our Common Future Under Climate Change, Unesco, Paris 2015 side event

Wednesday, 8 July

8:30am - Registration opens

9:00am - Welcome

9:05am - **Eric Guilyardi**: Goals & logistics of the workshop

Session 1: ENSO Mechanisms

(Chair: A. Fedorov, rapporteur: A. Chiodi)

9:15 **Mike McPhaden**: Playing Hide and Seek with El Niño

9:40 **Tony Lee**: Ocean mixed-layer temperature balance associated with ENSO diversity: The relative importance of zonal advective and thermocline processes

10:05 **Soon-Il An**: Pre-conditions for extreme El Niño and the application to 2014-15 event

10:30 *Coffee break*

11:00 **Boris Dewitte**: On the diversity of moderate El Niño events evolution

11:25 **Dietmar Dommenges**: A link to atmospheric cloud feedbacks for the ENSO seasonal phase locking in model simulations and observations

11:50 **Aaron Levine**: The Role of ENSO Growth Rate Annual Cycle in Creating the Spring Predictability Barrier

12:15-1:20pm – lunch

1:20pm **Fei-Fei Jin**: Dynamics of ENSO Frequency Cascade

1:45pm **Sarah Larson**: Revisiting ENSO coupled instability theory and SST error growth in a fully coupled model

Session 2: ENSO and intraseasonal variability

(Chair: S. Power, rapporteur: A. Kumar)

2:10 pm **Matthieu Lengaigne**: 2014 El Niño fate and the impact of intraseasonal variability on the occurrence of moderate/extreme El Niño events

2:35 pm **Shayne McGregor**: Charging El Niño with off-equatorial westerly wind bursts

3:00 pm *Coffee break*

3:30 pm **Alexey Fedorov**: The impact of intraseasonal wind bursts on the diversity and predictability of El Niño: from the extreme event of 1997 to the nonevent of 2014

3:55 pm **Andy Chiodi**: Reconstructing recent ENSO SSTA variability: A subseasonal wind event perspective

4:20 pm **Martin Puy**: Ocean-state dependency of the equatorial Pacific response to Westerly Wind Events

4:45 pm **Poster session**

6:30 pm *Welcome cocktail*

Thursday, 9 July

Session 3: ENSO: climate change and decadal variability

(Chair: A. Capotondi,
rapporteur: K. Takahashi)

- 9:00 **Scott Power:** Inability of CMIP5 models to simulate recent interdecadal strengthening of the Walker circulation
- 9:25 **Wenju Cai:** Increasing frequency of extreme El Niño events due to greenhouse warming
- 9:50 **Sang-Wook Yeh:** Changes in ENSO amplitude from the historical run to the RCP8.5 run in the CESM large ensemble
- 10:15 **Jaci Brown:** Precipitation projections in the tropical Pacific are sensitive to different types of SST bias adjustment

10:40 *Coffee break*

- 11:10 **DeZheng Sun:** The Response of El Niño Events to Higher CO₂ Forcing: A Role for Nonlinearity
- 11:35 **Christina Karamperidou:** The role of nonlinearities and seasonality in the response of ENSO to global warming
- 12:00 **David Halpern:** Decadal-to-Centennial Variability of the Pacific Equatorial Undercurrent Over the Next 400 Years Under Increasing Greenhouse Gas Emissions

12:25-1:40pm – lunch

- 1:40 pm **Malte Stuecker:** Recent Walker circulation strengthening and Pacific cooling amplified by Atlantic warming
- 2:05 pm **Myriam Khodri:** The triggering of El Niño by volcanic eruptions: the mega breeze effect

Session 4: ENSO modelling and prediction

(Chair: B. Giese, rapporteur: J. Brown)

- 2:30 pm **Andrew Wittenberg:** Evaluating ENSO in GFDL's next-generation models
- 2:55 pm **Antonietta Capotondi:** Assessing systemic ENSO changes

3:20 pm *Coffee break*

- 3:50 pm **Ken Takahashi:** Nonlinear convective processes in operational climate models and forecasting of extreme El Niño
- 4:15 pm **Masahiro Watanabe:** Retrogressive ENSO prediction skill in the 2000s
- 4:40-6:00 pm **ENSO in models** - discussion led by Mat Collins, rapporteur Wenju Cai

8:00 pm *Workshop dinner*

Friday, 10 July

Session 4: ENSO modelling and prediction (cont'd)

- 9:00 **Arun Kumar:** Low-frequency variability in ENSO and implications for seasonal predictions
- 9:25 **Matt Newman:** Diagnosing changes in ENSO variability and predictability from observations and models
- 9:50 **Eleanor Middlemas:** Unforced Decadal-Scale Global Mean Warming and Cooling in Climate Models
- 10:15 **Sandrine Bony:** WCRP Grand Challenge on Clouds, Circulation and Climate Sensitivity and ENSO

10:40 *Coffee break*

Session 5: Observations for ENSO understanding and model evaluation

(Chair: M. McPhaden, rapporteur: T. Lee)

- 11:10 **Kim Cobb:** Forced or unforced? New views of ENSO from 6,000yrs ago to present
- 11:35 **Marion Saint-Lu:** Relationship between El Niño and the hydrological cycle of tropical regions in different climatic contexts
- 12:10 **Weipeng Zheng:** ENSO variations in the mid-Pliocene

12:35-1:45pm *Lunch*

- 1:45 pm **Ed Harrison:** Aspects of the multi-decadal variability of ENSO from the historical record
- 2:10 pm **Ben Giese:** ENSO in a large ensemble of ocean reanalyses
- 2:35 pm **Billy Kessler:** The Tropical Pacific Observing System 2020 project

3:10 pm *Coffee break*

Actions and next steps

3:40-5:30 pm - Discussion led by Eric Guilyardi, rapporteur Andrew Wittenberg

5:30 pm *Adjourn*

List of posters

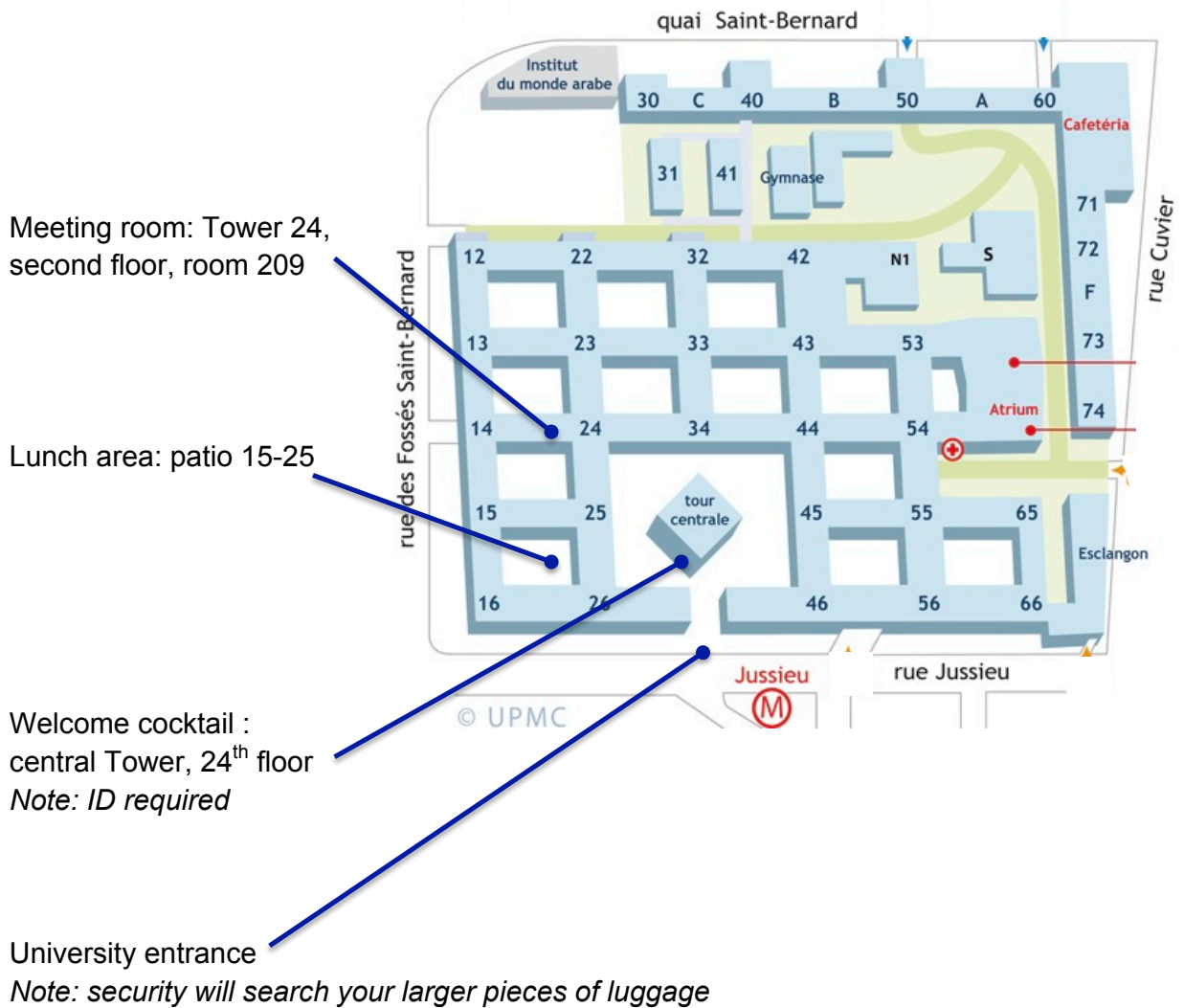
1. **Esteban Abellán:** The role of the southward wind shift in both, the seasonal synchronization and asymmetric duration of ENSO events
2. **Pascale Braconnot/Julie Leloup:** El Paso: confronting models and observations to understand from the past
3. **Simon Borlace:** The natural frequency of extreme El Nino events over multidecadal timescales in CMIP5 models
4. **Emanuele Di Lorenzo:** ENSO and Meridional Modes, a null-hypothesis for tropical Pacific decadal variability
5. **Okuku Archibong Ediang:** Data management activities in est African coast and its teleconnections of Arctic Oscillation, Southern Oscillation, and Ocean Surges
6. **Ramón Fuentes-Franco:** The role of ENSO and PDO on variability of winter precipitation over North America from 21st century CMIP5 projections
7. **Shineng Hu:** An exceptional mid-summer easterly wind burst impeding 2014 El Nino
8. **Jules Kajtar:** Tropical Climate Variability: Interactions across the Pacific, Indian, and Atlantic Oceans
9. **Bryam Orihuela Pinto:** Assesment of the mechanisms in global climate models' forecasts of extreme El Niño in 2015-2016
10. **Alain Tchakoutio Sandjon:** Influence of ENSO on intraseasonal oscillations in Central Africa
11. **Simon Wang:** Evaluating the Changing ENSO Precursors and Impacts on North American Climate Extremes

Homework topics for discussion sessions

Please list:

- 1) Your top 3 priorities for CMIP ENSO analysis.
- 2) The 3 most promising avenues (or barriers) you see to improving ENSO simulations & projections.
- 3) The 3 most important things you've learned from the workshop.
- 4) Any relevant obs products, theories, or subject that we have overlooked.

Workshop venue at Université Pierre et Marie Curie, Jussieu campus



Workshop dinner

Meeting point to board the cruise boat (7:30 pm):

Escale de La Tournelle - Notre Dame



Jussieu

We will come back to the same location around 11:30pm.

Menu choices: choose **one** starter (red ticket), **one** main course (green) and **one** dessert (blue). There are 25 of each type so negotiate with your colleagues if you would like to change !