



INSTITUT  
POLYTECHNIQUE  
DE PARIS

RESEARCH  DAY

# NUMERICAL MODELING *and* ECOLOGICAL TRANSITION

12.01 2025 *Lecture Hall Thévenin,  
Télécom Paris (Palaiseau)*

## PROGRAM

8:30 am

Opening doors and welcome coffee

9:00 am  
9:05 am

Opening speech

**Patrick Olivier**  
Dean of Télécom Paris

9:05 am  
9:10 am

Research address

**Jamal Atif**  
VP Recherche & Innovation IP Paris

9:10 am  
9:15 am

Special speech

**Anthony Briant**  
Dean of École nationale  
des ponts et chaussées

9:15 am  
9:55 am

Plenary 1

*Digital Twins and AI for the Ecological  
Transition*

**Patrick Pélata**  
Alumni of École Polytechnique  
and École nationale des ponts et  
chaussées  
CEO Meta Strategy Consulting

9:55 am  
10:33 am

Plenary 2

**Silke Biermann**  
Professor at École Polytechnique - CPHT,  
Co-scientific director M4S, Affiliated to E4C  
center

10:35 am  
11:15 am

Plenary 3

*Artificial Intelligence and Rare Event  
Algorithms to Study Extreme Climate Events  
and the Resilience of the Power System*  
**Freddy Bouchet**  
Director of LMD laboratory, ENS / IPSL,

11:15 am  
11:35 am

Pitch session

11:35 am  
1:30 pm

Lunch break, stands, poster session



INSTITUT  
POLYTECHNIQUE  
DE PARIS



ENST2



ENSAE





## PROGRAM

1:30 pm  
3:30 pm

### Symposium 1 «Climate and meteorology»

*The AI revolution in numerical weather prediction: surrogate models and data assimilation*

**Marc Bocquet**  
CEREA - ENPC - E4C

*Learning Environmental Representations for Scalable, Long-Term, Tree-Level Forest Monitoring*

**Loïc Landrieu**  
LIGM - ENPC

*Parametric insurance: challenges and opportunities to reduce the climate insurance protection gap*

**Olivier Lopez**  
CREST - ENSAE Paris

*Heatwaves in a changing climate: from hazards to impacts*

**Aglaé Jézéquel**  
LMD - École Polytechnique

LECTURE HALL THÉVENIN

### Symposium 2 «Energy»

*Energy Footprint of Numerical Simulations on Supercomputers*

**François Trahay**  
SAMOVAR - Télécom SudParis, E4C

*Inter-domain and multi-stakeholders system infrastructure orchestration*

**Daphné Tuncer**  
LVMT - ENPC - E4C

*The economics of home energy retrofits*

**Louis-Gaëtan Giraudet**  
CIRED - ENPC - E4C

*Future floating wind turbines: scientific obstacles and contribution of modelling to synthetic anchoring solutions*

**Yann Marco**  
IRD - ENSTA

LECTURE HALL 3



## PROGRAM

### Symposium 3 «Transportation & Mobility»

*Reducing Accessibility Inequality  
via Flexible Mobility: a Descriptive  
and Prescriptive Analysis*

**Andréa Araldo**  
SAMOVAR - Télécom SudParis

*Tackling Car Emissions in Urban  
Areas: Shift, Avoid, Improve*

**Marion Leroutier**  
CREST - ENSAE Paris - E4C

*Integrating intermediate modes  
in mobility research and policy:  
Prospects and challenges*

**Virginie Boutueil**  
LVMT - ENPC

*Combinatorial Optimization  
Augmented Machine Learning for  
Sustainable Transport and Logistics*

**Axel Parmentier**  
CERMICS - ENPC

LECTURE HALL 4

3:30 pm  
4:00 pm

Coffee break, stands

4:00 pm  
6:00 pm

### Symposium 4 «Models & society»

*Tipping points, climate risks and  
emission reduction*

**Peter Tankov**  
CREST - ENSAE Paris - E4C

*Economists, their models, and  
public policy on energy issues:  
a retrospective view*

**Antoine Missemer**  
CIRED - ENPC

*Energy sufficiency in real life:  
domestic practices in a stratified  
society. Insights from winter  
2022–2023*

**Claire Le Renard**  
LATTS - ENPC

*Science beyond quantification -  
integrating objective and subjective  
views in unpredictable worlds*

**Ada Diaconescu**  
LTCl - Télécom Paris

LECTURE HALL THÉVENIN



## PROGRAM

### Symposium 5 «Materials & sustainability»

*Knowledge gap and data collection and treatment needs for durability evaluation in emerging photovoltaic applications (AgriPV ad FloatingPV)*

**Polina Volovitch**

IPVF - École Polytechnique

*Numerical modeling of various phenomena associated with the freezing of cement-based materials*

**Matthieu Vandamme**

NAVIER - ENPC - E4C

*From Durability Optimization to Solid-State Recycling: Pathways to Lower Environmental Footprints*

**Bruno Levieil**

IRDL - ENSTA

*Thin films for the energy transition: atomic layer deposition, a well-suited technique*

**Clémence Badie**

PMC - École Polytechnique - M4S

### Symposium 6 «Water & Environment»

*Numerical Modeling of Urban Water and Environment: Nature-Based Solutions for Climate Adaptation*

**Pierre-Antoine Versini**

HM&CO - ENPC

*Modeling the ecological transition of urban stormwater management*

**Marie-Christine Gromaire**

LEESU - ENPC

*Swimming in the Seine*

**Rémi Carmigniani**

LHSV - ENPC - E4C

*CO2 Extraction from Seawater: from Lab Bench to Ocean Depths*

**Cédric Tard**

LCM - École Polytechnique - E4C

LECTURE HALL 3

LECTURE HALL 4