



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
Head of the Department of Physics at
École Polytechnique, 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



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ENST2





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 Carmignani

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