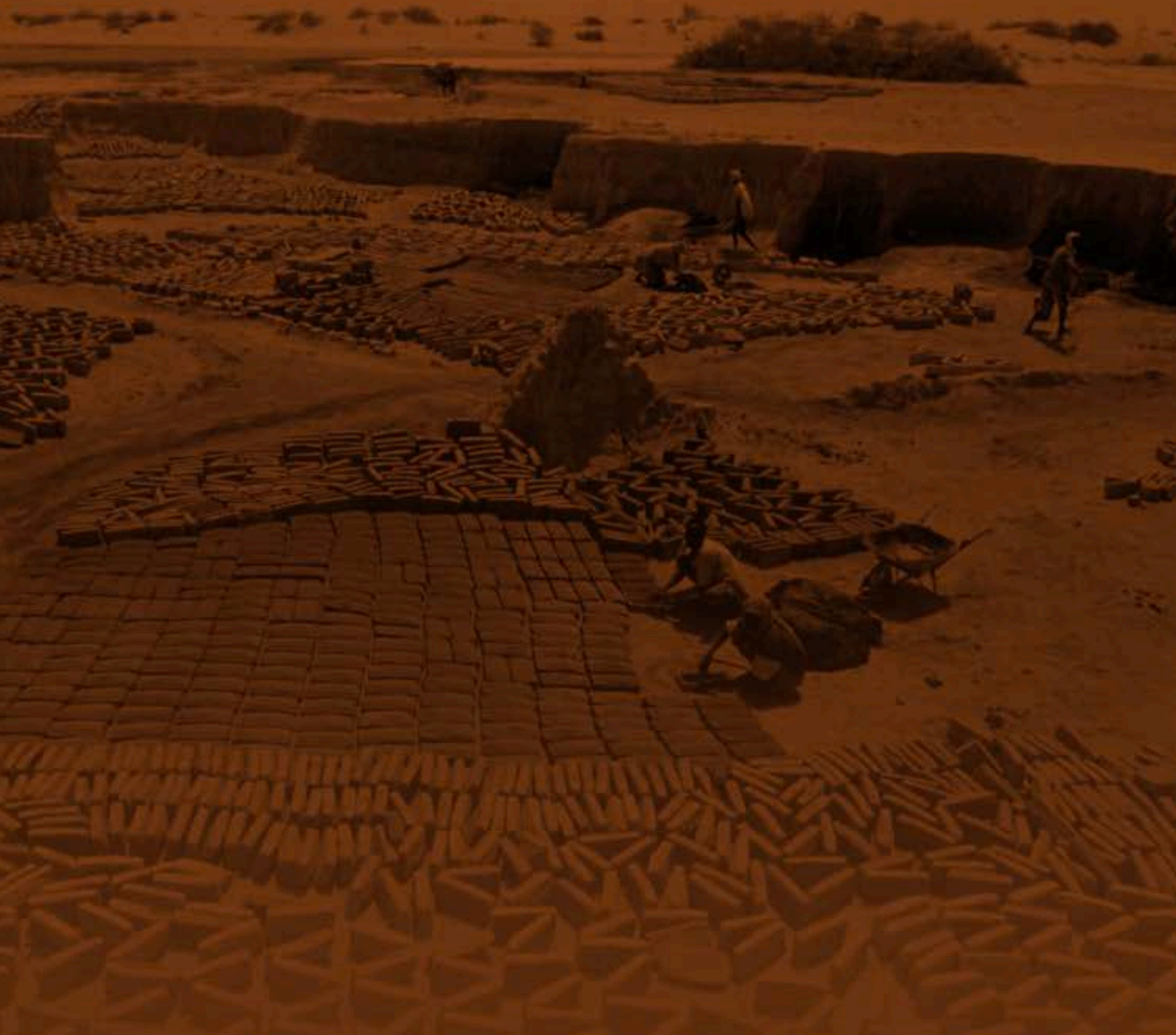


# TERRA

## EDUCATION IV

*Changing Scale  
Changer d'échelle  
Cambiar de escala*

ORGANISED BY GRENOBLE SCHOOL OF ARCHITECTURE



**2-3-4 JULY 2024**

**MAISON DE LA CRÉATION ET DE L'INNOVATION - MACI**

339 avenue Centrale, 38400 Saint-Martin-d'Hères



## The UNESCO Chair “Earthen architecture, construction cultures and sustainable development”

The Terra Education IV international conference is being organised under the aegis of the UNESCO Chair "Earthen Architecture, Building Cultures and Sustainable Development" and to mark the 40th anniversary of the creation of the DSA Architecture de terre, post-master's degree in earthen architecture at ENSAG.

This UNESCO Chair was created at the initiative of UNESCO's Division of Higher Education. It was inaugurated in Oct. 1998 at the School of Architecture of Grenoble in France, where the CRAterre-ENSAG research laboratory (now part of the AE&CC Research Unit) leads the Chair as its centre of excellence.

Consistent with the objectives of UNESCO's Program and orientations, this Chair and its network contribute to "strengthen higher education and research capacities through transfer of knowledge and share in a spirit of international solidarity". It thus promotes North-South, South-South and triangular cooperation, as a strategy for institutional development to increase, on a global scale, the dissemination of scientific and technical know-how on earthen architecture, in three main areas:

1. Territory, human settlements and habitat.
2. Earth as a building material, other bio- and geo-materials, building systems and practices.
3. Heritage, with particular emphasis on World Heritage (cultural, natural, mixed).

# TERRA Education IV

*CHANGING SCALE | CHANGER D'ÉCHELLE | CAMBIAR DE ESCALA*

Since the middle of the last century, efforts have been made to better exploit the potential of earth as a building material. Following in the footsteps of the Egyptian architect Hassan Fathy or the Chilean engineer Raul Ramirez, inventor of the Cinva Ram brick press, and inspired by the vernacular habitats of many countries, the founders of CRAterre embarked in the 1970s on research aimed at producing knowledge that could be widely disseminated[1]. The first publications were a success and inspired numerous initiatives around the world. Among these, the creation of the post-master's course in earthen architecture (1984) and then the CRAterre laboratory at the Grenoble School of Architecture (1986) were decisive in spreading the idea that it was possible to build simply with what you have under your feet! All over the world, interest in earthen architecture is growing, and research centres are multiplying, as are training efforts.

However, the major projects carried out at the time (e.g. "Village terre" in Villefontaine, France ; a social housing and infrastructure programme in Mayotte, etc.) did not become widespread. Their appropriation has often remained at the prototype or demonstrator stage. A situation which is not always easy to decipher. Is it lack of support from public authorities? Lack of interest from professionals? Lack of standards? Inadequacy for widespread use?

In recent years, however, with a renewed ecological awareness that is now widely shared at global level because of the climate threat, the situation seems to be changing, perhaps also because those involved in earthen construction and their networks are now better organized. In many places/countries, changes of scale are taking place, enabling a better response to global demand for quality construction solutions that drastically limit the production of greenhouse gases.

The Terra Education IV conference aims to take stock of this phenomenon(s) and to decipher the underlying mechanisms and/or strategies, in order to better integrate them into the research and training programs of the UNESCO Chairs network, and beyond. What actions have been taken and what conditions have been put in place to facilitate the implementation of large-scale projects? What partnerships have been established? What technological developments or construction processes have been developed? What scale of development is most appropriate for the sector (industrial, semi-industrial, artisanal, etc.)? Shouldn't strategic approaches be systematized, including the complementary activities of research, training, experimentation, support, etc.?

**8:30 - Poster delivery**

Welcoming of participants

**9:00 - Introduction and opening speeches** | Thierry JOFFROY, Thomas SPIEGELBERGER, Lazare ELOUNDOU ASSOMO

**10:15 - COFFEE BREAK / POSTER PRESENTATION (30 MIN)**

**THEME 1 & 2 : CONSERVATION, REHABILITATION AND ADAPTATION OF HERITAGE & REVERSE ENGINEERING OF LOCAL BUILDING CULTURES**

**10:45 - Introduction & moderation** | David GANDREAU



**10:50 - Procesos dialógicos para la conservación de las culturas constructivas de tierra** | Aarón DURAN

**11:05 - Contemporary conservation practice and traditional wisdom – knowledge exchange during Himalayan wall painting conservation** | Anca NICOLAESCU, Pimpim DE AZEVEDO, Yutaka HIRAKO

**11:20 - Chantiers-écoles de réhabilitation de maisons par l'association Imane-Atarikh à Agadez, pour sauvegarder les pratiques traditionnelles de construction en terre** | Abdoulaye CISSE, Sébastien MORISET, Mohamed AG ALASSANE

**11:35 - Study on the Morphological Characteristics and Regional Distribution of Traditional Earthen Dwellings Under the Influence of Natural Environment** | Ma XUECHUN, Jun MU

**11:50 - Fenómeno socio-económico y cultural alrededor de la construcción con tapia pisada en Barichara, Colombia** | Santiago RIVERO

**12:05 - Debate**

**12:30 - LUNCH**



## THEME 3 : TRAINING - INITIAL TRAINING AND RELATIONSHIP WITH UNIVERSITY TRAINING

**14:00 - Introduction & moderation** | Camila MILETO

**14:05 - DSA Architectures de terre, cultures constructives et développement durable, 40 années d'évolution inspirées de projets de recherche action** | Thierry JOFFROY, Halimatou MAMA AWAL, Bakonirina RAKOTOMAMONJY, Marina TRAPPENIERS

**14:20 - Tierra en programas educativos en Chile, aportes a la sostenibilidad** | Carmen GOMEZ MAESTRO, Amanda RIVERA VIDAL

**14:35 - De la materia a la arquitectura: La enseñanza de la Arquitectura de Tierra en el mapa curricular de la licenciatura en arquitectura. Reflexiones y proyecciones sobre la experiencia docente** | María Lucía BLANCO CANALES, Iván Alejandro LOPEZ NIETO

**14:50 - Tierra, Academia y Comunidad: análisis y perspectivas desde Uruguay** | Alejandro FERREIRO, Gabriela VAZQUEZ, Natalia VELIZ, Helena GALLARDO, Bruno PALUMBO, Jessica MESONES

**15:05 - La investigación proyectual de la arquitectura de tierra Un método para la Enseñanza en la Facultad de Arquitectura** | Mauricio GANDUGLIA

**15:20 - Debate**

**15:45 - BREAK (30 MIN)**

**16:15 - Introduction & moderation** | Halimatou MAMA AWAL

**16:20 - Changer d'échelle dans la formation : Documenter et diffuser l'apprentissage par l'expérience** | Adélie COLLETTA, Sébastien CHALIES, Laetitia FONTAINE

**16:35 - Toca Tierra # 6, récit d'une expérience combinant la sensorimotricité avec une approche transdisciplinaire pour l'apprentissage des matériaux géosourcés et biosourcés** | Juan TRABANINO, Nathalie TORNAY

**16:50 - L'histoire d'une maison expérimentale et pédagogique se poursuit** | Dominique DAUDON, Yannick SIEFFERT, Thierry JOFFROY, Martin POINTET, Laurent GALICHET

**17:05 - Projet TerCel 2023 : exploration par le design de nouveaux matériaux composites terre/cellulose** | Arnaud MISSE, Milena STEFANOVA, Emma COLOMBARI

**17:20 - Debate**

**17:45 - CLOSURE (15 MIN)**

### THEME 3 : TRAINING - ACTION AND COMMUNITIES

**09:00 - Introduction & moderation** | Bakonirina RAKOTOMAMONJY

**09:05 - “Versus+ / Heritage for People Project”: Design of strategies and didactic activities for the transmission of the values of traditional architecture** | Camilla MILETO, Fernando VEGAS, Lidia GARCIA-SORIANO



**09:20 - Chullpawawa, el arte aymara del tejido de la tierra** | Pacha YAMPARA BLANCO

**09:35 - Regio Earth. A cross-border educational perspective** | Alina NEGRU, Alessandro SERRA, Dragana KOJICIC, Ádám BIHARI, Gergely Péter BARNA, Ana PATO, Isabella BREDA, Zdeněk VZJPUSTEK, Viola TOCCAFONDI, Tommaso VENTURINI

**09:50 - Impacts du programme PROFAS C+ de renforcement des capacités des corps techniques du CAPTERRE** | Nuria SANCHEZ MUNOZ, Alaeddine BELOUAAR

**10:05 - Debate**

**10:30 - COFFEE BREAK / POSTER PRESENTATION (30 MIN)**

### THEME 3 : TRAINING - TRAINING AND EXPOSURE TO THE PROFESSIONAL WORLD

**11:00 - Introduction & moderation** | Laetitia FONTAINE

**11:05 - Builders of Change. Joint exploration of regenerative building materials through construction site projects** | Ulrike SCHWANTNER

**11:20 - Building capacities to protect, promote and transmit earthen heritage. Al Ain, Abu Dhabi, as a regional model** | Felipe GUTIERREZ, Amel CHABBI, Aqeel Ahmed AQEEL

**11:35 - Openness, Diversity and Interactivity: Exploring an Informal Educational Approach for Earth Construction in China** | Shuang TANG, Jun MU

**11:50 - ECVET, la certificación europea en oficios de la construcción con tierra que recorre continentes** | Maria BROWN

**12:05 - Debate**

**12:30 - LUNCH**

# Afternoon

## THEME 4 : TRAINING - PARTNERSHIPS AND MULTIDISCIPLINARITY

**14:00 - Introduction & moderation** | Amanda RIVERA VIDAL

**14:05 - Full immersion nella terra: teaching earth building by sharing experiences** | Maddalena ACHENZA, Miguel FERREIRA MENDES, Jean-Marie LE TIEC



**14:20 - Beyond function & fabrics: Building that brings back memory, tradition and local craftsmanship** | Fatiha POLIN

**14:35 - One to one, education and multidisciplinary at ETHZ Kiln Tower Cham** | Felix HILGERT

**14:50 - Afghanistan Cultural Heritage conservation: What role diaspora can play** | Sayed MOSSADEQ KHALILI

**15:05 - La chaire UNESCO architecture de terre, cultures constructives et développement local. Un réseau de 34 partenaires répartis sur 4 continents pour la diffusion des connaissances** | Bakonirina RAKOTOMAMONJY, David GANDREAU, Arnaud MISSE

**15:20 - Debate**

**15:45 - CLOSURE (15 MIN)**

**16:00 - BREAK / WALK TO VISIT SITE**

**16:30 - Visit : Maison 24h** | Dominique DAUDON



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## THEME 5 : PRODUCTION SECTORS (INNOVATION, PRODUCTION, TECHNOLOGICAL RESEARCH)

09:00 - Introduction & moderation | Ivan MAZEL



09:05 - **Enhancing the Sustainability and Performance of Compressed Stabilized Earth Blocks with Vetiver Straw Fiber and Cement** | Md. BULBUL ISLAM, Shantanu PAUL, Mirza Md. NAZMUS SAKIB, Mohammad SHARIFUL ISLAM



09:20 - **Arquitectura de tierra a pequeña o gran escala y a poca o gran velocidad** | Dario ANGULO

09:35 - **La préfabrication du pisé : vers une massification des constructions en terre crue en France ?** | Andréas KREWET, Martin POINTET, Bastien NEUFEIND, Julien NOURDIN

09:50 - **La filière terre en France : des moyens mis en œuvre dans la perspective d'une demande qui change d'échelle** | Julien NOURDIN, Thierry JOFFROY

10:05 - Debate

10:30 - COFFEE BREAK / POSTER PRESENTATION (30 MIN)

## THEME 6 : CHARACTERIZATION – STANDARDIZATION

11:00 - Introduction & moderation | Arnaud MISSE

11:05 - **Création d'un protocole d'essai quantitatif pour l'aide à l'analyse de terres** | Leonardo EGAS, Eugénie CRETE, Hiep Trong DO, An Na CHO, Zélie DELORME, Martin POINTET

11:20 - **Retours d'expériences des textes à visées normatives sur le développement de la construction en blocs de terre comprimée : les Appréciations Techniques d'Expérimentation de Cycle Terre et les règles professionnelles Mayotte** | Arnaud MISSE, Eugénie CRETE, Melvyn GORRA



11:35 - **Validación ante normas de sistemas bioconstructivos** | Jorge BROUGHTON, Romina ACEVEDO, Oscar CARRILLO, Diana AYENSA, Ignacio CONDE, Marcela GALLARDO

11:50 - Debate

12:15 - LUNCH



# Afternoon

## THEME 7 : STRATEGIC APPROACHES : BEYOND THE ARCHITECTURAL PROJECT, THE DEVELOPMENT PROJECT

**13:45 - Introduction & moderation** | Thierry JOFFROY

**13:50 - Construire en terre Mahoraise** | Vincent LIETAR, Dominique TESSIER

**14:05 - Construcción y reconstrucción de resiliencia con bloques de tierra comprimida (BTC)** | Aleyda RESENDIZ-VAZQUEZ



**14:20 - Building with natural and recycled material for sustainable construction: Case of Dhoksan** | Prakriti DANGOL



**14:35 - Autoproducción de vivienda acompañada: Una estrategia para el acceso a una vivienda digna y el fortalecimiento comunitario** | Ana Katherine CARRENO CHARRY

**14:50 - Debate**

### 15:15 - BREAK (30 MIN)

**15:45 - Introduction & moderation** | Theophilus SHITTU

**15:50 - Bio Casa Vá: diálogo, transformación social, vinculación tecnológica y sustentabilidad a través de la Tierra como material de construcción en la periferia urbana** | Claudia VARIN, Jessica MESONES, Gabriela VAZQUEZ, Bruno PALUMBO, Tiago MACHAIN

**16:05 - Vivienda social rural en Técnica mixta en tierra. Pertinencia cultural y sustentabilidad, Biobío - Chile** | Romina ACEVEDO



**16:20 - A collaborative approach to earthen techniques. Moving beyond training from ethnographic experiences with local communities in northern Argentina** | Jorge TOMASI

**16:35 - Debate**

**17:00 - CONCLUSION & CLOSURE (60 MIN)** | Thierry JOFFROY, Maddalena ACHENZA

# POSTER PRESENTATION

## THEME 1. CONSERVATION, REHABILITATION & ADAPTATION OF HERITAGE

**Construction characteristics and Its Inheritance and Development of Earthen Buildings in Liling, Hunan Province** | Yujia FAN

**Cultura Constructiva en Tierra en el Valle del Itata, Chile** | Romina ACEVEDO

**Levantamiento arquitectónico y cultura constructiva de la vivienda vernácula en Marchigüe, Chile** | Margarita Alejandra CÁCERES CONTRERAS

**Low-cost digital documentation. Using mobiles and laptops** | Heba AHMED MOAWAD, Mahmoud SAMIR MAHMOUD ABDEL FATTAH, Eman ALY SELIM

**Salvaguarda de la arquitectura en tierra de la región de Aysén, con miras a su conservación, rehabilitación y adaptación a las tecnologías actuales de construcción** | Carlos Nicolás CASTILLO LEVICOY, Constanza PÉREZ LIRA, Amalia NUEVO DELAUNAY, María Ximena URBINA CARRASCO

**Villes historiques en terre en Amérique Latine identité, perception et risque d'un patrimoine fragile** | Corrado SCUDELLARO

**Women and earth. The Kosi-Kosi decoration technique** | Shadia ABDRABO ABDELWAHAB ABDALLA, Eman ALY SELIM, Ana Elva MICHEL VALENZUELA

## THEME 3. TRAINING

**Architectural teaching through constructing with earthen materials** | Maria MANDALAKI

**De la escala del lugar y del objeto arquitectónico al detalle constructivo en tierra. Método y principios teóricos para resolver la tectónica en la facultad de Arquitectura** | Mauricio GANDUGLIA

**Earth Modular Building: Best Practices Manual & Blockchain-based Certification** | Thiago MARTONI, Hélio DIAS

**El turismo cultural y experiencial como herramienta de sensibilización y apropiación de la construcción con tierra en escenarios con vocación turística caso de la tierra casa taller en Barichara, Colombia** | Santiago RIVERO, Lina PIERUCCINI

**From theory to practice. The Nile's Earth training course** | Eman ALY SELIM, Heba AHMED MOAWAD, Mahmoud SAMIR MAHMOUD ABDEL FATTAH, Shadia ABDRABO ABDELWAHAB ABDALLA, Ana Elva MICHEL VALENZUELA

**Hacia una metodología de enseñanza y aprendizaje del Diplomado de Arquitectura Contemporánea en tierra USACH** | Carolina VALDÉS, Romina ACEVEDO, Jorge BROUGHTON

**Utilización de la escala para el proceso enseñanza-aprendizaje de la arquitectura de tierra** | Yolanda ARANDA-JIMENEZ

# HALL & FIRST FLOOR - MaCI

## THEME 4. PARTNERSHIPS AND MULTIDISCIPLINARITY

**Advancing Earthen Structures for Sustainable Temporary Housing: A Case Study in Turkey** | Marcel MALLET, Veysi ALTINTAS, Evrim SOLHAN, Nurettin EKINCI, Çisem BOZBEK

## THEME 5. PRODUCTION SECTORS

**Bacteriopolis** | Angela RUIZ PLAZA

**La Brique de terre allégée comprimée, un matériau expérimental et innovant adapté à la réhabilitation et à l'amélioration du confort thermique** | Laurent GALICHET, Thierry JOFFROY, Yannick SIEFFERT, Dominique DAUDON, Martin POINTET

**Ondol, traditional Korean Heating Method Applied to Earthen Buildings** | Lim JUNG HUN , Choi DUK JOON, Hwang HEYZOO

**Recuperación de residuos de la industria del tequila para la producción de adobes y su implementación en proyectos sociales de Jalisco, México** | Ana Rosa OLIVERA BONILLA

**Tierra Lamp, Serie Itata. Técnicas patrimoniales de construcción con tierra llevadas al diseño de objetos lumínicos contemporáneos** | Romina ACEVEDO

**Transforming CSEB Production: A Sustainable Approach to Architectural Innovation** | Thiago MARTONI

## THEME 6. CHARACTERIZATION – STANDARDIZATION

**Fabric Formed Poured Earth; Development of Standardized Testing** | Charlie O'GEEN

**Mechanical behaviour of earth block masonry in contemporary construction** | Jacopo BALDELLI, Giosuè BOSCATO, Antonella CECCHI, Daniele BARALDI, Nandini PRIYA THATIKONDA

## THEME 7. STRATEGIC APPROACHES

**A study on the proposal of Korea's Earth-concrete construction method based on two cases** | Soojung PARK, Hwang HEYZOO

**Contexte comportemental de l'adoption de la construction en terre dans la région semi-aride de Paraíba** | Antonio GONÇALVES DE FARIAS JÚNIOR, Mariana NICOLAU, Jaine FERREIRA GOMES, Andressa FERNANDES PINHEIRO

# VENUE

## CONFERENCE VENUE

MaCI - Maison de la Création et de l'Innovation  
339 avenue Centrale  
38400 SAINT-MARTIN-D'HÈRES



● STOP TRAM B / C - GABRIEL FAURIÉ



## VISIT LOCATION

Maison 24h  
666 avenue Centrale  
38400 SAINT-MARTIN-D'HÈRES





# SCIENTIFIC COMMITTEE

- Mohsen ABASI HAROFTEH | Yazd University / UNESCO Chair earthen architecture (Iran)
- Maddalena ACHENZA | UNICA Università degli Studi di Cagliari / ISCEAH / UNESCO Chair earthen architecture (Italie)
- Gerhard BOSMAN | University of Free State / UNESCO Chair earthen architecture (Afrique du Sud)
- Mariana CORREIA | Universidade Portucalense / PROTERRA / ISCEAH / CIAV / UNESCO Chair earthen architecture (Portugal)
- Lara DAVIS | Limaçon Design / Rhode Island School of Design (Etats-Unis)
- Lazare ELOUNDOU ASSOMO | Centre du patrimoine mondial, UNESCO (France / Cameroun)
- Hassan FEKRI | Université Française d'Égypte (Egypte)
- Laetitia FONTAINE | Université Grenoble Alpes / ENSAG / AE&CC-CRAterre / UNESCO Chair earthen architecture (France)
- David GANDREAU | Université Grenoble Alpes / ENSAG / AE&CC-CRAterre / UNESCO Chair earthen architecture (France)
- Hubert GUILLAUD | CRAterre (France)
- Thierry JOFFROY | Université Grenoble Alpes / ENSAG / AE&CC-CRAterre / UNESCO Chair earthen architecture / PROTERRA (France)
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- Theophilus SHITTU | Faculty of Arts, Science and Technology, University of Northampton (Royaume Uni)
- Yannick SIEFFERT | Université Grenoble Alpes / 3SR (France)
- Mirta Eufemia SOSA | CRIATIC-FAU-UNT, Centro Regional de Investigaciones de Arquitectura de Tierra Cruda - Facultadde Arquitectura y Urbanismo - Universidad Nacional de Tucuman / UNESCO Chair earthen Architecture (Argentine)
- Jenny Astrid VARGAS SANCHEZ | Universidad Nacional de Colombia / UNESCO Chair earthen Architecture (Colombie)
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# ORGANISING COMMITTEE

- Thierry JOFFROY | CRAterre/AE&CC/ENSAG/UGA
- Alix HUBERT | CRAterre/AE&CC/ENSAG/UGA
- Arnaud MISSE | CRAterre/AE&CC/ENSAG/UGA
- Bakonirina RAKOTOMAMONJY | CRAterre/AE&CC/ENSAG/UGA
- David GANDREAU | CRAterre/AE&CC/ENSAG/UGA
- Audrey CARBONNELLE | AE&CC/ENSAG/UGA

The TERRA Education IV conference aims to take stock of the global concerns that are leading to a worldwide drastic increase in the demand for earth building solutions, thus requiring an adaptation of the proposed responses. The TerraEducation IV conference aims to decipher the mechanisms and/or strategies underlying the projects that actually lead to a "change of scale" in the production of quality housing, in order to better integrate them into the research and training programs of the UNESCO Chair « Earthen Architecture, Building Cultures and Sustainable Development » and beyond, in the global academic world.

To this end, it is structured within 7 themes :

1. Conservation, rehabilitation and adaptation of heritage
2. Reverse engineering of local building cultures
3. Training (programs, professional certification, local ranchoring, etc.)
4. Partnerships and multidisciplinary
5. Production sectors (innovation, production, technological research)
6. Characterization – Standardization
7. Strategic approaches : beyond the architectural project, the development project

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Under the aegis of



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earthen architecture, building cultures  
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