



# Environment and Health

Global/local challenges and actions



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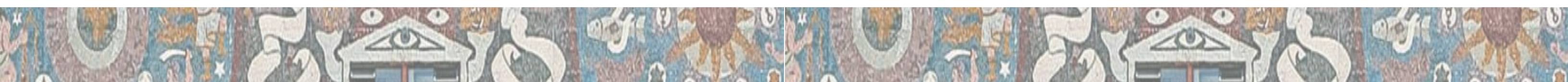
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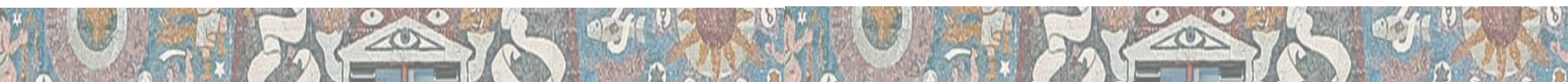
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## The Emotional Atmospheres ATLAS: A Database of Architectural Experiences Surveyed through Arousal and Valence

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**Author: Kutay Guler** (Kansas State University)

**Robert Condia** (Kansas State University)

Spatial experiences in humans are afforded and altered by architecture. How we perceive our environments affects our behavior, well-being, and health. This is well known. However, as designers, we must consolidate evidence. Architecture now cooperates with neuroscience in studying how we experience spaces. Design expertise might advance into a different dimension, shifting the focus from buildings' technical performances to people's experiences and emotions.

We refer to our surroundings' emotional charge as "atmosphere." From a methodological perspective, the interpretation of atmospheres has been dominated by a phenomenological approach grounded in observing spatial experiences as consciously felt in first-person. Nowadays, there is an increased emphasis on unconscious responses, examinable through third-person assessments. The challenge is to link a growing understanding of architectural atmospheres to studying the body, brain, and emotion-related mechanisms to decipher people's emotional complexity.

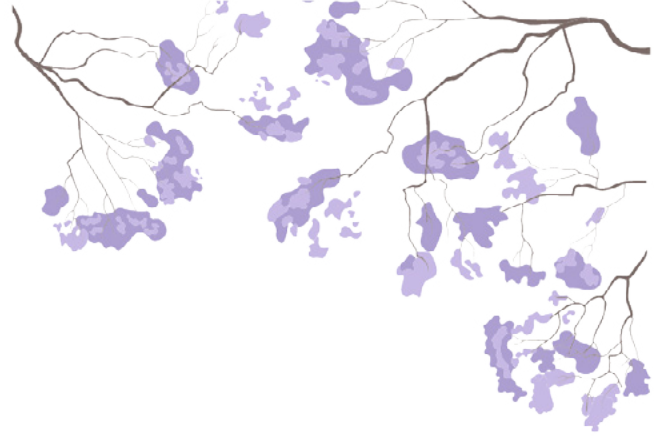
In designing (neuro)physiological signal-based protocols aimed at detecting and measuring atmospheric emotions, we need normative affect-based stimuli specifically conceived to analyze architectural settings. The reference is the International Affective Picture System (IAPS), a set of photos validated as consistently eliciting a precise emotional response (self-rated upon arousal, valence, and dominance). Within the interdisciplinary field of neuroarchitecture, similar databases are rare, and methodologies differ. We crafted ATLAS, a dATabase of visual Atmospheric Stimuli: namely, a series of spatial patterns born from a systematic selection of atmosphere generators. Generators of atmosphere are architectural features designed to afford atmospheric effects (e.g., lights, colors, materials, and proportions).

A workshop of 5th-year students trained in Atmospheric Design produced 65 case studies (corridors), grown from a shared baseline and altered according to 13 generators. Atmosphere is a complex process. Yet a scientifically controllable experimental paradigm imposes a reductionist approach, suggesting work on one design factor at a time to ensure a correlation between stimulus and response.

As experts, we rated the spaces in terms of arousal and valence (the two dimensions of core affect). Through an online survey, we then tested our hypotheses. We simulated dynamic engagement with space by editing 12-second videos of first-person-view trajectories. This study verified the methodology of another video dataset. Our stimuli are more consistent and comparable. They offer an architectural quality adaptable to the design practice, minimizing semantic information. We dimensioned our 3D environments to use them in virtual reality protocols, incorporating wireless gear, eye-tracking technology, and physiological sensors. The validation process will move on to this stage.

ATLAS is a unique open-access tool that supports researchers interested in exploring emotional reactions to architectural features by providing reliable, standardized, and reproducible stimuli. Experiment-based investigations need this database to advance research questions and methodologies.

This abstract was developed within the RESONANCES project (ArchitecturalAtmospheres: The Emotional Impact of Ambiances Measured through Conscious, Bodily, and Neural Responses), which received funding from the European Union's Horizon 2020 research and innovation program under the Marie Skłodowska-Curie grant agreement 101025132. The content reflects only the authors' view. The European Research Executive Agency is not responsible for any use that may be made of the information it contains.



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