

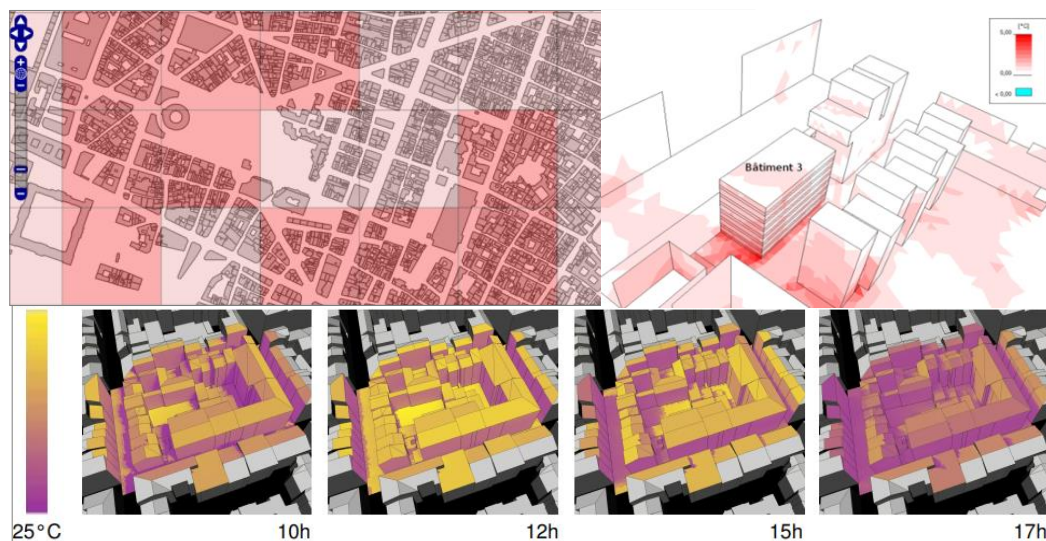
## Postdoc - Climate & spatial data visualization – 18 months.

(autumn 2018 or early 2019)

IGN-France, LaSTIG, GeoVIS Team

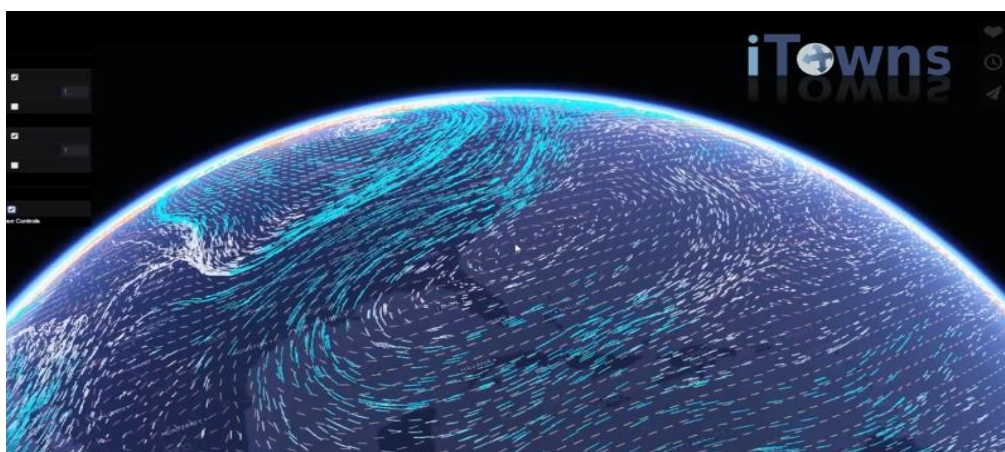
Geovisualization of climate data and their uncertainties, for global climate change understanding.

We are seeking a postdoc in **climate & spatial data visualization** for the [ERA4CS](#) European project **URban CLIMate Services (URCLIM)**. The purpose of URCLIM is to design methods and tools to assess the impacts of the climate change on urban spaces, based on the analysis of such complex and imprecise phenomena, through space and time.



Existing visualizations of climate data and scenarios to co-visualize with 3D city models at various scales.  
RepExtrem (IFSTARR, CNRM), Pinson et al. 2015, Bouyer 2009, Groleau et al. 2003

Researchers in Meteorology and in Geographic Information Sciences (GI Sciences) converge to visually integrate, interact with and analyze, both geographic data describing the urban spaces and data simulating the climate. Visualizing and interacting with such **heterogeneous data**, in scale, temporality, precision and dimension, require methods to favor their **co-visualization**, in order to facilitate the **graphic representation of uncertainties** from data acquisition and underlying physical models and simulations. **Exploration and navigation between data, models and representations** should be also enhanced based on innovative interaction techniques. Adaptation of visualization content and media is expected to be optimized, regarding various stakeholders (scientists, citizens, practitioners) and related uses (communication, spatio-temporal analysis, decision making).



iTowns 3D geovisualization : <http://www.itowns-project.org/> and <https://github.com/itownsResearch>

## Goals & Tasks

The main goal of the post-doc concerns the **co-visualization of climate and spatial data, at various spatio-temporal scales**, enabling visual reasoning of climate phenomena. The post-doc will propose **how to improve the geovisual analytics of climate data**, in managing both the visual integration of those heterogeneous data, and the interactive navigation between spatio-temporal scales. A particular focus will be given on the **control of the visual propagation of uncertainties**, based on graphic semiology knowledge and/or innovative interaction techniques to explore, highlight or analyze uncertainties. Issues of **graphic semiology, realtime rendering, and interactive techniques** are at stake here, in order to explore urban climate, data models and phenomena.

These methods will be implemented into the existing open source 3D geospatial data visualization framework<sup>1</sup> iTowns, that we have been extending at the IGN LaSTIG Geovis Team.

## Expected profile & skills

PhD thesis in Geographic Information Sciences, Information Visualization, or Computer Graphics. Geovisualization, information visualization, graphic semiology, interactive realtime rendering, Web Visualization (Javascript, WebGL). Interests for climate change and meteorological simulations.

## Location

The postdoc is funded by the ERA4CS URCLIM project and will take place at the Laboratory of Sciences and Technologies in GI Sciences (LaSTIG) of IGN-France, GeoVIS team, in Saint-Mandé (94, close to Paris), France. **18 months, starting in autumn 2018 or early 2019.**

## Application

To apply, please submit a CV, a motivation letter and a link to the PhD thesis and main publications to [Sidonie Christophe](mailto:Sidonie.Christophe), senior researcher in GI Sciences & Geovisualization at the IGN/LASTIG: [sidonie.christophe@ign.fr](mailto:sidonie.christophe@ign.fr) **before December, 1st, 2018.**

## References

Bouyer J. Modélisation et simulation des microclimats urbains - Étude de l'impact de l'aménagement urbain sur les consommations énergétiques des bâtiments. Energie électrique. Université de Nantes, 2009. Français.

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<sup>1</sup> [iTown](#)s project based on [three.js](#) library to manipulate and render 3D geospatial data.