Geophysical Research Abstracts
Vol. 20, EGU2018-15134, 2018
EGU General Assembly 2018
© Author(s) 2018. CC Attribution 4.0 license.

Monitoring the environmental impacts of an innovative subway station in Noisy-Champs : indicators and objectives

Lucas Charbonnier, Pierre-Antoine Versini, Ioulia Tchiguirinskaia, and Daniel Schertzer
Paris-Est, Ecole des Ponts ParisTech, HM&Co, France (lucas.charbonnier@enpc.fr)

The Grand Paris Express is a project currently taking place for the development of the Paris urban area's subway network which will lead to the construction of 200 km of railway and 68 new stations. Noisy-Champs is one of these stations. Located in the eastern part of the agglomeration, it is meant to become a major hub of the new network and one of the figureheads of the project. Designed by the Duthilleul architecture office, the Noisy-Champs station has to be first of all functional and of high-performance. It proposes innovative solutions to promote sustainability and adaptation to climate change, and particularly concerning storm water management, optimization of the light inputs or thermal and hygrometric comfort. To assess and monitor the environmental impacts of the station, a grid of indicators has to be set, focused on complex interactions between geophysical fields.

Analysing the pre-existing simulations and blueprints, the main issues for the station's environmental performances with regard to its resilience to extreme meteorological events and climate change have been identified. They concern heavy rainfalls and heat waves mitigation, air quality, energy consumption and users' comfort. The study of the space-time variabilities and interactions between the physical fluxes in the station (pollutants, heat, radiation, water and wind) and passenger flows has led to the proposal of indicators and performance objectives for each of identified issue.

This presentation discusses an assessment program to monitor and evaluate the environmental behaviour of the station, as an urban object evolving with time and geophysical context. A monitoring program, which would define more precisely the type and location of sensors in the station, has already initiated the fruitful dialog between the researchers and stakeholders. We will present the matrix of pre-defined indicators and related objectives. In order to manage efficiently eventual conflictual situations during crisis due to geophysical extremes, a hierarchy has been set between the environmental issues and objectives.