

Seismic and landslides hazards in the high stakes area of the Nice Côte d'Azur airport

Courboulex F (1), Migeon S. (2), Sladen A. (1), Larroque C.(1), Kelner M.* (1), Deschamps A.(1), Hello Y.(1)

(1) Université Côte d'Azur, CNRS, IRD, Observatoire de la Côte d'Azur, Géoazur, Valbonne, France.

(2) Sorbonne Université, Faculté des Sciences et Ingénierie, Paris, France.

* Now at IMSRN, Corte, France.

A smart city must be equipped with efficient and interconnected transportations. Unfortunately, economic or operational reasons for creating an infrastructure sometimes compete with imperatives of natural hazards.

The case of Nice Cote d'Azur airport is an interesting example. As air traffic increased, the airport has been progressively extended. The largest extension occurred between 1975 and 1979 when a large amount of backfill material has been accumulated on the continental shelf to reclaim land and create new tracks. In October 1979, a submarine landslide destroyed part of a seawall under construction and killed 10 people. This landslide was associated with a tsunami wave that swept the coast from Menton to Antibes: the damage was significant but much less than if it had occurred in summer during the tourist season. This disaster stopped all projects in the area for 40 years. However, recently, development projects have again been mentioned (information relayed by the press) with, in particular, the idea of a new port near the airport, able to accommodate ferries.

For several years now, scientists have been working on the area to qualify natural hazard. Their results show that the airport tracks are subsiding [1] and that the surrounding offshore area is subject to recurrent small landslides [2], while geotechnical studies point to its unstable nature [3]. Recently, a seismological sensor installed under the sea during two years has recorded small local earthquakes. Our analysis of the signals reveals a strong amplification effect of seismic waves related with the presence of a thick layer of sediments. Likewise, a future larger earthquake would also be amplified in this area, accentuating the potential for a significant submarine landslide. A domino effect is therefore to be feared: an earthquake, a landslide, a tsunami and maybe the only major local airport unable to operate properly in a time of crisis.

A smart city should be a safe and resilient city that takes into account the contributions of all its stakeholders, including scientists. How scientific results can be taken into account into public decisions is still an open question.

[1] Cavalié O., Sladen A., & Kelner M. (2015) Natural Hazards and Earth System Sciences [2] Kelner M., Migeon S. et al. (2016) Marine Geology [3] Dan G., Sultan et al. (2007) Marine Geology.