Despite the incontestable progress over the past decades, very short term forecasting is still challenging.

In operational meteorology, especially in nowcasting and issuing severe weather warnings, it is crucial to be able to make the right decisions in the shortest amount of time.
As a forecaster, I am often dealing with the limitations of numerical weather prediction models. Doppler radar products and satellite imagery are very useful but there is the 5-10 minutes delay, thunderstorm development can be extremely fast, its movement and intensity can change rapidly and rain areas vary significantly within a few minutes or so. Considering the time in which the warning is elaborated and disseminated, there is a very short time left for people to be informed and put themselves to safety. There are situations when you can partially miss the time interval when the severity of meteorological phenomena is greatest.

To prevent these situations, we have to improve our capacity to estimate in advance the initiation and evolution of severe weather.

As deep learning techniques have shown substantial results in many domains, including the geosciences, developing a high-resolution, short-term predictions application could have a huge potential and a considerable impact on improving the performance on convective storms forecast. If the characteristics of the variations in thunderstorms and rain areas can be obtained from radar images during the past heavy rain situations, they will be useful to improve forecasting the growth and decay of convective storms. The deep learning method also looks for optimized algorithms to recognize features about the change of radar rainfall intensity and movement during the past weather processes.

For me, it is a challenging experience to be part of this project. The preliminary results of the model we are developing are encouraging, the evolution is interesting and in the end we hope for a reliable tool to use in our daily work.

The main purpose of a machine learning based nowcasting tool, is not to replace weather forecasters, but to provide a huge advantage in severe weather prevention both spatially and temporally.