



Photo: Joshua Raswon-Harris

# Predict the Damage to infrastructures caused by storms and map more precisely the risks of claims for insurance

The French NCC: CC-FR, dedicated to HPC, HPDA and AI technologies, brings together the community of technology providers and users. CC-FR federates the HPC, HPDA and AI ecosystem and supports SMEs on the use of intensive computing, high-performance data analysis and artificial intelligence.



## Organisations Involved

CC-FR, set up within the framework of EuroHPC, is managed by the European Pole of Competence in high performance digital simulation **Teratec**, in association with the European Center for **Advanced Research and Training in Scientific Computing** **Cerfacs** and with the participation of the Big National Equipment Intensive Computing **Genci**.

**Risk Weather Tech**, <https://www.riskweathertech.com>, is a Climate Modelling Specialist.

RiskWeatherTech provides risk management and for the study of the vulnerability of territories and companies.



## Technical Challenge

Risk Weather Tech integrated the CC-FR Tailored Program, to benefit from a high-level support in intensive computing. In collaboration with CRIANN (Regional Centre Information Technology and Digital Applications Normandy), Risk Weather Tech was able to access the MYRIA supercomputer, equipped with more than 10,000 computing cores connected in very high throughput, and capable close to 700 trillion transactions per second.



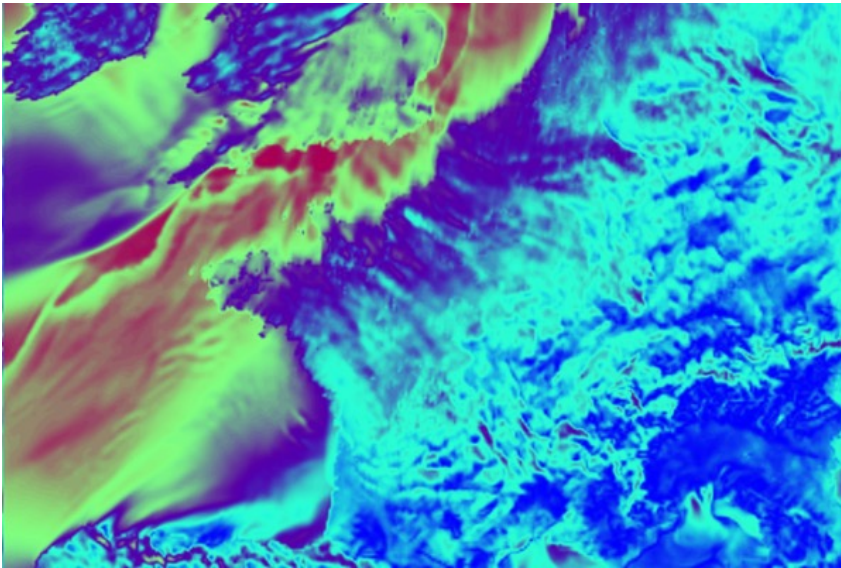


Figure 1: simulation of storms upon the French territory.

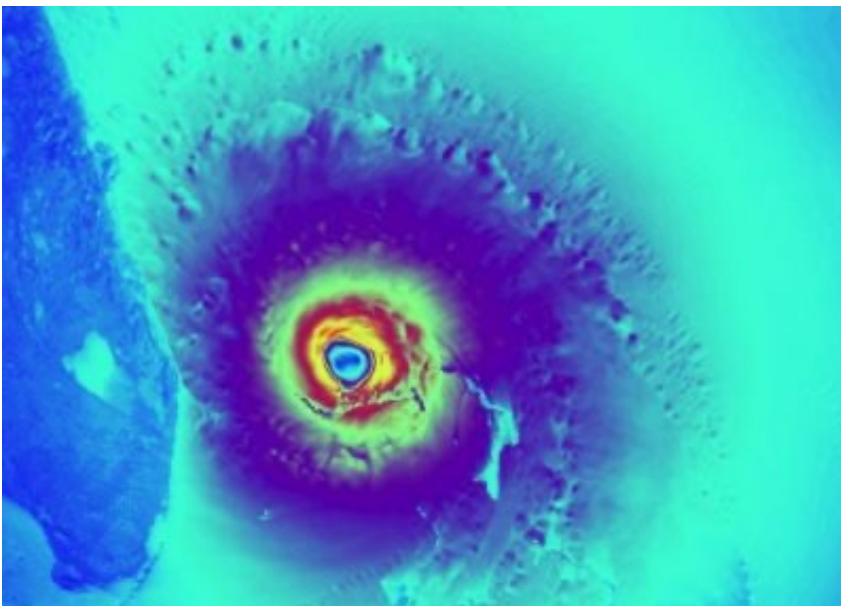


Figure 2: visualization of a storm.

## Solution

Risk Weather Tech has developed, thanks to the Criann's Myria supercomputer and due to the recurrence of intense weather disturbances in France, a vast catalogue of storms physically and statistically plausible. Their main objective in the concerned use case was to anticipate potential damage to infrastructures and to map more precisely the risks of claims for insurance. Using the Myria super calculator of CRIANN, Risk weather Tech has performed 10,000 probable and realistic storms simulation in order to forecast what could happen on the French territory. More than 870,000 CPU hours on the Criann's Myria supercomputer was needed to achieve these simulations.

## Business Impact

The catalogue of the 10,000 realistic simulated storms will enable insurers to refine their storm cost estimates as requested by the French Authorities. It could also provide a better understanding of the vulnerability of large infrastructures recently installed on French territory, such as wind turbines or solar panel fields.

## Benefits

✔ This first Catalogue of 10,000 Storms simulation permitted to propose service offerings to predict the damage to infrastructures caused by storms and to map more precisely the risks of claims for insurance.

- › HPC
- › Simulation
- › Algorithm
- › Parallelization
- › Environment
- › Climate and weather

› Industry Sector: Environment/ climate/weather

› Technology: HPC, HPDA, AI

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