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## ® Investigating machine learning techniques for precipitation forecast in Brazil

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Extreme events of rainfall in Brazil are observing significant increase in the frequency and in the strength of their occurrence. Recent events in the southeast part of the country led to casualties, property damage, and huge impact in the cities and their urban lives. Governments are installing alarms in endangered parts of the towns, preparing evacuation instructions and event deallocating people trying to avoid human loss in the next known-come large event.

In other to support these initiatives, we are developing different projects aiming at constructing predictive models to forecast the occurrence of strong rainfall. The Rionowcast project is being carried on in a collaboration between academic institutions in the Rio de Janeiro state and the Operation Center of Rio de Janeiro (COR). The idea is to build AI spatio-temporal models using a variety of data sources providing historical and real-time information about the weather conditions in Rio de Janeiro. Data sources include: rain gauges, weather stations, radio-sonda; ocean buoys; satellite products, radar products and numerical models. We are trying with different DL model architectures from transformers to GNN; from global to local models and ensembles; and physical informed networks.

In order to foster the collaboration among the different research groups, we are using the Gypscie framework that supports data and model management and dataflow execution.

During the Digital Earth Session of the CHPC National Conference, we intend to briefly present these initiatives

### **Student or Postdoc?**

**Primary author:** Dr PORTO, Fabio

**Presenter:** Dr PORTO, Fabio

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