Paraná State Flood Information System – Brazil

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Starting point

Problems

- The need for a reliable early warning system.
- Assertiveness of the alerts - generate public confidence in civil defense.

Challenge

- To define the warning levels considering the relation between precipitation and river level.

Fig.1: Webpage of the Civil Defense System (SISDC) – Municipal Tools

Fig.2: One of the monitored rivers.

Institutional setting

- Project developed and executed by the Paraná State Civil Defense Department, against flood and landslide.
- **Project partners**
  - Meteorology Service of Paraná – SIMEPAR;
  - Water Institute of Paraná – AGUASPARANÁ;
  - Geology Service of Paraná– MINEROPAR;
  - Regional Departments for Protection and Civil Defense of Paraná;
  - Municipal Departments for Protection and Civil Defense of Paraná.
- **Important condition:** all Municipal Departments for Protection and Civil Defense of Paraná (399) have Municipal Contingency Plans against disasters at the *PlanCon* platform of the Civil Defense System of Paraná - SISDC

Approach

- Registration of the families settled in risk areas.
- Establishment of a grid of hydrometeorological stations.
- Warning levels: Attention, Alert and Alarm – definition and validation.
- Geo-referenced stations change colors according critical rain levels.
- Identification of the flood threat by the State Civil Defense and communication to the regional and municipal units by SMS and e-mail.
- Action according to the threat level.

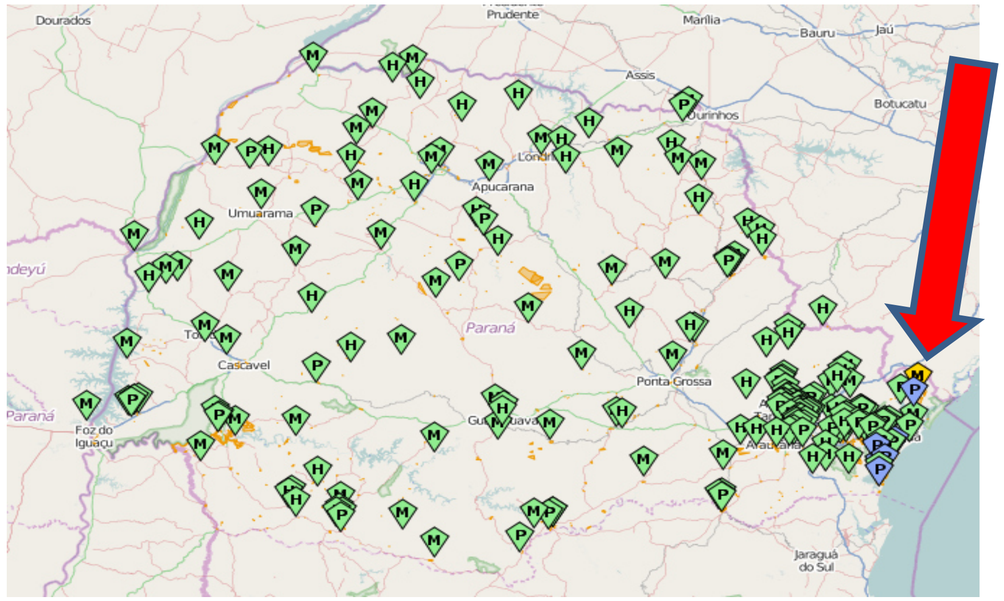

Fig. 3: Distribution of the hydrometeorological stations

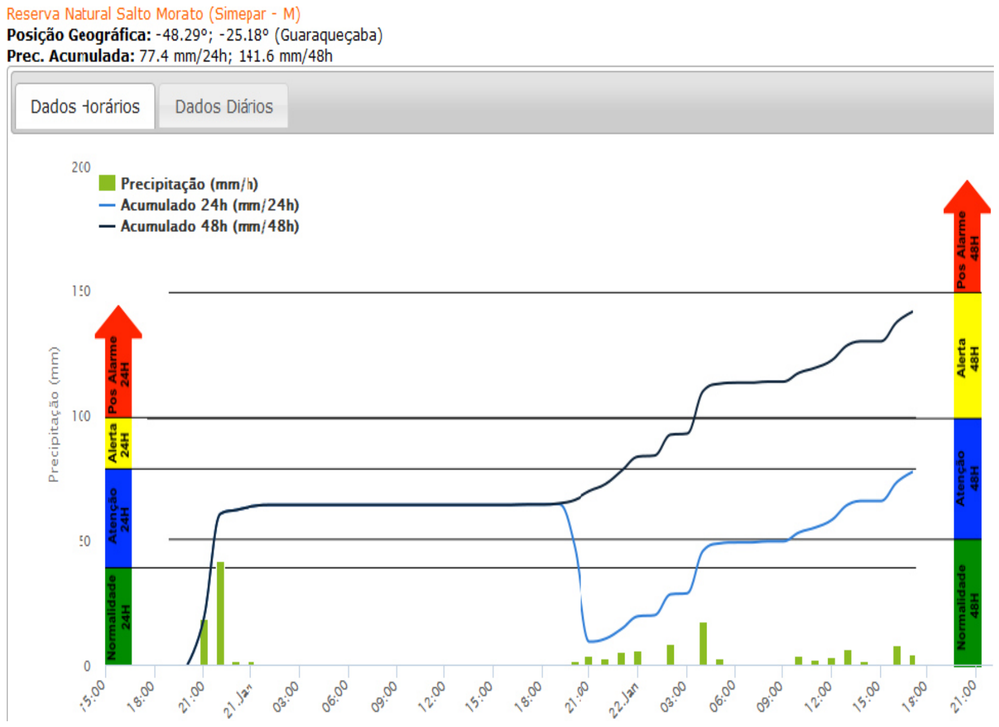

Fig. 4: Precipitation level and its relation with the warning levels

Outputs

- Credibility improvement of civil defense warnings.
- Reduction of the response time of the emergency units.
- Reduction of the damage and economical losses by the floods.

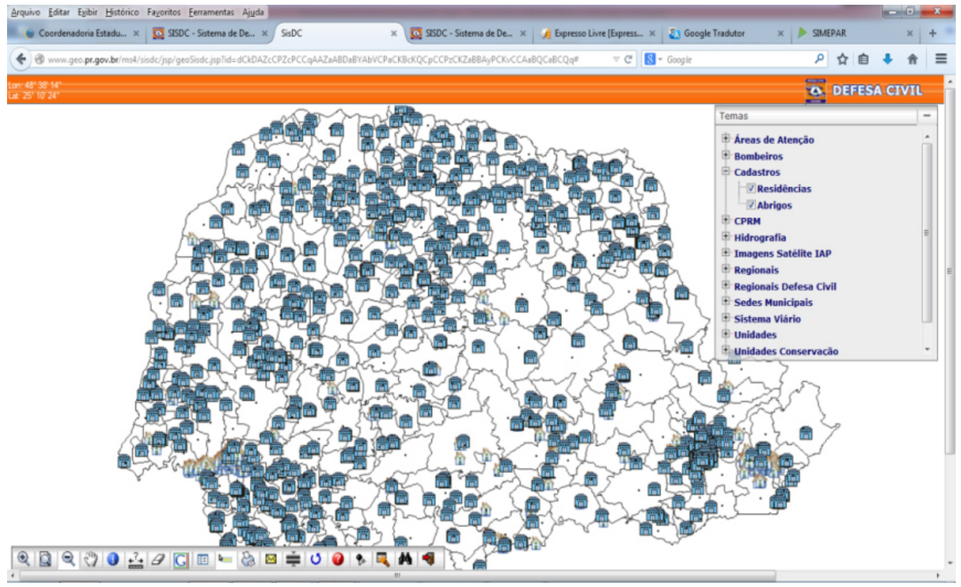

Fig. 5: Registered public shelters used in case of disasters in the State of Paraná

SUSTAINABILITY

- Development of the **SIGRisco**, Information System for Natural Disaster Risk Management, composed by experts in hydrology, geology, meteorology and civil defense.

Fig. 6: Mapping a risk area.

Lessons learnt

- The warning message, considering content and receivers, shall be carefully communicated in order to avoid panic or mistrust.

- Investments in meteorological monitoring grids shall be done (or implementation of communitarian systems).

- The municipal administration shall be aware of the risk areas and work together with the affected community, considering their previous knowledge regarding the vulnerability scenarios to better detail these areas.

Open questions

- Validation of the precipitation indexes to the definition of the warning limits of ATTENTION, ALERT and ALARM for each risk area identified in the municipality.

- Installation of telemetric hydrometeorological stations in all municipalities of the Paraná State, according to the need.