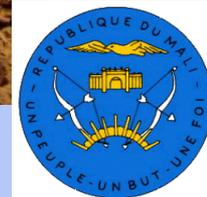


People –Centered Flood Early Warning System in Mali: ANADIA Approach

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Consiglio Nazionale delle Ricerche

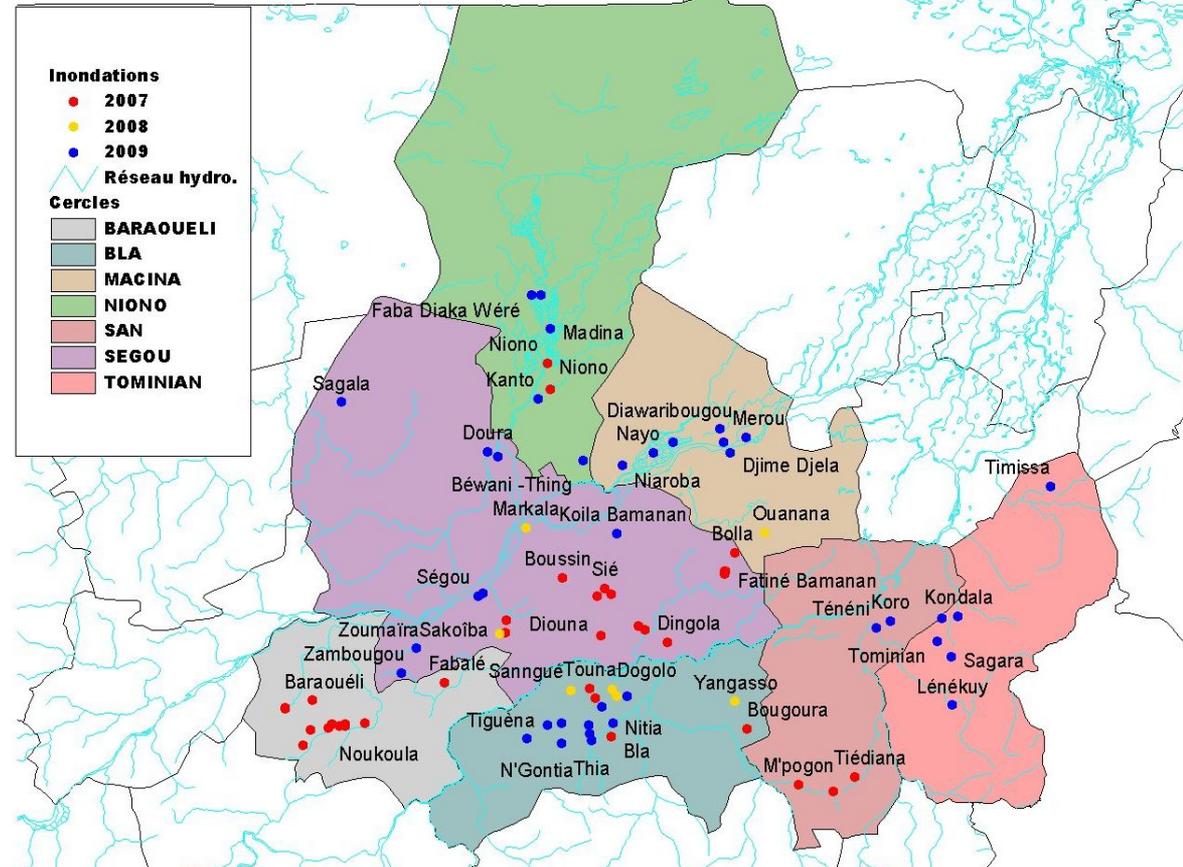
ANADIA MALI

The ANADIA initiative has been conceived by WMO to assess natural disasters impact on agricultural systems. ANADIA Mali is the first operational test on flash floods in rural areas.

These limited intensity and localized floods are increasingly frequent in West Africa, affecting every year hundreds of thousands of peoples.

Nevertheless little is known about the causes and the relation with climate change, due to the absence of flood data series and appropriate meteorological data. “Commune” level contingency plans have also shown limited effectiveness to respond to these extreme events.

Region de Ségou



ANADIA MALI APPROACH

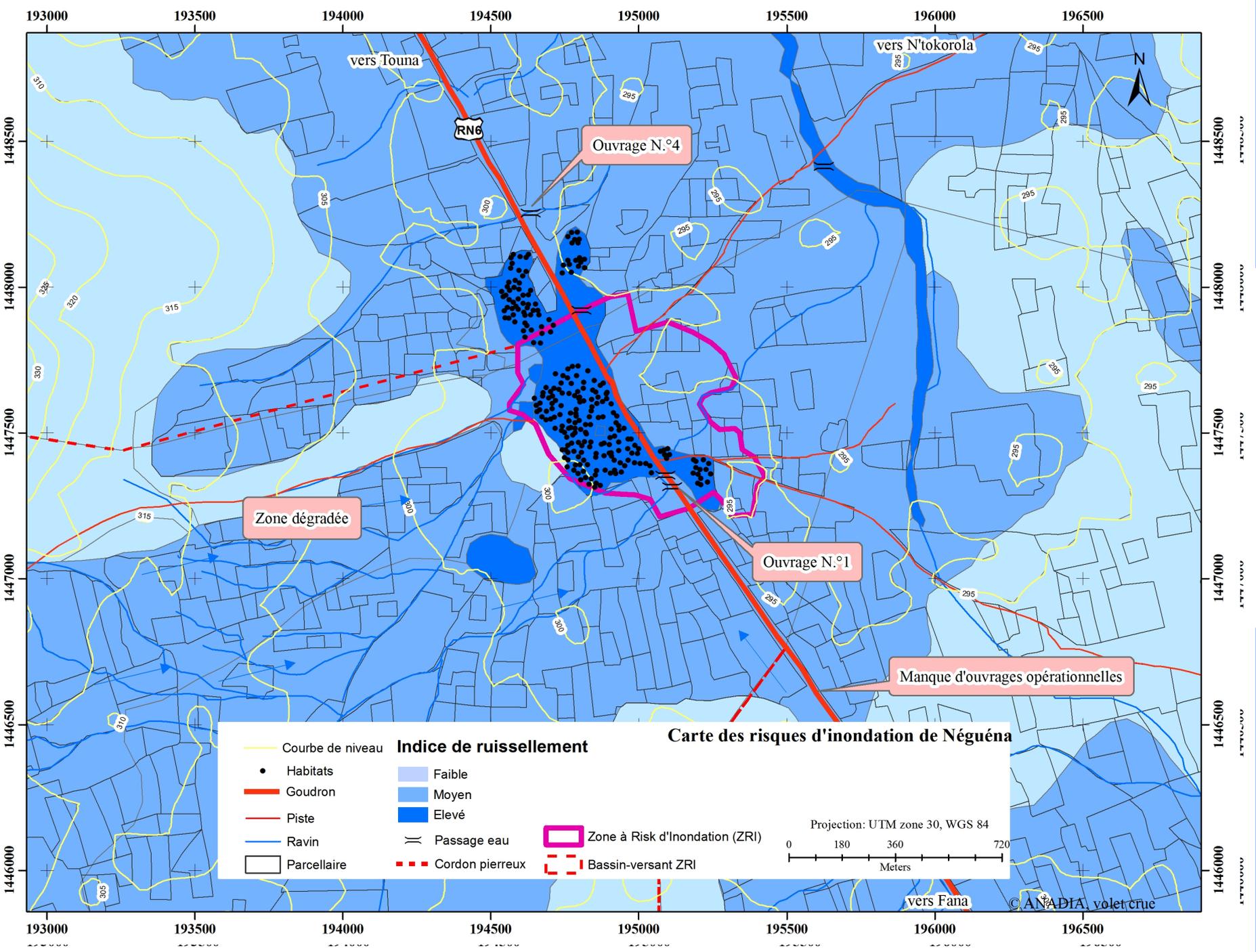
The project approach was conceived to respond to a series of constraints:

- 1) to be coherent with the principles of disaster risk reduction by ISDR and adaptation strategy to climate change by UNFCCC,
- 2) to be operational at the same scale of the event, the village level,
- 3) to assess vulnerability and causes
- 4) to identify solutions and appropriate early warning mechanism

The approach is composed of two components:

- 1) the assessment methodology called Flood Risk Reduction Village Plan (PVRRI),
- 2) the EW mechanism based on the identification of the flood rain threshold and the “paysan observateur”

The approach has been tested in 10 villages of the Segou region selected by 2007-2009 flood records, the only years with reliable data rescued, and representatives of different contexts.



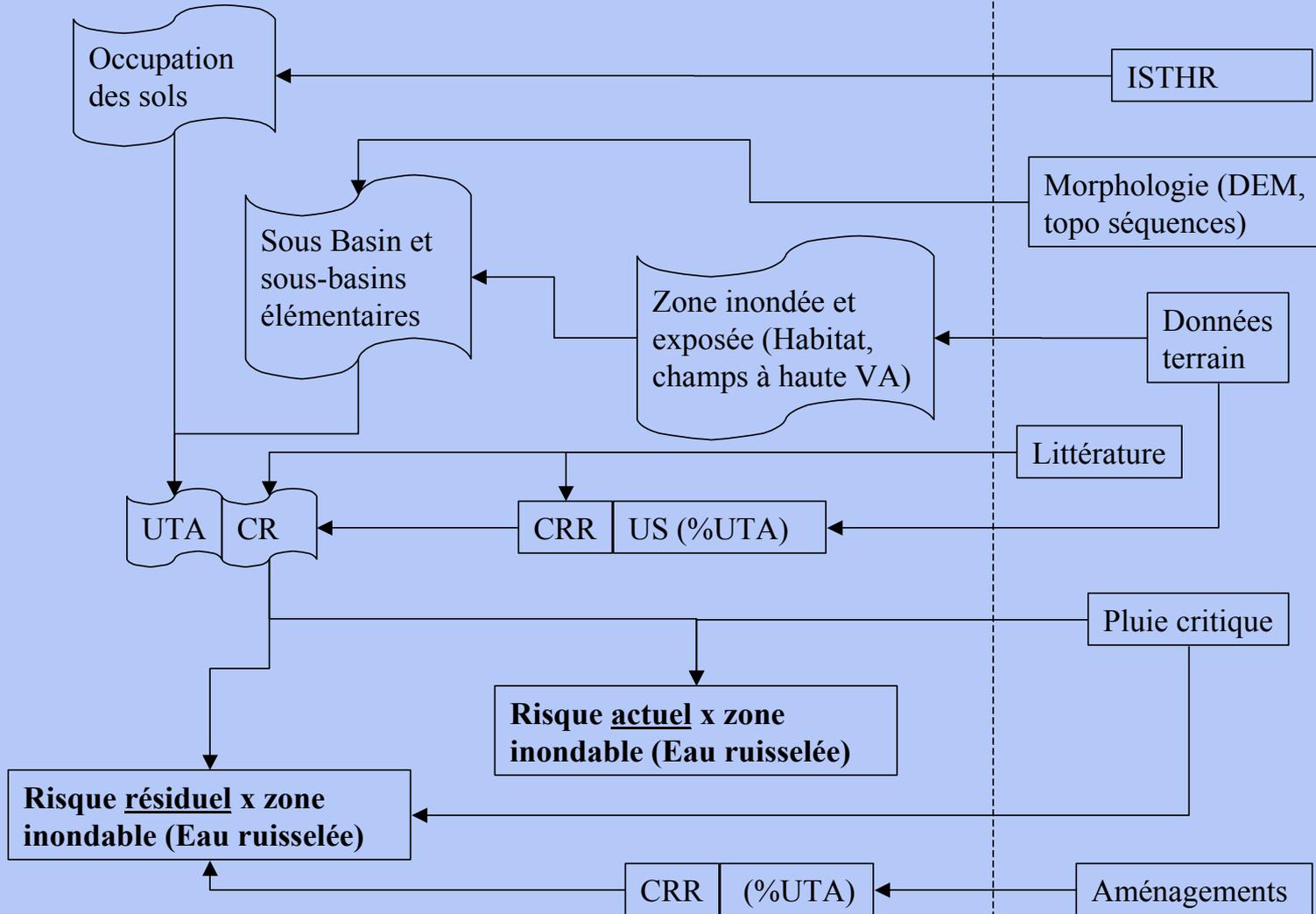
Carte des risques d'inondation de Néguéna

- | | | |
|------------------|--------------------------------|--------------------------------|
| Courbe de niveau | Indice de ruissellement | Faible |
| Habitats | Moyen | Elevé |
| Goudron | Passage eau | Zone à Risk d'Inondation (ZRI) |
| Piste | Cordon pierreux | Bassin-versant ZRI |
| Ravin | | |
| Parcelleaire | | |

Projection: UTM zone 30, WGS 84
 0 180 360 720
 Meters

RUN OFF MODEL

INPUTS



ISTHR : High Resolution Satellite Image
 DEM : Elevation Numerical Model
 VA : Added value
 UTA : Land elementary unit

CR : Run off coefficient
 CRR : Run off reduction coefficient
 US : Land use

EARLY WARNING MECHANISM

- 1) Critical rain: to set the rain level triggering flood, necessary for EW mechanism, has been difficult and not yet solved task. The limited and degrading meteorological stations network did not allow to correlate flood and rain. Existing satellite based data sets have limits in terms of pixel size and in quantitative value. At the present all variety of data, including those collected locally, have been exploited as reference data both in the run off model and in monitoring for alert under, the condition to start a data collection mechanism at village level to update the critical rain value.
- 2) EW alert: at national level a meteo and hydro integrated monitoring service has to be set up to forecast potential meteorological risk conditions and at local level a system centered on the “paysan observateur” is in charge to alert the village whenever the critical rain level is reached.

CONCLUSION

- 1) In all village cases flood was direct consequence of negative interaction between climate change, traditional knowledge and agricultural practices,
- 2) Changes in village social structure. The individual farmer is emerging as a more independent entity limiting the communal effective management of the village territory
- 3) Need to update national technical services working mechanism to better integrate disaster risk management, climate change adaptation strategy and agricultural development
- 4) Drought is not anymore the unique climate constraint to food security, a more complex climate management service vision is necessary
- 5) Disaster management strategy has been adapted to the administrative structure rather than to the events to monitor, priority should be given to the local scale empowering village with people centered system
- 7) Meteorological service should evolve toward a global climate service

