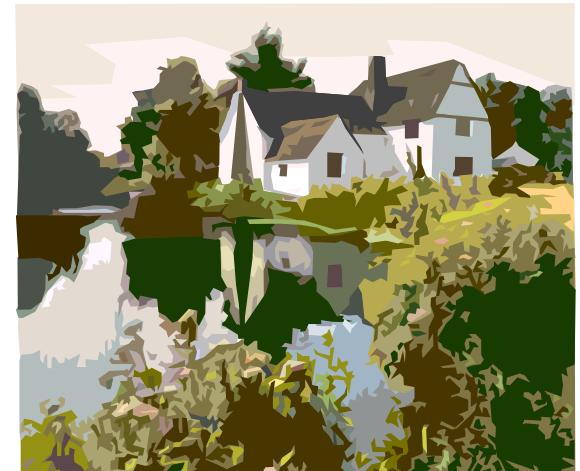


Flood Management System (SGP –Système de Gestion Prévisionnelle)





Kenogami characteristics are

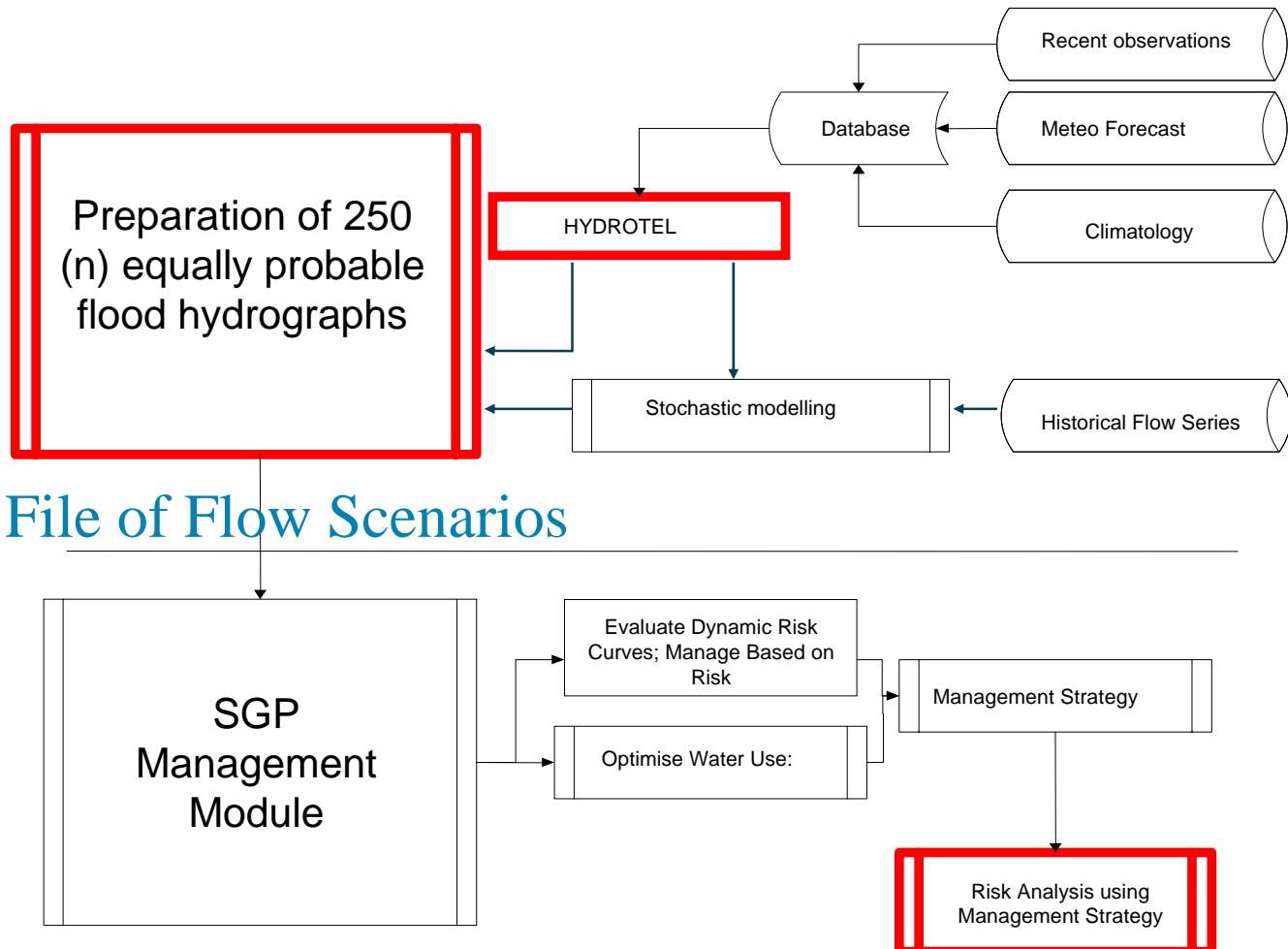
- ◆ Small storage, high slopes, high precipitation;
- ◆ One reservoir, two outlets;
- ◆ Damage vs. level/outflows relations following July 1996 flood;
- ◆ Minimum and maximum outflows constraints;
- ◆ Minimum summer level ->constraints for recreation, maximum summer level ->constraints for flood protection; very small span!



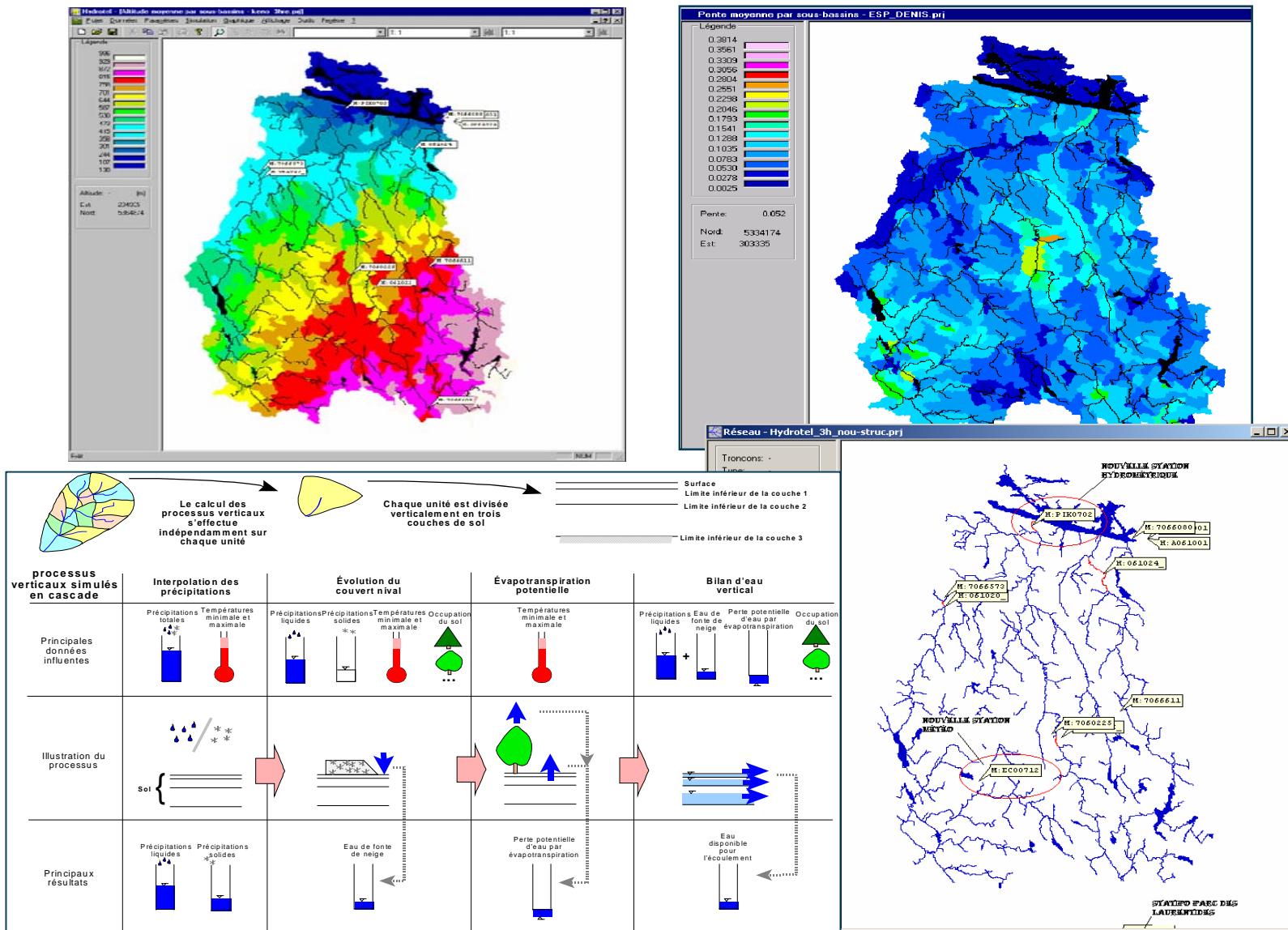
SGP is divided in 2 blocks

- ◆ **1- ESP (Extended Streamflow Forecast) :**
 - Method for deriving runoff forecasts using a precipitation-runoff model (Hydrotel).
 - Meteorological inputs could be:
 - Forecast of future meteo conditions;
 - All observed historical sequences of meteorological inputs, possibly weighted to reflect prior probabilities;
 - A historical data set which is similar to actual conditions up to the time of forecast;
 - Synthetically generated meteorology.
 - When several series of meteorological inputs are used, an estimate of the probability distribution of the forecast could be prepared as outputs.
- ◆ **2- Conduct alternative stream-flow scenario analyses.**

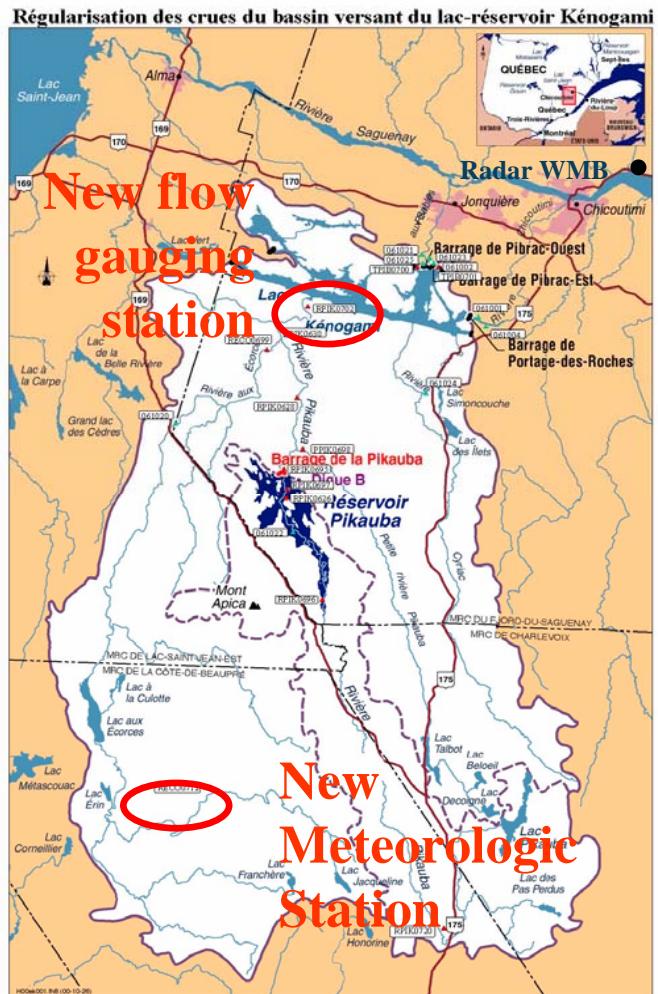
Overview of the SGP



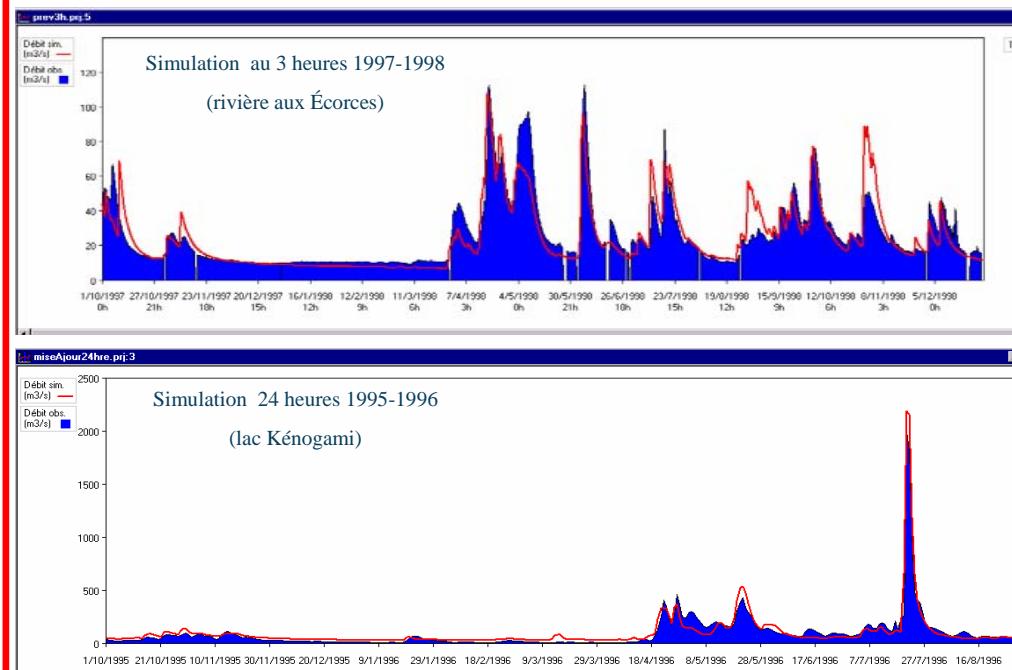
HYDROTEL distributed hydrologic model



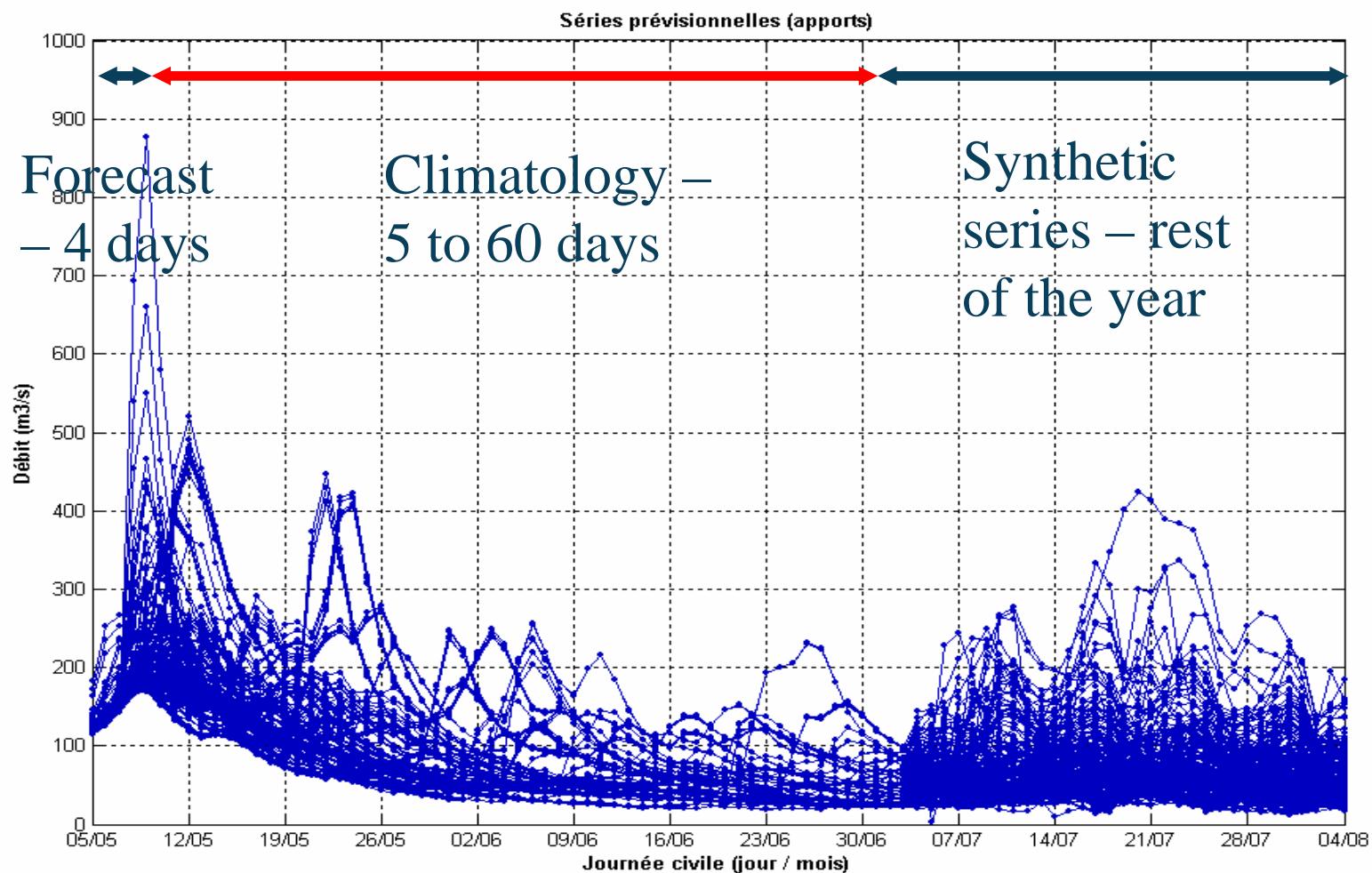
Application of SGP to Kénogami River Basin



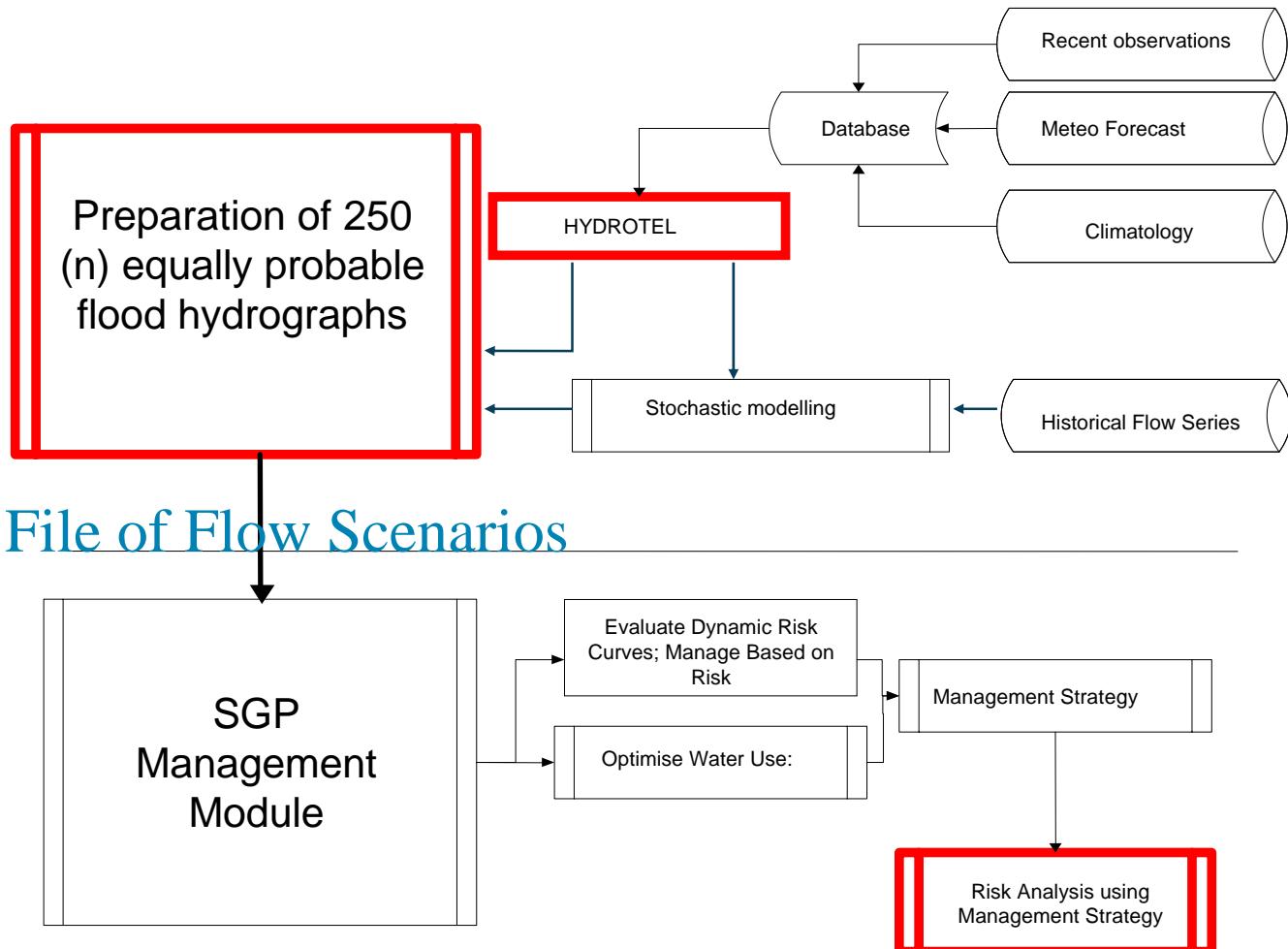
- Division of watershed into 619 hydrologic units (UHRH)
- DB with real-time levels at 3 river stations and the reservoir
- DB with real-time meteorological data at 5 stations
- Hydrologic simulation (3h time step for days 1 to 4 and 24h time step for up to 365 days)



Generation of 250 Flow Scenarios



Overview of the SGP

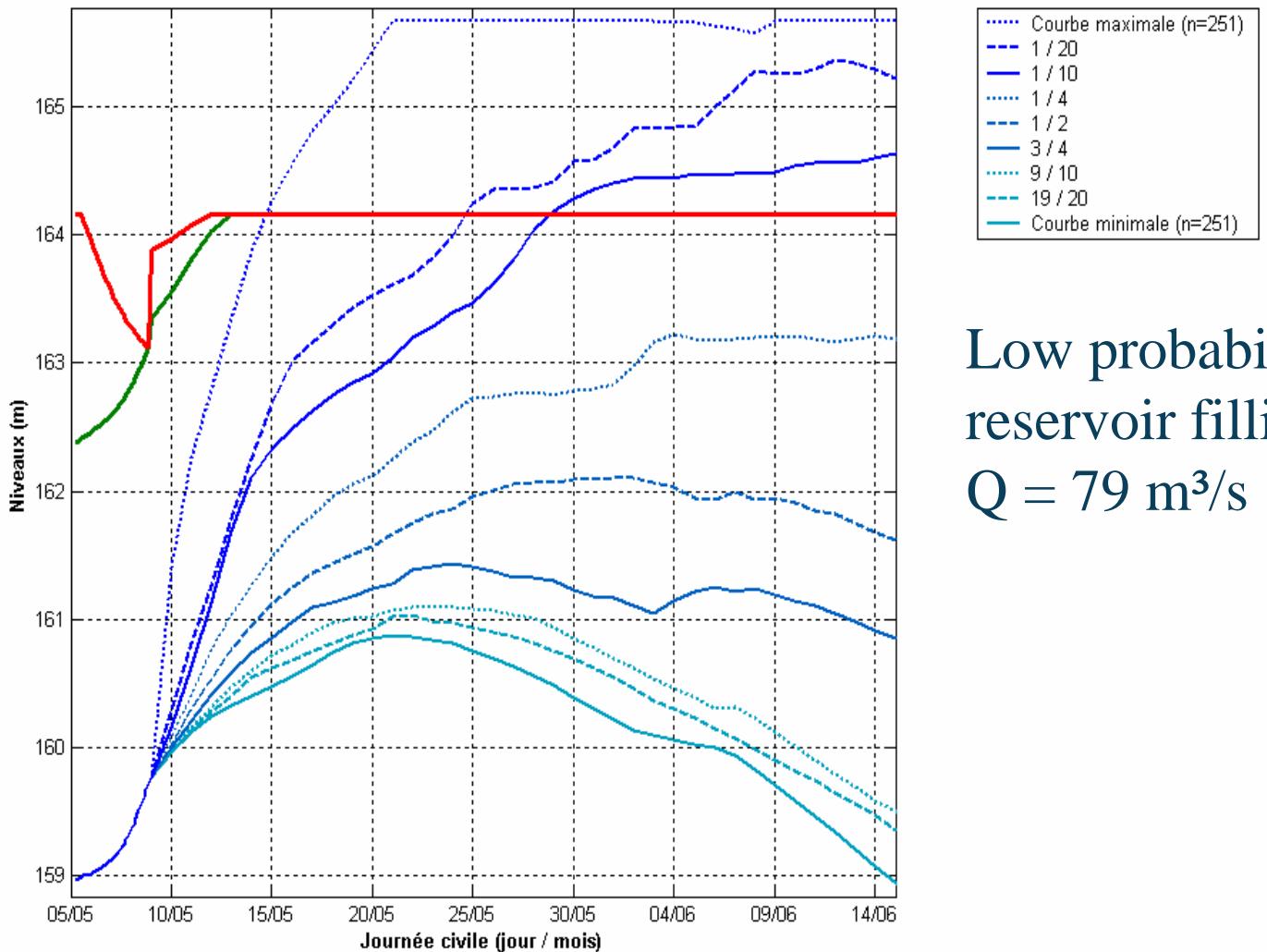




Risk analysis

Risk of attaining or exceeding MWL at Q = 79 m³/s

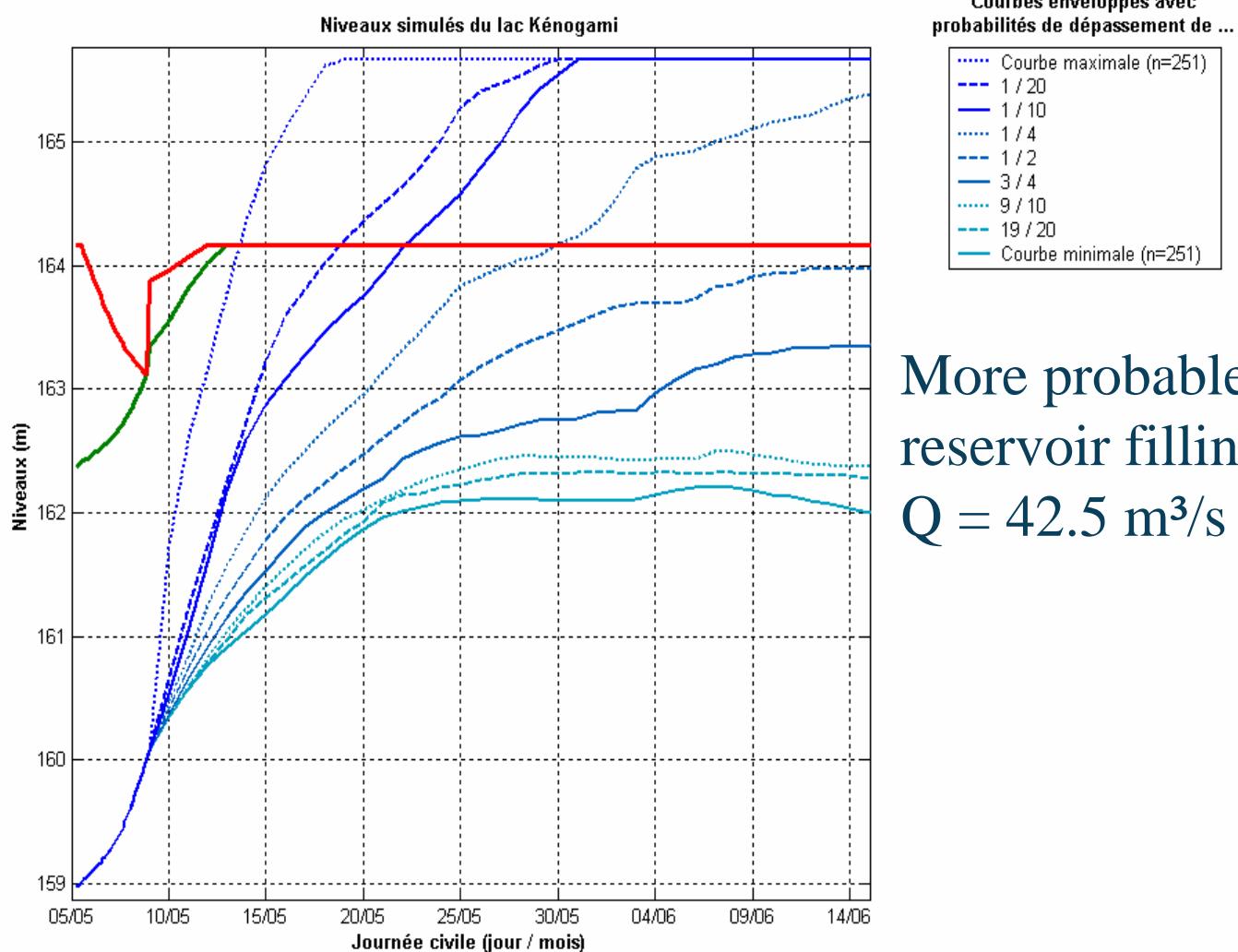
Niveaux simulés du lac Kénogami



Low probability of reservoir filling for
Q = 79 m³/s

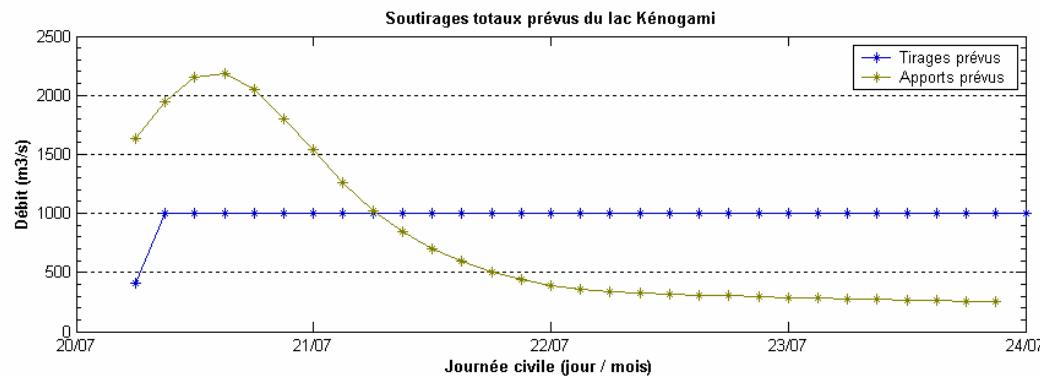
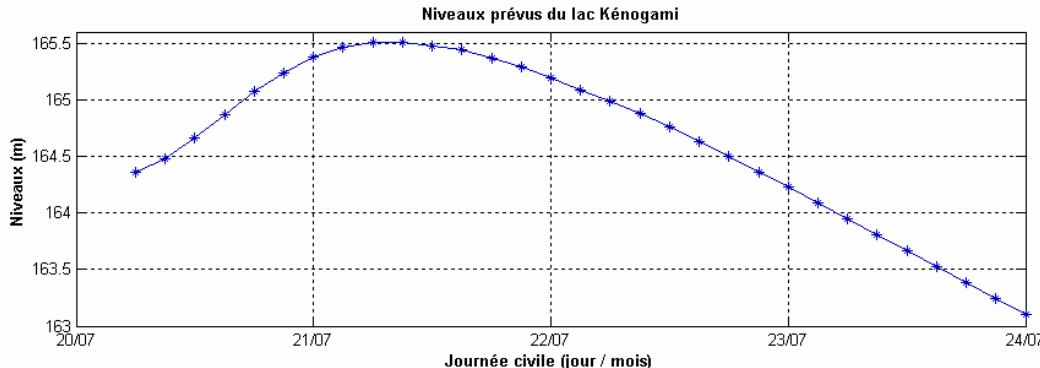
Risk analysis

Risk of exceeding MWL at Q = 42.5 m³/s



Damage Risk Analysis

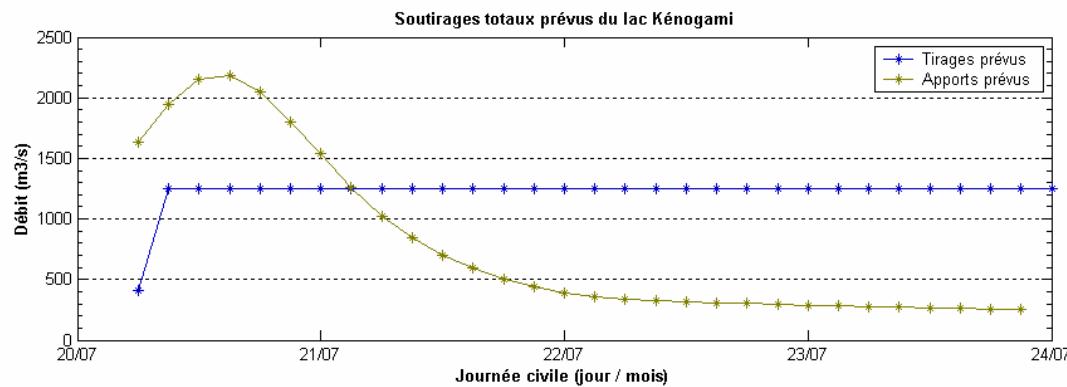
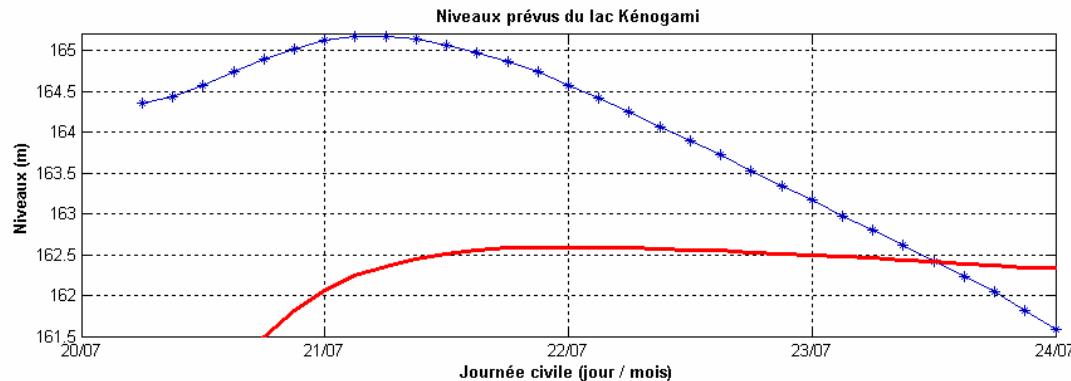
20 july 6h00 (tirage = 1000 m³/s)



- ◆ Maximum Water Level: 165.51m
- ◆ Outflow released: 1 000 m³/s
- ◆ Estimated Damages: 3.0 M\$

Damage Risk Analysis

20 juillet 6h00 (tirage = 1250 m³/s)



- ◆ Maximum Water Level: 165.17m
- ◆ Outflow released: 1 250 m³/s
- ◆ Estimated Damages: 8,775 M\$

Overview of the SGP

