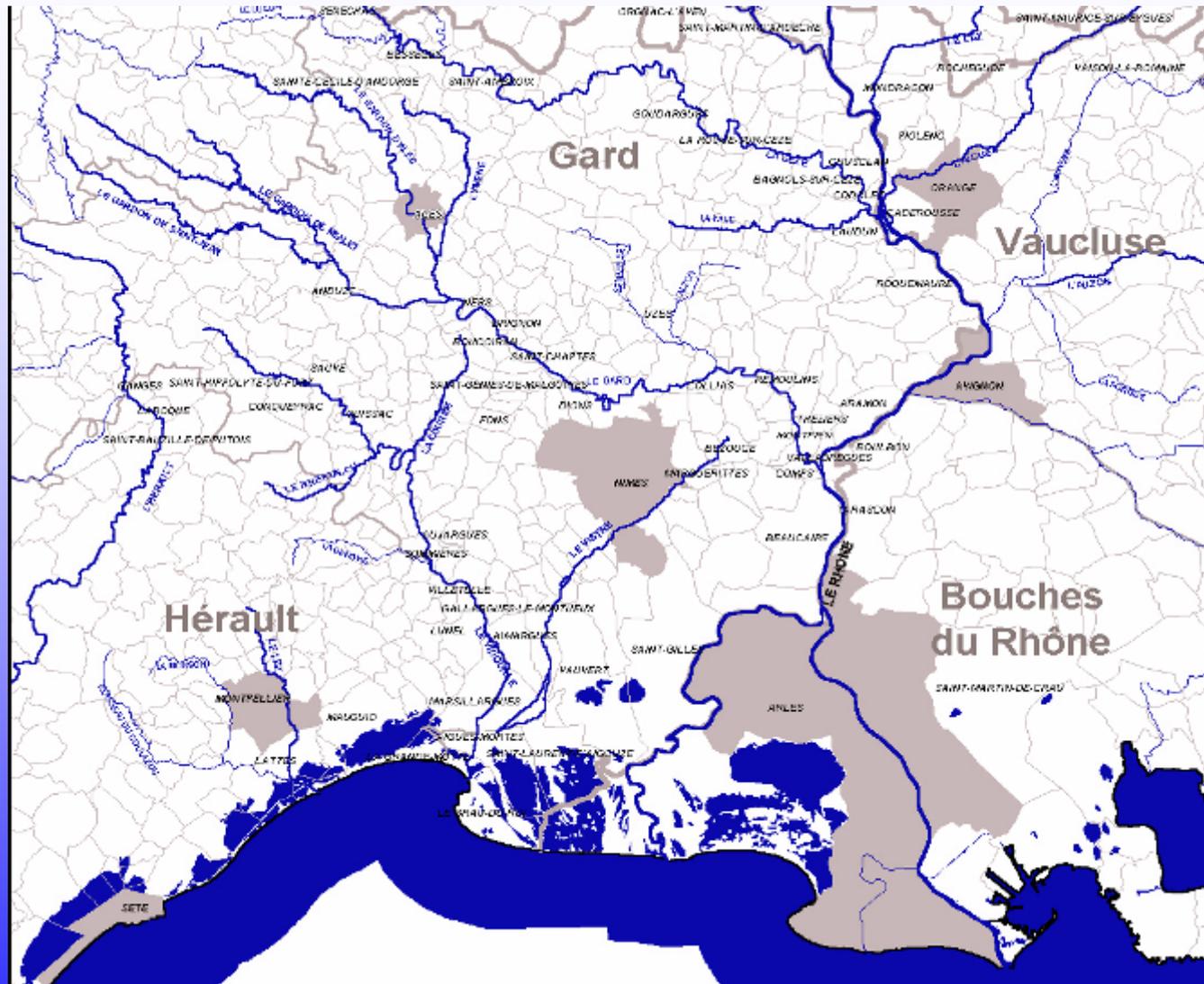
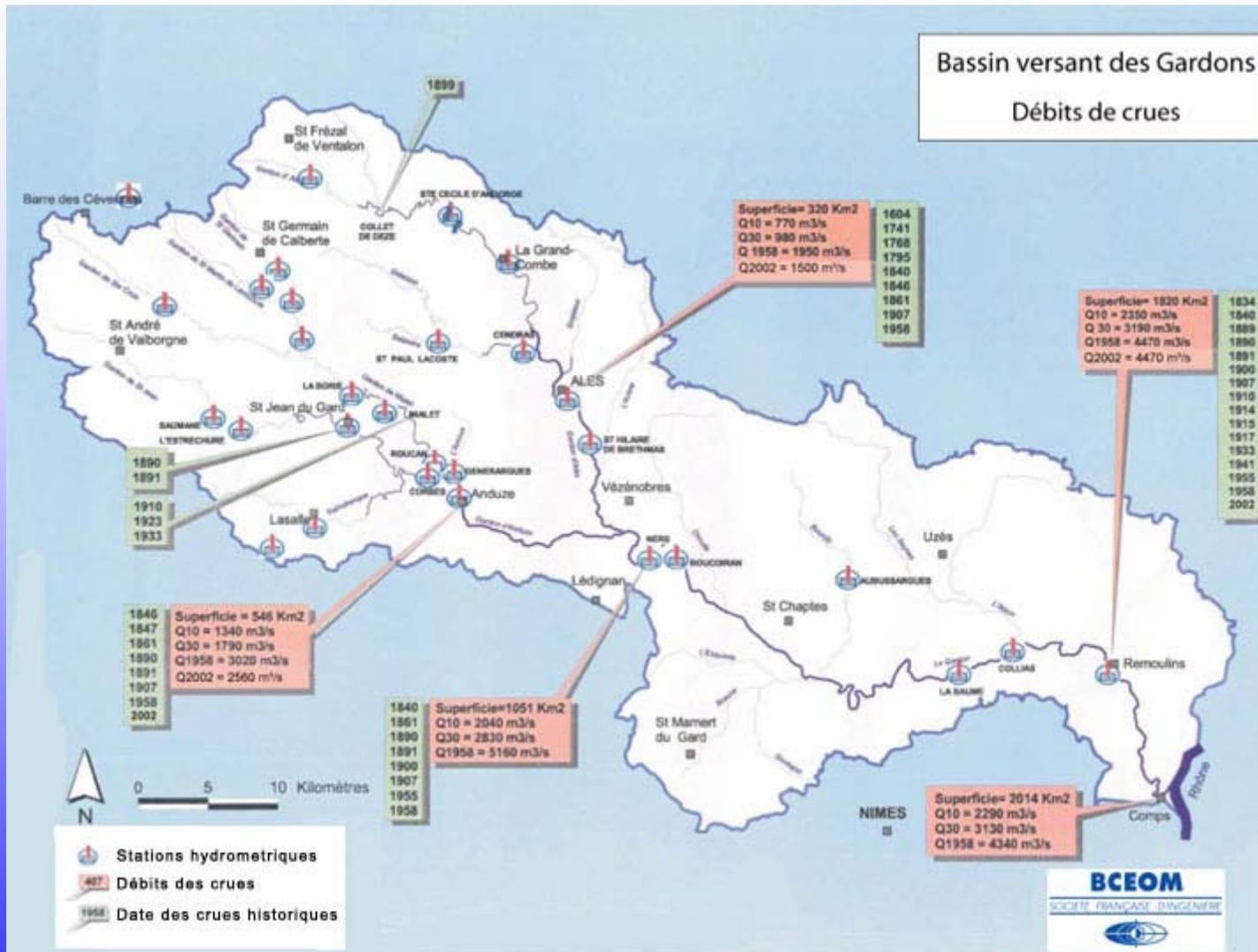


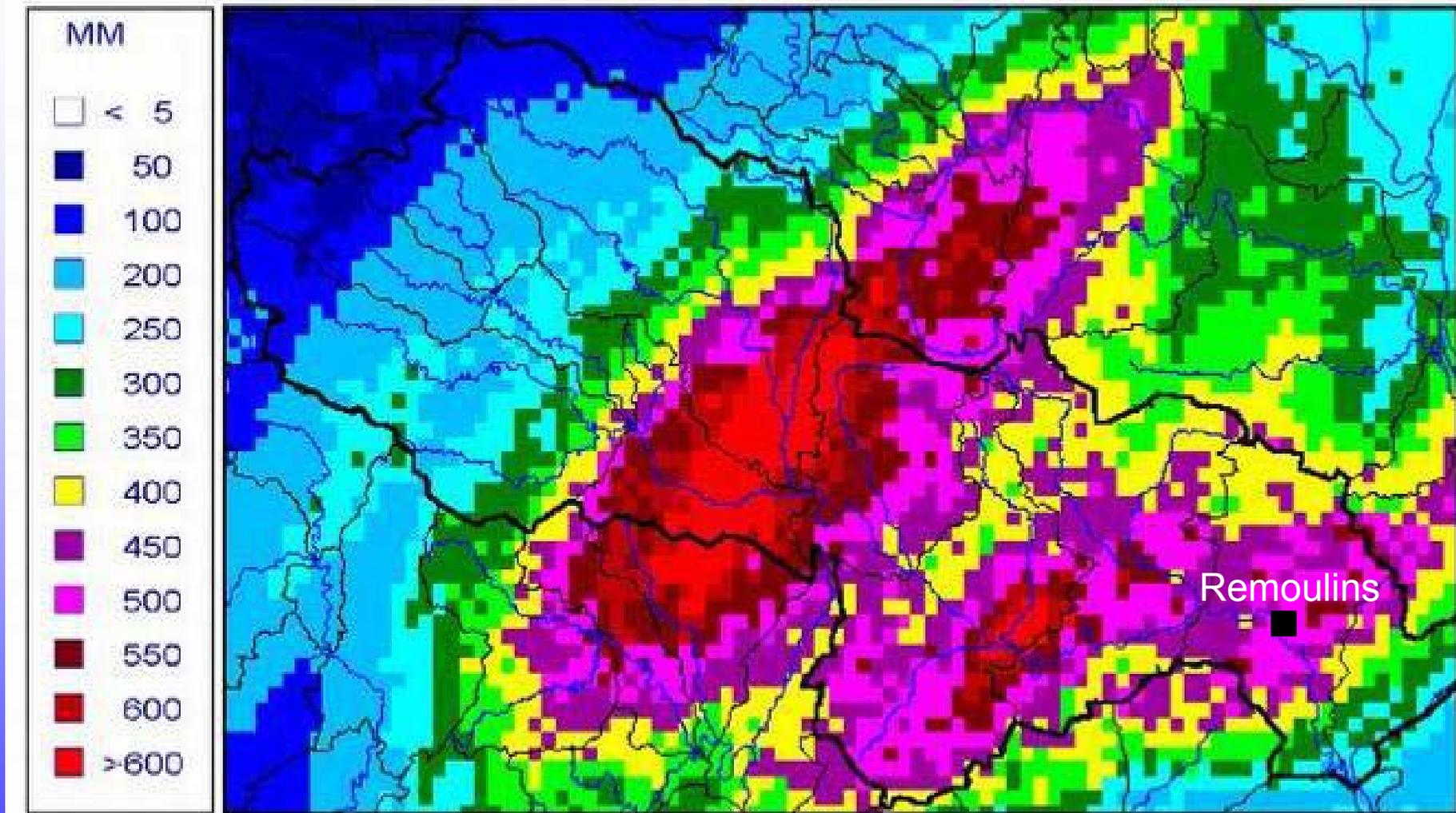
Exceptional flood of 2002, September 8th and 9th in Gard river, South France



Hydrological network of the Gard basin



TOTAL RAINFALL IN THE GARD BASIN

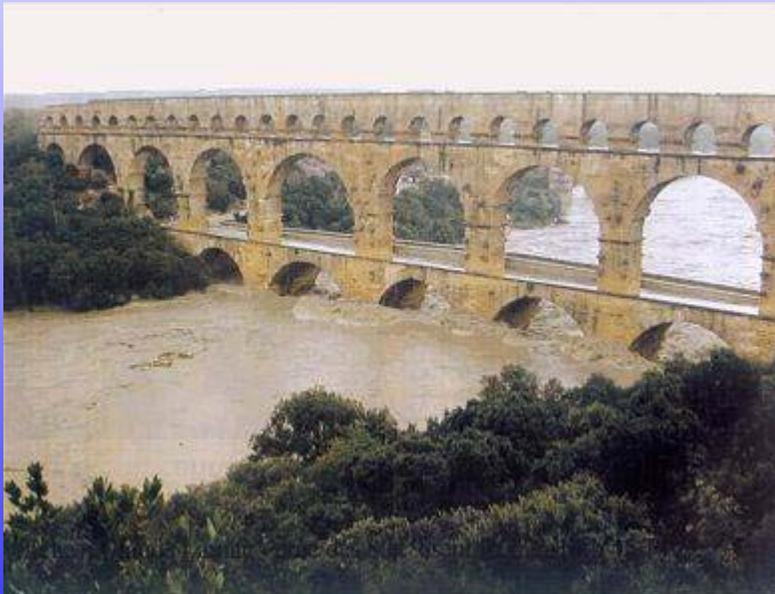


Cumulative rainfall on the Gard for the whole event 08/09/02 09:00 to 09/09/02 16:00



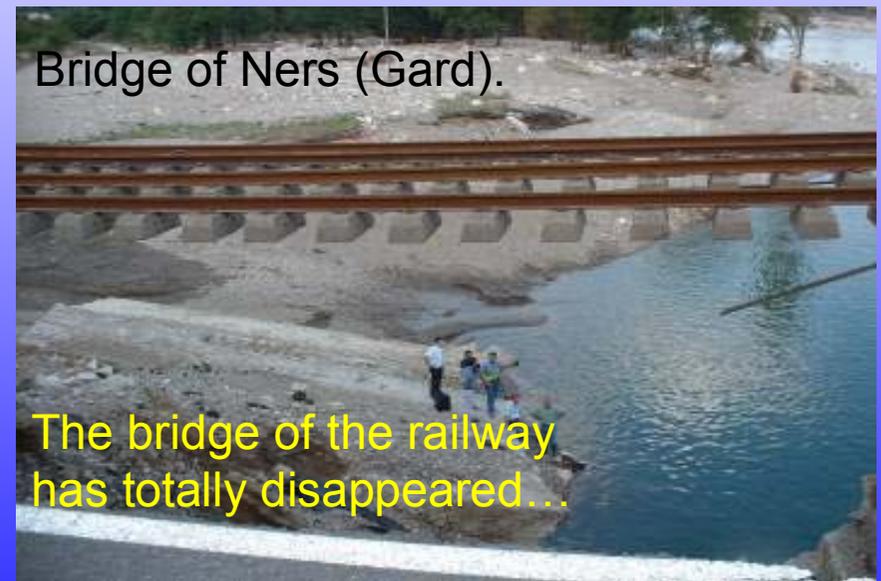
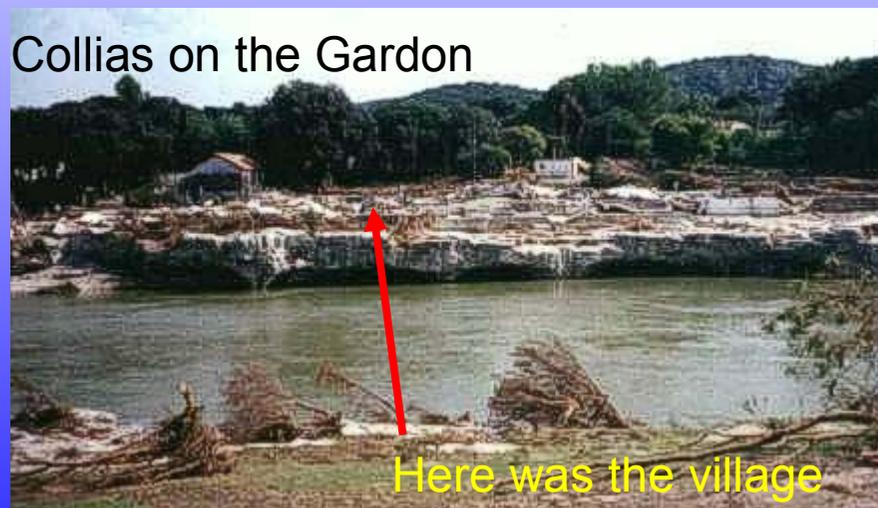
The famous roman aqueduct Pont du Gard

Normal conditions



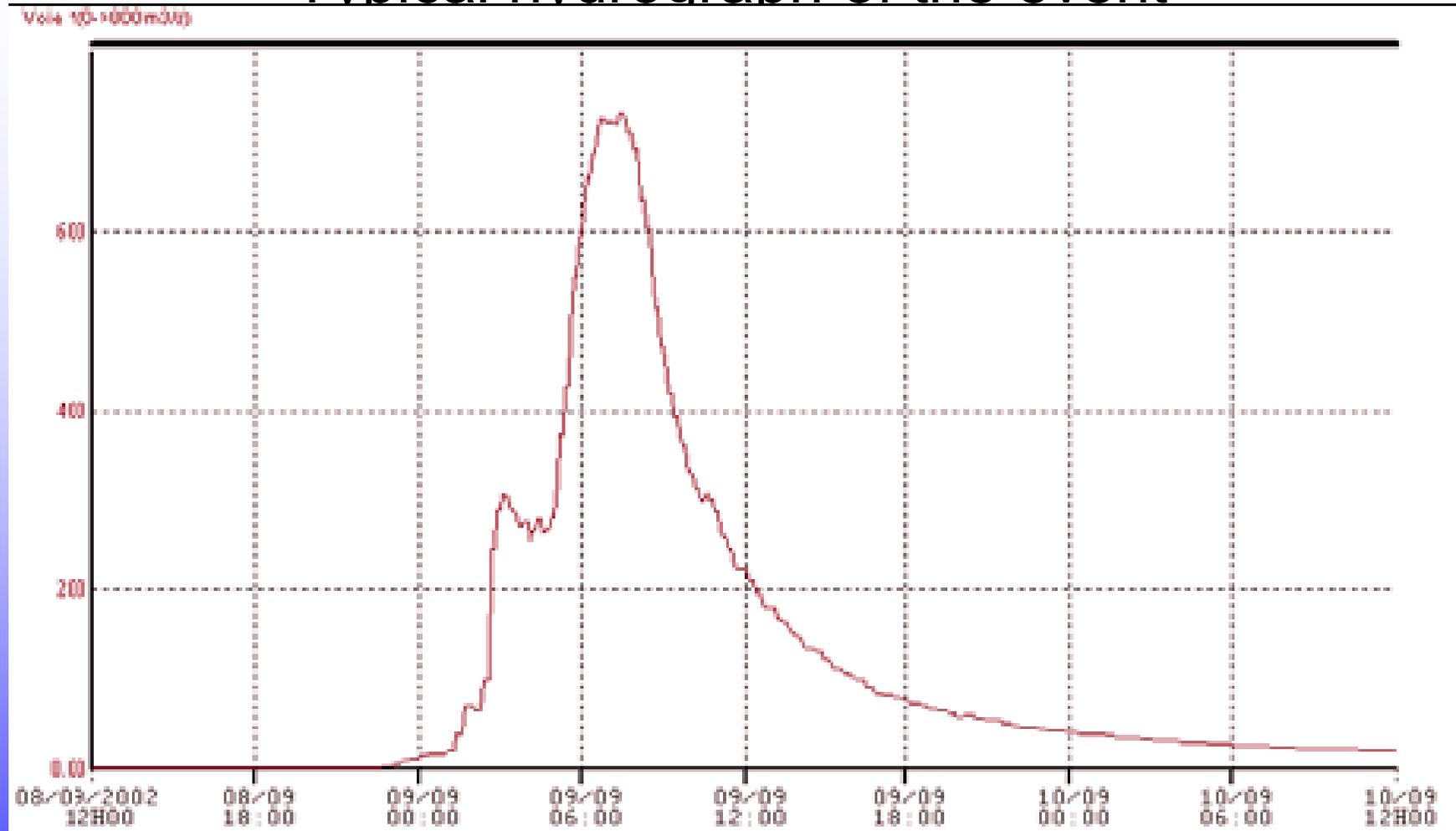
Monday 9th September 2002:
The water level is closed to top of the first
arch's level.
Build 2000 years ago, it was not damaged.

Some damages





Typical hydrograph of the event



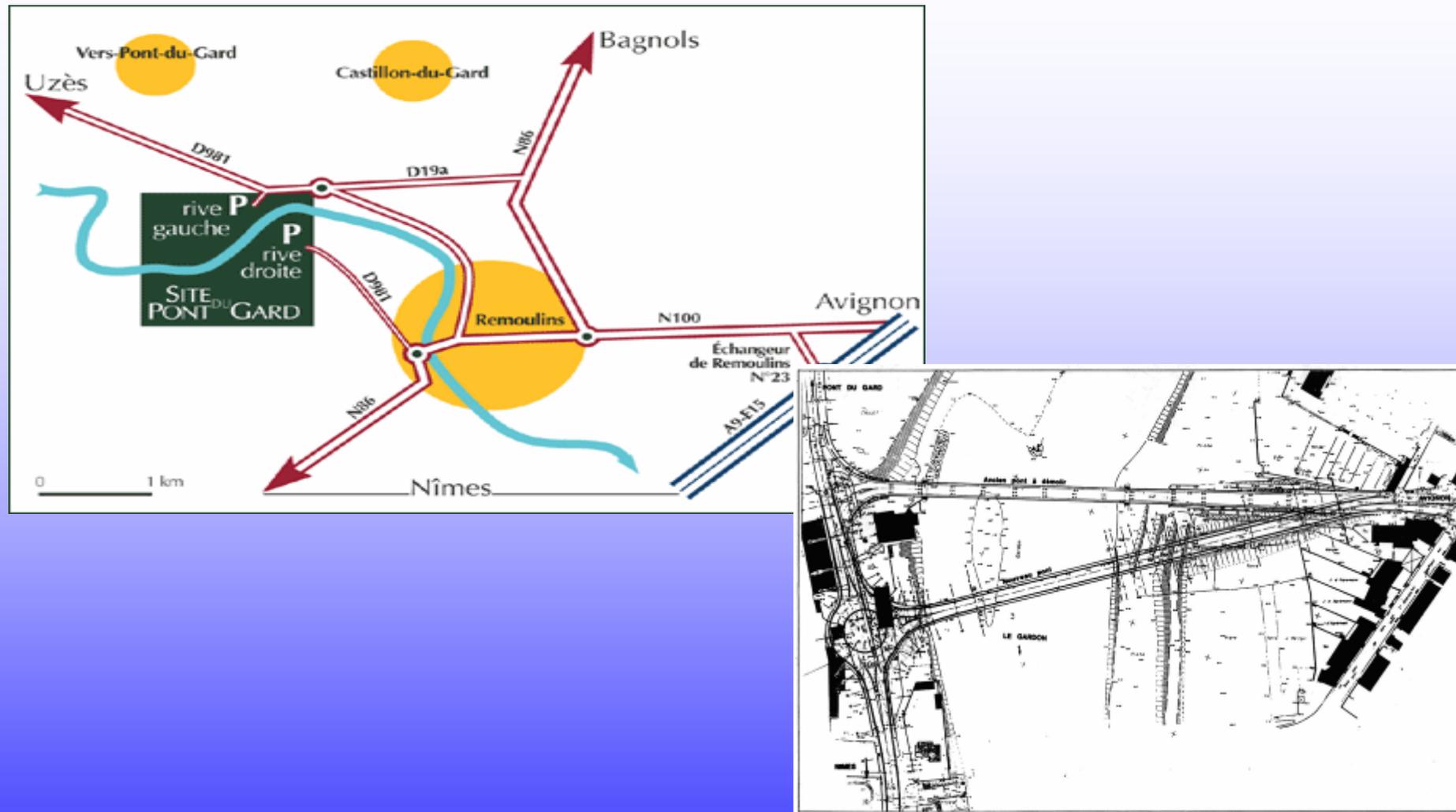
Water level recorded at the station of Mialet (upper Gardon, 240 km²)
Peak discharge is 730 m³ s⁻¹.

Field data collected



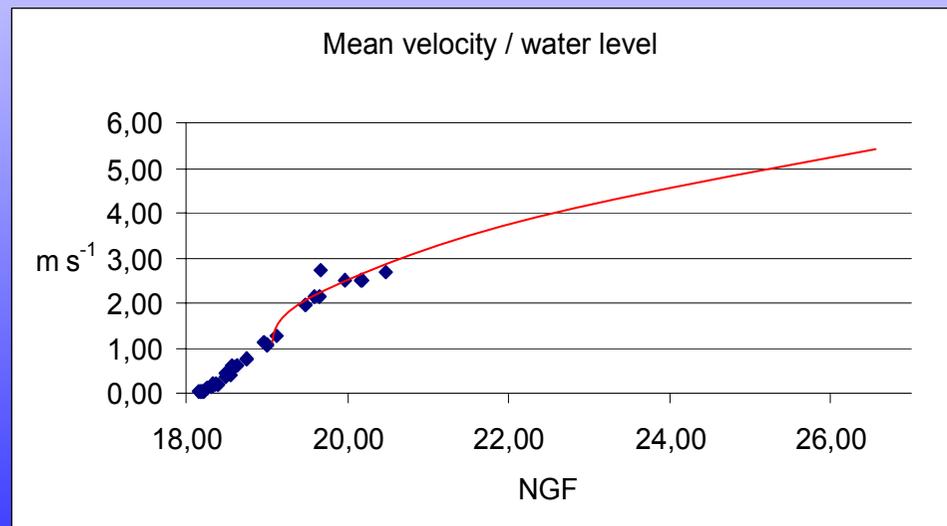
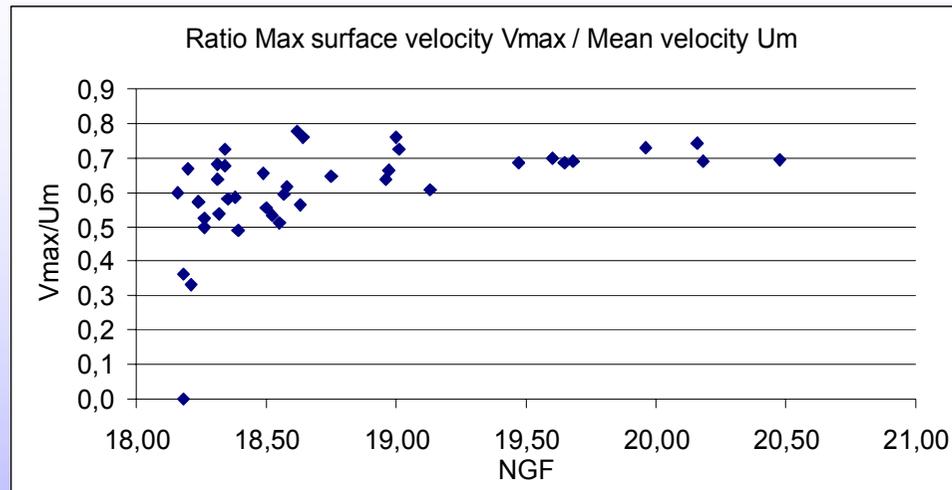
- Maximum level recorded (from AWLR): 26.72 m
- Staff gauge reference: 16.06 m
- Level of the balcony: 25.0 m
- Max level on the house: 26.7 m
- Slope: 1.7 m km⁻¹
- Surface velocity: 5 – 6 m s⁻¹ (CNR estimation)

General situation

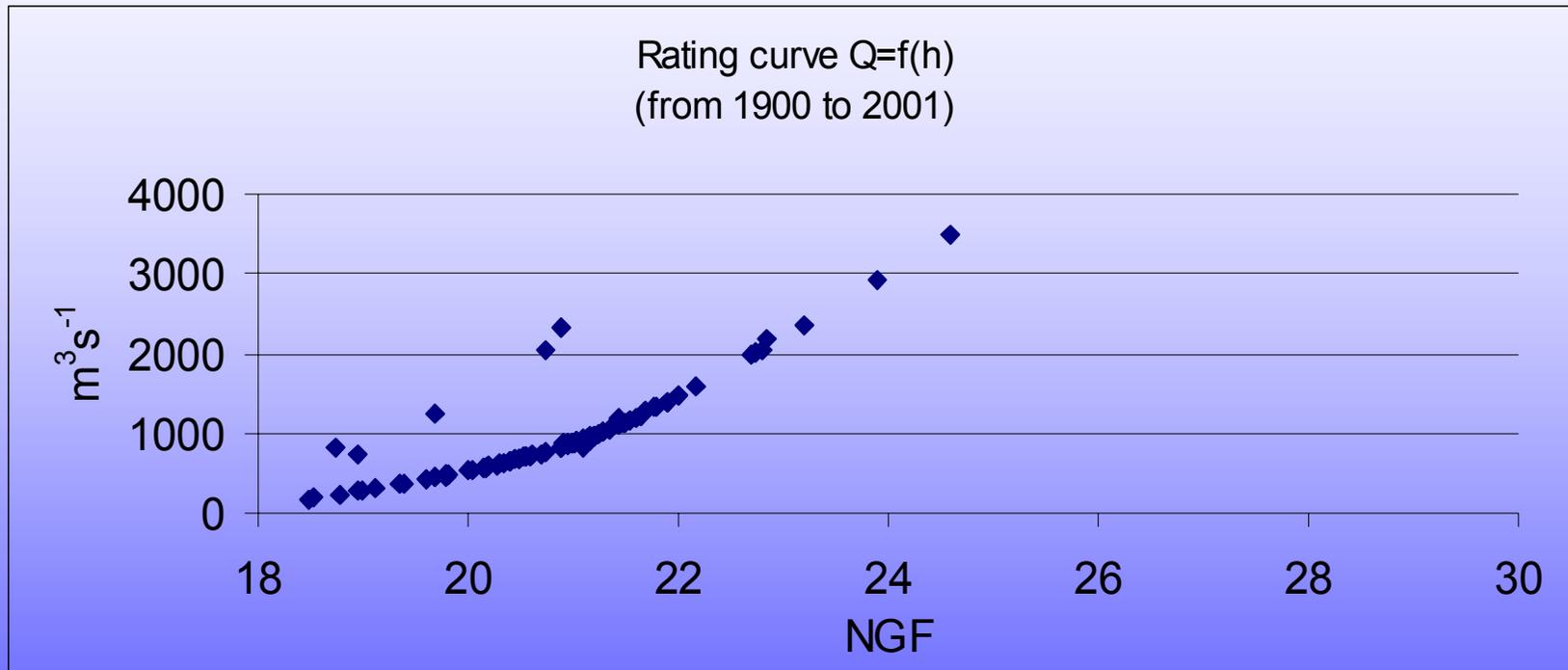


Bridge downstream the village is a good control station

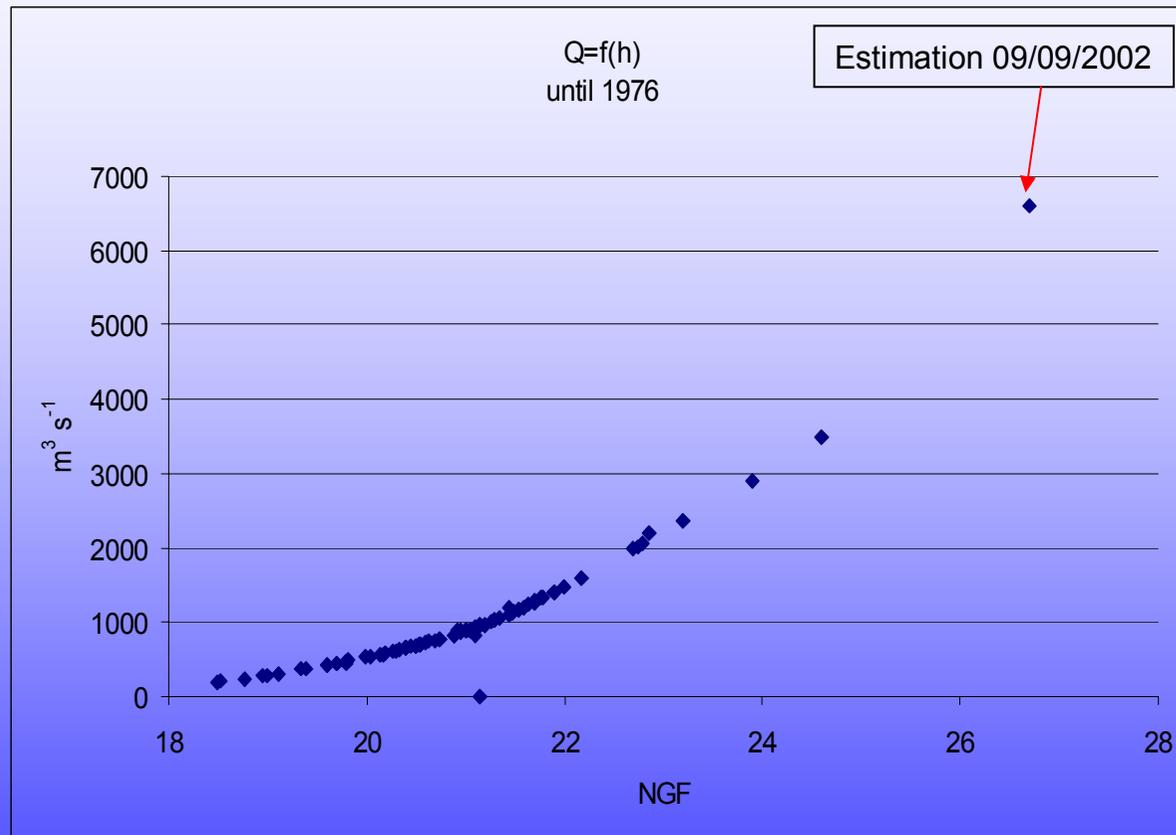
Second estimation of discharge

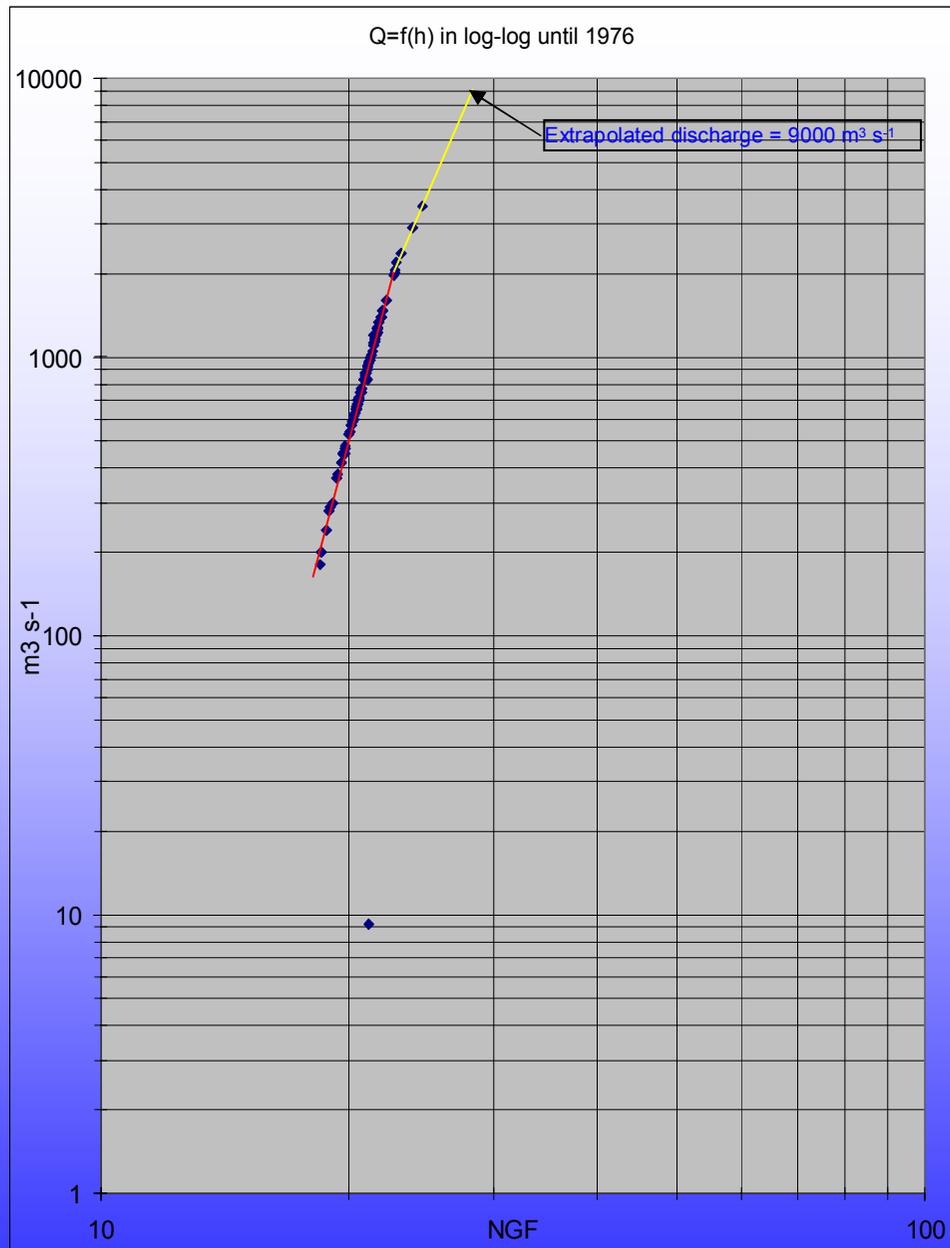


Rating curve



Rating curve





Log-log graph
showing the
change in the
slope

As conclusion

- Simple tools (topography, velocity correlation...) give a good estimation of the peak discharge;
- Results can be produced quickly;
- Allow a better estimation of the damages (volume of sediments,...);
- Estimations by models are in the same range :
 - Specific discharges for upper basin range from 20 to 30 m³ s⁻¹ km⁻²
 - Specific Peak discharges reached more than 35 m³ s⁻¹ km⁻².
- But still estimation and not measurement.
- Last point: the cost of rehabilitation (cleaning, restoration...) is approximately 5 millions euros.