

Multi-decadal variations of the hydrological cycle over France through the 20th century

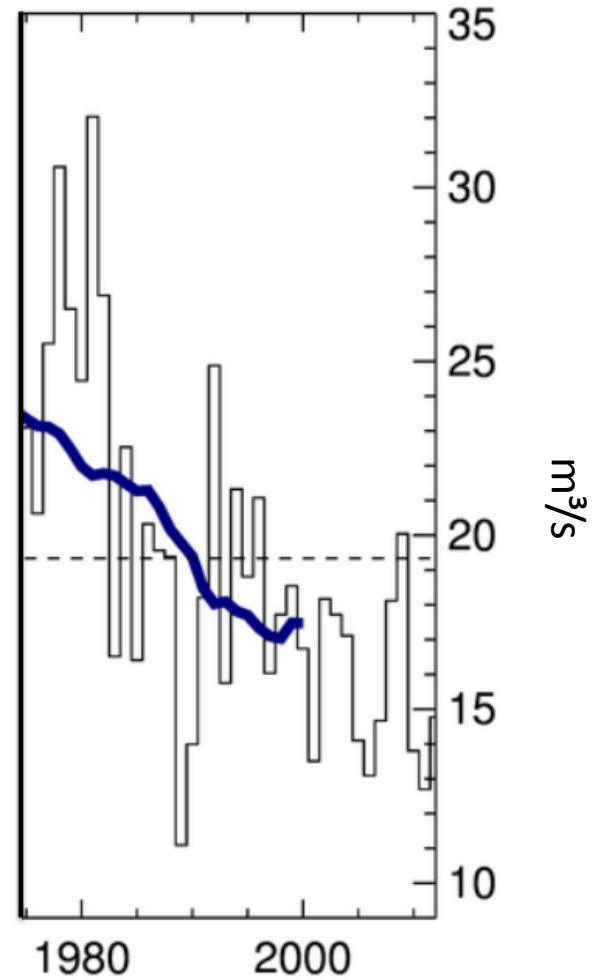
Rémy Bonnet

Supervisors: Julien boé, Laurent Terray

GLOBC team

Annual river flows of the Gave D'Ossau at Oloron (Pyrenees)

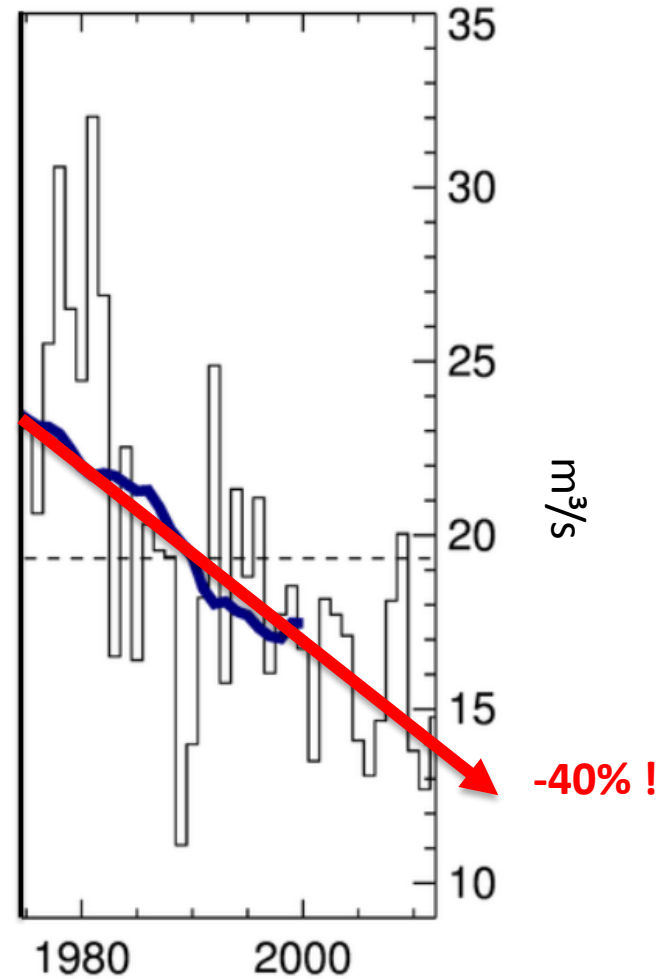
Period : 1975-2012



Annual river flows of the Gave D'Ossau at Oloron (Pyrenees)

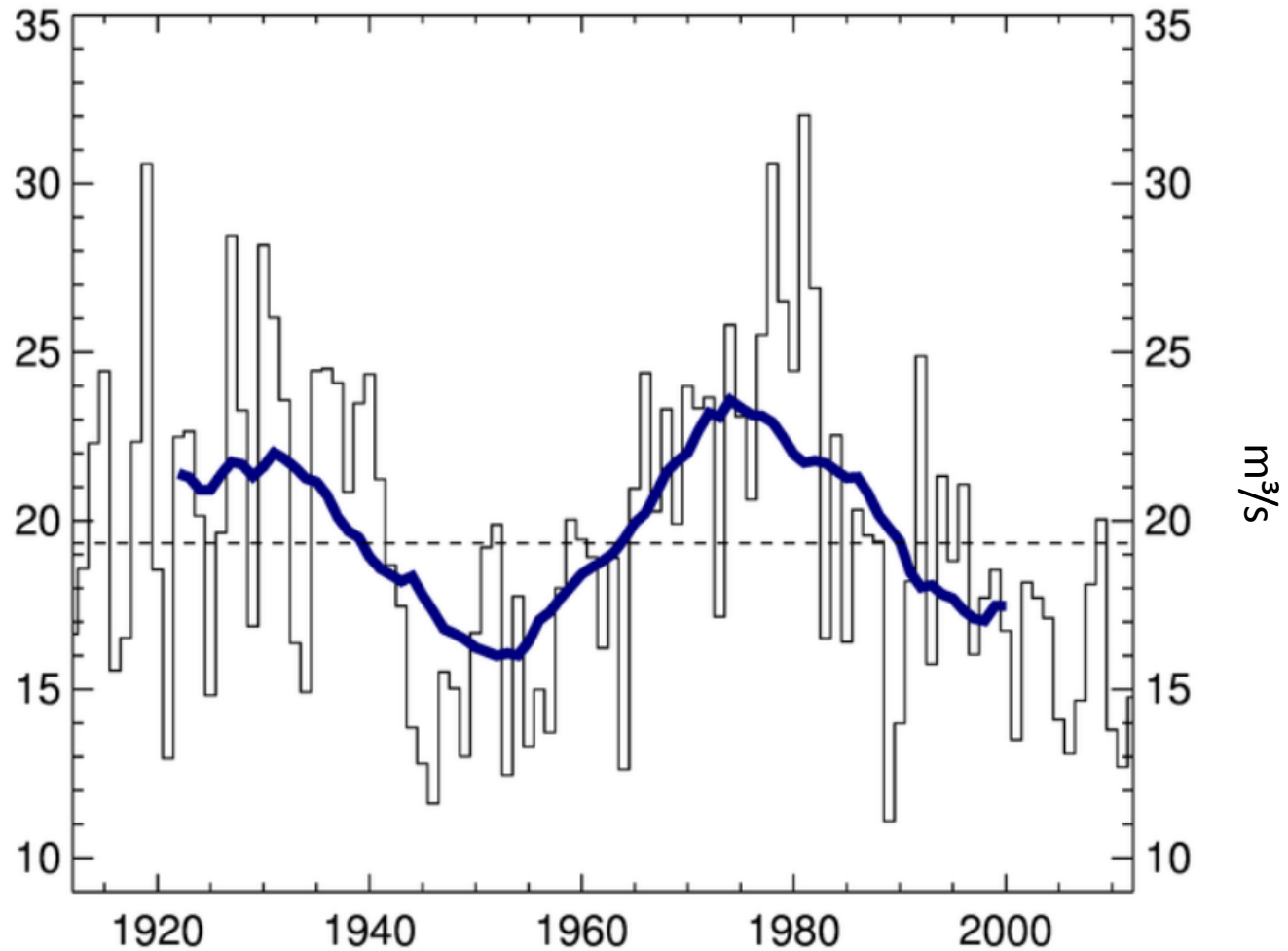
Period : 1975-2012

Giuntoli et al., 2013

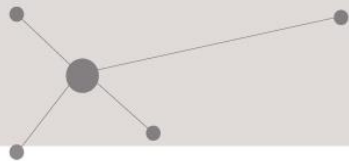


Annual river flows of the Gave D'Ossau at Oloron (Pyrenees)

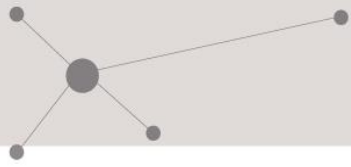
Period : 1900-2012



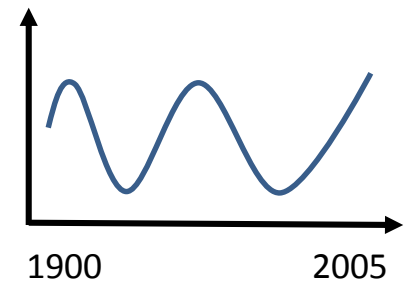
Boé et Habets, 2014

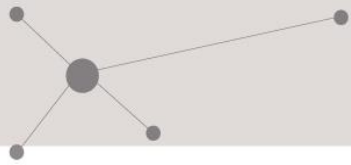


- How to explain the multi-decadal variability of the French river flows?
- What is the role of the internal climate variability versus the anthropics forcing (GES/aerosols) in these variations ?
- Can climate models and associated hydrological projections reproduce this type of variability? And if not, why?



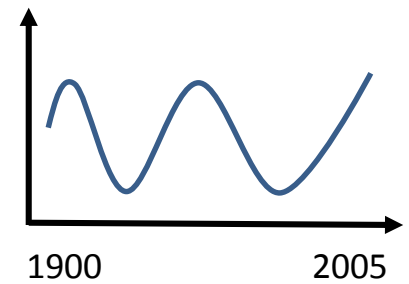
Long-term observations





**Hydrological
simulations (high
resolution)**

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Long-term observations

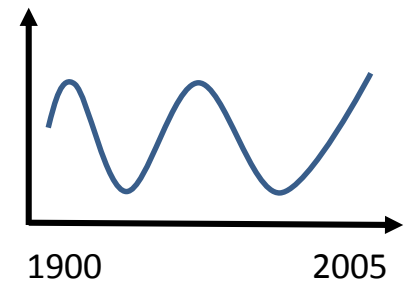


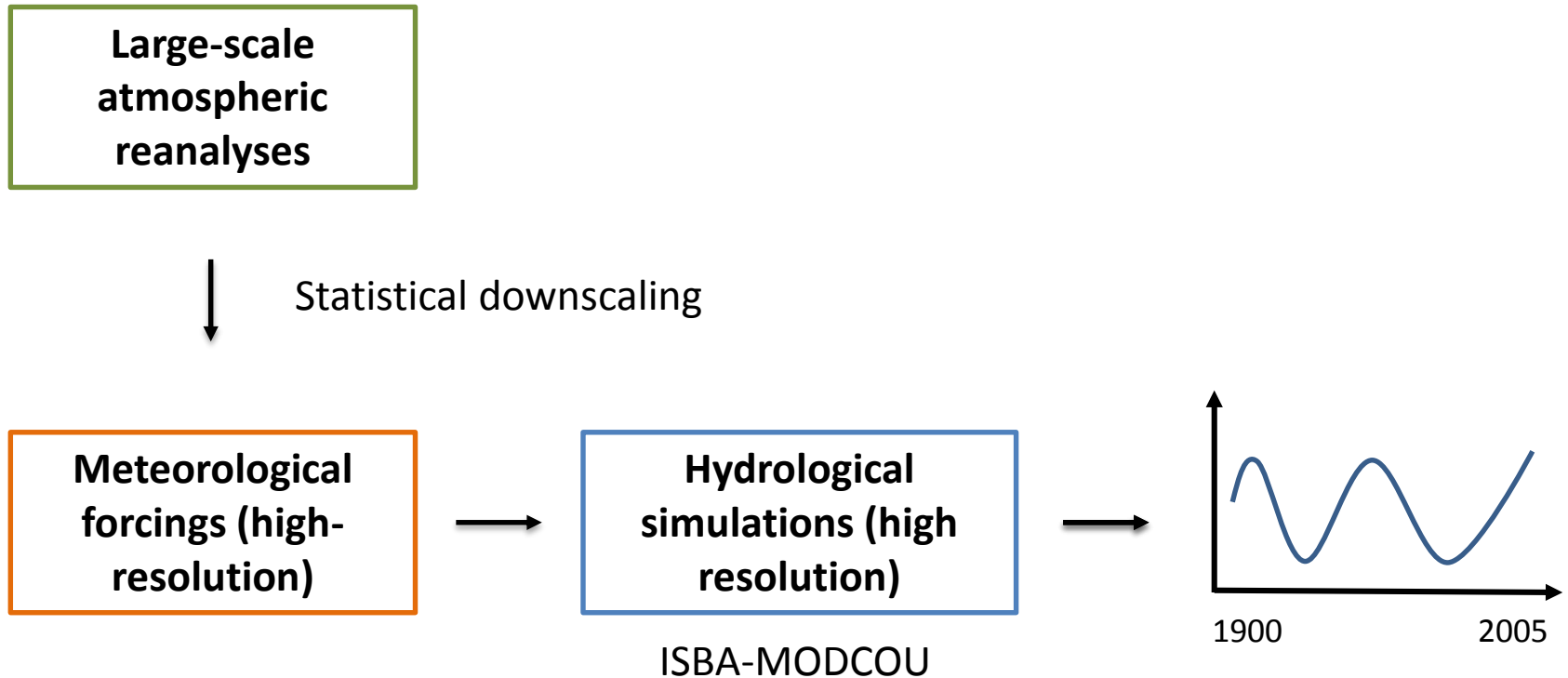
Meteorological forcings (high-resolution)



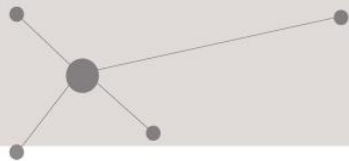
Hydrological simulations (high resolution)

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Dayon et al., 2015



Large-scale
atmospheric
reanalyses



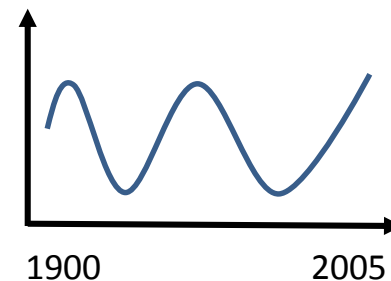
Statistical downscaling

Meteorological
forcings (high-
resolution)



Hydrological
simulations (high
resolution)

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→ Study of the low-frequency variability of the French hydrological cycle