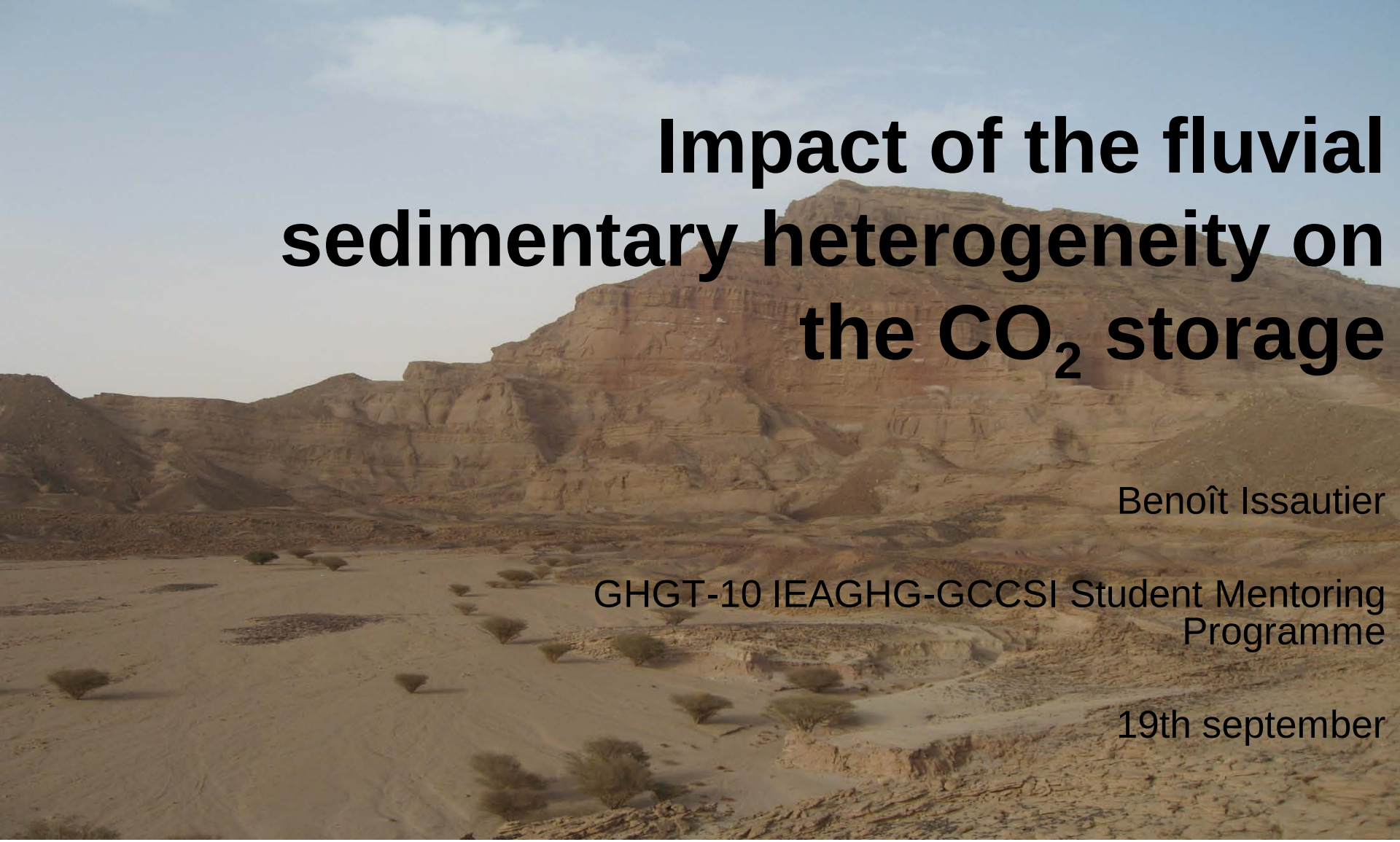


Impact of the fluvial sedimentary heterogeneity on the CO_2 storage

Benoît Issautier

GHGT-10 IEAGHG-GCCSI Student Mentoring Programme

19th september

Geoscience for a sustainable Earth
brgm
gSRC
Université de Provence EA 4234
Géologie des Systèmes et des Réservoirs Carbonatés
ADEME

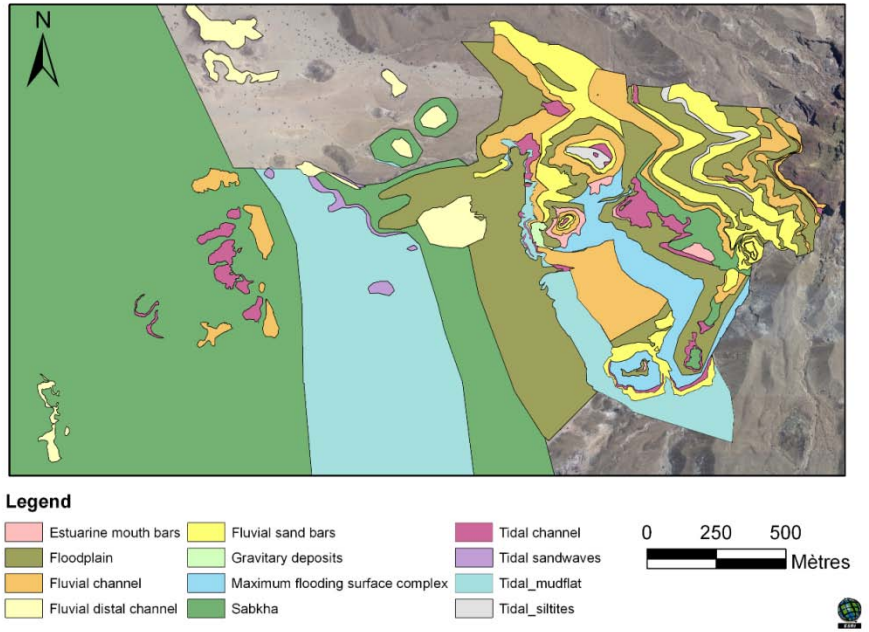
Introduction

- Started in october 2008
- Financed by :
  - The French Energy Agency (ADEME)
  - The French Geological Survey (BRGM)
- Universitary Laboratory : Laboratory of Carbonate System and Reservoirs from Aix-Marseille
- 3 domains involved in the project :
  - Sedimentology
  - Geomodelling
  - Flow modelling

→ Study the fluvial heterogeneity and show how they may decrease peformance of CO2 geological storage.

Field Work (year 1)

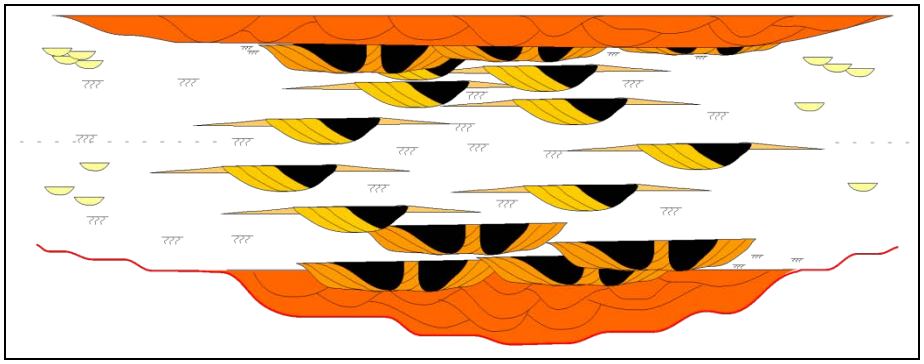
- Formation :The Minjur Sandstone in Saudi Arabia.
- Purposes :
  - Reservoir Characterization
  - Diversity of the sedimentary bodies
  - Connectivity
  - Geological model

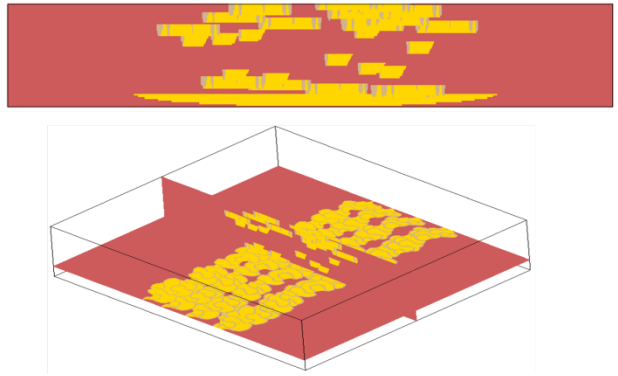


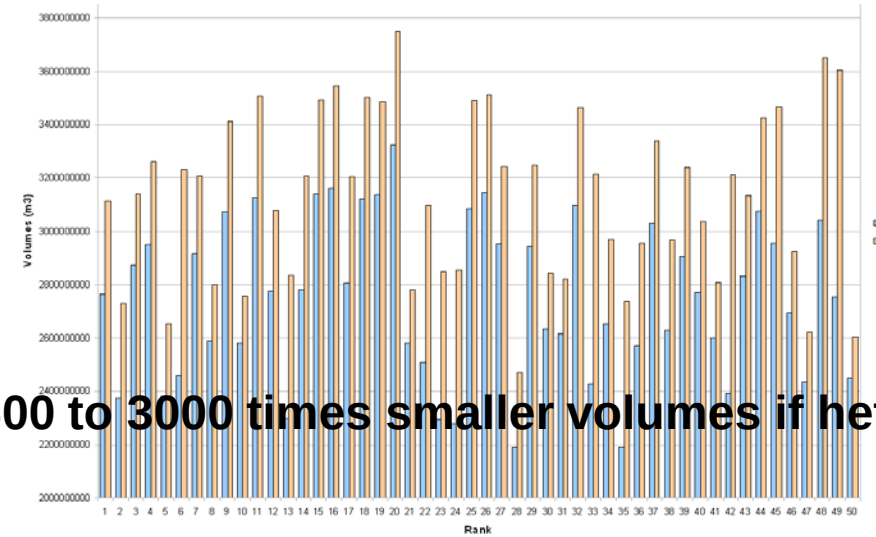
- *Communication at GeoBahrein 2010*
- *Article in process for GeoArabia*

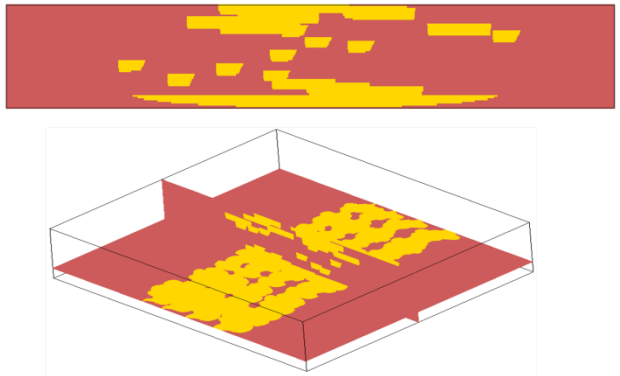
Geological Modelling (year2)

- From a conceptual model, build architectural models accounting for heterogeneities.
- Study the impact of the heterogeneities on the compartmentalization of the reservoir.
- Reproduce the geological concept through “classical available methods” and with rare data (often critical in deep saline aquifer projects).





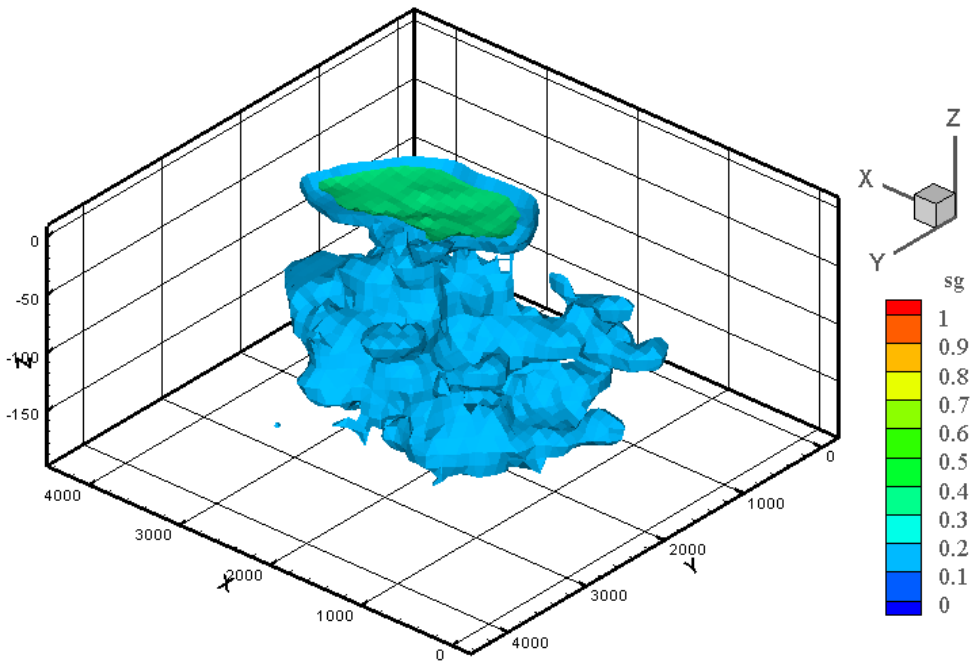


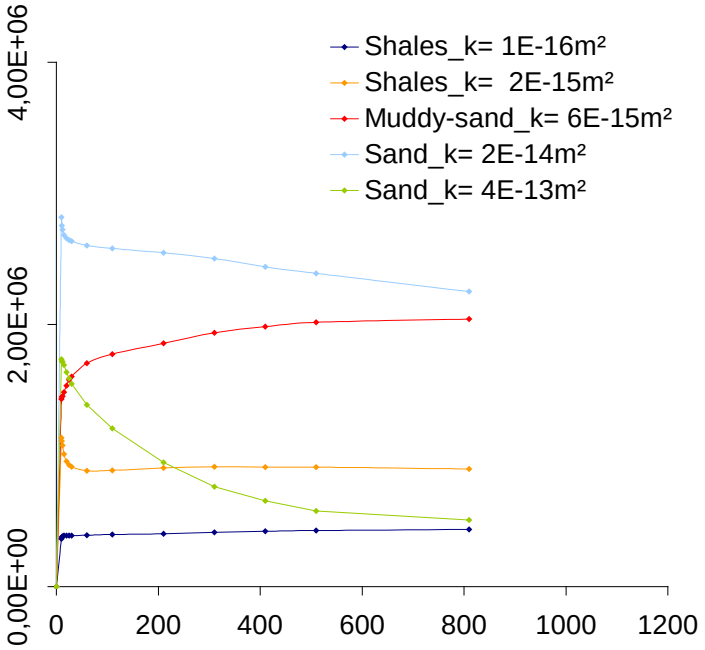


600 to 3000 times smaller volumes if heterogeneous

Flow simulation (year3)

- Impact of the heterogeneities on the injectivity and capacity of the reservoir
- Comparison of flow simulation in key models selected through statistical analysis





Issautier et al., 2008 (University of Nice, internship report)