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Session 2 - Occupation of territories and population mobility

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A transdisciplinary approach to reconstruct the Nilotic socio-ecosystem in Luxor west bank during the Ptolemaic period (4th-1st centuries BC.)

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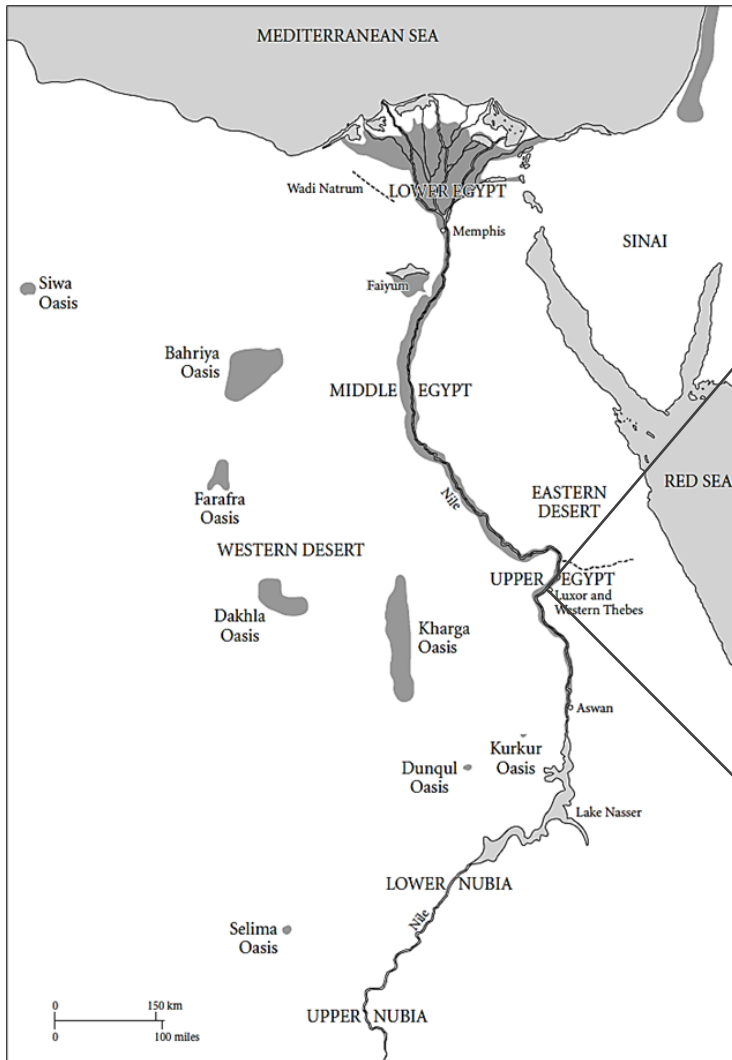
C. Petit, Professor, Université Paris I Panthéon-Sorbonne, UMR 7041 ArScAn, Équipe “Archéologies environnementales”, France

Presentation of my formation

- **2010/2012: Master's Degree in Classical Letters, University of Milan**
 - Master's thesis in Egyptology
- **2012/2013: Master in Preventive Archaeology, University of Siena (Italy)**
 - Dissertation in computer science applied to Egyptology
- **2017/2018: Master 2 in Environmental Archaeology, University Paris I Panthéon - Sorbonne**
 - Dissertation: The intersection of demotic and geomorphological data: study of the environment of the west bank of Luxor (Egypt) during the Ptolemaic period
- **2019-present: PhD in Environmental Archaeology at the University Paris I Panthéon-Sorbonne**

Study area: Luxor west bank and the Memnnoneia in the Graeco-Roman period

- Ptolemaic period: from 332 BC to 0



— Study area

Sources: on the left, Map of Ancient Egypt, Bard 2015, p. 48; on the right, the study area, Google Earth Pro, 25/02/2021

Available data for the study area



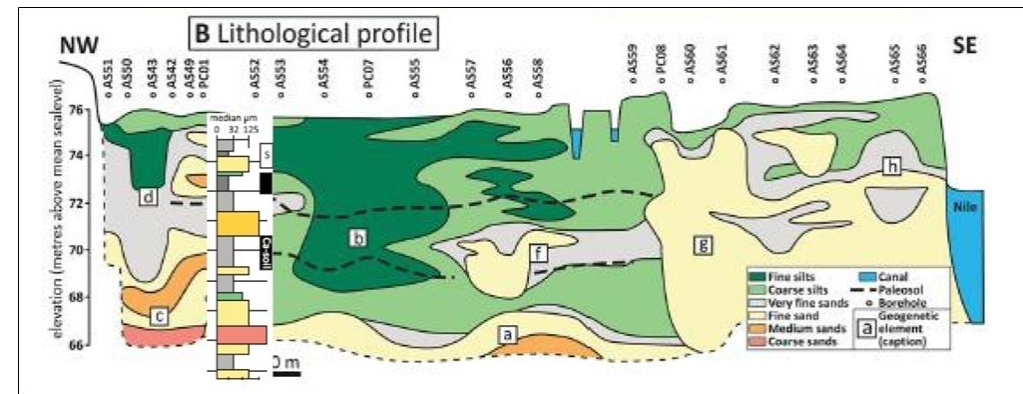
Carte de Thèbes, Jollespin, Description de l'Égypte, V. II, planche 19, 1821-1829



Google Earth Pro, 30/01/2018



Landsat image of the Thebaid, <https://landsat.gsfc.nasa.gov/>



Lithological profile of the west bank of Thebes, Toonen, Graham, Georchaeology 2017, p. 6

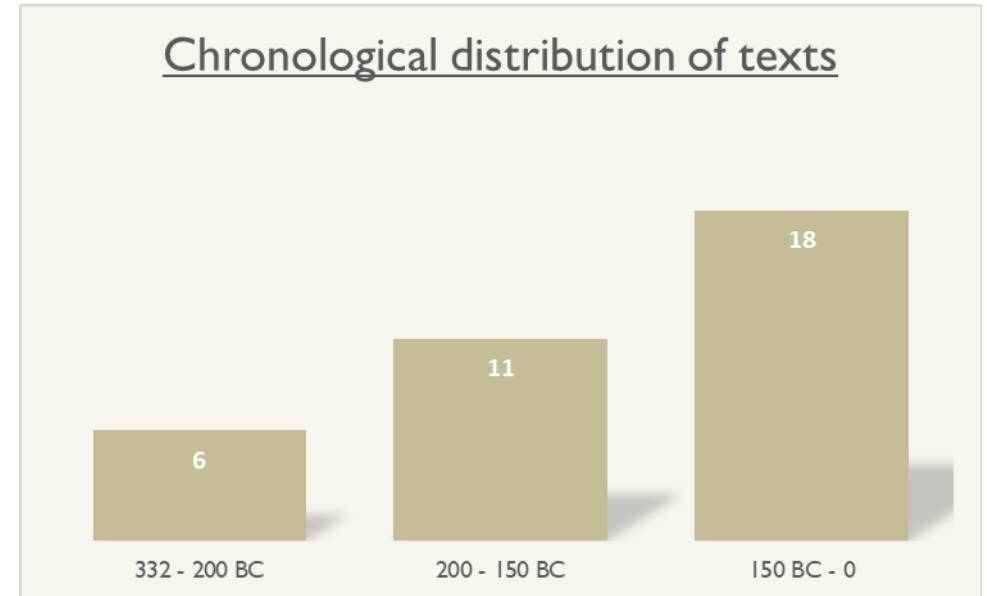
Issues approached through cross-referencing of data

- How was the river managed?
 - Management analysis of all water resources; the Nile's dynamics
- How was the agricultural exploitation of the plain structured?
 - Identification of the network of irrigation canals; soil and subsoil analysis; location and size of fields mentioned in the contracts
- What form the organization of the settlement takes?
 - limits of the village of Djeme; relating to the landscape all the topographical elements cited in the papyri

 Achieving a detailed description of the **overall evolution** of the socio-ecosystem of the study area and not only of an isolated archaeological site

Selected data for the analysis

- **33 Demotic and 2 Greek land sale and lease contracts:**
 - from 332 B.C. until the end of the first century B.C.;
- **maps of the west bank of Luxor:**
 - from the *Description de l'Égypte* (Royal edition, 1821-1829) to the most recent satellite and aerial images;
- **geoarchaeological data:**
 - geomorphological data already acquired by other archaeological missions
 - geophysical mapping of the plain that we planned.



An example of the methodology: lexicographic analysis

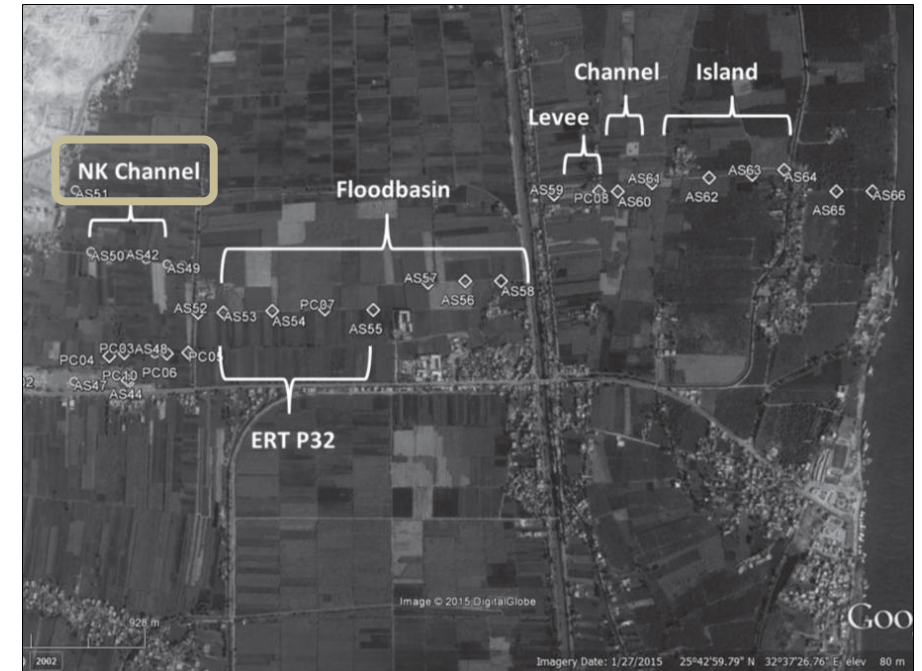
- Combining papyrological and geophysical data



P. Botti 4, land lease, photo by Egyptian Museum, Turin, february 2019



<p><i>N t3 s.t-mnꜥ.t dꜣs rsy p3 m3 n Dm3 mhtꜥ</i> <i>imnꜥ n3 wh.w n t3 b3.(t) n Is.t Bꜣt p3</i> <i>myt n Pr 3 .w.s.</i></p>	<p>(...) of the dovecote in its entirety: to the south, the canal of Djémê; to the north and west, the wastelands of the sacred place of Isis; to the east, the road of the souverain</p>
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Graham et alii, JEA 2015, p. 43

An example of the methodology: georeferencing modern maps



Figure 1. P. Jacotin 1821-1829
Georeferencing a geographical map

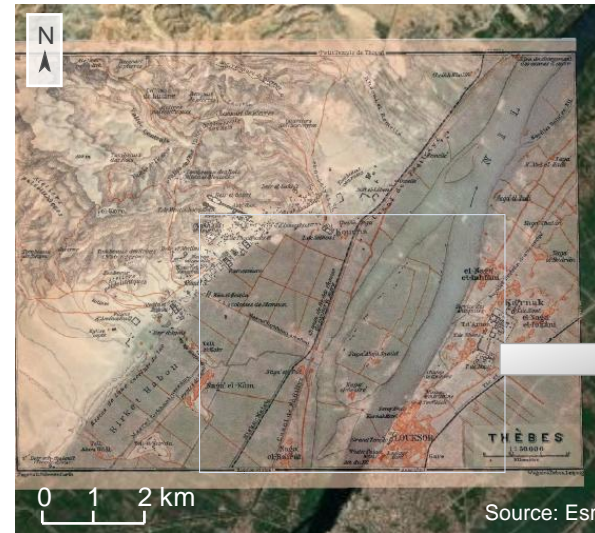
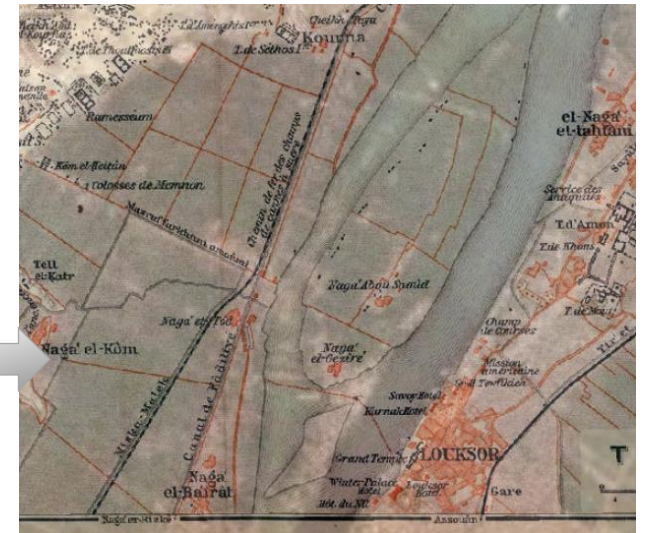


Figure 2. G. Schweinfurth, 1914
Georeferencing a topographical map



- Methodology: georeferencing and comparing maps with GIS tool
 - Comparing the human/environmental changes produced over the course of a century
 - Understanding the evolution of the *Memnoneia* sector and how the agrarian reform of Muhammed Ali changed the environment

Geoarchaeological part of the project

- Using existing data



Toonen et al., 2018, *Geoarchaeology* 33, p. 276

1) An inscription in the Temple of Karnak (east bank, Luxor) mentions a sacred mound, also called the "Mound of Djeme," from which water flowed before the Nile flooded.

"The great entrance to the "Noun Cave" [= the underground waters] on the west bank of Heaven (= Thebes) at Khefetherennebes.

2) Herodotus, II, 93, 5: "[...] the hollow parts of the country and the lagoons parallel to the river begin first to fill, the water coming from the Nile by infiltration. »

- Acquiring new data

- Three-dimensional geometry of the alluvial forms
 - Mapping of the electrical conductivity of the plain



Device EM31-MK2 - www.georeva.eu

Conclusions

- **Reconstruction of the microtopography of the region during the Ptolemaic period**
 - Visualization as complete as possible through a geographic information software

- **Future perspectives**
 - Applying the methodology in others part of Egypt presenting the same abundance and variety of data

Thank you for your attention!

Q/A Time