



HAL
open science

Geoarchaeological results on the Northern Peruvian coast: environmental changes and societal responses in the Sechura Desert during the last two millennia.

Aurélien Christol, Matthieu Carré, Nicolas Goepfert, Patrice Wuscher, Vittori Cécile, Philippe Bearez, Valentin Mogollon, Belkys Gutierrez

► To cite this version:

Aurélien Christol, Matthieu Carré, Nicolas Goepfert, Patrice Wuscher, Vittori Cécile, et al.. Geoarchaeological results on the Northern Peruvian coast: environmental changes and societal responses in the Sechura Desert during the last two millennia.. EGU General Assembly 2017, Apr 2017, Vienna, Austria. 19, Geophysical Research Abstracts. hal-01678585

HAL Id: hal-01678585

<https://hal.science/hal-01678585>

Submitted on 12 Jan 2018

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Geoarchaeological results on the Northern Peruvian coast: environmental changes and societal responses in the Sechura Desert during the last two millennia

Aurélien Christol¹, Matthieu Carré², Nicolas Goepfert³, Patrice Wuscher⁴, Cécile Vittori⁵, Philippe Béarez⁶, Valentin Mogollon⁷ and Belkys Gutierrez⁸

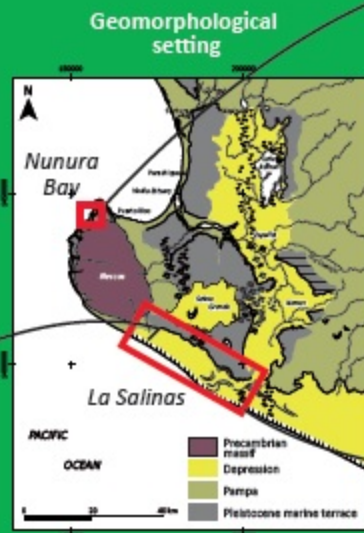
(1) Université Lyon 3 - EVS, Laboratoire EVS - UMR 5000 CNRS, Geography Department, France [aurelien.christol@univ-lyon3.fr], (2) Université de Montpellier: ISEM - CNRS, Montpellier, France, (3) Université Paris 1 - CNRS, Laboratoire ARCHAM - UMR 8096, Nanterre, France, (4) FAIR-Laboratoire LSP - UMR 8594 CNRS, Meudon, France, (5) Université de Strasbourg, Laboratoire LIVE - UMR 7362 CNRS, Strasbourg, France, (6) MNHN, Laboratoire Archéologie, Archéobotanique, Sociétés, Pratiques et Environnements, Paris, France, (7) Universidad Nacional Federico Villarreal, Lima, Peru, (8) Universidad Nacional de Trujillo, Trujillo, Peru

GEOGRAPHICAL SETTING

Various coastal configurations: small bays and vast depressions

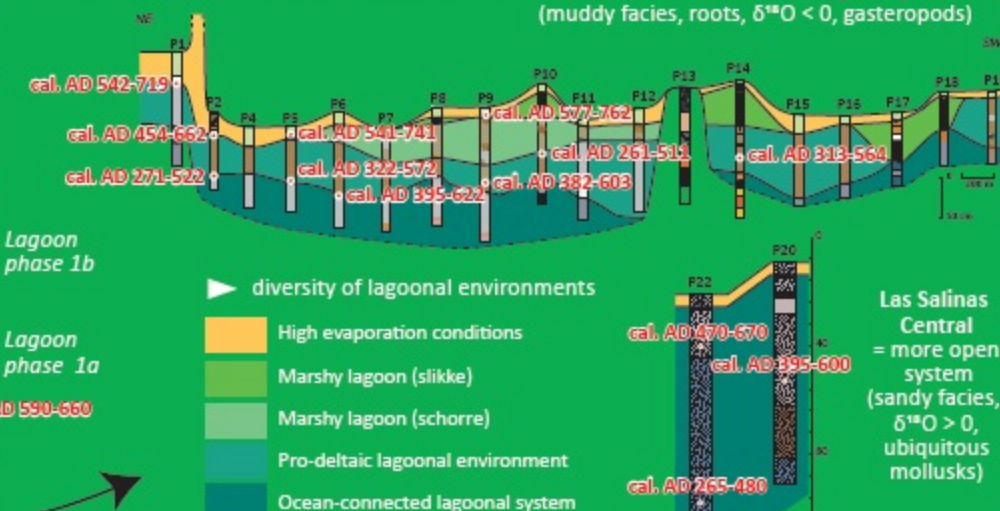


PALAEOLAAGOON RECONSTRUCTIONS



Morpho-sedimentary evidences

Las Salinas Noroeste (transect) = continental influenced marginal system (muddy facies, roots, $\delta^{18}O < 0$, gasteropods)



Archaeozoological evidences

Las Salinas-Bayovar-01

37 000 otoliths = warm water species: *Micropogonias atipinnis*, *Albula* sp.

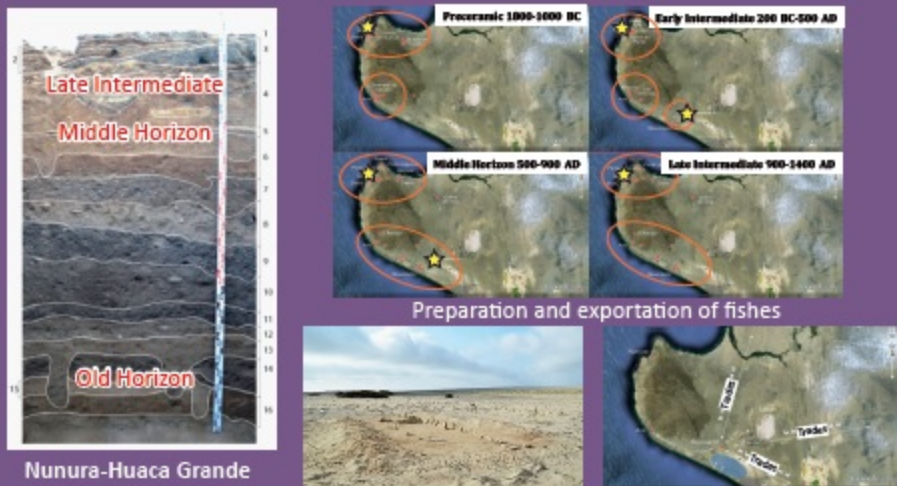


Active fishery

489-697 AD
 ↓
 651-766 AD

ADAPTED SOCIETAL RESPONSES

Continuous settlement of the western part of the Desert with perennial and opportunist sites



Radiocarbon datings

- Datings on «live position» shells
- Calculation of a local reservoir effect $\Delta R = -12 \pm 36$ years
- Correlations with archaeological ages

Palaeoenvironmental evidences

$\delta^{18}O$ (‰) on shells

P9 low	-1,107
P2	-0,750
P6	-0,560
P5 low	-0,451
P10	-0,307
P20	-0,161
P14	-0,083
P22 low	0,051
P22 top	0,075
P5 top	1,651

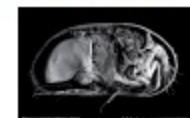
Freshwater inputs ++
 ↓
 Salinity ++

Mollusks determination



Cerithium muscarum
Ilioichione subrugosa
 → a «tropical» and mangrove-type fauna

Ostracods preliminary tests



Cyprideis torosa
 → brackish water species

SUMMARY OF RESULTS

During the 1st millennium AD...

- coastal environments different than today's ones → contrasts between vast lagoon and small lagoon >> variations of hydrosedimentary dynamics in specific palaeoclimatic context (wetter, ENSO events)
- adaptations of prehispanic populations → highest variability of resources (ENSO) in Las Salinas >> opportunist settlement → Perennial geosystems in Nunura Bay >> long and continuous cultural chronology

A SUITABLE PALAEOCLIMATE

Wetter conditions than today during the second part of the 1st millennium AD

Important input of continental water in the lagoonal systems
 Warm water supplies from the ocean («tropical» fishes)

