

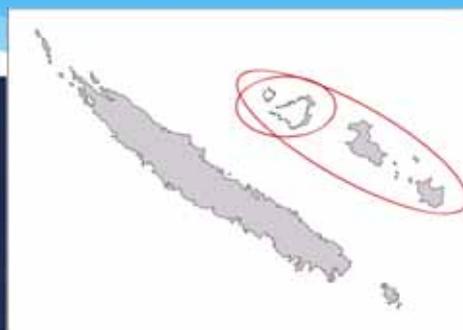
Shoreline evolution in Ouvea island (New Caledonia)

A diachronic approach using (past) long term data
A method for a middle term in field measurements for the future

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Ouvea





Method

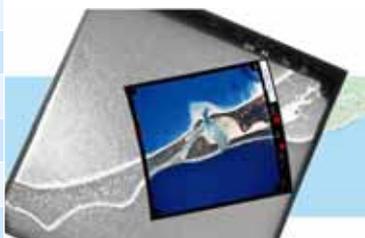
- * Two Steps
 - * First step: understanding long term shoreline dynamics from the past
 - * Collect historical data and put them in « usable » form (digitizing , georeferencing)
 - * Diachronic analysis using classical photointerpretation
 - * Second step: medium term in the field measurement for the future
 - * GNSS
 - * High resolution airborne photogrammetry (UAV)
 - * Emery's frame thanks to local communities

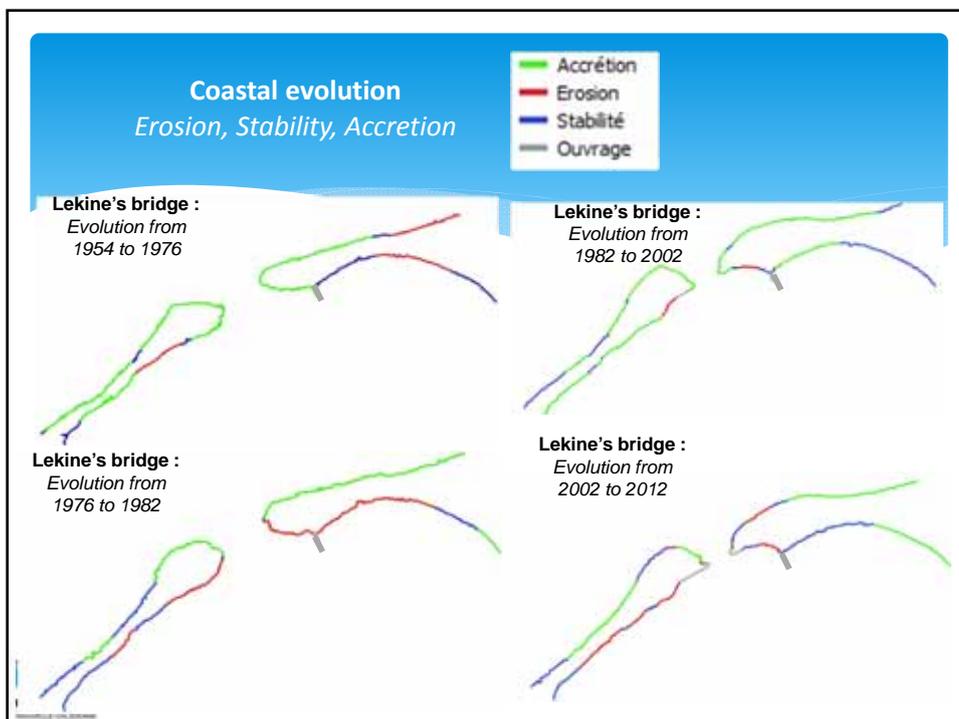
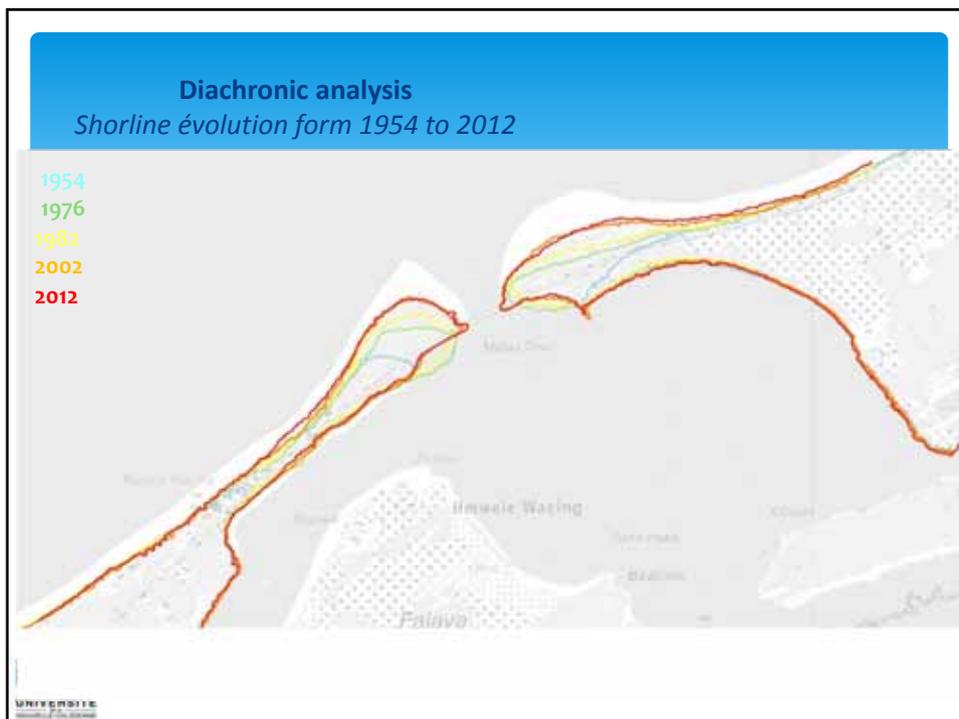
First step

Available data

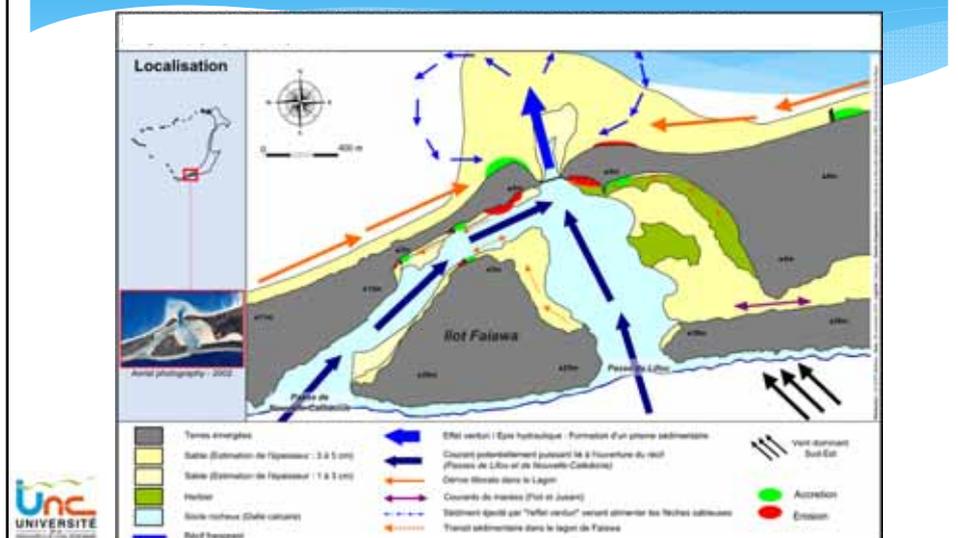
Shoreline's definition used for this study is the upper beach vegetation line.

Year	Scale	Resolution (pixel)	Types	Source	Data used
1943	1/30 000	-	Aerial photography	NARA	Data to acquire
1954	1/40 000	2,8 m	Aerial photography	DITTT	Data used here
1976	1/20 000	1,4 m	Aerial photography	SHOM	Data used here
1982	1/40 000	2,8 m	Aerial photography	SHOM	Data used here
1988	-	20 m	Satellite imagery	IRD	Data to treat
1995	-	20 m	Satellite imagery	IRD	Data to treat
2002	1/20 000	1,3 m	Aerial photography	DITTT	Data used here
2010	-	5 m	Satellite imagery	IRD	Data to treat
2012	1/20 000	1 m	Aerial photography	DITTT	Data used here





Reasons : *Hydrodynamics context*

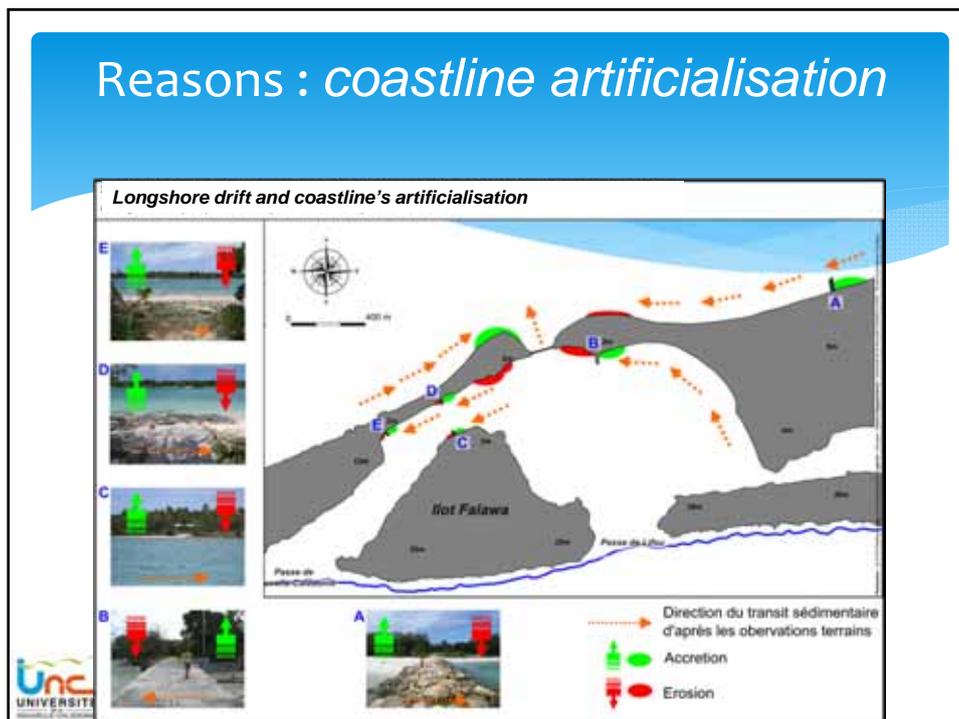


Reasons : *Past extreme meteorological events*

Historic cyclonic system on Loyalty Island (1850-2015) – Total : 70 events



Reasons : *coastline artificialisation*



First conclusion

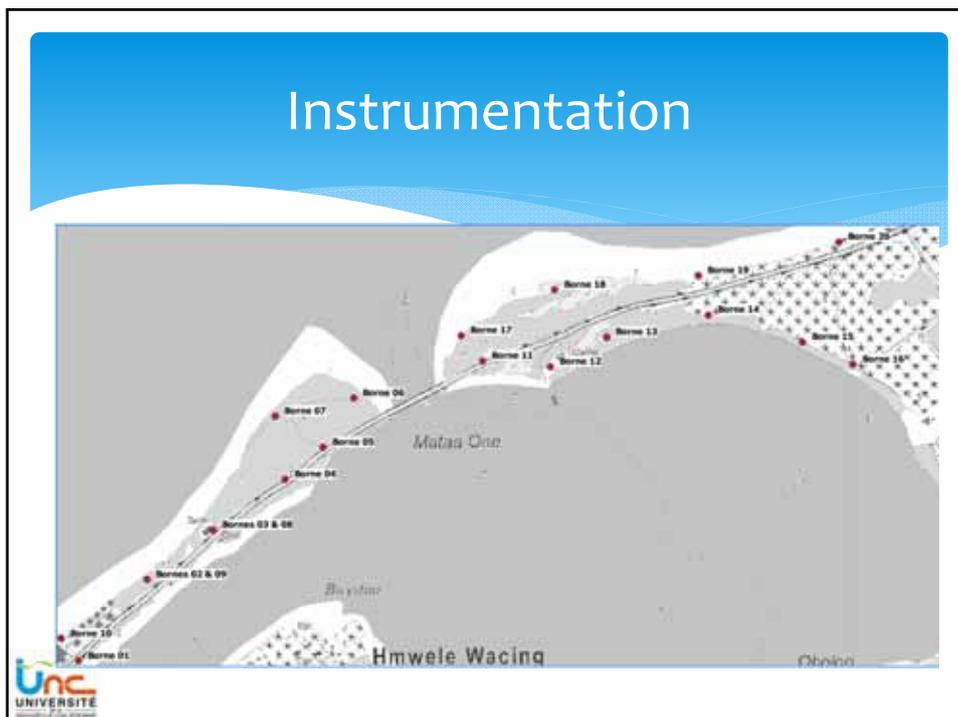
- * Understanding hydrodynamics
 - * Diachronic analysis using long term historical data give a first interesting results
 - * Need to fine-tune that understanding with more data, like aerial photography and satellite imagery
- * Artificialisation
 - * Impacts of artificialisation are very clear and quite important.

Second step

Objectives

- * Middle term survey for the future
 - * Instrumentation
 - * High-tech approach ?
 - * Participatory approach ?

Instrumentation



High-Tech approach

- * Differential GNSS
- * UAV



Low-Tech approach

Participatory approach

- * Acquiring data after the period de the project
- * Availability of human resources to make measures when a particular event happens (extreme or not)
- * Inhabitants take part of a scientific project and learn to observe the own territory
- * Help to have consciousness of the consequences of their own actions.

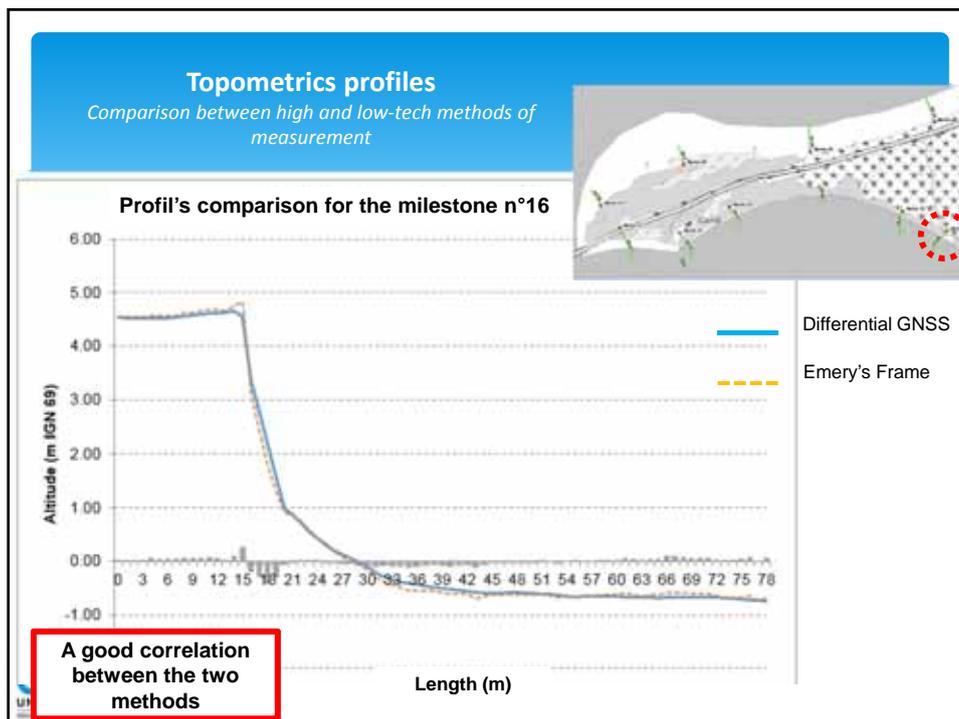


Population Monitoring

Low-Tech methods

Emery Frame
Optical level





Conclusion

- * Involving local inhabitants in the heart of the project is crucial
 - * Collect scientific data continually in the future
 - * Local communities and authorities understand environmental issues depending on their management decision
 - * May be seen as a first step for participatory integrated coastal management for Ouvea's Island.

