



www.dunestrust.org.nz

WAY OUT WEST

Dune Restoration of NZ Annual Conference 2014

11 – 13th March 2014

Fitzroy Surf and Lifesaving Club, New Plymouth



Presentation: HISTORY OF THE COASTAL DUNES on GREAT BARRIER ISLAND

John Ogden

johnogden@farmside.co.nz

The Dunes Trust has been given permission to make this document publically available from our website. However the information and images contained in the document belong to the presenter and presenter's organisation.

To obtain permission to use the information and/or imagery used in this document for any purpose please contact **the presenter or the Dunes Trust**.

Conference sponsors



Department of
Conservation
Te Papa Atawhai

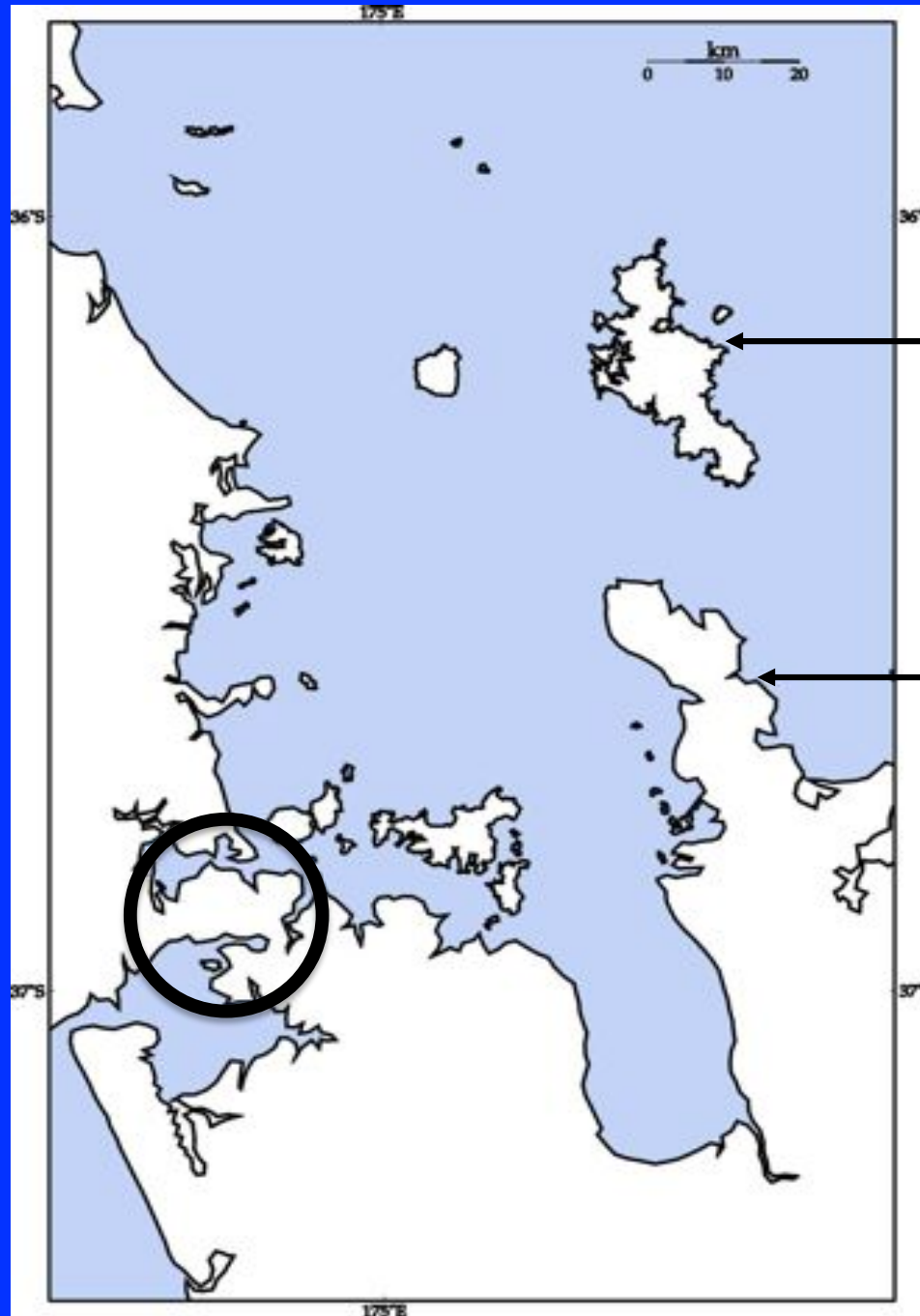




**HISTORY OF THE
COASTAL DUNES on GREAT BARRIER ISLAND**

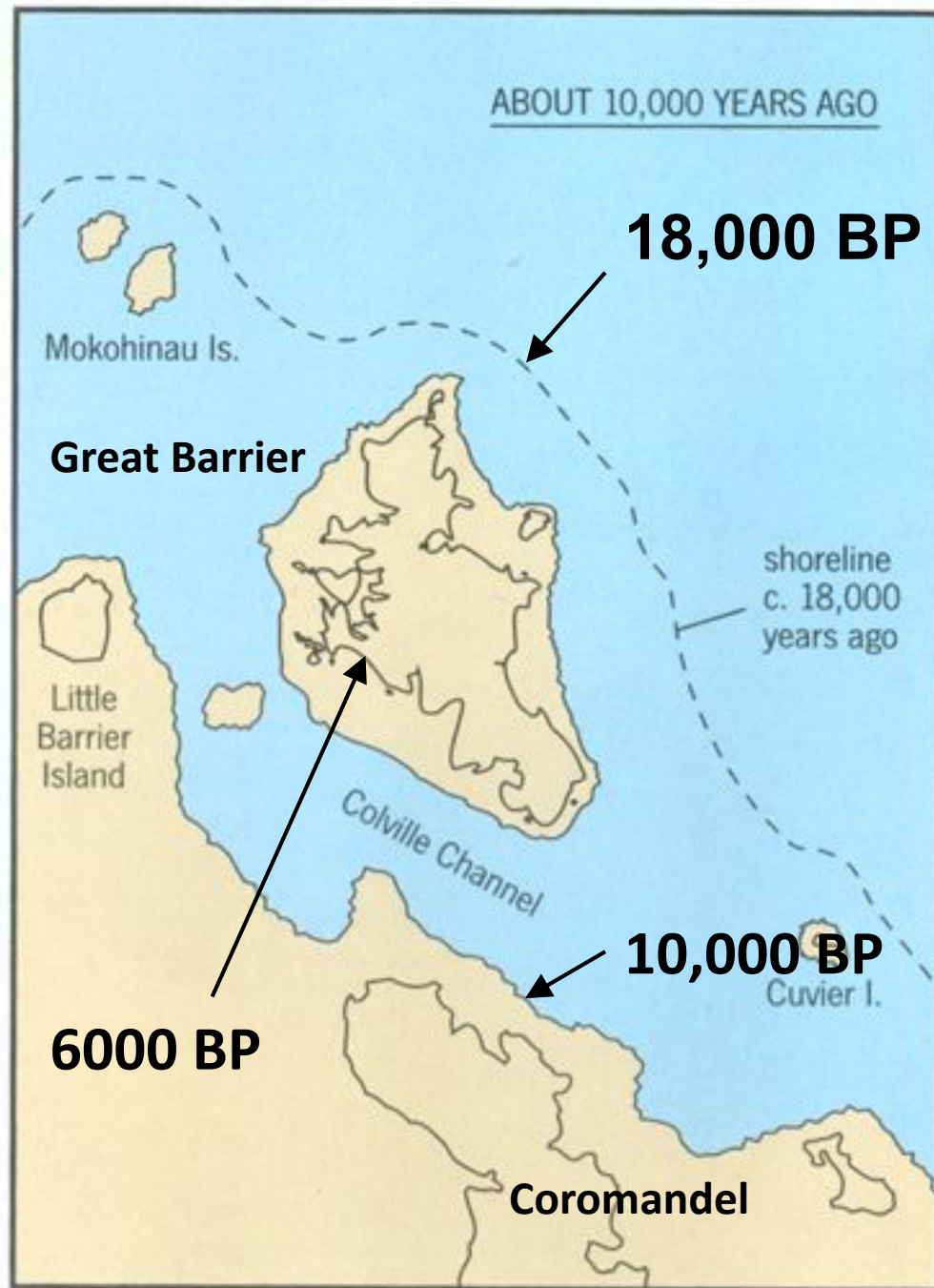
JOHN OGDEN

HAURAKI GULF



GREAT BARRIER

COROMANDEL



Changing shoreline of the Outer Hauraki Gulf.

10 – 6k a
30m sea level rise

Map from Armitage (2001)

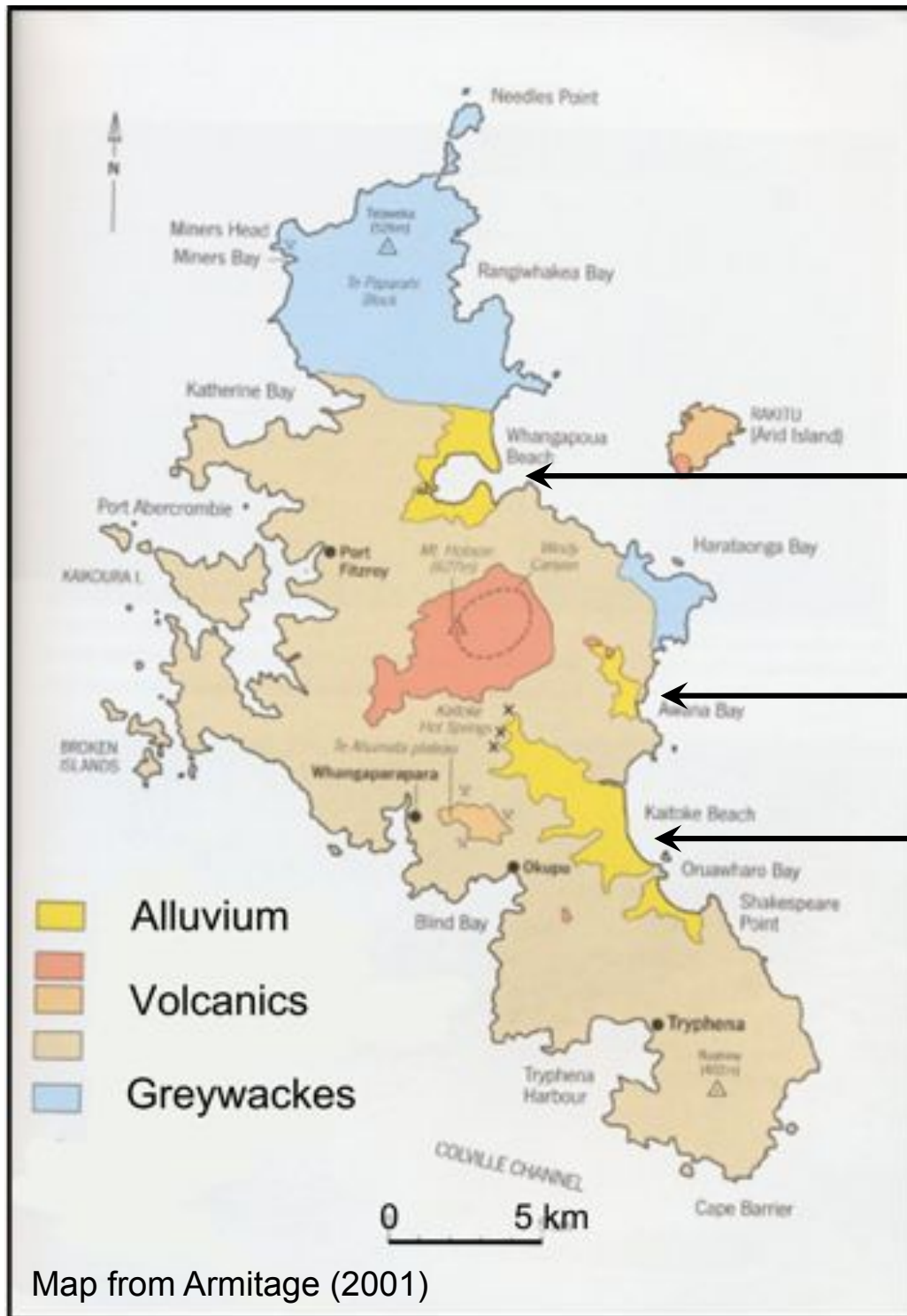


THIS ACTUALLY HAPPENED !

Past sea-level fluctuations (low in Glacials, high in Inter-Glacials) have determined the coastal landforms, and this story is preserved in the coastal swamp sediments.

Geology of GBI

(After: Moore, 2001)



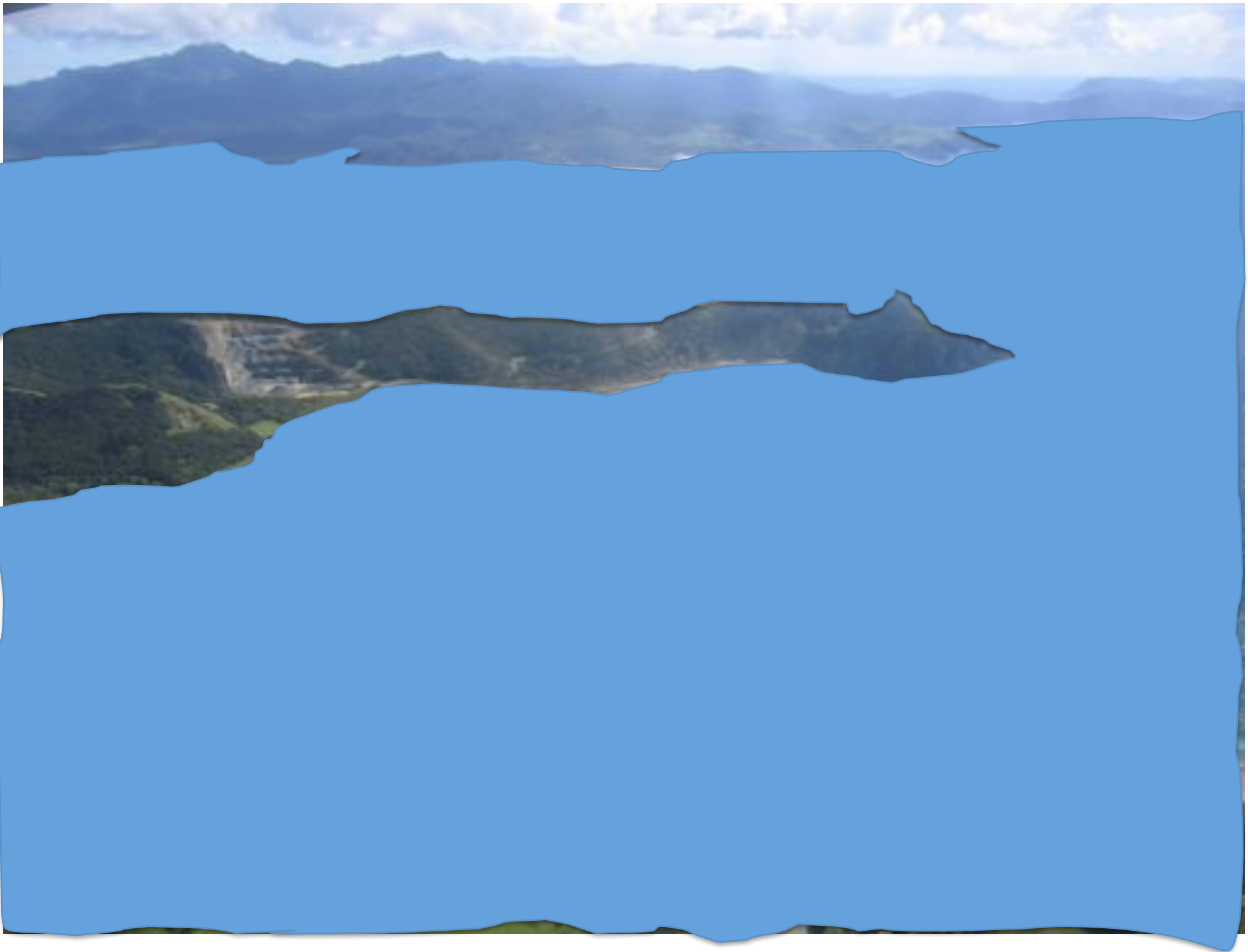
Whangapoua

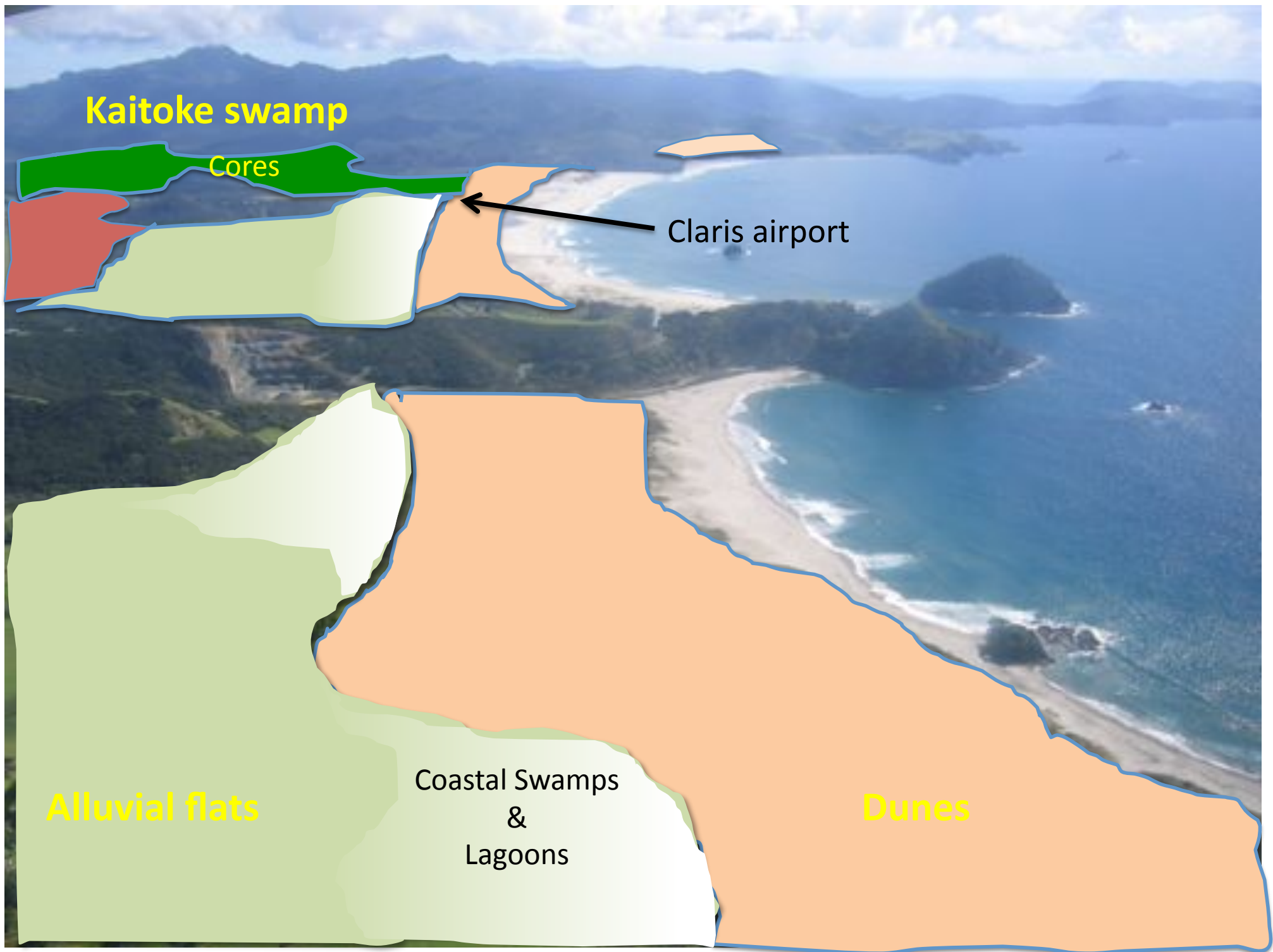
Awana

Kaitoke

These embayments are now infilled with late Quaternary/Holocene sands and peats

Map from Armitage (2001)





Kaitoke swamp

Cores

Claris airport

Alluvial flats

Coastal Swamps
&
Lagoons

Dunes



Extracting a core
On Kaitoke Swamp



Mactra shells!

7m down

C14 date =

c. 7300

Cal. BP.

AWANA

Alluvial flats formed by infilling of marine embayments since 6000BP and swamp drainage by Europeans





HOLOCENE DUNES IN AWANA ESTUARY

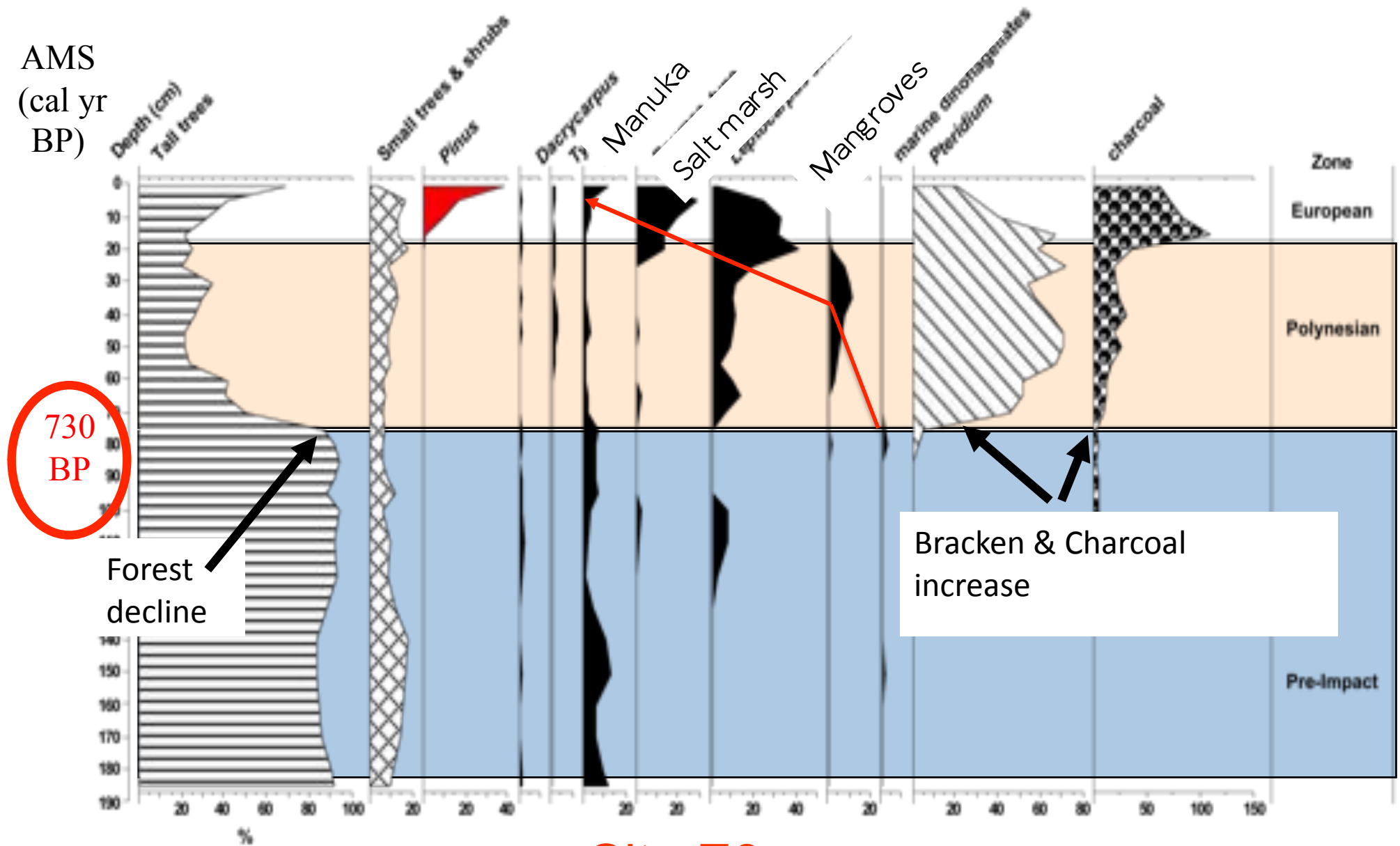


ANCIENT DUNES. AOTEA RD. AWANA

Whangapoua
Estuary
6000BP to
c.1250 AD
TO PRESENT



AMS
(cal yr
BP)



730
BP

Forest
decline

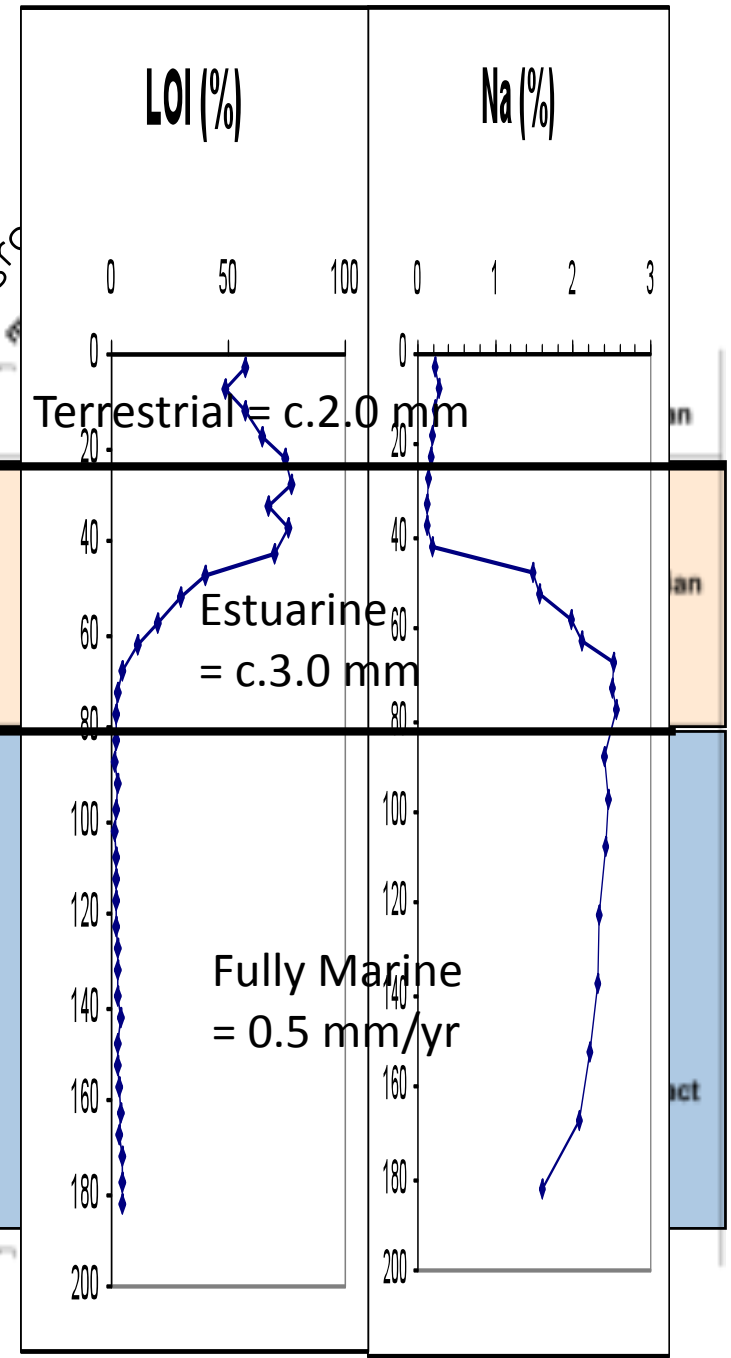
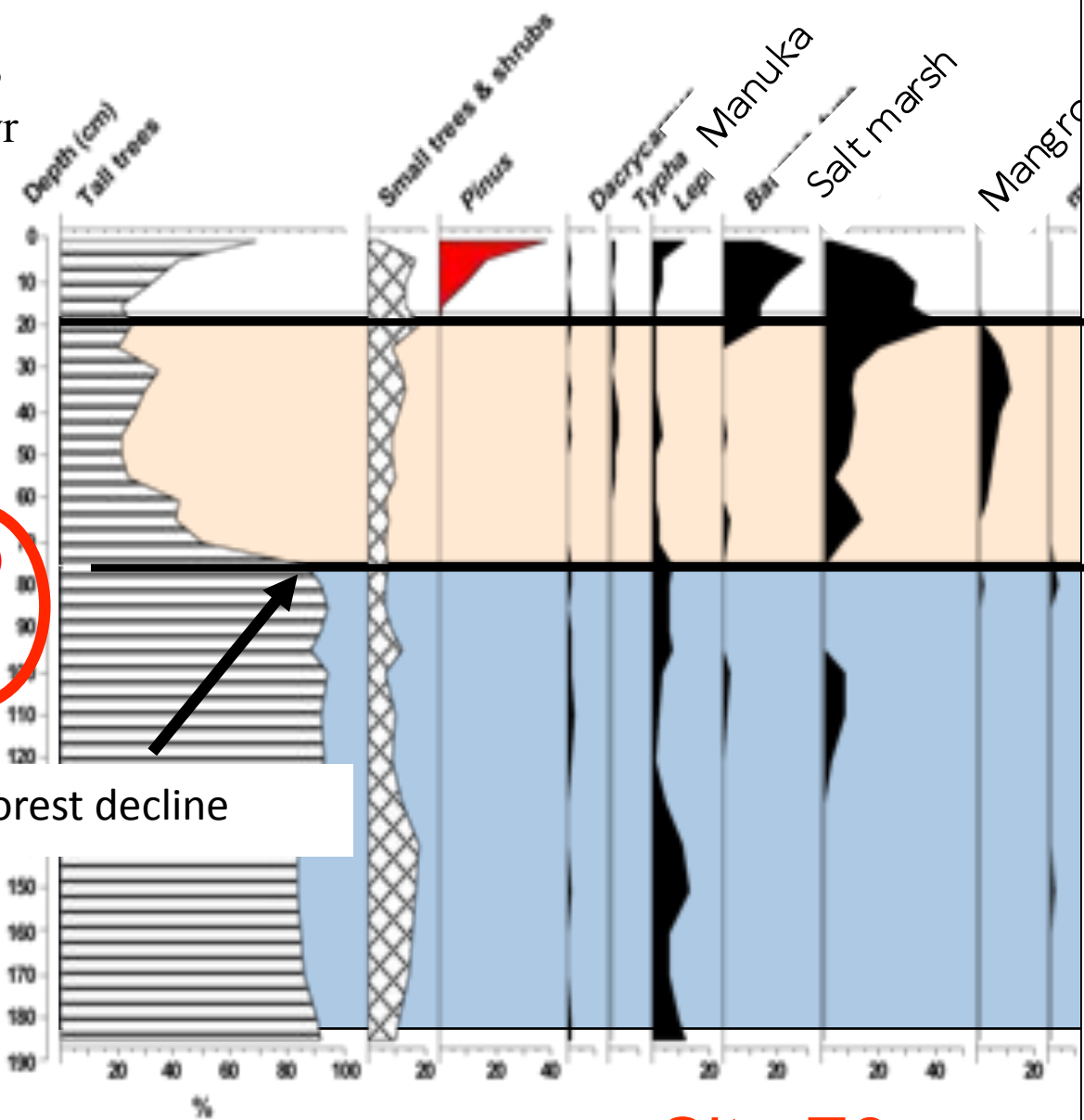
Bracken & Charcoal
increase

Site E8

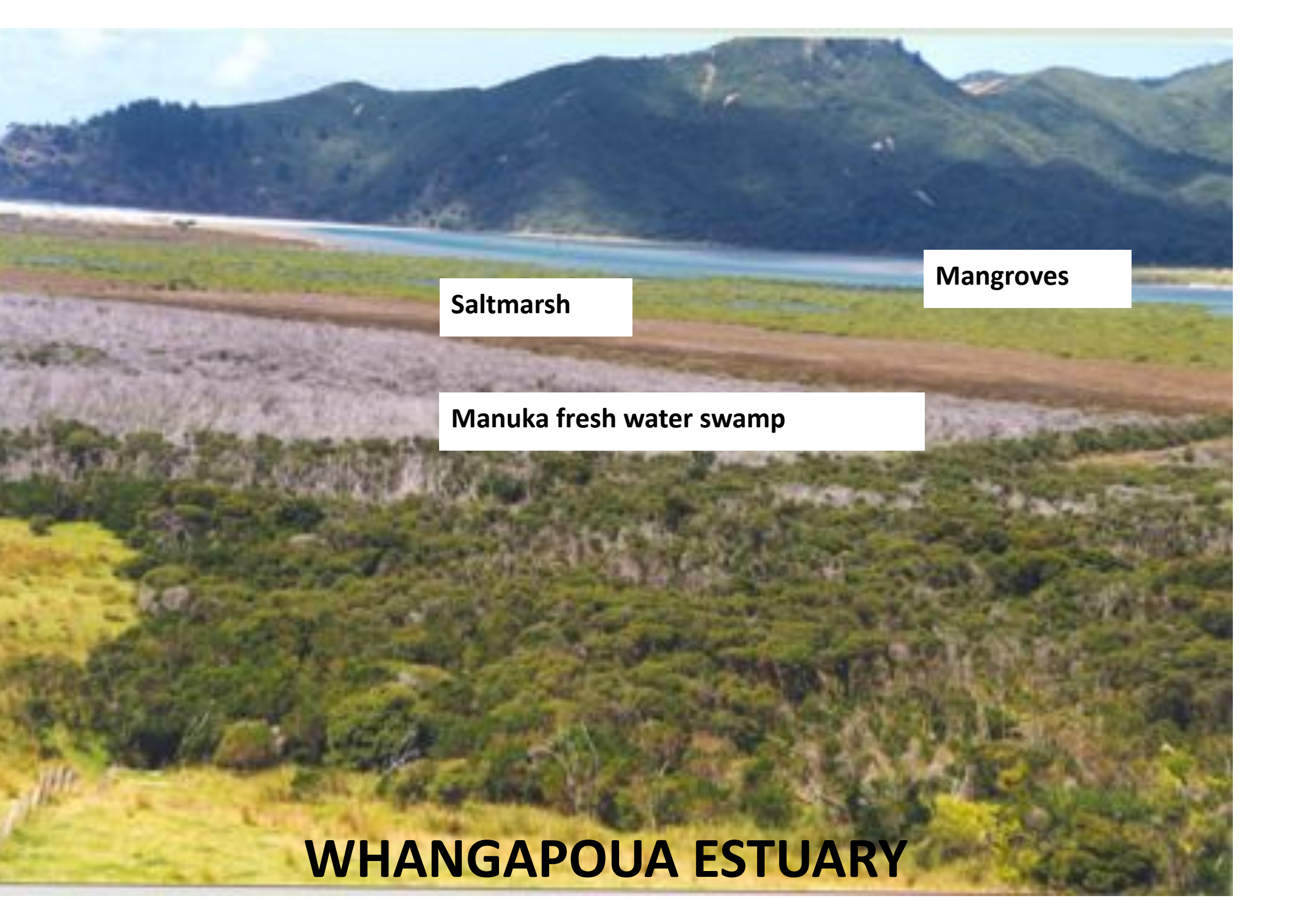
AMS
(cal yr
BP)

730
BP

Forest decline



Site E8



Saltmarsh

Mangroves

Manuka fresh water swamp

WHANGAPOUA ESTUARY









SKIM OF PEBBLES = TSUNAMI DEPOSIT



BURIED SURFACES (PALAEOOLS) ON WHICH PEOPLE LIVED 700 YEARS AGO



MAORI MIDDENS and ANCIENT DUNE REMNANTS



← Rotoehu Ash

← Pre-Rotoehu
Dune system



**TRACES OF FOREST
ON
ANCIENT DUNES**

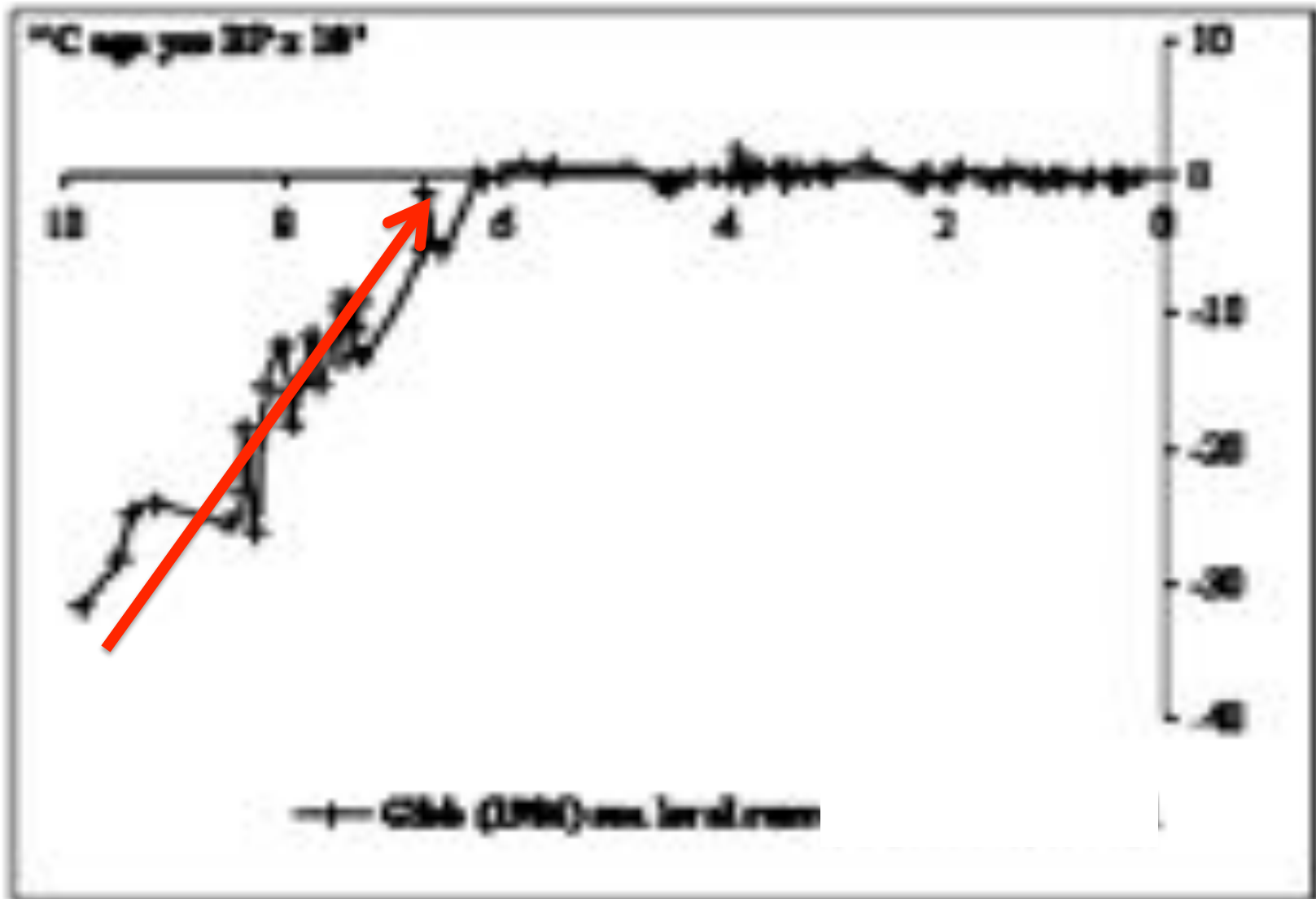


A wide-angle photograph of a coastal landscape. In the foreground, there are sandy dunes and alluvial flats with sparse, low-lying vegetation. A wide, sandy beach stretches across the middle ground, meeting the ocean on the left. In the background, there are dark, forested mountains under a blue sky with scattered white clouds.

**THE COASTAL LANDSCAPE OF GREAT BARRIER IS A COMPOSITE OF
ANCIENT AND NEW LANDFORMS and HUMAN INFLUENCES**

**THE BEACHES, DUNES and ALLUVIAL FLATS are LINKED BY THE
PROCESSES WHICH FORMED
THEM OVER THE LAST GLACIAL CYCLE, and BY THE CURRENT
HYDROLOGY**

**THANKS TO ALL THOSE WHO HAVE HELPED IN FIELD WORK and
DISCUSSION**



Sea level rose 30m+ from 10 - 6k BP

*