

CANALS:
MOST LOUISIANA LANDLOSS IS
CAUSED BY CANALS AND RESTORING
CANALS IS SUCCESSFUL

Barataria-Terrebonne National Estuary Program
Management Conference

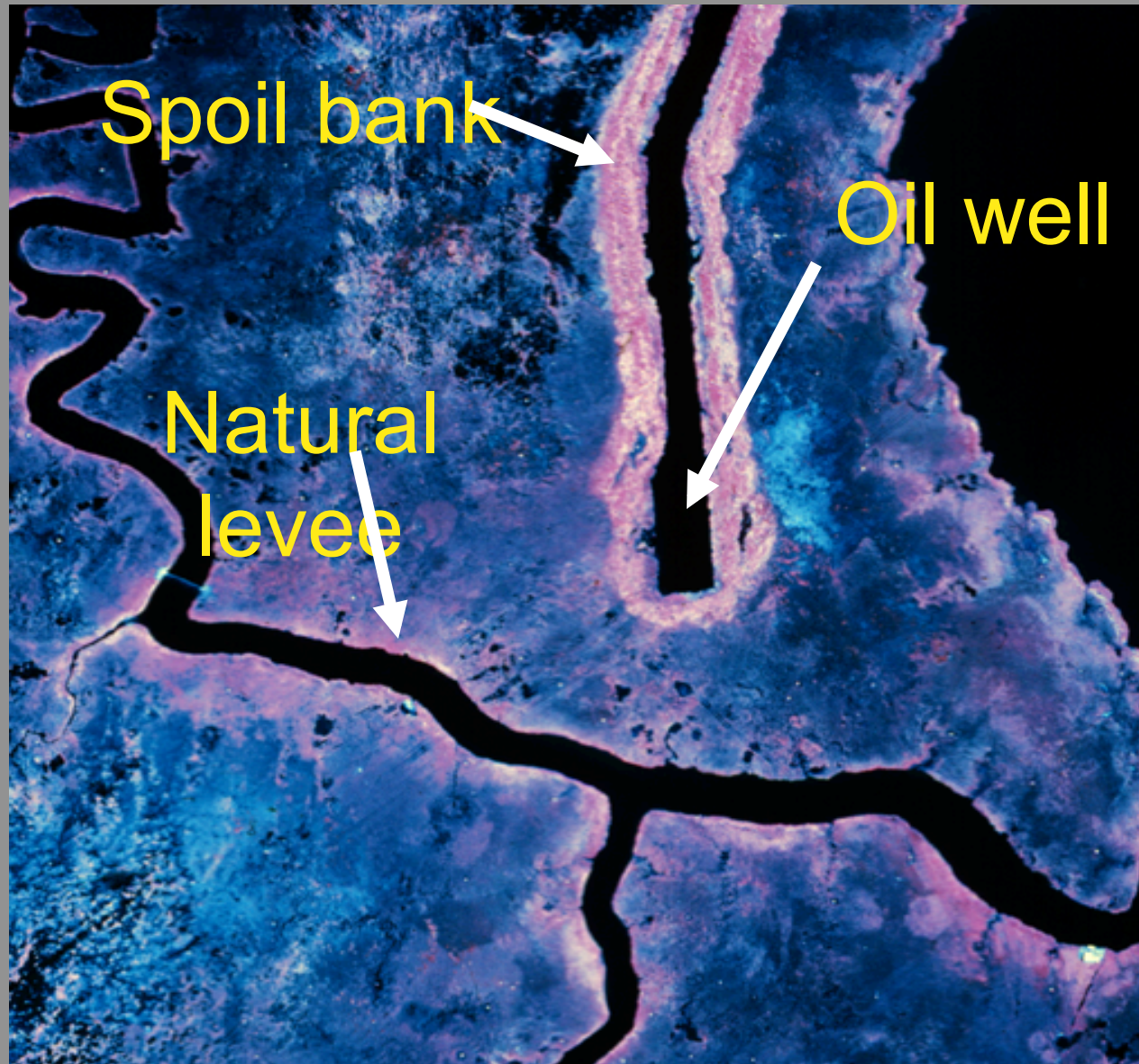
R.E. Turner¹
G. McClenachan²

¹Louisiana State University

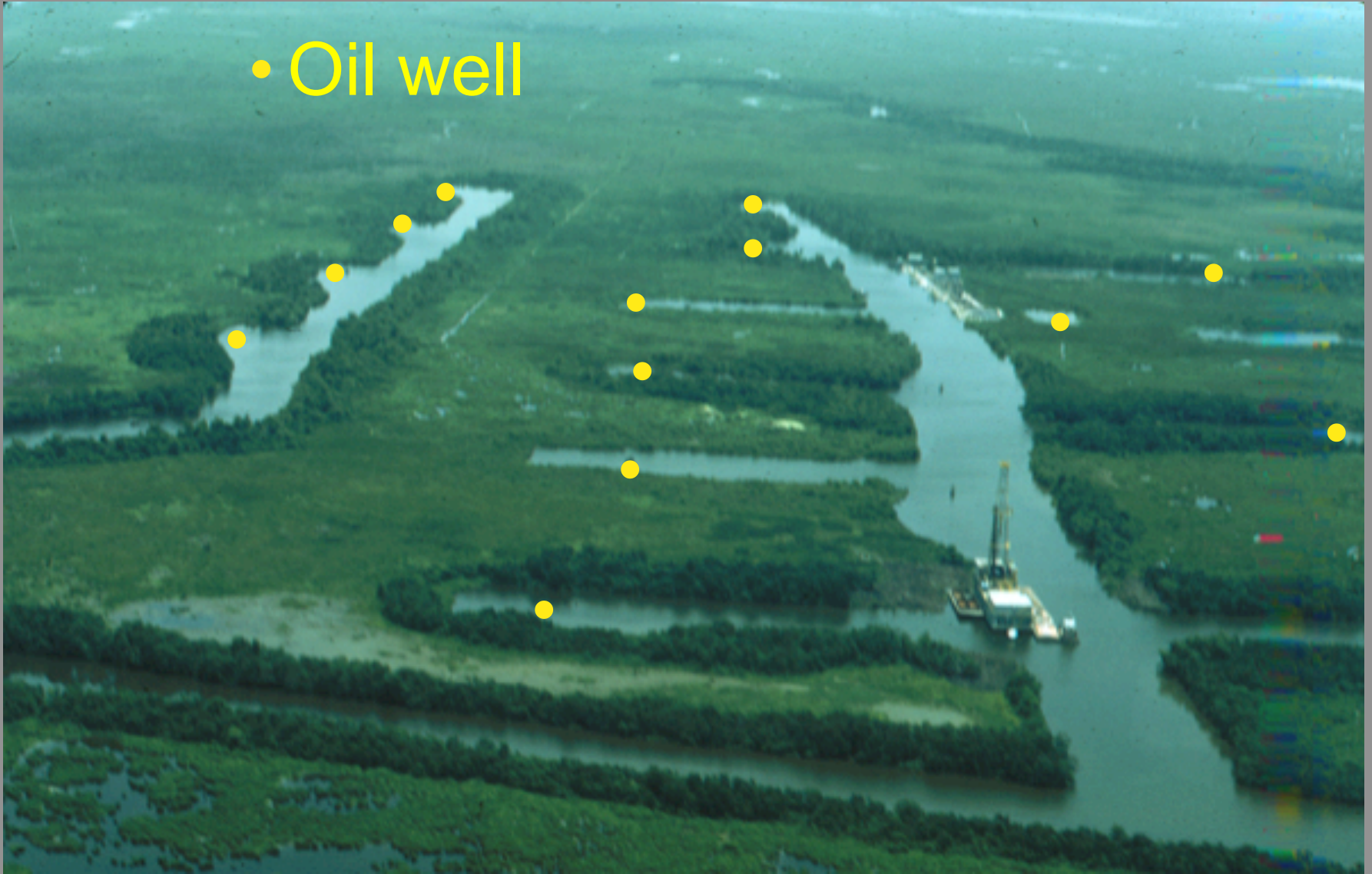
²University of Central Florida

2 August 2018

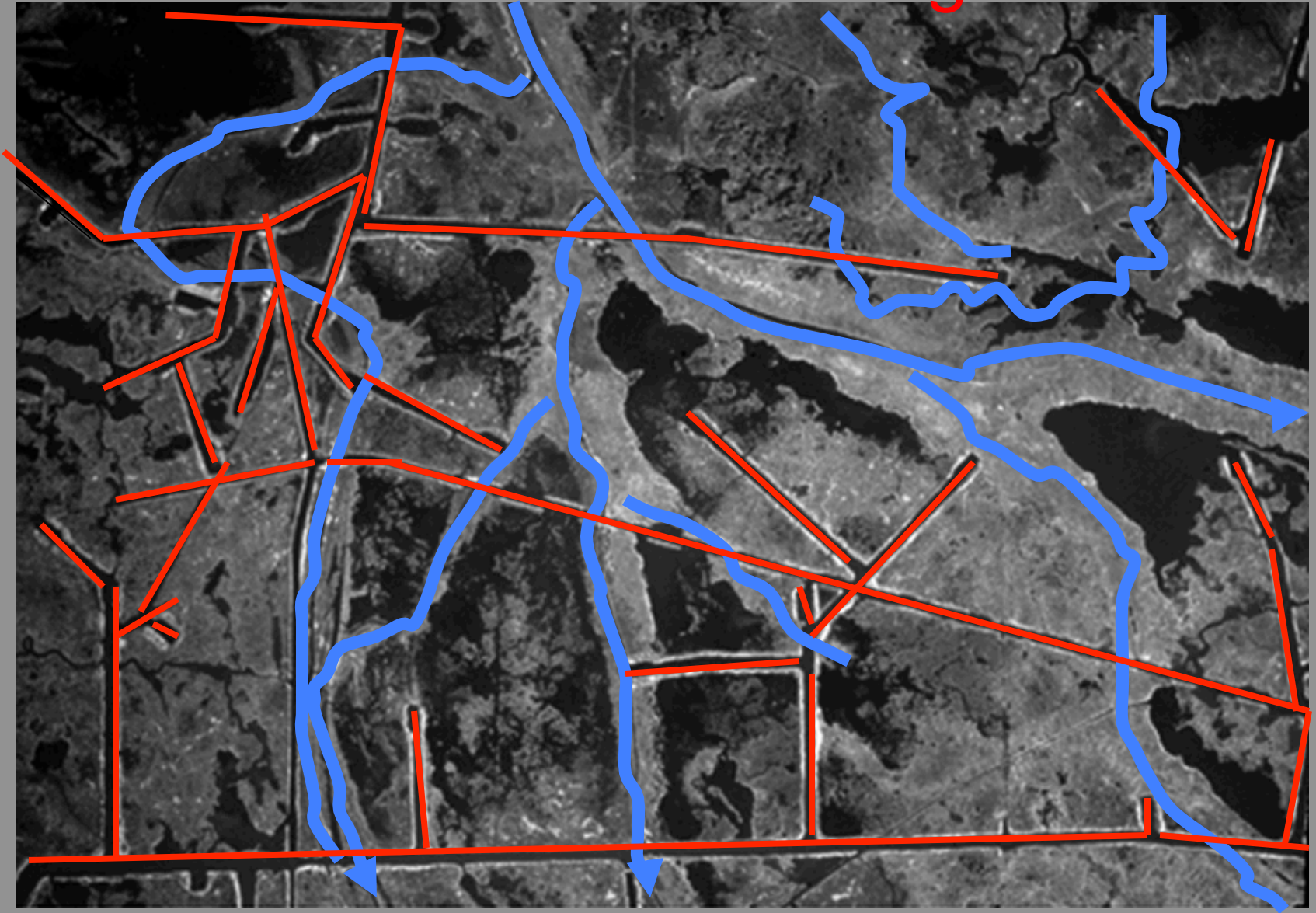
What and where are canals and spoil banks?



- Oil well

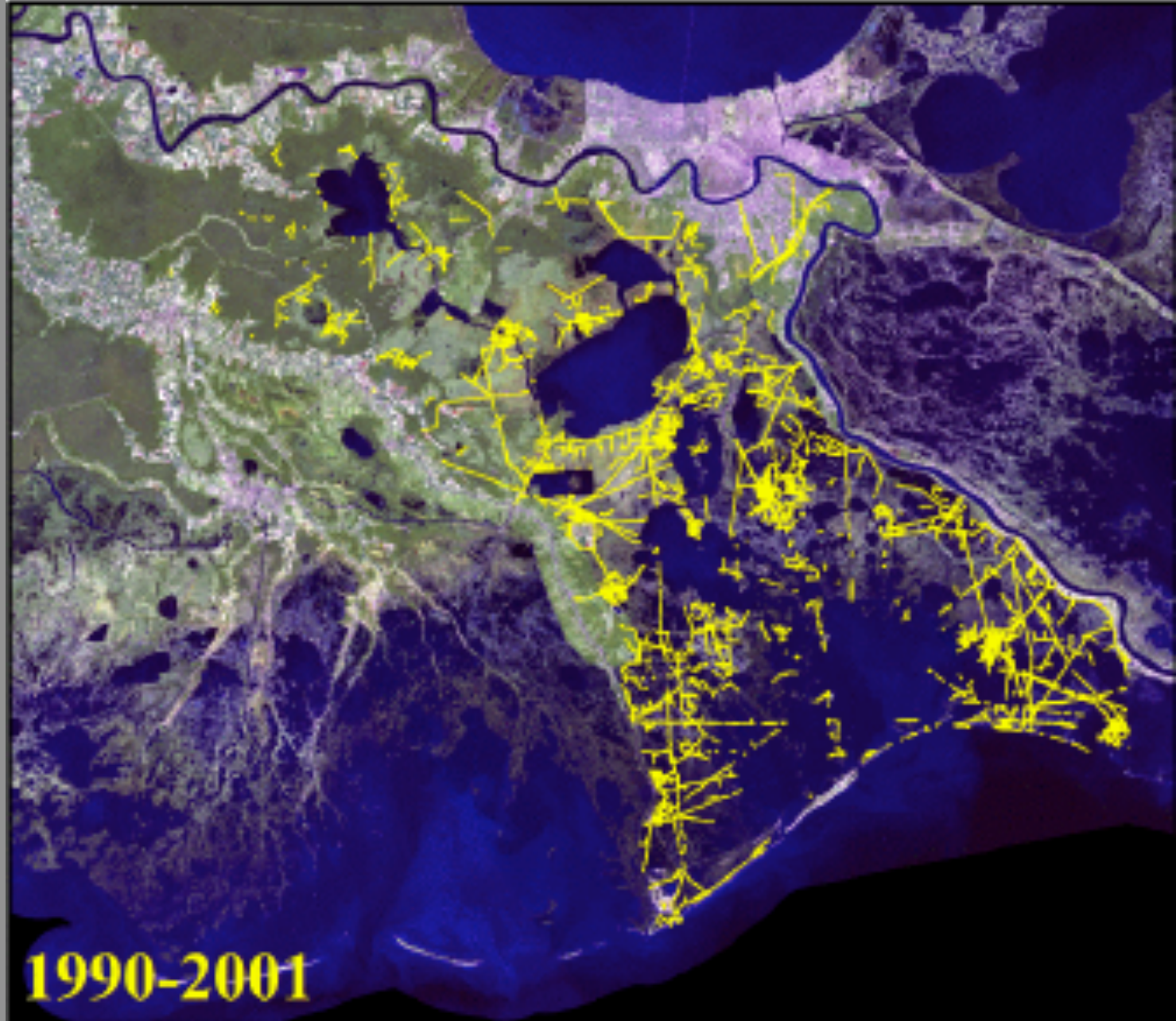


Interaction of natural and dredged levees



Barataria Estuary 2001

Canals
and
spoil
banks



How do canals and spoil banks cause land loss?

Water exchange interrupted above and belowground: drying and flooding exacerbated

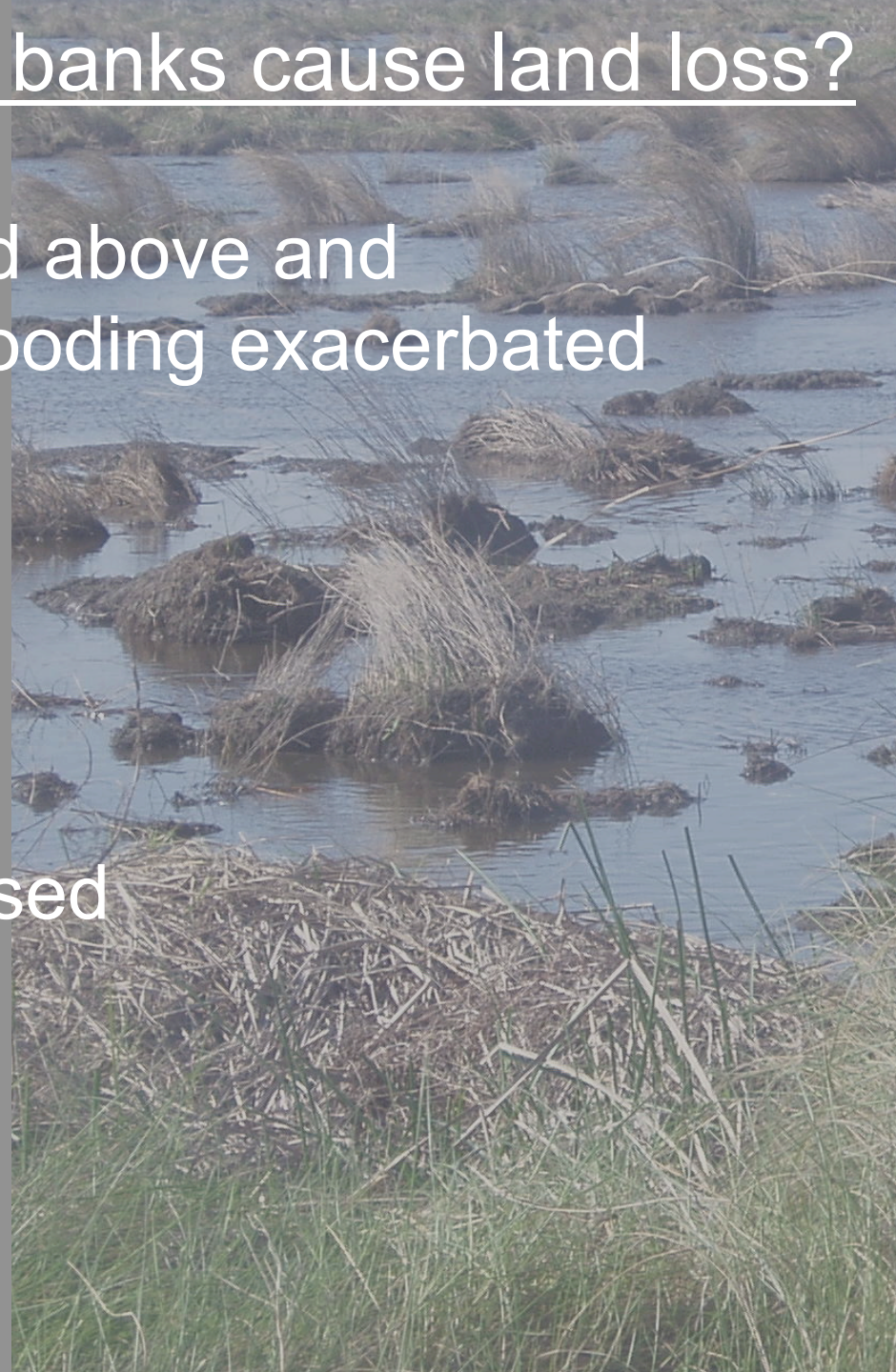
Impoundments form

Soil oxidation

Shallow subsidence increased

Soil weakens

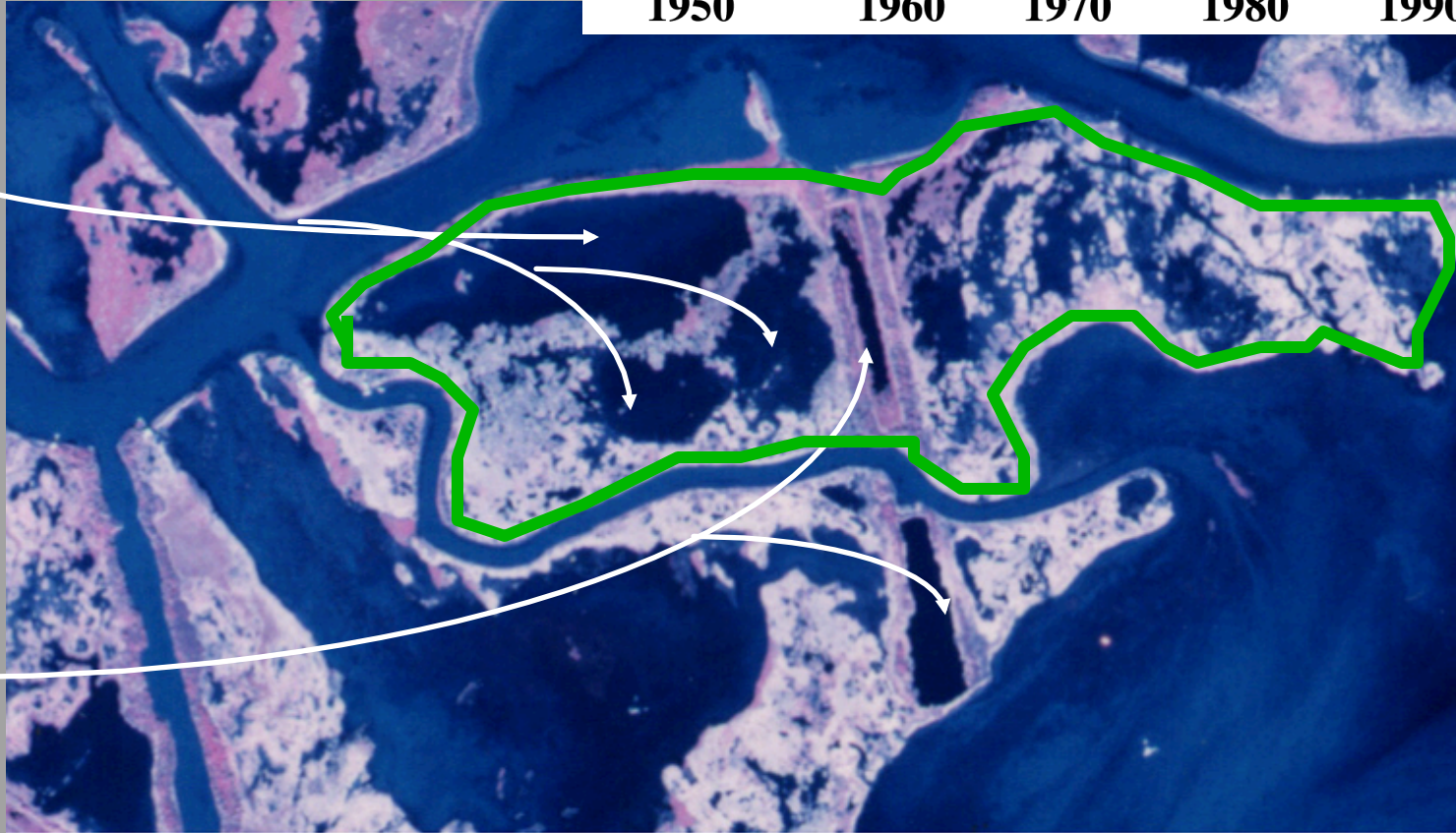
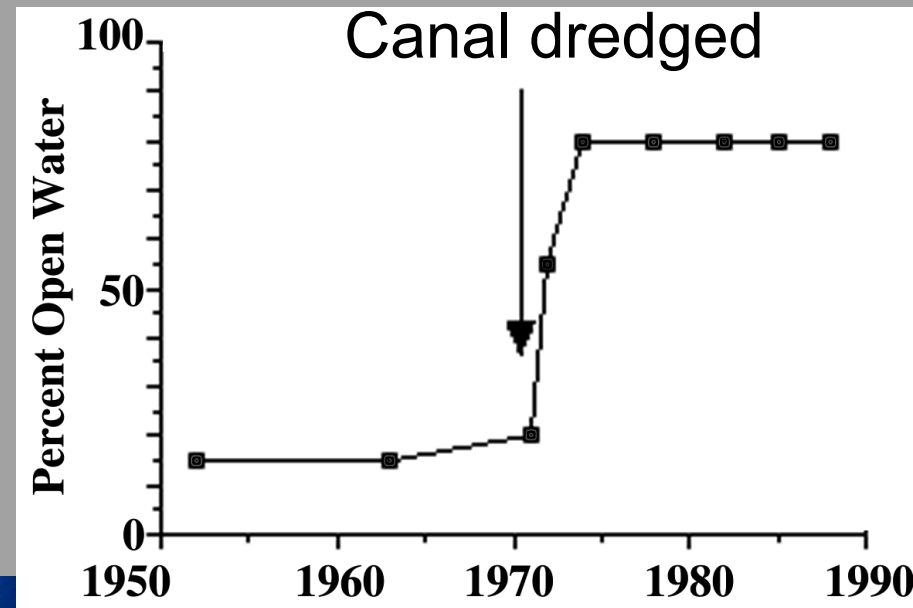
plant dieback



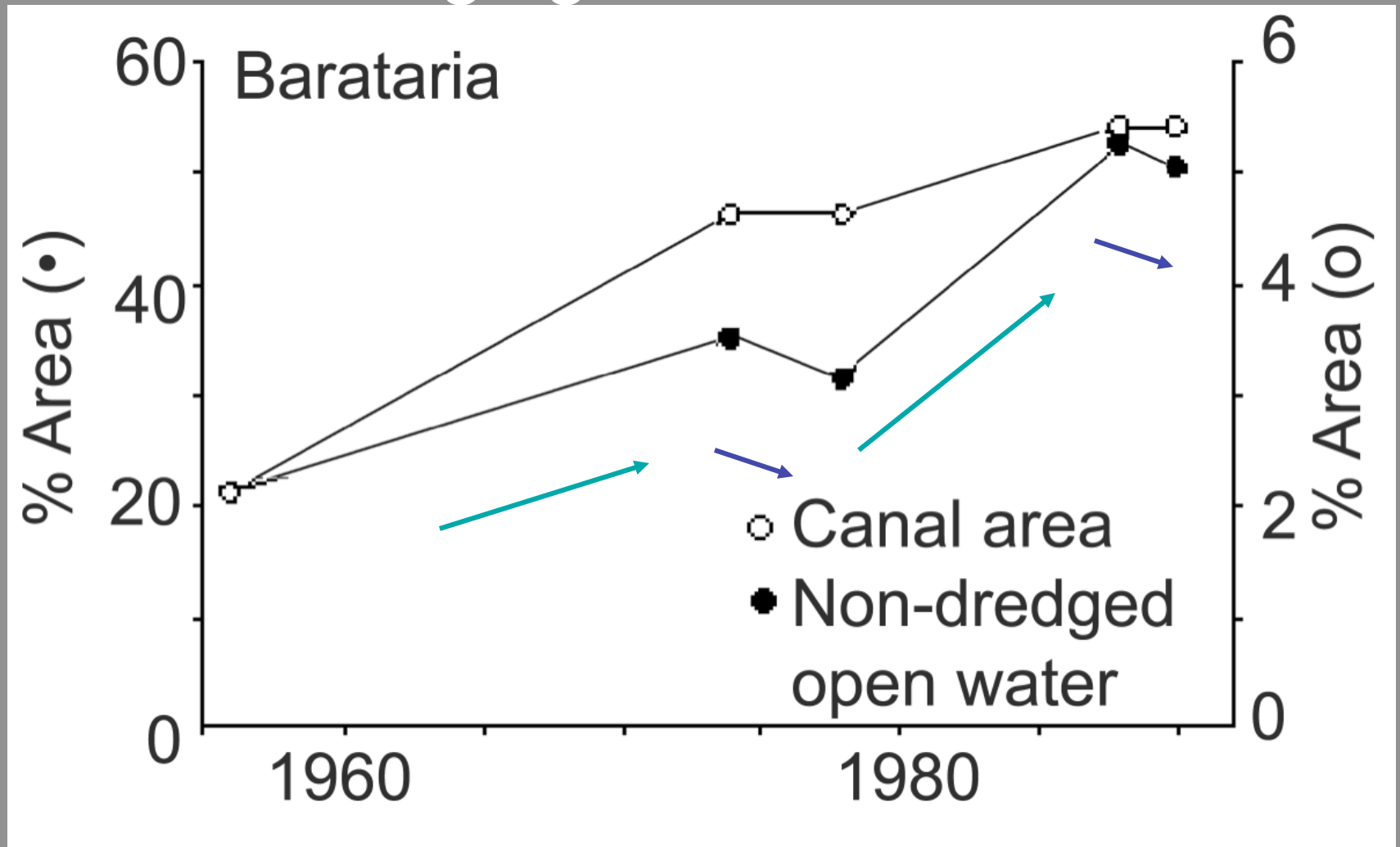
Unexpected Indirect linkages

2. and open
water
formed
here

1. this
canal was
dredged



A dose-response relationship between dredging and wetland loss

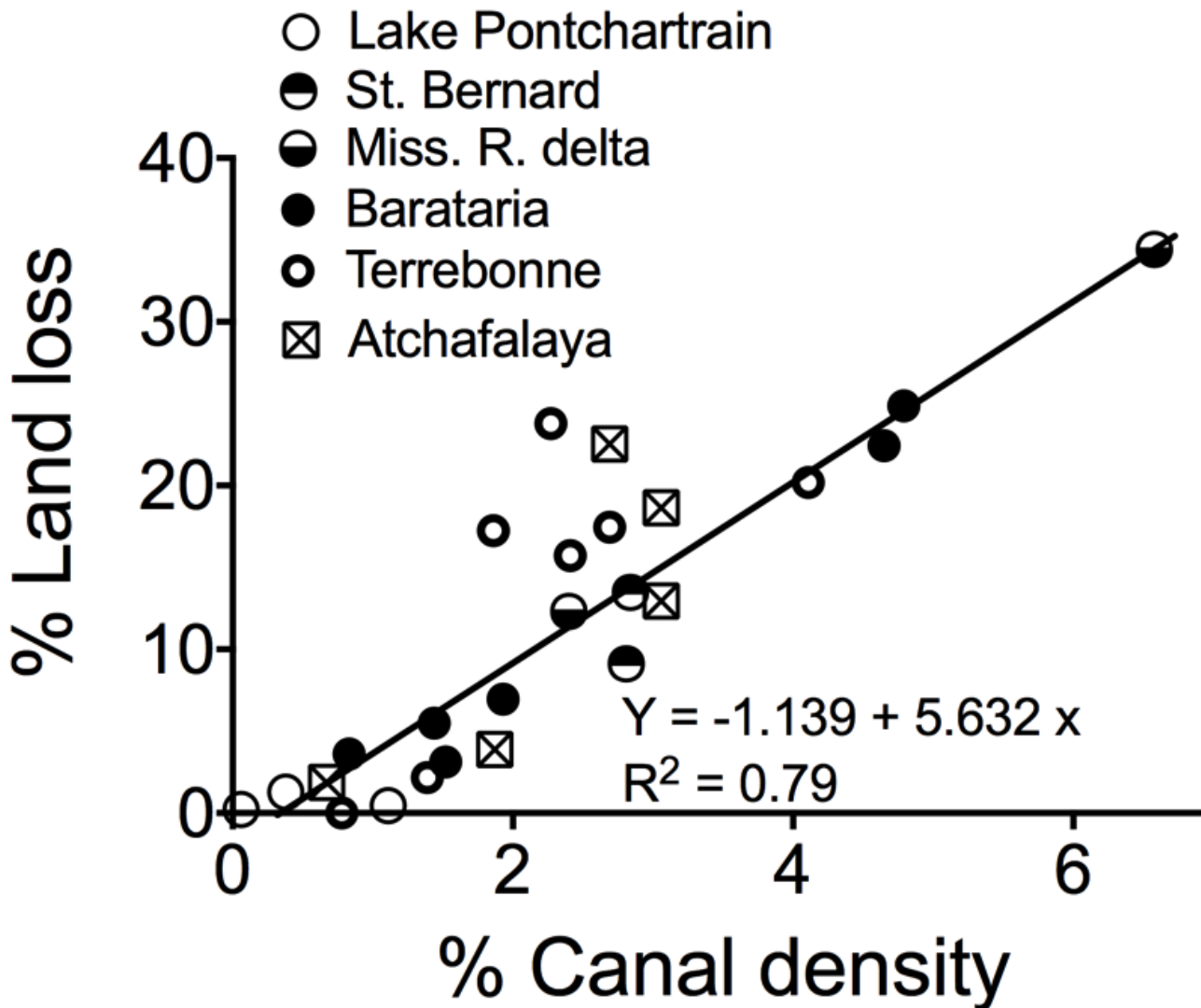


Bass, A. and R.E. Turner 1997. Relationships between salt marsh loss and dredged canals in three south Louisiana estuaries. **J. Coastal Research** 13: 895-903.

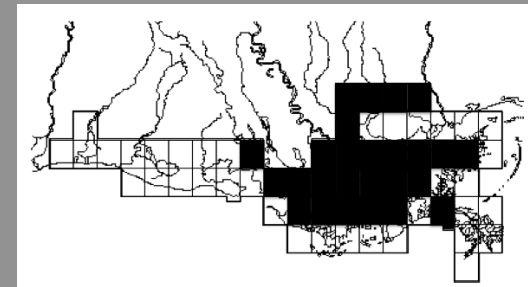
How much land loss is caused by
canals?

The outcome:

1930s to 1990



4.6 ha of
land lost per
ha of canal



15 min quadrangle
maps that include
77% of the deltaic
plain; maps with
<25% marsh are
excluded

An Option

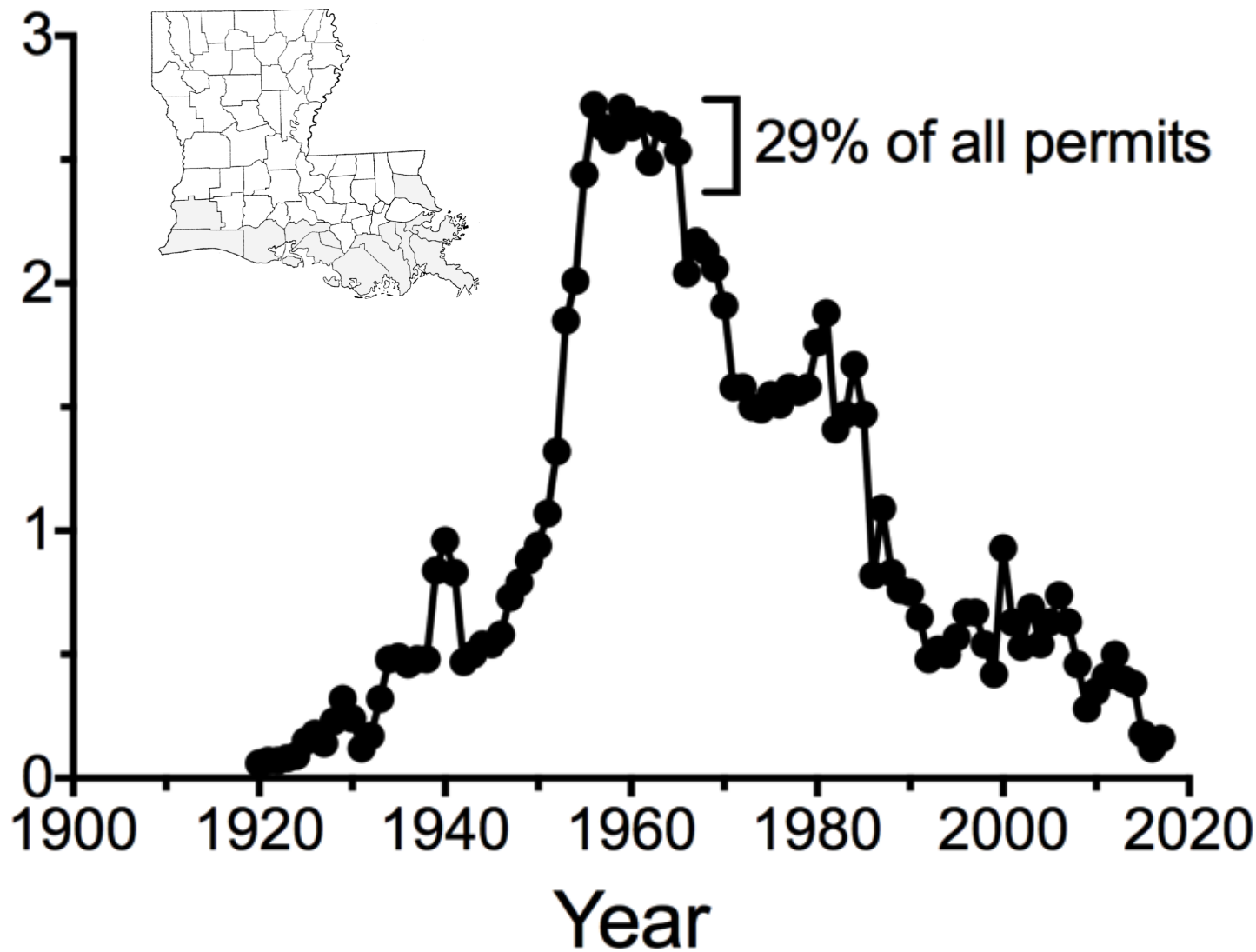


How many canals?

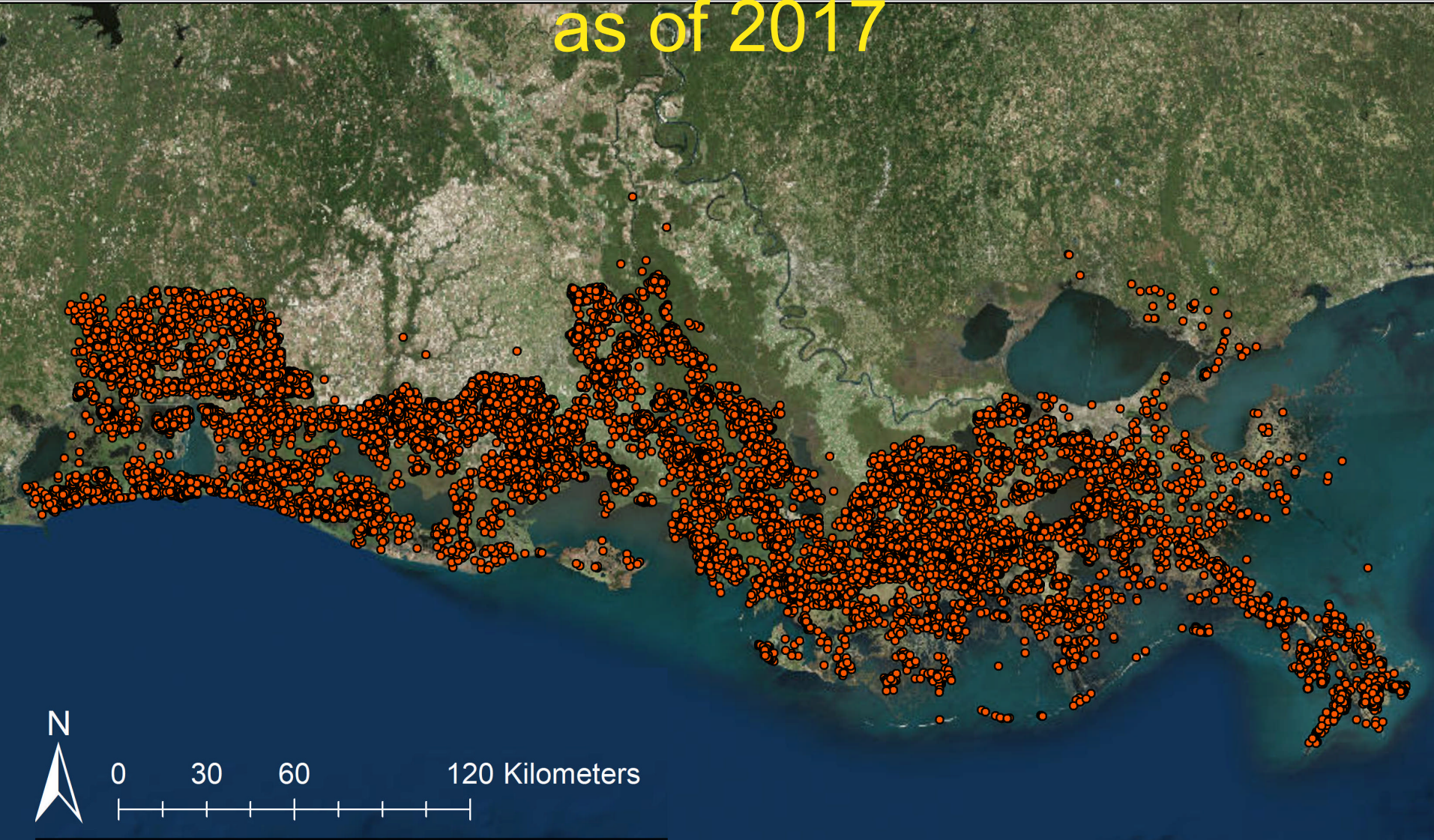
DNR permit files for 14 coastal parishes
from 1900 to 2017:

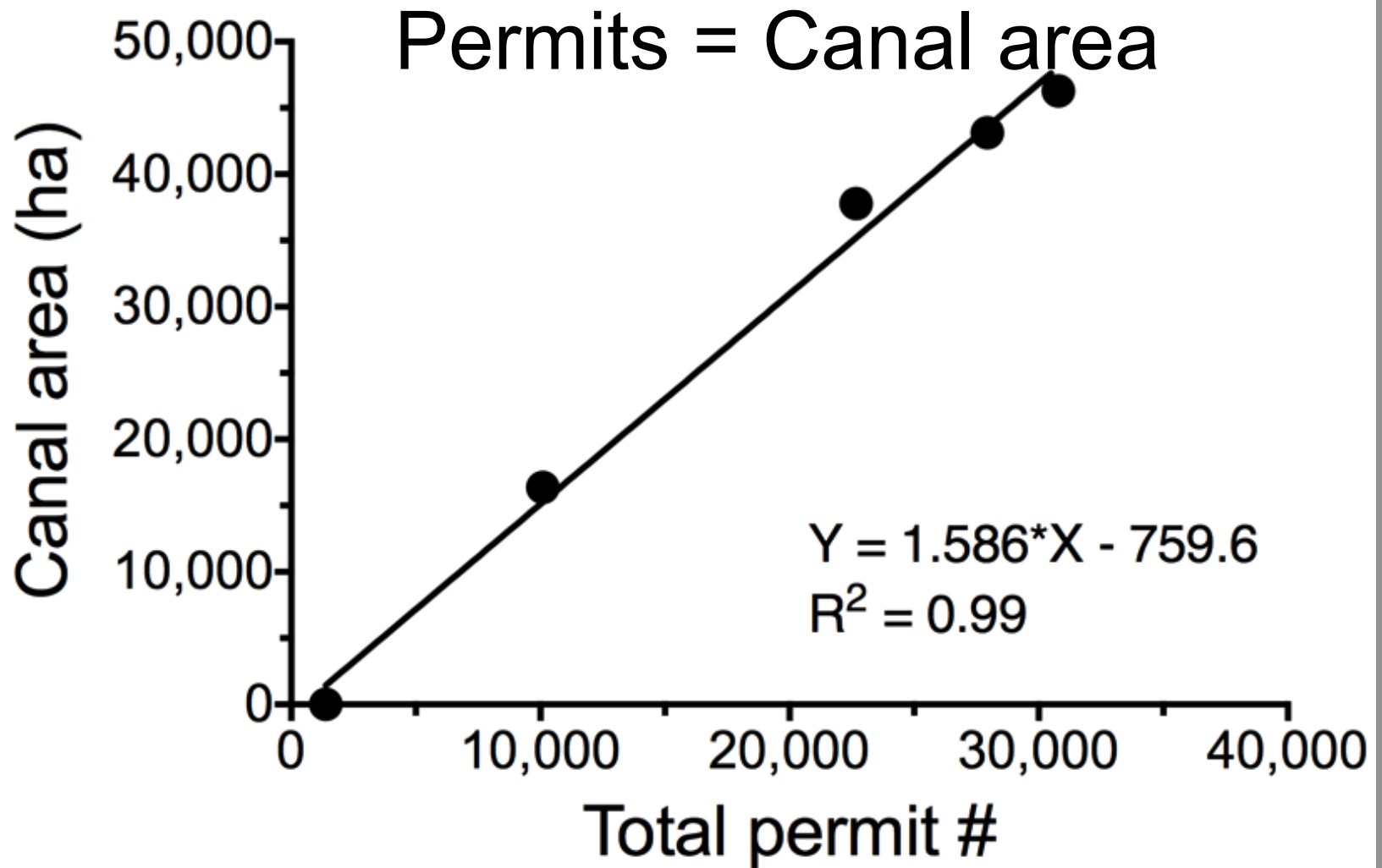
- 76,247 permits
 - 35,163 on land as of 2010
 - 27,483 officially abandoned

Annual permits / all
permits (%)



Abandoned and plugged wells on land as of 2017





Divide by width = length

10,000 miles of canals =
20,000 miles of spoil bank

250 miles wide



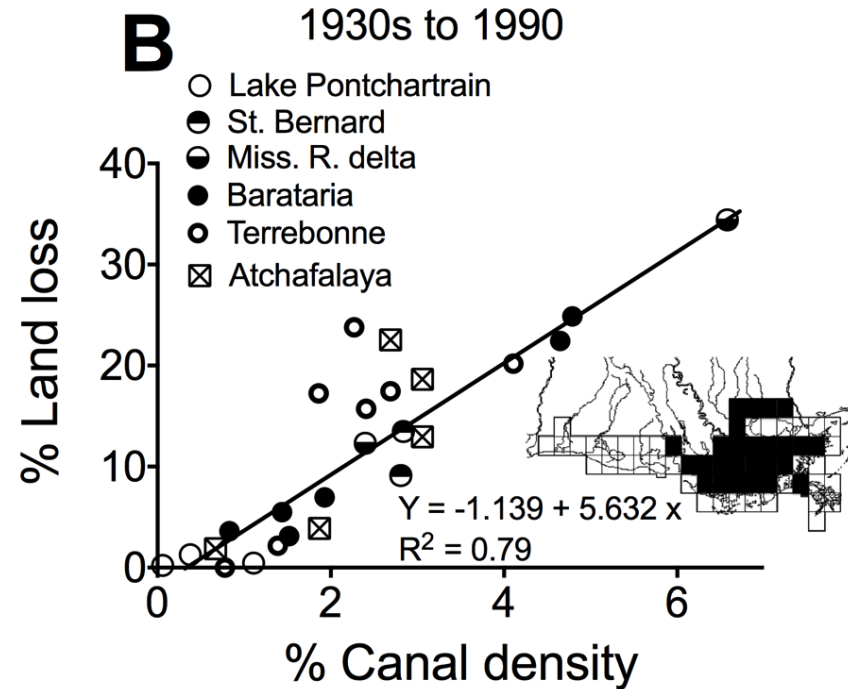
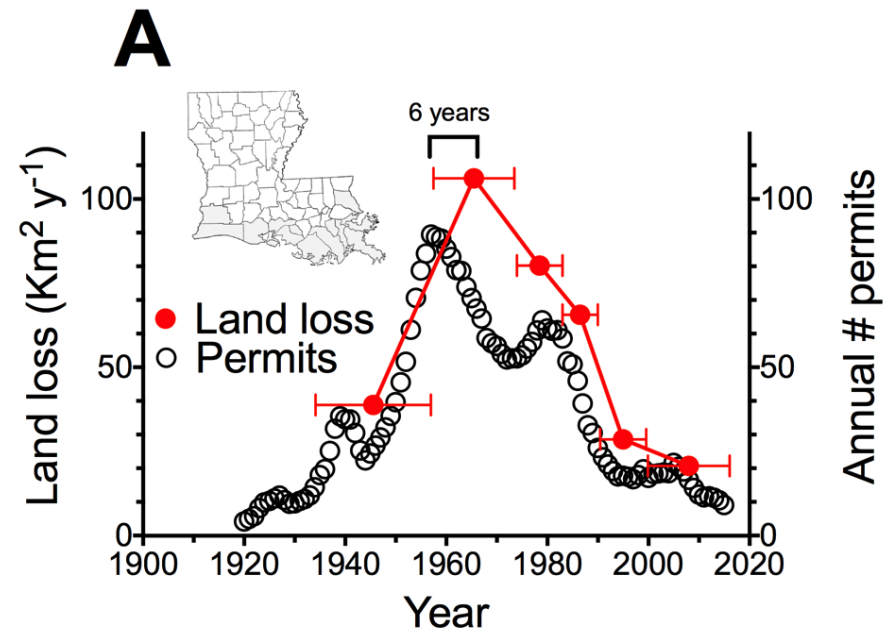
80 times across the State

20K miles = 2
round trips from
Louisiana to Switzerland

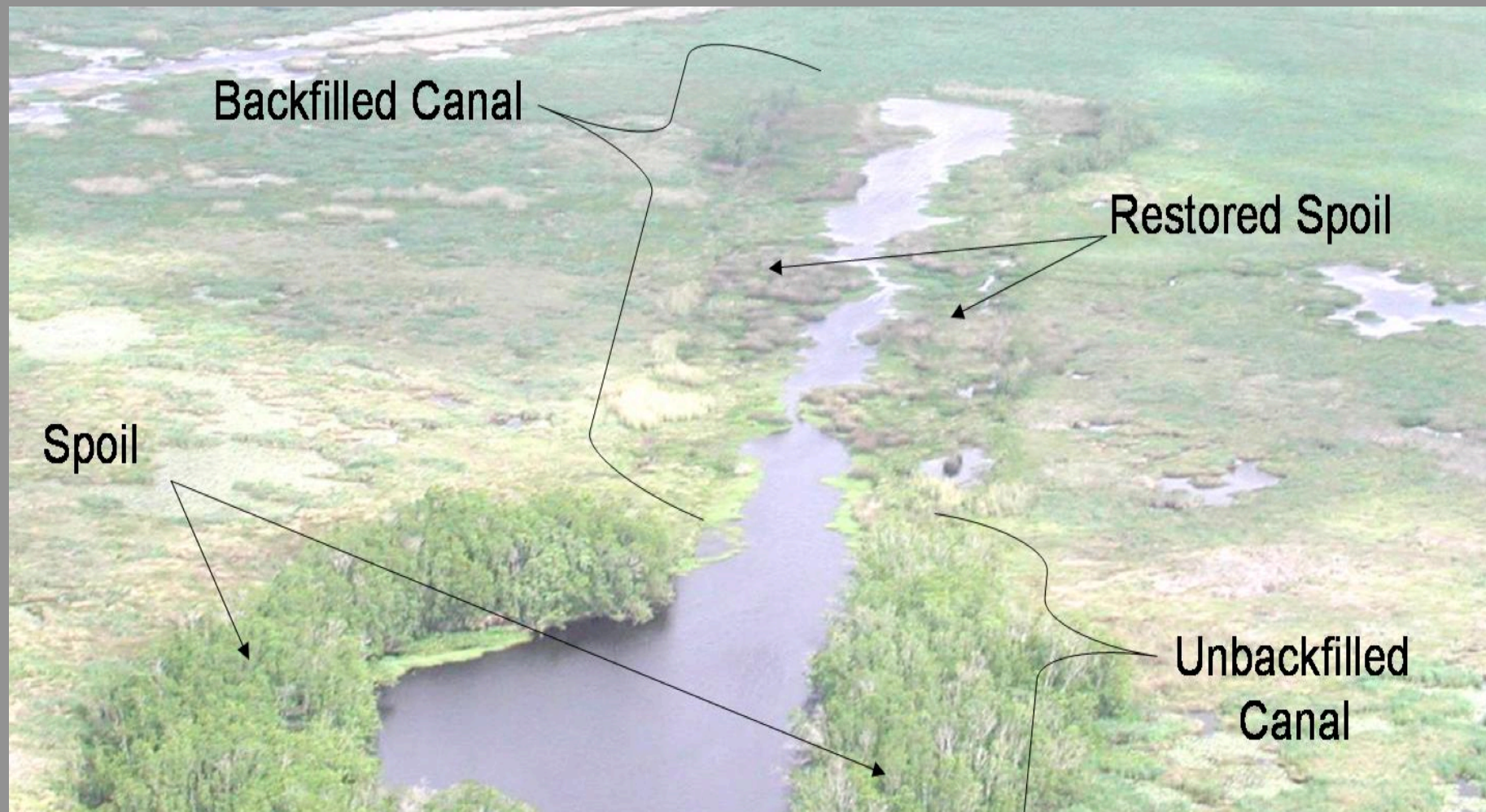


Distance around the
equator = 24,901 miles

Concurrence of land loss in time and space



Can the damage be reversed?



Some don't recover



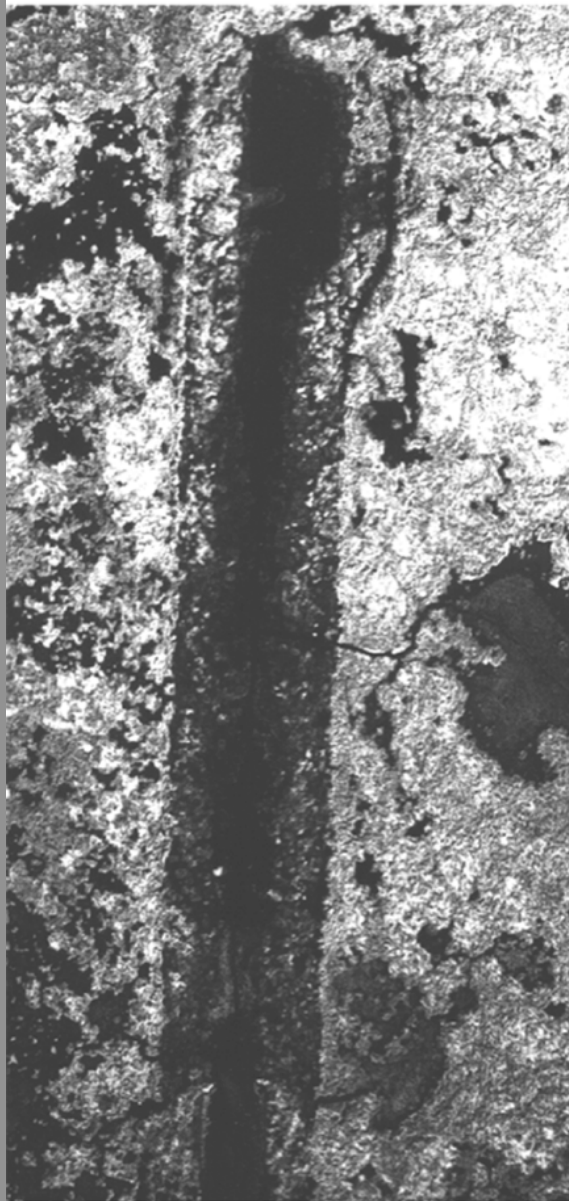
Some do recover



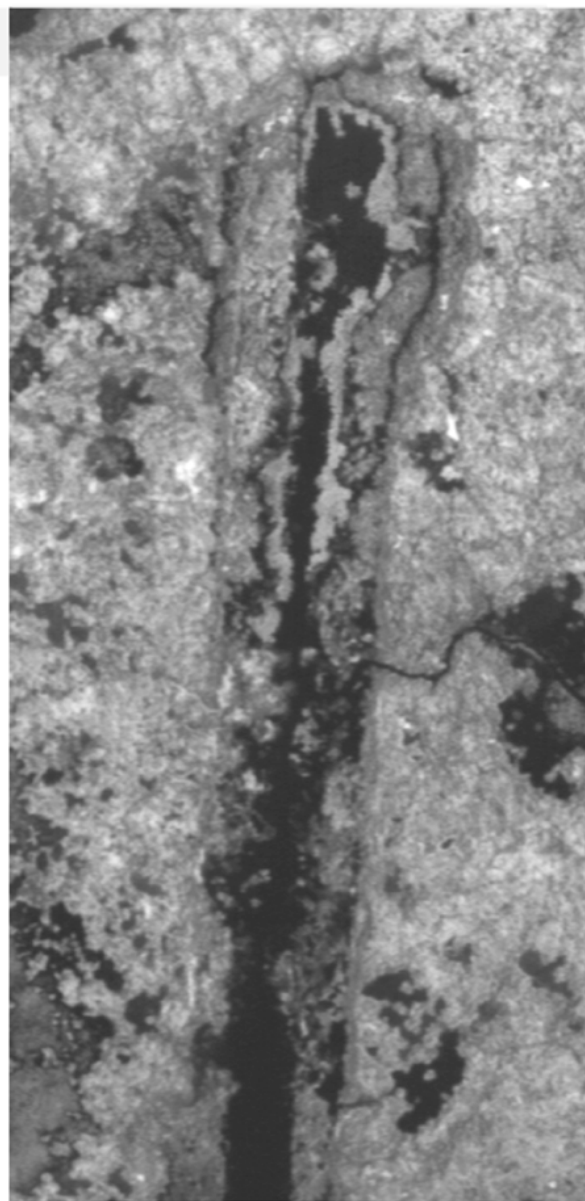
Examples



#6 4.8 ha



1990



2000

Backfilling cost:

@ \$12,224 ha⁻¹

= \$335 million for ALL canals

= 0.67% of \$50 billion dollar

restoration cost in Louisiana's
'Master Plan'

1% of the canals dredged = 260 canals

= \$3.5 million restoration cost

= 65 X more than already backfilled

Thank you!

