

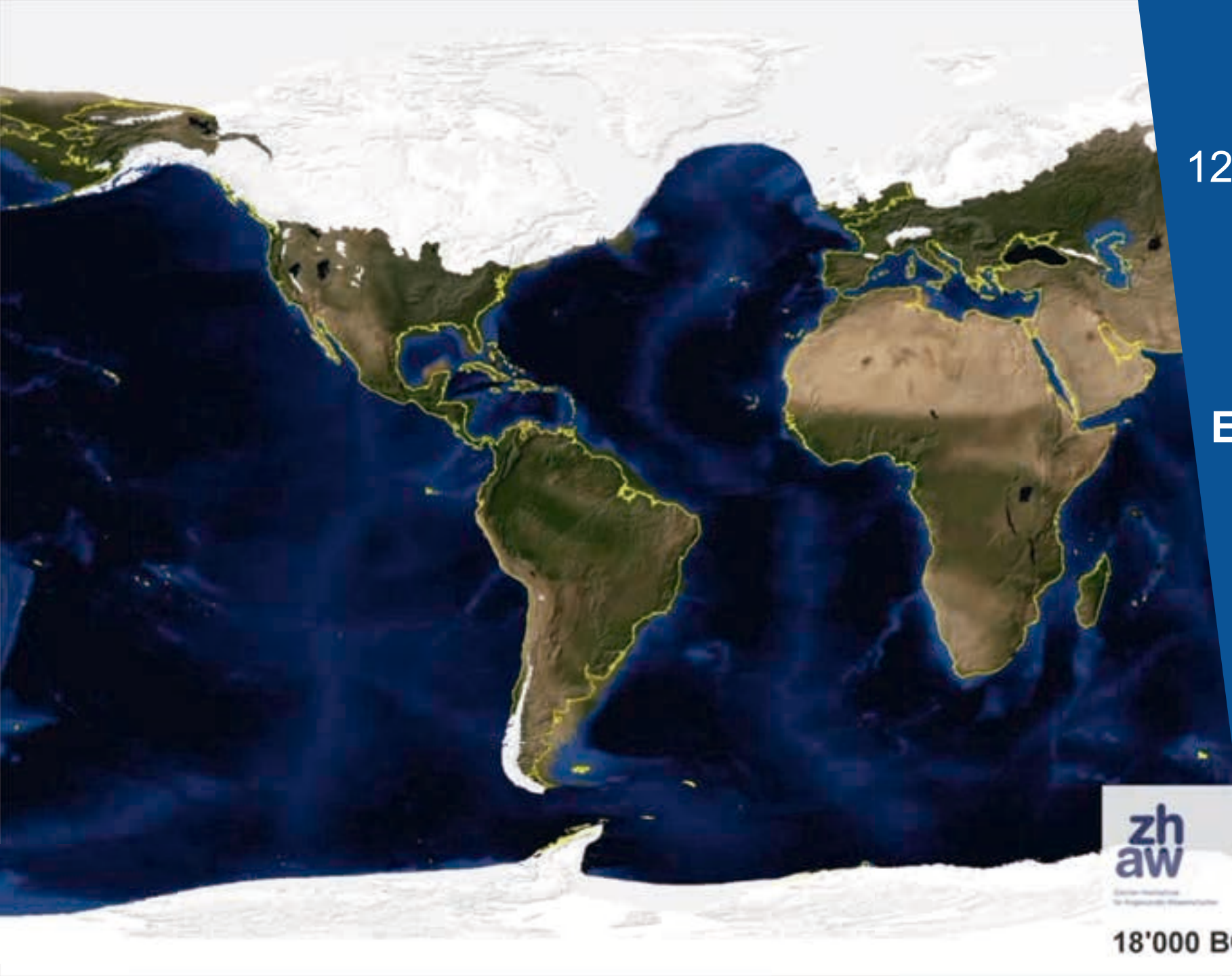


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CAPE HORN & PATAGONIA

# Glaciology in Patagonia

# The ice as main sculptor of the Patagonian landscape





**Last Glaciation**  
120.000 years ago approx.

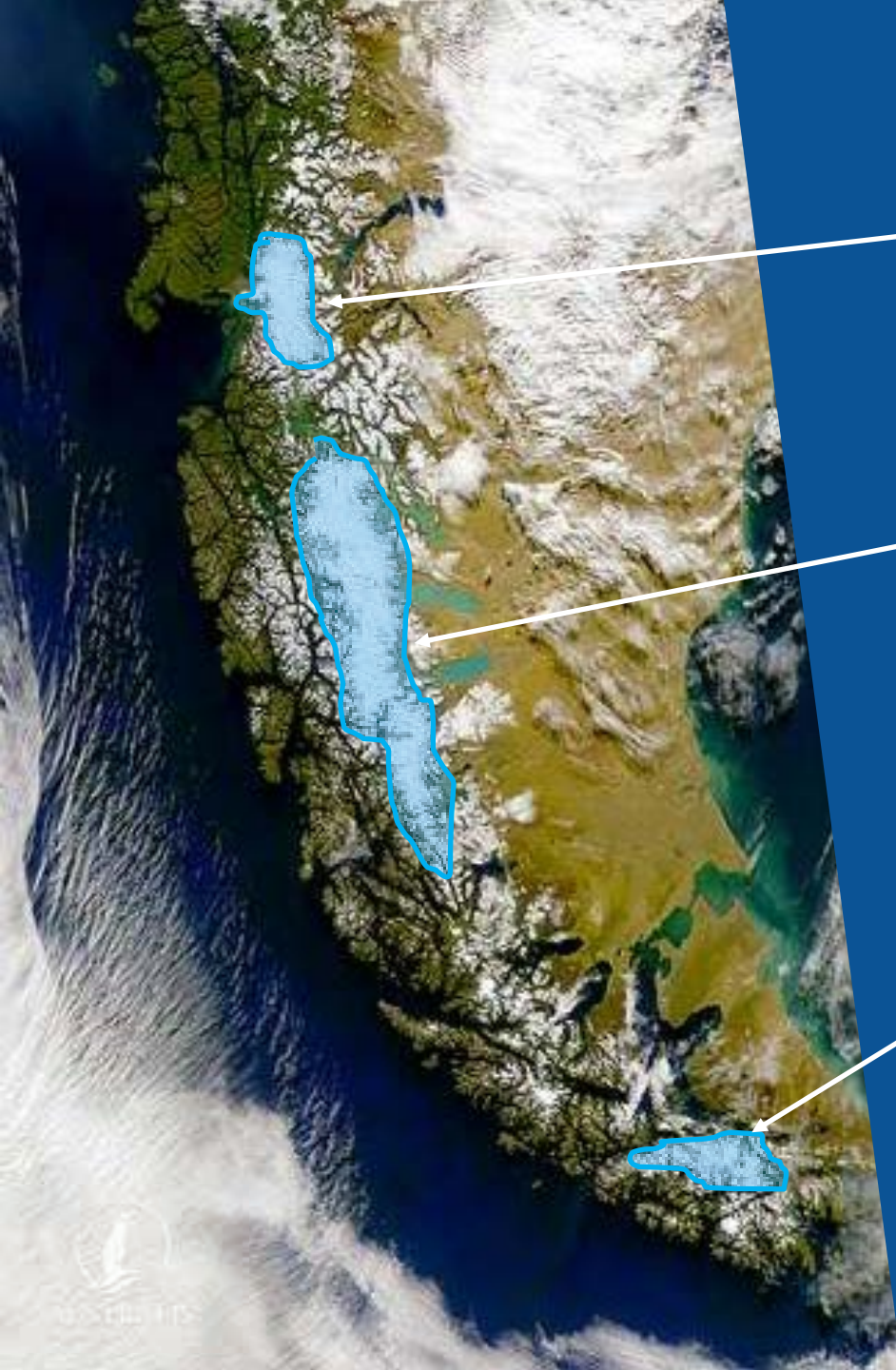
**Last expression**  
23.000 years approx.

**End of the last variation**  
12.000 years approx.

**Variation of the sea**  
140 meters approx.

zh  
aw

18'000 BC



**NORTHERN  
PATAGONIAN  
ICE FIELD**  
(4.200 Km<sup>2</sup>)

**SOUTHERN  
PATAGONIAN  
ICE FIELD**  
(13.000 Km<sup>2</sup>)

**DARWIN MOUNTAIN  
RANGE ICE FIELD**  
(2.333 Km<sup>2</sup>)

+ Santa Inés Island  
+ Muñoz-Gamero Pen.

## Study of the Patagonian Icefields

**80% of glaciers of Chile are located in the Region of Magellan.**

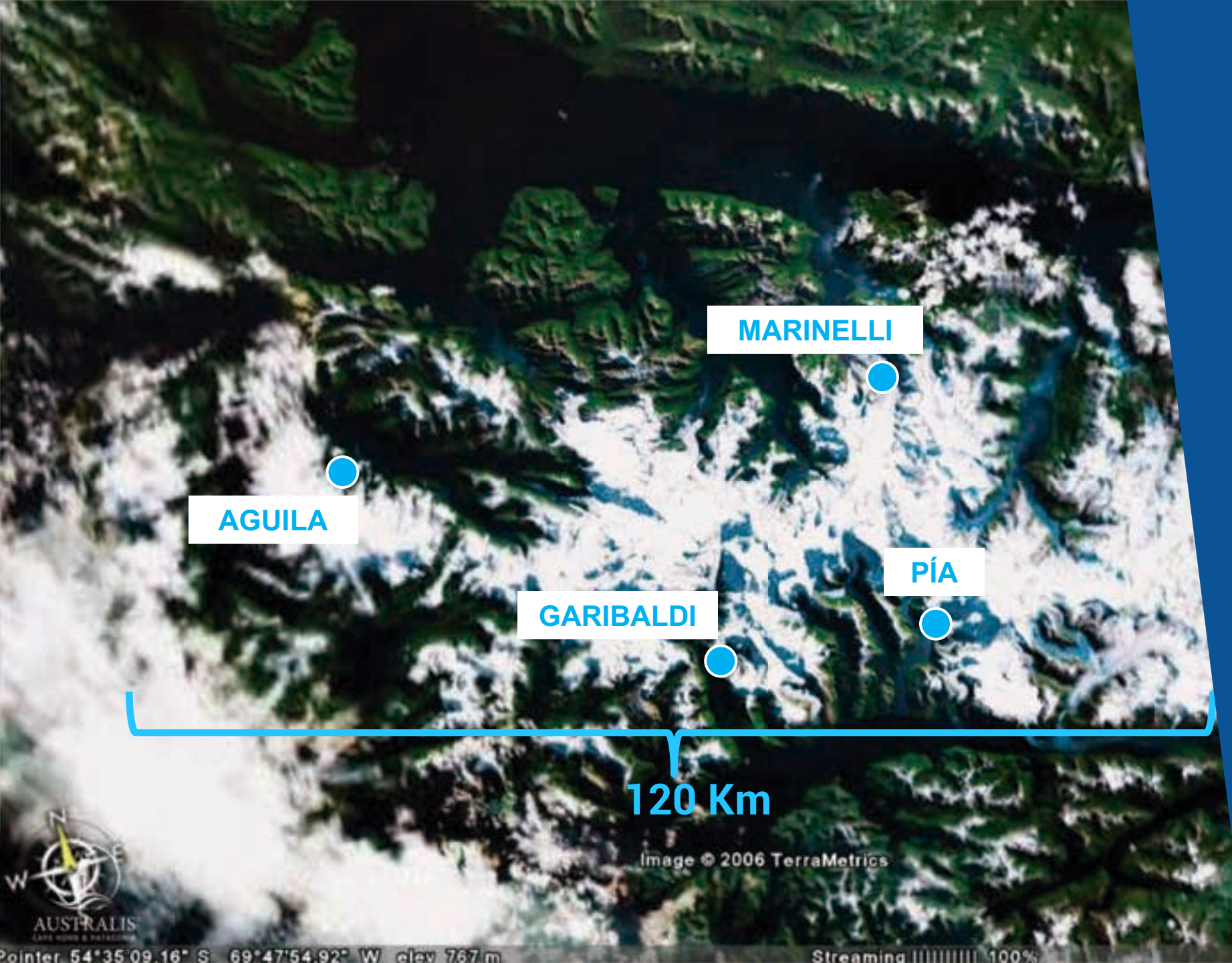
**Contributes more than 9% to the increase of the levels of the sea (melting of the Northern and Southern Patagonic Ice Fields)**

**Recent studies show a strong influence due to global warming.**

# Darwin Mountain Range Ice Field

Approximate surface  
2.333 Km<sup>2</sup>

50% Covered in ice



# Glacial Projection in Tierra del Fuego

Punta Arenas

2.000 mts.

Ushuaia



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# Glacial Projection in Tierra del Fuego

Punta Arenas

Ushuaia

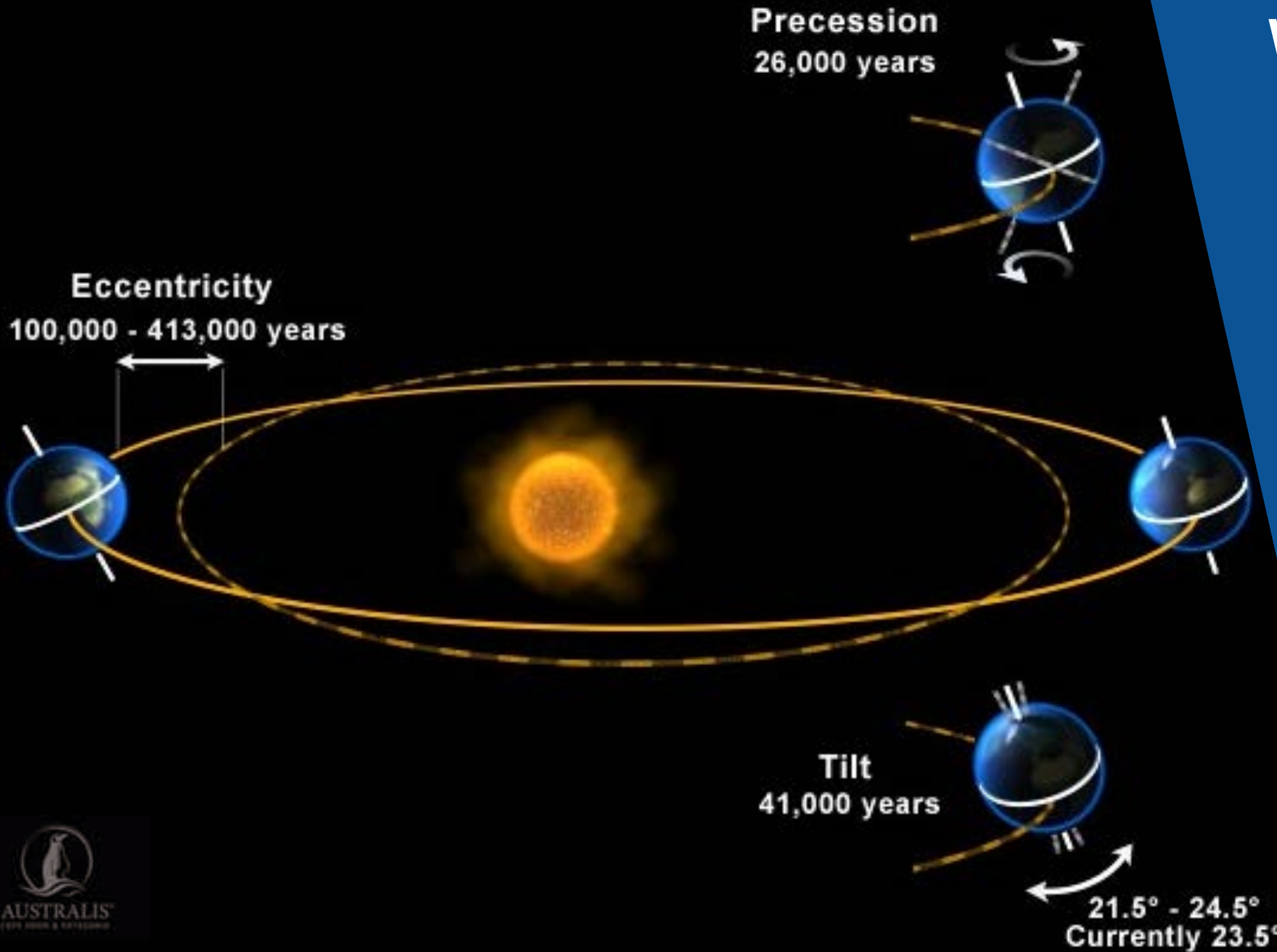
# Ice Core samples



# Why do Glaciation Eras take place in our world?

**Milutin Milankovitch**  
1879-1958

“Cyclical Theories”



# What is a glacier?

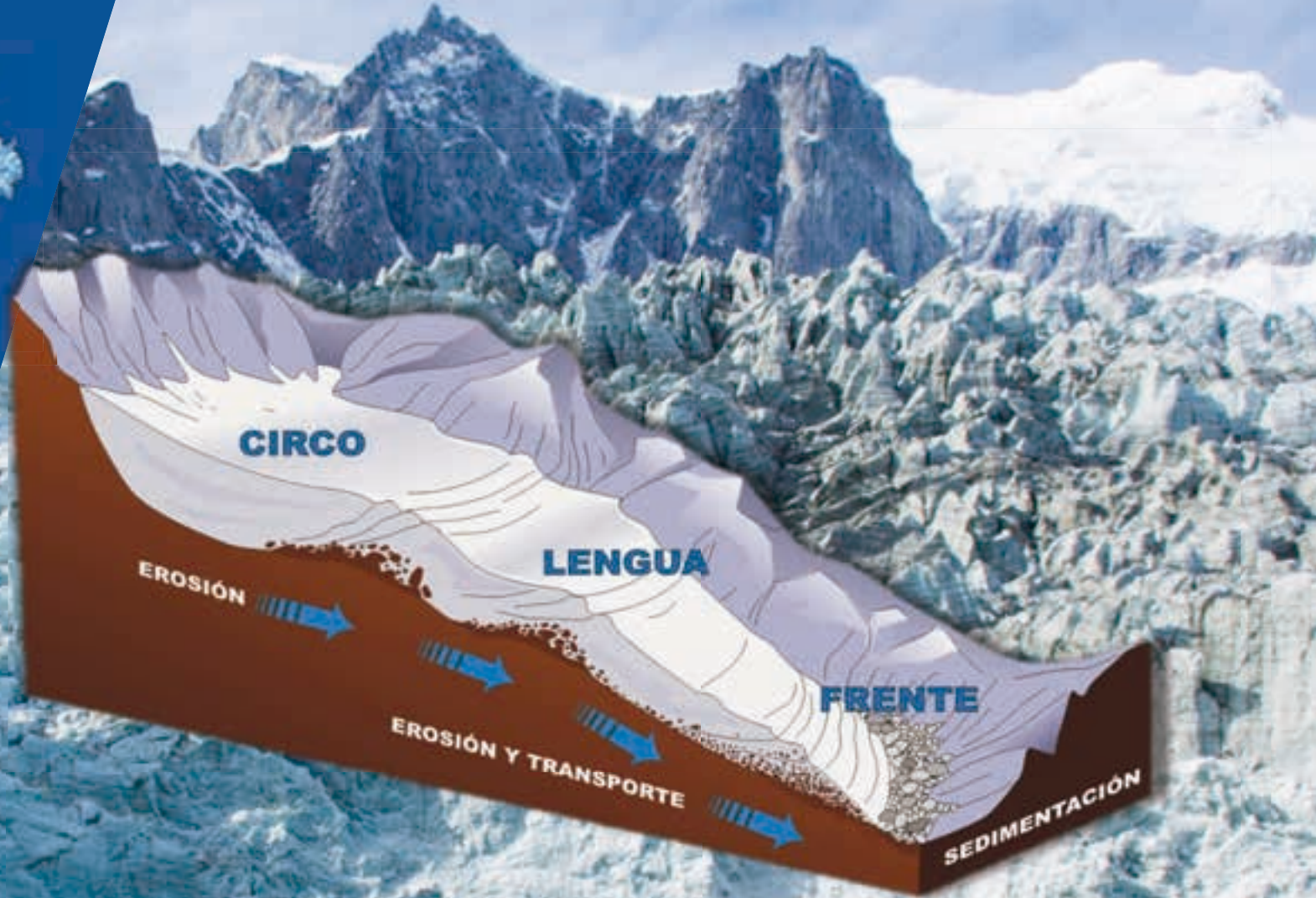
Accumulation of snow

Mass of ice in movement

Visible for 2 years

Surface equal or higher  
than  $0.01\text{km}^2$   
(1 acre)

Can be rocky



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# Formation of Glaciers

Accumulation of snow



Expulsion of air

→ Pressing of snow

→ Transformation into firn

→ Transformation into ice



# Cold Glaciers

## Warm or temperated Glaciers



# Glaciers Classification

Valley Glacier

Tidewater Glacier



# Glaciers Classification

Hanging Glacier

Circus Glacier

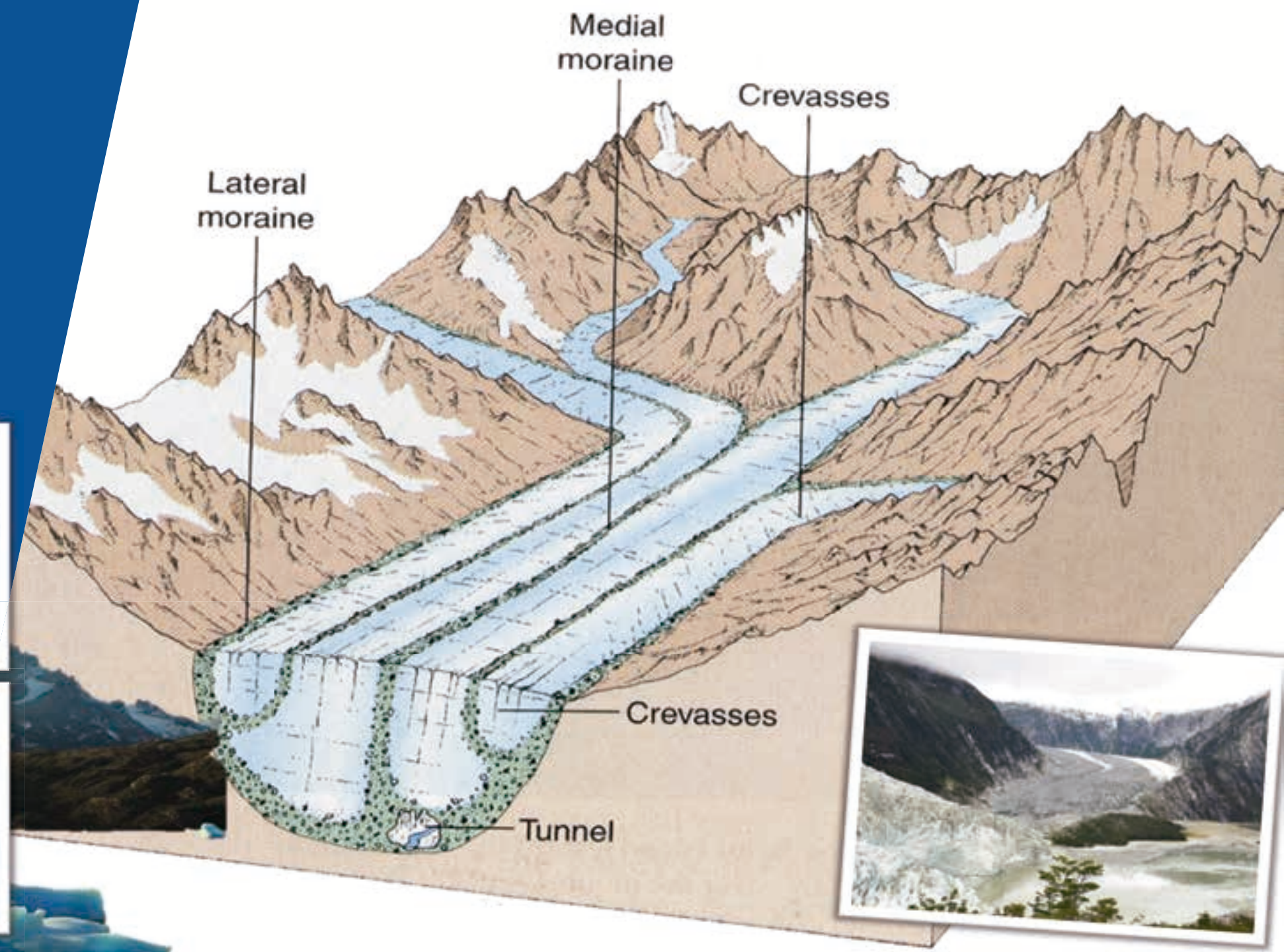


# Movement of Glaciers



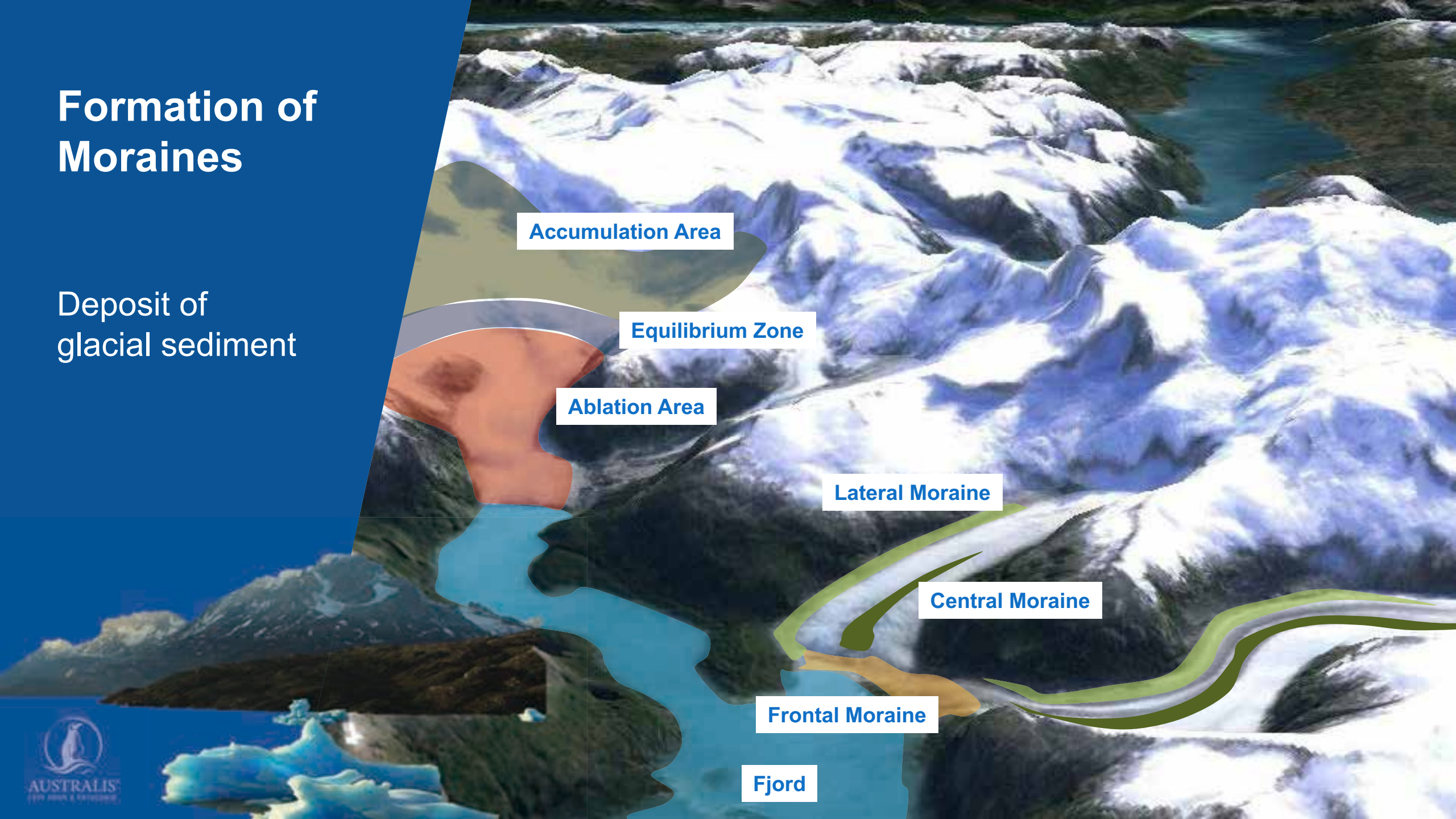
# Formation of Moraines

Deposit of  
glacial sediment



# Formation of Moraines

Deposit of  
glacial sediment



Accumulation Area

Equilibrium Zone

Ablation Area

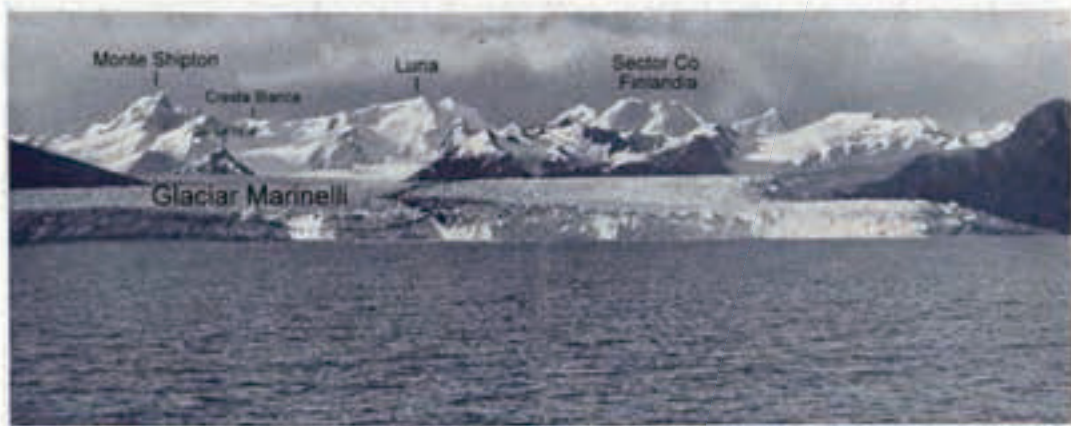
Lateral Moraine

Central Moraine

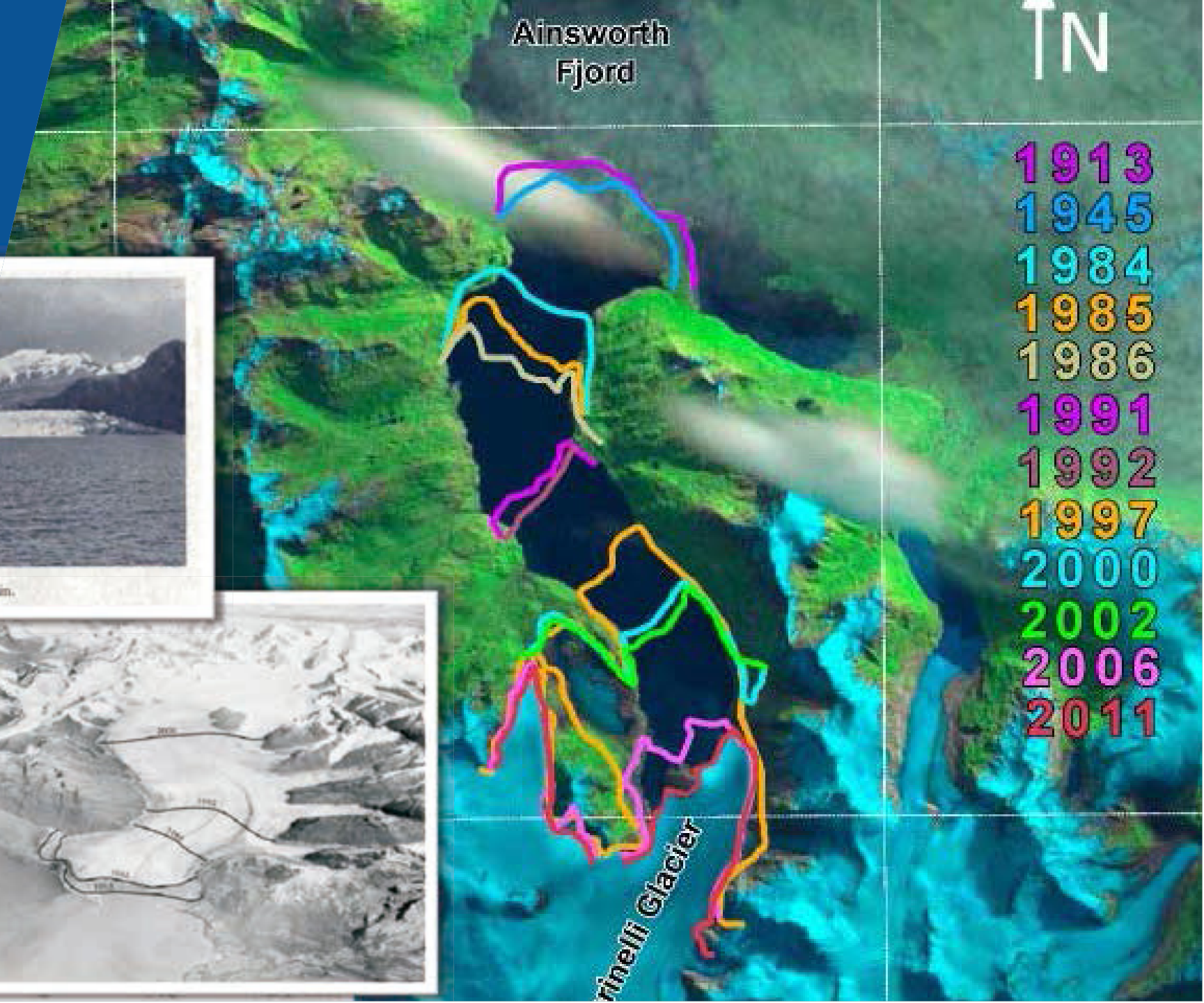
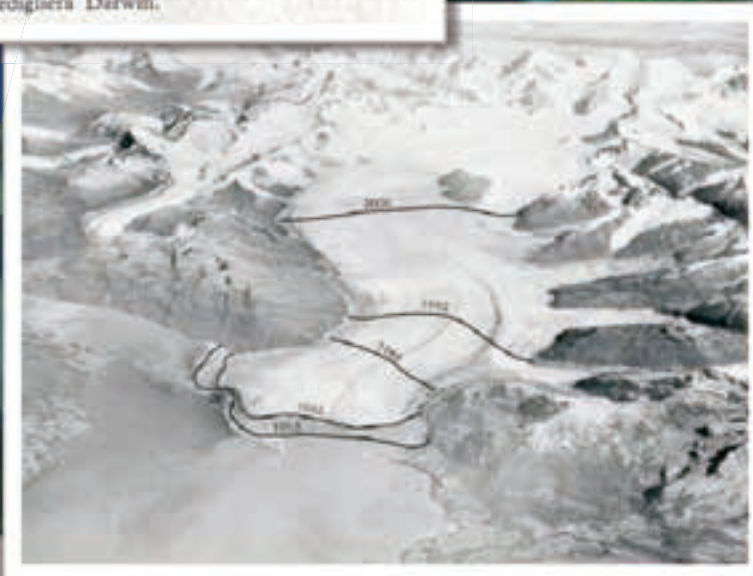
Frontal Moraine

Fjord

# Movement and retreat of Glaciers in Patagonia



Baia Ainsworth - Ghiacciaio Marinelli e Cordigliera Darwin.



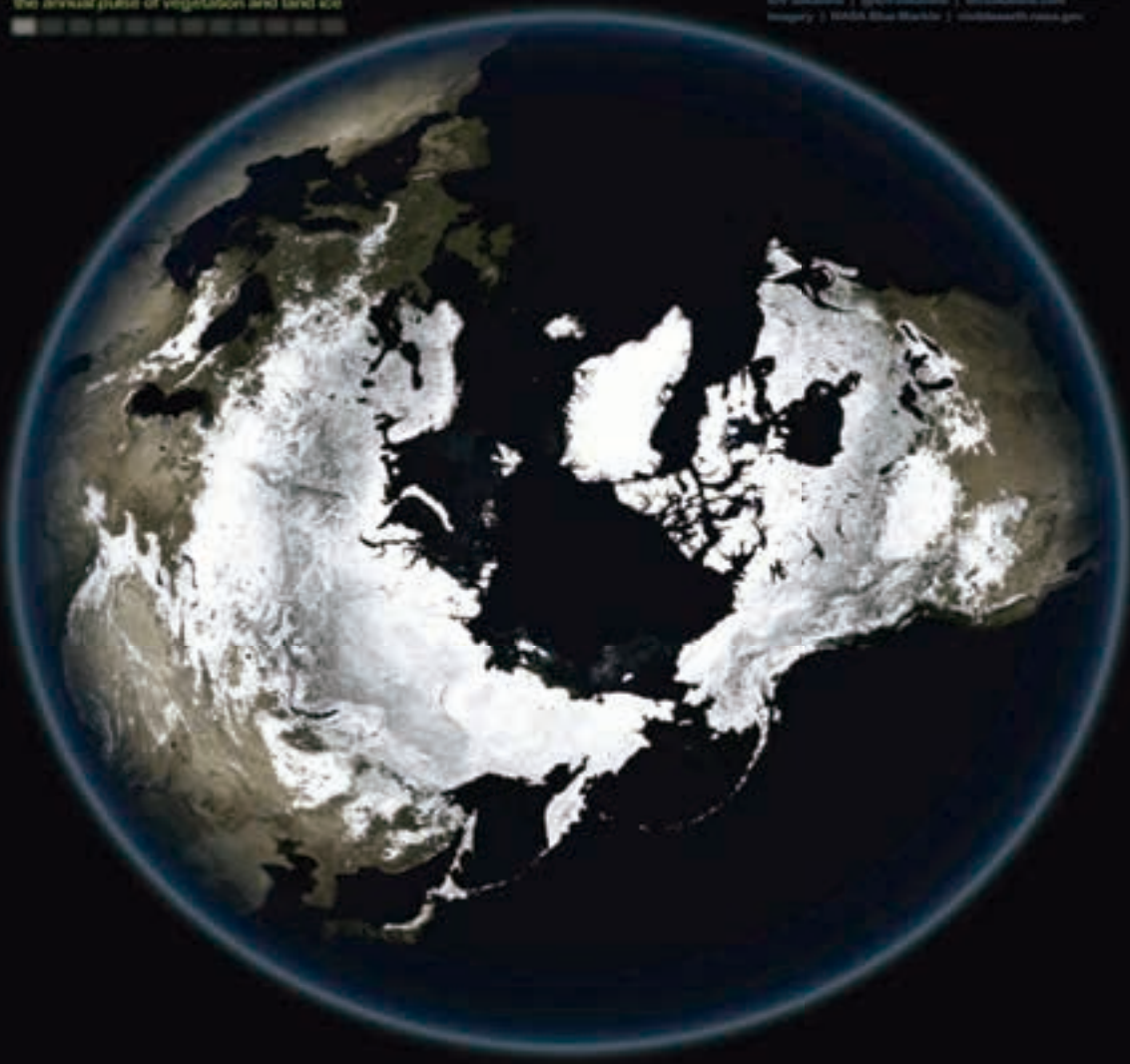
1913  
1945  
1984  
1985  
1986  
1991  
1992  
1997  
2000  
2002  
2006  
2011

## A BREATHING EARTH

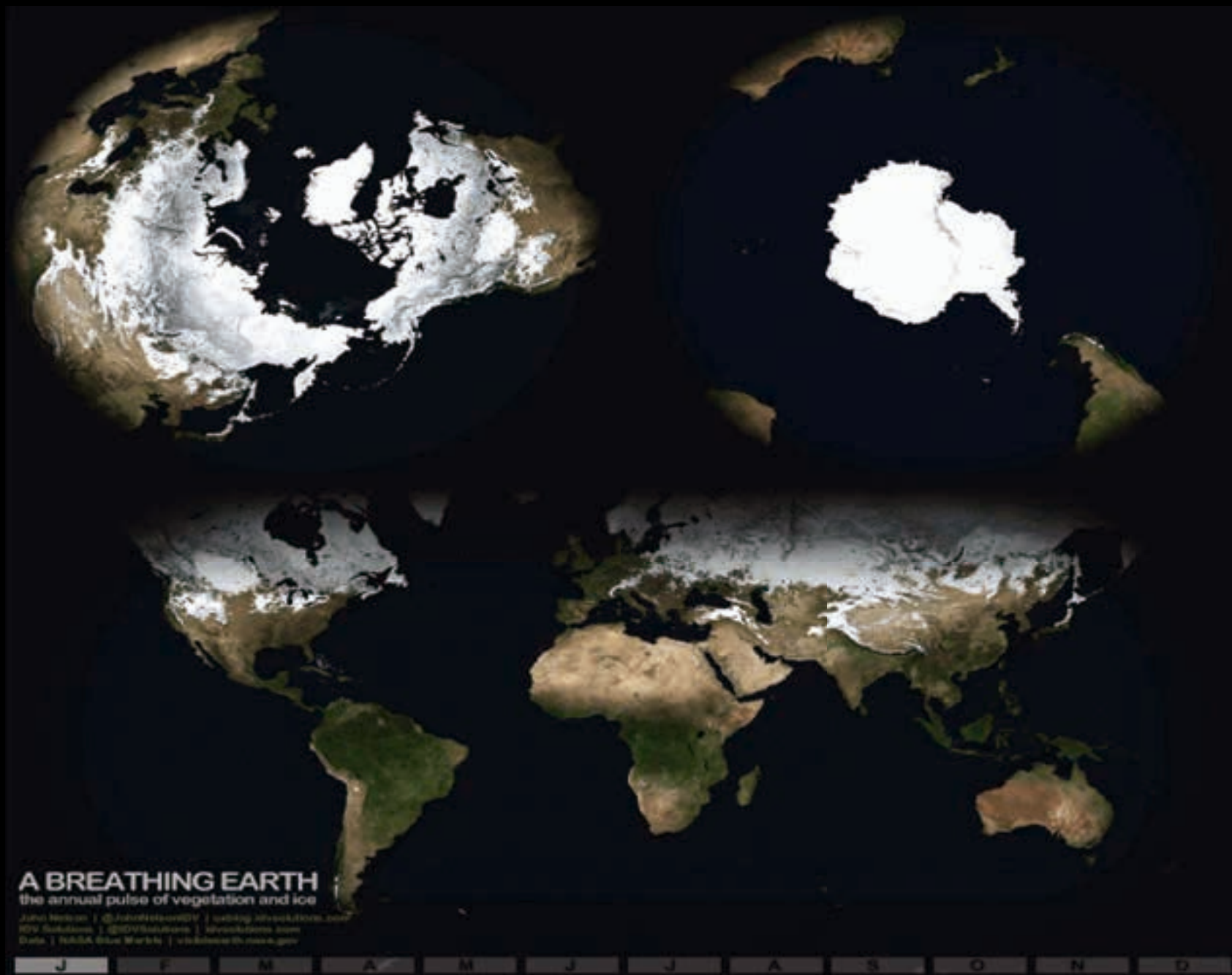
the annual pulse of vegetation and land ice

1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100

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