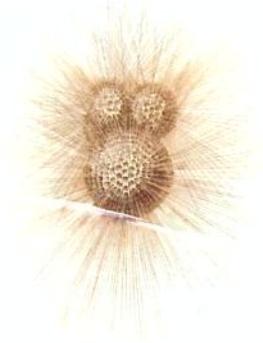
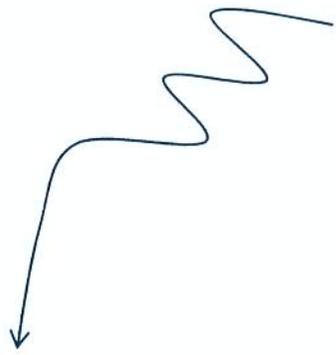




MÓDULO: FORAMINÍFEROS

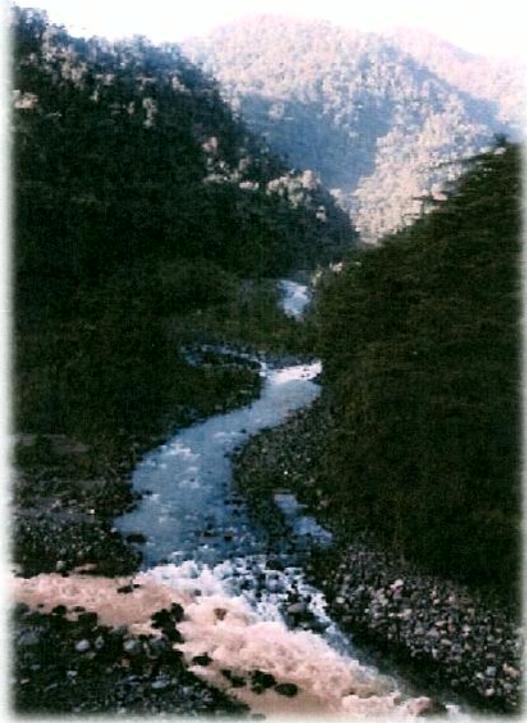


SEDIMENTOS
MARINHOS

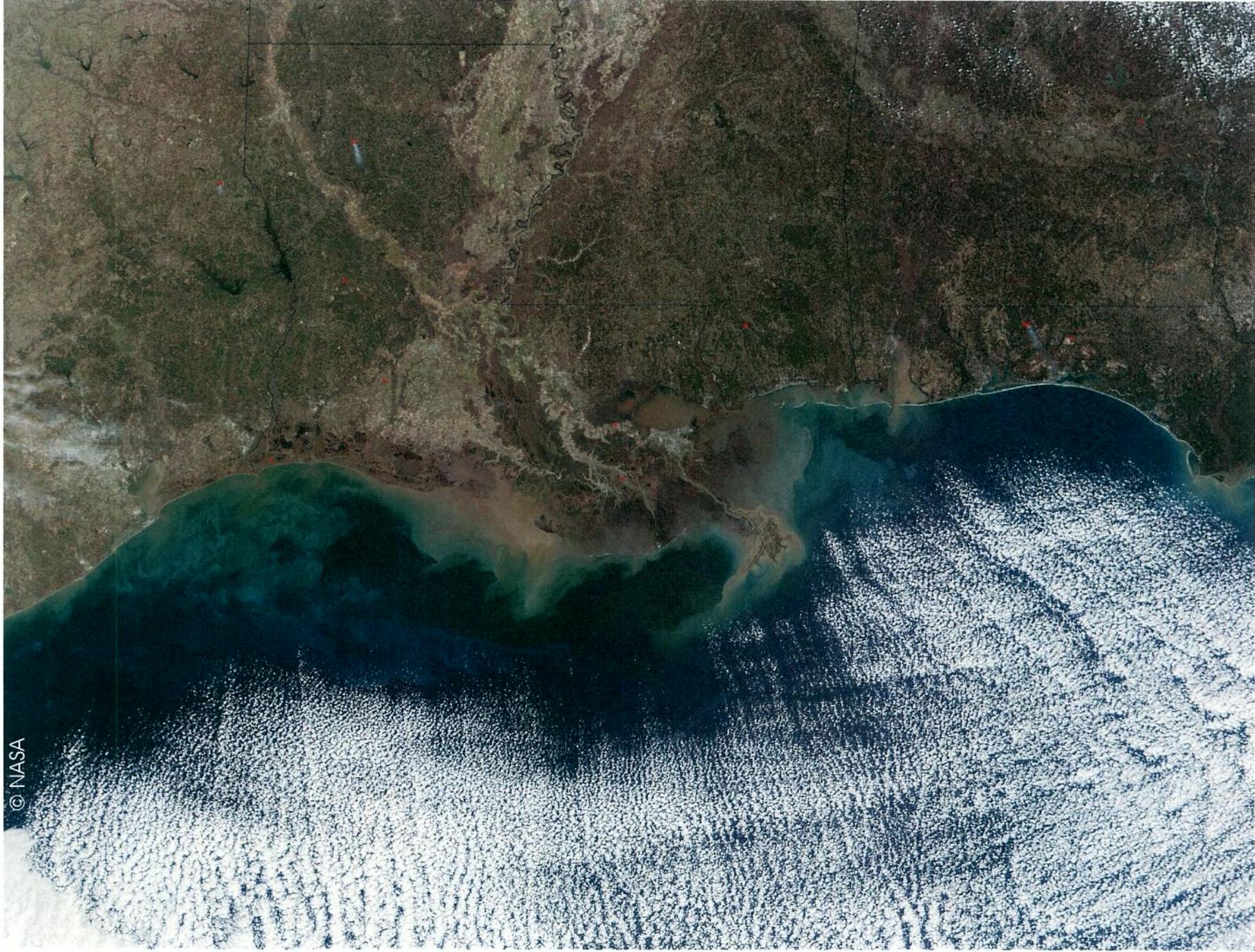


LITOGÉNICOS
OU
TERRÍGENOS

MEIOS DE TRANSPORTE DOS SEDIMENTOS PARA OS FUNDOS OCEÂNICOS

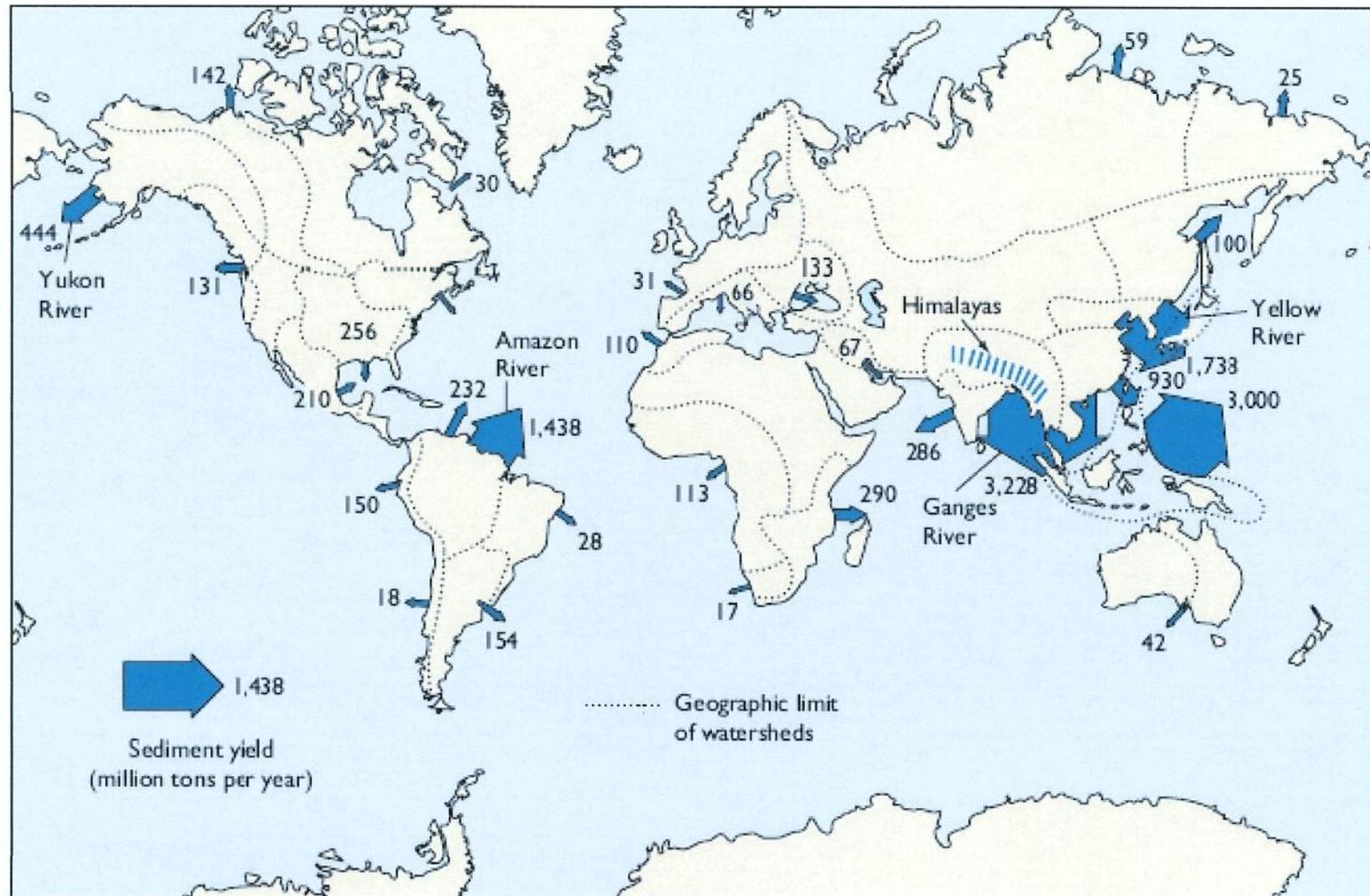


RIOS



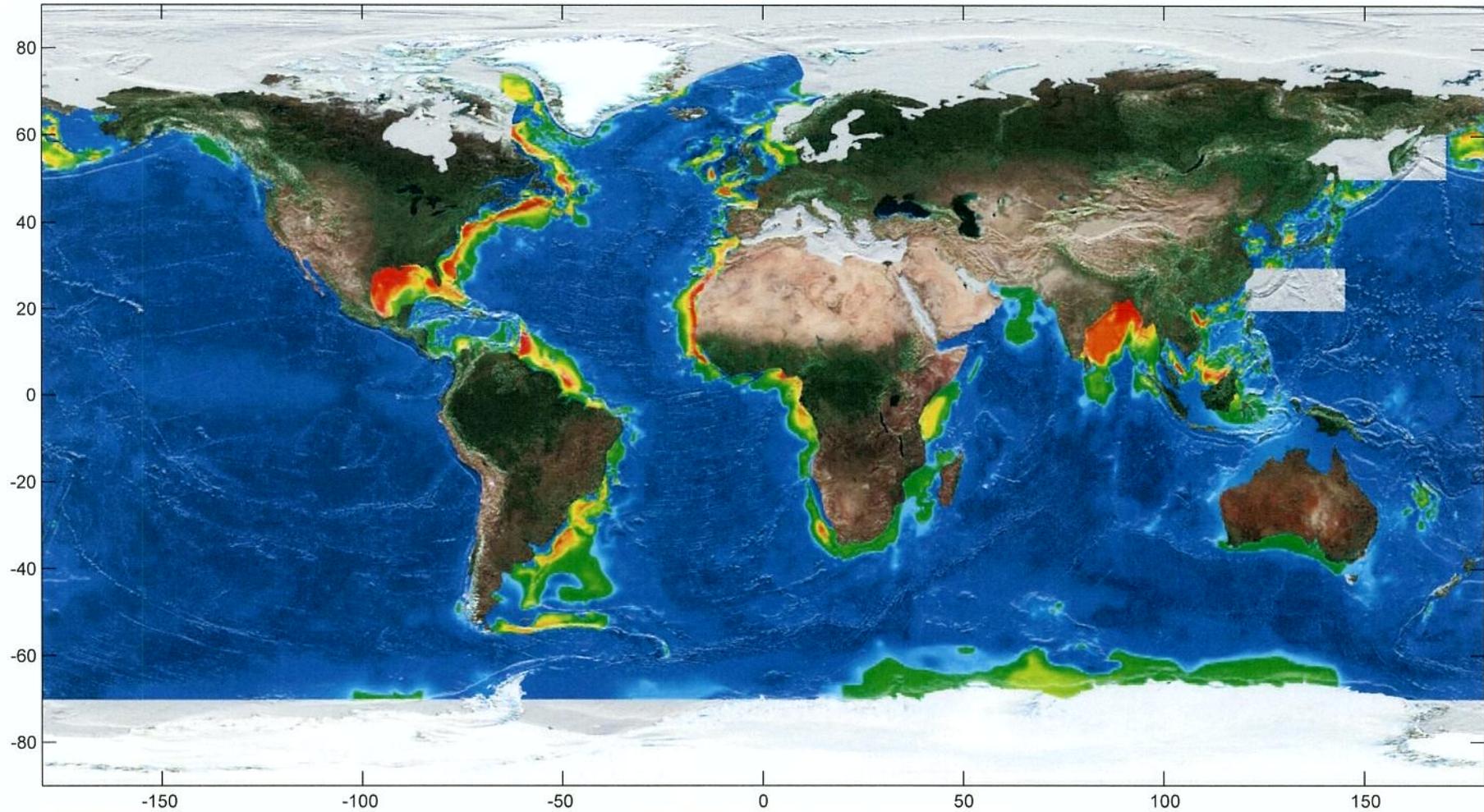
© NASA

DESCARGA DE SEDIMENTOS PELOS RIOS PARA OS FUNDOS OCEÂNICOS



adaptado de Milliman e Meade (1983)

ESPESSURA DOS SEDIMENTOS DOS FUNDOS OCEÂNICOS



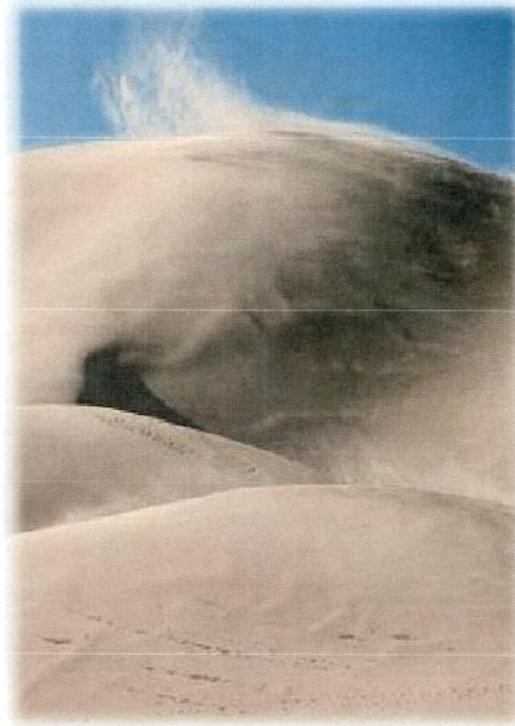
MIRONE - grid viewer and much more



metros

Divins (2006)

MEIOS DE TRANSPORTE DOS SEDIMENTOS PARA OS FUNDOS OCEÂNICOS

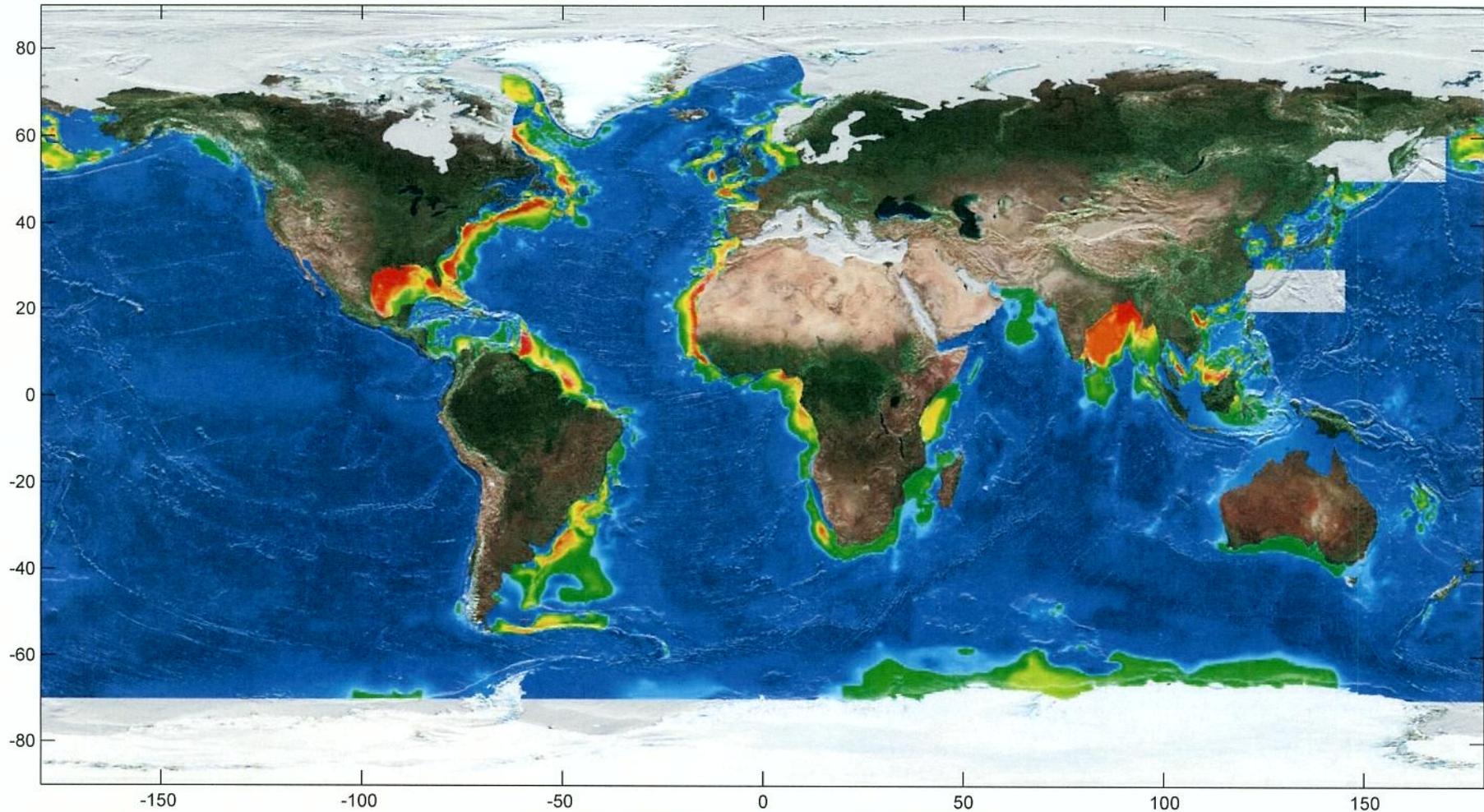


VENTO



© NASA

ESPESSURA DOS SEDIMENTOS DOS FUNDOS OCEÂNICOS



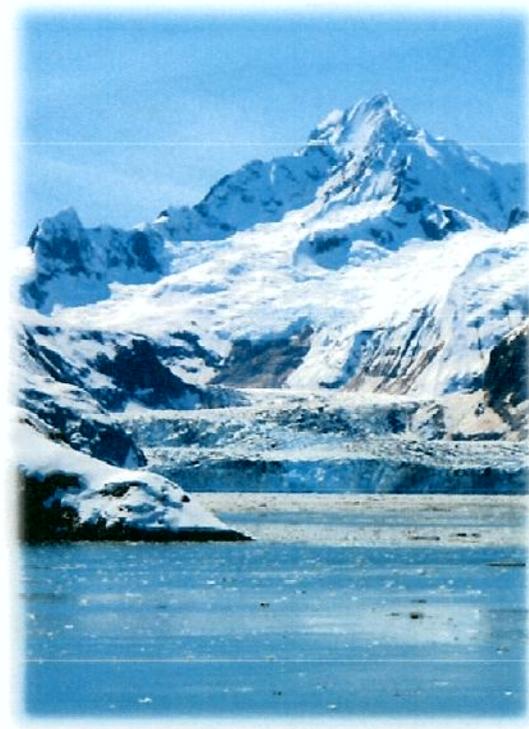
MIRONE - grid viewer and much more



metros

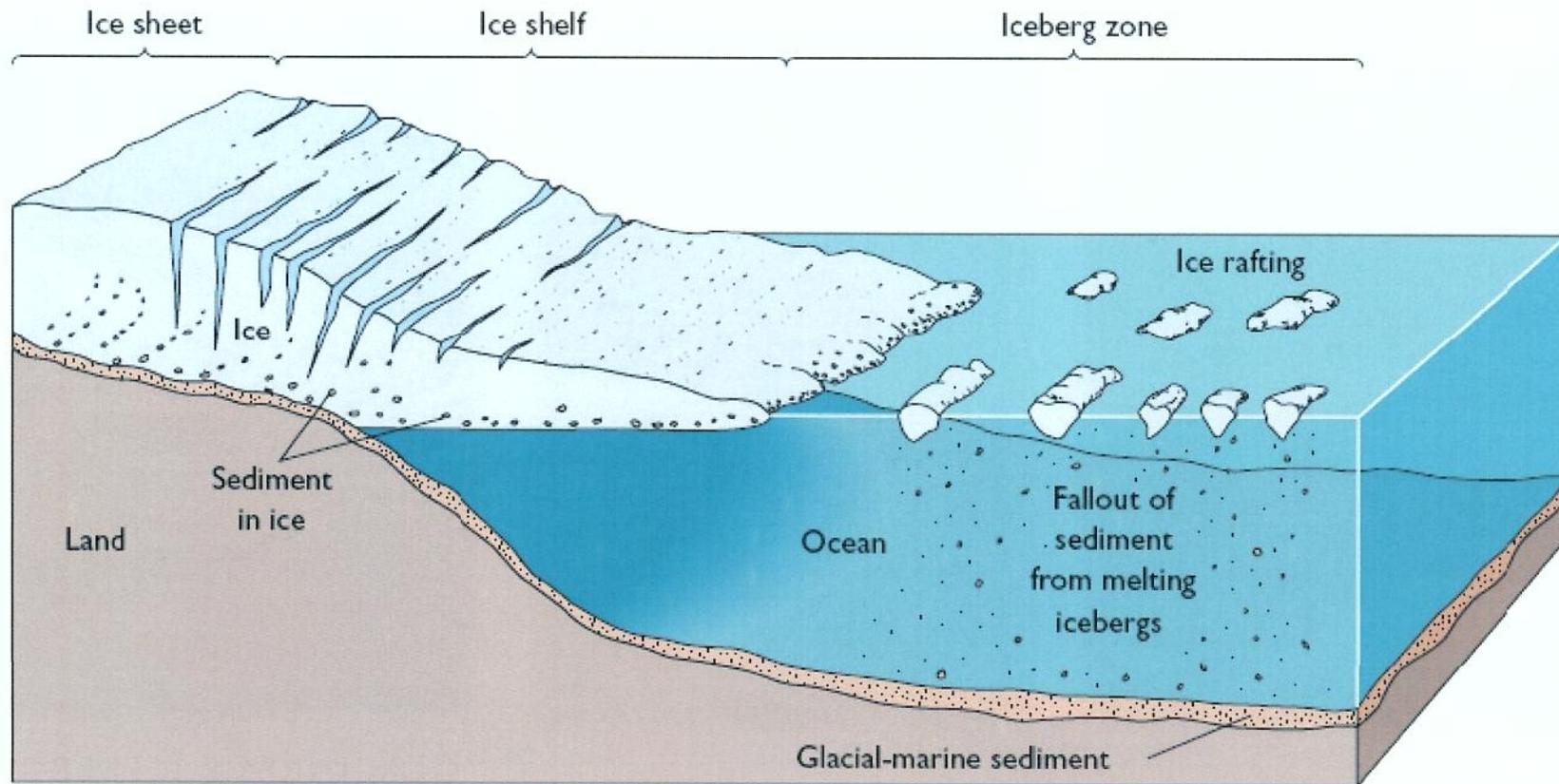
Divins (2006)

MEIOS DE TRANSPORTE DOS SEDIMENTOS PARA OS FUNDOS OCEÂNICOS

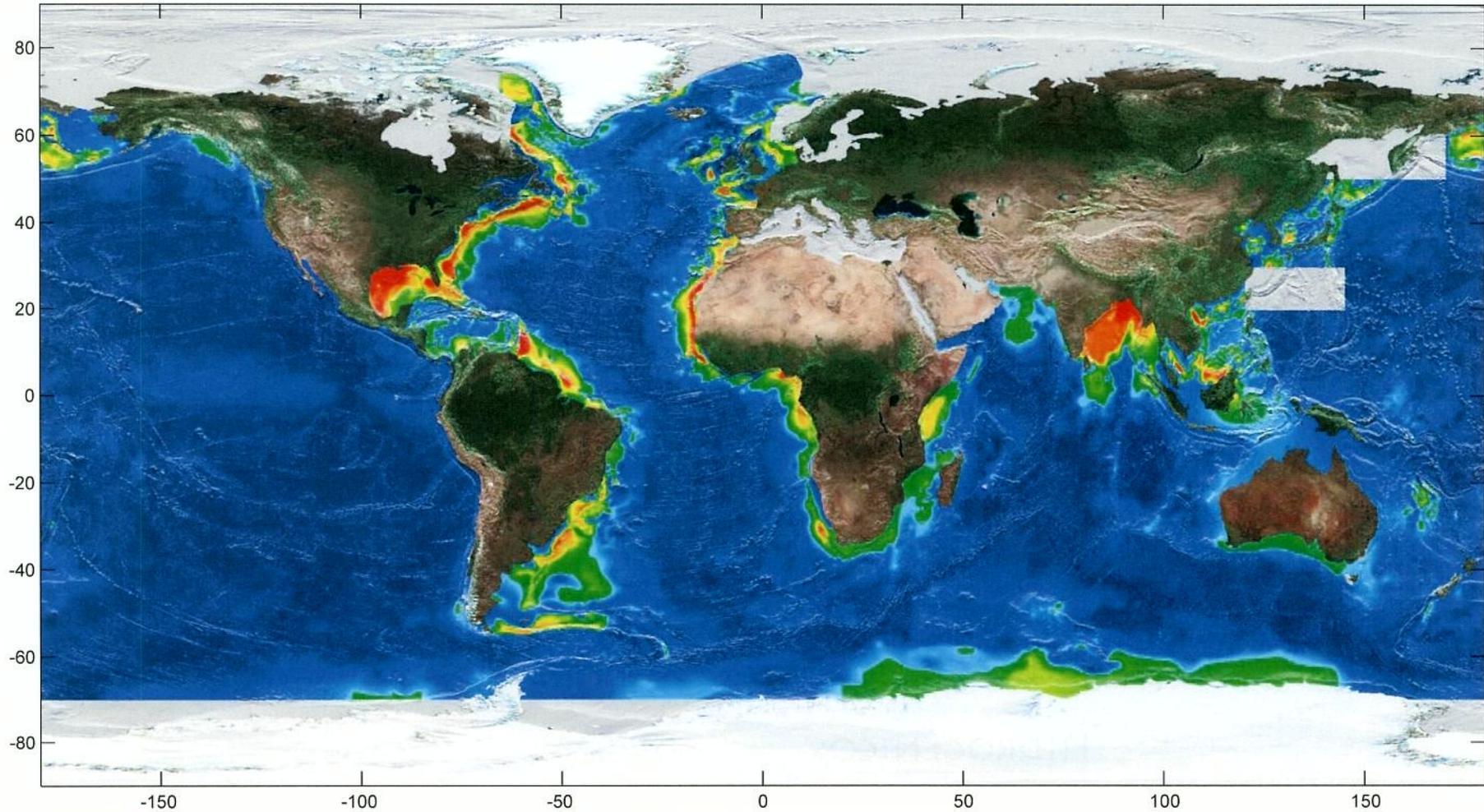


GLACIARES E ICEBERGS

TRANSPORTE DE SEDIMENTOS PELOS GLACIARES E ICEBERGS



ESPESSURA DOS SEDIMENTOS DOS FUNDOS OCEÂNICOS



MIRONE - grid viewer and much more

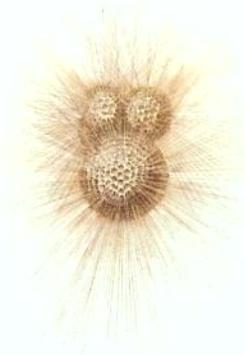


metros

Divins (2006)



MÓDULO: FORAMINÍFEROS



SEDIMENTOS
MARINHOS

LITOGÉNICOS
OU
TERRÍGENOS

HIDROGÉNICOS

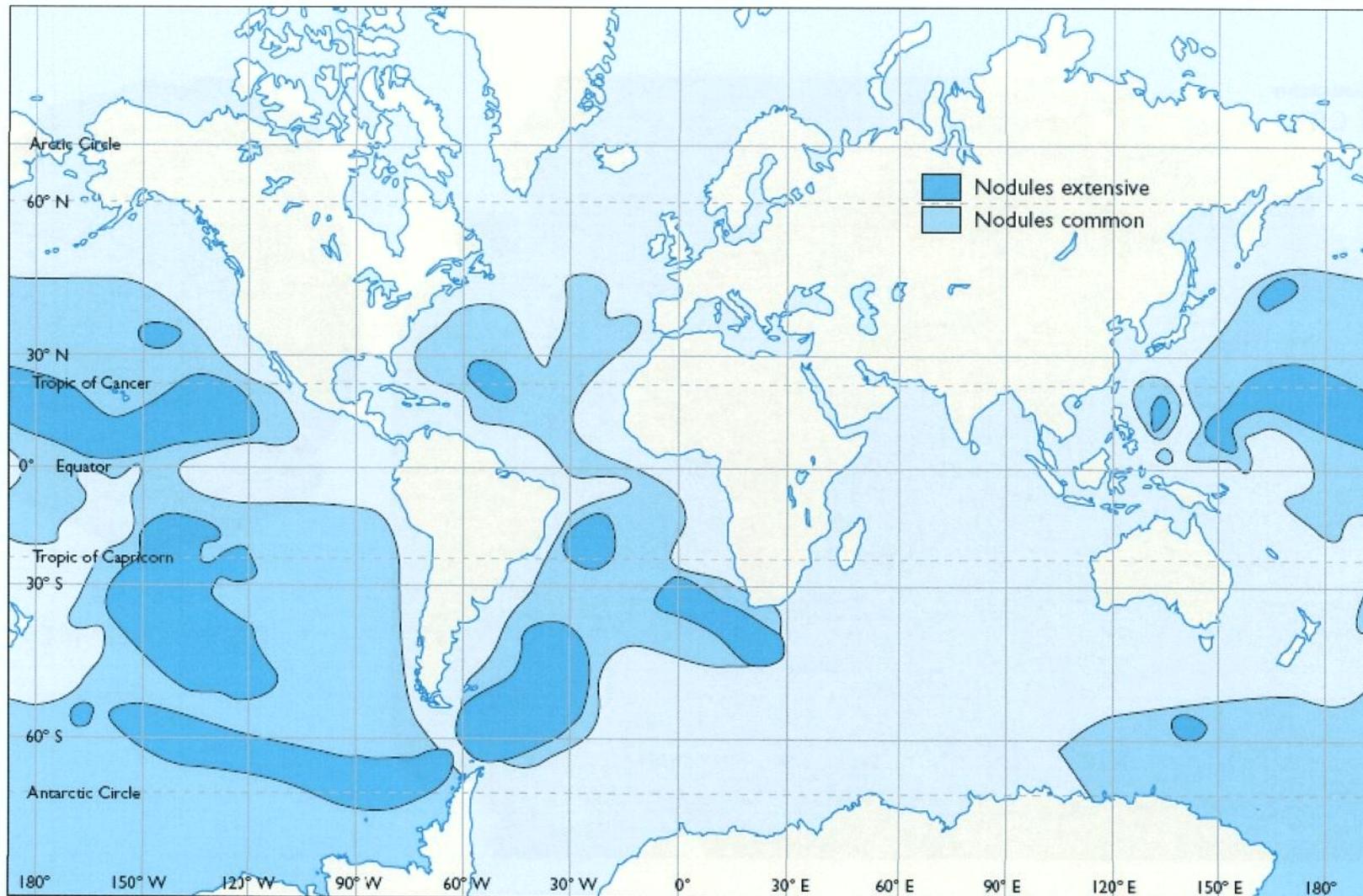


CARBONATOS, FOSFATOS, SULFURETOS METÁLICOS, EVAPORITOS...



NÓDULO
DE MANGANÊS

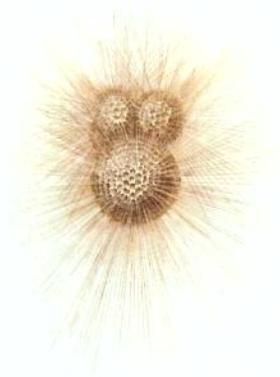
DISTRIBUIÇÃO DOS NÓDULOS DE MANGANÊS



Pinet (2009)



MÓDULO: FORAMINÍFEROS

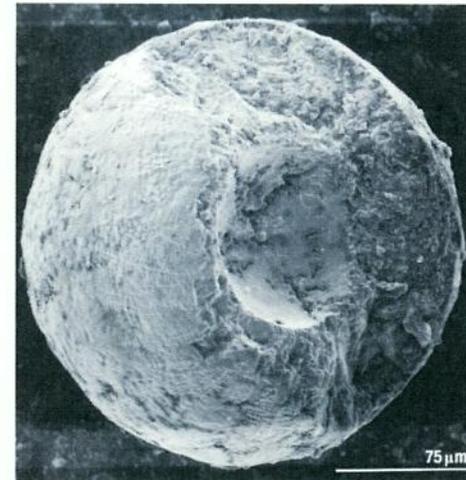


SEDIMENTOS MARINHOS





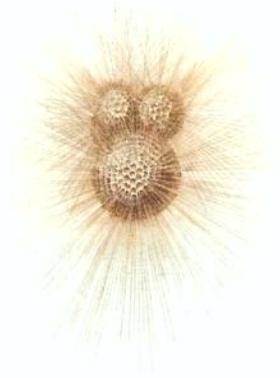
POEIRAS ESPACIAIS



TECTITO



MÓDULO: FORAMINÍFEROS



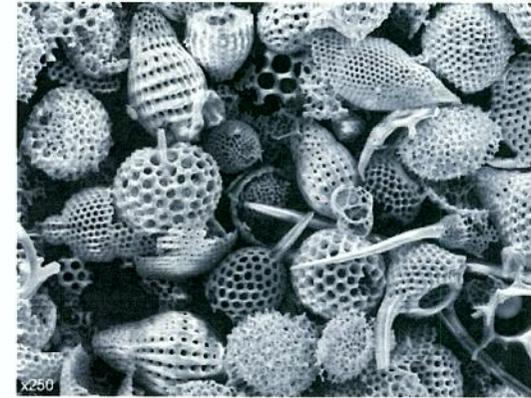
SEDIMENTOS MARINHOS



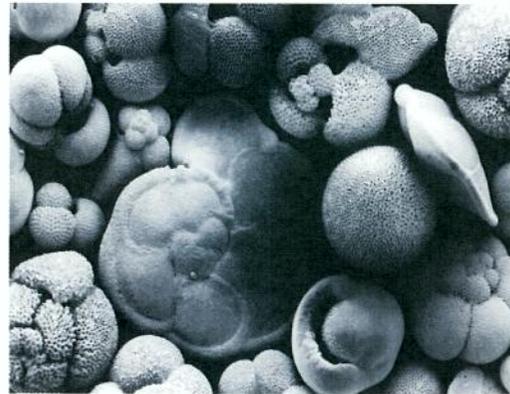
MICROFÓSSEIS COMUNS EM VASAS MARINHAS



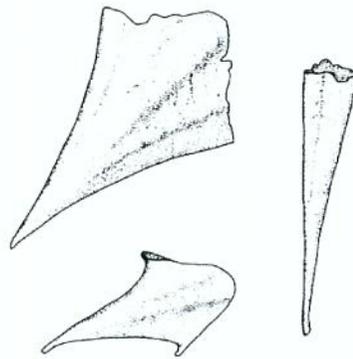
COCOLITÓFOROS



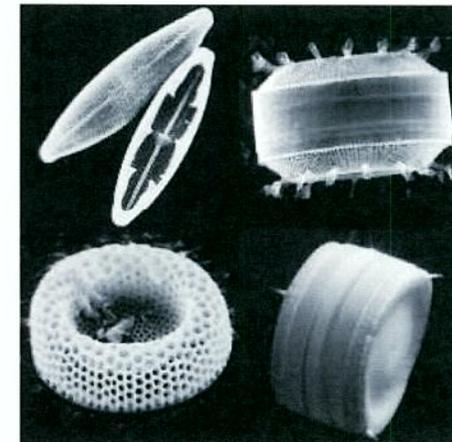
RADIOLÁRIOS



FORAMINÍFEROS



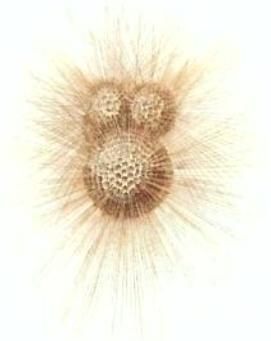
PTERÓPODES



DIATOMÁCEAS



MÓDULO: FORAMINÍFEROS

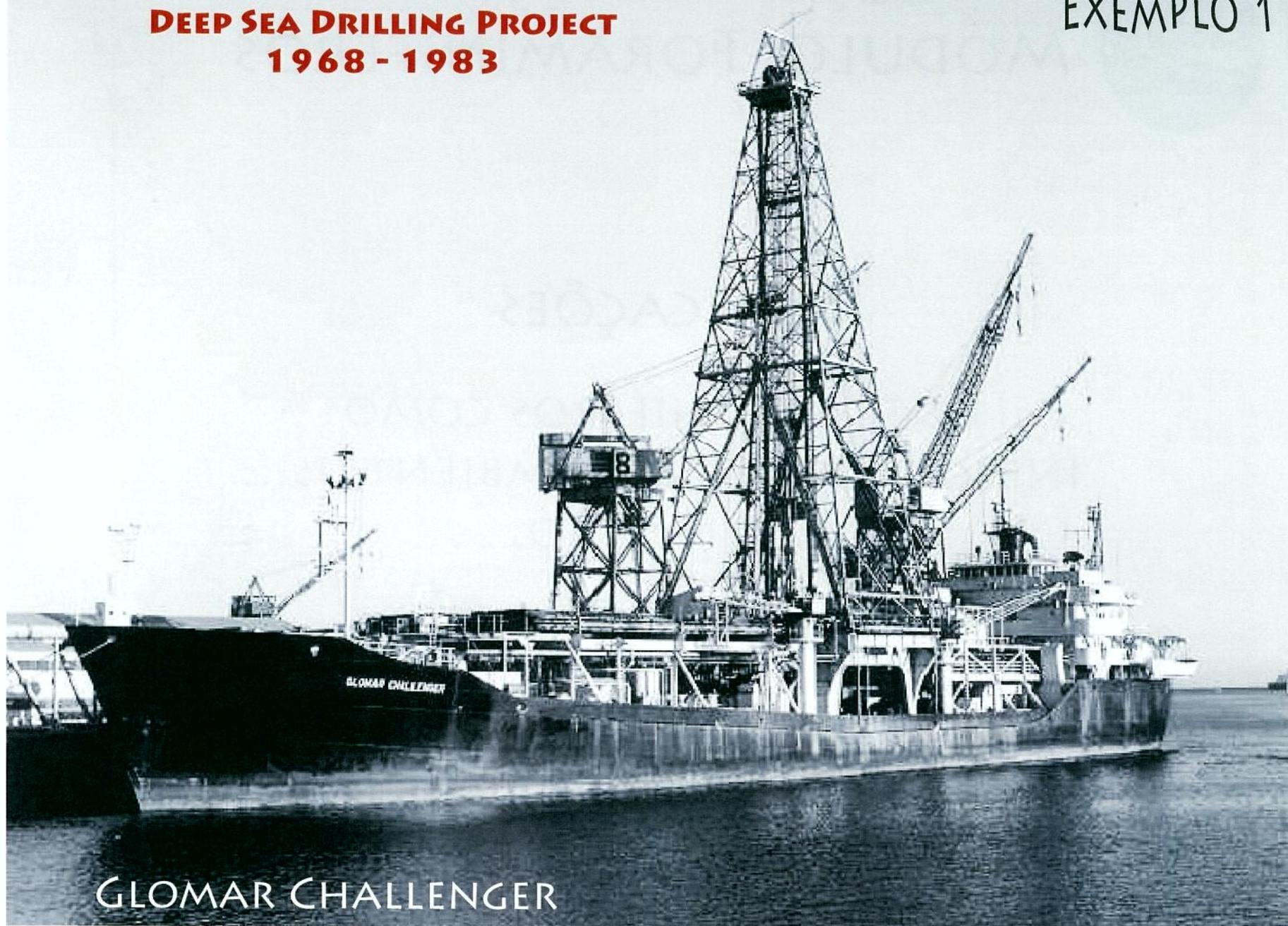


APLICAÇÕES

OS FORAMINÍFEROS COMO
INDICADORES PALEOAMBIENTAIS...
...E NÃO SÓ.

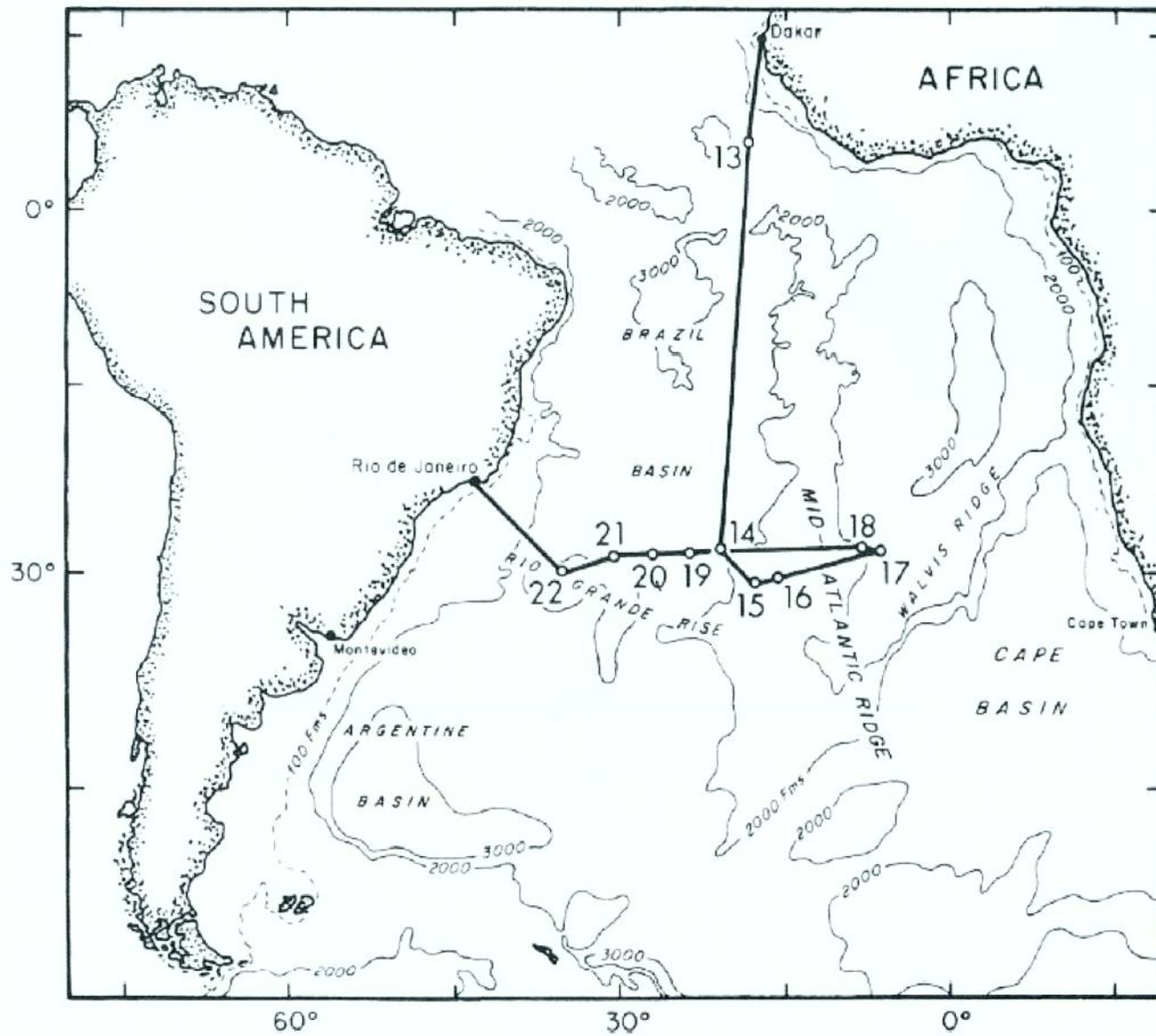
**DEEP SEA DRILLING PROJECT
1968 - 1983**

EXEMPLO 1



GLOMAR CHALLENGER

DSDP LEG 3 DRILLING SITES



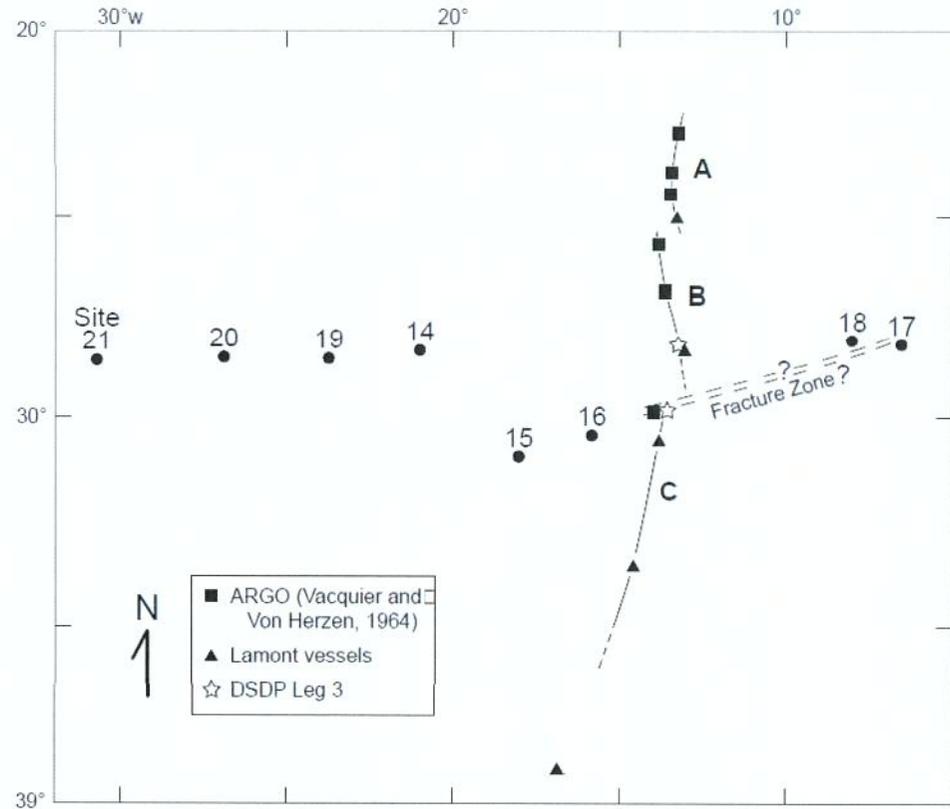
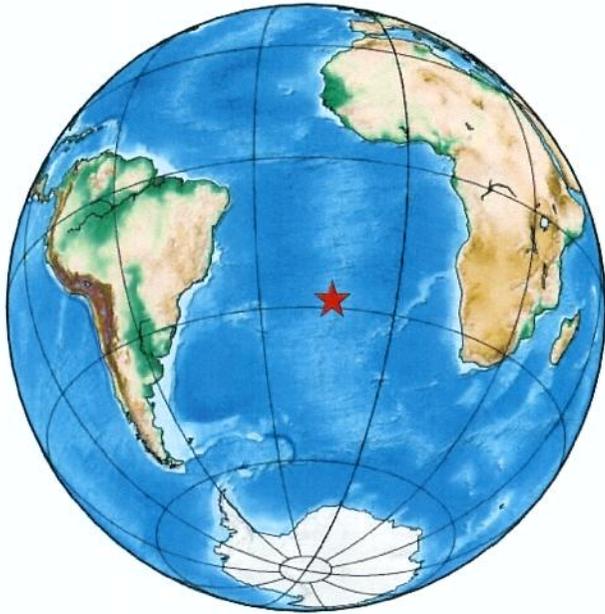


Table 1
Distances and Ages of Mid-Atlantic Ridge Sites from the Axis

Site Number	Paleontological Age of Sediment (m.y.)	Distance From Ridge Axis (km)
16	11	221
15	24	422
18	26	506
17	33	718
14	40	745
19	49	1010
20	67	1303
21	76	1686

Adapted from Table 5', from Initial Reports of DSDP, Volume 3

**OCEAN DRILLING PROGRAM
1983 - 2003**

EXEMPLO 2



JOIDES RESOLUTION

The K-T Boundary (ODP Expedition 171)

Top
64.9 ma

65 ma

65.1 ma



AFTER THE IMPACT

Only tiny, less ornate foraminifera microfossils are found in this layer; a few new species have evolved. There is a tremendous difference in size between the foraminifera microfossils shown here compared to those from before the impact.

FIREBALL LAYER

Contains dust and ash fallout from the asteroid impact.

EFFECTS OF THE IMPACT

Ejecta including tektites - glassy spherules condensed from the hot vapour cloud produced by the asteroid impact - are found in this layer of the core. Debris thrown into the atmosphere by the impact rained down on the Earth for days to months after the event. The impact and ensuing global climatic changes devastated life. In the ocean, 95 percent of the free-floating foraminifera died out.

MOMENT OF IMPACT

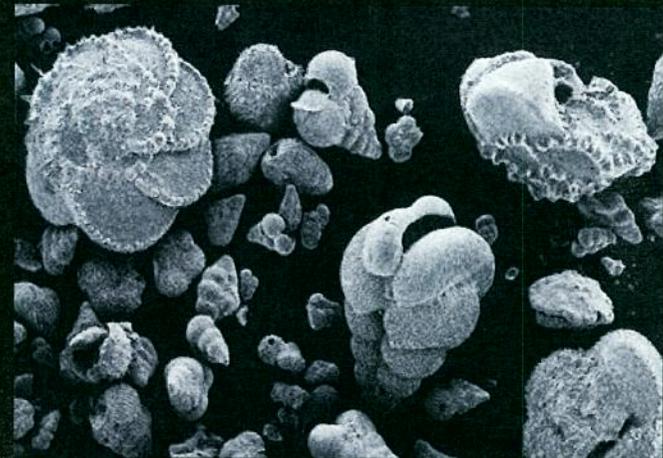
K/T (Cretaceous/Tertiary) Boundary

BEFORE THE IMPACT

This layer contains microfossils of the large and ornate foraminifera that flourished in the oceans during the time of the dinosaurs.



— 0.1 mm



— 0.1 mm

EXEMPLO 3

**INTEGRATED OCEAN DRILLING PROGRAM
2003 - 2013**



JOIDES RESOLUTION



Paleocene - Eocene Thermal Maximum (PETM)

Walvis Ridge ODP Leg 208

Top

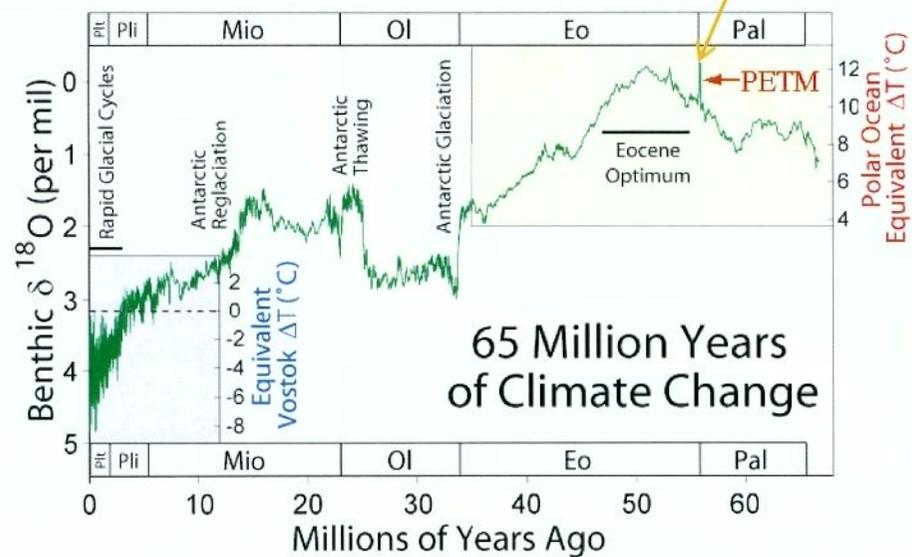


Early Eocene ooze

PETM clay

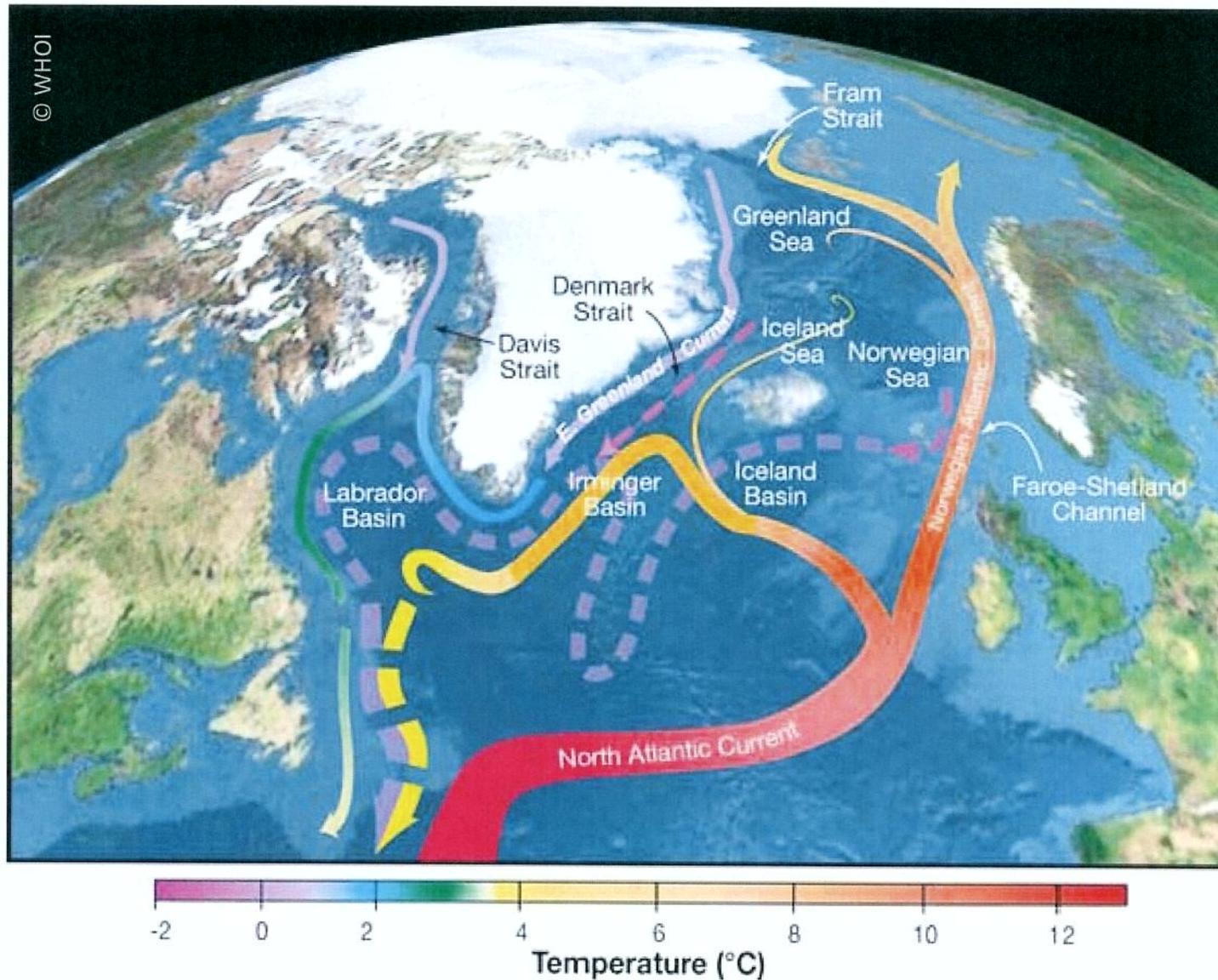
Paleocene ooze

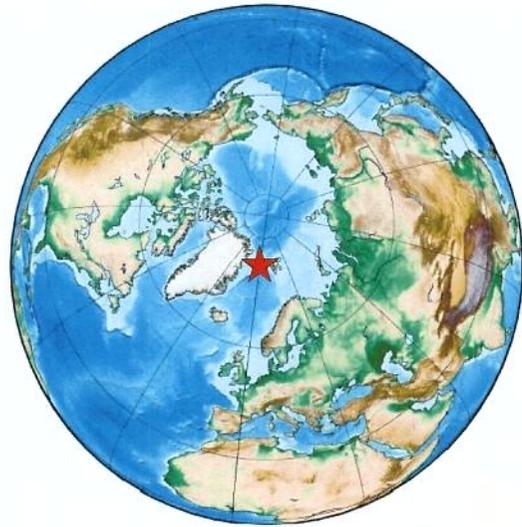
Paleocene-Eocene boundary
Onset Warming



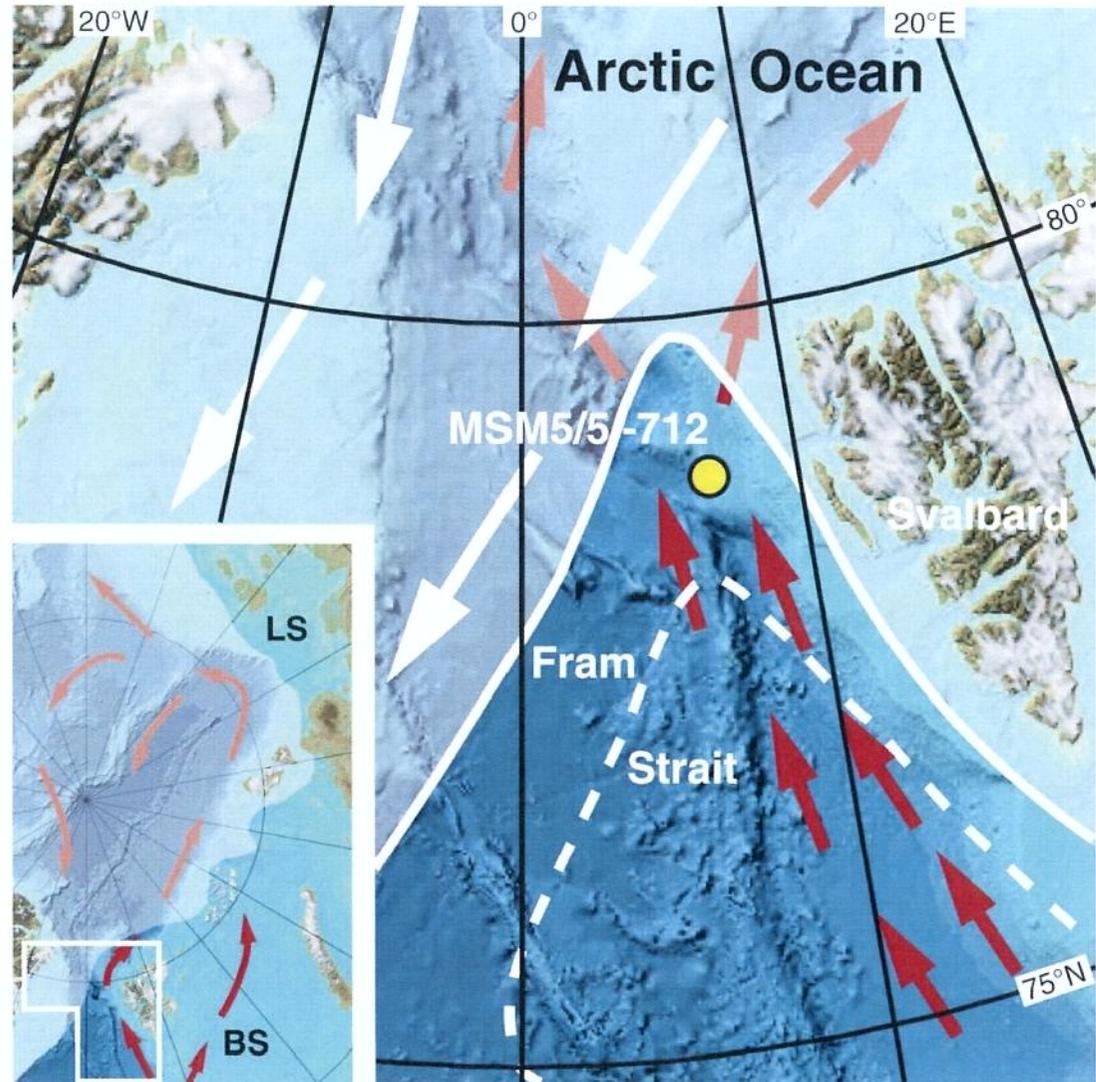
AS CORRENTES OCEÂNICAS DO ATLÂNTICO NORTE

EXEMPLO 4





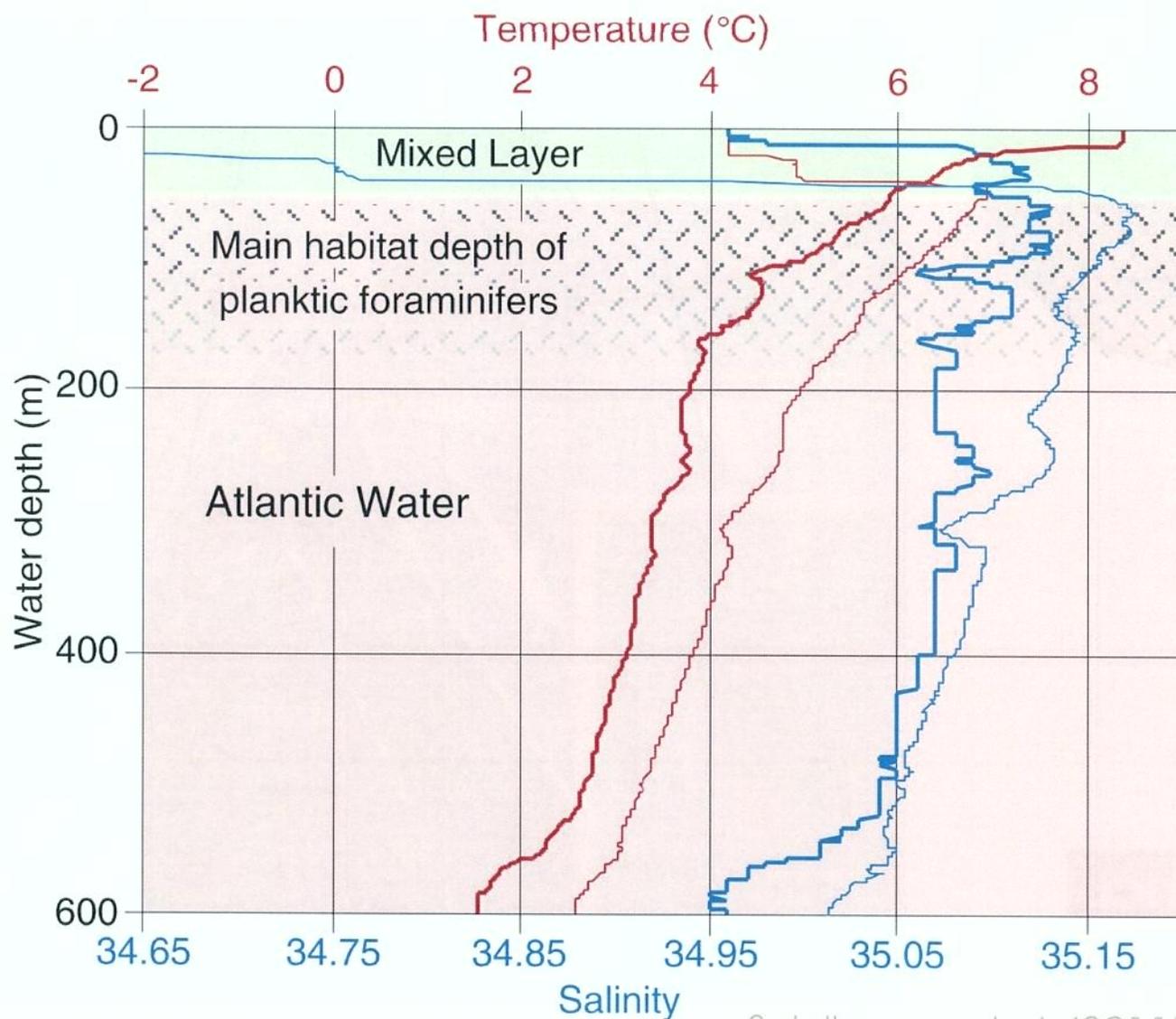
Batimetria da região do Estreito de Fram



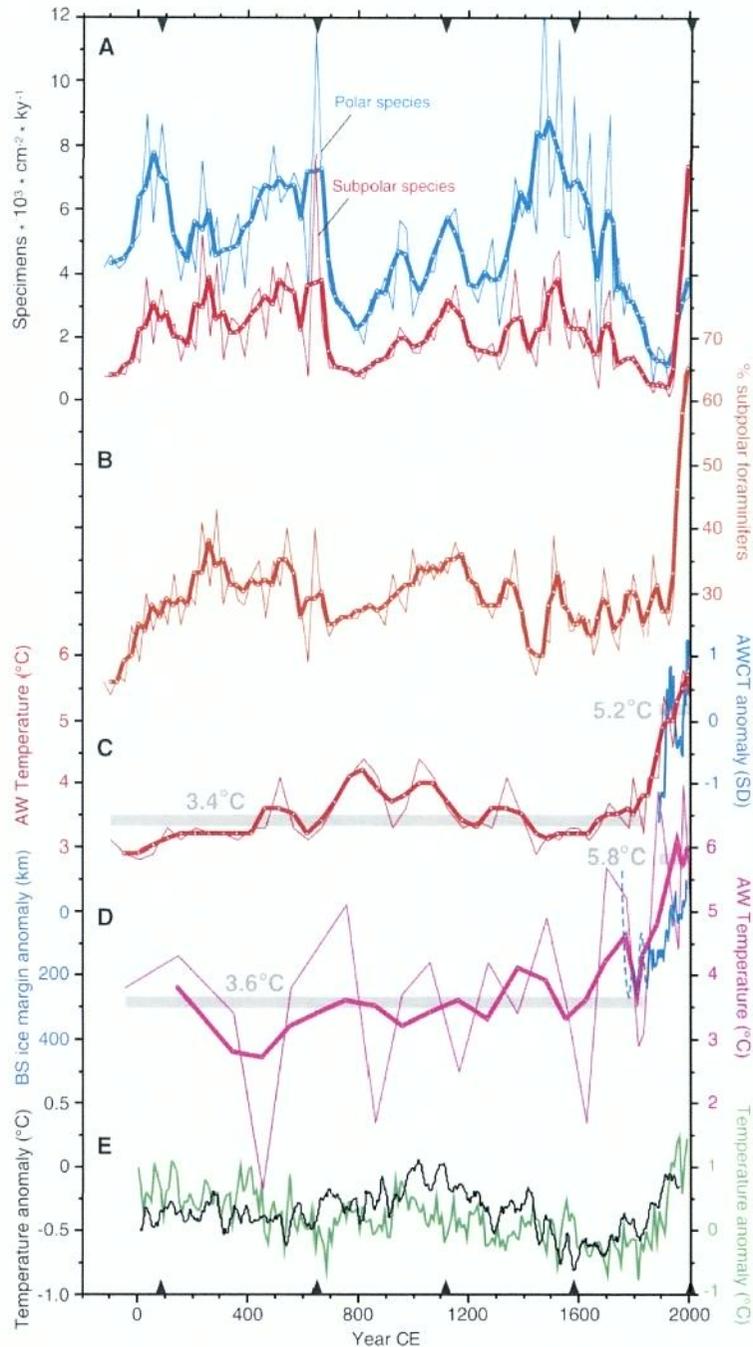
Vol. 311, Jan. 2011

Spielhagen et al. (2011)

Estrutura dos primeiros 600m da massa de água na estação MSM5/5-712



Spielhagen et al. (2011)



Reconstruções
de temperatura
da água do
Atlântico na
região do estreito
de Fram nos
últimos ~2100
anos a partir da
análise de
foraminíferos
planctónicos do
testemunho de
sedimentos
MSM5/5-712-1

Spielhagen et al. (2011)

