A litosfera como um filtro

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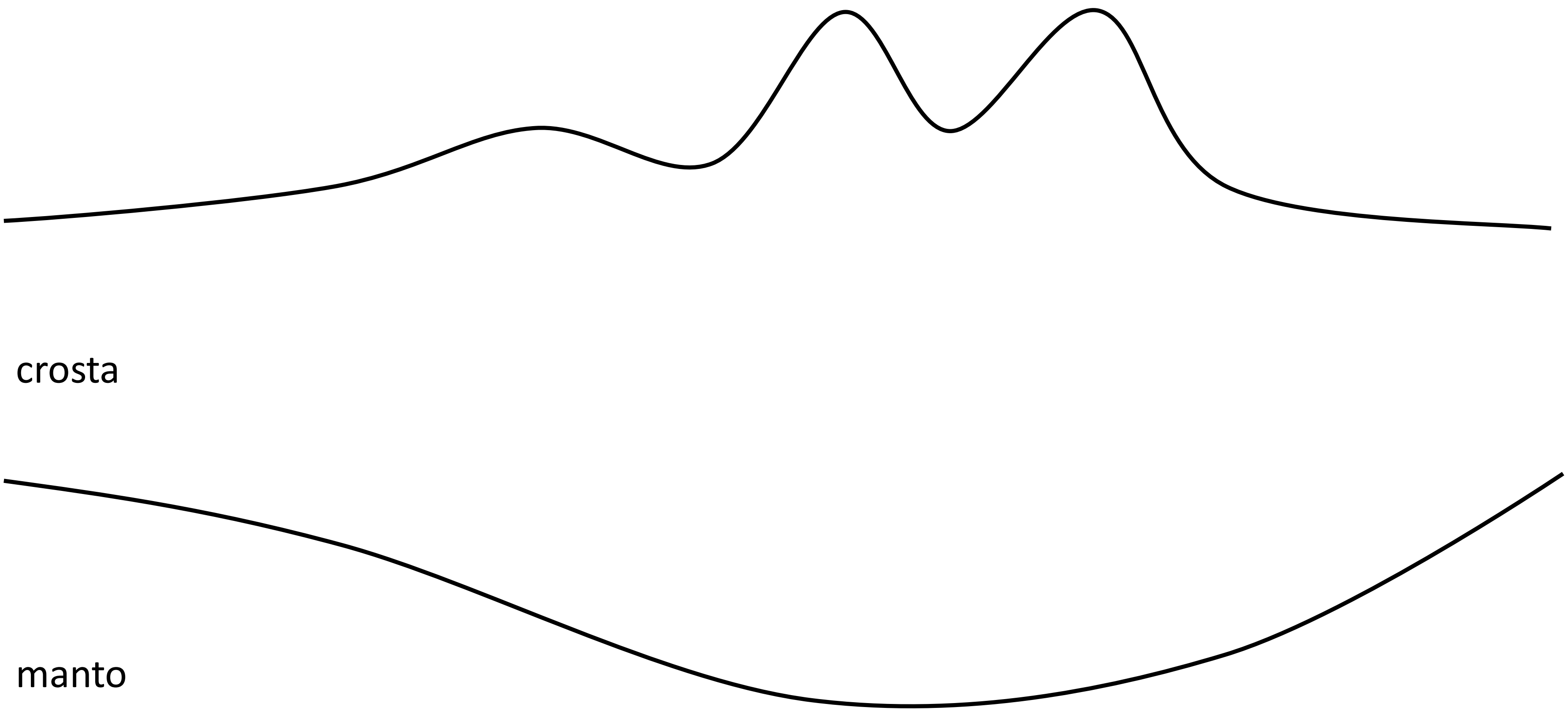
Alfred Wegener (1880-1930)

Para grandes blocos – por exemplo, um continente inteiro ou uma bacia oceânica inteira – a teoria da isostasia deve ser aceita sem dúvida; mas onde há feições menores, como montanhas individuais, a lei perde a sua validade. Tais feições podem ser sustentadas pela elasticidade do bloco todo.

Wegener (1929) *tradução livre*

Isostasia regional



A litosfera como um filtro

Entrada

$h(x)$

Carga

A litosfera como um filtro

Entrada

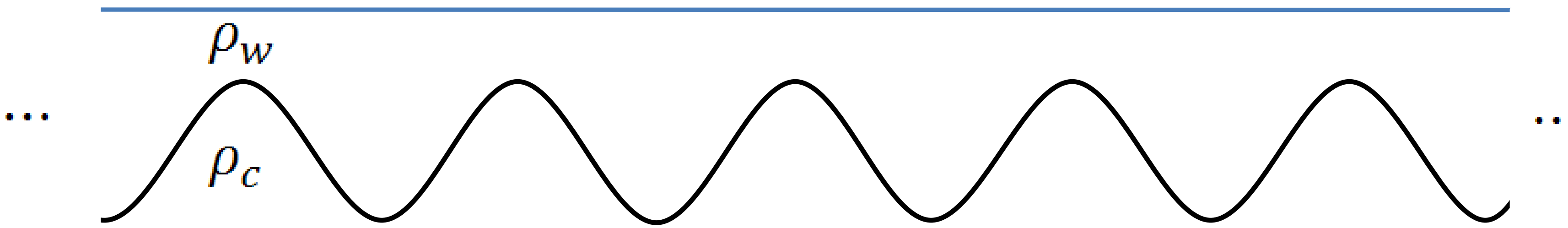
$h(x) \longrightarrow$ Litosfera (Filtro)

Carga

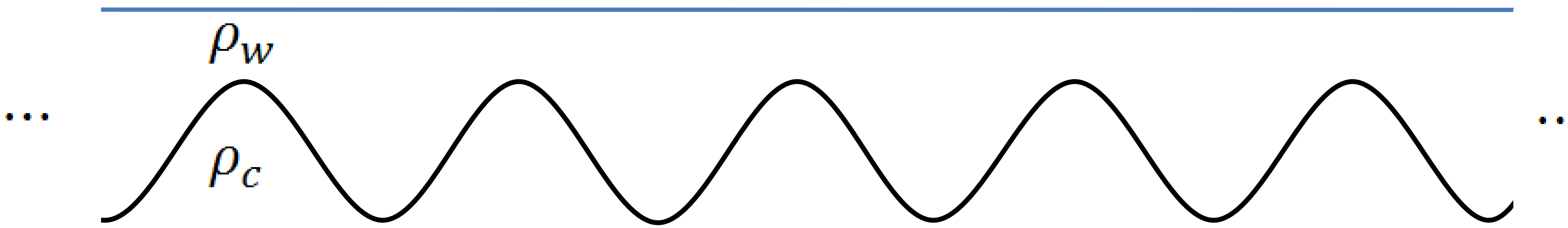
A litosfera como um filtro

Entrada		Saída
$h(x)$	$\longrightarrow$ Litosfera (Filtro) $\longrightarrow$	$w(x)$
Carga		Flexura

Carga periódica

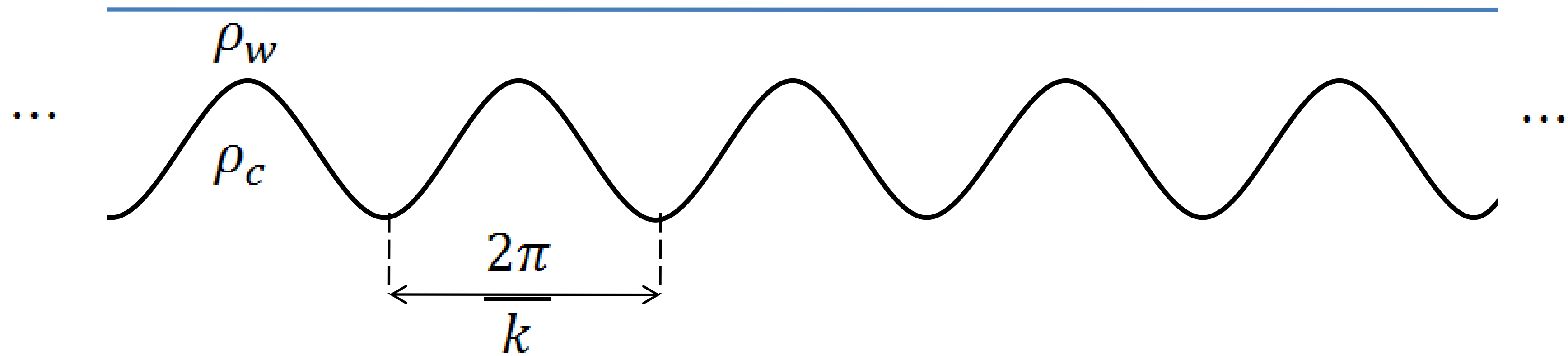


Carga periódica



$$D\frac{d^4w}{dx^4} + (\rho_m - \rho_w)wg = (\rho_c - \rho_w)gh\cos(kx)$$

Carga periódica



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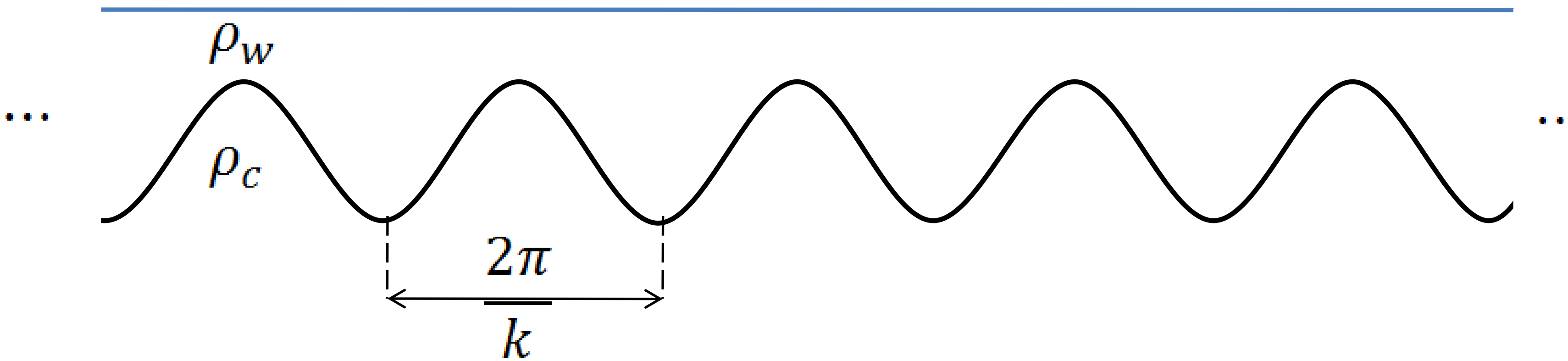
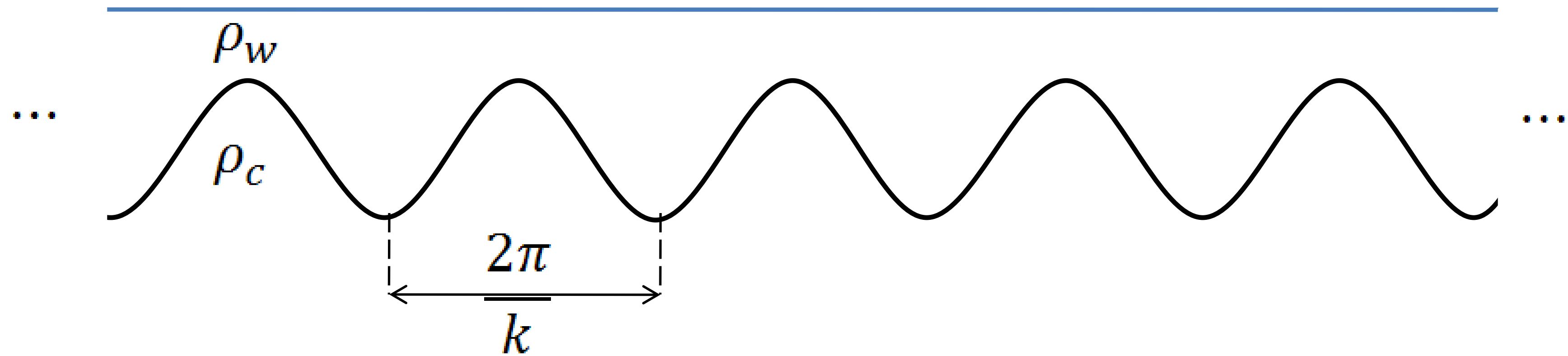


$$D\frac{d^4w}{dx^4} + (\rho_m - \rho_w)wg = (\rho_c - \rho_w)gh\cos(kx)$$

$$w = A_0\cos(kx)$$

Carga periódica

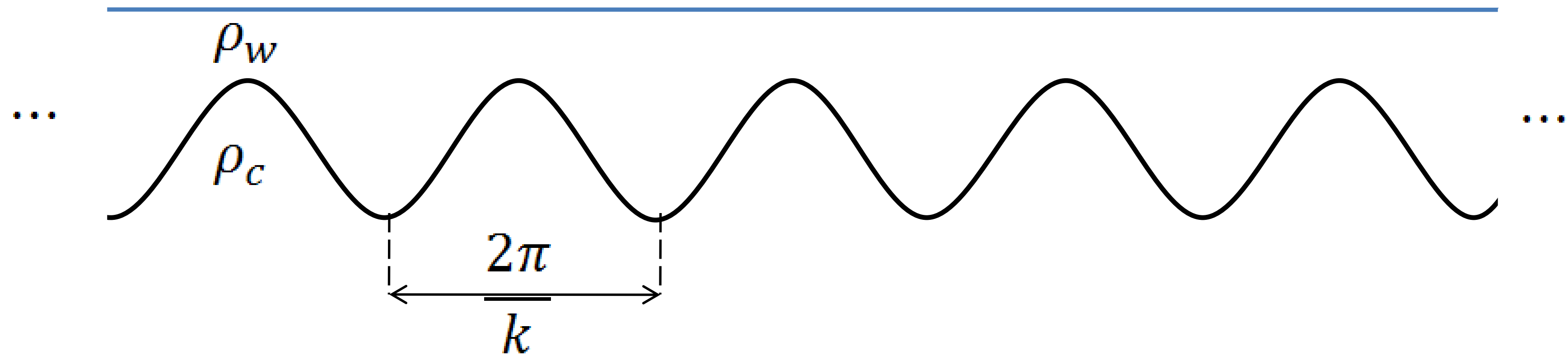


$$D\frac{d^4w}{dx^4} + (\rho_m - \rho_w)wg = (\rho_c - \rho_w)gh\cos(kx)$$

$$w = A_0\cos(kx)$$

$$D \cdot k^4 A_0\cos(kx) + (\rho_m - \rho_w)A_0\cos(kx)\,g = (\rho_c - \rho_w)gh\cos(kx)$$

Carga periódica



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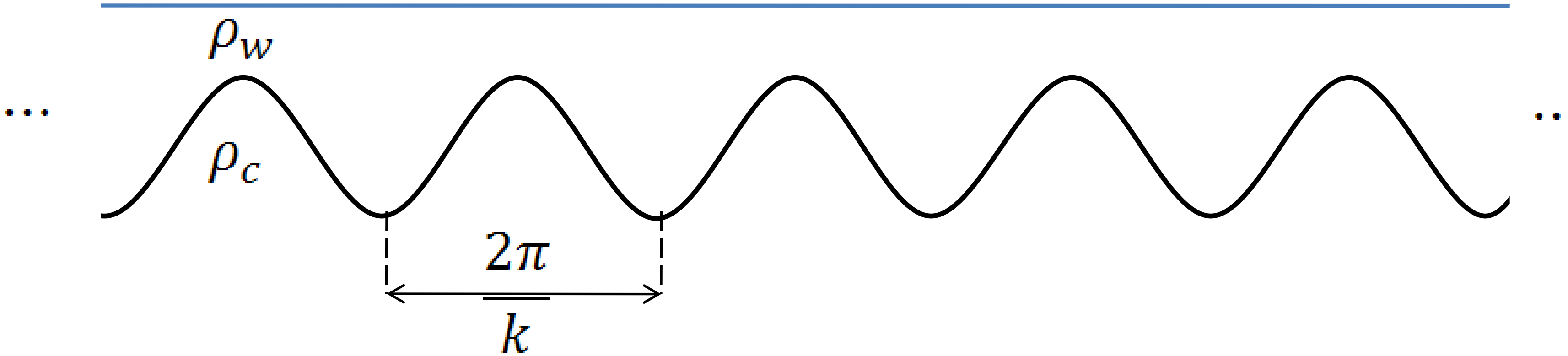
$$D \cdot k^4 A_0 \cancel{\cos(kx)} + (\rho_m - \rho_w)A_0 \cancel{\cos(kx)}\, g = (\rho_c - \rho_w)gh \cancel{\cos(kx)}$$

Carga periódica



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$$D \cdot k^4 A_0 \cancel{\cos(kx)} + (\rho_m - \rho_w)A_0 \cancel{\cos(kx)}\, g = (\rho_c - \rho_w)gh \cancel{\cos(kx)}$$

$$A_0[Dk^4 + (\rho_m - \rho_w)g] = (\rho_c - \rho_w)gh$$

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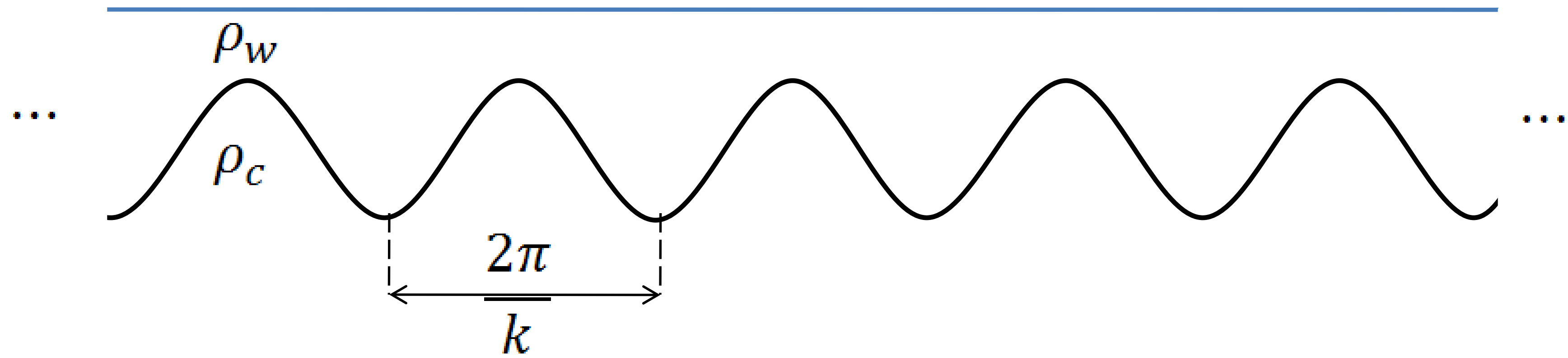
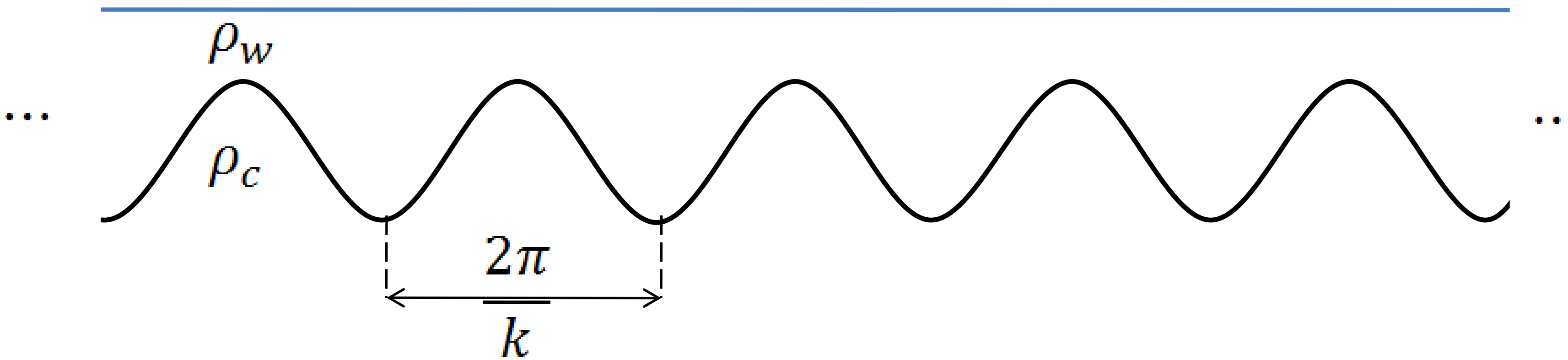
Carga periódica



$$A_0[Dk^4 + (\rho_m - \rho_w)g] = (\rho_c - \rho_w)gh$$

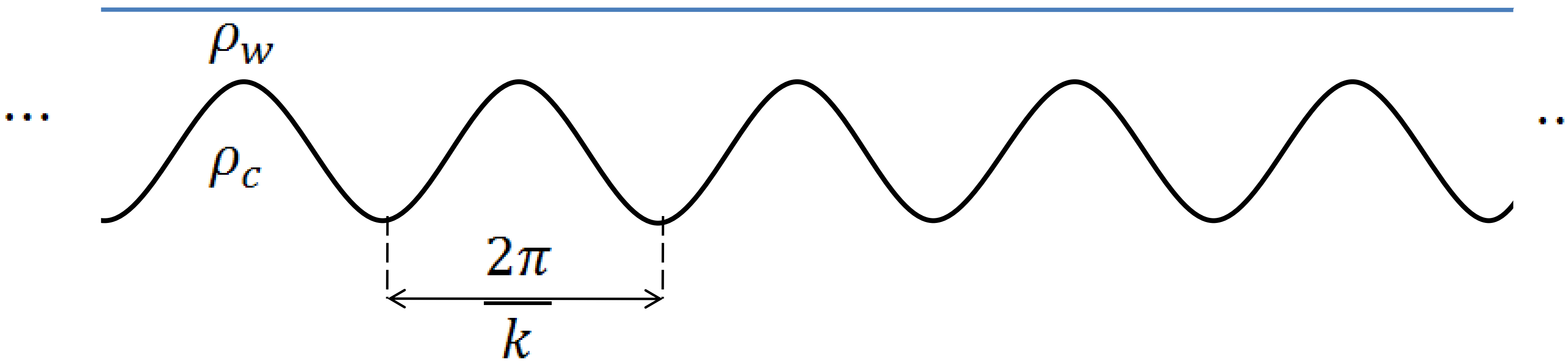
Carga periódica



$$A_0[Dk^4 + (\rho_m - \rho_w)g] = (\rho_c - \rho_w)gh$$

$$A_0\left[\frac{Dk^4}{(\rho_m - \rho_w)g} + 1\right] = \frac{(\rho_c - \rho_w)h}{(\rho_m - \rho_w)}$$

Carga periódica



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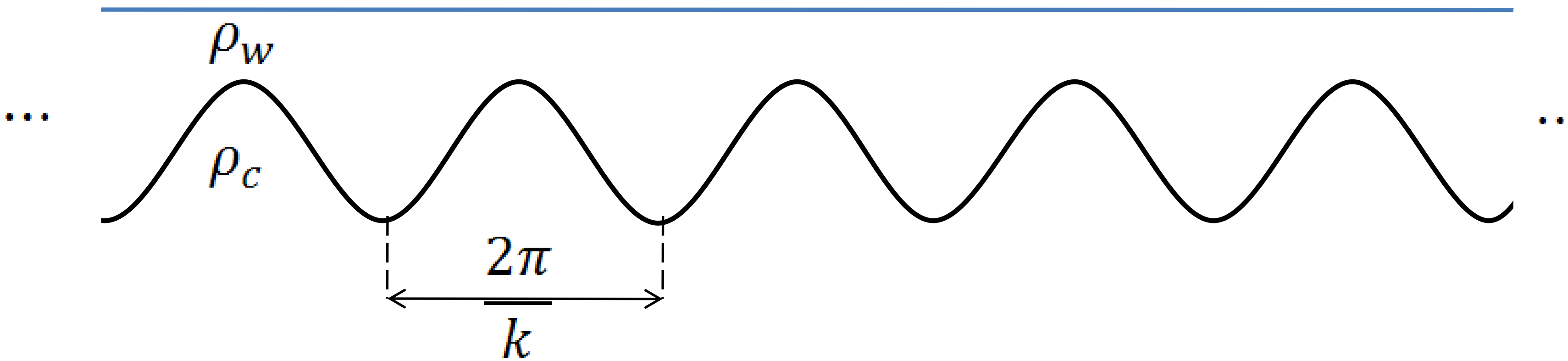
Carga periódica



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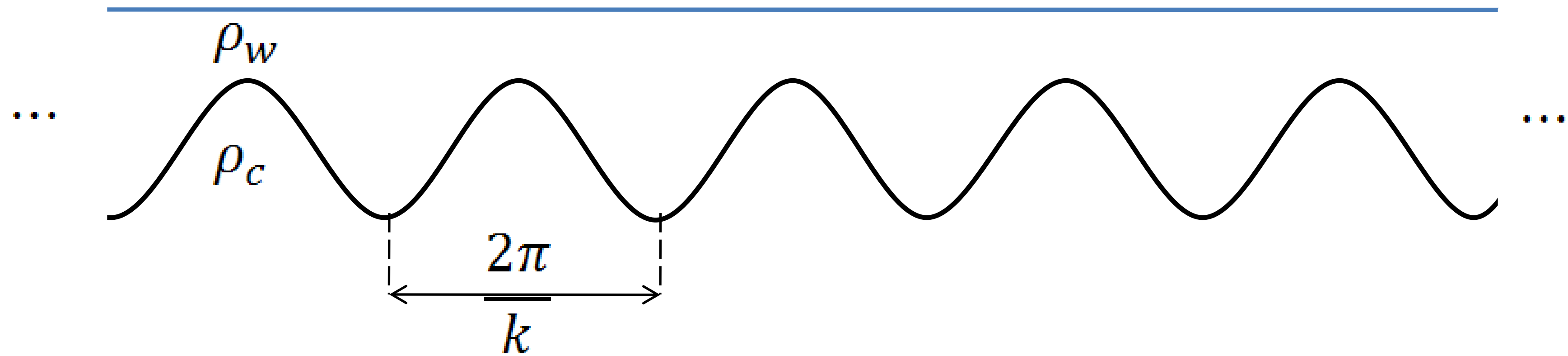
$$w = \frac{(\rho_c - \rho_w)h\cos(kx)}{\rho_m - \rho_w}\left[\frac{Dk^4}{(\rho_m - \rho_w)g} + 1\right]^{-1}$$

Carga periódica



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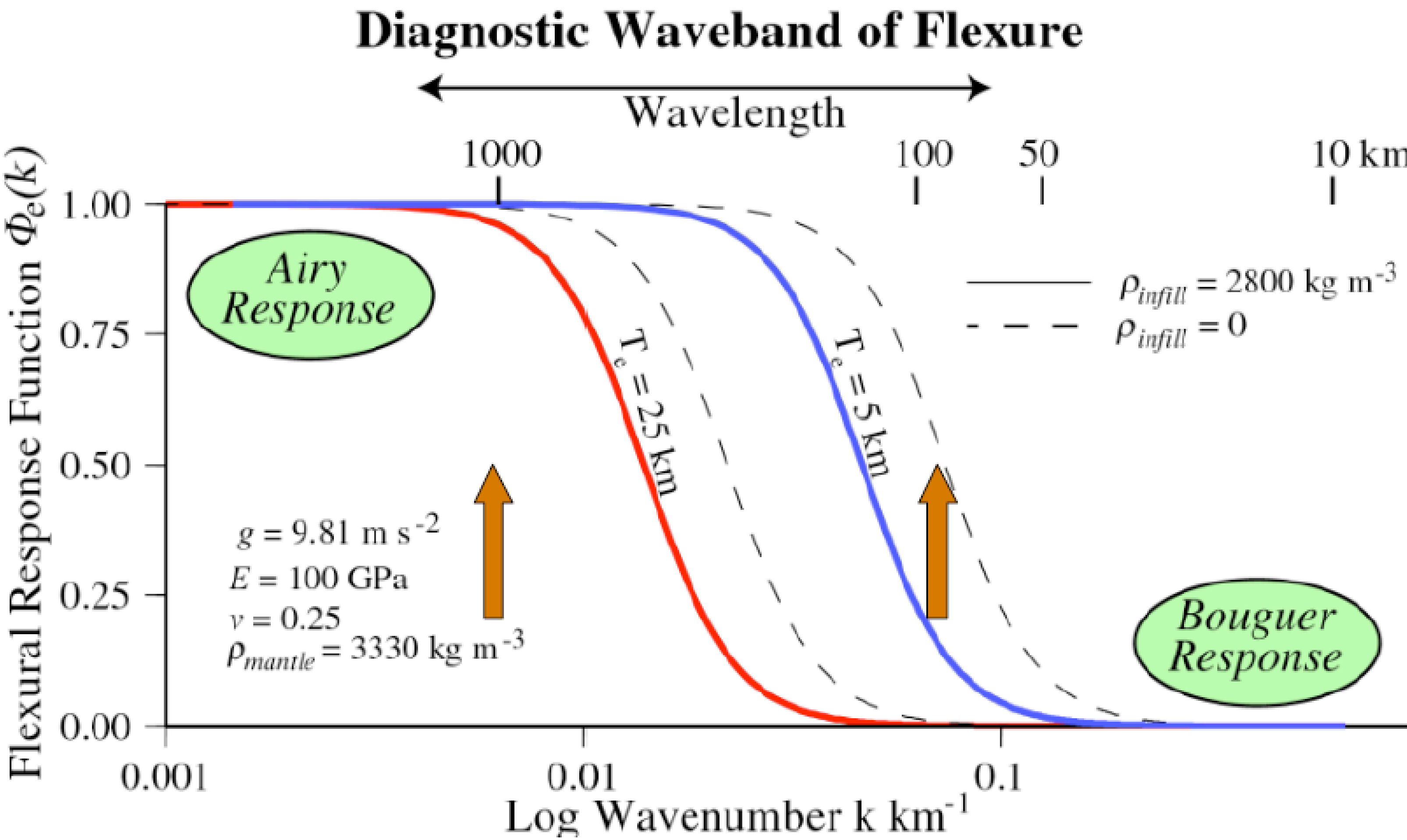
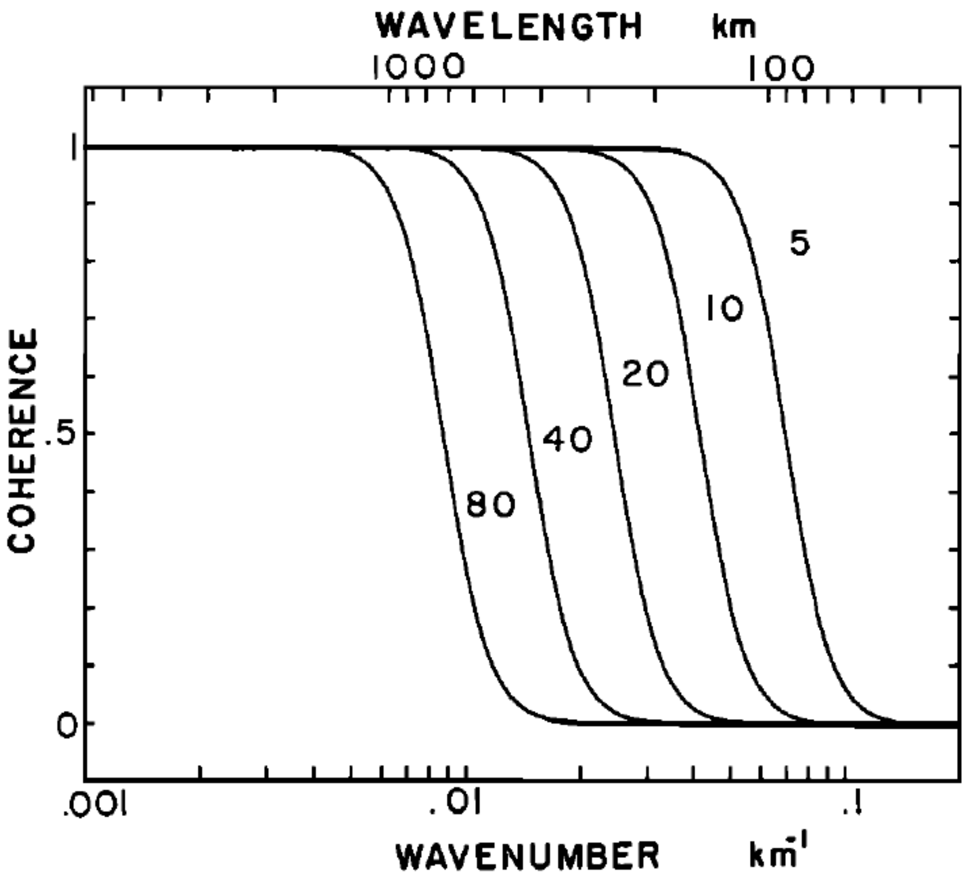
$$w = \frac{(\rho_c - \rho_w)h\cos(kx)}{\rho_m - \rho_w}\underbrace{\left[\frac{Dk^4}{(\rho_m - \rho_w)g} + 1\right]^{-1}}_{\phi_e(k)}$$

Função resposta flexural $\phi_e(k)$

Função resposta flexural

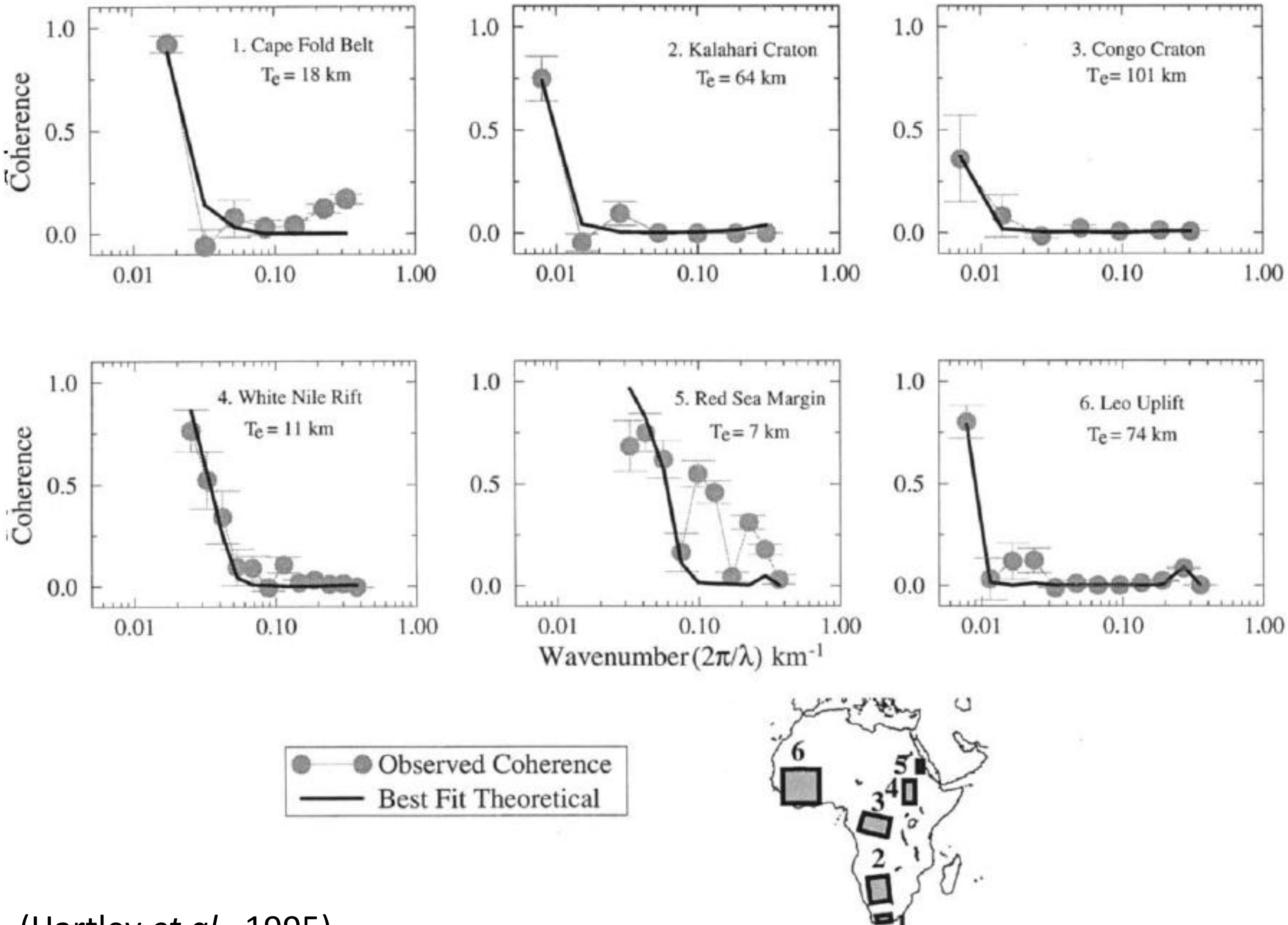


Função de coerência



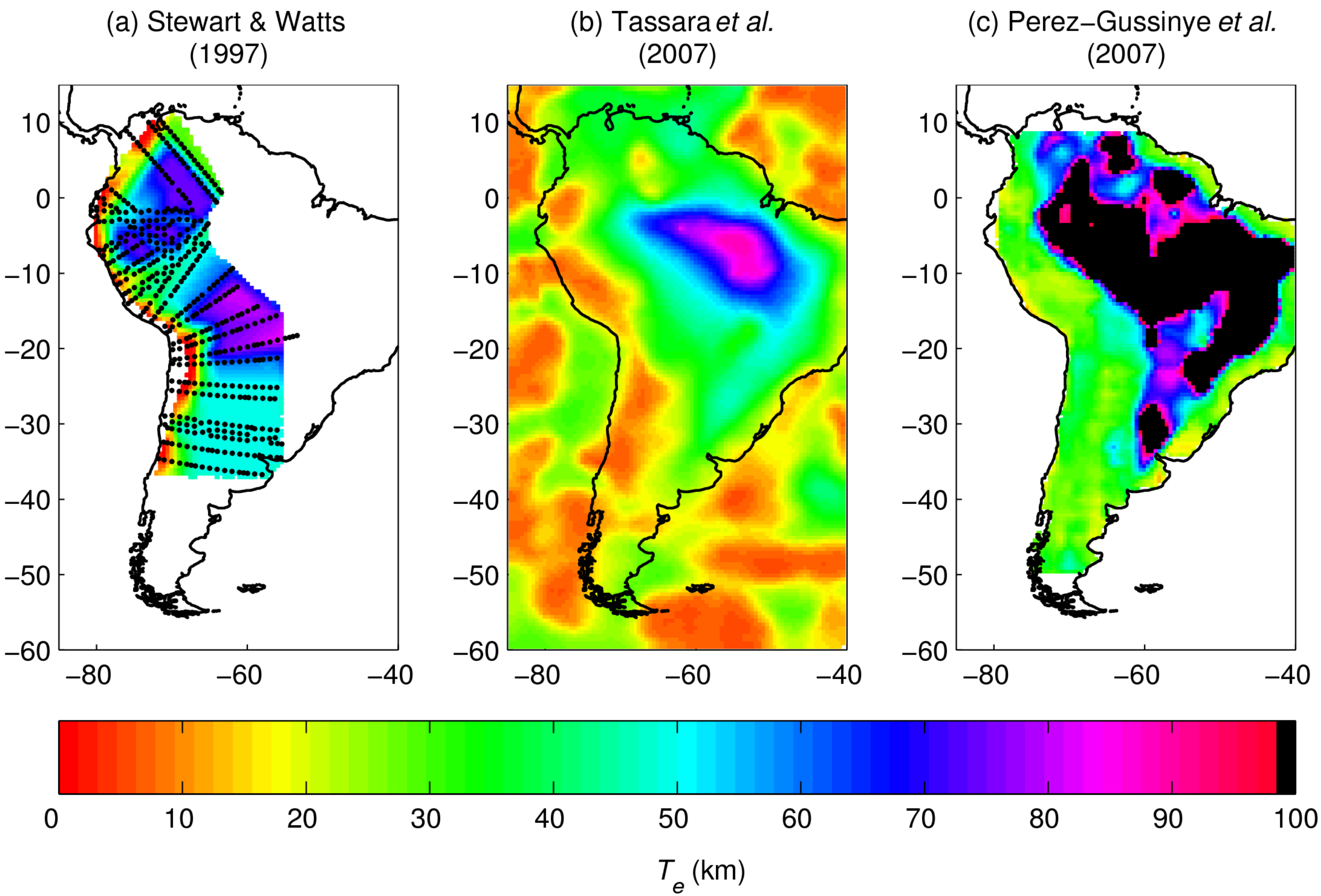
(Forsyth, 1985)

$$\gamma^2_{obs} = \left\langle \frac{|S_{hb}(k)|^2}{S_{hh}(k)S_{bb}(k)} \right\rangle$$



(Hartley *et al.*, 1995)

Mapas de T_e para a América do Sul



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