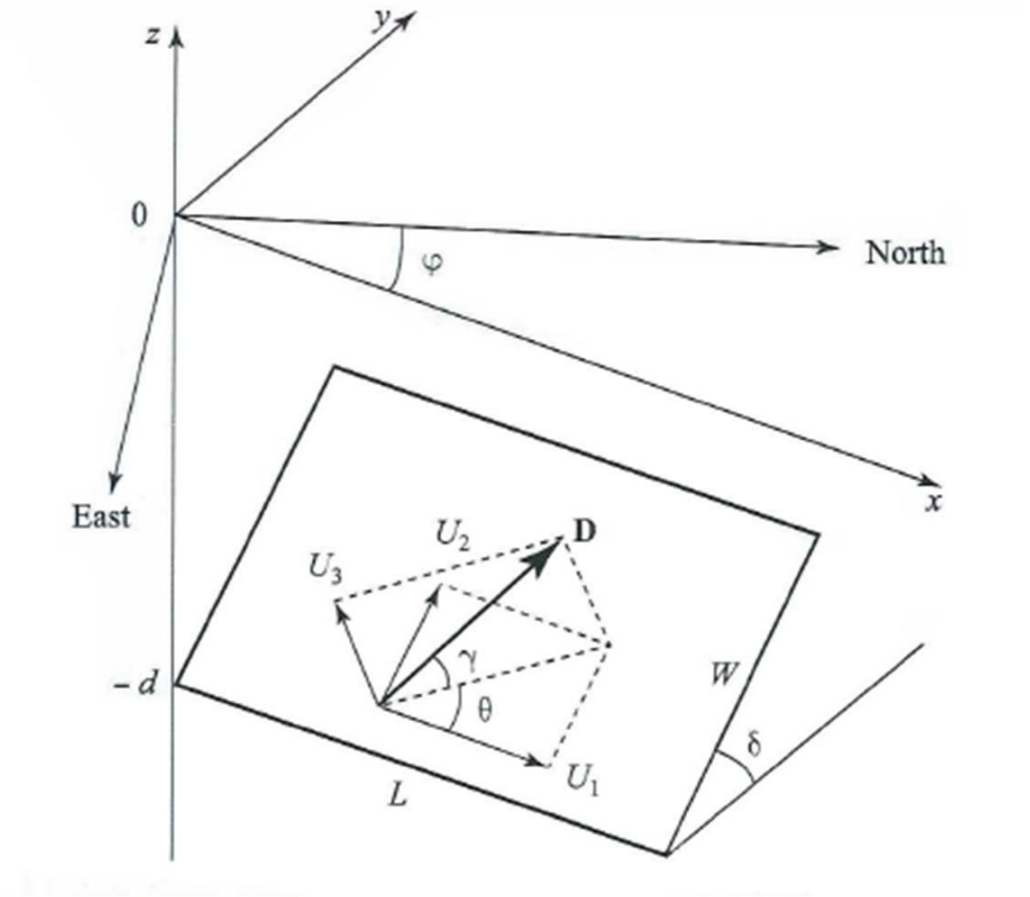
Fuente sísmica

RELACIONES EMPÍRICAS

Parámetros



φ: strike
δ: dip
ϒ: entre D y el plano
θ: rake
u_1: strike-slip
u_2: dip-slip
u_3: tensile

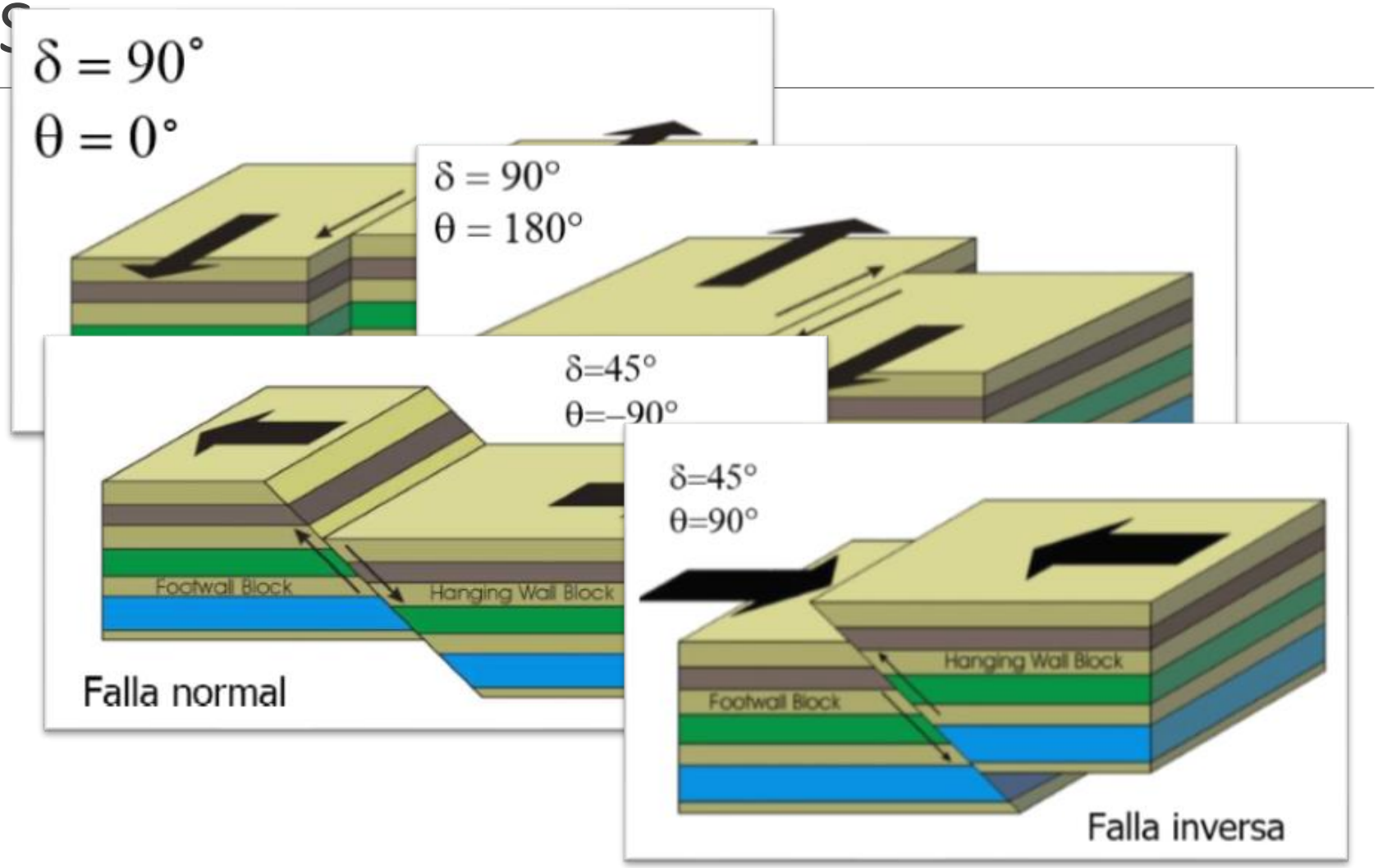
Ejercicios

- δ=90°, θ=0°

- δ=90°, θ=180°

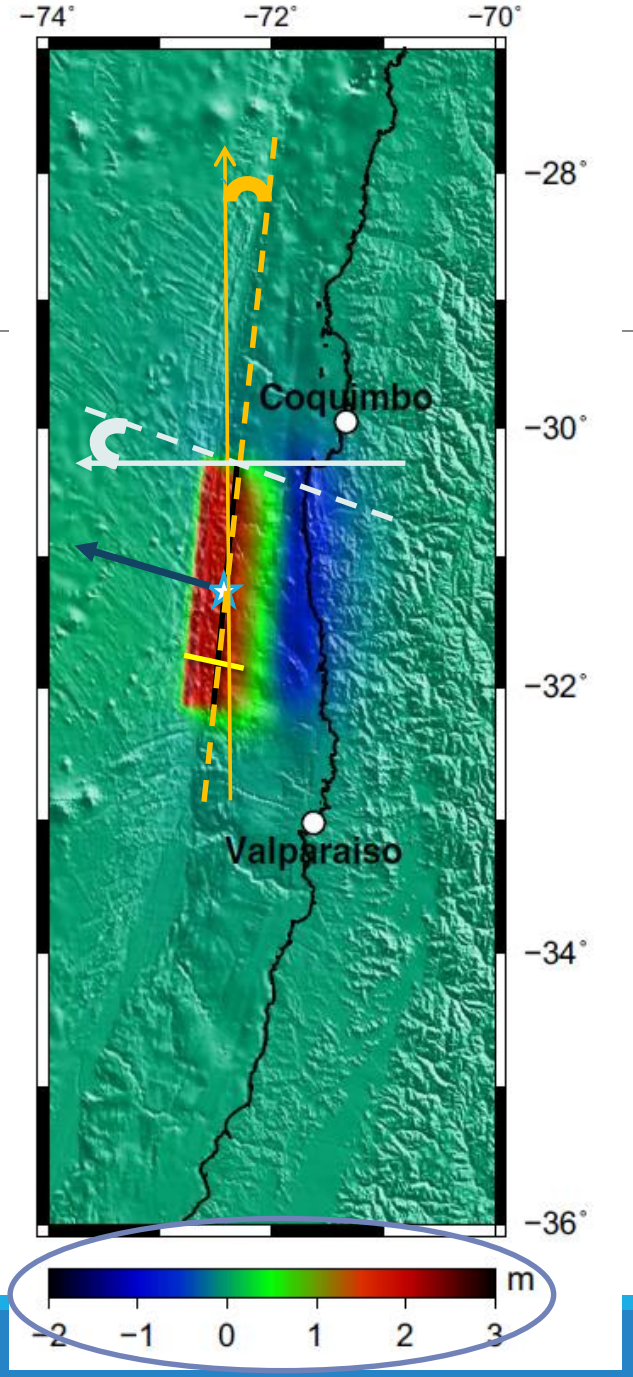
- δ=45°, θ=90°

- δ=45°, θ=-90°



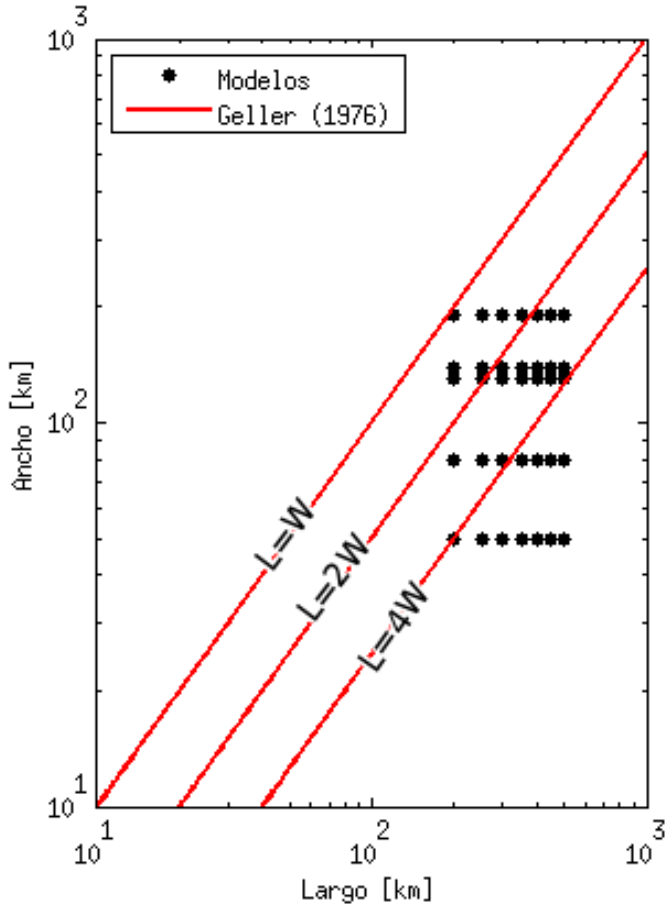
Parámetros de falla para tsunami

Largo	L
Ancho	W
Epicentro	(lon,lat)
Dislocación	d
Strike	φ
Dip	δ
Slip angle (rake)	θ

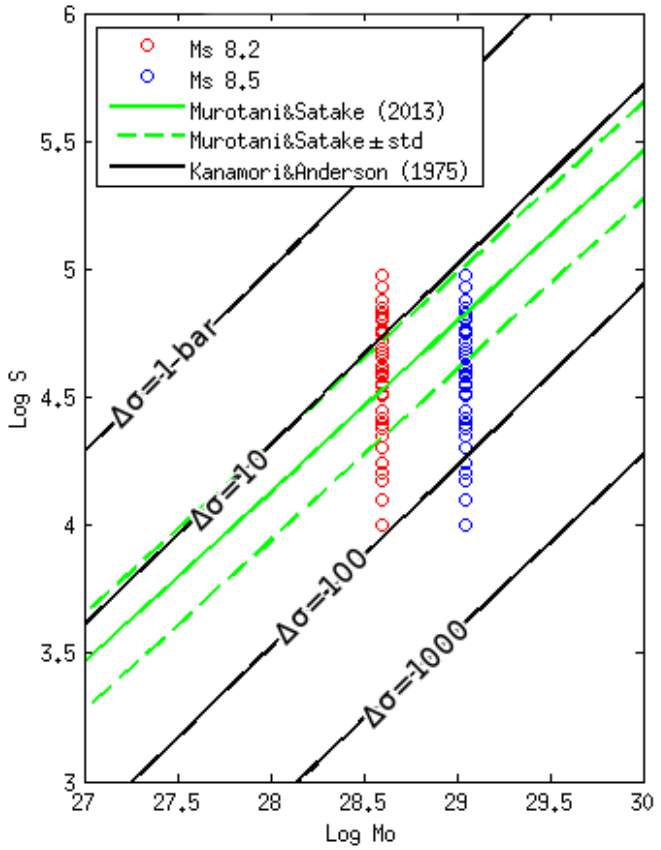


Parámetros de fuente sísmica

Relación entre *L* y *W*

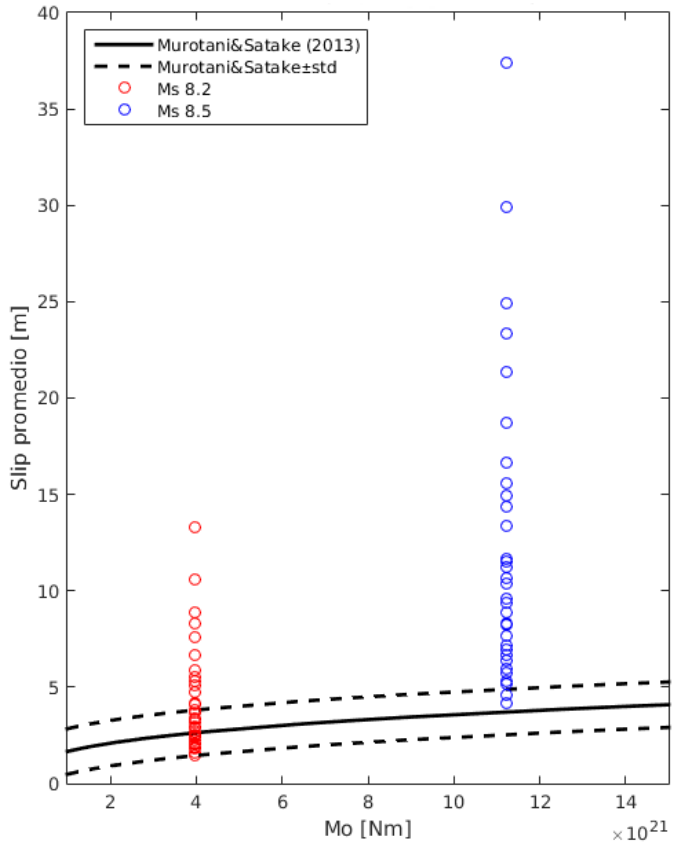


Relación entre M_0 y S



$S = 1.34 \cdot 10^{-10} Mo^{2/3}$
(Murotani y Satake, 2013)

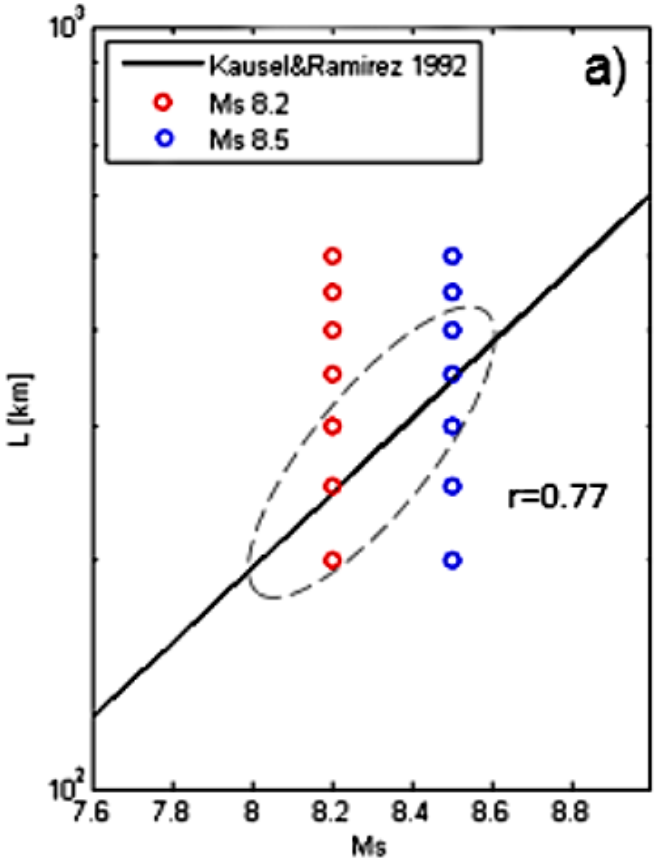
Relación entre M_0 y $\overline{D}$



$\bar{D} = 1.66 \cdot 10^{-7} Mo^{1/3}$
(Murotani y Satake, 2013)

Parámetros de fuente sísmica

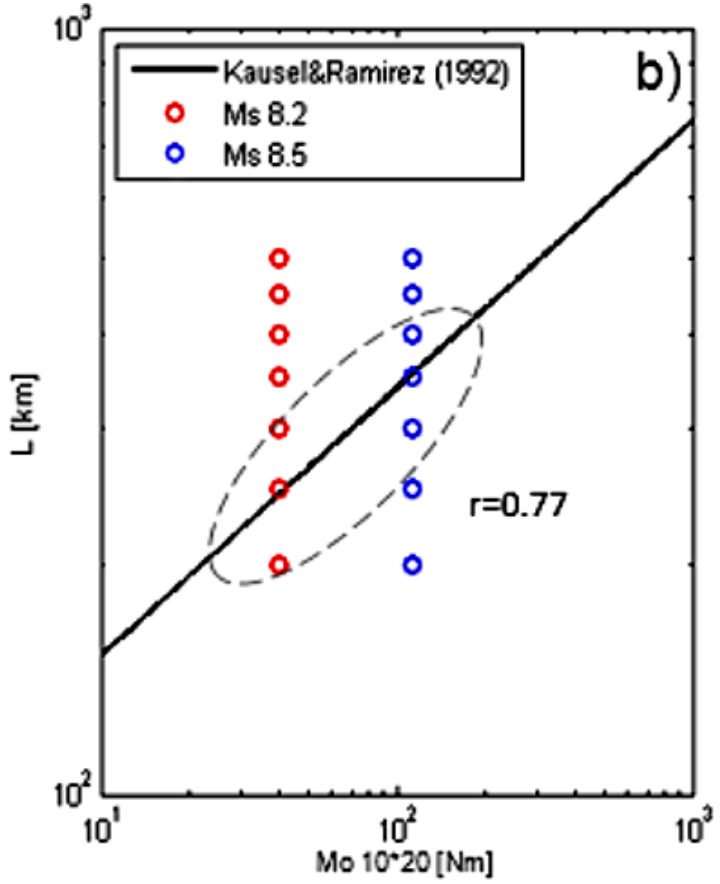
Relación entre *Ms* y *L*



$$\log L = -1.67 + 0.49\, Ms$$

(Kausel y Ramírez, 1992)

Relación entre *Mo* y *L*



$$\log L = -7.48 + 0.35 \log Mo$$

(Kausel y Ramírez, 1992)

Otras relaciones…

$\log_{10} L\,[km] = 0{,}5\ Mw - 1{,}8$

$\log_{10} W[km] = 0{,}5\ Mw - 2{,}1$

$\log_{10} D[m] = 0{,}5\ Mw - 3{,}3$

Kamigaichi, 2011

$A = 1{,}34 \times 10^{-10} Mo^{2/3}$

$D = 1{,}66 \times 10^{-7} Mo^{1/3}$

Murotani et al, 2013 (M~9,0)

$\log_{10} L\,[km] = 0{,}57\ Mw - 2{,}37$

$\log_{10} W[km] = 0{,}46\ Mw - 1{,}86$

Blaser et al, 2010

$\log_{10} L\,[km] = 2{,}55\ Mw - 2{,}19$

$\log_{10} W[km] = 0{,}31\ Mw - 0{,}63$

Papazachos et al, 2004

$Mo = \mu \bar{D} A \qquad A = LW$

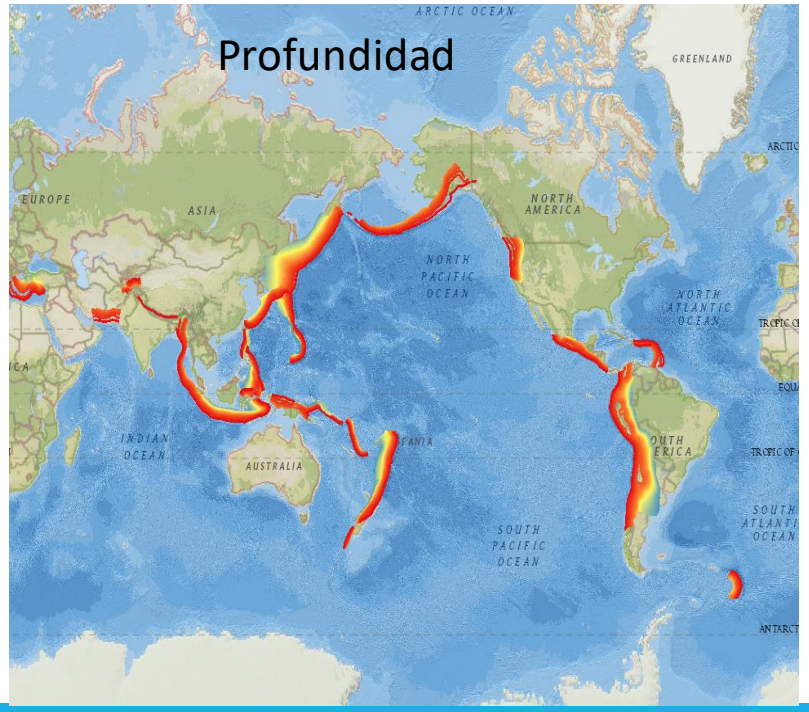
$Mw = \frac{\log_{10} Mo}{1{,}5} - 6{,}07$

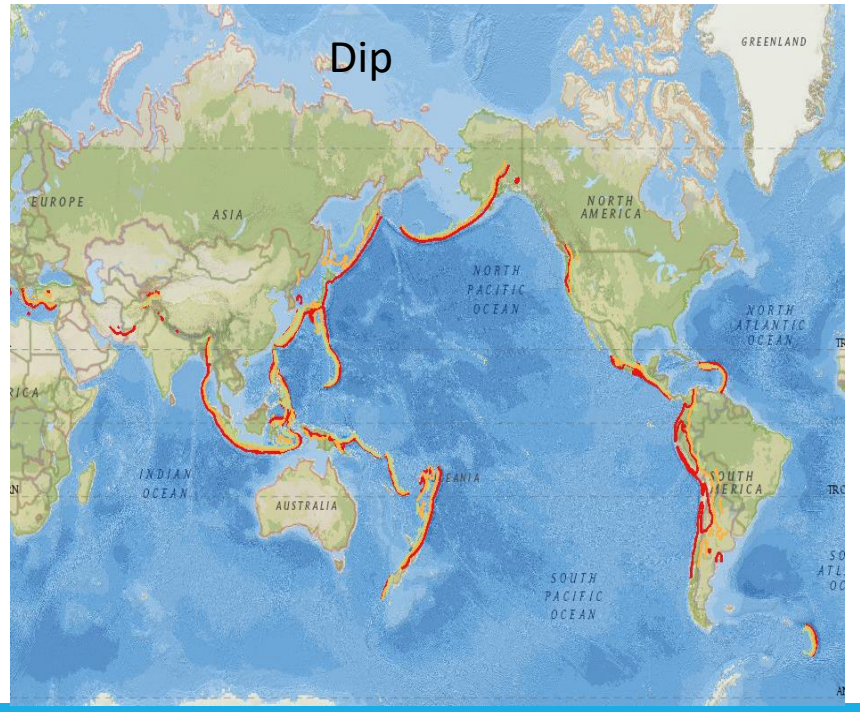
Kanamori and Brosky, 2004

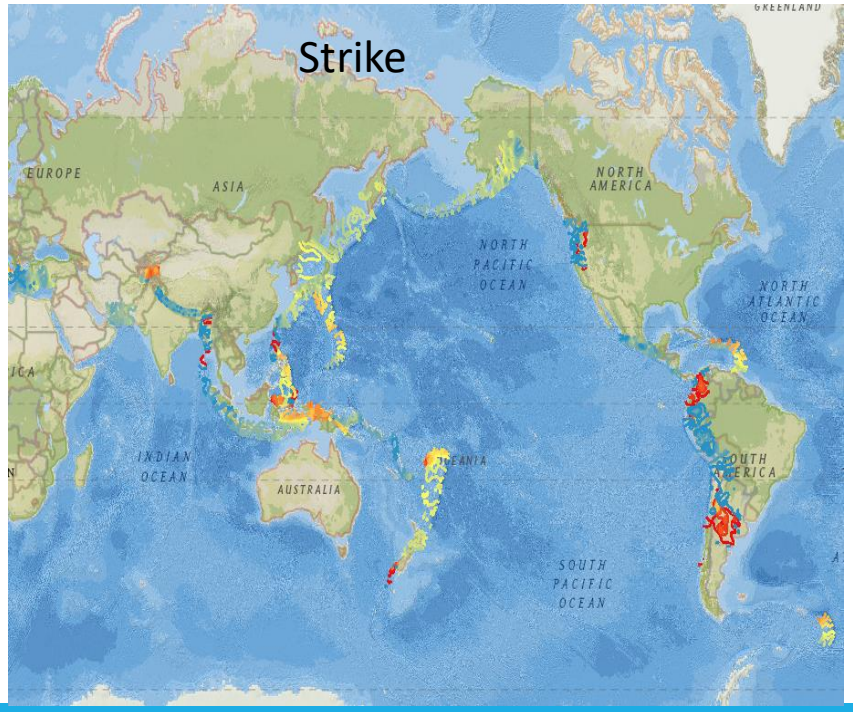
Parámetros del slab

Slab2.0 : Hayes et al., 2018

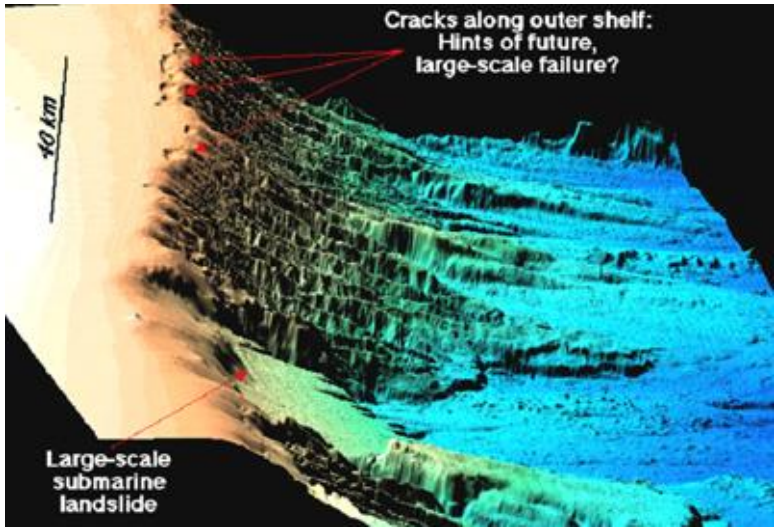
Slab1.0 : Hayes et al., 2012



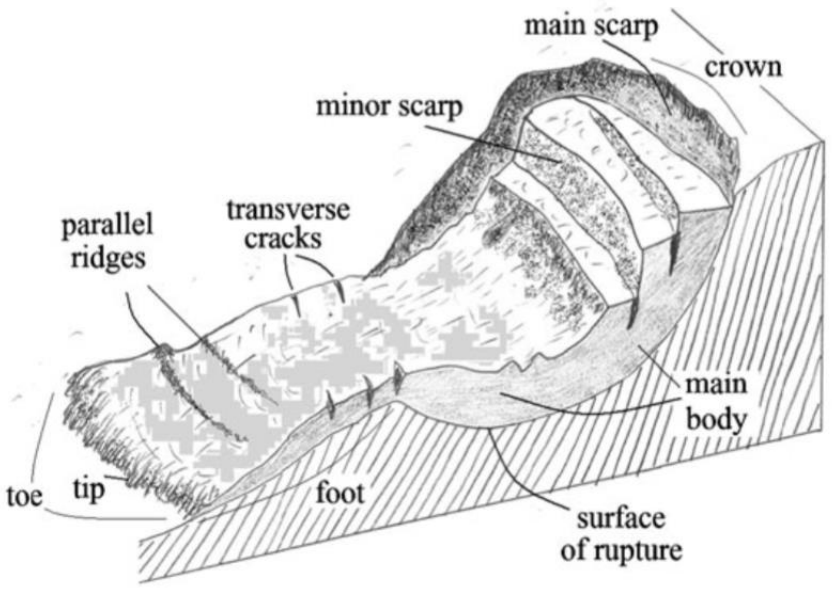




Parámetros de fuente: Landslides

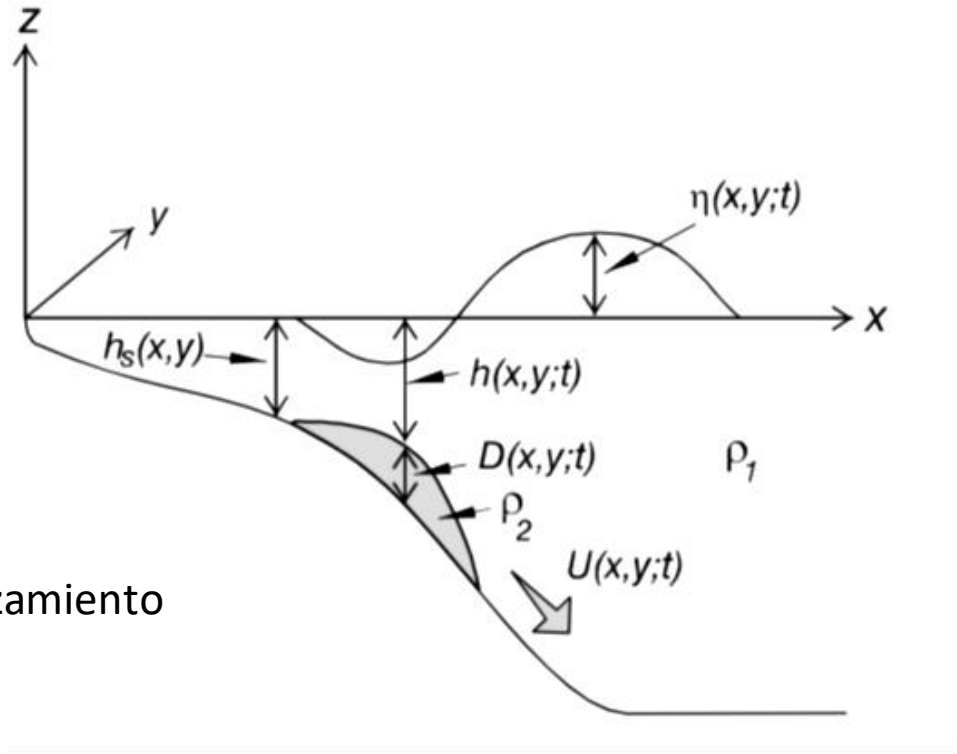


Colapso de una pendiente

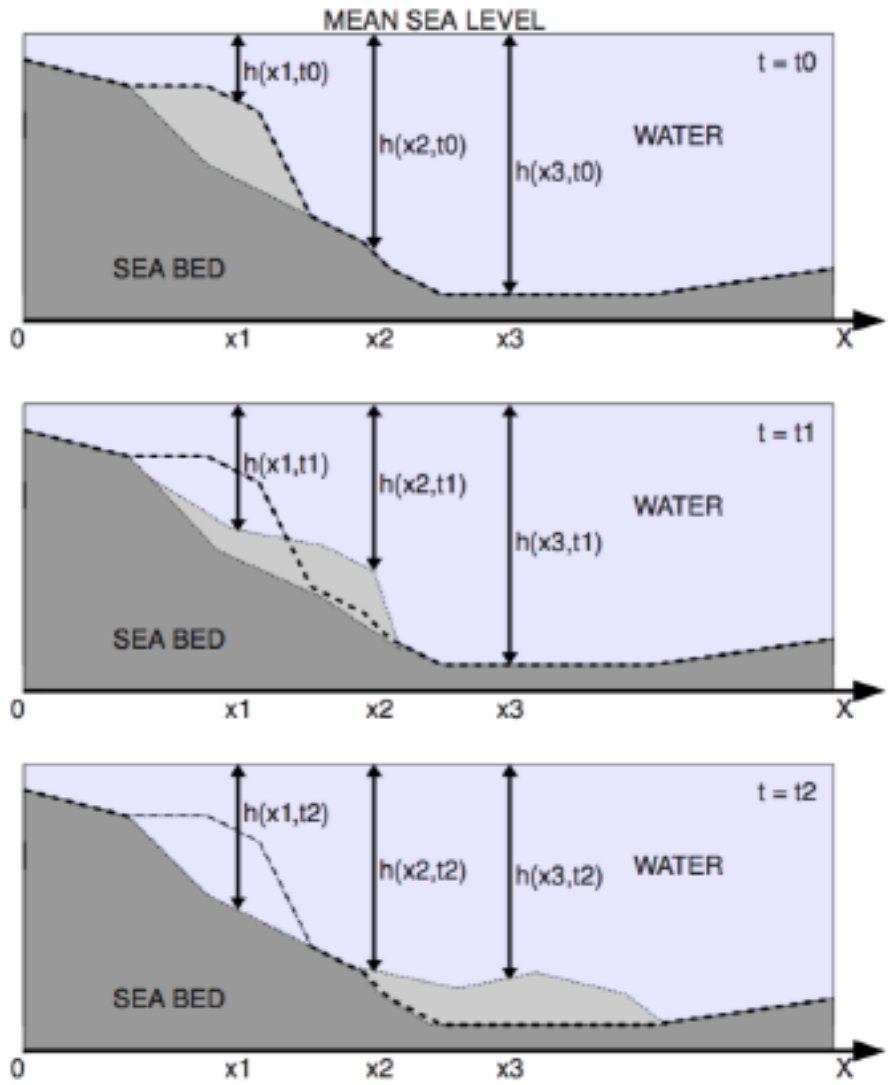


- Sobrecarga de capas débiles genera aumento en la presión de poro.
- Inicio de movimiento genera separación de las partículas, lo que aumenta la capacidad de fluencia del depósito.

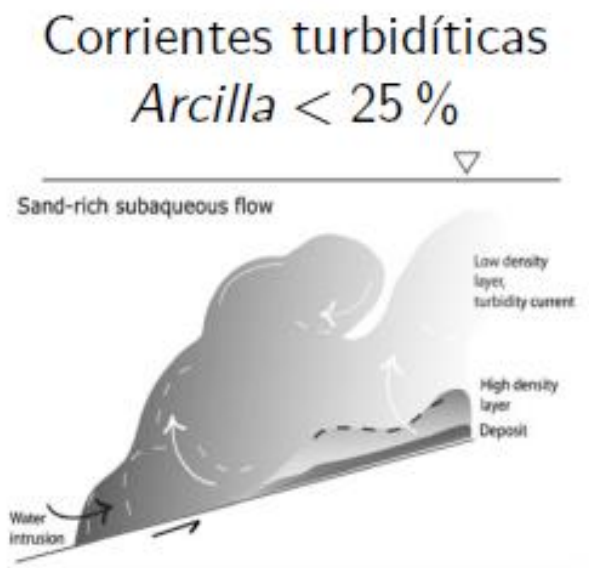
Parámetros a considerar

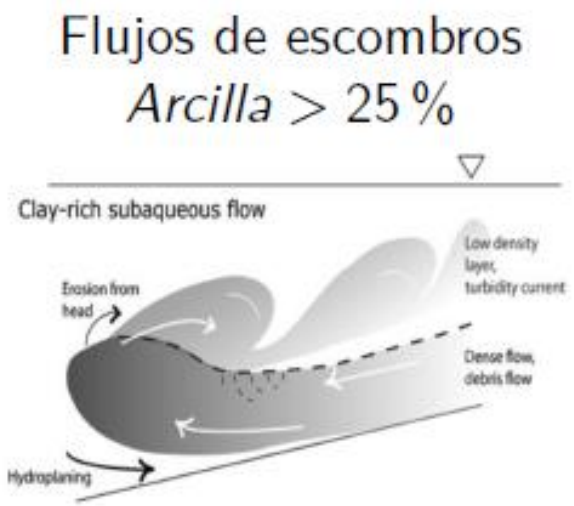


h : profundidades
D : espesor material
U : velocidad de deslizamiento
ρ : densidades
η : amplitud tsunami

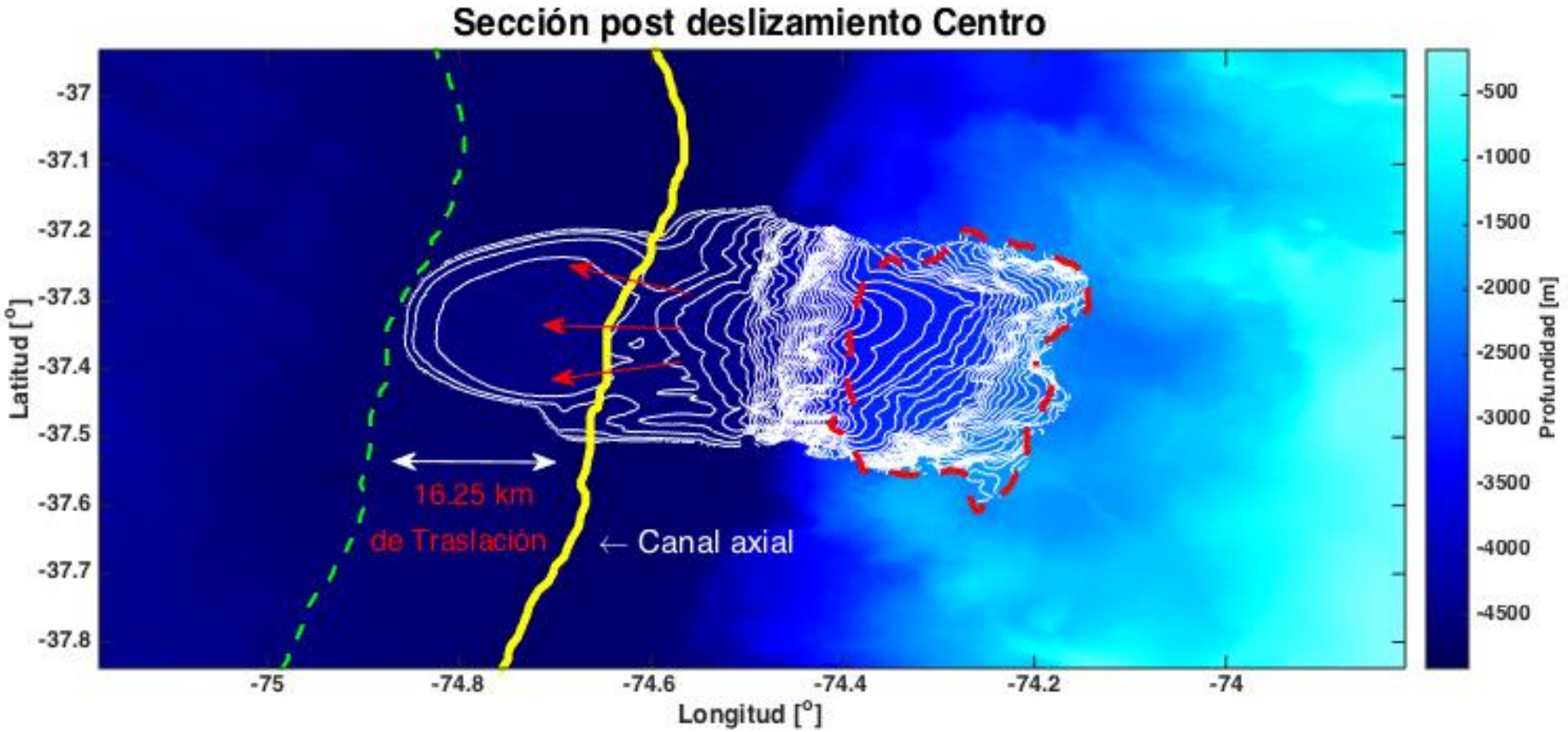


Espesores vs arcilla

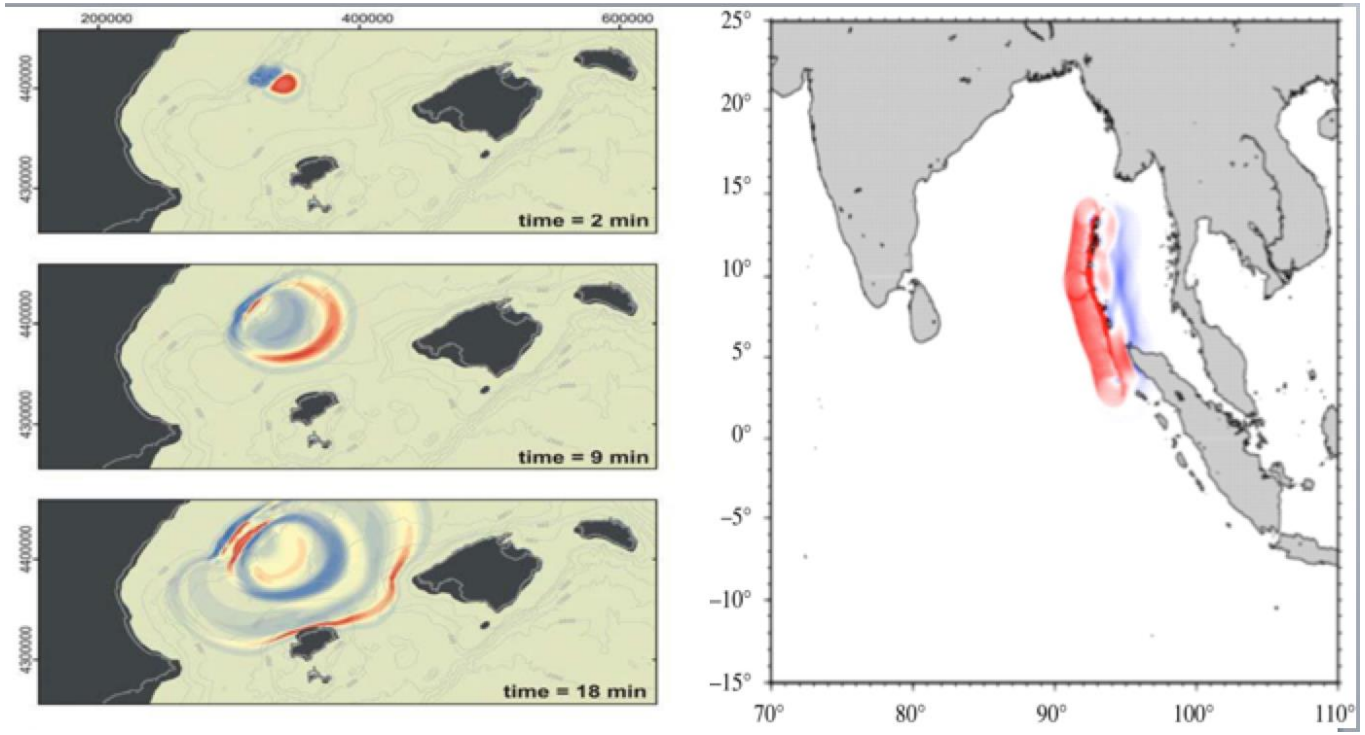




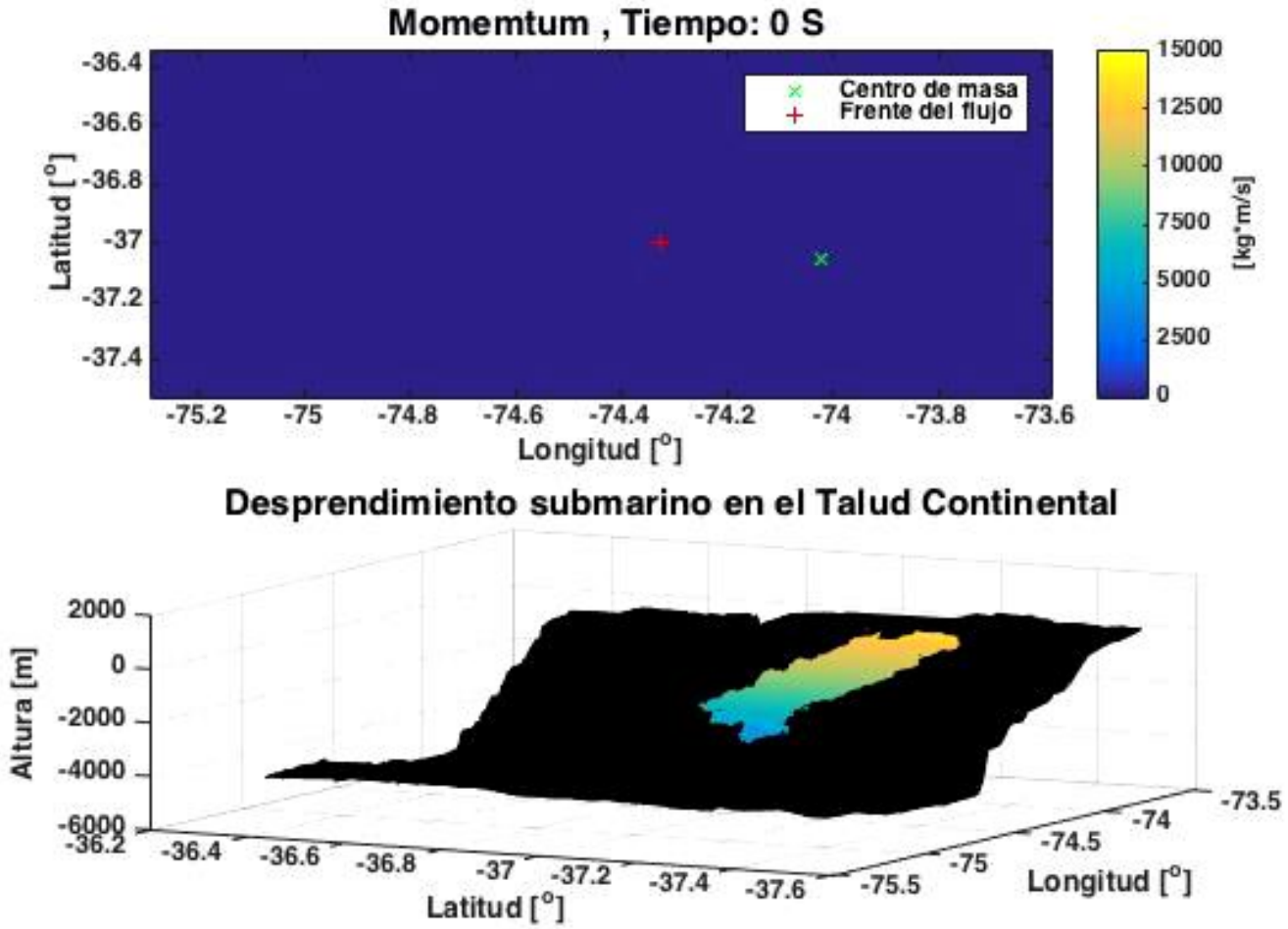
Landslide submarino



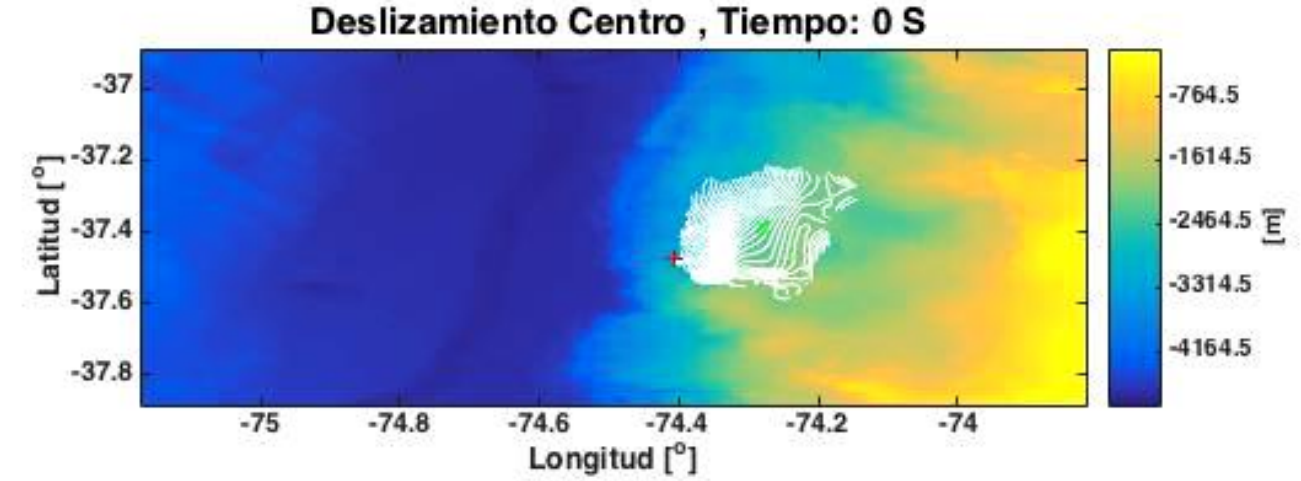
Comparación en patrón de radiación

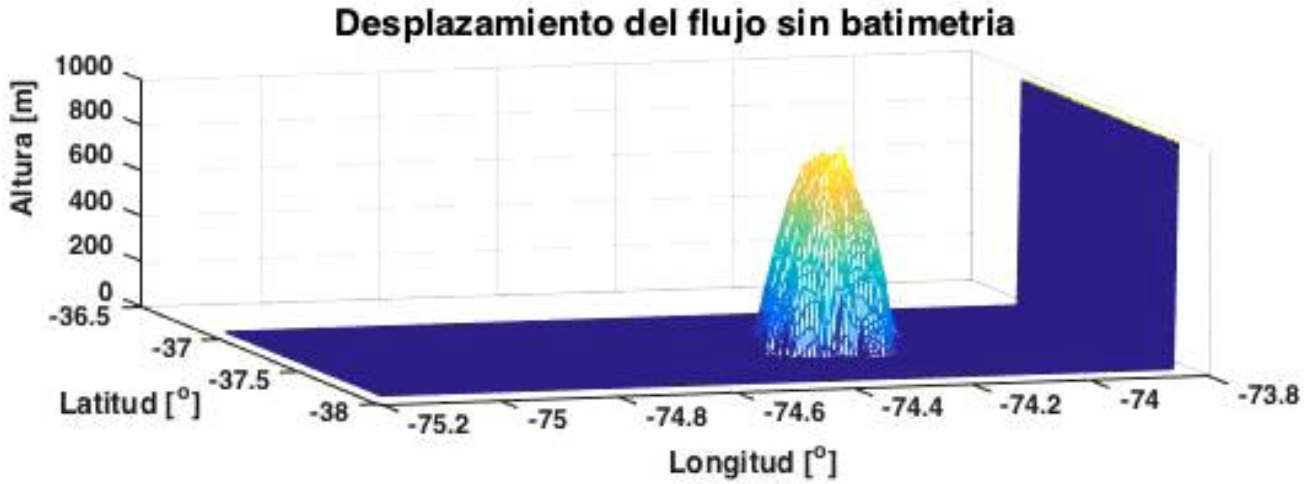


Ejemplo de landslide



Ejemplo Landslide





Flujo de escombros.