

GEOMORFOLOGÍA

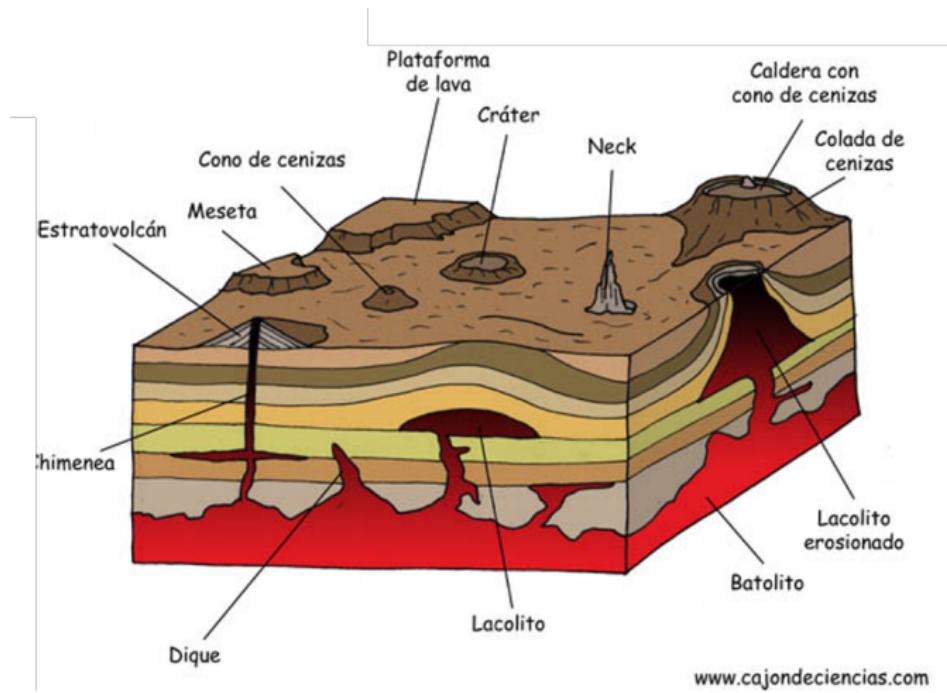
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Versión: June 25, 2020

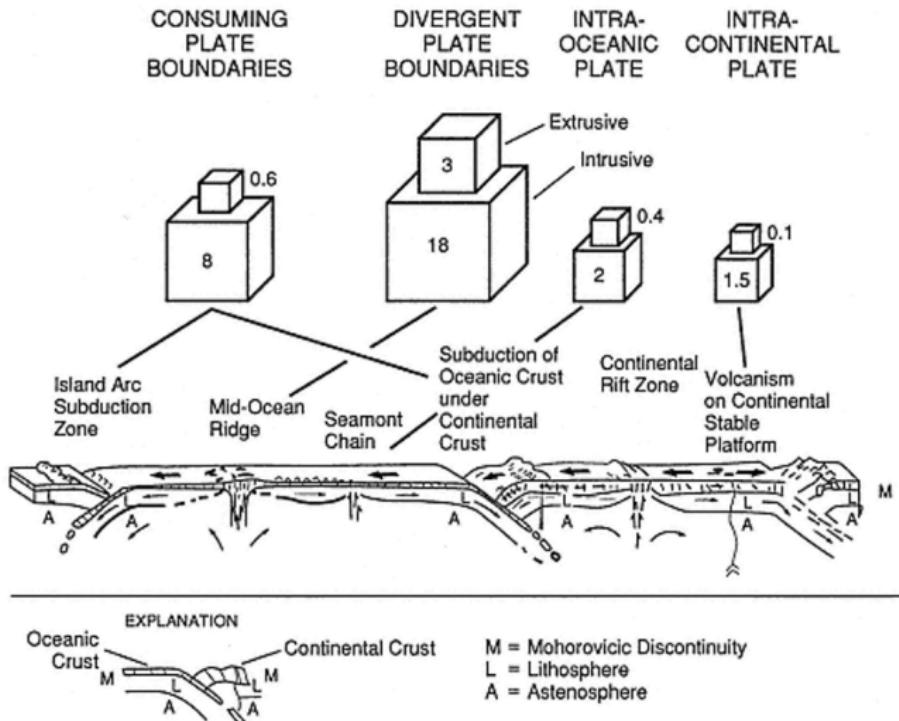


Ambiente Volcánico



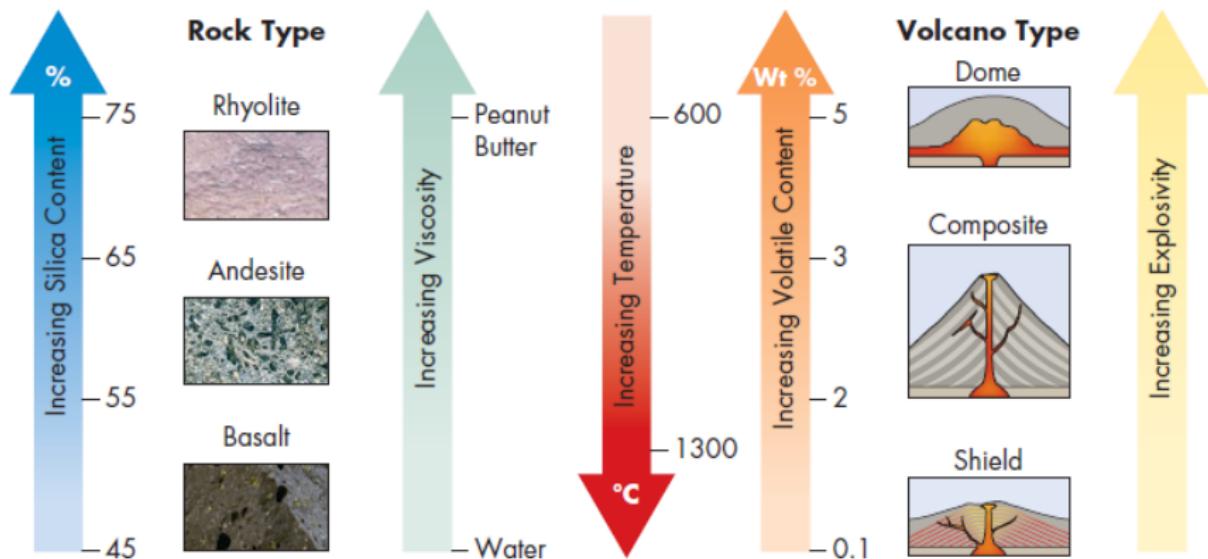
www.cajondeciencias.com

Ambiente Tectónico de Volcánico



Fuente: Manville et al (2009)

Dinámica de erupciones



Dinámica de erupciones

Magma Composition	Felsic	Intermediate	Mafic	
Silica Content	70%	60%	50%	
Water (Gas) Content	5.0%	2.0%	0.5%	
Eruption Temperature	750-900 °C	900-1000 °C	1100-1200 °C	
Viscosity	Higher	Intermediate	Lower	
Explosiveness	More Explosive		More Effusive	
Volcanism	Rhyolitic	Dacitic	Andesitic	Basaltic
Volcanic Products	Lava Domes	Pyroclastic Deposits	Lava Flows	
Volcano Types	Lava Dome Complexes	Composite Volcanoes	Shield Volcanoes Cinder Cones	

Kenneth A. Bevis © 2013

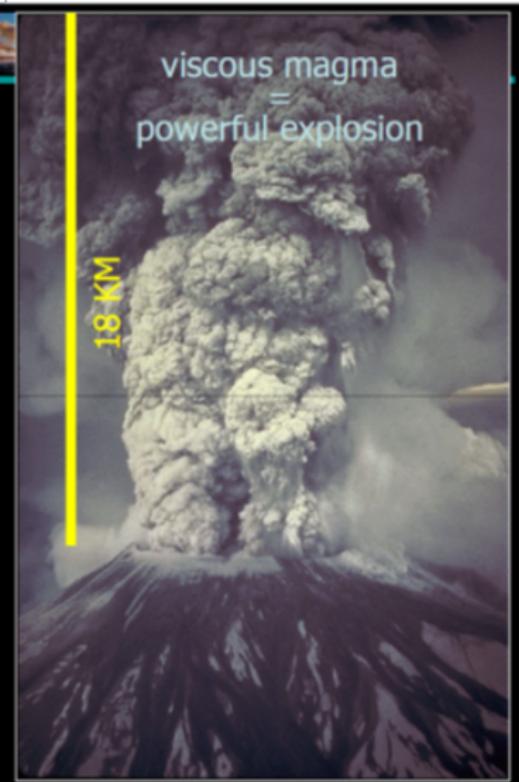
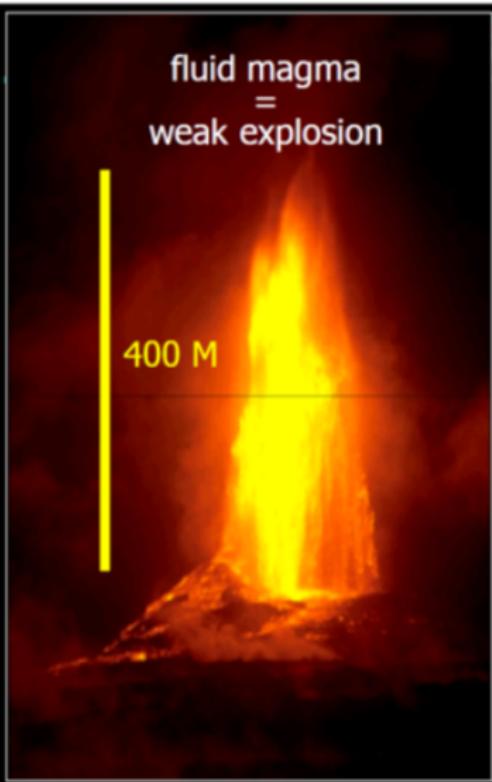
<http://intheplaygroundofgiants.com/geology-of-central-oregon/the-geology-of-volcanoes-and-volcanism/>

fluid magma
= weak explosion

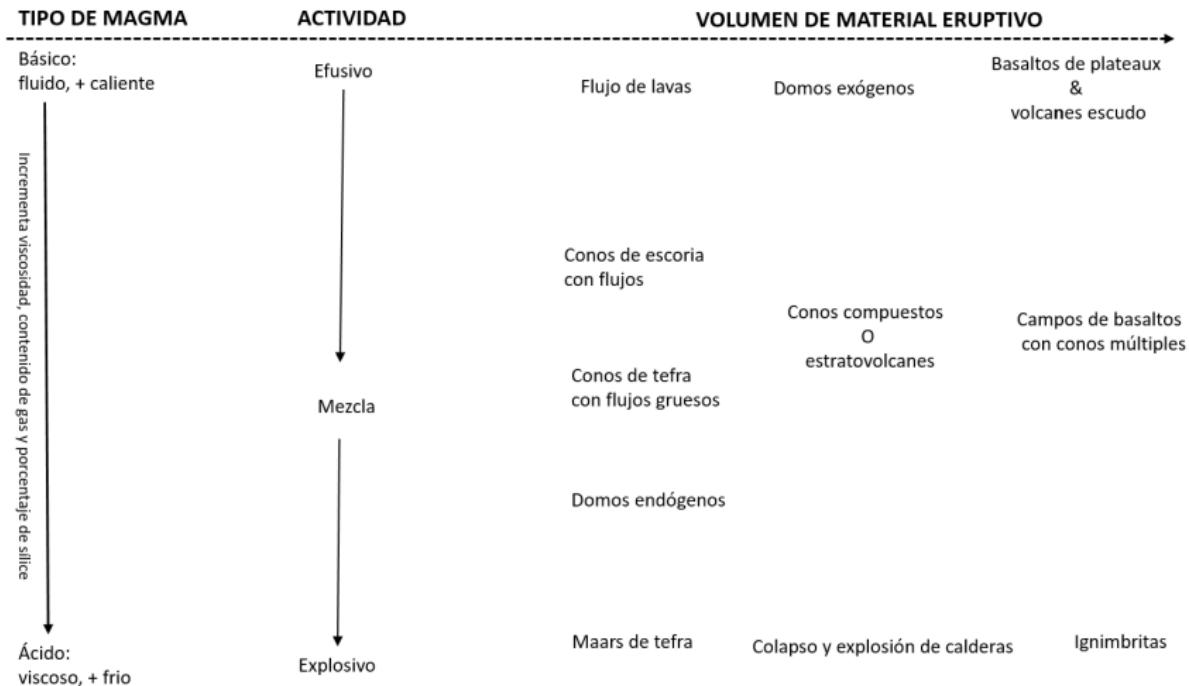
400 M

viscous magma
= powerful explosion

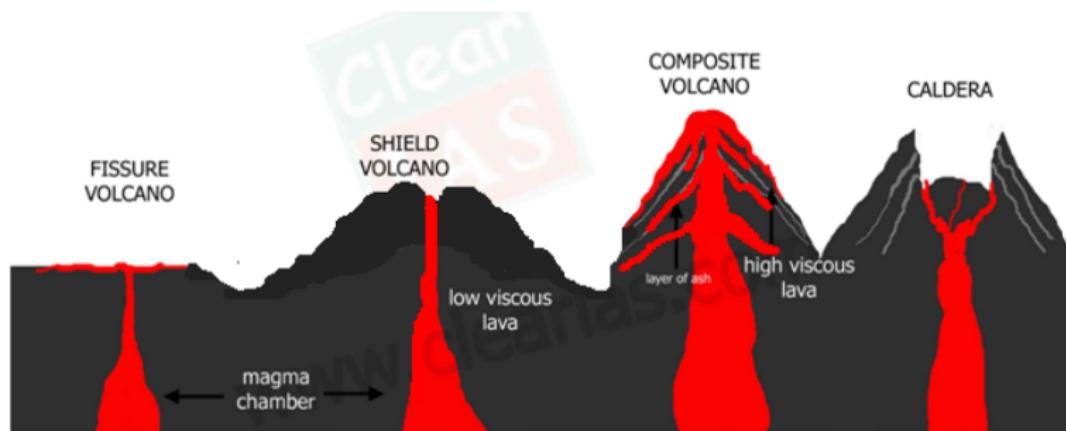
18 KM



Geoformas Volcánicas

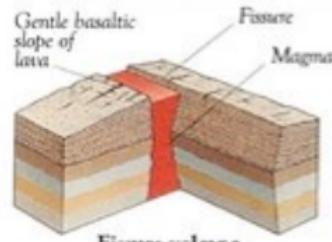


Basado en el edificio volcánico

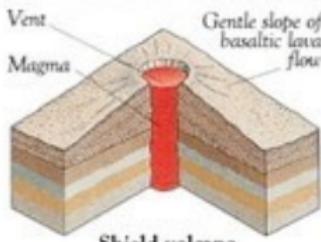


Basado en el edificio volcánico

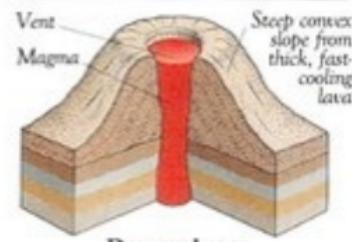
TYPES OF VOLCANO



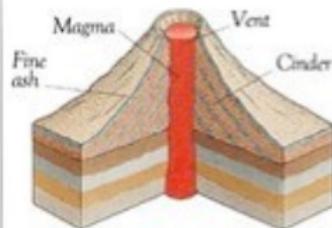
Fissure volcano



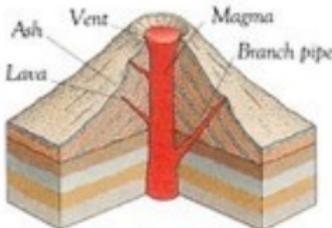
Shield volcano



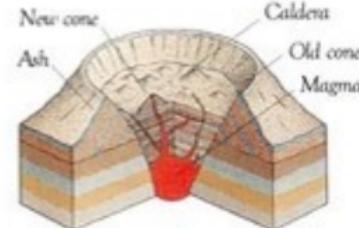
Dome volcano



Ash-cinder volcano

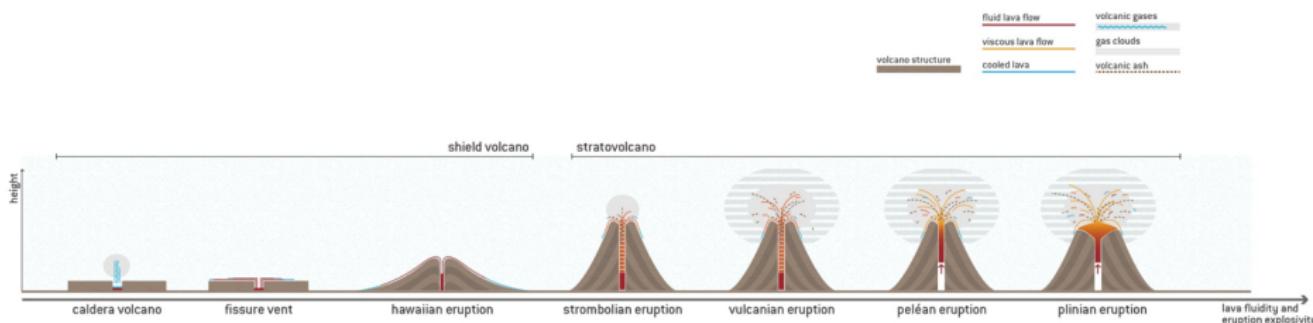


Composite volcano



Caldera volcano

Basado en el modo de erupción



Geoformas Monogenéticas vs Poligenéticas

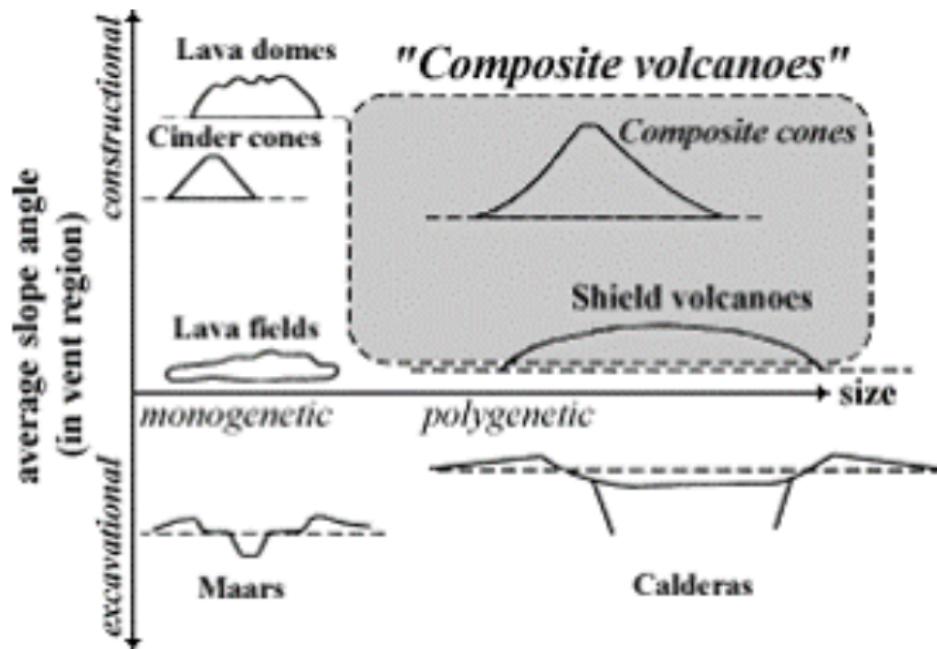




Figure: Sierra Grande (New México, USA)



Figure: Domo de lava creciendo dentro del cráter de Mt. St. Helens después de la erupción de 1980)

Cono de Escoria

(A) volcano-sedimentary processes

constructive

lava flow, rafting,
littoral cones

dyke intrusion
lava lake and
fountaining
debris infill,
slope failure

proximal ballistics/
fallout from eruption
column, grain-flow,
rootless lava flow

ash-fallout

destructive

post-emplacement
lava tube
phreatic
eruptions

slope failure, intermittent or initial
cone collapse
ph eruption

vent migration,
crater breaching

rarely PDC,
multiple venting

(B) typical deposits

lava rock and
scoriaceous lapilli
(+fallout tephra)

ash to block,
spatter

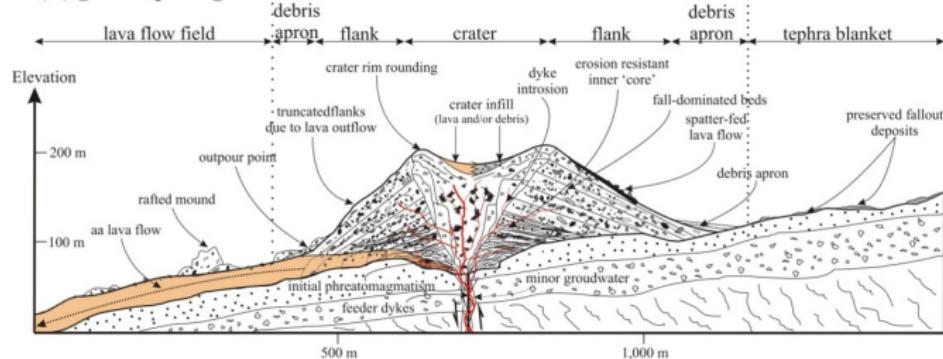
welded or
agglutinated
spatter

debris
infill

ash to block,
spatter

ash
fine lapilli
rarely bombs

(C) geomorphologic features



Cono de Escoria(*cinder cone*)



Tuff ring



Figure: Diamond Head Crater, Honolulu (Hawaii)

Estratovolcano



Figure: Estratovolcán del Arenal en erupción (Costa Rica)

tomada de <http://www.biodiversidadvirtual.org/geologia/Estratovolcan-del-Arenal-en-erupcion-img2832.html>

Edier Aristizabal (evaristizabal@unal.edu.co)

Ambiente Volcánico

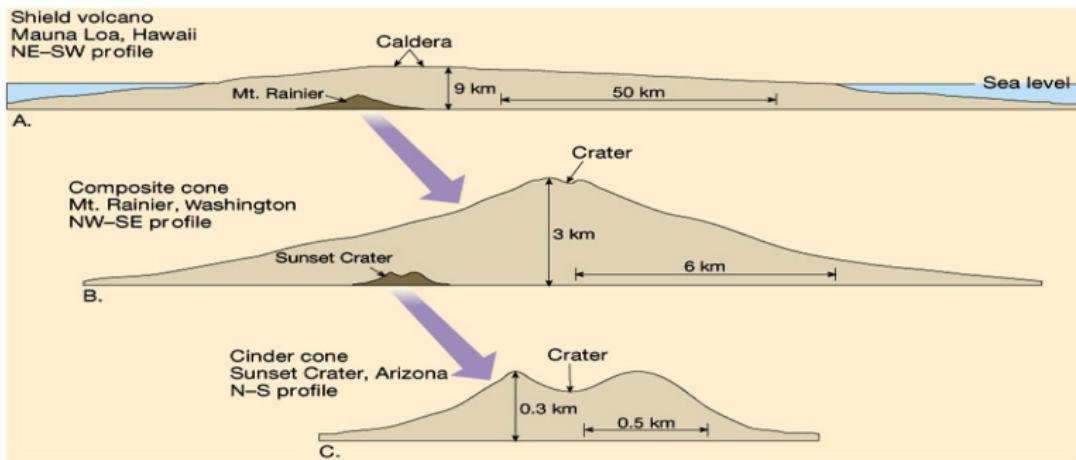
Versión: June 25, 2020

17 / 1

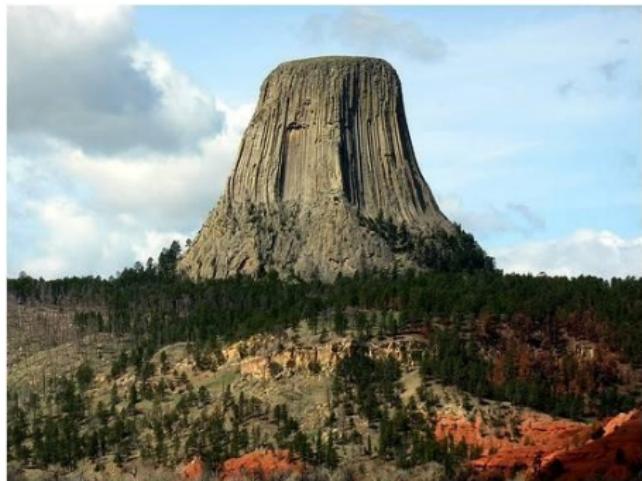
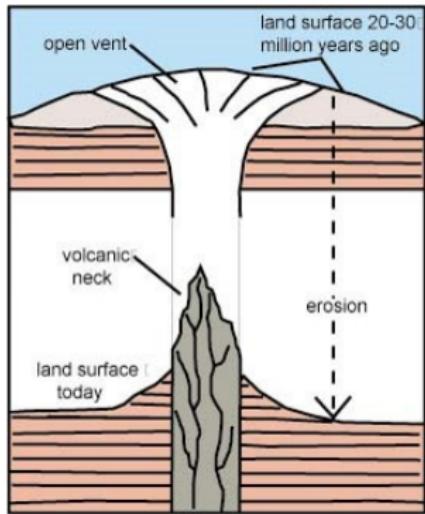
Estratovolcán



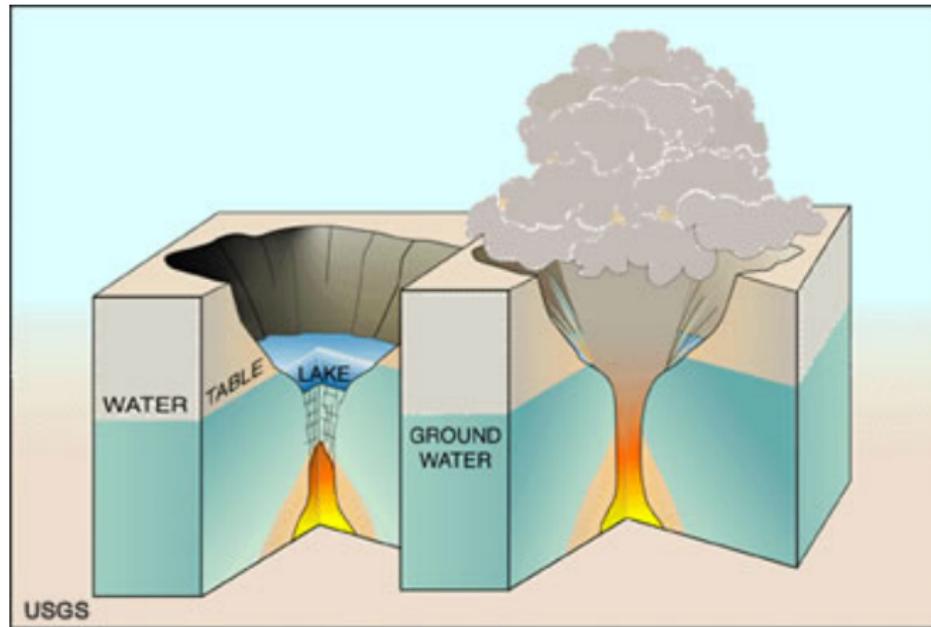
Figure: Estratovolcán del Monte Fuji (Japón)



Cuellos volcánicos



Cráteres Maar



Source:USGS

Cráteres Maar

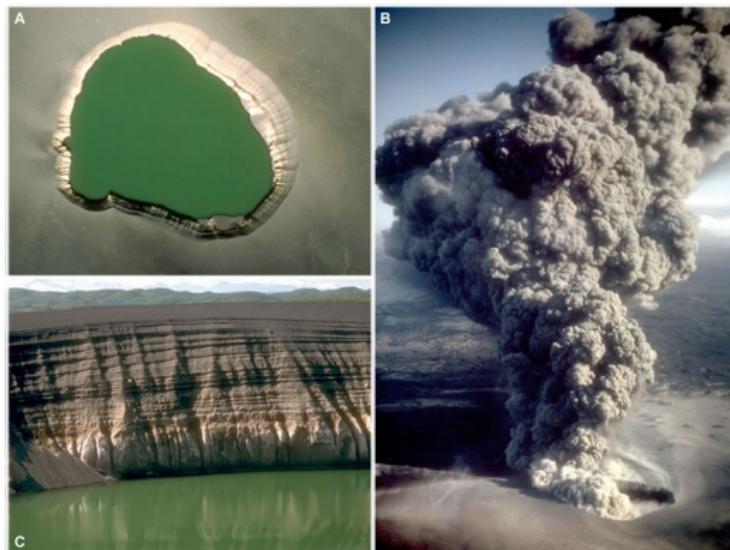
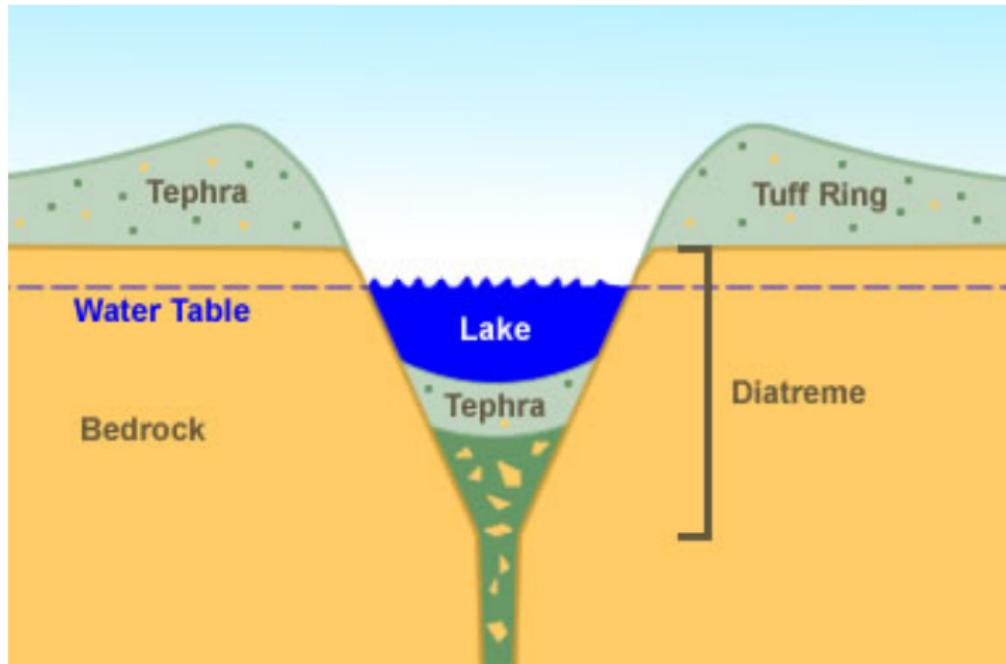


Figure: Views of East Ukinrek Maar Crater, which formed in April, 1977 during a 10-day eruption

<https://geology.com/stories/13/maar/>

Crateres Maar

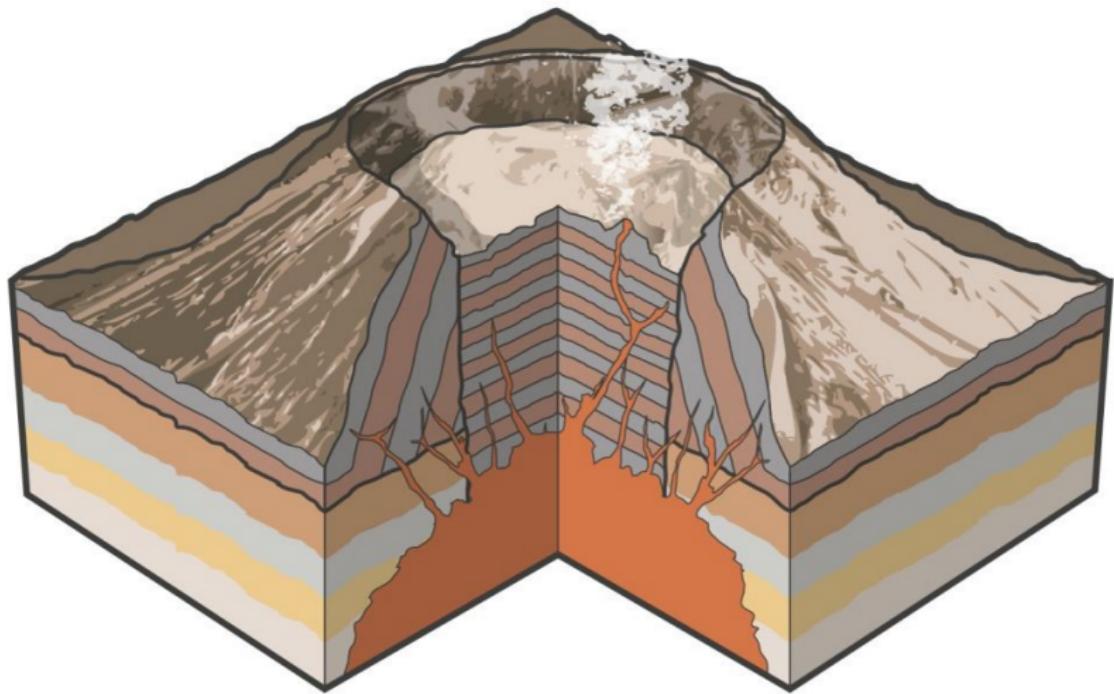


<https://geology.com/stories/13/maar/>

Campos de Lava



Calderas

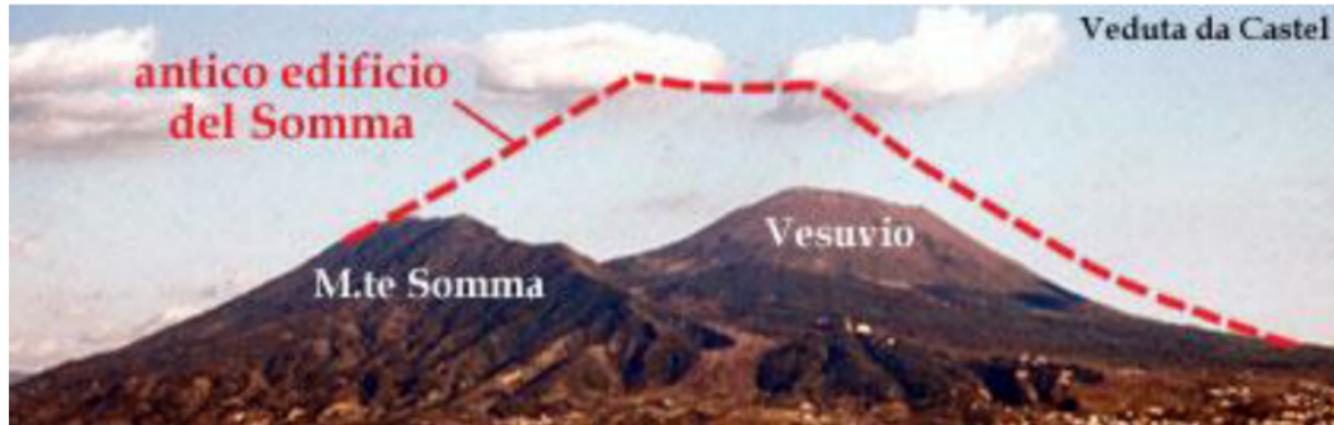


Calderas



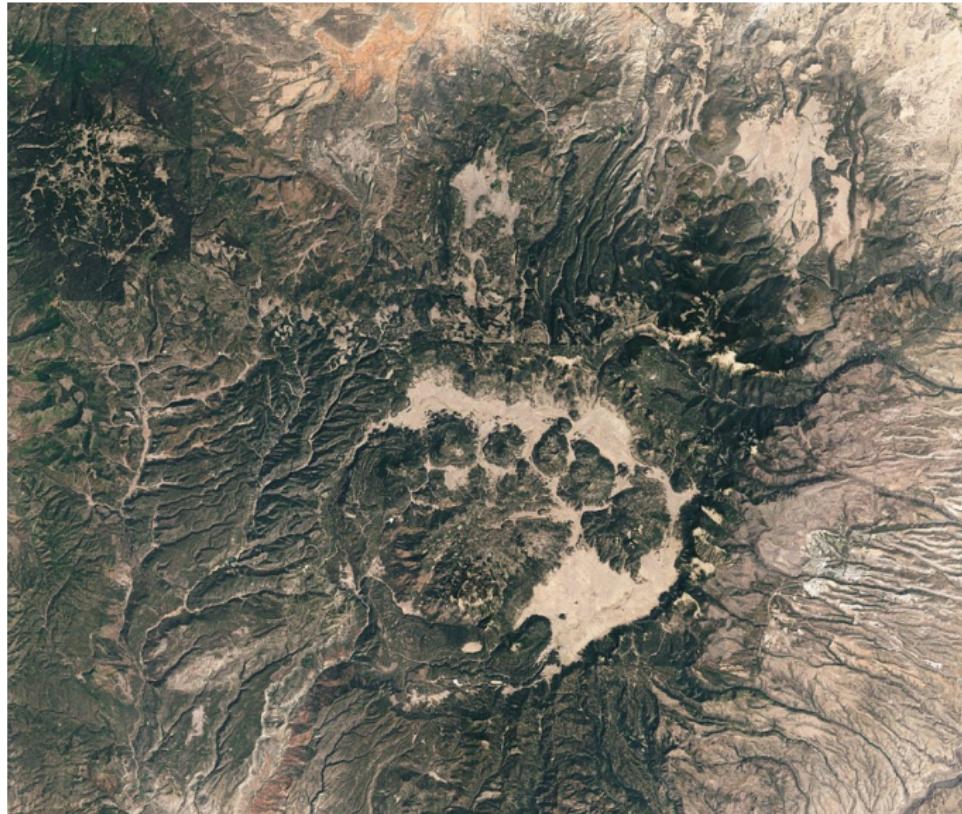
Figure: Calderas Taal (Filipinas)

Calderas



Veduta da Castel

Calderas Colapso - Resurgimiento



Caldera Krakatoa



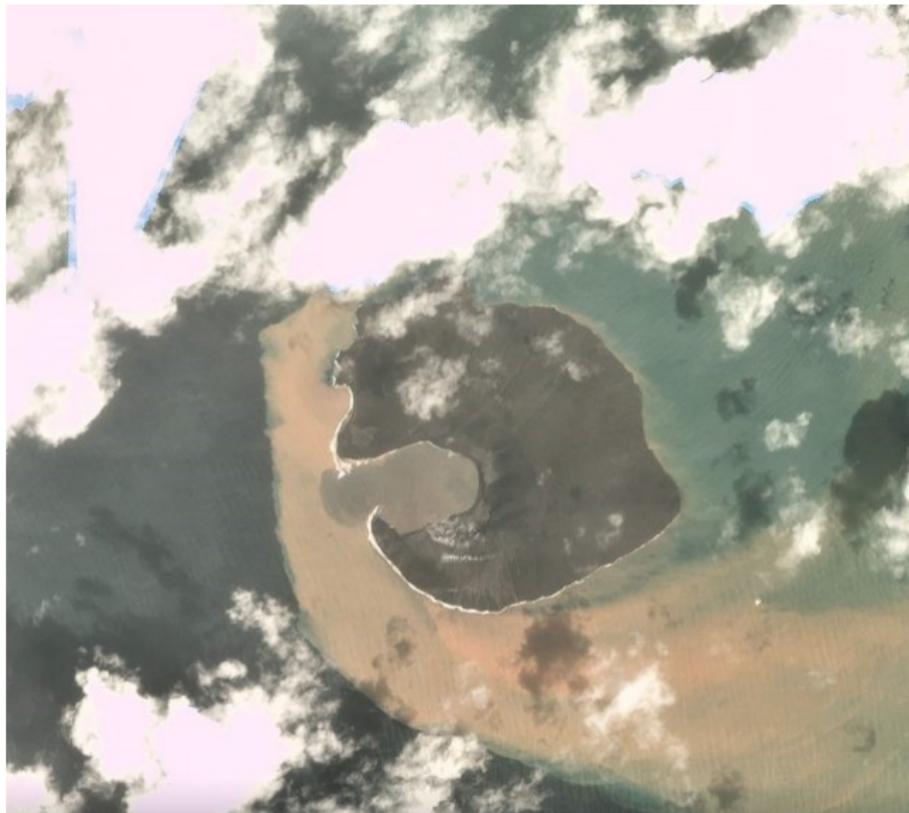
Volcán Krakatoa, Indonesia. 813 m

Fotografía cortesía del VSI

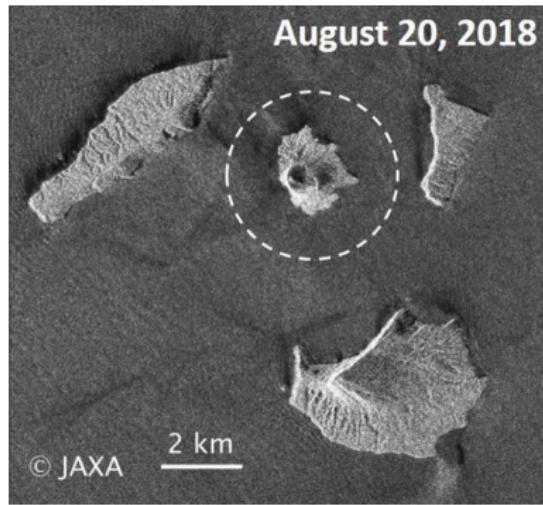
Caldera Krakatoa



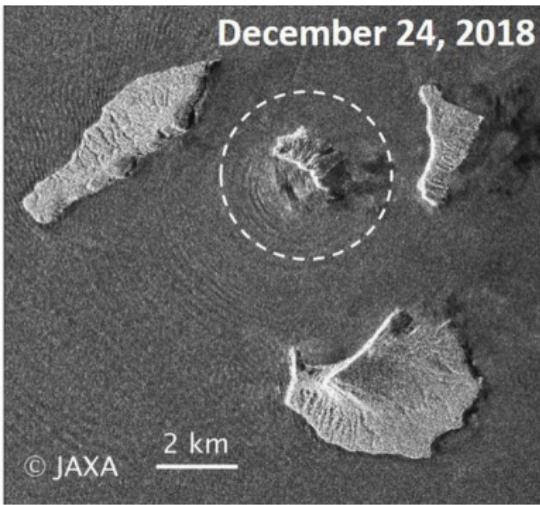
Caldera Krakatoa



Caldera Krakatoa

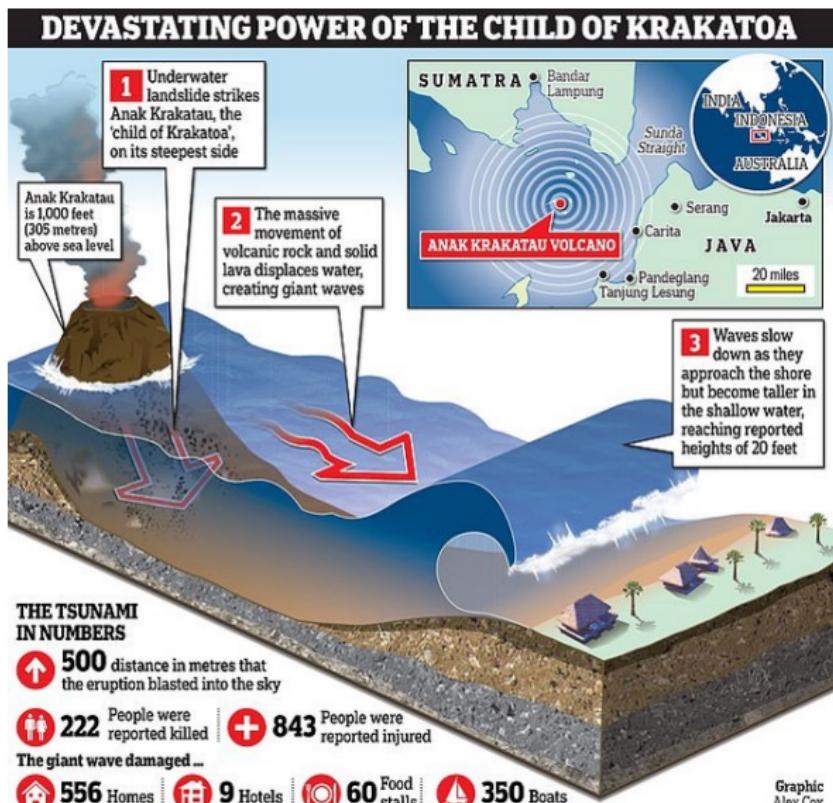


August 20, 2018

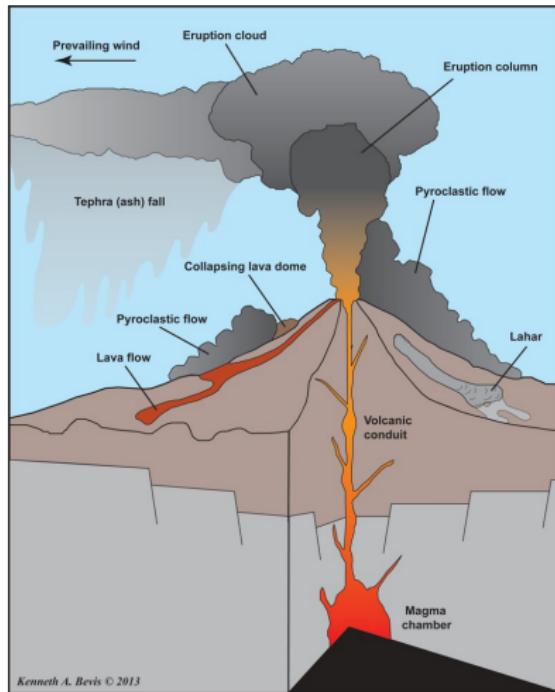


December 24, 2018

Caldera Krakatoa



Depósitos de origen Volcánico



Depósitos de origen Volcánico

Los sedimentos y depósitos de origen volcánico pueden ser divididos de acuerdo a su origen en:

Piroclásticos → primarios → restringido a material generado, transportado y depositado por vulcanismo explosivo subaereo (Explosivo).

Hyaloclásticos → primarios → Fragmentos formados por el choque térmico cuando la lava caliente entra en contacto con el agua fría (efusivo).

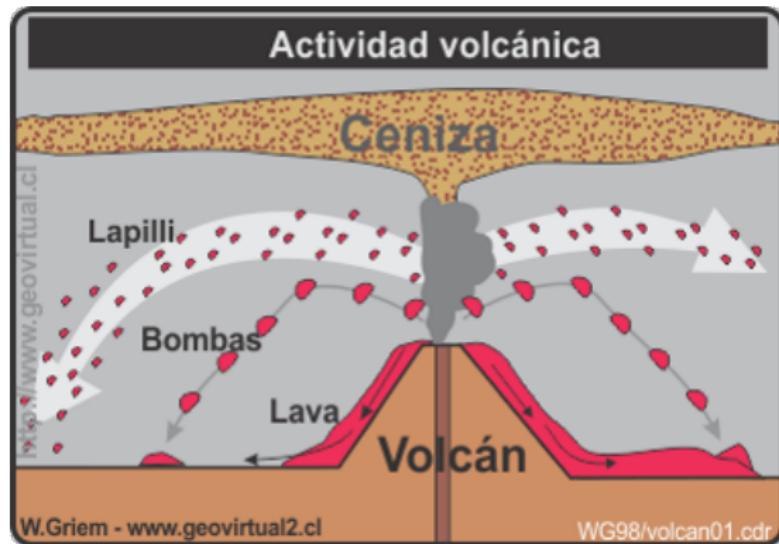
Autoclásticos → primarios → formados por movimiento mecánico o gravitacional de flujos de lava y/o domos (efusivo).

Epiclásticos → secundarios → fragmentos volcánicos que son producidos por erosión de rocas volcánicas por viento, agua o hielo de rocas volcánicas preexistentes consolidadas.

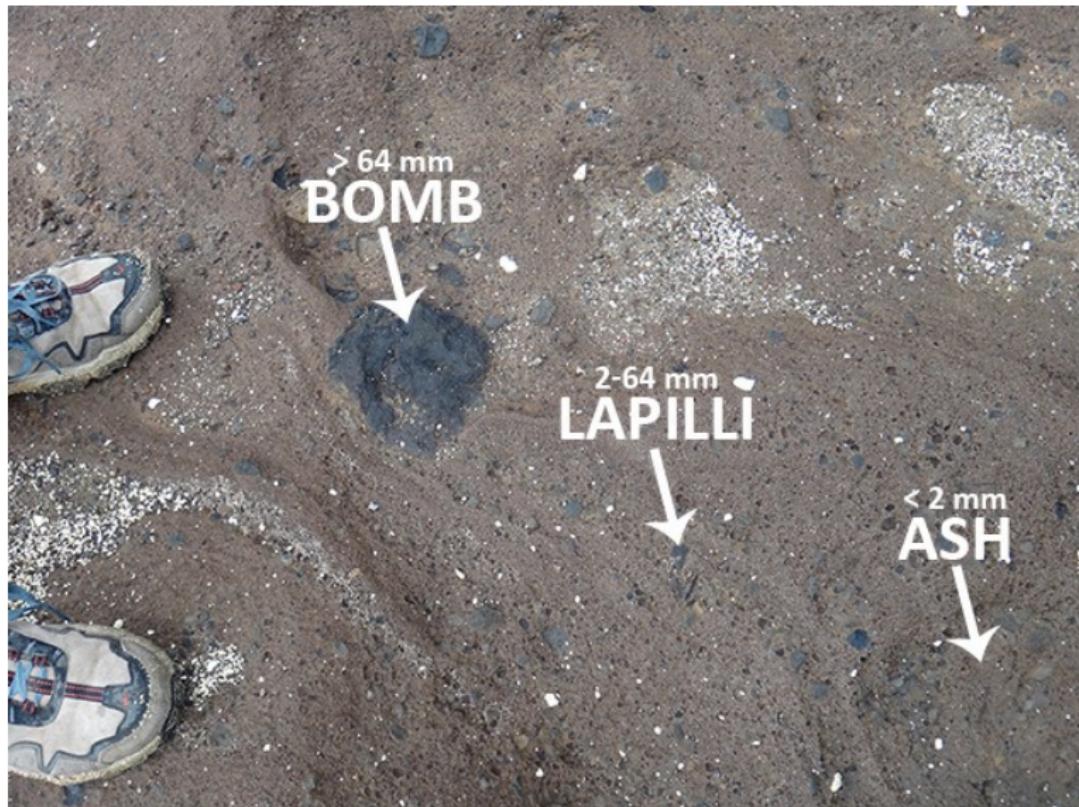
Depósitos Piroclásticos

Teffra

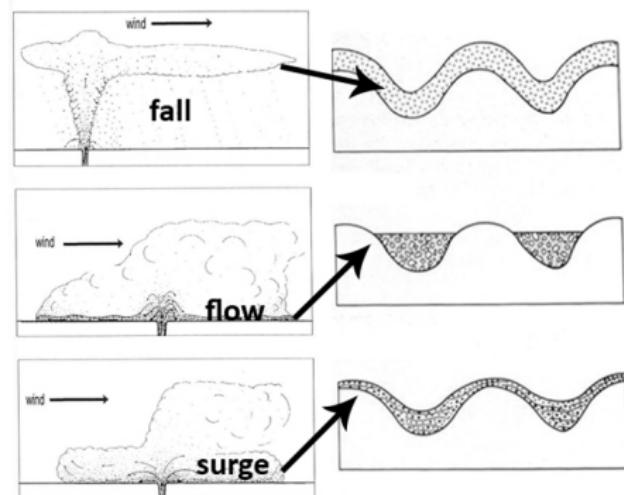
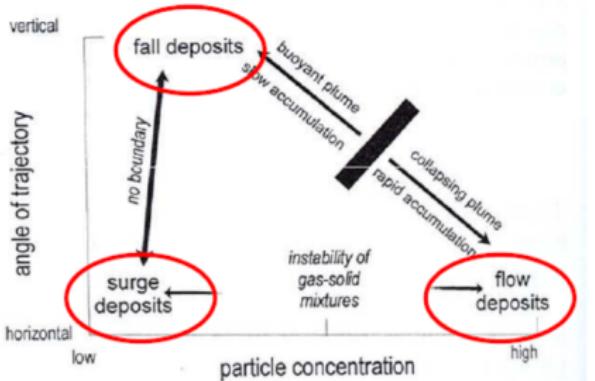
Teffra: Material expulsado, fragmentado y distribuido por el viento, no compactado se denomina tefra, independientemente de la composición o del tamaño de los granos. Los diferentes fragmentos, sueltos o compactados, son llamados piroclástos.



Depósitos Piroclásticos



Depósitos Piroclásticos



Flujos Piroclásticos



Flujos



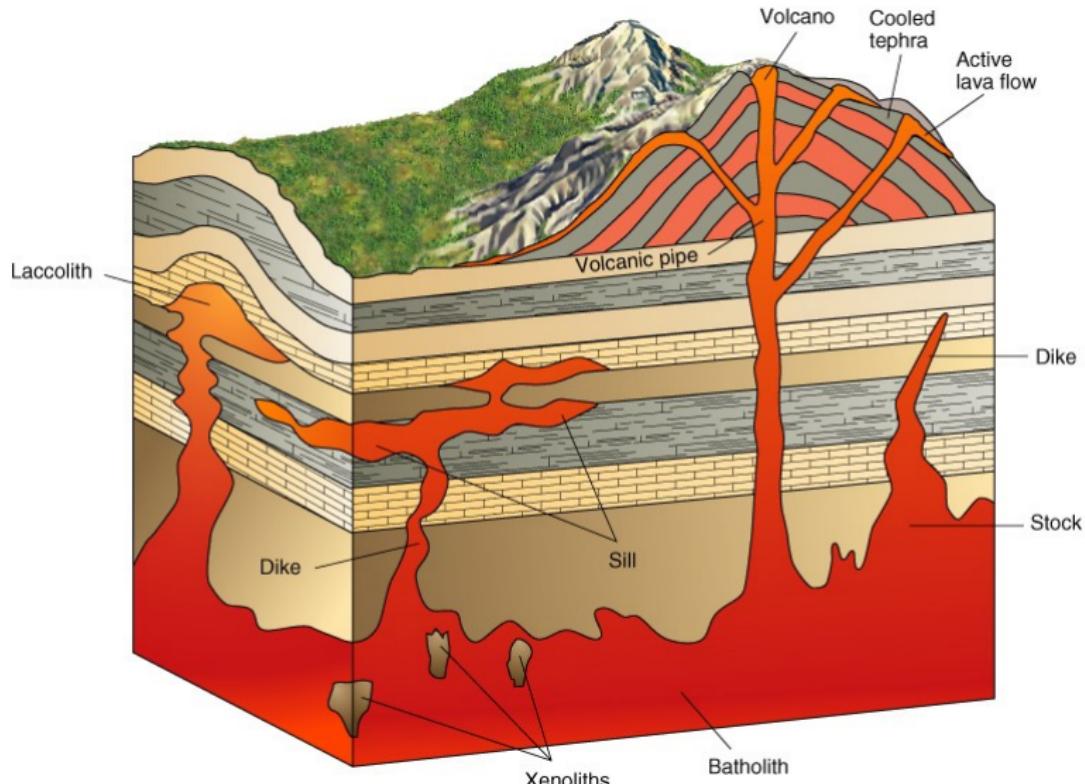
Nube Ardiente



Lahar



Geoformas Plutónicas



Geoformas Plutónicas

Lacolitos

Cuerpos intrusivos que generan formas dómicas sobre los techos de la roca encajante, son usualmente ácidos y se generan comparativamente superficiales en áreas relativamente poca afectadas (Twidale, 1971).



Geoformas Plutónicas

Lacolitos, lopolitos y facolitos

Lacolito



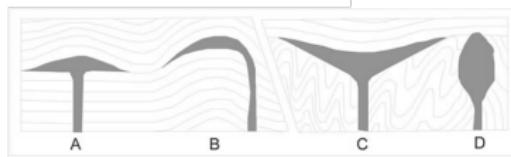
Los lopolitos son grandes, lenticulares donde la masa central se hunde. El espesor es entre 1/10 y 1/20 del ancho o diámetro.

Lopolito



Los facolitos están en la cresta de anticlinales y fueron instruidos contemporáneamente con el plegamiento.

Facolito

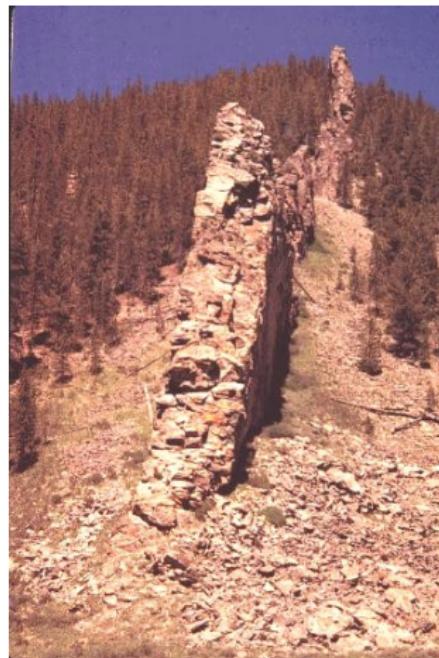


Sill



Dikes

Cuerpos intrusivos tabulares, verticales o cercanos, usualmente cortando la roca encajante (Twidale, 1971).



Sill

Masas tabulares emplazadas horizontalmente y usualmente paralelas a la estratificación, clivaje o foliación de la roca encajante (Twidale, 1971).

