

Les verres volcaniques, témoins des processus éruptifs

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Photo OVPF-IPGP

Journée Verres Naturels
30 mai 2022



Piton de la Fournaise
Éruption effusive (coulée de lave)



Mont St Helens (U.S.A.)
Éruption 1980 explosive (plinienne)





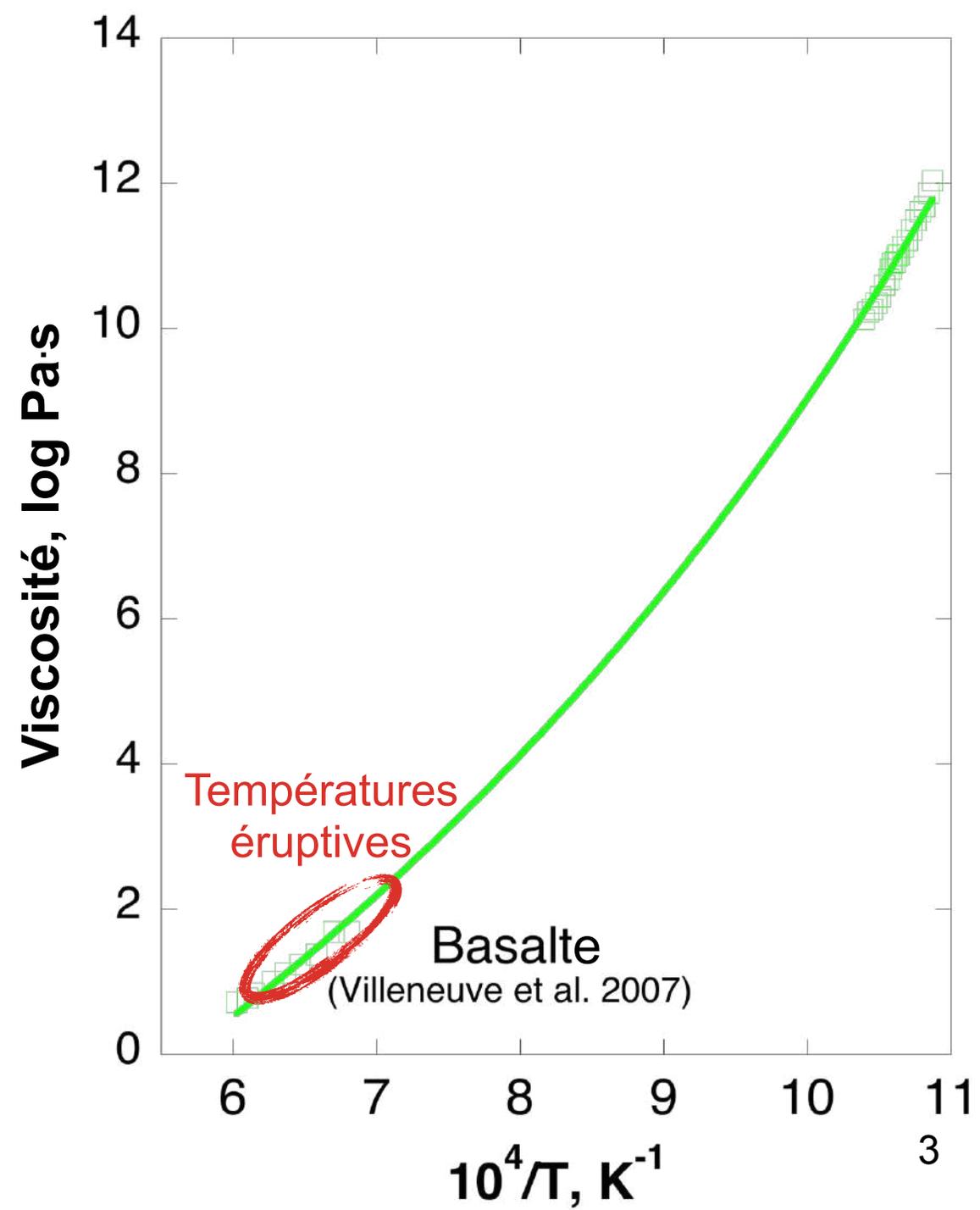
Basalte

50 wt% SiO_2 , 14 wt% Al_2O_3 , 2.5 wt% TiO_2

12 wt% Fe_2O_3

17.5 wt% $\text{CaO}+\text{MgO}$, 3.5 wt% $\text{Na}_2\text{O}+\text{K}_2\text{O}$

0.5 wt% autres

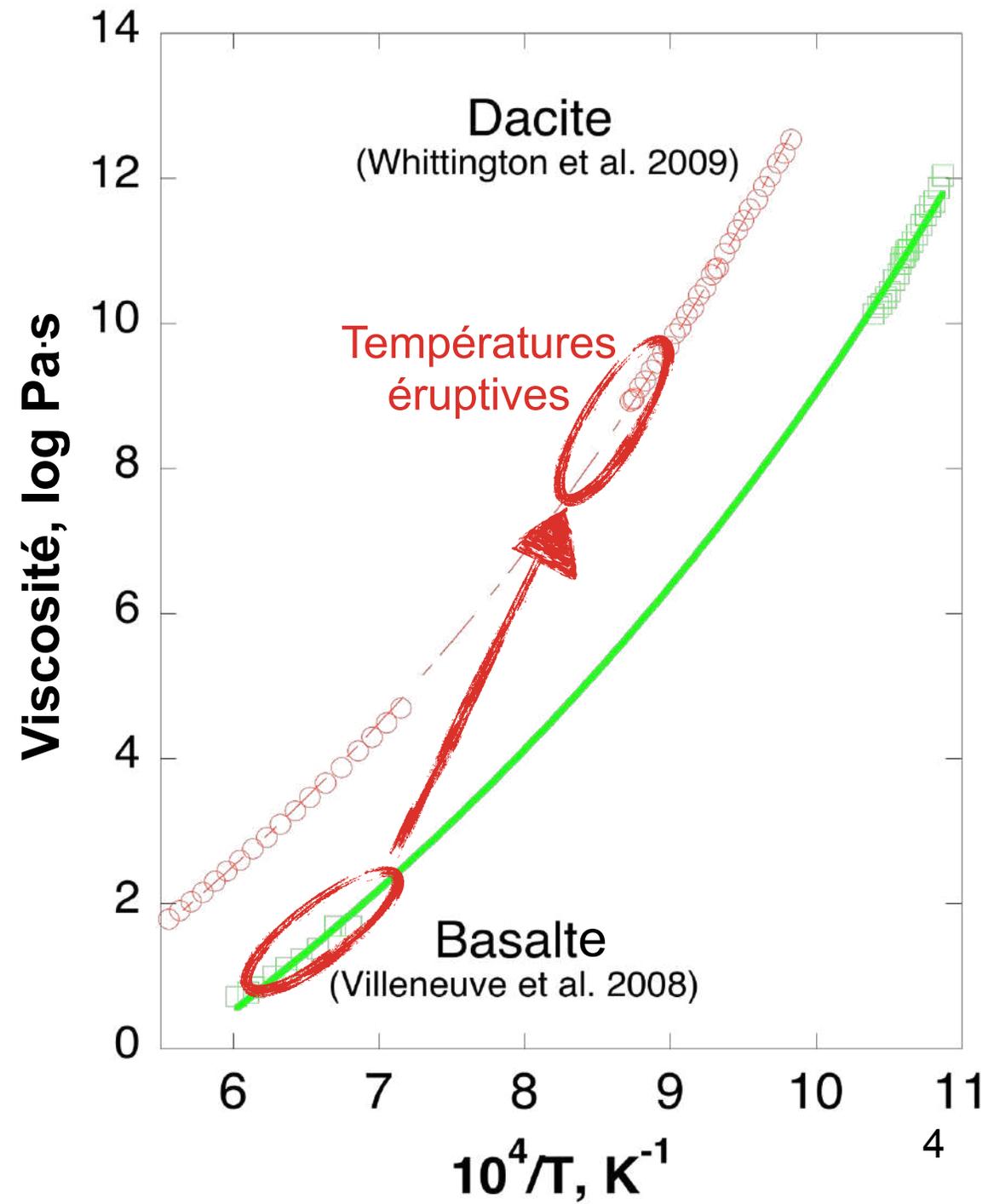




St Helens, Mai 1980
source: USGS

Dacite

65 wt% SiO_2 , 17 wt% Al_2O_3 , 0.6 wt% TiO_2
4.5 wt% Fe_2O_3
6.5 wt% $\text{CaO}+\text{MgO}$, 5.5 wt% $\text{Na}_2\text{O}+\text{K}_2\text{O}$
1.0 wt% autres





St Helens, Mai 1980
source: USGS

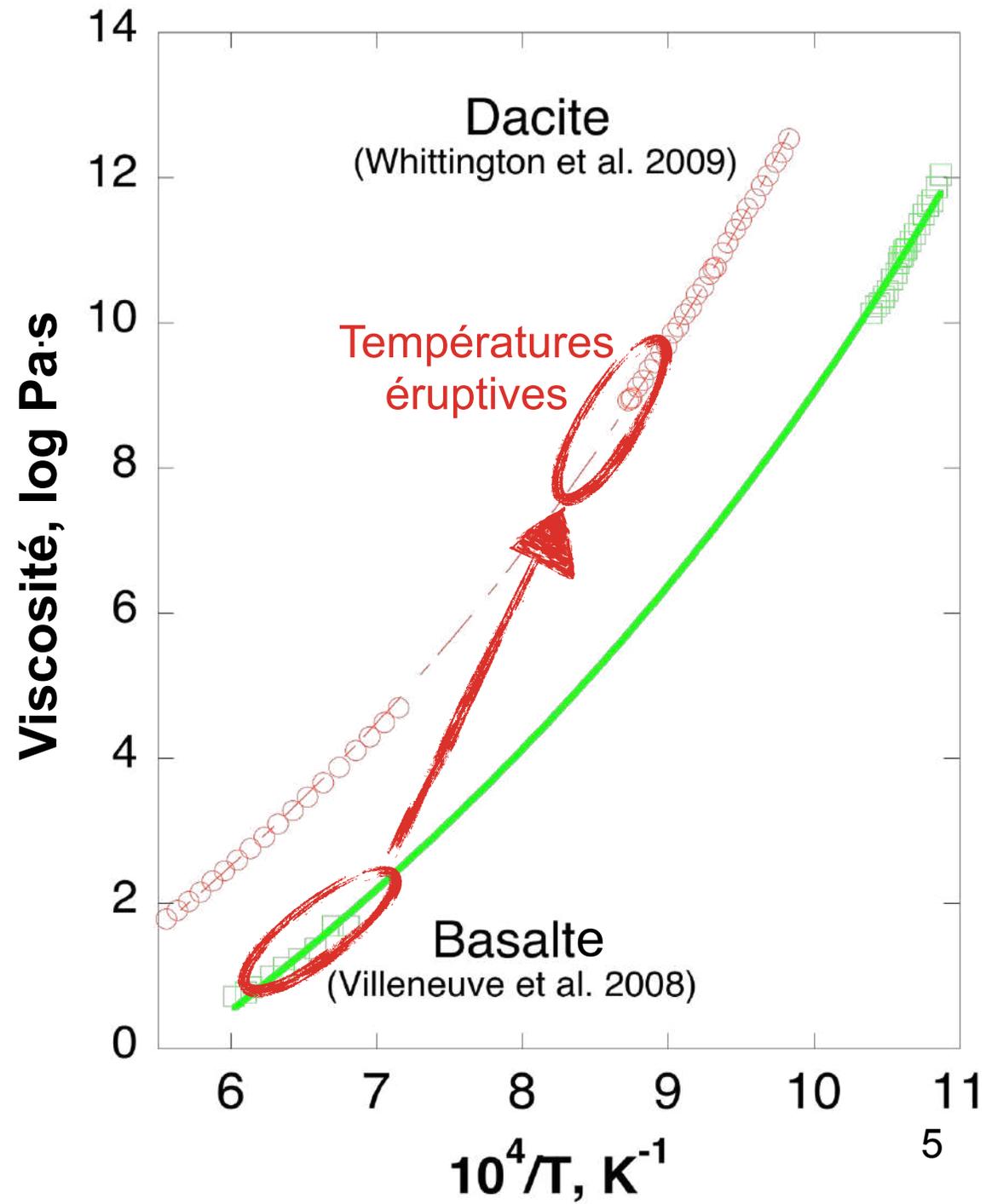
Dacite

65 wt% SiO₂, 17 wt% Al₂O₃, 1.5 wt% FeO, 1.5 wt% CaO, 1.5 wt% TiO₂

6.5 wt% H₂O, 0.5 wt% Na₂O+K₂O

1.0 wt% autres

+ H₂O, CO₂, ...



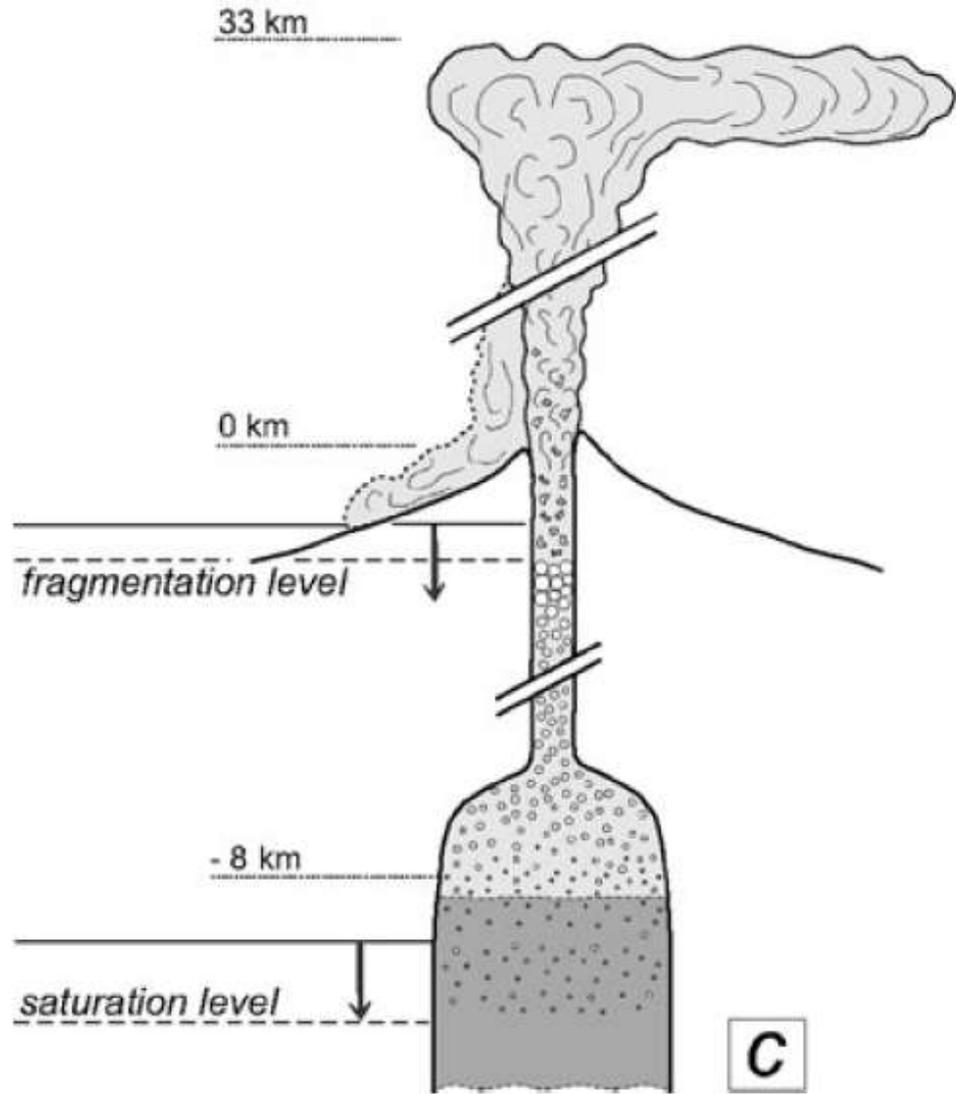


Vésuve vu de Pompéi, C. Le Losq

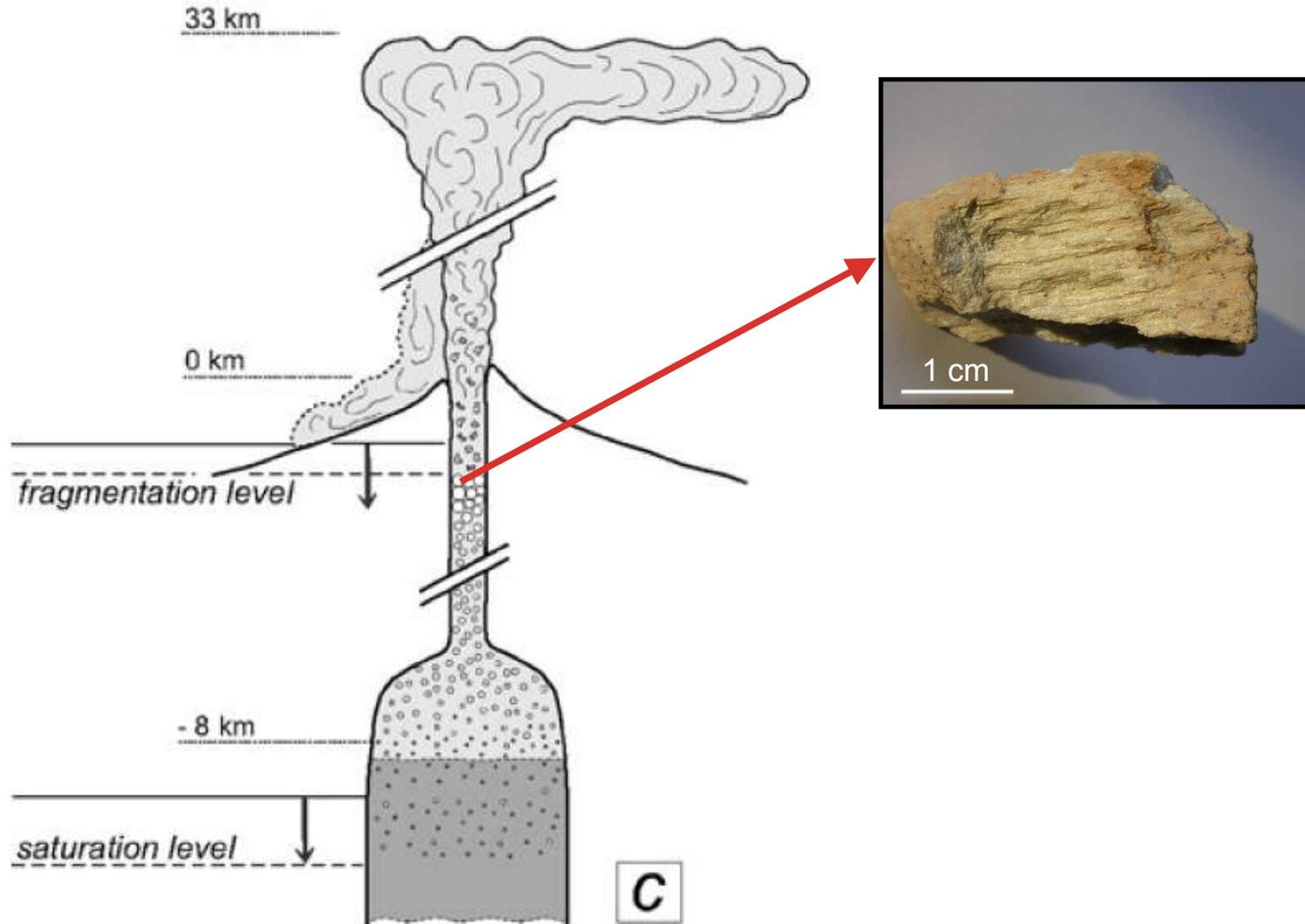


Video courtesy of C. Oppenheimer and MEVO team

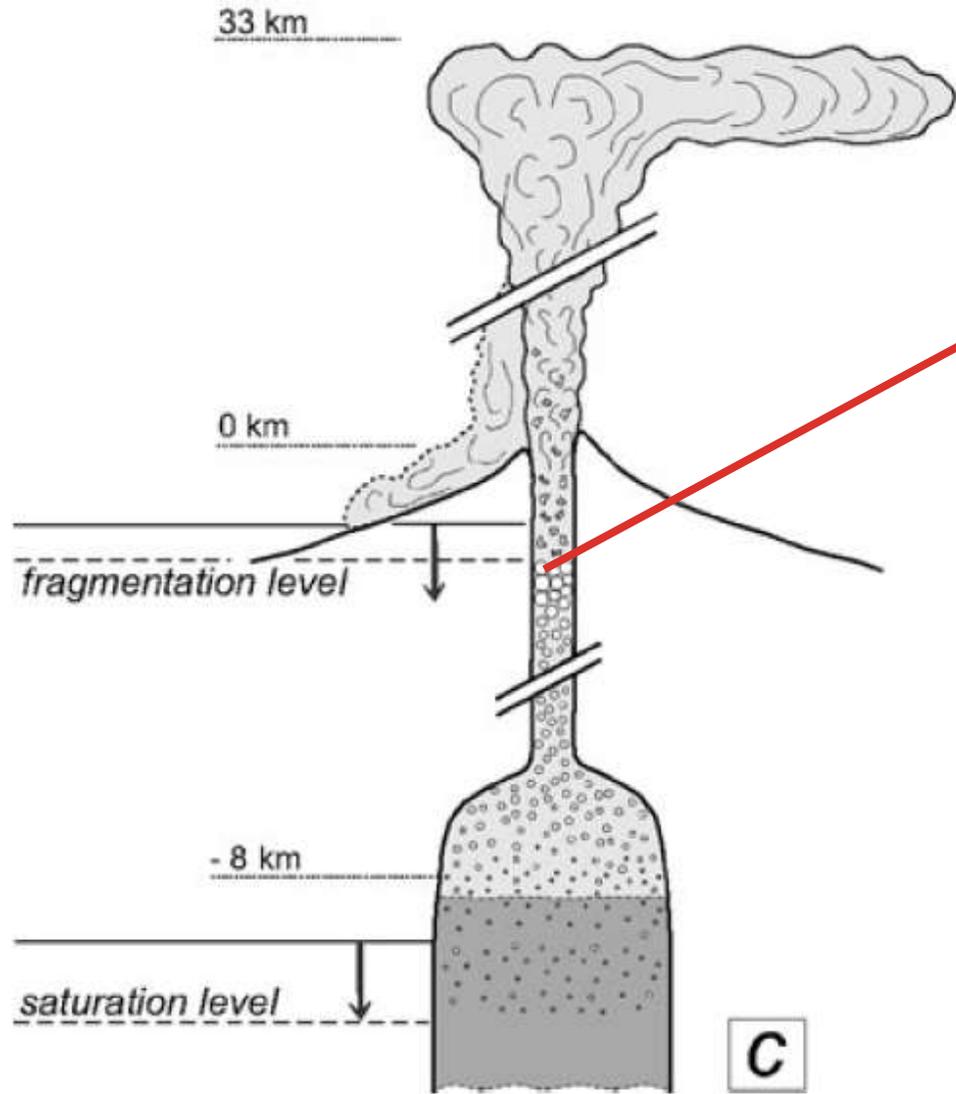
Erebus, Antarctique



Vue schématique du Vésuve lors de l'éruption
de 79 Balcone-Boissard et al., 2010



Vue schématique du Vésuve lors de l'éruption
de 79 Balcone-Boissard et al., 2010



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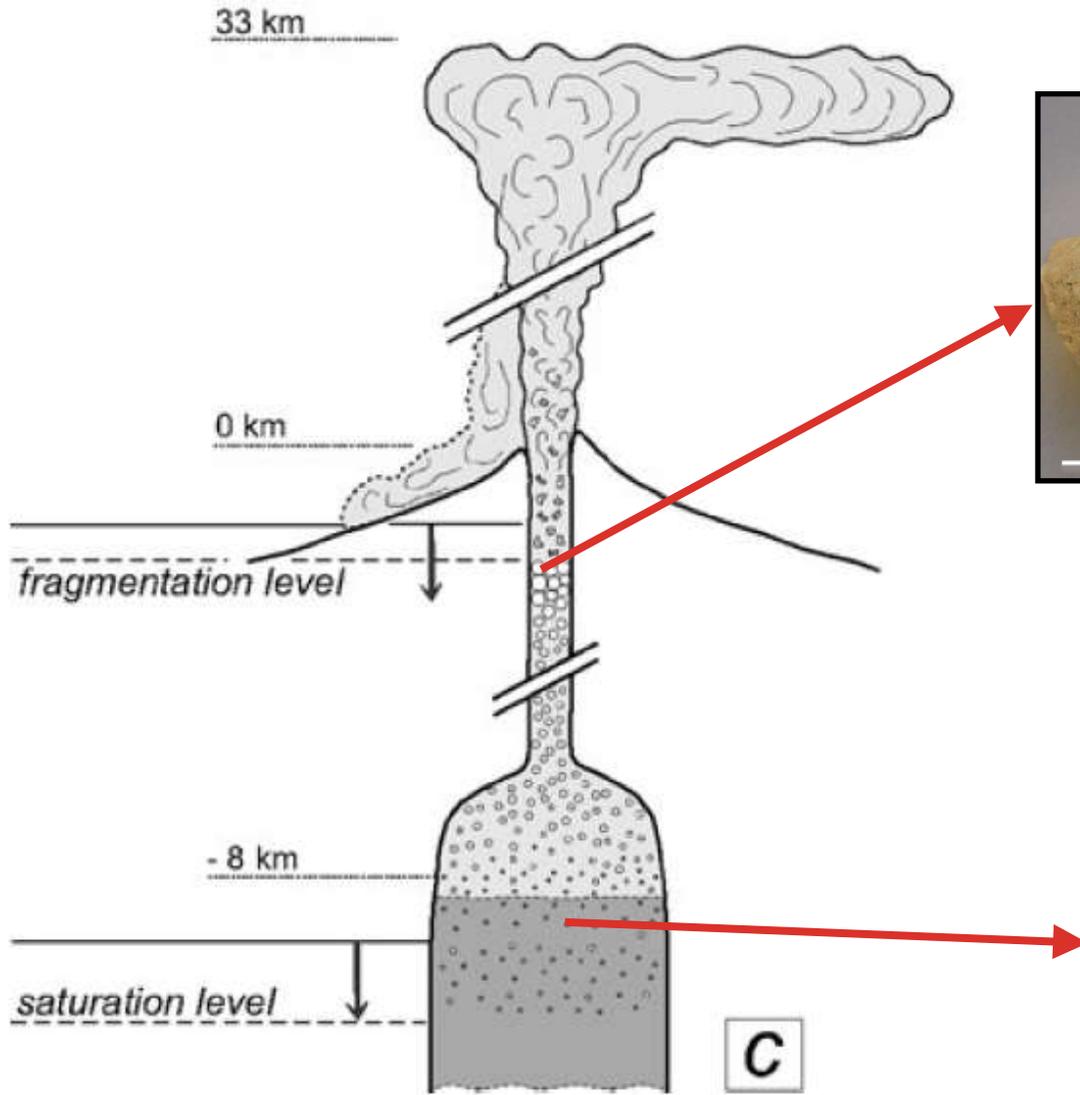
EU3F & PF

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EU2F ?
(non observée)

Vue schématique du Vésuve lors de l'éruption de 79 Balcone-Boissard et al., 2010



Vue schématique du Vésuve lors de l'éruption de 79 Balcone-Boissard et al., 2010

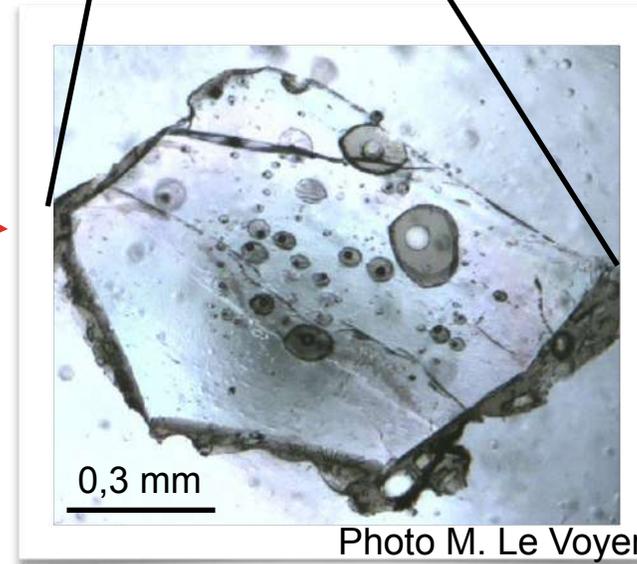
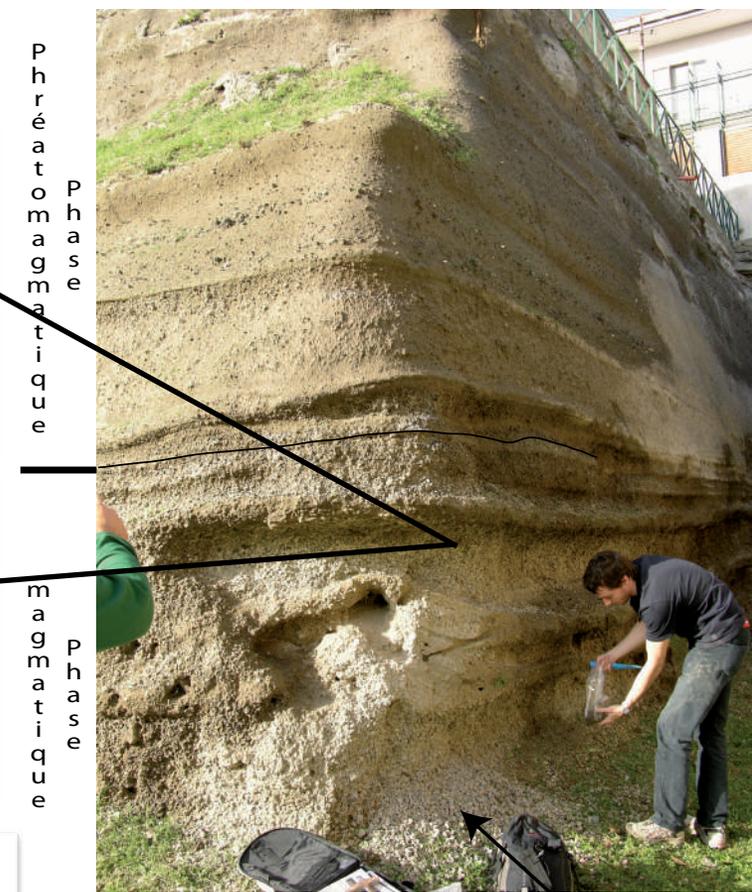


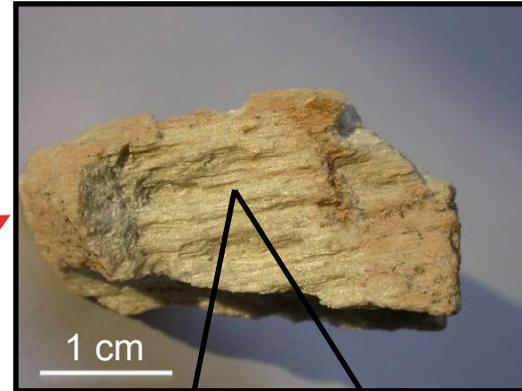
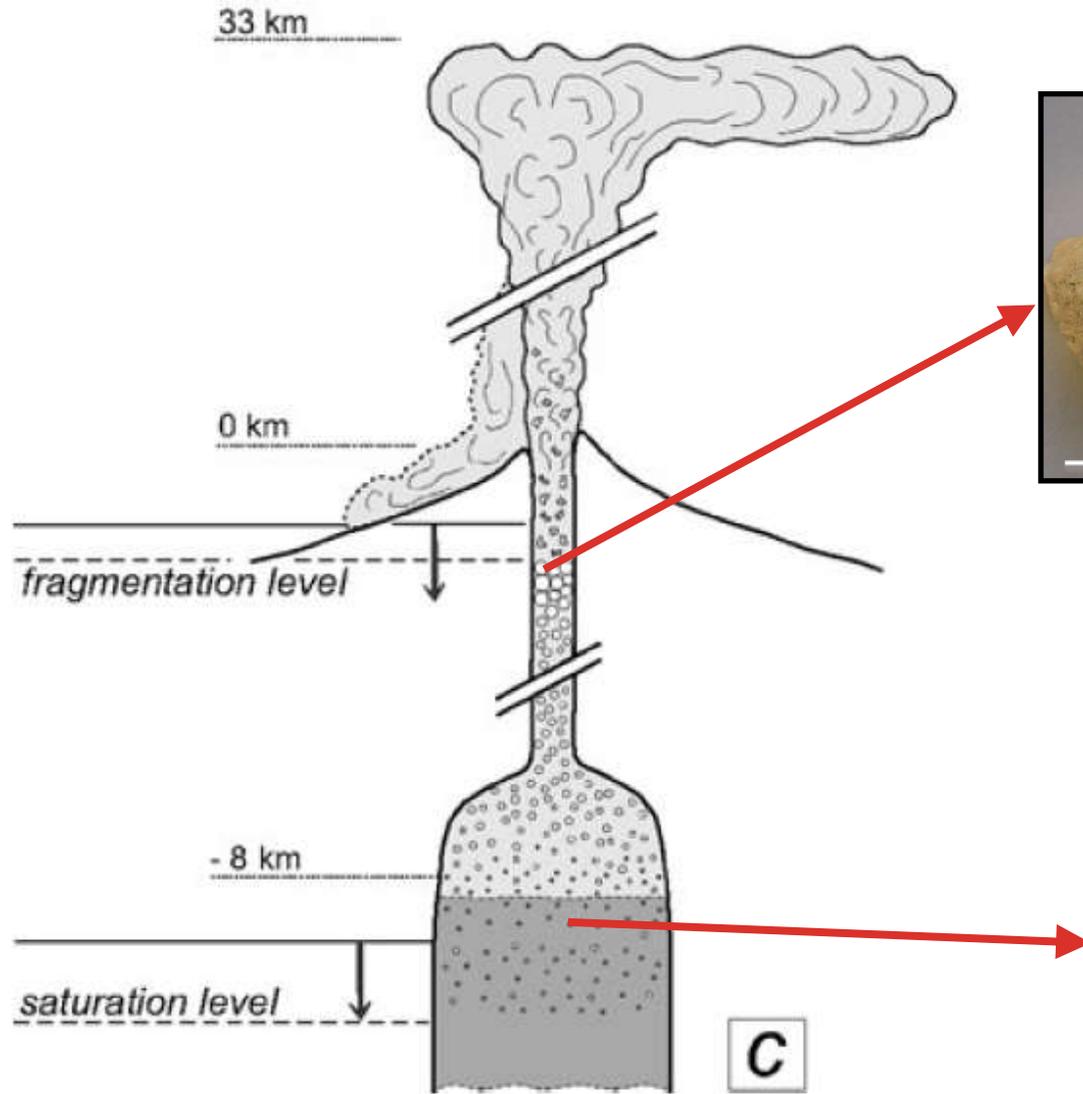
Photo M. Le Voyer



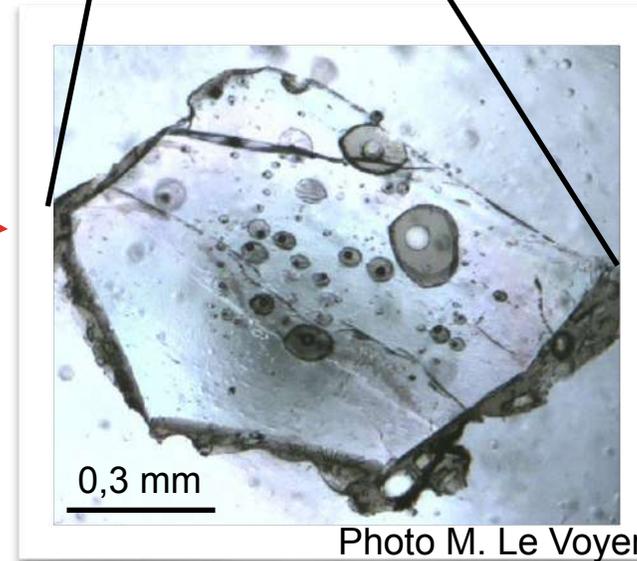
EU4

EU3F & PF

EU2F ?
(non observée)



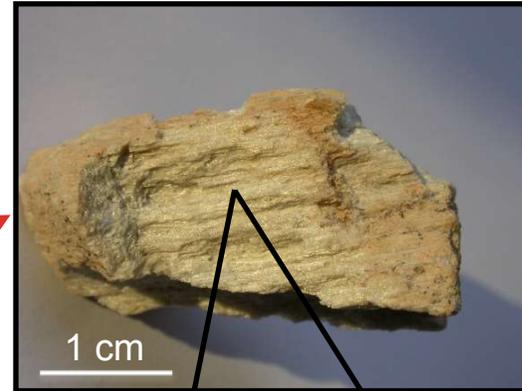
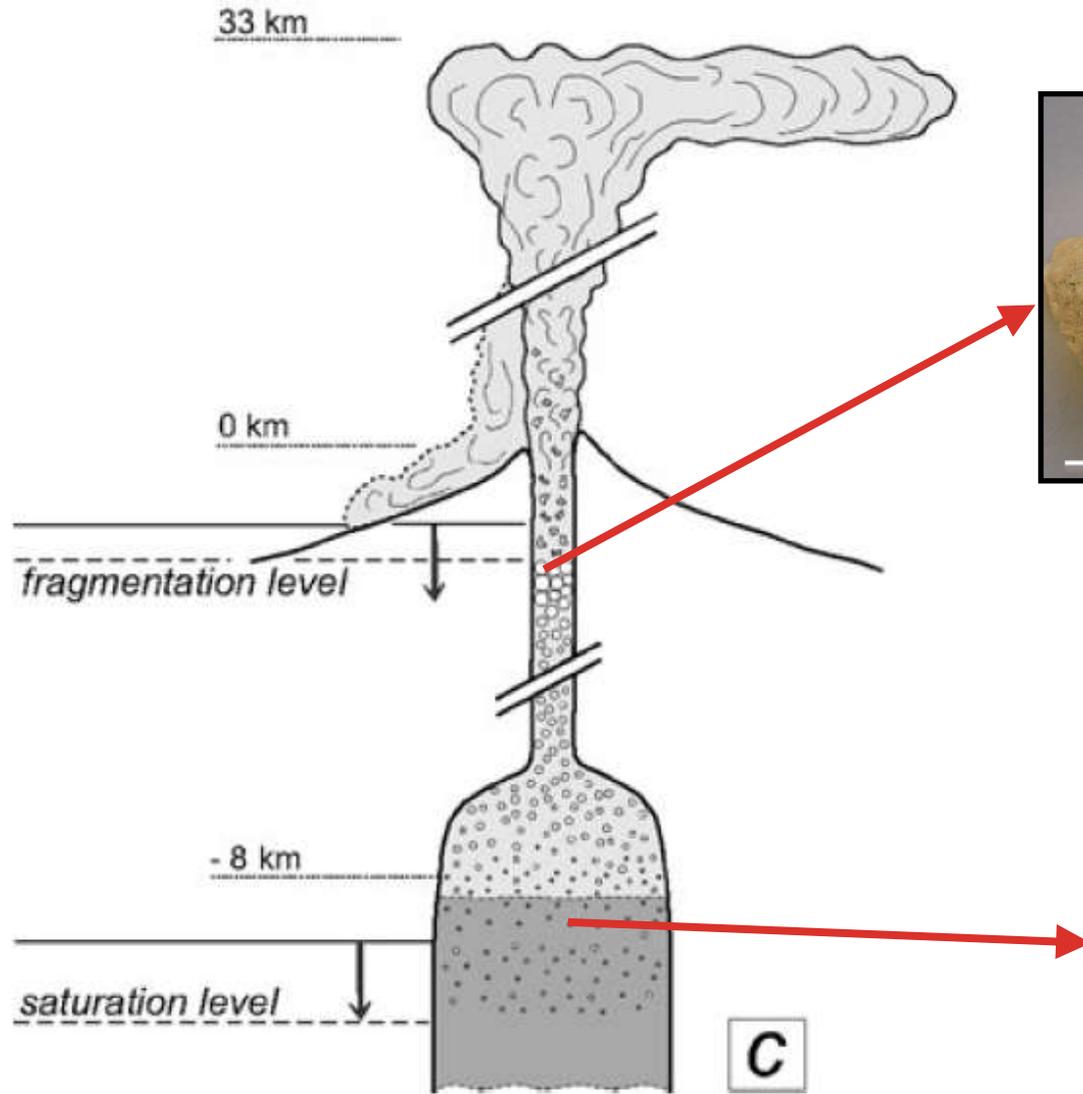
Spectrométrie Raman,
manométrie H₂, etc.
=> ~ 1 pds% H₂O



Spectrométries
Raman et Infrarouge
=> ~ 5-6 pds% H₂O

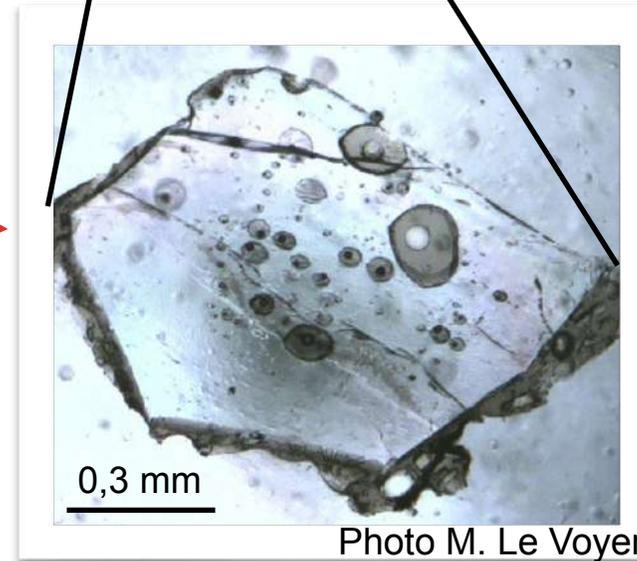
Vue schématique du Vésuve lors de l'éruption
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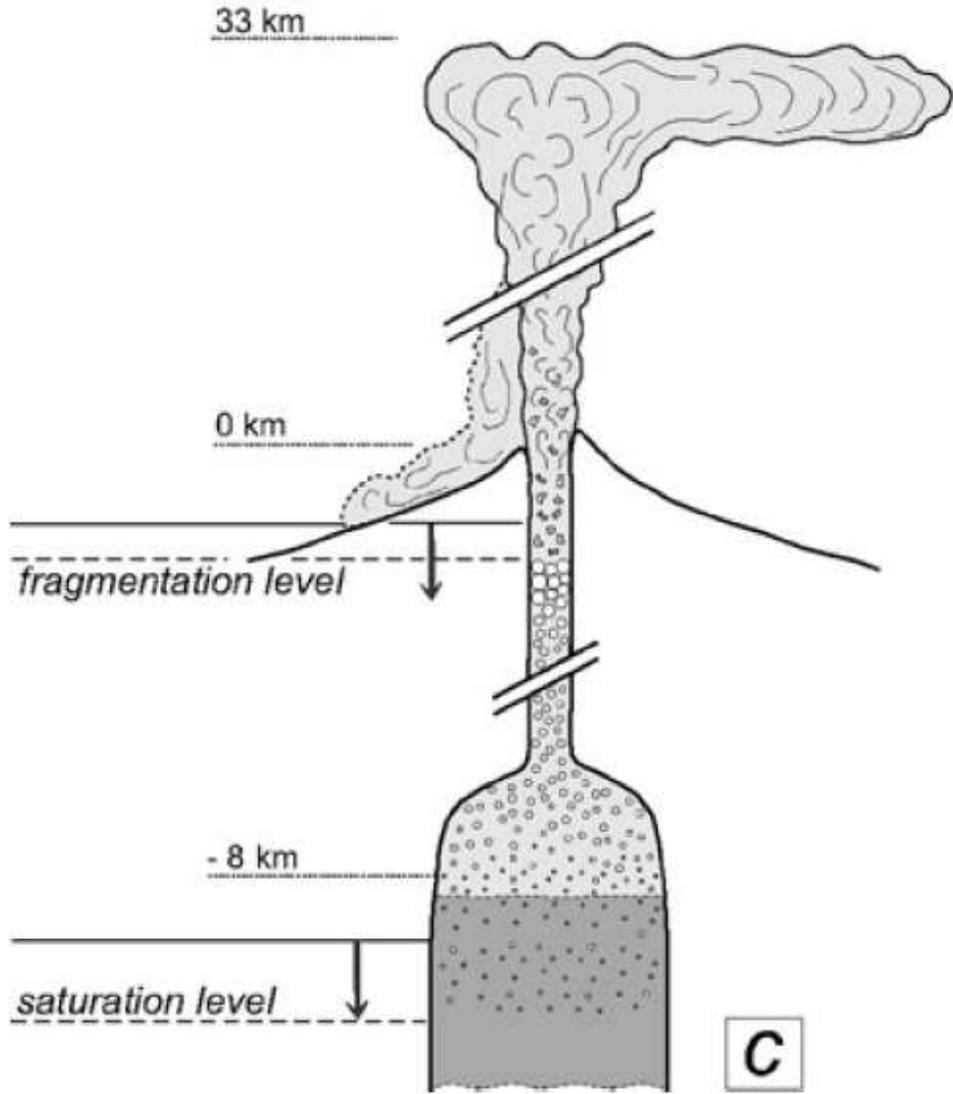
Dégazage de 4-5 pds% H₂O



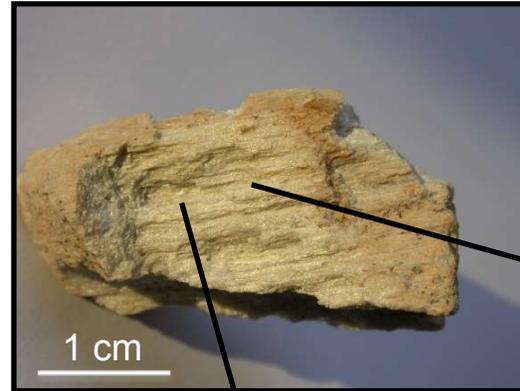
Spectrométries
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Vue schématique du Vésuve lors de l'éruption
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Dégazage de
4-5 pds% H₂O
= beaucoup de gaz !

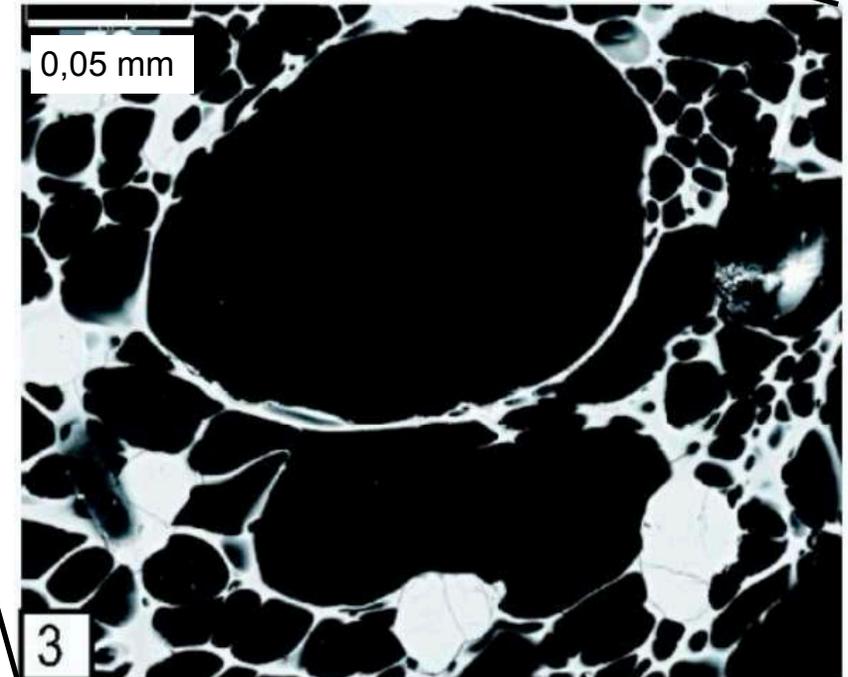


Image Balcone-Boissard et al. 2010



Photos C. Oppenheimer (thanks Clive!)

Bombe volcanique de l'Erebus
Un magma phonolitique aussi !

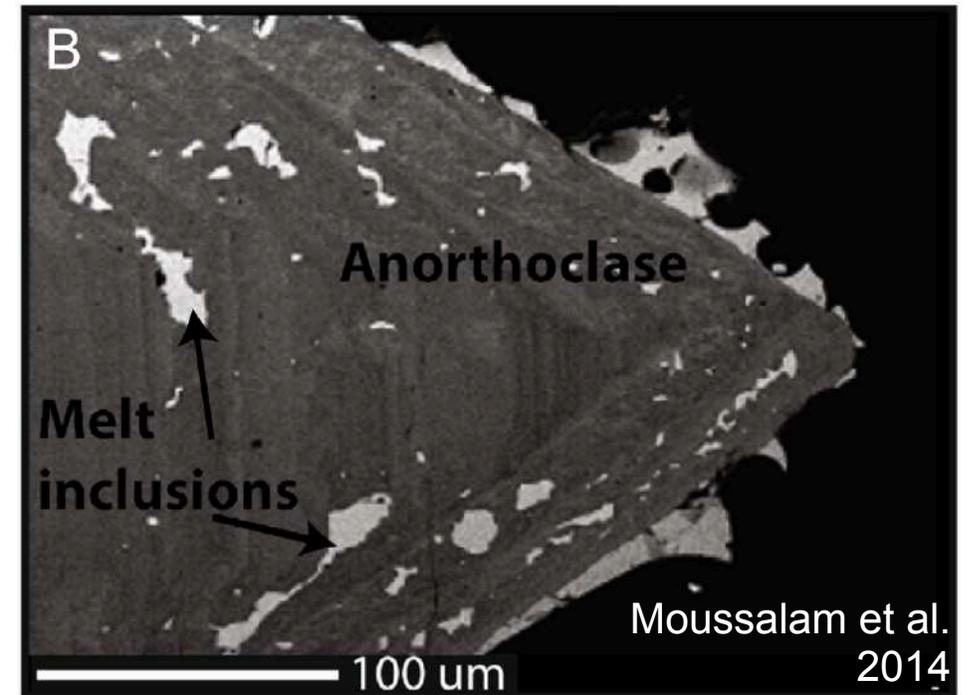


C. Oppenheimer



Bombe volcanique de l'Erebus

Un magma phonolitique aussi !





Erebus

Un magma anhydre avec un faible débit éruptif... > donne un splendide lac de lave !

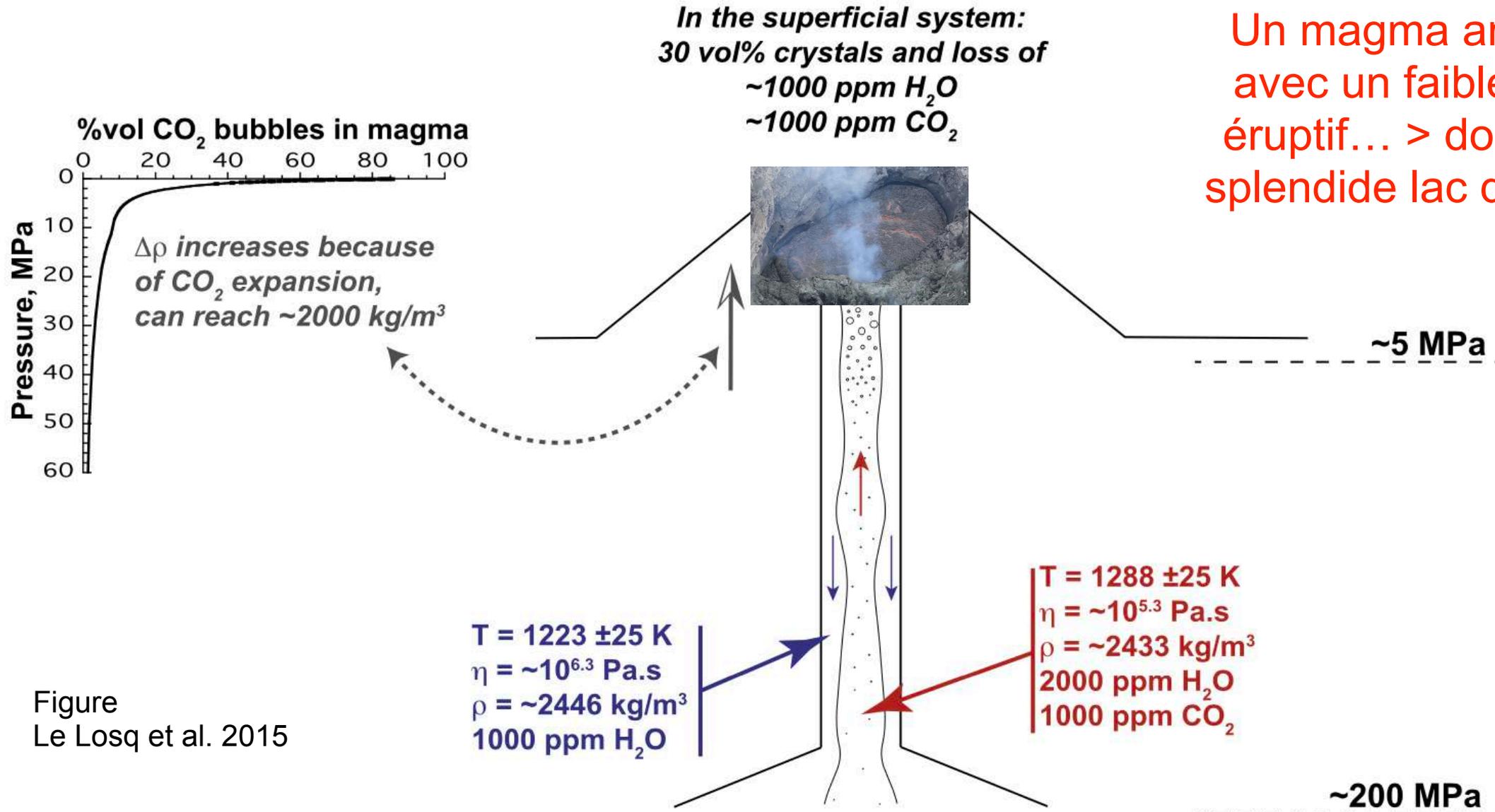
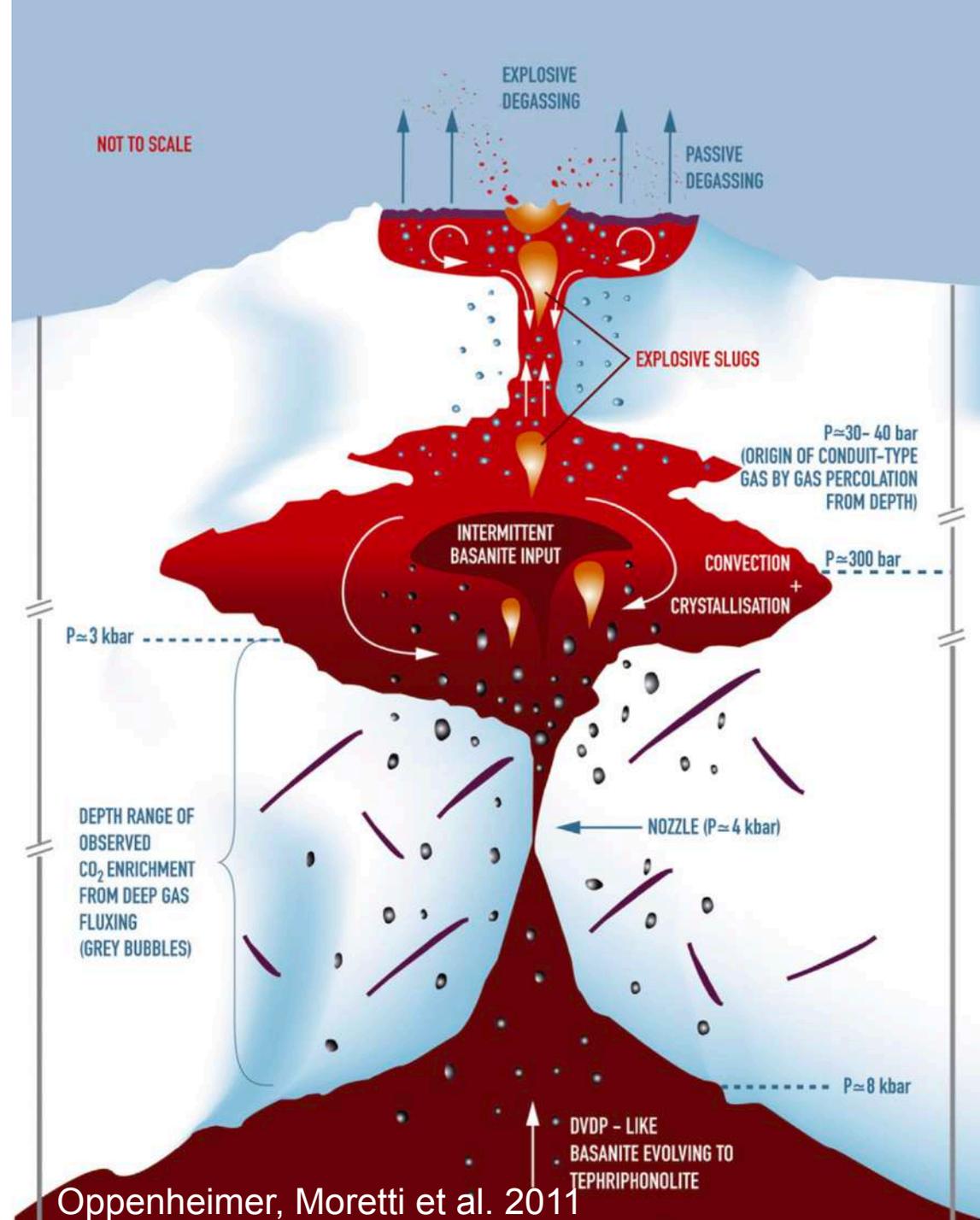


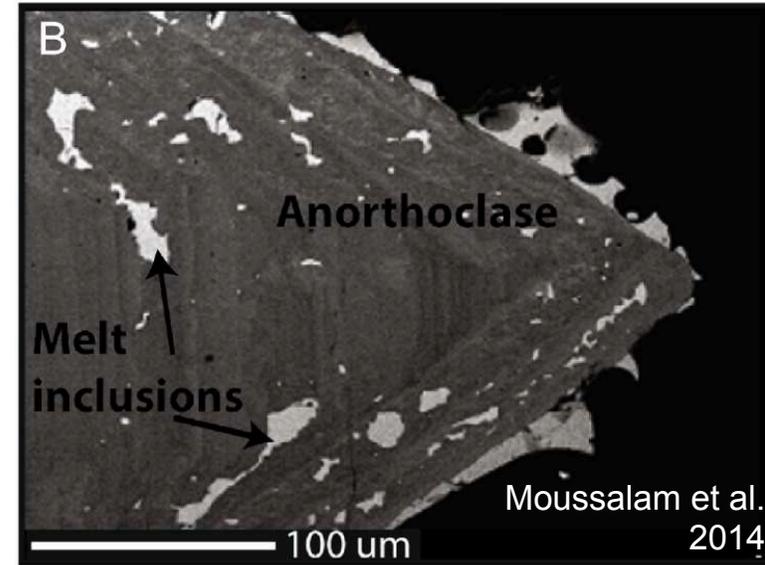
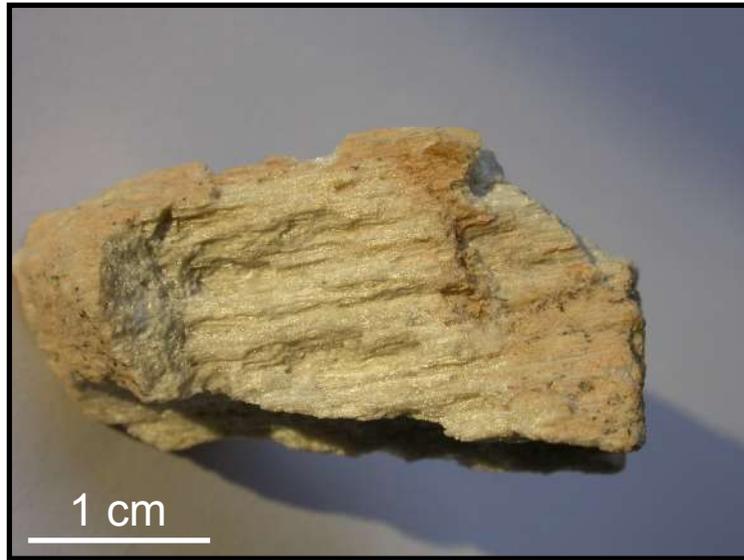
Figure
Le Losq et al. 2015

Erebus

Un magma anhydre avec un faible débit éruptif... > donne un splendide lac de lave !

Evolution depuis une basanite





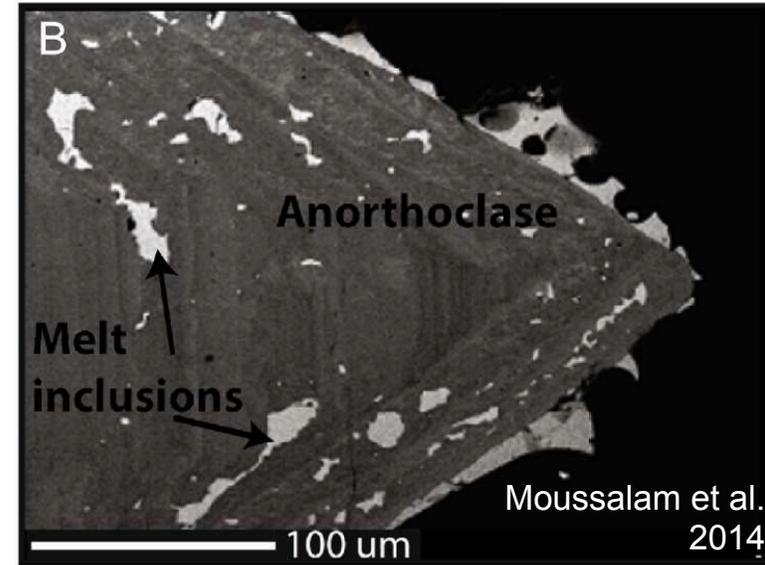
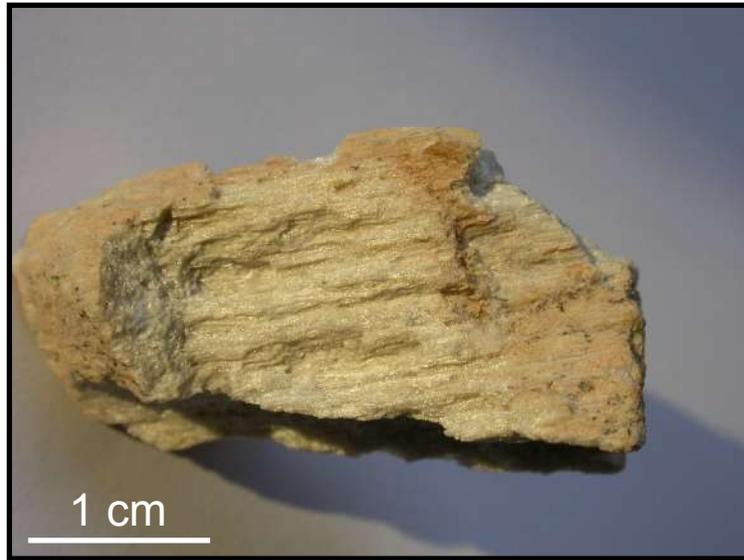


photo D. Neuville



Glass Mountain, Californie

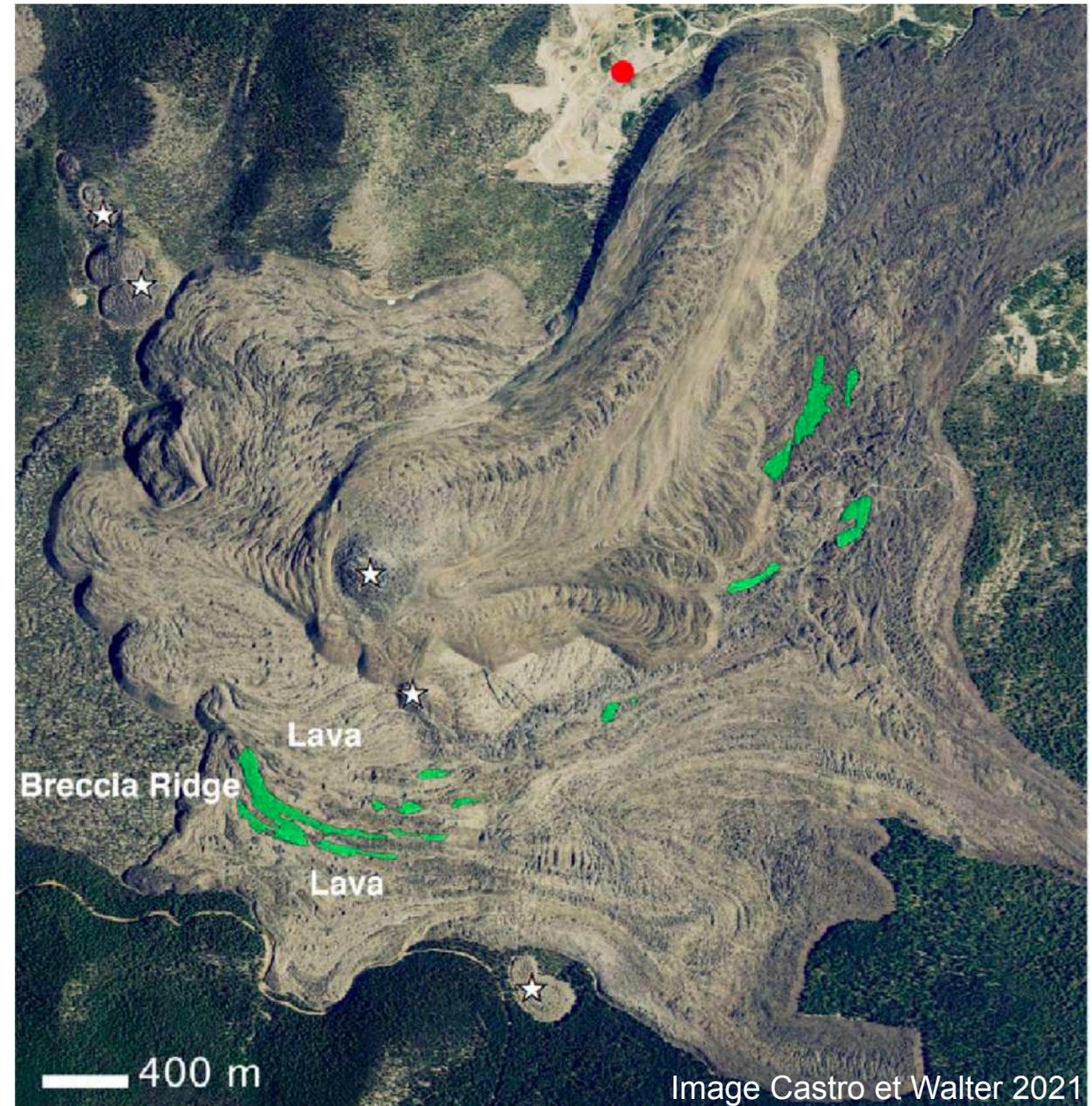


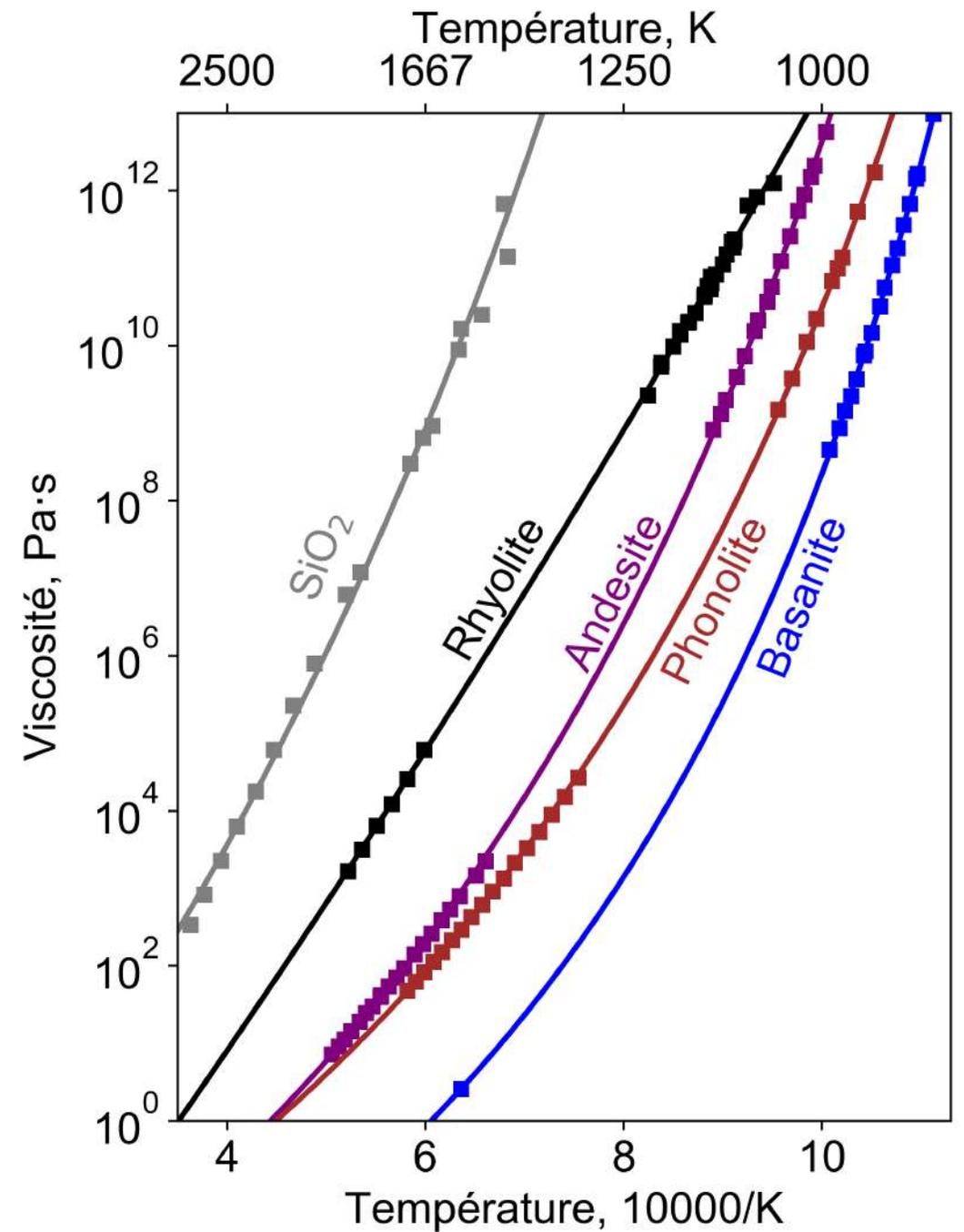
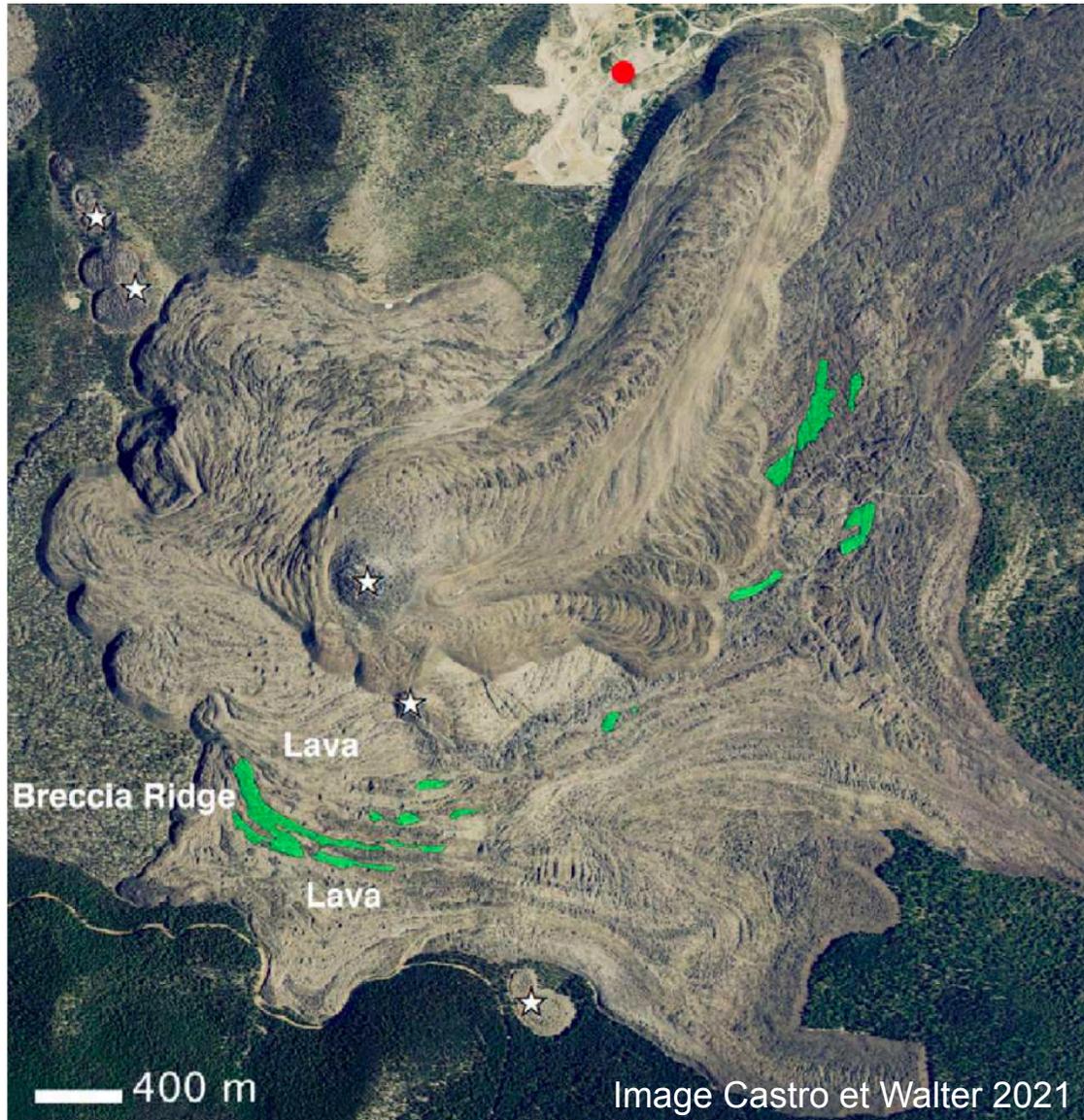


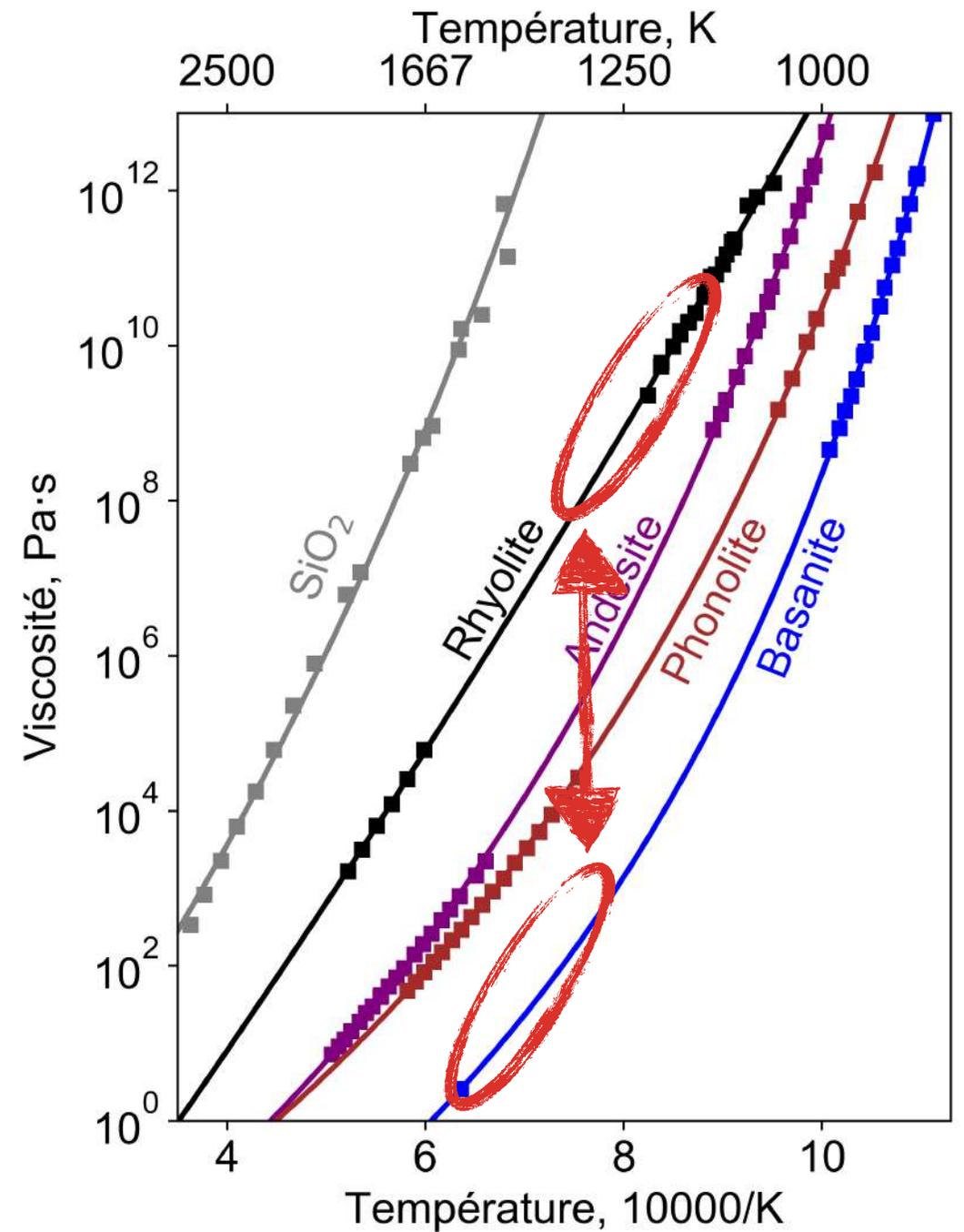
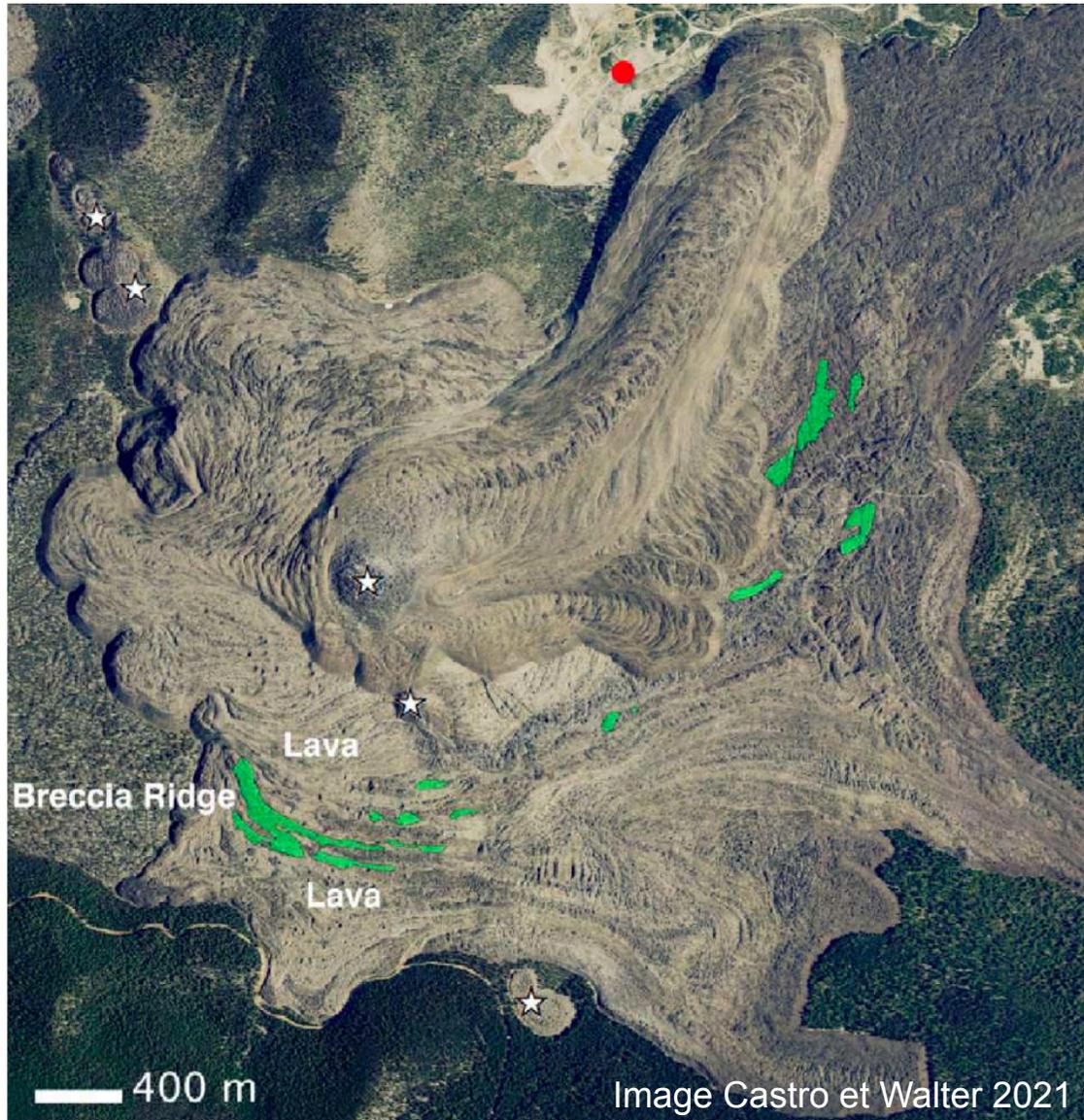
Little Glass Mountain, Californie

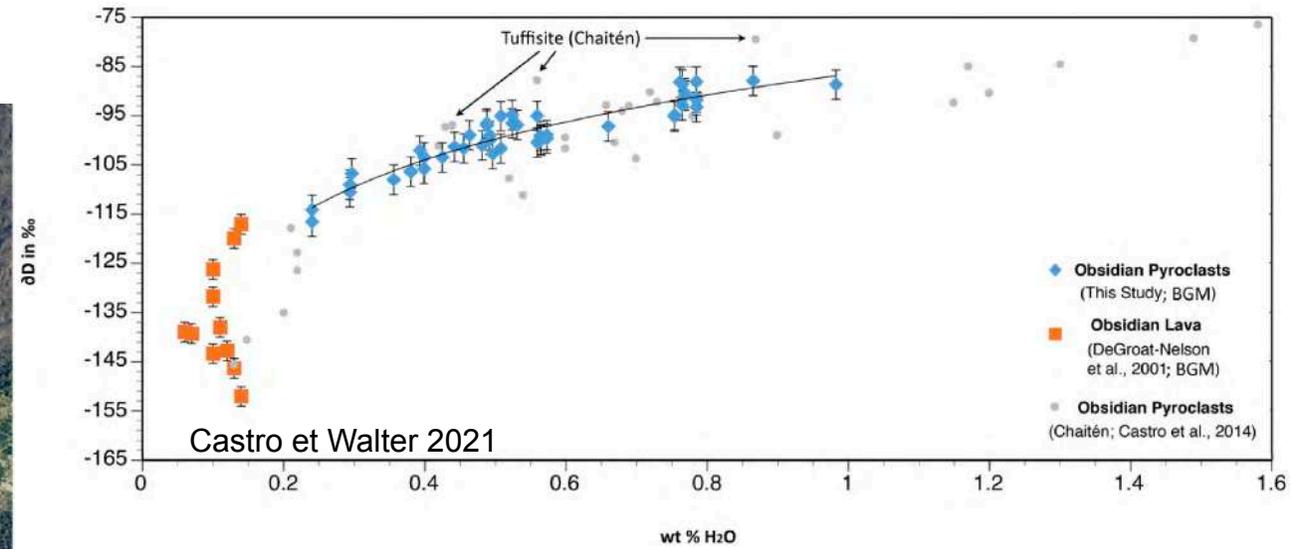
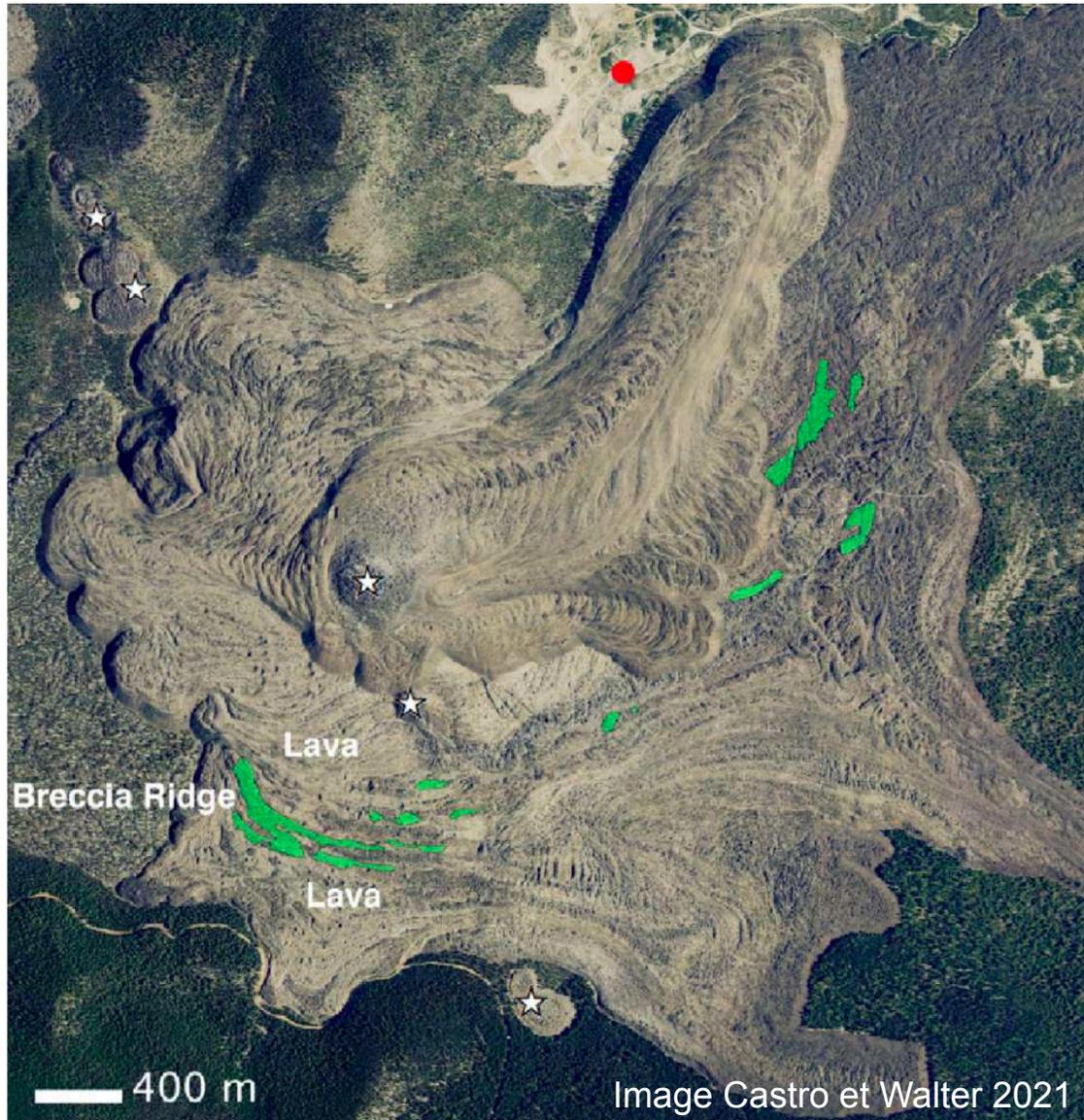


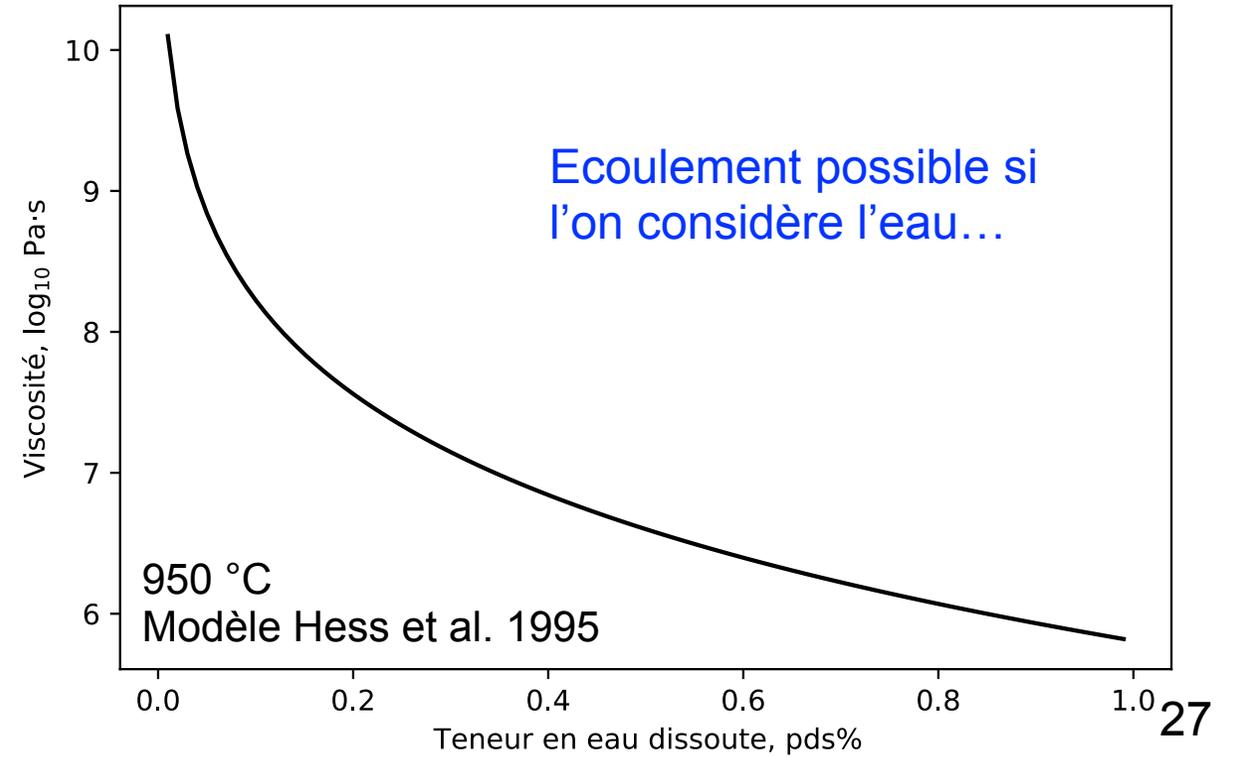
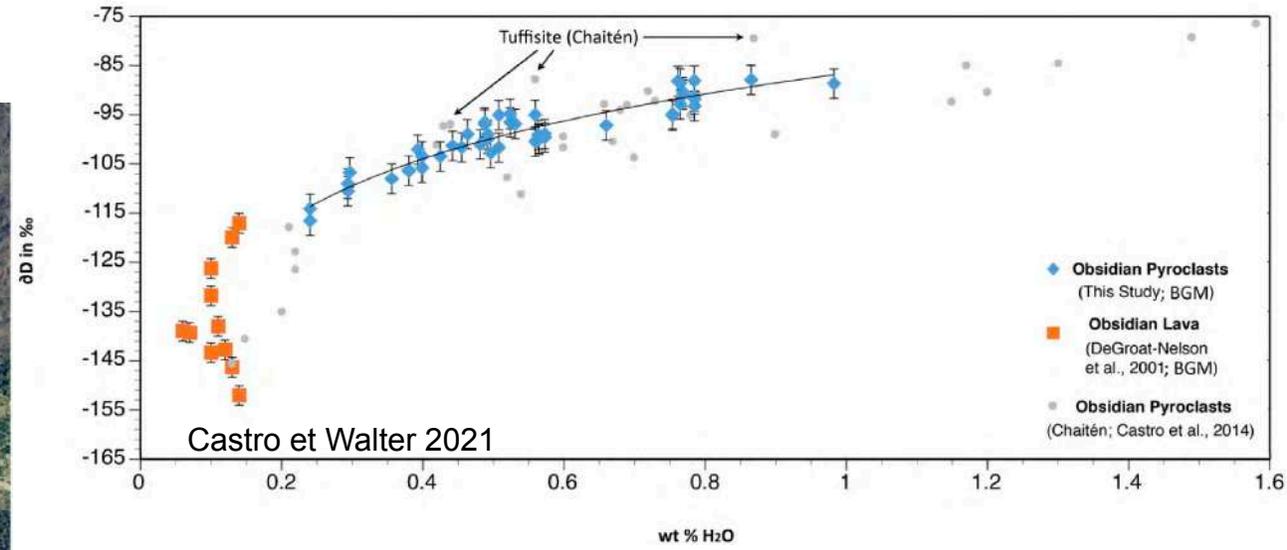
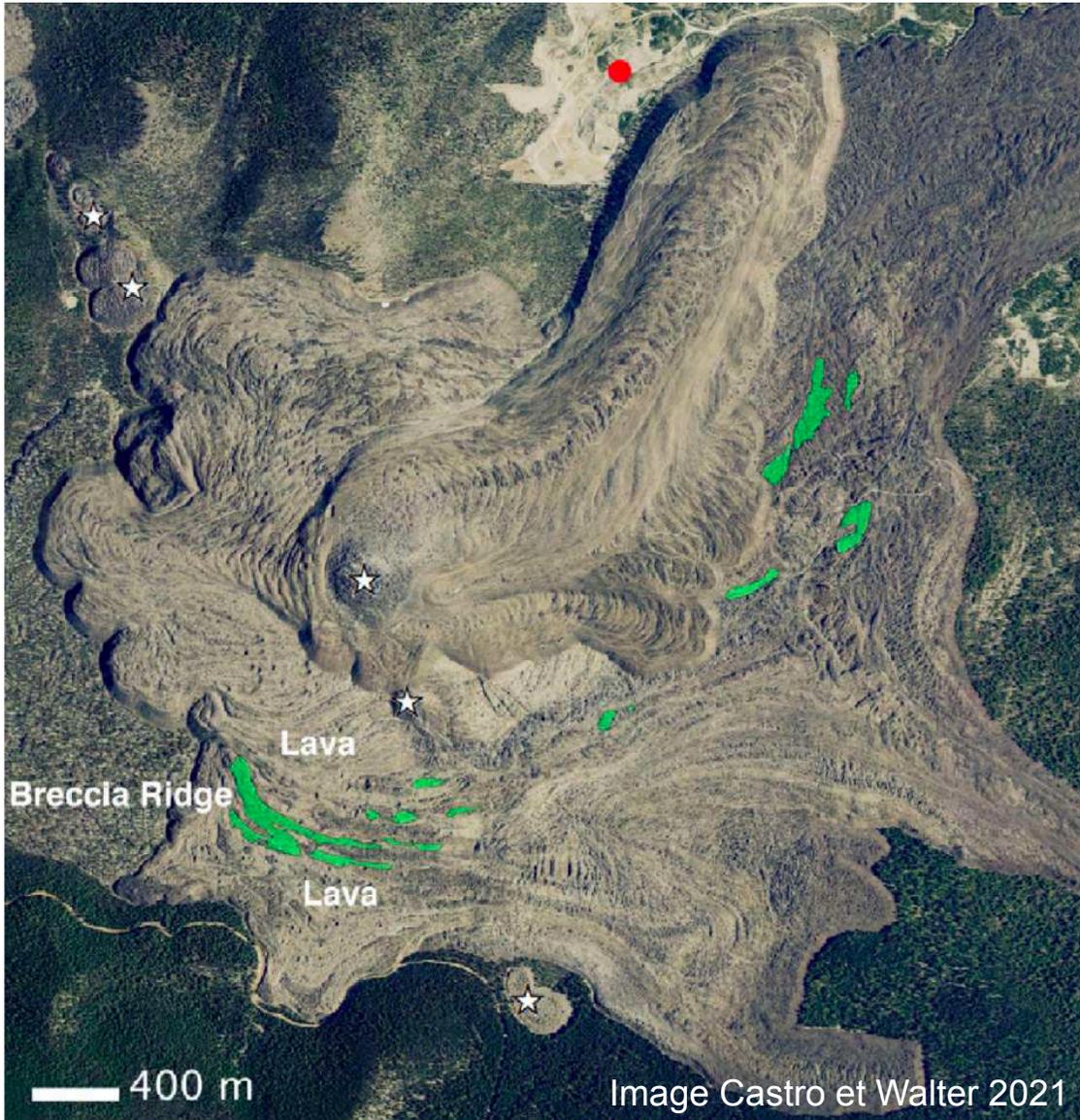
Glass Mountain, Californie











Merci de votre attention !