



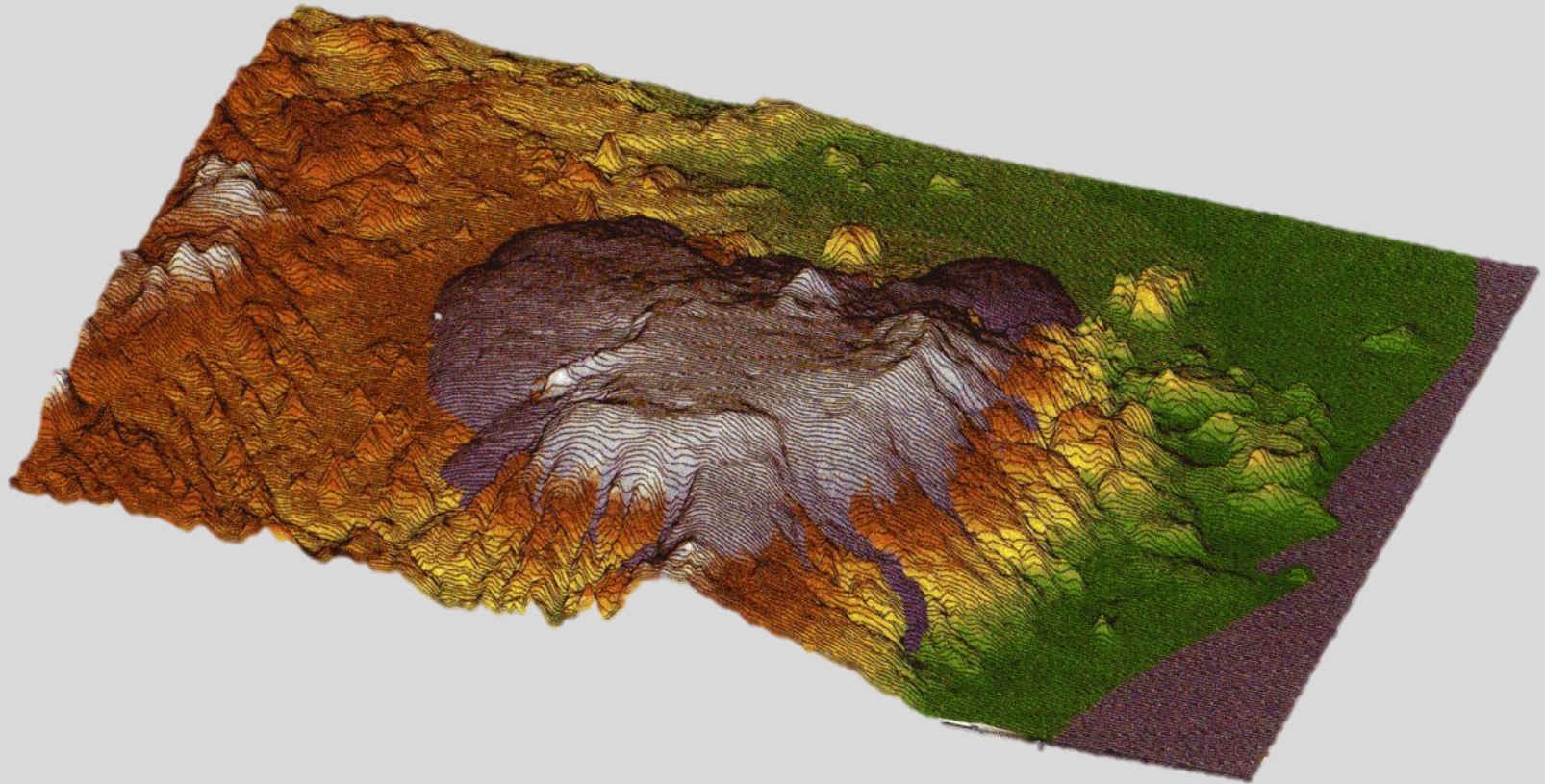
KATLA 1918: THE FIRST PIECES OF THE PUZZLE

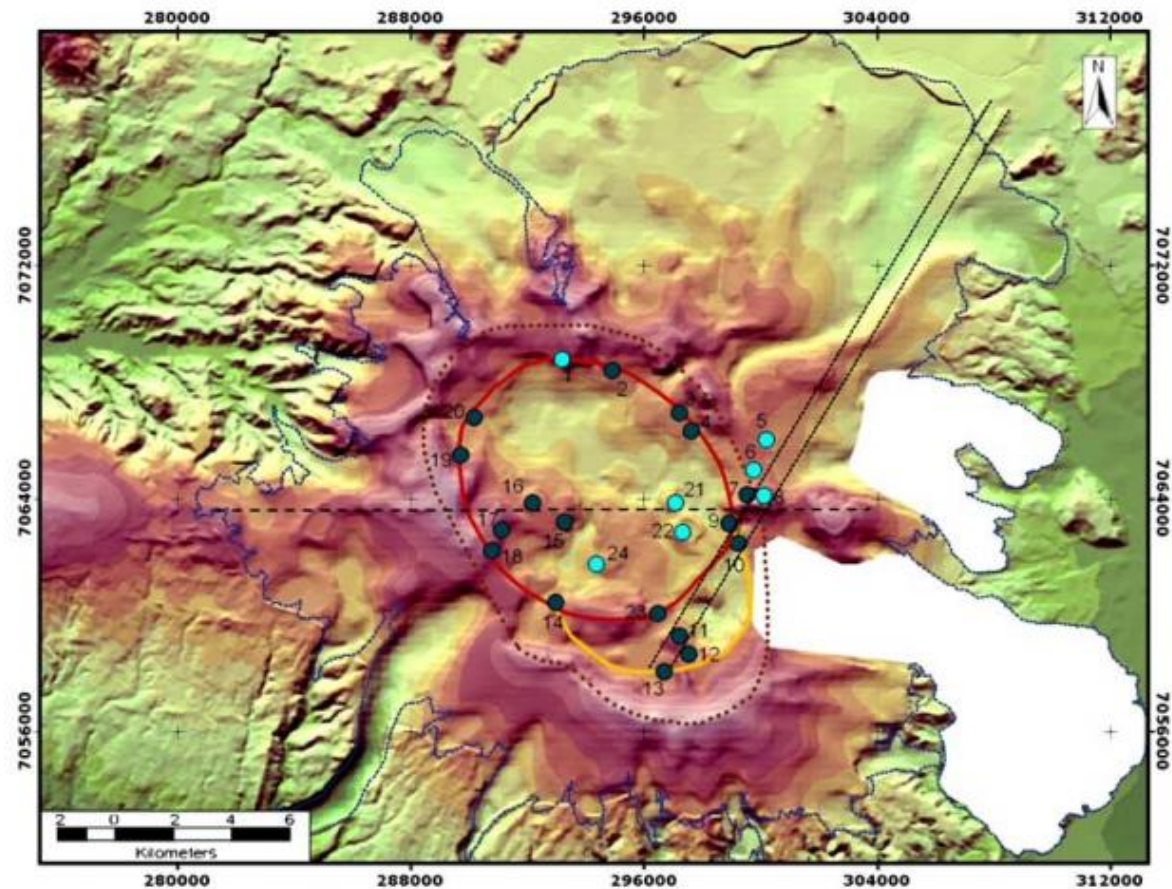
J. OWEN AND H. TUFFEN





KATLA





Caldera structure

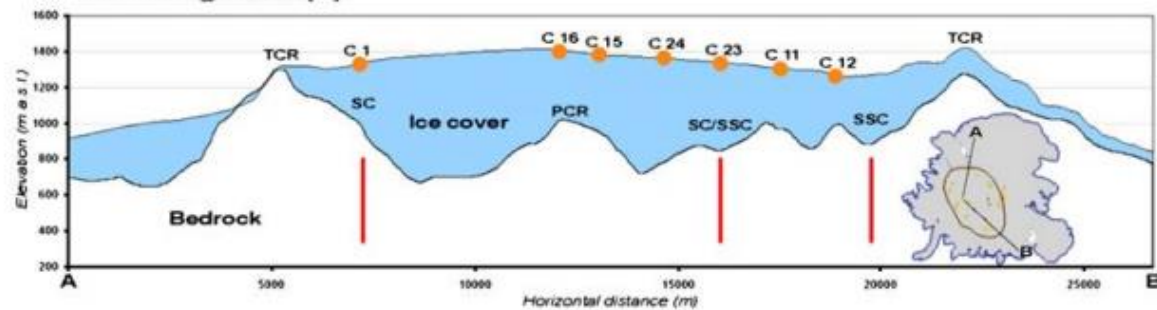
- Topographic caldera rim [TCR]
- Structural caldera [SC]
- Southern section caldera (SSC)
- Pre caldera ridge [PCR]
- Eldgjá fissure [FI]

Ice cauldrons

- additional
- identified by Gudmundsson et al. (2006)

— Glacier margin

Painted relief of bedrock topography according to Björnsson et al. (2000)





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Image IBCAO
Image IBCAO
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Google earth

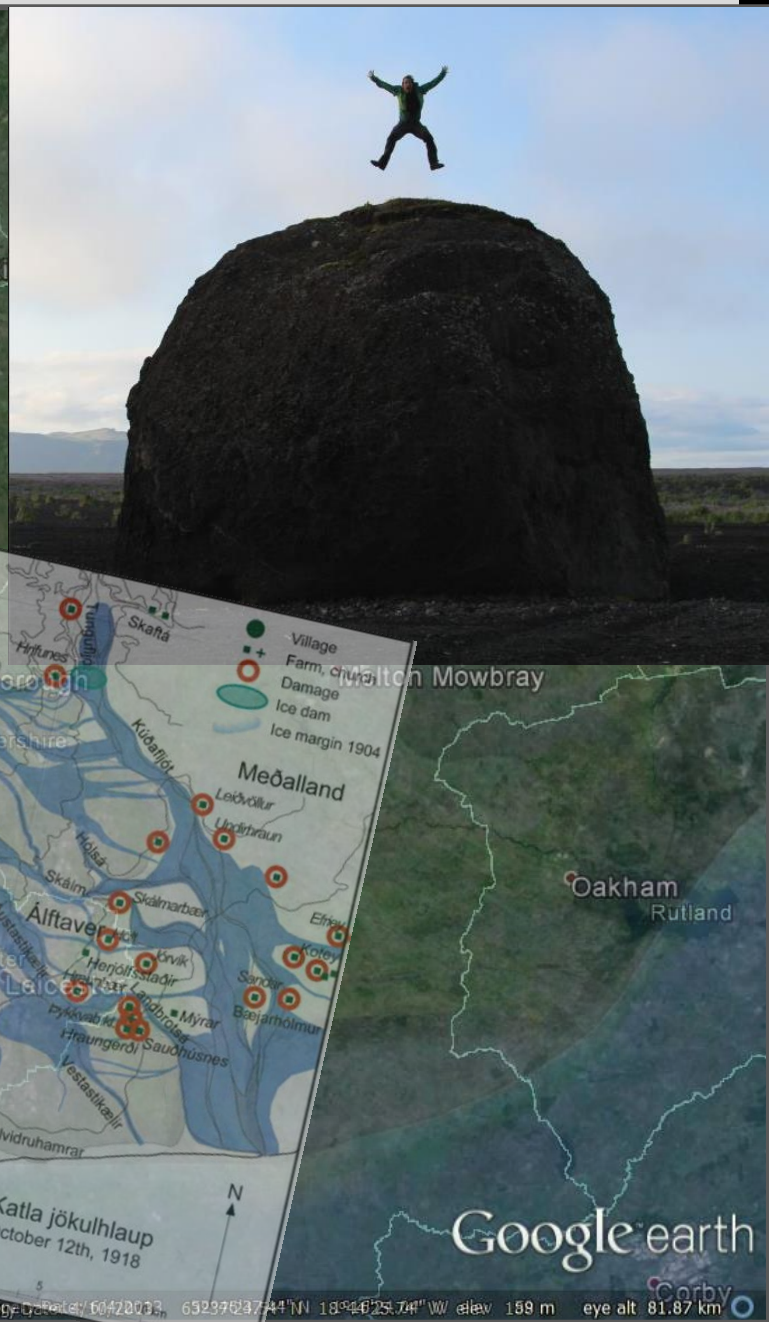
Image Date: 01/2013 69237637544"N 18°46'25.74"W elev 159 m eye alt 81.87 km

Tour Guide



	Katla 1918	Eyjafjallajökull 2010
Date of commencement	12 th Oct 1918 ^A	14 th Apr 2010 ^G
Duration of eruption	24 days ^A	39 days ^G
Composition	Basalt (47% SiO ₂) ^B	Benmoreite and trachyte ^G
VEI	4 (at least) ^C	4 (upgraded from 3) ^C
Total erupted volume (DRE)	1 km ³ ^D	0.2 km ³ ^G
Max plume height	14 km ^A	10 km ^G
Volume of airborne tephra	0.7 km ³ ^D	<0.3 km ³ ^G
Area of tephra fall on land	50,000 km ² ^A	12,000 km ² ^H
Thickness of ice over eruption site	400 m ^D	200 m ^G
Volume of subglacial lavas	0.2 km ³ ^E	0.02 km ³ ^G
Time taken to melt overlying ice	2 hours ^E	3-4 hours ^G
Jökulhlaup volume	>8 km ³ ^E	<0.06 km ³ ^H
Flooded area	600-800 km ² ^F	57.5 km ² ^H
Max discharge rate of jökulhlaup	>300,000 m ³ s ⁻¹ ^E	2,600 m ³ s ⁻¹ ^H
Volume of flood transported tephra	0.7-1.6 km ³ ^F	0.03 km ³ ^G

A: Larsen (2010); B: Óladóttir et al., (2008); C: GVP (2013); D: Sturkell et al., (2010); E: Tómasson, (1996); F: Larsen (2000); G: Guðmundsson et al., (2012); H: Gylfason et al., (2012)



Larsen, 2010



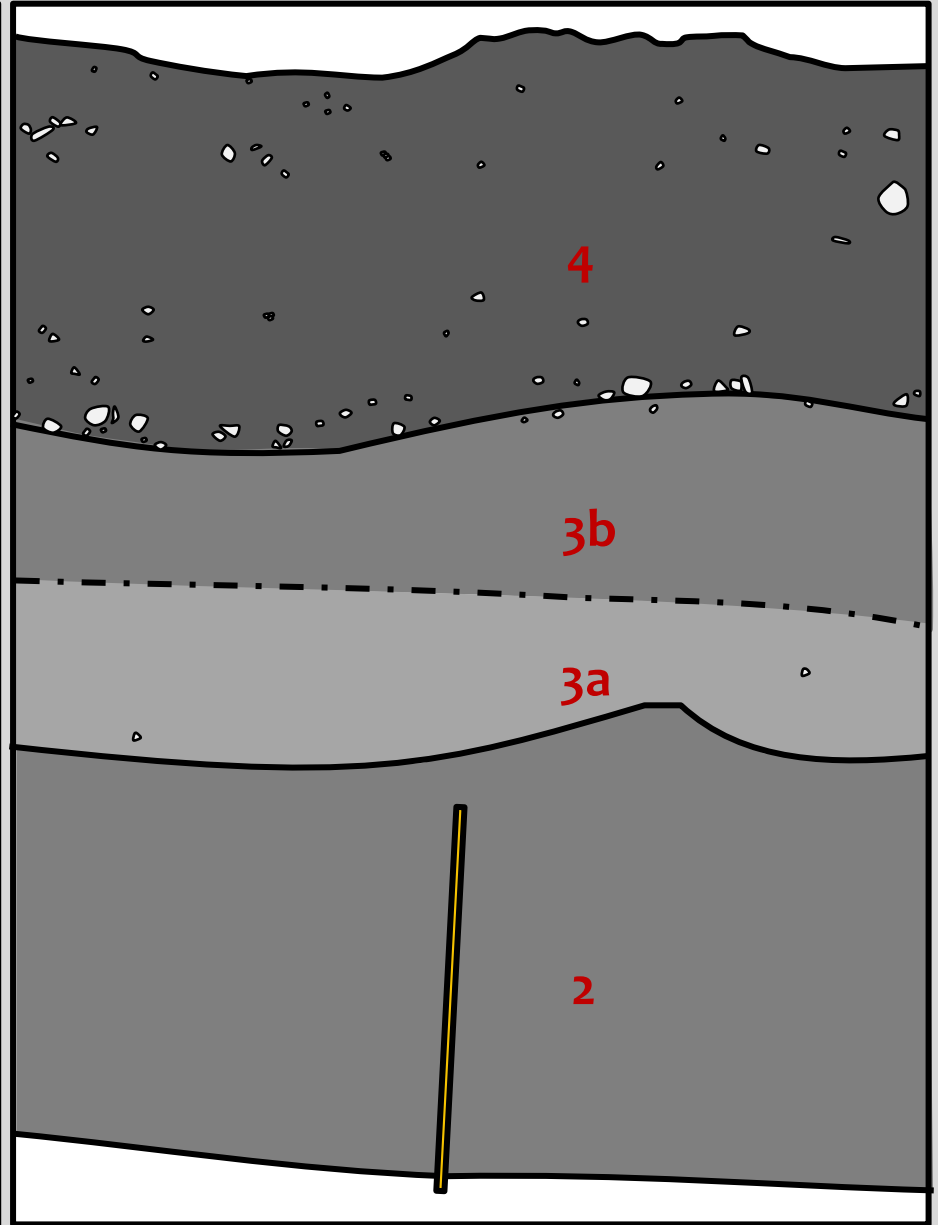




Duller et al., 2008



MUL 6





Vik

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Image Landsat
Image © 2014 DigitalGlobe

Google earth

Tour Guide

Imagery Date: 4/10/2013 63°37'24.54" N 18°44'25.74" W elev 188 m eye alt 81.87 km







Sol 1A

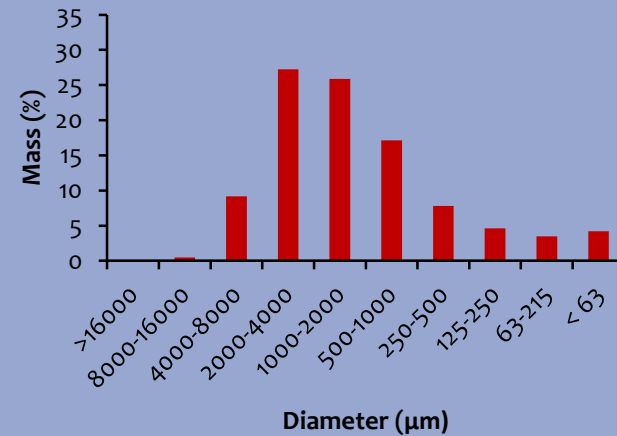
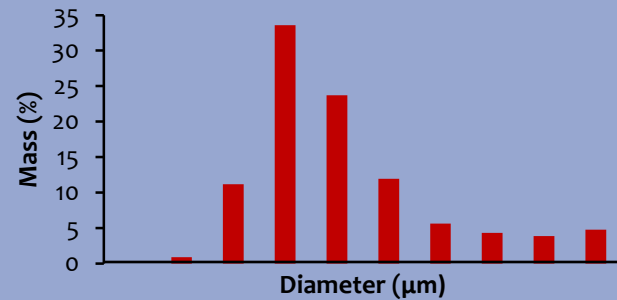
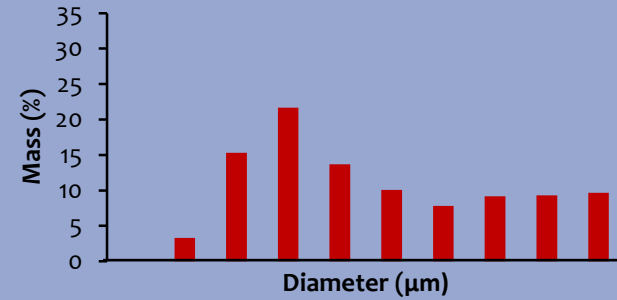
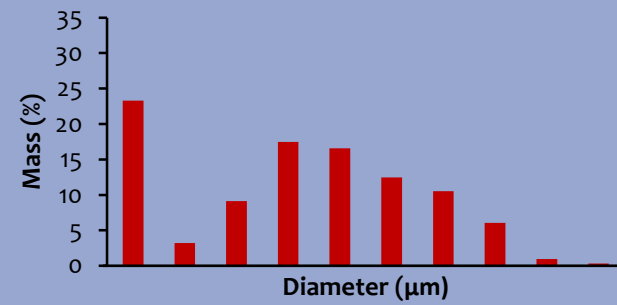
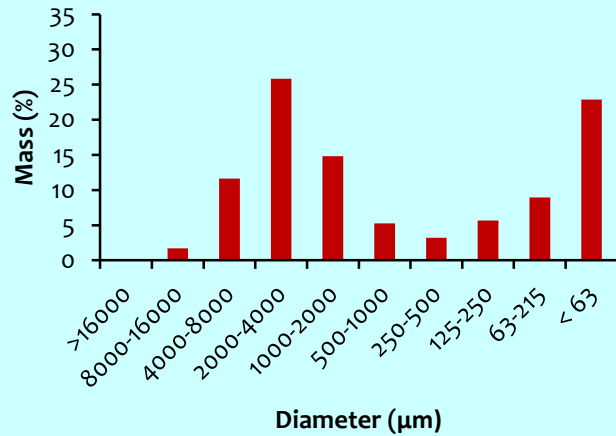
Mul 6 unit 4

Mul 6 unit 3b

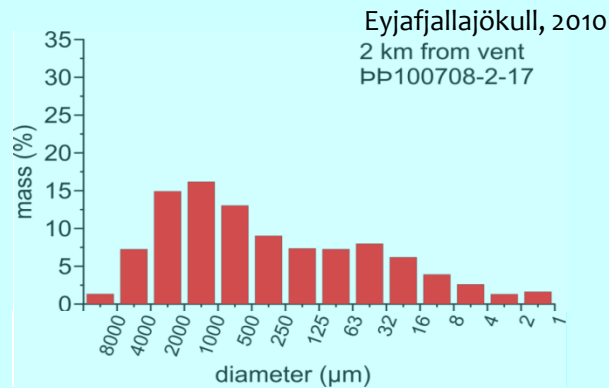
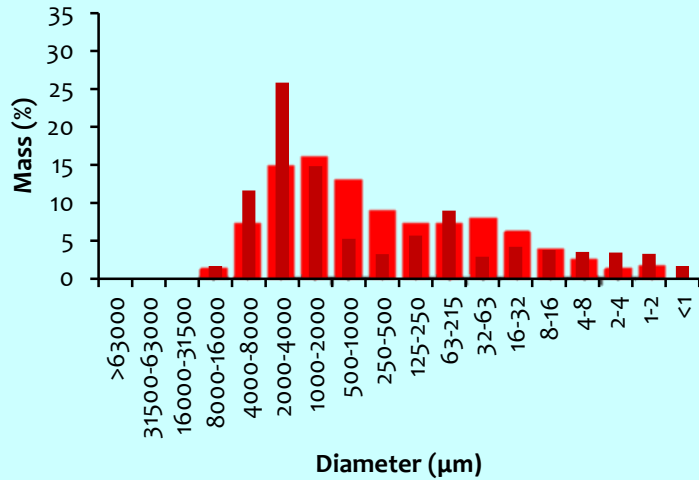
Mul 6 unit 3a

Mul 6 unit 2

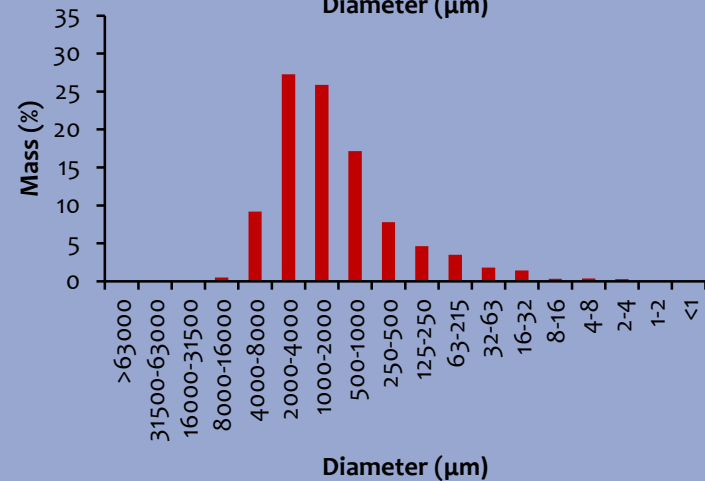
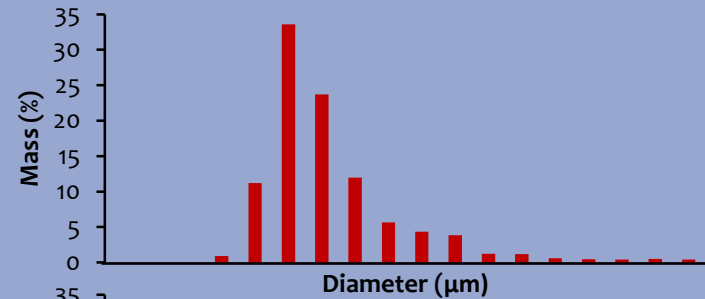
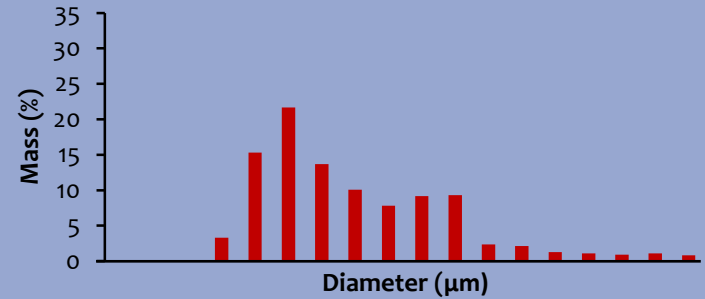
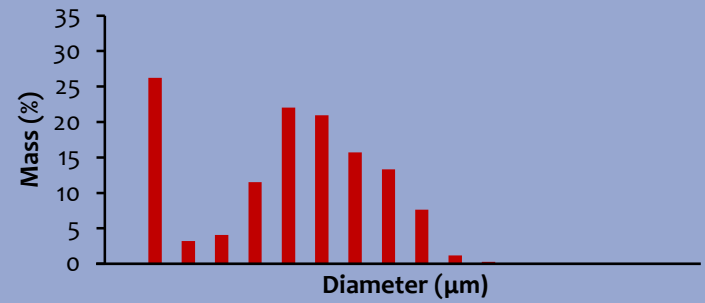
ASH SIEVING



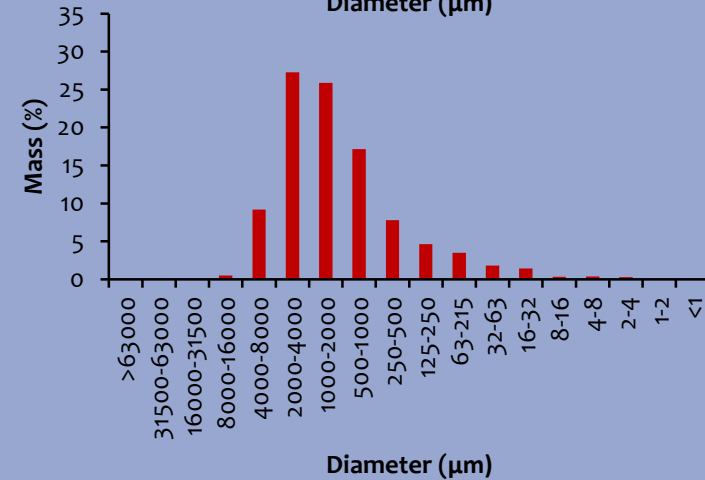
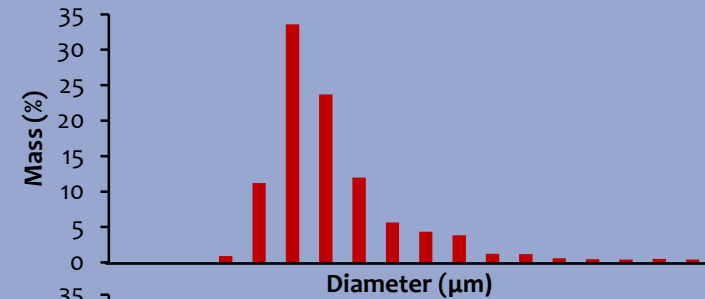
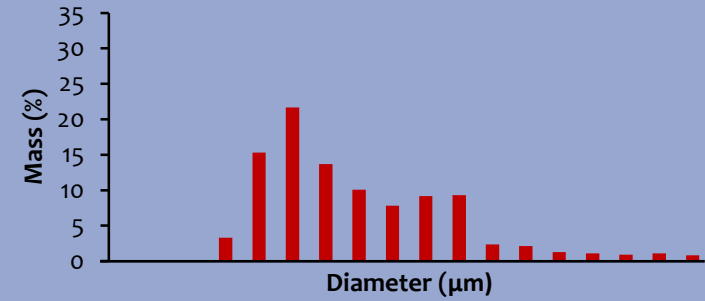
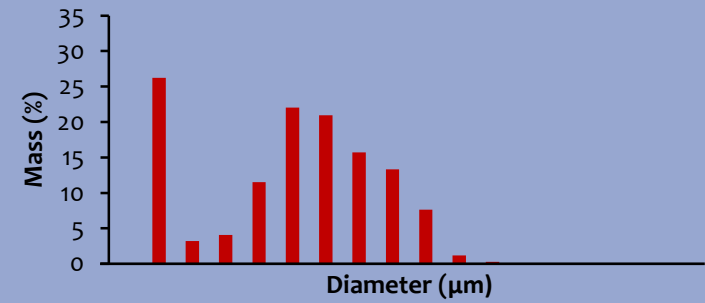
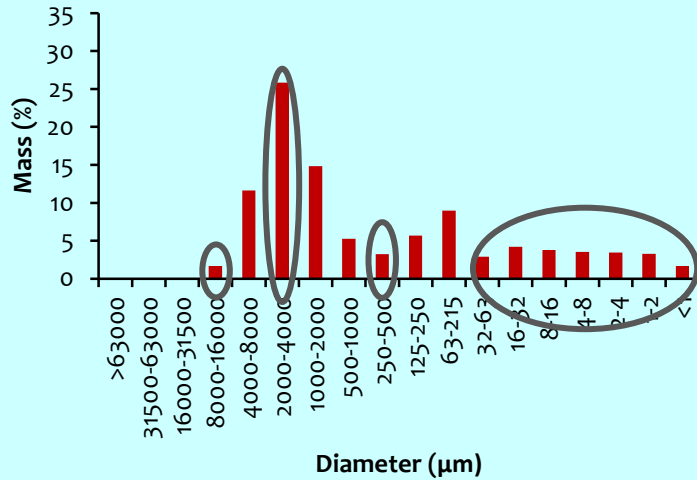
LASER DIFFRACTION ANALYSIS



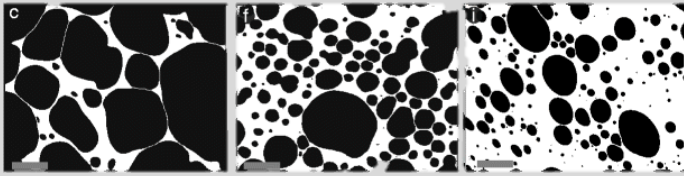
Gudmundsson et al., 2012



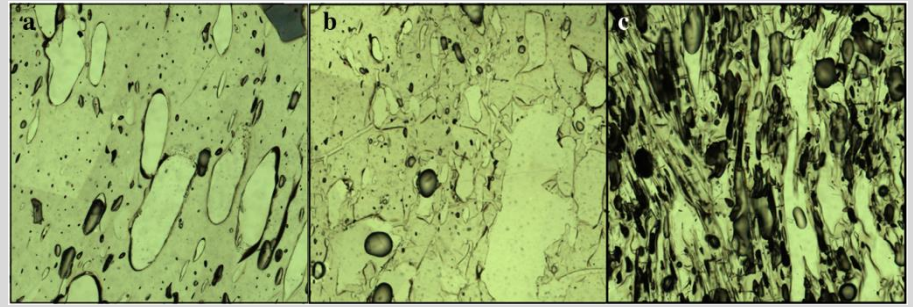
LASER DIFFRACTION ANALYSIS



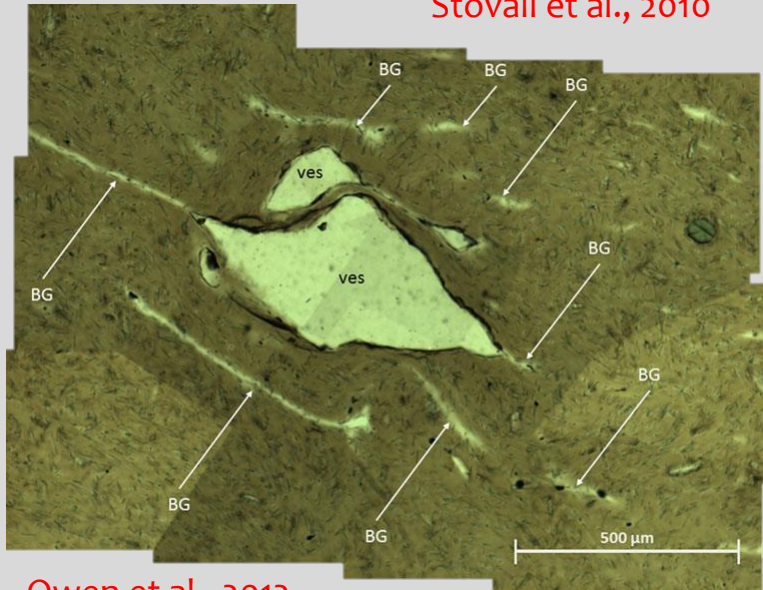
THIN SECTIONS



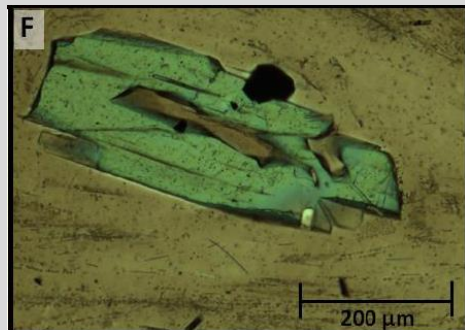
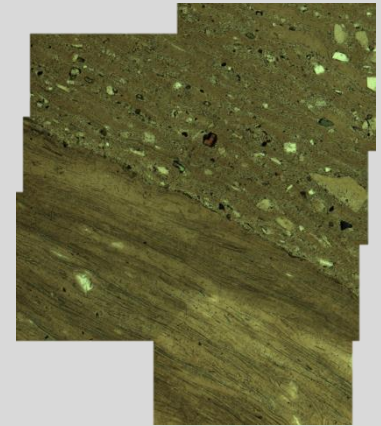
Stovall et al., 2010



Owen et al., 2013, JVGR



Owen et al., 2012



Ellen McGowan (P3)

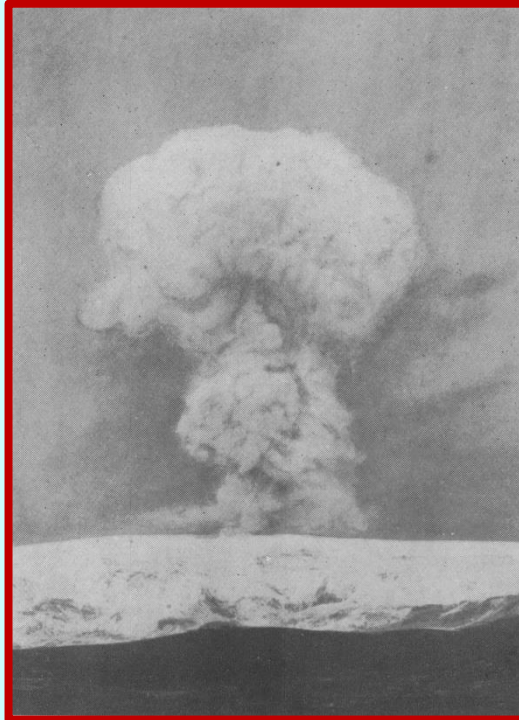
“Degassing rhyolites
via fractures and
foams”

Owen et al., 2013, Geology



FTIR

Sol 1A
0.07 wt.%



Mul 6 unit 4
0.18 – 0.30 wt.%

Mul 6 unit 3b

Mul 6 unit 3a

Mul 6 unit 2
0.22 – 0.32 wt.%

TGA



FUTURE PLANS

- More FTIR
 - TGA-DSC
 - Thin section observations – vesicle textures (NBDs, VSDs etc.)
 - Grain morphophology
 - EPMA
 - SIMS
 - hotstage
- 
- SEM

