

PETROLOGY OF THE 2016 ERUPTION OF PAVLOF VOLCANO, ALASKA: INSIGHTS ON THE MAGMA PLUMBING SYSTEM

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Background

" Rcxmhl"Xqrecpq"7706395ÅP."3830 ; 59ÅY ."473: "o "cunl"ku"c"eqplecm{/uj cr gf "utcvqxqrecpq"hi 0'3+" mcevgf "qp"vj g"uqwj y guvgtp"r ctv'qh"vj g"Crcunl"Rgplpuwnc0'Y kj "47"eqphko gf "gtw vlqpu"lp"vj g"42"egpwt {" cpf "7"gtw vlqpu"uppeg"4222"CF."Rcxmhl"Xqrecpq"ku"eqpukf gtgf "vq"dg"qpg"qh"vj g"o quv'cevkg"xqrecpq"lp" Crcunl0'Vj g"gtw vlqg"cevkg"v{r lecm{ "lpenmf gu"Utgqo dqrkcp"rcxc"hwpcvklpi ."gr kuqf gu"qh"uwl/Rdklcp"cu" go kuqpu."ghwukg"cevkg{."cu"y gmi'cu"vj g"htqo cvkqp"qh'r {tqercukle"f gpuk{ "ewttgpw."y j lej ."f gr gpf lpi "qp" upqy "eqpf klqpu."o c{ "tki i gt"vj g"htqo cvkqp"qh'rcj ctu"cpf "o wf "lmqy u"Y c{ y qo cu'gv'cnl"4236+0" " Vj g"o quv'tgegpv'gr kuqf g"qh"xqrecple"cevkg{ "cv"Rcxmhl"utcvgf "cdtwr w{ "qp"O ctej "49."4238"y kj "pq" y ctpkpi "cpf "pq"cr r ctgvp'r tgewtuq{ "ugkuo le"cevkg{ "Hgg"gv'cnl"4239+0'Vj g"htu"42"j qwtu"qh"vj g"gtw vlqpu" y gtg"ej ctcevgtk gf "d{ "c"eqpvpwqu."xki qtqwu"cu" go kuqpu"vq"cp"cnkwf g"qh'ec0: 07"no ."y j lej "r tqf weg"cp" cu"j "enqwf "ftklpi "ht"o qtg"vj cp"822"no "cetquu"vj g"Dgtkpi "Ugc"cpf "vj g"lpvgtkt"Crcunl0'Nexc"hwpcvklpi " qeewtgf "uko wncpgqwn{ "htqo lpi "ur cvgt "f gr quku."y j lej "eqmcr ug"cpf "htqo gf "ugxgtcnlhpgu'r qqt "r {tqercukle" f gpuk{ "ewttgpw"Vj g"rcwtg"y gtg"j qv'gpqi j "vq"o gni'wpf gtn{ lpi "upqy "cpf "leg."cpf "vq"r tqf weg"gzvpukg" rcj ctu0'Chgt"ec042"j qwtu"qh"cevkg{ "vj g"cu" go kuqpu"dgeco g"kvgtgto kwgpv."vj g"rcxc"hwpcvklpi "i tcf wcm{ " f genkpgf."cpf "vj g"gtw vlqg"cevkg{ "y cpgf "qp"O ctej "4; ."42380" "

Petrological Observations

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Figure 1: Pavlof Sister (left) and Pavlof (center) Volcanoes, July 2017

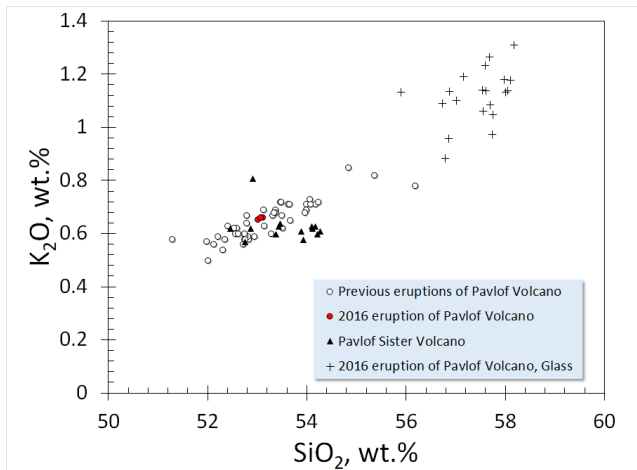


Figure 2: Whole rock and glass composition of tephra produced by the 2016 eruption of Pavlof Volcano. Whole rock composition of prior eruptions of Pavlof and Pavlof Sister Volcanoes from Mangan et al.(2009) is shown for comparison.

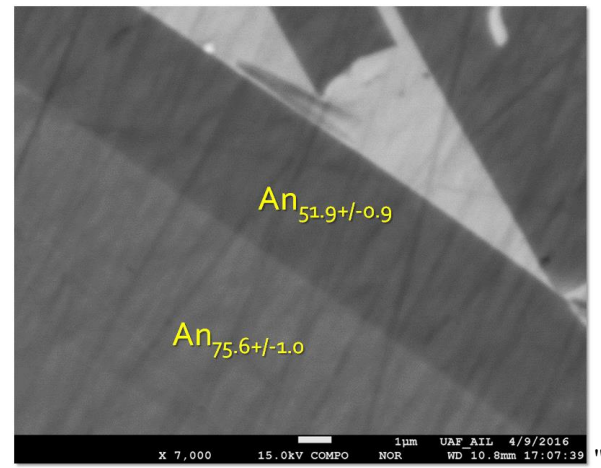


Figure 3: BSE image of plagioclase crystal showing a step-wise boundary between its calcic core and the 5-micron-wide sodic rim.

Ego r quklqp"qh"qrxklpgu"lp"NUDC"ku"j qo qi gpgquw"cpf"xtkgu"lp"c"xgt{"pcttqy"tcpi g"y kj lp"lpf kxf wcn' et{ucnu"cu"y gmi'cu'dgy ggp"et{ucnu"ltqo "8;"q"930 "Hq"o qrd 0'Qeecukqpcmf."yj g"qwgto qu"tko "qh"cp" qrxklpg"et{ucnu"ku"ej ctcegtk gf"d{"c"i tcf wcn'f getcgug"qh"Hq"eqo r qpgpv"q"890"o qrd "qp"c"uecrg"qh"7/32" o letqpgu00 ctkz"i nuu"qh"NUDC"ku"j qo qi gpgquw"y kj "770 /7: 04"y v0 "qh"UkQ4"cpf"20 ; /3053"y v0 "M4Q"hi 0' 4+0'

Kp"cf f kklqp"q"NUDC"y g"r tqf weu"qh"4238"gtw vlqp"qh"Rcxmhl'eqpvclp"eqpur lewquw"co qwpv"qh"y g"et{ucnu"tlej ." tqwpf n/uj cr gf "emqu"hi 06+0Vj gug"emqu"flhtgt"ltqo "y g"j quv"NUDC"d{"c"uki plhcepv"j ki j gt."wr"vq"; 2"xqr0 " o letqksg"eqpgpv"lp"y g"o ctkz0Vj g"qwgto quv"lpgu"qh"qrxklpg"et{ucnu"lp"y g"et{ucnu"tlej "emqu"ctg"tgr rcegf" d{" Vko ci pgksg" cpf" qtj qr {tqzpgp0' Ego r quklqp" qh" yj g" cngtgf" qrxklpg" eqtgu" ku"; : /; ; " Hq" o qrd 0' Ego r quklqp"qh'r mci kqercug"et{ucnu"lp"y g"et{ucnu"tlej "emqu"ku"y g"uco g"cu"lp"y g"NUDC0'

" Xqrecple" cuj " r ctvlengu" qh" yj g" O ctej " 49/4: " r gtkqf" qh" gtw vlqp" ctg" tgr tguqpvf" d{" yj tgg" o clp" o qtr j qm i lecn'i tqw u"<3+"hpg">"42"o letqp+."cpi wret"i nuu"uj ctf u."*4+"r nv"et{ucnu."*5+"rti g"322/472" o letqp+eqo r quksgr ctvlengu"qhpgp"y kj "uo qqjy "uwthegu"hi 07+0'

Preliminary Interpretation

" Rrci kqercug/qrxklpg"mry "uklec"dcuente"cpf guks"ku"c"r tko ct{"r tqf wev"qh"y g"4238"gtw vlqp"qh"Rcxmhl" Xqrecpq0Nqy "et{ucnu"lp"y g"o gnu"cu"y gmi'cu"uo qqjy "uwthegu"qh"cu j "r ctvlengu"hi 07+" uwi i guv"c"xgt{"mry "o ci o c"xluquk{0Vj g"4238"gtw vlqp"qh"Rcxmhl"cuq"r tqf wegf "c"uwdqtf lpcvg"co qwpv"qh"

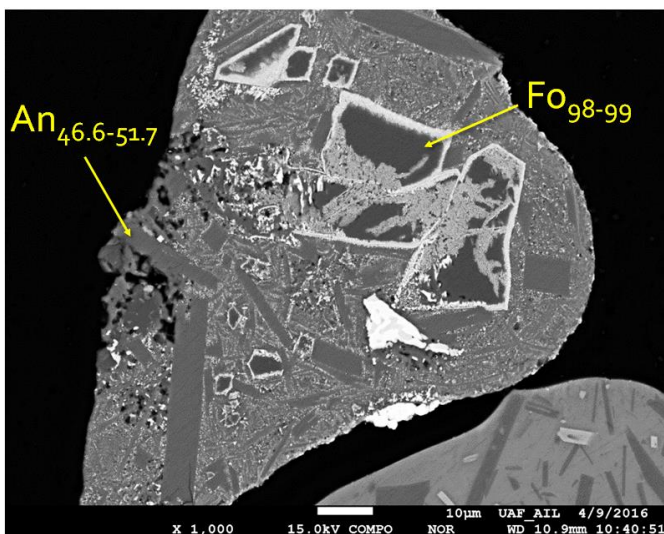


Figure 4: BSE image of rounded, crystal-rich clot with altered olivine.

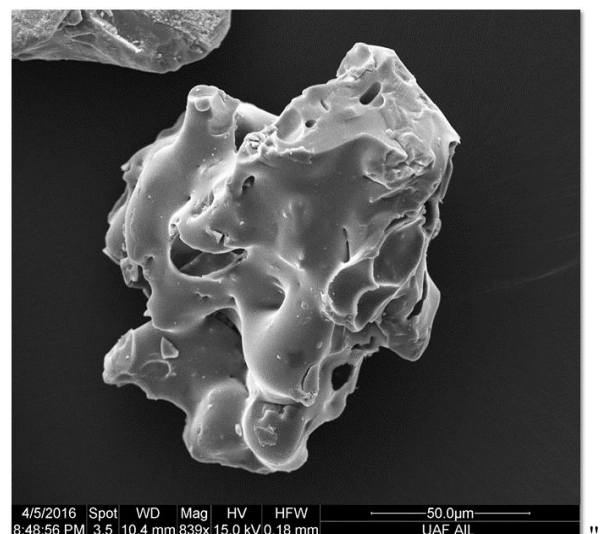


Figure 5: Large composite ash particle with smooth surface.

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| qpgu"hi 06+0Tqwpf "uj cr gu'qh'et { ucn'tlej "r ctv'ergu'ui i guv'q'wu'vj cv'vj ku'o cvgtkcn'y cu'o qnpg'cv'vj g'vko g'qh"
gtw vqp"cpf "vj gtghqtg" tgr tguwpw" c" uwdqtf kpcvg" o ci o cve." lwxgpkrg" eqo r qpgrv0' Ku" j ki j " et { ucnkpkv{ ."
rtgugpeg"qh"cnegtgf "Hq:./.; "qrkxkpgu."vqi gvj gt"y kj "vj g"rtgugpeg"qh'uqf le"r m'kqercugu"ctg" kpf lecvxg"qh" c"
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References

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63.: 65/: 890'
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enqugn{ "ur cegf "xqrecpqgu"ftcy lpi "ltqo "c"eqo o qp"r ctgvpv"Go o qpu"Ncng"Xqrecple"Egpgt."Gcvgtp"
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Xqrecpq."Crcun<c"ur cwtg"gtw vqp"cv'cp"leg/cpf "upqy /enqf "xqrecpq0'Bulletin of Volcanology."98*32+."
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