

""F K'V'T'K'Д'W'V'K'Q'P 'Q'H'X'Q'N'E'С'P' K'Е'G'T'W'R'V'I'Q'P' U'K'P' U'K' G'V'Q'U'V'W'F [ 'Q'H'O'G'E'J' C'P'K'U'O' U'Q'H'O' C'I' O' C' CI' I' T'G'I' C'V'K'Q'P ""K'P' V'J' G'G'С'Т'V'J' J'N'K'V'J' Q'U'R'J' G'T'G'С'P'F' J' C' \ C'Т'F' R'Т'G'F' K'Е'V'K'Q'P ""

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" C'v'i t'g'c'v'f' g'r' v'j' u' .k'p' 'v'j' g' | q'p'g'u'q'h'k'u'q't'k'i' k'p' .o' c'i' o' c' 'k'u' h'q't'o' g'f' 'k'p' 'v'j' g' 'k'p'v'g't'i' t'c'p'w'r'e't' 'u'r' c'e'g'u'q'h't'q'e'm'i'k'p' 'v'j' g' h'q't'o' "q'h'o' k'p'w'g' 'd'c'e'j' g'u'q'h'o' g'n'o'V'j' g'c't'g'c' .e'q'p'v'c'k'p'i' "c' 'r'g'u' 'f' g'p'u'g' 'o' g'r'w' .k'p' 'v'j' g' 'h'k'g'r'f' "q'h'i' t'c'x'k'v' . "w'p'f' g't' 'v'j' g' k'p'h'w'g'p'e'g'q'h' C't'e'j' k'o' g'f' g'u' h'q't'e'g'u' 'd'g'i' k'p'u'v'q' 't'k'u'g' 'g'z'v't'g'o' g'n'f' "u'r'y' n'f' "h't'q'o' "v'j' g'r' m'u'k'e' 'w'r' r'g't' 'o' c'p'v'g'v'q' 'v'j' g' 'u'w't'h'c'e'g' q'h' 'v'j' g'g't'v'j' . "h'q't'o' k'p'i' "c'u'c' 't'g'u'w'n'q'h' T'c' { 'r'g'i' j' "k'p'u'c'd'k'k'v' { '\$l'g'u's' \*r' n'w'o' g'u' + "k'u'q'r'v'g'f' "h't'q'o' "g'c'e'j' "q'v'j' g't'o'V'j' g' { "h'g'g'f' "k'p'f' k'k'f' w'c'n'x'q'r'e'c'p'q'g'u'q't' "x'q'r'e'c'p'k'e' "e'g'p'v'g't'u' \*T'c'o' d'g't'i' . "3; 89+0'Y' k'j' "c'f' g'e't'g'c'u'g' "k'p' 'r'k'j' q'u'c'v'k'e' "r' t'g'u'w't'g'f' w'g'v'q'c' "f' g'e't'g'c'u'g' "k'p' "f' g'r' v'j' . "v'j' g'r' t'q'r' q't'v'k'p' "q'h' 'v'j' g' 'o' g'n' 'k'p'e't'g'c'u'g'u' 'c'p'f' "k'u' 'r' q't'v'k'p'u' 'c't'g' 'o' g't'i' g'f' "k'p'v'q' 'r't'i' g't' "q'p'g'u' O' C' v'j' g' u'c'o' g' 'v'o' g' . "v'j' g' "g'h'g'e'v'x'g' "x'k'u'e'q'u'k'v' { "q'h' 'v'j' g' "g'p'e'm'k'p'i' "o' g'f' k'w'o' "k'u' 'u'k'i' p'h'k'e'c'p'v'k' { "k'p'e't'g'c'u'g'f' . "c'p'f' 'v'j' g' 'o' g'e'j' c'p'k'u'o' "q'h' 'o' c'i' o' c' "r' t'q'r' c'i' c'v'k'p' "e'j' c'p'i' g'u' "t'c'f' k'e'c'm'f' ( 'k'p' 'v'j' g' "g'r'w'k'e' / d't'k'w'g' "r'k'j' q'u'r' j' g't'g' . "o' c'i' o' c' "r' q't'v'k'p'u' "h'q't'o' "h'q'c'v'k'p'i' "e't'c'e'm'u' 'h'k'g'r'f' "y' k'j' 'k'v' 'y' j' k'e'j' . "k'p' 'v'j' g'r' t'g'u'g'p'e'g'q'h' 'u'w't'g'e'j' k'p'i' "e'q'p'f' k'k'p'u'k'p' 'v'j' g' 'r'k'j' q'u'r' j' g't'g' . "o' q'x'g'v'q' 'v'j' g' 'u'w't'h'c'e'g'q'h' 'v'j' g'g't'v'j' O' C' u'c' "t'g'u'w'n' "x'g't'k'e'c'n' 'r' g't'o' g'c'd'r'g' "c'p'f' "j' g'e'v'g'f' | "q'p'g'u' \*h'g'g'f' k'p'i' "e'j' c'p'p'g'u' + "c't'g' "h'q't'o' g'f' "v'j' g't'g' . "y' j' g't'g' 'v'j' g' 'u'w't'g'p'i' v'j' "q'h' 'v'j' g' "t'q'e'm'u' "v'q' "d't'g'e'n' 'k'u' 'u'k'i' p'h'k'e'c'p'v'k' { "t'g'f' w'e'g'f' O' V'j' g't'g' "o' w'n'k' 'r'g' "c'u'q'k'e'v'k'p'u' "q'h' "h'q'c'v'k'p'i' "e't'c'e'm'u' "k'p' 'r't'i' g't' "q'p'g'u'v'c'n'g' "r' m'e'g' \*V'c'm'f' c' . "3; ; 6+0' C' u'c' "t'g'u'w'n' "r't'i' g'f' "k'g'u' 'e'c'p' "d'g' "h'q't'o' g'f' . "h'g'g'f' k'p'i' "o' c'i' o' c'v'k'e' "e'j' c'o' d'g't'u' "c'p'f' "g't'w'r' v'k'p'u' 'y' k'j' "x'q'n'w'o' g'u'w'r' "v'q' 'u'g'x'g't'e'n'v'g'u'q'h' n'o' 50"

F'w't'k'p'i' "v'j' g' 't'k'u'g'q'h' 'o' c'i' o' c' . "c' 'u'k'i' p'h'k'e'c'p'v'k' 'c't'v'q'h' 'k'u' 'k'p'v'q'f' w'e'g'f' "k'p'v'q' 'v'j' g'g't'v'j' 'u' 'e't'w'u'v'q't' "x'q'r'e'c'p'q' 'u' 'd'q'f' { . "p'q'v't'g'e'j' k'p'i' "v'j' g' 'u'w't'h'c'e'g'q'h' 'v'j' g'g't'v'j' O' P' g'x'g't'v'j' g'r'g'u' . "y' g' "d'g'r'k'x'g' "v'j' c'v'v'j' g'f' "k'w't'k'd'w'k'p' "q'h'g't'w'r' v'k'p'u'q'h'c' "x'q'r'e'c'p'q' "d' { "v'j' g'k't' "u'k' "g' "t'g'h'g'e'v'j' g'f' "k'w't'k'd'w'k'p' "q'h' 'o' c'u'g'u'q'h' 'r' q't'v'k'p'u'q'h' 'o' c'i' o' c' 't'k'k'p'i' "k'p' 'v'j' g' 'r'k'j' q'u'r' j' g't'g' O' E'q'p'g'u's' w'e'p'v'k'f' . "k'v' 'e'q'p'v'c'k'p'u' 'k'p' h'q't'o' c'v'k'p' "c'd'q'w'v'j' g'r' t'q'e'g'u'g'u'q'h' 'i' g'p'g't'c'v'k'p' "c'p'f' "c'i' i' t'g'i' c'v'k'p' "q'h' 'o' c'i' o' c' O' V'j' g' 'u'w'f' { "d' { "c'd'q'x'g' "o' g'p'v'k'p'g'f' "o' g'v'j' q'f' "k'u' 'k'o' r' q't'c'p'v' . "u'k'p'e'g' "x'q'r'e'c'p'k'e' "g'c't'v'j' s' w'c'n'g'u' 'e'c'p' "t'c'e'g'v'j' g' 'o' q'x'g'o' g'p'v'q'h' 'o' c'i' o' c' "q'p'n'f' "k'p' 'v'j' g' j' k'i' j' g'u'v'g'e'j' g'm'p'u'q'h' 'v'j' g'g't'v'j' 'u' 'e't'w'u' O' K'p' 'v'j' g' "M'c'o' e'j' c'v'n'e' "u'w'f' w'e'v'k'p' | "q'p'g' "w'p'f' g't' "x'q'r'e'c'p'q'g'u' . "c'v'f' g'r' v'j' u' "h't'q'o' " 322/372 "n'o' "v'q' "42/47" "n'o' . "g'c't'v'j' s' w'c'n'g'u' "q'e'w' "t'g'r'v'x'g'n'f' "t'c't'g'n'f' \*I' w'u'g'x' . "U'j' w'o' k'k'p'c' . "3; 97+0' M'p'q'y' k'p'i' "v'j' g'u'g' "f' k'w't'k'd'w'k'p'u' "k'u'c'n'q' "p'g'e'g'u'c't' { "h'q't' "r'q'p'i' /v'g't'o' "h'q't'g'e'c'v'k'p'i' "r' w't'r' q'u'g'u' O' V'j' g' 'u'w'f' { "q'h' 'v'j' g'f' "k'w't'k'd'w'k'p' "q'h'g't'w'r' v'k'p'u' "d' { "v'j' g'k't' "o' c'i' p'k'w'f' g' "h'q't' "v'j' g' 'y' j' q'r'g' "y' q't'r'f' "y' c'u' "e'c't't'k'g'f' "q'w' "d' { "V'O' U'k'o' n'k'p' . "N'O' U'k'g'd'g't'v' "c'p'f' "q'v'j' g't'u' . "c'p'f' "q'p' "M'c'o' e'j' c'v'n'e' . "R'K'O'V'q'n'e't'g'x' "c'p'f' "C'С'О'И' w'u'g'x' . "K'K'О'О' g'r'g'n'g'u'g'x' "y' k'j' "e'q'n'g'c'i' w'g'u'f' "

The distributions of eruptions in size for the volcanoes Klyuchevskoy and Karymsky

H'q't' 'v'j' g'u'g' "x'q'r'e'c'p'q'g'u' . "y' g' 'u'w'f' k'g'f' "p'q'v'q'p'n'f' "g't'w'r' v'k'p'u' . "d'w' 'c'n'q' "y' g'c'n'g't' "c'e'v'x'c'v'k'p'u' O' "V'j' g' "u'k' "g' "q'h' 'v'j' g' c'e'v'x'c'v'k'p'u' "y' c'u' 'e'j' c't'c'e'v'g't'k' g'f' "d' { "v'j' g'k't' "f' w't'c'v'k'p' O' K'p' "y' c'u' "d'g'r'k'x'g'f' "v'j' c'v' "c'e'v'x'c'v'k'p' "y' q'w'f' "v'c'n'g' "r' m'e'g' "k'i' "v'j' g' u'g'l'u'o' q'm'i' k'e'c'n' 'r' c't'c'o' g'v'g't'u'q'p' "v'j' g' "x'q'r'e'c'p'q' "g'z'e'g'g'f' g'f' "e'g't'v'c'k'p' "v'j' t'g'u'j' q'r'f' "x'c'n'g'u' O' Y' g' "w'u'g'f' "y' q'f' c'k'n'f' "r' c't'c'o' g'v'g't'u' < c+ "v'j' g'f' w't'c'v'k'p' "q'h' "x'q'r'e'c'p'k'e' "v't'g'o' q't' " \*M'w'e'j' g'x'u'q' { + "c'p'f' "d+ "v'j' g' "p'w'o' d'g't' "q'h' "g'z'r' m'u'k'x'g' "x'q'r'e'c'p'k'e' "g'c't'v'j' s' w'c'n'g'u' \*M'c't' { o' u'n'f' +0'V'j' g' "c'p'c'n'f' "u'k'i' "y' c'u' "e'q'p'f' w'e'g'f' "c'v'37' / { g'c't' "v'o' g' "k'p'v'g't'x'c'n'i' "c'p'f' "k'p'e'n'f' g'f' "o' q't'g' "v'j' c'p' "352' "c'e'v'x'c'v'k'p'u' O' V'j' g' "r'q'p'i' g'u'v'c'e'v'x'c'v'k'p'u' "k'p'e'n'f' g'f' "g't'w'r' v'k'p'u' O'

K'p' "H'k'i' O'3 "v'q' "v'j' g' "r'g'h'v' . "v'j' g' "d'g'i' c'x'k'q't' "q'h' "x'q'r'e'c'p'k'e' "v't'g'o' q't' "r' c't'c'o' g'v'g't'u'q'p' "M'n'f' w'e'j' g'x'u'q' { "x'q'r'e'c'p'q' "k'u' 'u'j' q'y' p' "h't'q'o' "3; ; 6'v'q' "3; ; 70'k'p' 'v'j' g' "h'k'i' w't'g'v'q' "v'j' g' "t'k'i' j' v' . "v'j' g'f' "k'w't'k'd'w'k'p' "q'h' 'v'j' g'f' w't'c'v'k'p' "q'h' "v't'g'o' q't' "g'r' k'u'q'f' g'u'q'x'g't' "c' "37' / { g'c't' "v'o' g' "k'p'v'g't'x'c'n' "k'u' 'u'j' q'y' p' O' K'p' "h'q'm'q'y' u' "h't'q'o' "v'j' g' "h'k'i' w't'g'v'q' "v'j' c'v'v'j' g'f' w't'c'v'k'p' "q'h' 'v'j' g' "c'e'v'x'c'v'k'p'u' "k'u'f' "k'w't'k'd'w'g'f' "c'e'e'q't'f' k'p'i' "v'q' "v'j' g'r' q'y' g't' "r'c'y' "y' k'j' "v'j' g' "v'c'p'i' g'p'v'q'h' 'v'j' g' "u'm'q'r' g' "q'h' 'v'j' g' "t'g'r' g'c'v'd'k'k'v' { "e'w't'x'g' "y' ? "2075' O' 2084" \*; 7' +0' H'q't' 'v'j' g' "M'c't' { o' u'n'f' "x'q'r'e'c'p'q' "c'p' "c'p'c'n'q'i' q'w'u'f' "k'w't'k'd'w'k'p' "y' k'j' "y' ? "2082' O' 2085" \*; 7' + "y' c'u' "q'd'v'c'k'p'g'f' O' U'k'p'e'g' "v'j' g' "x'c'n'g' "q'h' 'v'j' g'r' c't'c'o' g'v'g't' "T'4" ? "20 8/20 9' "k'u' 'e'n'q'u'g' "v'q' "3' "v'j' c'v'k'p'f' k'e'c'v'g'u' "v'j' c'v'k'p' "d'q'v'j' "f' "k'w't'k'd'w'k'p'u' "v'j' g'r' q'y' g't' "r'c'y' "k'u' "

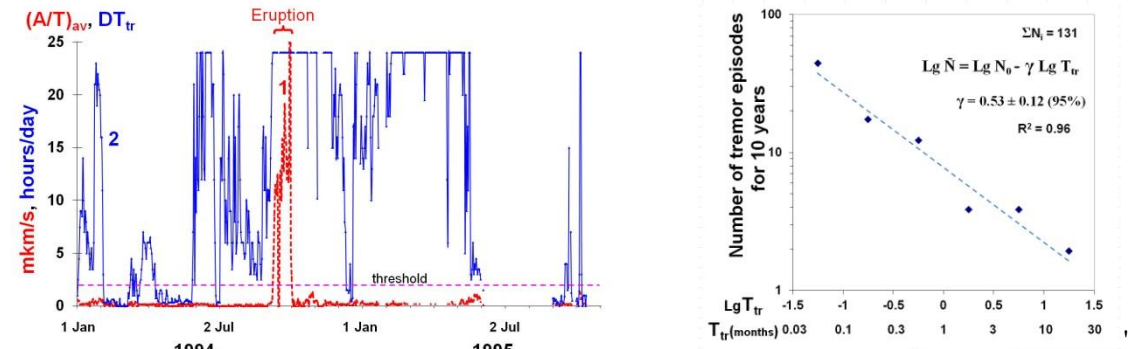


Fig. 1. Klyuchevskoy volcano. Left: The daily average values of the ratio of amplitudes to the periods  $(A/T)_{av}$ , dotted curve 1) and daily duration of volcanic tremor  $(DT_{tr})$ , solid curve 2). Right: Distribution of the duration of tremor episodes in 1994- June 2009. Activation was considered if  $DT_{tr} > 2$  hours per day.



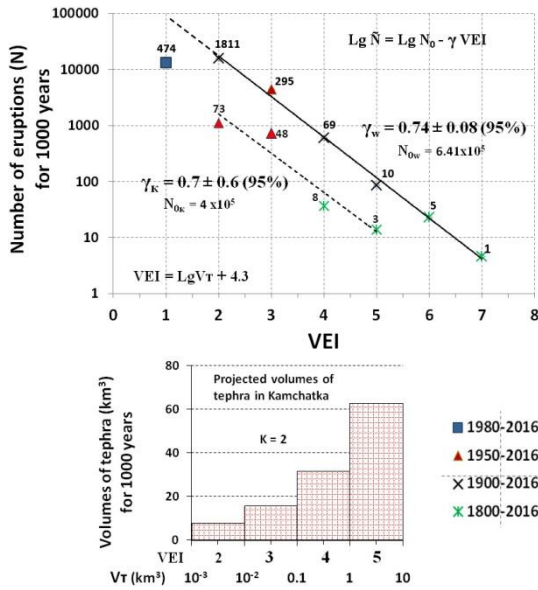


Fig 3. "Top graphs: The distributions of VEI and the corresponding volumes of tephra ( $V_T$ ,  $km^3$ ) ejected during volcanic eruptions of the world (solid line) and Kamchatka (dashed line) in IXX - the beginning of the XXI century. " The numbers above the dots indicate the number of eruptions in the sample for each VEI. "The lower histogram: the most probable volumes of tephra, which will be ejected by all volcanoes of Kamchatka in the next 1000 years.

Mco ej cwn'qdg{ u'vj g'htcevn'r qy gt 'rcy "qh'f kntkdwkqp'y kj 'emug'v'cpi gpw'qh'vj g'urqr g'cpi ng'?' 20/207" \*Hki wtg'5. "wr r gt' i tcr j +0Vj g'f c'v'ht' Mco ej cwn'j c'xg'c'o wej 'y kf gt' f'kur gtukqp'vj cp'vj g'i mdcn'f c'v'0U'peg'y" >3. "vj g'htcevkqp'qh'v'v'cpi' cp'f' x'gt' { 'f'cpi gtqwu'gtw' v'kpu'ku'uki p'k'hecp'0Vj gt'gh'gt'g. "vj g' { 'uj qwf 'dg'c'w'k'dw'gf' 'pq'v'q'pc'w'tc'n'f' k'uc'v'gtu. "d'w'v'q'catastrophes0

H'qt'gecu'g'v'ko cv'g'ht' Mco ej cwn'c'tg'i k'xgp'lp'vj g'h'm'y kpi 'v'cd'rg0

V'cd'rg"

Vj g'bo quv'r tqdcd'rg'lp'v'gt'xcn'd'gy ggp'gtw' v'kpu'c'p'f' vj g'x'q'no gu'qh'gl'ge'v'f' v'gr j tc'ht' h'w'w'g'lp' Mco ej cwn' "

XGK'	Vj g'c'x'gt'ci g'lp'v'gt'xcn'd'gy ggp'gtw' v'kpu'	X'q'no g'qh'ki p'g'q'w'v'gr j tc'ht' "3222" {gctu}
7"	; 2" {gctu}	82'no <sup>5</sup> "
8"	572" {gctu} *gz'v'c'r q'r'v'k'p'+"	342'no <sup>5</sup> *gz'v'c'r q'r'v'k'p'+"
9"	3622" {gctu} *gz'v'c'r q'r'v'k'p'+"	462'no <sup>5</sup> *gz'v'c'r q'r'v'k'p'+"

References

I m'dcn'X'q'rec'p'k'uo 'R'tqi tco ""j wr <l'x'q'rec'p'q'0'k'f' w'l'ug'ct'ej ag'tw' v'k'p'at'g'u'w'u'c'ho +0"

I w'ug'x' 'C'0'0' 'N'0'U'j wo k'k'p'c'0' g'qo g't { 'qh'vj g'ug'k'uo k'ec'm' { 'ce'v'x'g'x'q'no g'qh'vj g'et'w'v'c'p'f' 'wr r gt' 'o' c'p'v'g'qh'vj g' Mco ej cwn'c'p'f' vj g'E'qo o c'p'f' g't' K'ur'c'p'f' u'0'K'ur'g'f' q'x'c'p'k' { 'c' 'r' q' h'k' k'ng' } go n'g't { 'c'ug'p'k' \*U'w'f' l'gu'lp' "g'ct'vj s'w'ng' r j { 'u'k'eu'0'0' q'ue'q'y <'E'P' c'w'nc'i . "3; 98. "R'r 03; 6/4220"

P'gy j c'm' 'E'0'0' "U'gr' "U'V'j g'x'q'rec'p'k' "g'z'r m'q'k'x'k'f' { 'k'p'f' g' "X'G'K' <'c'p' "g'v'ko cv'g' "qh'vj g' "g'z'r m'q'k'x'g' "o' c'i p'k'w'f' g' "h'q't" j k'ur'q't'k'ec'n'x'q'rec'p'k'uo "I'l'q'w't'p'c'n'q'h'I' g'q'r j { u'0'T'gu'03; : 40X0: 90'K'u'w'g' 'E'40' 'R'r 034536 345: 0'

P'gy o c'p' 'O' 0'G'0'0' 'R'q'y gt' 'rcy u. "R'ct'g'v'f' k'ur'k'd'w'k'p'u'c'p'f' \ k'r h'u'rc'y (E'q'p'v'go r q't'c't { 'R'j { 'u'k'eu. "U'gr' v'go d'g't'0 Q'ev'q'd'g't' "42270'X'q'r'068. "P'q'07. "RR0545' "6' "5730"

J'c'p'm'i' 'V'0'E'0' 'M'c'p'c'o q't'k'J' '0'c' "o' q'o g'p'v'o' c'i p'k'w'f' g' 'u'ec'rg'0' l'q'w't'p'c'n'q'h'I' g'q'r j { u'0'T'gu'0'3; 9; 0'X'q'r'0: 6. "K'u'w'g' "7. " 456: " / "4572. "; D227; 0'

T'co d'g'ti "J' 0'3; 89+0' q'f' g'l'g'z'r g't'k'o g'p'v'k'p'qh'vj g'g'h'g'ev'q'h'i' t'c'x'k'f' { 'q'p' 'v'g'ev'q'p'k' "r' t'q'eg'u'gu'0' l' g'q'r j { 'u'k'ec'n' l'q'w't'p'c'n'q'h'vj g' "T'q' { c'n'c'ut'q'p'q'o k'ec'n'U'q'ek'v'f' "36 < "529654; 0'

V'c'n'ef' c' 'C'0' 'C'ee'wo w'r'v'k'p'qh'o' c'i o' c' "k'p' "ur' c'eg'c'p'f' "v'ko g' "d' { "et'c'ec'n'k'p'v'g't'ce'v'k'p' "I'l' "O' c'i o' c'v'k'e' "u' { 'v'go u'0'G'f' 0'0' 0'R'0' T' { 'c'p'0'c'ec'f' go k'e' 'r' t'g'u'03; ; 60'R'0463/4790'