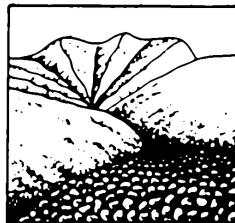


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Pyatigorsk, Russia, 22-29 September 2008



Edited by
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Pyatigorsk 2008

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Гидрометеорологические условия периодов массового селеобразования на о. Сахалин

Ю.В. Генсировский, Н.А. Казаков, С.В. Рыбальченко

*Дальневосточный геологический институт ДВО РАН, Сахалинский филиал,
лаборатория лавинных и селевых процессов, Южно-Сахалинск, Россия*

Hydrometeorological conditions of the periods of mass debris-flow occurrence on Sakhalin Island

Y.V. Gensirovskiy, N.A. Kazakov, S.V. Rybalchenko

*Far East Geological Institute of Far East Branch of Russian Academy of Sciences,
Sakhalin Department, Laboratory of Avalanches & Debris-Flows Processes, Yuzhno-Sakhalinsk, Russia*

JZkkfZljbZ_lky ēbygb fZdkbfZevguo agZq_gbc ūZfbo bdbo hkZdh gZ ijhp_kk nhjfbjhZgby ijjbhh fZkhhjh k_e_hjZahZgby gZhkljh KZoZebg

We examine the influence of the maximum values of liquid precipitation on the process of the formation of periods of mass debris-flows occurrence on Sakhalin Island.

1 Введение

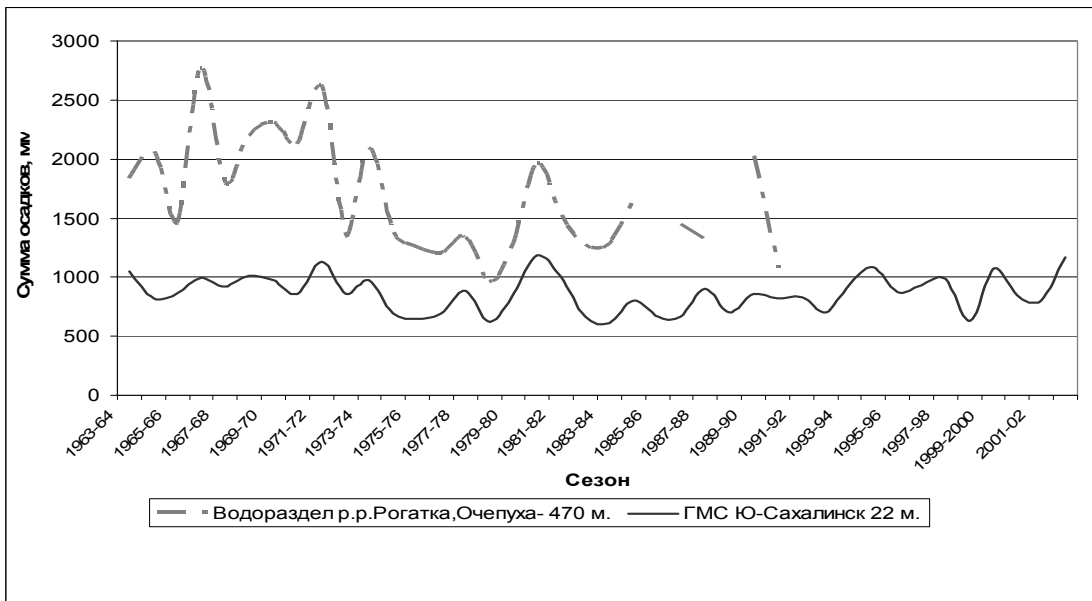
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2 Рассмотрение проблемы

f]hknjgu hkd[db, ūZZxsb gZ_ljjblhjbb hkljhZ , yeylky j_amevlZlhf Zdlbgc pbdehgbq_kdhc yl_evghklb. hhu kmffu hkZdh gbsZo hebg b gZ fhjkdhf ih]j]v xguo jZchgZo dhe[exlky ij_eZo 800-1100 ff([hjZo kj_gb agZq_gbykmff ūZfbo hkZdh aZbkbfhklb hl ūklghc ahgu khklZeyxl 1500-2000 ff b hl_evgu]hu fh]ml ij_ūZlv 3000 ff). Wlh ohjhrh bgh gZ kjZgb]evghf]jZnbd fgh]he_lg]h ohZ hkZdh, ijb_ggh] gZjbk. 1.

< l_euc ijjbhh ūZZ_l 65-80%]hhc ghjfu . Kmffu hkZdh ih Zgguf]bjhf_ h]heh]bq_kdbc klZgpbc (FK) ih_lgpbZevgh k_e_hiZkguc ijjbhh (bxgv- hdly]v) kj_gf khklZeyxl 300-600 ff, fZdkbfmf hklb]Zy 1100 ff . GZh hlf - l]v ke_mxs , qlh ihZeyxZy qZklvgZ[exZ]evghc klb Jhk]bjhf_IZ jZkiheh- g Zhev ih]j]bc, eb[h gbsZo j_qguo hebg hkljhZ . < LZ[ebp l ijbh]lky ijhp_lgh ghhlghr_gb jZki_e_gby FK b]bjheh]bq_kdbo ihklh (E) ih ūkh - lZf gZ_ljjblhjbb hkljhZ (gkbhjhkdbc b DZaZdh, 2007).

< mkehbyo dh]Z , ¼ ljjblhjbb aZgyh]hjZfb , kZ[khexlguf hlf]dZfb 350-1600 f. bkihevahZgb lhevdh Zgguo h hkZdZo, itemq_gguo gZ FK , ijbhh d_g hm q_lm iZjZf_ljh]bjhf_ h]heh]bq_kdbo ye_gbc , Zgguo bo gZ[ex_gbc g_fh]ml bkihevahZlvky ey khklZ_e_gby k_e_h]h ijh]ghaZ.



К[е]т[и] jZgb]evguc [jZnbd ohZ hkZdh] ih [bjh]f]i]h]jeh]bq]kdhc klZgpbb Xgh - KZoZebgkdb kmffZ]ghfm hkZdh]jm , gZohbr]fmky gZ hhjZa]e] j]d Jh]ZldZ b Hq]imoZ] hdj]klghklyo] Xgh -KZoZebgkdZ.

LZ]ebpZ 1. Ijhp]glgh] khhlghr]gb] jZkiheh]gby]FK b]i] ih ukhlZ]f gZ]ijb]h]jbb KZoZ ebZ.

>bZiZahg]ukhl] Z[k]f].	% h]h]s]h] dhebq]klZ]FK b]i]
0-50	77,7
50-100	9,6
100-200	11,7
>200	1

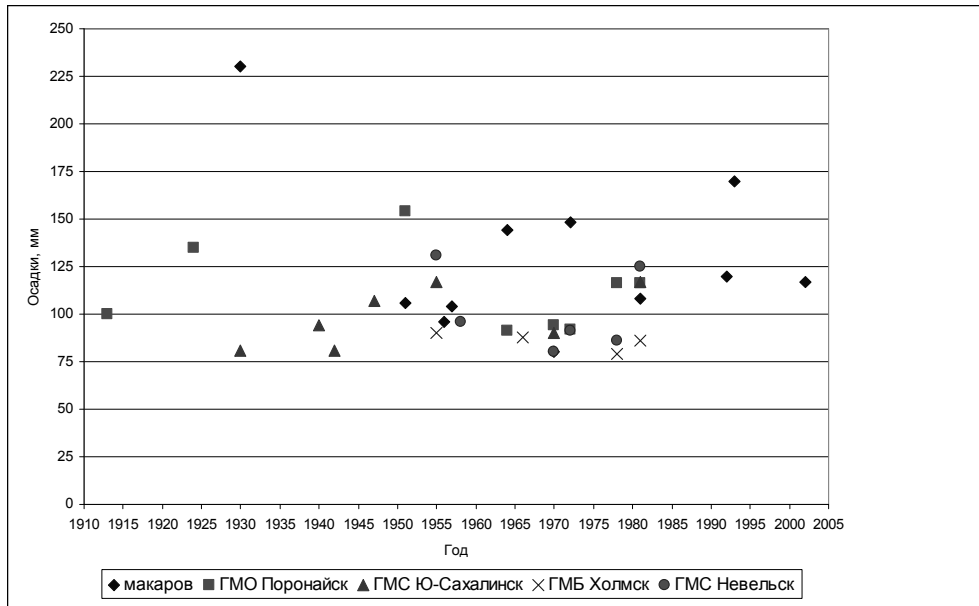
GZijbf]j] , lZdZykb]mZpbykehbeZkv]jZchg]] FZdZjhZ]ijbh] fZkhh]h] k]e]h]jZahZgby] gZqZe]k]gly]jy 1992] ihkdhevdm]FK jZkiheh]gZ gZ fhjkdhc]ijZk] (Z[khexlgZy ukhlZ 38 f), ahg]jZa]jmadb k]e]u] hleh]gbc , ZhhjZa]e]u k]e]u] [Zkk]cgh] gZohylky] hlf]ldZ] 300-500 f, lh hkZdb, u]Zr]b]]jZchg] klZgpbb agZqbl]evgh hlebqZebkv hl]hkZdh] u]Zr]b]]ijbh]jZa]evghc qZklb [Zk]k]cgh]

d]hgp]e]lZ]b gZqZe]hk]gb gZ]exZxlky u]hu]em]hdbo pbdehgh] b lZcnm]gh] ijbgkysbo ebZ]u] hbi AZkml]db h]afhgh u]Z]gb] 1-2 f]kyqguo gh]f] hkZdh]. L]d]d]]hebgkd]k]gly]jy 1947] aZkml]db u]Zeh] 222 ff hkZdh], ij] f]kyqghc gh]f] 120 ff. FZdkbfZevgu] kmlh]qgu] dhebq]klZ hkZdh] hl]hy] ij] -gu gZ]j]kmgd]2.

DZdbgh] b]ijb]ggh]h] j]kmgdZ, kmlh]qgu] fZdkbfm]fu hkZdh] fh]m] ij]u]r]Zlv] 200 ff. K]e]h]jZamxsZy kmffZ hkZdh] gZ hkl]h] KZoZebgij]urZ] 50 ff ij] bgl]gkbgk]b hkZdh] 30-50 ff /kml]db (DZaZdh]b Fbg]jbg] , 2000). HgZdh] , kemqZij]r]klm]xs]h] meZg]gby ih]h]]k]e]hf] fZk]b] , k]e]u] ijhp]kku jZa]bZxlky ij] u]Z]gbb 10-20 ff hkZdh]]l]q]gb] kmlhd]

KhiZ]]gb] kmlh]qguo fZdkbfm]fh] hkZdh] (ij]gu] fZdkbfZevgu] kmlh]qgu] hkZdb hl]hy] ij]urZ]xs]b] 70 ff) ih g]kdhevdbf klZgpbyf, hgh]f]ggh] mdZau]Z]]ijbh] fZkhh]h] k]e]nh]f]h]Zgby gZ]hevr]c] qZklb]]ijb]h]jbb h] KZoZebg]JZkfh]j]f] gZb]he]i]hdZaZ]evgu] kemqZb]fZkhh]h] nh]f]h]Zgby k]e]c]

>Zgg]]ijbh]u] dZd]ijZbeh] , hlf]qZxlky kh]h]jhc] iheh]gu] bxey] h] k]j]b] -gu hdly]jy b]kyaZgu k]ijhoh]]gb]f]]em]hdbo pbdehgh] , khijh]Z]sboky] u]Z]]gb]f] h]bev]guo hkZdh] ([he] 50 ff/ kml]db) ij] bo]]hevr]c] bgl]gkbgk]b . HgZdh] g]h]oh]bf] h]yaZ]evgh] mkeh]b] - gZdhie]gb]]k]e]u] hqZ]Zod]j]b]bq]kdh]h] h]f]Z] ihl]gp]bZevgh]h] k]e]h]h] fZk]b]Z (IKF). Dj]b]bq]kdZy]hesbgZ] IKF khklZey] 0,5-1,0 f] (DZaZdh]b] Fbg]jbg] , 2000).



Jbk2. Kmlhquu fZdkbfmfu hkZdh hl hy ih =FK k_e_hiZkguo jZchgZo aZi_jbh 1913-2003]]

Pbdehg, ijhfbc gZojjblhjb KZoZebgdhch[eZklb 18-19.09.1970 hoZlbe [hevrnx ojjblhjb hkljhZ. Kmlhquu fZdkbfmfu hkZdh khklZbeb ojZchgZo k_e_hijZahZgby: =FK FZdZjh - 80 ff, =FK G_evk d - 80 ff, ohjZo xjZ (kg_jheZbggZy kIZgpby IjZe, Z[k ukhIZ 300 f) aZ 12 qZkhuiZeh 121 ff. <uiZgb lZdhjh dhebq_klZ hkZdh ijbeh d fZkkhhfm k_e_hijZahZgby oG_evkdhf, Ohefkdhf, FZdZjhkdhf jZchgZo KZoZebgdhc h[eZklb.

Ke_mxsbc jZkkfZljbZ_fuc ijbh k_glyjv-hdlyjv 1972]hZ, dhjZ ijhohgb jyZ pbdehgh ijbeh d uiZgbx agZqbl_evgjh dhebq_klZ hkZdh, m_eZggbx ojjblhjb b_uaZeh fZkkhuc koh_k_e_c ur_gZaZgguo jZchgZo. Km lhquu fZdkbfmfu hkZdh khklZbeb: =FK FZdZjh - 148 ff, =FK G_evk d - 91 ff, =FK Xgh- KZoZebgd - 68 ff (aZ9 qZkh). < ohjZo xjZ (kg_jheZbggZy kIZgpby IjZe) aZ 12 qZkhuiZeh 121 ff.

?s_hbg ijbh fZkkhhjh nhjfbjhZgby k_e_c hoZlbfbc [hevrnx qZklv hkljhZ - Z]mk 1978]hZ. Kmlhquu fZdkbfmfu dhe_Zebkv h 76 ff (]bjhf_hjh - eh]bq_kdh [xjh Ohefkd) h 116 ff (]bjhf_hjheh]bq_kdZy h[k_jlhhjby]hjh - gZckd), ohjZo hkljhZ bg_gkbgkiv hkZdh [ueZ s ur (kg_jheZbggZy kIZgpby IjZe) - 40 ff aZ 3 qZkZljb ijhohgbb lZcnmgh «Hbg » b «Nbeebk» 2-7 Z]m-klZ 1981] kmffZ hkZdh gZ=FK «Xgh -KZoZebgd (Z[k ukhIZ 22 f) khklZbeZ 220 ff. AZlh o ijbh o KmkmZckdhfj] ih Zgguf kmffZjguo hkZdhfjh o bg- l]Ze Z[khexlguo hlf_lhd h 400 h 600 f kmffu hkZdh khklZbeb [he 1200 ff.

<h k_o ur_ i_jqbke_gguo ijbhZo k_e_hijZahZgby, uiZrb hkZdb h[m-keZebZeb Zdlbgh hijZahZgb k_e_uo ihlhdh.

HgZdh g_k]Z uiZgb agZqbl_evgjh dhebq_klZ hkZdh ijhbhl d fZk- khfm kohm k_e_c lZd, k_glyjv 1982]hZ, ijb ijhohgbb pbdehgZ kmlhagh_dh- ebq_klh hkZdh ih =FK FZdZjh khklZbeh 124 ff. JZkoh_hu ih j_FZdZjh kh- klZbe 850 f³/k Zgguc jZkoh ih kh_c ebqbg, yey_lky lhjuf aZkv ijbh gZ [ex_gbc b mklmiZ_lhev dh dZlZkljhn bq_kdhfm jZkohm hu 1722 f³/k (Z]mk 1981]hZ). Gh fZkkhhjh k_e_nhjfbjhZgby ojZchg hlf_q_gh g [ueh. Wlh h[mkehegh l]f, qlh]hfh jZg, ihke ijhohgby lZcnmgZ «Nbeebk», khf_rfb k_e_uo ihlh- db iheghklvx hqbkbeb k_e_uo hqZ]b h ihl_gpbZevguo k_e_uo fZkkbh gZdhie- gby. Dh_klv hklmklhZeh h]yaZl_evg h mkehb kohZ k_e_c gbadh]hjv h KZoZebgZ - djblbq_kdbc h]f fZl]bZeZ o k_e_uo hqZ]Zo.



Ж[б]к[д]3. К[е]т[у] ил[д]б[и] г[ы]ы ил[д]с[б]г[а]к[и] 2,5 ф[т] ([З[к]к[г]ж[и] Ж[и]З[д]З). Н[л]л[и] Л[ж]м[р] □.□.

3 Заключение

1. К[м]ф[ф]у к[З]д[д] □ П[г]Л[З]е[в]г[у]о б[и] X[г]уо j[З]ч[г]З[о] К[З]о[З]е[б]г[З] (□ х[е]б[г]З[о] б[и] г[З] ф[и]к[д]б[о] ил[д]ж[и]в[у]о) □ ил[д]г[п]З[е]в[г] к[е]т[у]и[З]к[г]у[с] и[ж]б[и] (б[х]г[в]-х[д]л[и]ж[и]в[и]) □ к[ж]г[г]ф[и] к[х]к[Л]З[е]х[и] 300-600 ф[т], □ ф[З]д[к]б[ф]м[ф] к[л]б[ж]З[ы] 1100 ф[т] □ [ж]г[у]о q[З]к[Л]ыо к[л]ж[З] а[З] y[е]г[б] □ ф[и] □ и[З]к[Л] (□ а[З]б[к]б[ф]к[л]б[и] х[и]у[к]х[л]у ф[и]к[Л]З) [х[е] □ 1200 ф[т] к[З]д[д].
2. □ [ж]З[о] к[л]ж[З] б[г]г[к]б[г]к[л]в к[З]д[д] ф[и] □ к[х]к[Л]З[е]л[в] [х[е] □ 40 ф[т] /q[и] Л[ж] и[ж]о[х]г[б]б[и] Л[З]с[н]м[г]□j[З]а[г]б[п]З ф[и]м[и] к[З]д[д]З[ф]б[и], х[л]ф[и]q[З]ф[у]ф[и] а[З]y[е]г[б] □ и[ж]ж[и] □ - г[а]к[и], х[е]б[г]г[а]к[и] q[З]к[Л]ыо к[л]ж[З] б[и] к[З]д[д]З[ф] □ [ж]З[о] ф[и] □ к[х]к[Л]З[е]л[в] 1000 ф[т] а[З]y[е] □ - г[а]к[и].
3. К[е]т[у]и[З]З[а]m[х]s[З]y[и] к[м]ф[ф]З к[З]д[д] □ г[З]к[л]ж[и] □ К[З]о[З]е[б]г[и] □ и[р]З[и] □ 50 ф[т] и[ж] б[г]- и[г]к[б]г[а]к[л]б[и] к[З]д[д] □ 20-50 ф[т] /к[м]л[д]б[и].
4. >e[у] ф[З]к[к]х[и]ж[и] к[е]т[у]и[ж]ф[и]ж[З]г[ы] г[и]х[и]о[х]б[ф]и г[З]д[и]е[г]б[и] □ к[е]т[у]о х[а]q[З]З[о] д[ж]б[л]б[а]к[д]х[и]ж[и] х[и] □ ил[д]г[п]З[е]в[г]ж[и] к[е]т[у]и[ж] ф[З]к[к]б[З] ил[д]с[б]г[а]к[и] 0,5-1,0 ф[т].

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м[ж]г[З] Н.Б., и[ж] □ <N., К[б]и[ж]З[и] Л.Е. К[е]т[у]и[ж] y[е]г[ы]ы ил[д]с[б]г[а]к[и] К[З]о[З]е[б]г[и] - <к[л]г[б]д[и] Ф[х]д[х]к[д]х[и]ж[и] м[г]Л[З], к[и] 5, [и]л[д]ж[и]З[н]б[и], □ 3, 1987, к[и] 76-81.

□□г[к]б[и]ж[и]к[д]б[и] X. <. Д[З]а[З]д[и]Г. □. Г[и]м[а] □ к[З]д[д] □ г[б]а[д]х[и]ж[и]в[и] ил[д] К[З]о[З]е[б]г[и]д[д]и[ж]б[а]г[ы]З[и] а[З]г[б]г[ы] j[З]к[а]г[у]о и[З]j[З]ф[и]и[ж]и к[х]н[ж]м[г]б[и] и[ж] и[ж]д[л]б[и]ж[и]З[г]б[б] б[и] к[л]ж[и]б[и]e[в]к[и] □ - □□□- ж[б]к[д], □ 1, 2007, к[и] 58-60.

Д[З]а[З]д[и]Г. □., □□г[к]б[и]ж[и]к[д]б[и] X. <. Д[З]И[К]Л[ж]н[б]а[к]д[б]и к[е]т[у]и[ж] ил[д]б[и] □ г[б]а[д]х[и]ж[и]в[и] ил[д] К[З]о[З]е[б]г[и] б[и] б[о] ил[д]к[г]х[и]л[в] e[у] ф[З]б[к]Л[ж]З[е]в[г]уо Л[ж]м[и]ж[и]х[и]х[и] □ (г[З] и[ж]б[и] □ «К[З]о[З]е[б]г[и]2»). - и[ж] [е]т[у]и[ж] и[ж]г[а]б[и]ж[и]З[г]ы q[и]а[у]q[З]г[у]о к[б]л[м]З[п]б[и] К[и]ж[г]б[д] ф[Л]j[б]З[е] □ VII г[З]м[а]q[а]и[ж]д[л]б[а]к[д]х[и] д[г]н[и] □□г[п]б[и]. Ф[х]д[З]: « [г]б[к]л[б]о[ы] », 2007, к[и] 34-35.

Д[З]а[З]д[и]Г. □., м[д]х[и] AB. J[З]ч[г]б[и]ж[и]З[г]б[и] ил[д] К[З]о[З]е[б]г[и]и к[и]и[г]б[и] и[ж]y[е]г[ы]ы к[е]т[у]и[ж] [y]л[е]v[и] - г[а]к[л]б[и] - Л[ж]м[и] □ б[и]ж[и]ф[и]л[п]г[Л]З[и] К[З]о[З]е[б]г[и]д[д]и[ж]м[и]F[и]K. J[и]л[б]h[г]З[е]в[г]у[и] б[к]к[е]и[ж]З[г]ы . X[г]и - К[З]о[З]е[б]г[и]д[д], 1988, к[и] 131-137.

Д[З]а[З]д[и]Г. □., м[д]х[и] AB. M[к]e[х]b[и] н[и]ж[и]ф[и]ж[и]З[г]ы к[е]т[у]и[ж] и[З]д[д] □ □ ф[З]у[о] х[и]л[д]З[о] . - и[ж] - и[ж]г[у]о д[З]И[К]Л[ж]н[у] б[и] к[л]б[о]б[г]у[и] □□к[л]b[и] □ >З[е]в[г]и[ж]к[л]q[а]h[и]f[и] j[и]л[б]h[г], □ 2, <e[З]b[к]л[д] : <<H :G KKKJ, 1990, к[и] 394-400.

Д[З]а[З]д[и]Г. □., F[б]г[и]ж[и] B. < K[е]т[у]и[ж] и[ж]п[и]к[и]у г[З]и К[З]о[З]е[б]г[и] - и[ж]b[е]З[г]З[и] [и]х[в]d[е]h[и]j[и]y[и] q[и]a[у]q[З]г[у]о к[б]л[м]З[п]b[и]a[и]f[е]v[г]у[с] д[З]З[к]Л[и]. <и[и]4, Ф[и]к[д]З : ил[д]д[и], 2000, к[и] 35-38.

и[ж]и □ <N. К[е]т[у]и[ж] y[е]г[ы]ы г[З]и[ж]и[ж]и[ж]и KKKJ. Ф[х]д[З] : <BGBLB , 1989, 148 к[и]