

The Addition S4.

To Section 4.3. Klyuchevskoy volcano activity in 2015-2022



Figure S43. The explosive eruption of the Strombolian type of the Klyuchevskoy volcano on January 03, 2015. Video data by KVERT IVS FEB RAS and Weathernews Inc. (<http://www.kscnet.ru/ivs/kvert/imgs/2038.jpg>)



Figure S44. The explosive-effusive eruption of the Klyuchevskoy volcano on January 19, 2015: two centers of the Strombolian activity and lava flows are observing at its summit crater. Photo by Yu. Demyanchuk (<http://www.kscnet.ru/ivs/kvert/imgs/2041.jpg>)

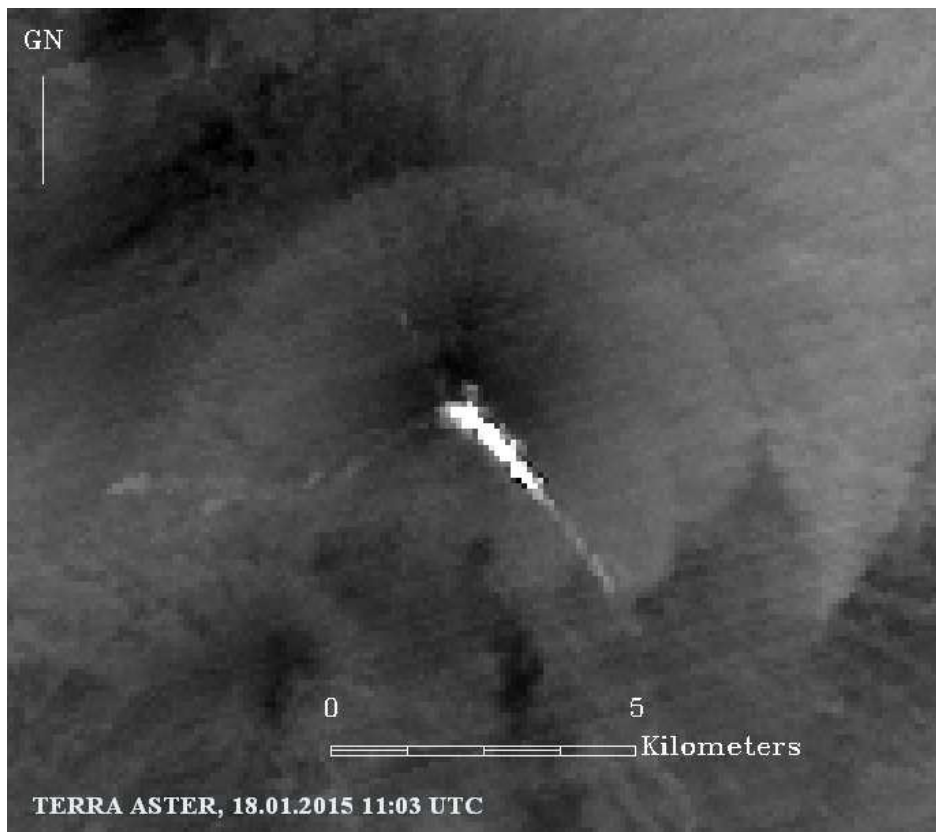


Figure S45. The lava flow on the southeastern flank of the Klyuchevskoy volcano on January 18, 2015 on the Terra Aster satellite image [103].



Figure S46. The paroxysmal explosive eruption of the Klyuchevskoy volcano on February 15, 2015: an ash plume raise up to 8 km a.s.l. Photo by Yu. Demyanchuk (<http://www.kscnet.ru/ivs/kvert/imgs/2050.jpg>)



Figure S47. The explosive eruption of the Strombolian-type of the Klyuchevskoy volcano on April 05, 2016. Video data by KVERT IVS FEB RAS and Weathernews Inc. (<http://www.kscnet.ru/ivs/kvert/imgs/2157.jpg>)



Figure S48. The lava flow is effusing on the southeastern flank of the Klyuchevskoy volcano (the Apakhonchich chute) on April 23, 2016. Video data by KVERT IVS FEB RAS and Weathernews Inc. (<http://www.kscnet.ru/ivs/kvert/imgs/2162.jpg>)



Figure S49. The Strombolian activity of the summit crater of the Klyuchevskoy volcano and of the E.K. Markhinin lateral breakthrough in the Apakhonchich chute, as well as lava flows on the southeastern slope of the volcano on July 05, 2016. Photo by Yu. Demyanchuk (<http://www.kscnet.ru/ivs/kvert/imgs/2909.jpg>)



Figure S50. The formation of the collapse cirque in the upper part of the Apakhonchich chute on the Klyuchevskoy volcano on May 03, 2016 as result of a series of rocks collapses from the chute walls, with ash clouds rising up to 5.5 km a.s.l. Video data by KVERT IVS FEB RAS and Weathernews Inc. (<http://www.kscnet.ru/ivs/kvert/imgs/2910.jpg>)



Figure S51. The explosive activity of the summit crater of the Klyuchevskoy volcano and the cinder cone into the Apakhonchich chute, and lava flows at the eastern flank of the volcano on August 03, 2016. Photo by A. Pereygin (<http://www.kscnet.ru/ivs/kvert/imgs/2180.jpg>)



Figure S52. The explosive-effusive eruption of the Klyuchevskoy volcano on August 25, 2016: the lava flows move downwards on the eastern and southwestern volcanic flanks. Photo by V. Voychuk (<http://www.kscnet.ru/ivs/kvert/imgs/2191.jpg>)

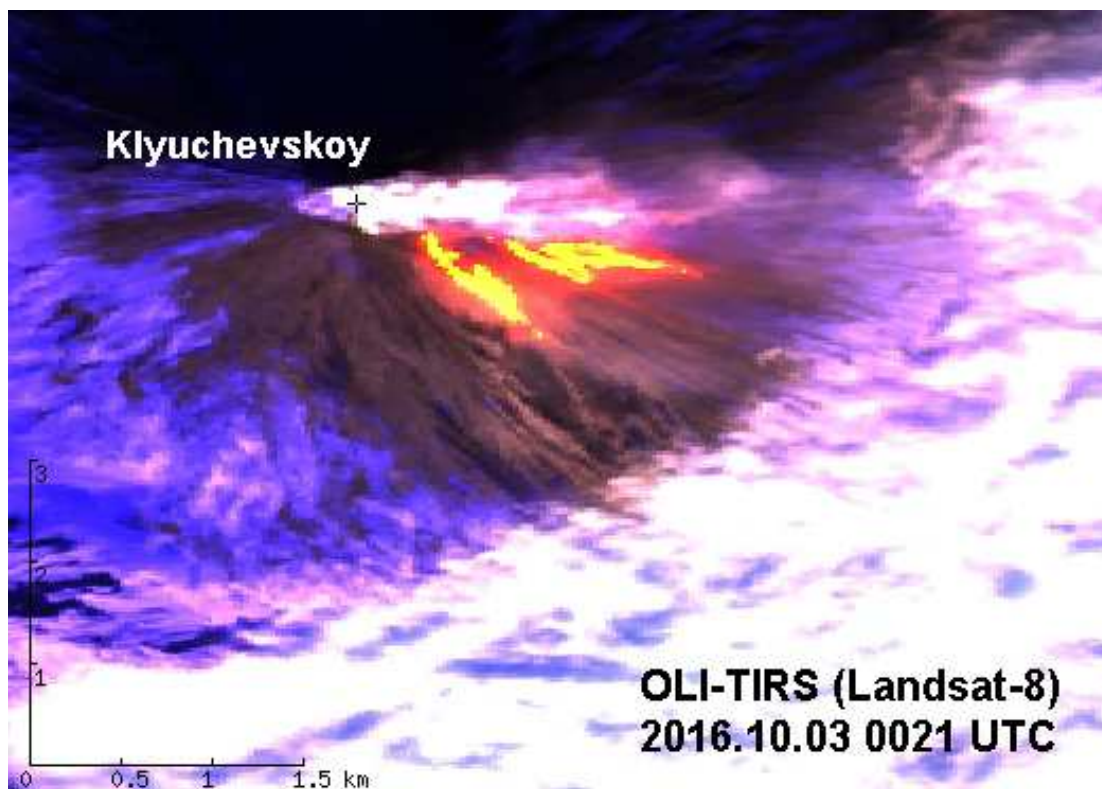


Figure S53. The thermal anomaly over the lava flows on the eastern flank of the Klyuchevskoy volcano on the OLI-TIRS (Landsat-8, USGS) satellite image at 00:21 UTC on October 03, 2016. (<http://www.kscnet.ru/ivs/kvert/imgs/2205.jpg>)



Figure S54. The explosive eruption of the Klyuchevskoy volcano on August 11, 2017. Photo by I. Borisov (<http://www.kscnet.ru/ivs/kvert/imgs/2298.jpg>)



Figure S55. The ash burst of the Klyuchevskoy volcano on July 04, 2019. Photo by Ch. Kirchmayer (<http://www.kscnet.ru/ivs/kvert/imgs/2498.jpg>)



Figure S56. The Strombolian activity of the Klyuchevskoy volcano on March 08, 2020. There is a lava fountain into the volcanic crater, and the collapse of hot avalanches on its slopes. Video data by KVERT IVS FEB RAS (<http://www.kscnet.ru/ivs/kvert/imgs/2521.jpg>)



Figure S57. The collapses of pyroclastic masses from the Apakhonchich chute walls of the Klyuchevskoy volcano on April 18, 2020. Video data by KVERT IVS FEB RAS (<http://www.kscnet.ru/ivs/kvert/imgs/2524.jpg>)



Figure S58. The Strombolian activity of the Klyuchevskoy volcano and the lava flow effuse along Apakhonchich chute on June 10, 2020. Photo by E. Saphonova (<http://www.kscnet.ru/ivs/kvert/imgs/2541.jpg>)



Figure S59. The lava flow is effusing along the Apakhonchich chute on the southeastern flank of the Klyuchevskoy volcano on October 07, 2020. Photo by V. Tsvetkov (<http://www.kscnet.ru/ivs/kvert/imgs/2594.jpg>)



Figure S60. The explosive-effusive eruption of the Klyuchevskoy volcano on December 24, 2020: the Strombolian and the gas-steam with some amount of ash activity, and the lava flow effusing along the southern slope of the volcano. Photo by Yu. Demyanchuk. (<http://www.kscnet.ru/ivs/kvert/imgs/2663.jpg>)



Figure S61. The explosive-effusive eruption of the Klyuchevskoy volcano on February 05, 2021: the Strombolian activity of the volcano, and the lava flow effusing along the Apakhonchich chute on the southeastern volcanic slope. Video data by KVERT IVS FEB RAS (<http://www.kscnet.ru/ivs/kvert/imgs/2670.jpg>)

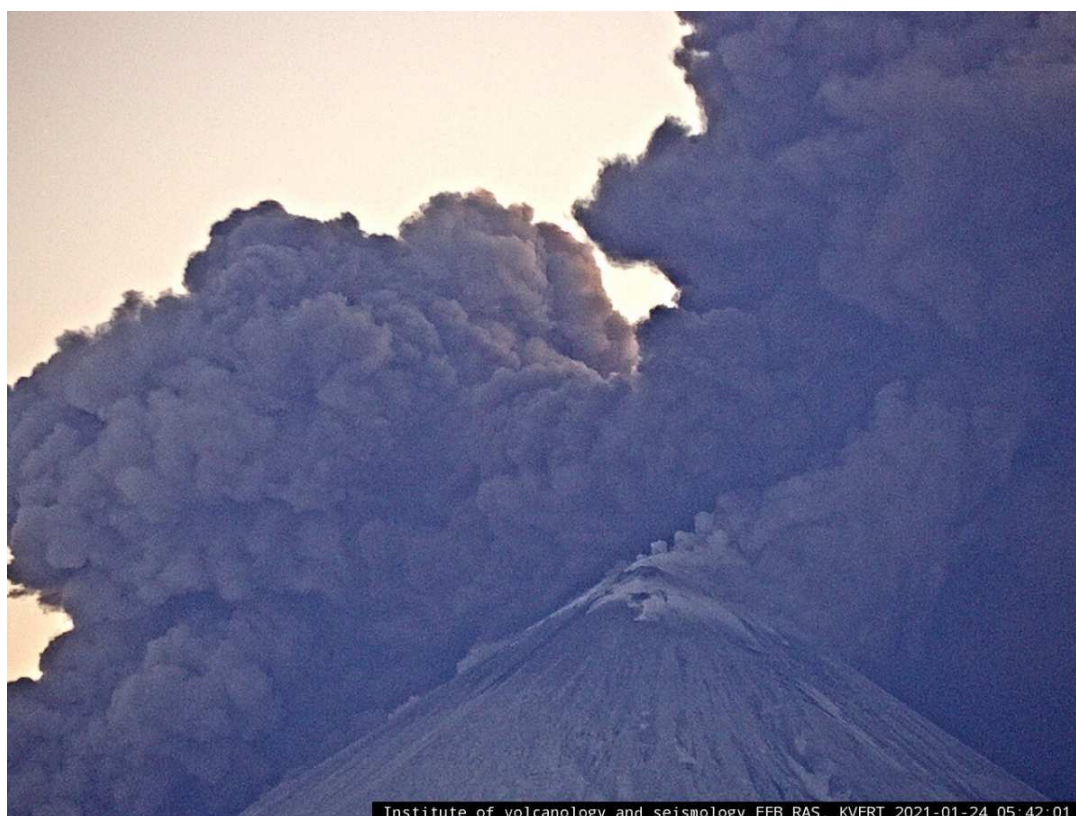


Figure S62. The Klyuchevskoy volcano: the collapse of large pyroclastics mass from the walls of the Apakhonchich chute on January 24, 2021. Video data by KVERT IVS FEB RAS (<http://www.kscnet.ru/ivs/kvert/imgs/2666.jpg>)



Figure S63. The lateral eruption of the Klyuchevskoy volcano on February 23, 2021. Photo by Yu. Demyanchuk (<http://www.kscnet.ru/ivs/kvert/imgs/2678.jpg>)



Figure S64. The lateral breakthrough named after volcanologist G.S. Gorshkov: the cinder cone and the lava flow on March 16, 2021. Photo by D. Bud'kov (<http://www.kscnet.ru/ivs/kvert/imgs/2684.jpg>)