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Abstract #358489

The VolSatView for Satellite Monitoring and Kamchatkan Volcanoes Study

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Abstract Text:

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(1) Institute of Volcanology and Seismology, FEB RAS, Russia, (2) Space Research Institute, RAS, Russia, (3) Computing Center, FEB RAS, Russia, (4) Far East Planeta Center of Space Hydrometeorology Research, Russia

Annually, from 3 to 6 Kamchatkan volcanoes produce eruptions, during which the explosions eject ash to 10-15 km a.s.l., and ash clouds spread thousands of kilometers from volcanoes. Strenuous volcanic activity could cause ash falls in towns and settlements, destruction of forests and communications. Ash clouds and plumes pose a serious threat to the modern jet aviation. Scientists of KVERT have conduct daily monitoring of Kamchatka volcanoes since 1993, to mitigate volcanic hazards to airline operations and population. Since 2014, satellite monitoring of volcanoes is carried out by KVERT scientists using the VolSatView (<http://volcanoes.smislab.ru>) IS. The VolSatView (Remote monitoring of active volcanoes of Kamchatka and the Kuril Islands) was created in 2011 by scientists from Space Research Institute (SRI) of Russian Academy of Sciences (RAS), Institute of Volcanology and Seismology of Far East Branch (FEB) RAS, Computing Center of FEB RAS and Far East Planeta Center of Space Hydrometeorology Research, and the IS continues to developing. The system utilize all the available satellite data, weather and video observations to ensure continues monitoring and study of volcanic activity in Kamchatka. Architecture of the VolSatView IS was developed for the work with distributed information resources and computation systems that are used for the acquisition, processing, storage, analysis, and visualization of various instrumental and scientific data. This work was supported by the Russian Science Foundation, project No. 16-17-00042.

Plain-Language Summary:

Girina Olga (1), Loupian Evgenii (2), Efremov Viktor (2), Melnikov Dmitry (1), Manevich Alexander (1), Gordeev Evgenii (1), Sorokin Alexey (3), Kramareva Lyubov (4), Uvarov Ivan (2), Kashnitskiy Alexander (2), Bourtsev Mikhail (2)

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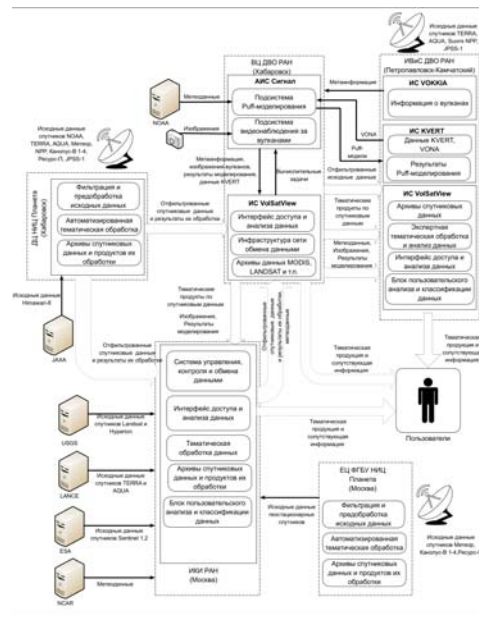
(1) Institute of Volcanology and Seismology, FEB RAS, Russia, (2) Space Research Institute, RAS, Russia, (3) Computing Center, FEB RAS, Russia, (4) Far East Planeta Center of Space Hydrometeorology Research, Russia



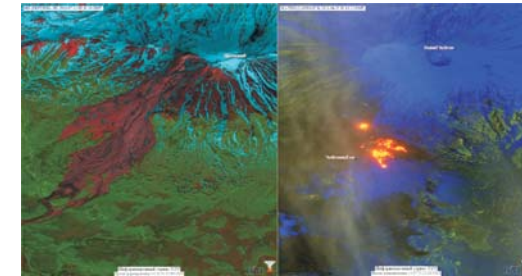
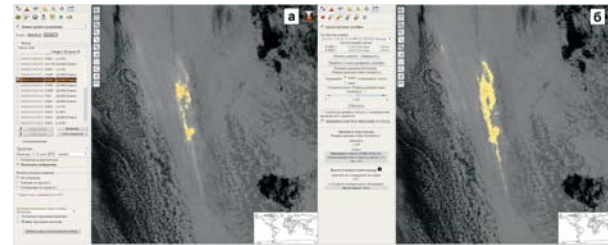
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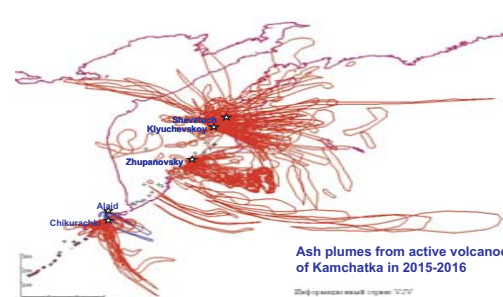
Architecture of VolSatView IS



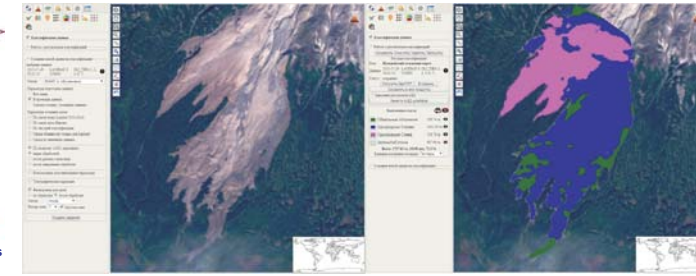
Analysis of ash plumes from volcanoes



Analysis of volcano eruption deposits



Ash plumes from active volcanoes of Kamchatka in 2015-2016

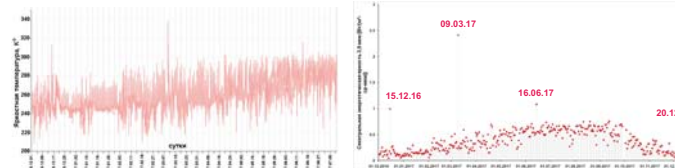


Classification of Zhupanovskoy volcano collapse deposits

Analysis of thermal anomalies over the volcanoes

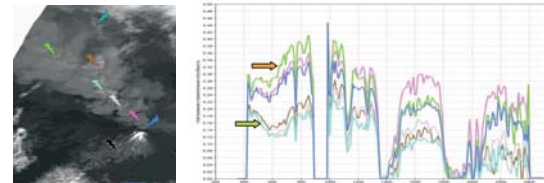


Klyuchevskoy volcano, 2016-2017 eruptions

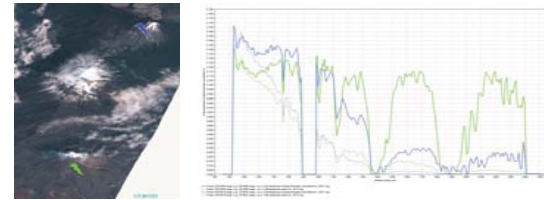


Bezymianny volcano, 2017 eruptions

Hyperspectral analysis (Hyperion)



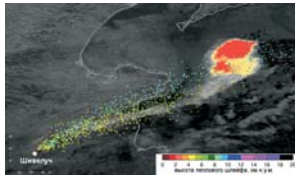
Hyperspectral analysis of ash plume different parts, Klyuchevskoy volcano, 08.07.2007.



Rock composition of Klyuchevskoy (basalt) and Bezymianny (andesite)



Klyuchevskoy, 02.10.1994



Joint analysis of simulation result and satellite data

