

Eruption clouds at volcanoes in Kyushu, Japan observed by web-camera, radar and satellite images

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Magmatic eruptions: 25 Nov. 2014_10:11 - after 20 years of low activity



Web-cam scenes of 25-27 Nov. 2014 from Archive every hour
<http://es.educ.kumamoto-u.ac.jp/volc/aso/>

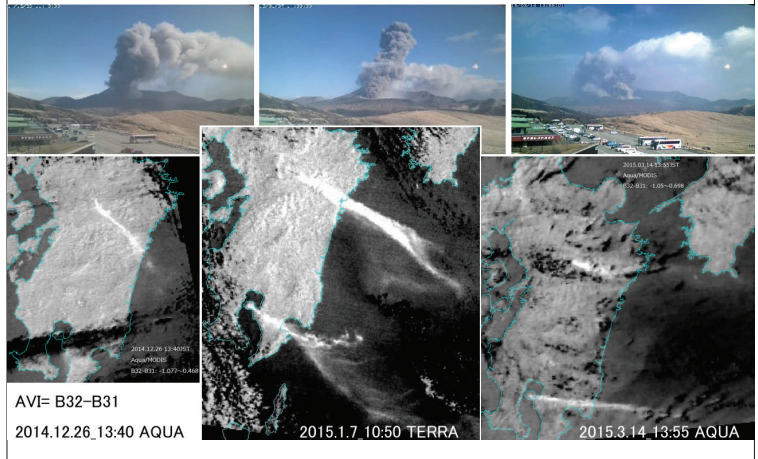


Eruptive volcanoes in Kyushu, Japan to discuss

1. Aso-Nakadake: Ash eruptions since 25 Nov. 2014
2. Kirishima-Shinmoedake: Sub-Plinian eruptions 26-27 Jan. '11
3. Sakurajima: Vulcanian eruptions since 1955 with increased activity of Showa crater since 2009
4. Kuchierabujima-shindake: Strong eruption on 29 May 2015, resulting evacuation of the residents

Web-Cam vs. MODIS AVI images

<http://es.educ.kumamoto-u.ac.jp/sat/aso/>



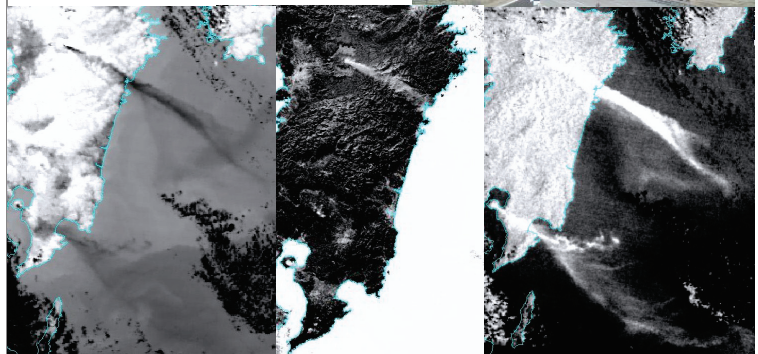
1. Aso volcano



Web-camera at Aso Volcano Museum ■, 3km west from Nakadake △
 Kumamoto Univ.-AVM collaboration, since May 2009

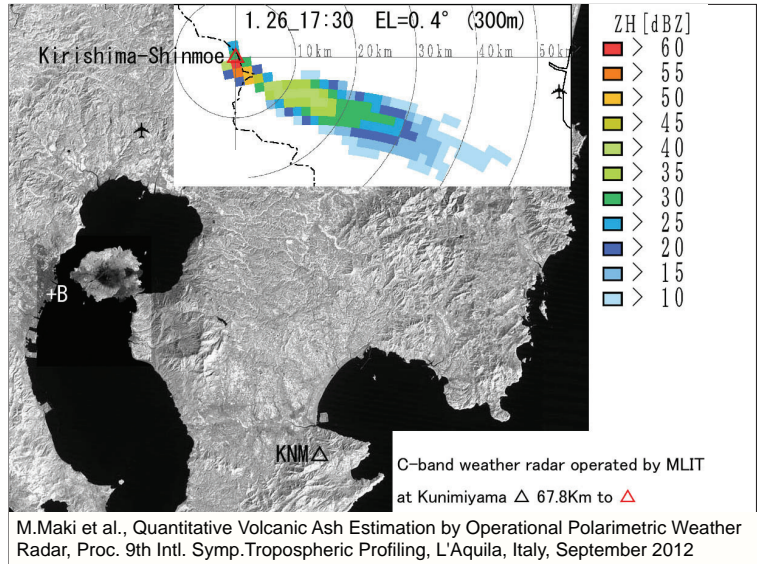
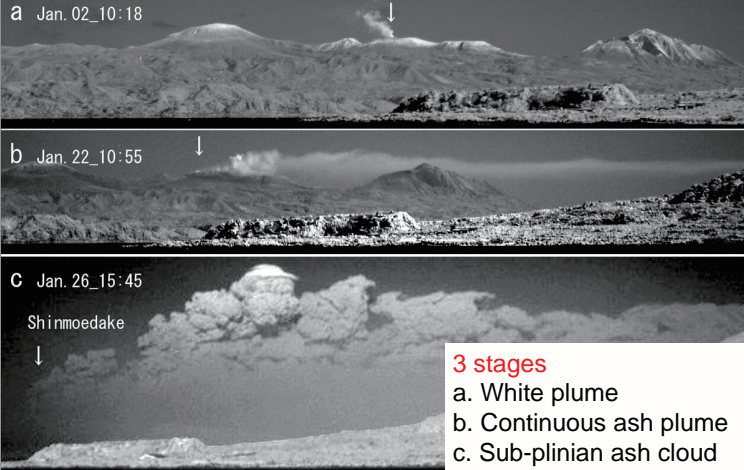
Methods of ash detection

2015.1.7_10:50
 TERRA/ MODIS
 B20, B1-B2, B32-B31=AVI

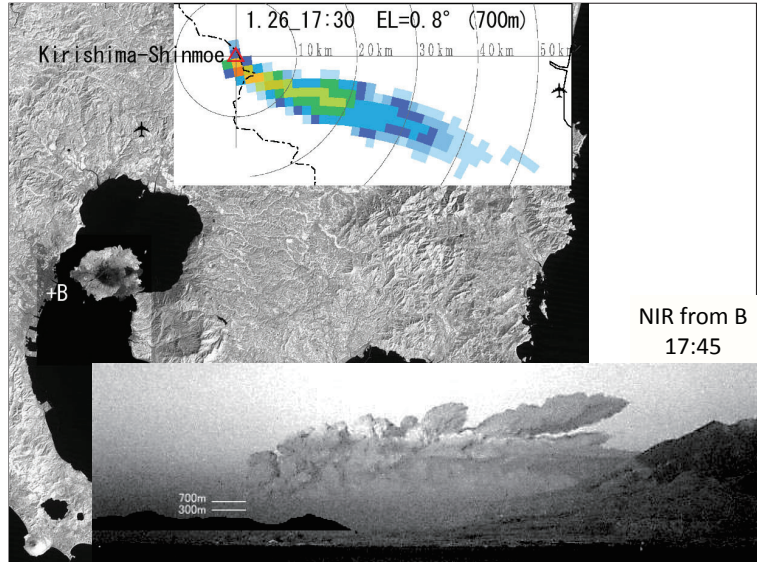
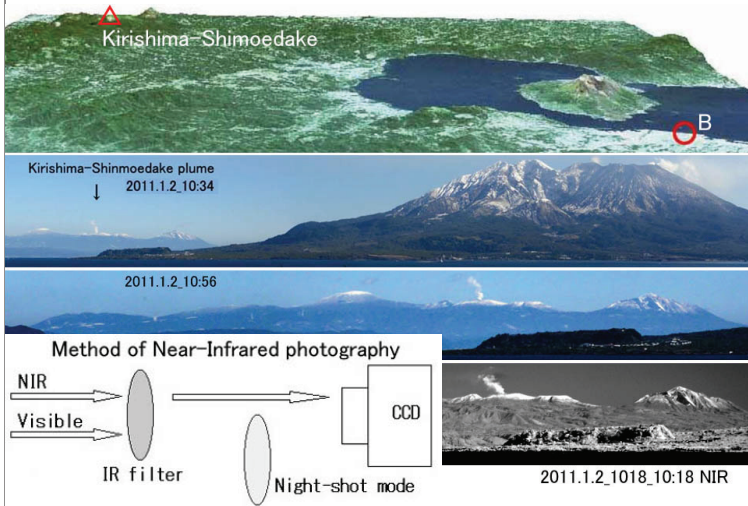


2. Kirishima volcanoes

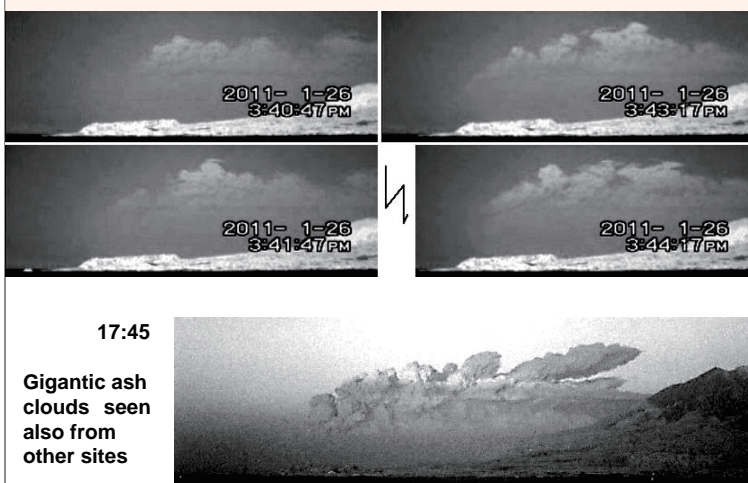
Sub-Plinian eruptions 26-27 Jan. 2011



Plume observation 50 km away from B



Sub-plinian erup. 1. 26_15:30-



Satellite images

NOAA-APT (TIR) : Kumamoto Univ.

MODIS/Terra, Aqua : Stations at Chiba, Abashiri and Miyakojima by Tokyo Univ. Information Sciences : Automatic Vis. Quick Look & Aerosol Vapor Index = AVI = Band32-Band31 ($12\mu\text{m} - 11\mu\text{m}$)

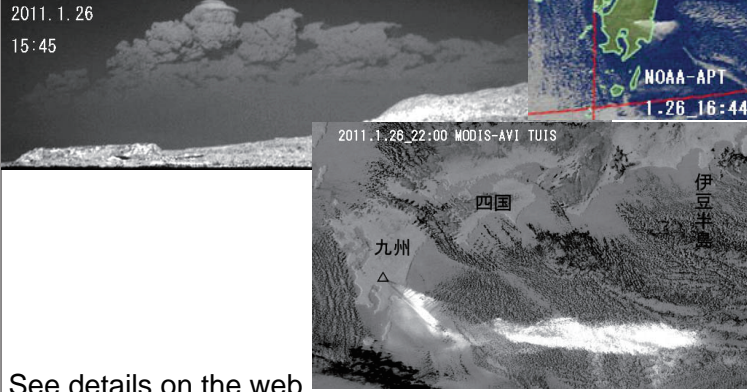
MTSAT-2 ERI/IIS, Tokyo Univ. \rightarrow AVI

Forward trajectories : NOAA HYSPLIT Model, every 6 hour

Ground observation

Visible & NIR automatic interval recordings at B and other sites, supplemented with manual zooming and photo-shootings

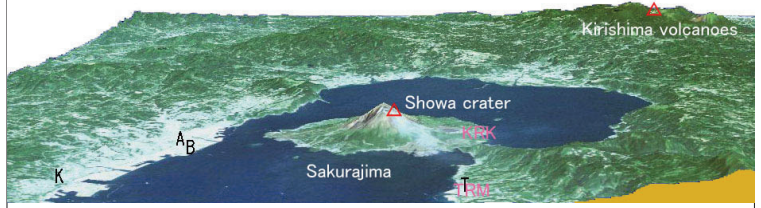
Satellite images of sub-plinian eruptions 1.26_15:30-1.27



See details on the web
<http://wwwkav.mydns.jp/volc/kiri/kiri11/kiri11top.htm>

3. Sakurajima volcano

Increased activity of Showa crater during 2009-2015



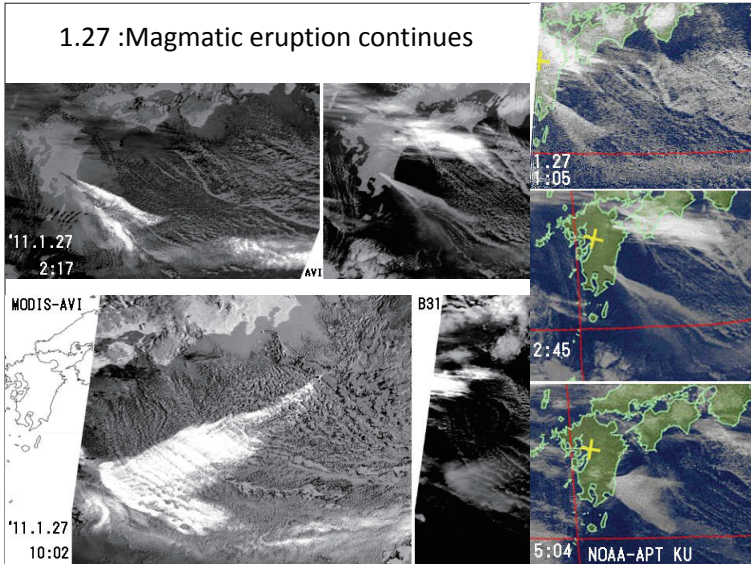
Web-cam sites

- A: Kagoshima Univ., 11km W from the crater (+Fish eye 2013-)
- B: Site near Kamoike port, 10km WSW (NIR, + manual photo.)
- K: Kinkodai, 17km SW
- T: Tarumizu city office, 10km SSE

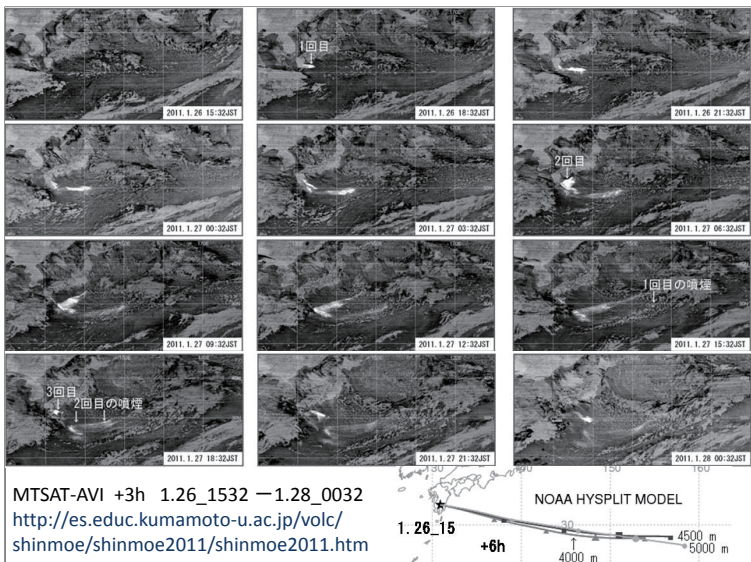
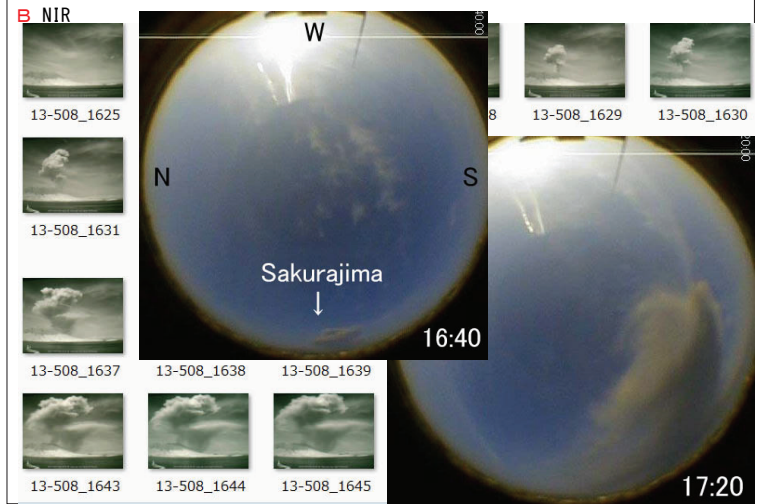
Radar sites

- KRM: Kurokami, Special obs. 29 Mar.-8 June '14. Ka-band Radar
- TRM: Tarumizu station, MLIT. X-band MP Radar

1.27 :Magmatic eruption continues

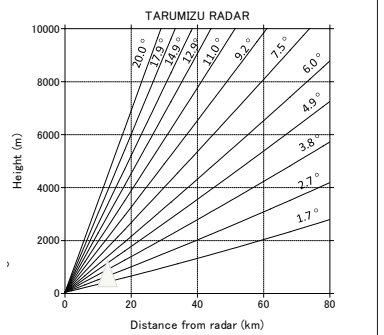
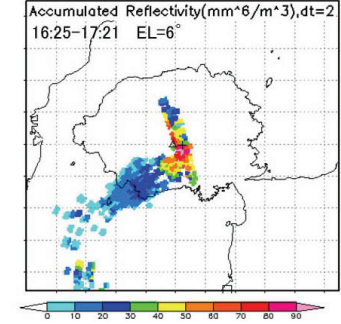


2013.5.08 _16:27 3300m Eruption

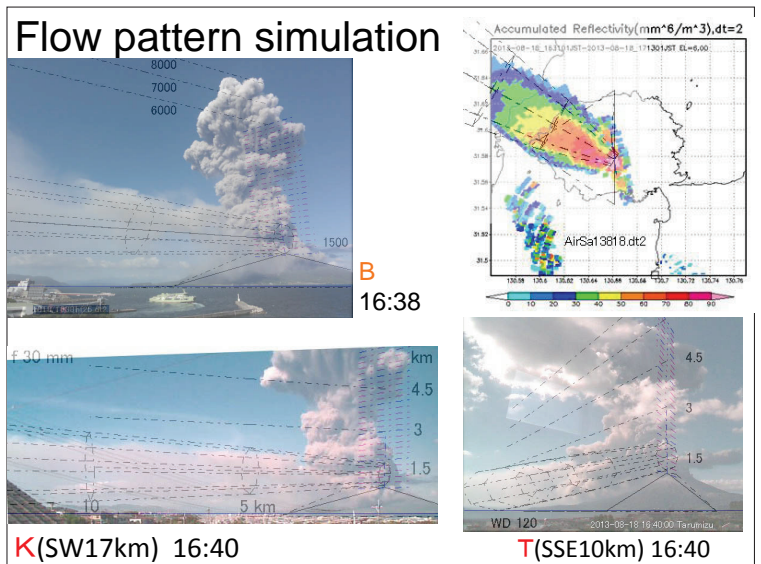
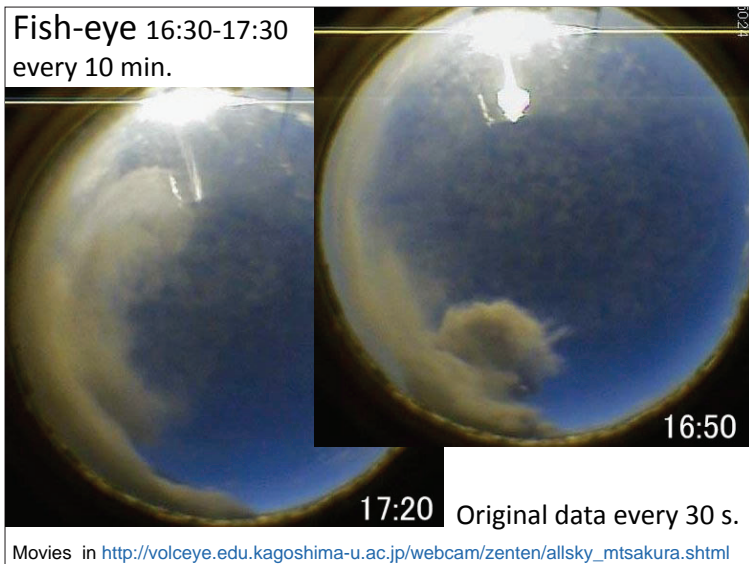
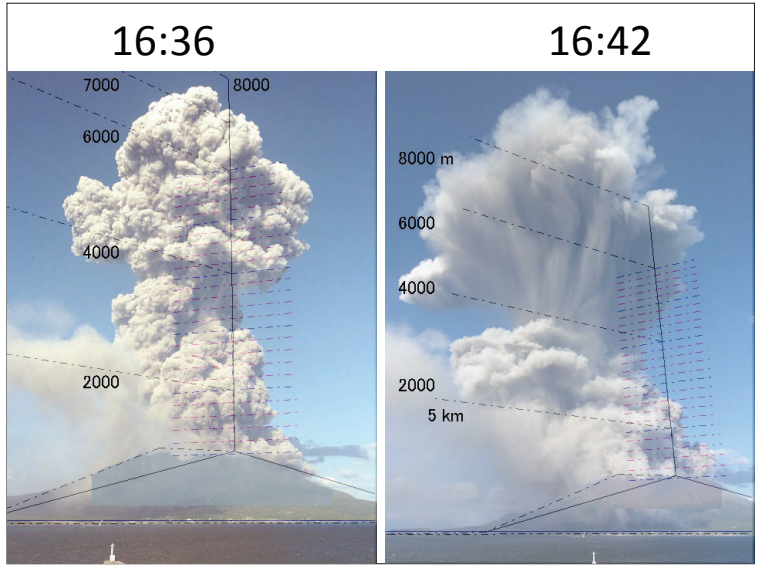
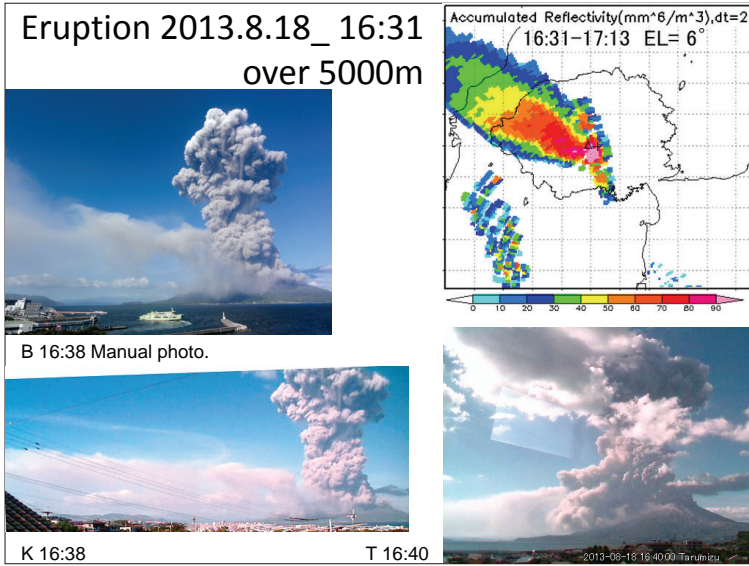
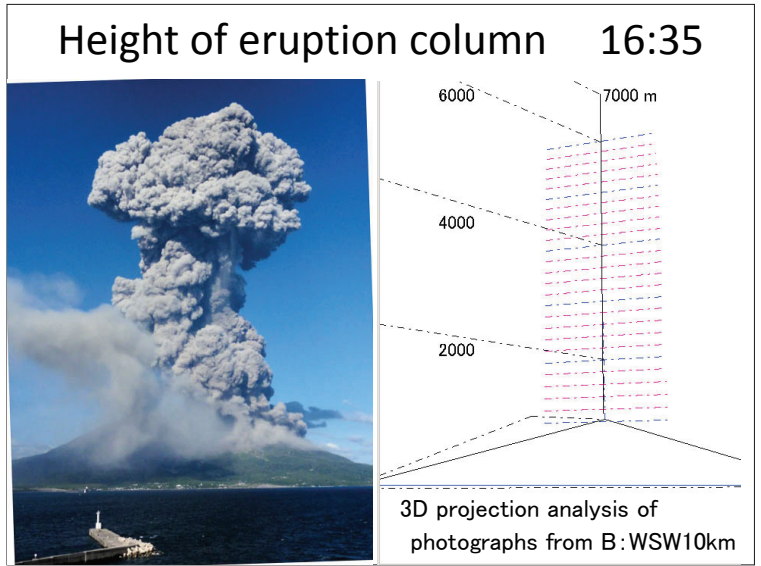
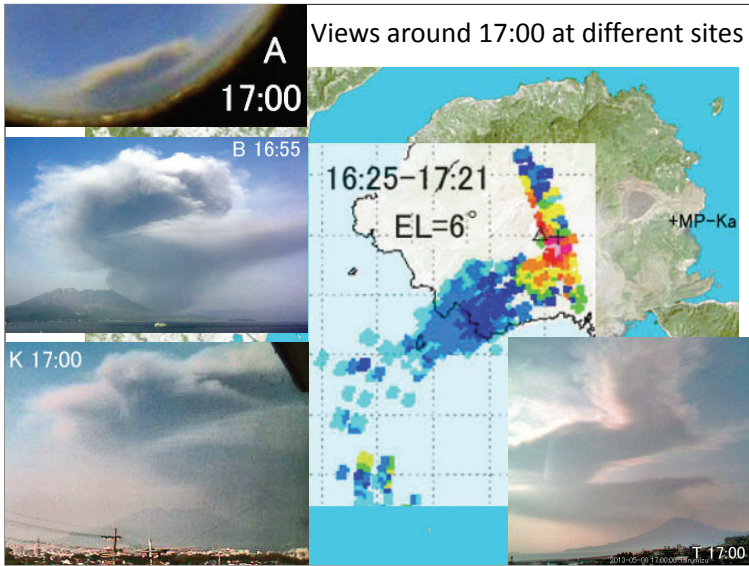


MTSAT-AVI +3h 1.26_1532 -1.28_0032
<http://es.educ.kumamoto-u.ac.jp/volc/shinmoe/shinmoe2011/shinmoe2011.htm>

2013.5.08_16:27 3300m Eruption



No	deg	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
e12	20.0																					
e11	17.5																					
e10	14.9																					
e09	12.3																					
e08	9.7																					
e07	7.1																					
e06	4.5																					
e05	1.9																					
e04	1.7																					
e03	2.7																					
e02	1.7																					



Sakurajima eruptions from Showa crater, etc.

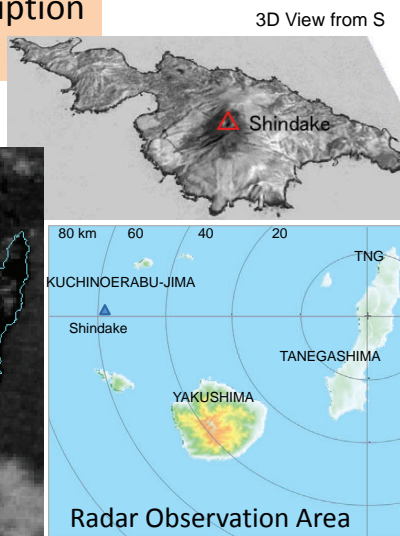
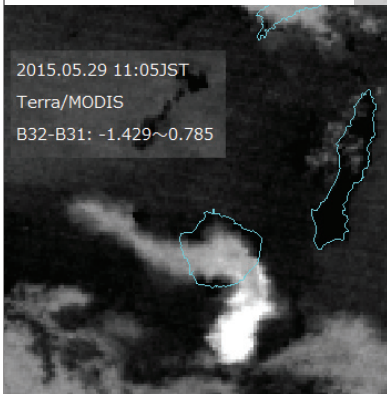
- Movies of notable eruptions
<http://es.educ.kumamoto-u.ac.jp/volc/sakushowa/notable/>
- Volcanic eruption clouds in southwest Japan observed from the ground and satellites, IAVCEI Conf. , Kagoshima, 2013.7 K.K., S.T., N.I., C.K.+ I. HARADA and J. PARK
- Mechanism of high concentration events of sulfur dioxide at the surface around Sakurajima Volcano, , IAVCEI Conf. , 2013.7, KINOSHITA, SAKAMOTO, KANAGAKI and IINO
- Papers and presentations in
<http://wwwkav.mydns.jp/volc/index-e.html>
- Volcanic clouds at Sakurajima in the 21th century
<http://wwwkav.mydns.jp/volc/sa21c/sa-menu.htm>

Acknowledgements

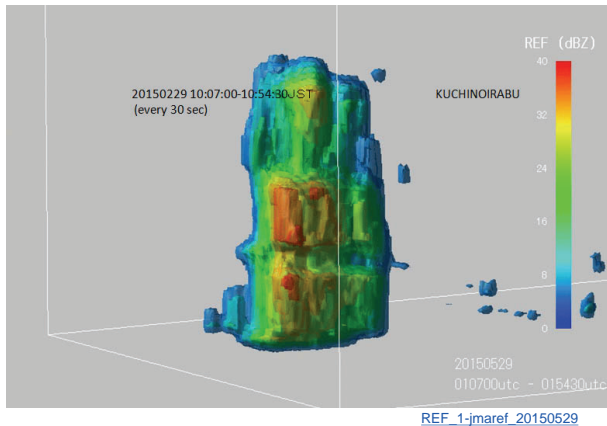
- We are grateful to Aso Volcano Museum and Tarumizu City Office for the support of web-camera observation, and Tokyo Univ. Information Sciences, Earthquake Res. Inst./Inst. Industrial Sci., Tokyo Univ. and NASA LAADS web. for providing the satellite data.
- We also thank very much River Bureau and Japan Meteorological Agency, Ministry of Land, Infrastructure, Transport, and Tourism, for providing operational weather radar data.
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4. Kuchierabujima eruption on 29 May 2015

66 min. after explosion at 9:59 JST



Radar 3-D View of Volcanic Ash Cloud



Thank you very much!