INTERNATIONAL HYDROGRAPHIC ORGANIZATION	INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (of UNESCO)

UNDERSEA FEATURE NAME PROPOSAL

(Sea **NOTE** overleaf)

Note: The boxes will expand as you fill the form.

Name Proposed:	Amami Calderas	**Ocean or Sea:**	East China Sea

Geometry that best defines the feature (Yes/No) :						
Point	Line	Polygon	Multiple points	Multiple lines*	Multiple polygons*	Combination of geometries*
					yes	

** Geometry should be clearly distinguished when providing the coordinates below.*

	Lat. (e.g. 63°32.6'N)	Long. (e.g. 046°21.3'W)
Coordinates:	Caldera1	Caldera1
	28°36.36'N	128°46.63'E
	28°33.71'N	128°47.82'E
	28°33.26'N	128°48.70'E
	28°34.68'N	128°50.37'E
	28°35.71'N	128°51.46'E
	28°37.94'N	128°50.54'E
	28°38.95'N	128°49.57'E
	28°38.81'N	128°47.41'E
	28°37.52'N	128°46.45'E
	28°36.36'N	128°46.57'E
	Caldera2	Caldera2
	28°29.72'N	128°41.90'E
	28°29.88'N	128°44.79'E
	28°31.09'N	128°47.08'E
	28°33.60'N	128°47.17'E
	28°35.58'N	128°45.90'E
	28°36.59'N	128°44.73'E
	28°35.45'N	128°41.72'E
	28°34.41'N	128°40.10'E
	28°32.54'N	128°40.15'E
	28°30.59'N	128°41.03'E
	28°29.75'N	128°41.92'E
	Caldera3	Caldera3
	28°28.07'N	128°40.07'E
	28°28.51'N	128°41.18'E
	28°29.18'N	128°41.92'E

	28°30.17'N 28°30.06'N 28°29.53'N 28°28.61'N	128°41.22'E 128°39.85'E 128°39.19'E 128°39.63'E

Feature Description:	Maximum Depth:	790 m	Steepness :	0 ~ 30 °
	Minimum Depth :	72 m	Shape :	oval
	Total Relief :	718 m	Dimension/Size :	Caldera1: 53 km^2 Caldera2: 112 km^2 Caldera3: 13 km^2

Associated Features:	Volcano tectonic graben, lava dome, volcanic cone, fault, fault scarp

Chart/Map References:	Shown Named on Map/Chart:	
	Shown Unnamed on Map/Chart:	W182B, 6315
	Within Area of Map/Chart:	

Reason for Choice of Name (if a person, state how associated with the feature to be named)**:**	Geographic name: Named after the adjacent Amami Oshima Island

Discovery Facts:	Discovery Date:	2007
	Discoverer (Individual, Ship):	H. Yokose (2007)

Supporting Survey Data, including Track Controls:	Date of Survey:	2011 Aug.
	Survey Ship:	Natsushima
	Sounding Equipement:	SEABAT 8160
	Type of Navigation:	GPS
	Estimated Horizontal Accuracy (nm):	0.01 nm
	Survey Track Spacing:	1 to 0.6 nm
	Supporting material can be submitted as Annex in analog or digital form.	

Proposer(s):	Name(s):	Hisayoshi Yokose
	Date:	2012 April
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	Organization and Address:	Faculty of Science, Kumamoto University 2-39-1 Kurakami Chuoku, Kumamoto 860-8555, Japan
	Concurrer (name, e-mail, organization and address):	

Remarks:	References Sato and Yokose (2007) Geochemical characteristics of the volcanic rocks from the Tokara islands, Ryukyu volcanic arc, Japan. AGU Fall Meeting V41D-0825. Yokose et al. (2009) Regularly spaced submarine rhyolitic-calderas on the Tokara volcanic ridge, northern Ryukyu arc, Japan. EGU Meeting XY541, Geophysical Research Abstracts.vol. 11, EGU2009-2283-5.

	Yokose et al. (2010) Mid-Pleistocene submarine acidic volcanism of the Tokara Islands, Japan. Jour. Geogr. 119, 46-68. Yokose et al. (2010) Submarine volcanic front on the central Ryukyu arc. JPGU Meetng, SVC063-32. Yokose et al. (2010) Evidence of recent hydrothermal activity in the Amami submarine caldera: discovery of Fe-Mn crusts enriched in As and Mo. JPGU Meeting, R219-008. Ishibashi (2011) Natsushima cruise report NT11-15, Japan Agency for Marine-Earth Science and Technology, Yokosuka, Japan.(http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/NT11-15_all.pdf)

NOTE : This form should be forwarded, when completed :

a) **If the undersea feature is located inside the external limit of the territorial sea** :-
to your "National Authority for Approval of Undersea Feature Names" (see page 2-9) or, if this does not exist or is not known, either to the IHB or to the IOC (see addresses below);

b) **If at least 50 % of the undersea feature is located outside the external limits of the territorial sea** :-
to the IHB or to the IOC, at the following addresses :

International Hydrographic Bureau (IHB) 4, Quai Antoine 1er B.P. 445 MC 98011 MONACO CEDEX Principality of MONACO Fax: +377 93 10 81 40 E-mail: info@ihb.mc	Intergovernmental Oceanographic Commission (IOC) UNESCO Place de Fontenoy 75700 PARIS France Fax: +33 1 45 68 58 12 E-mail: info@unesco.org

Explanation for "Amami Calderas"

Amami Calderas is a newly identified submarine silicic caldera complex, 50 km northwest of Amami Oshima, Ryukyu Islands. The caldera complex lies on the southern extension of the Tokara Volcanic Chain, which is the volcanic front of the northern Ryukyu arc. The caldera complex is located between active volcanoes, Yokoate Shima and Iou-Torishima. Although the Ryukyu arc has been long recognized as an archetypal intra-oceanic arc-back arc system, the arc volcanism has remained poorly documented primarily due to its submarine character. Detailed bathymetric and rock dredge sampling cruises on the middle part of the submarine arc volcanoes have been revealed the volcanic morphology, petrography and magma compositions.

Amami Calderas consists mainly of three calderas aligned NE-SW: Caldera-1、Caldera-2, Caldera-3. They have an asymmetrical structure and associated with post-caldera rhyolitic central cone(s) and satellite domes on the caldera rim. Some ENE-WSW strike faults across the Amami Calderas area. The polygonal structures could be controlled by tectonic movements related to opening of the Okinawa Trough, which has been characterized by the ENE-WSW strike faults.

Caldera-1, elongate along a strike of NNW, is a "trapdoor" type caldera, 5 km wide and 9 km long. Its inner walls are 100-200 m high in relief. Because its floor inclines to the SSE, depths of the floor change from 800 m at the SSE margin to 500 m at the NNW margin. Volume of the volcanic depression is estimated 9.4 km^3. A post-caldera central cone, 2 km in diameter, rises 200 m above the caldera floor, 780 m in depth at the southwestern margin.

Caldera-2, elongate a strike of NNW, is a "piecemeal" type caldera, 8 km wide and 10 km long, and has a relatively flat floor at 650 m in depth. Most of its inner walls rise 100-200 m above its floor, but the relief of the southern escarpments are up to ~450 m due to the post-caldera mass wasting. Volume of the volcanic depression is estimated 14.3 km^3. A post-caldera central cone is the largest one in this area, 4 km in diameter, rises 539 m above the caldera floor, 620 m in depth at the northwestern margin, and shows sector collapse on its summit.

Caldera-3, elongate a strike of NNW, is a "trapdoor" type caldera, 4.5 km wide and 5 km long. Because its floor inclines to the south, depths of the floor change from 720 m at the southern margin to 600 m at the northern margin. Most of its inner walls rise ~100 m above its floor, but height of the southeastern escarpments are up to ~400 m due to the post-caldera mass wasting. Volume of the volcanic depression is estimated 1.8 km^3. A post-caldera central cone, 2 km in diameter, rises 335 m above the caldera floor, 710 m in depth at the southwestern margin.

Dredge samplings were carried out at 21 stations in the Amami Calderas area during several cruises. Most of the dredged rock samples are highly vesicular fresh pumices without manganese coating and alteration. Some dredged large pumice clasts (cobbles and boulders) are prismatic with quenched margins and internal polyhedral joints. The occurrences indicate that dredged samples are not a drift pumice but in situ.

All dredged rock samples are fresh porphyritic glassy pumice with phenocrysts (~6 % by volume) dominated by plagioclase (< 1.5 mm in diameter) but with orthopyroxene (< 1 mm

in diameter) and Fe-Ti oxide (< 0.5 mm). The groundmasses of pumices are highly vesicular clear volcanic glass without alteration. They indicate elongated (tubular) or spongy texture.

Dredged volcanic samples in the Amami Calderas are rhyolite ranging between 70 and 77 wt. % SiO_2 (modal value = 76 wt. %) . Most dredged rock samples can be plotted on slightly above the boundary between low-K and medium-K series in a K_2O vs. SiO_2 variation diagram. Chemical characteristics of the rhyolitic pumices are very similar to acidic rocks recovered from submarine flanks of the Yokoate Shima and Iou-Torishima Islands. It suggests that Amami Caldras has been produced as a submarine silicic volcanism on the volcanic front, middle of the Ryukyu arc.

The age of the calderas is unknown, but it may be as young as Mid-Pleistocene age based on occurrences of the rock and its tectonic setting. A “Kuroko-type” polymetallic sulfide ore, notably rich in Sb and Ag, on the caldera rim at 480 m depth, was found. Fe-Mn oxide crusts rich in Mo and As were also discovered from some rhyolitic domes. Magmatic system of Amami Calderas at depth may still retain sufficient heat to sustain an actively growing intra caldera Kuroko-type polymetallic sulfide deposit.

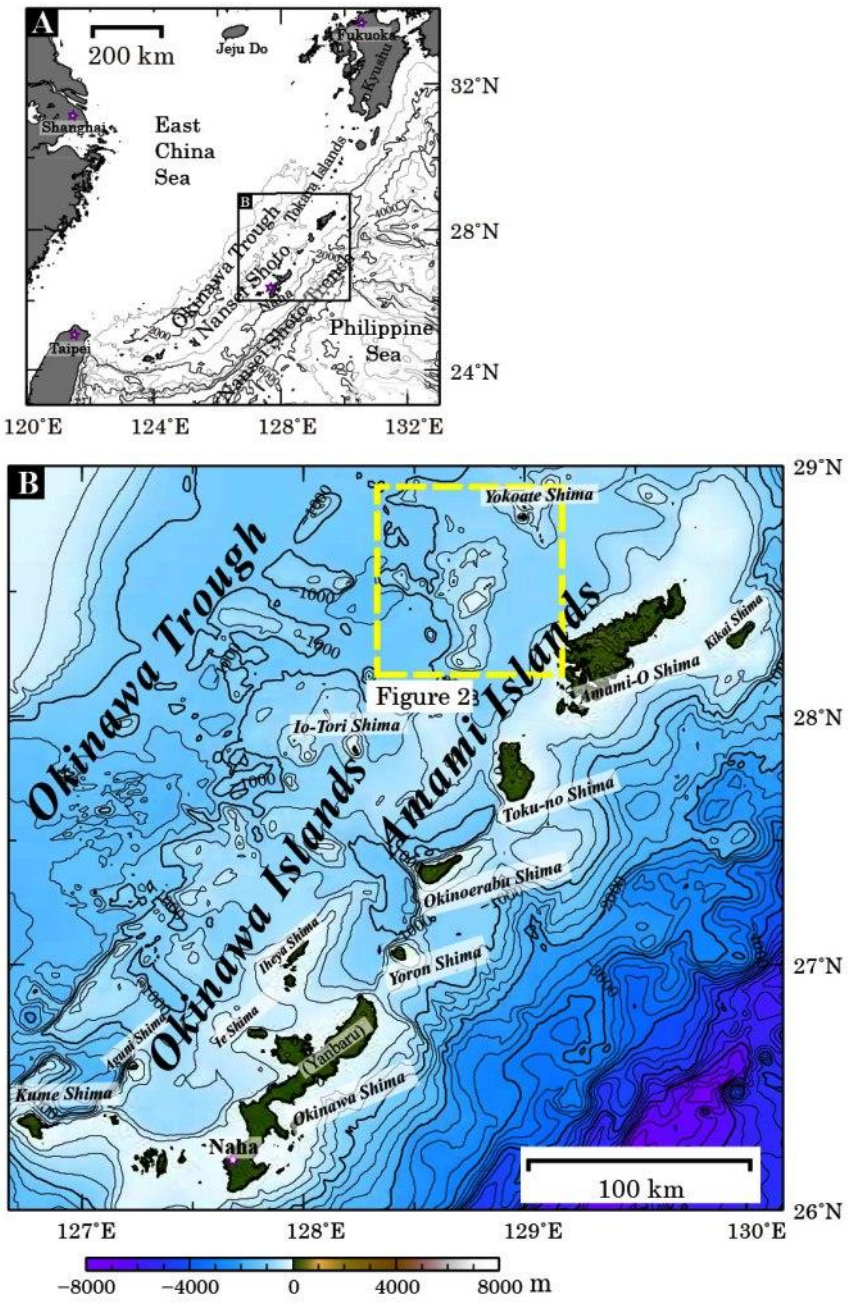

Figure 1. (A) Schematic bathymetric map (contour interval 1000 m) of the Nansei Shoto, Ryukyu Islands, and East China Sea. (B) Bathymetric details (contour interval 200 m) of the middle part of Nansei Shoto, the Okinawa and Amami Islands. Inset yellow box shows the Amami Calderas area. The area is covered by subsequent figure 2. The Amami Calderas lies on southwest of the Tokara volcanic chain.

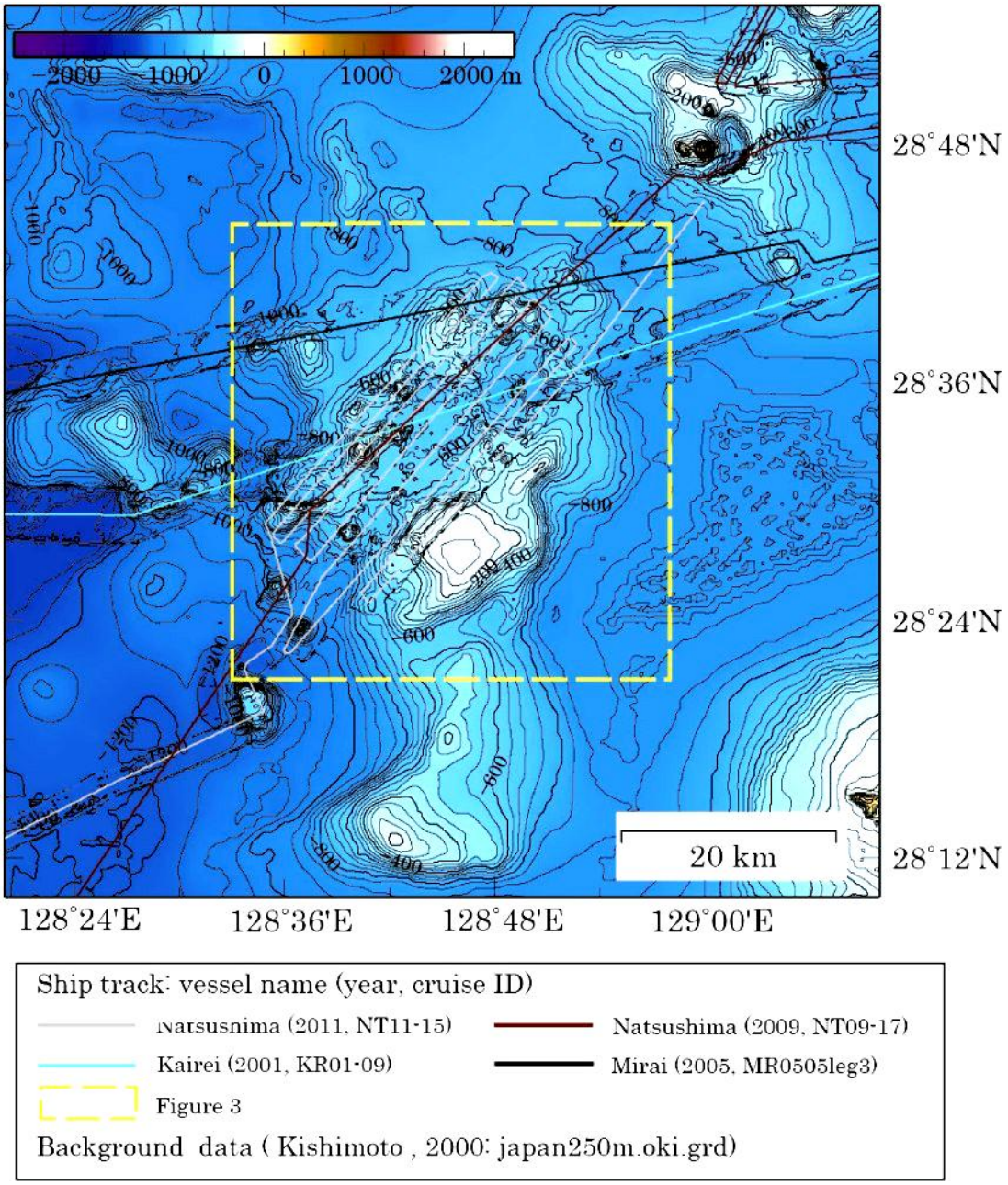

Figure 2. Distribution of multibeam tracklines from which bathymetry data were derived. (contour interval 50 m). Inset yellow box shows the Amami Calderas covered by subsequent figure 3. Kishimoto (2000) was used as a basemap grid in this bathymetric map.

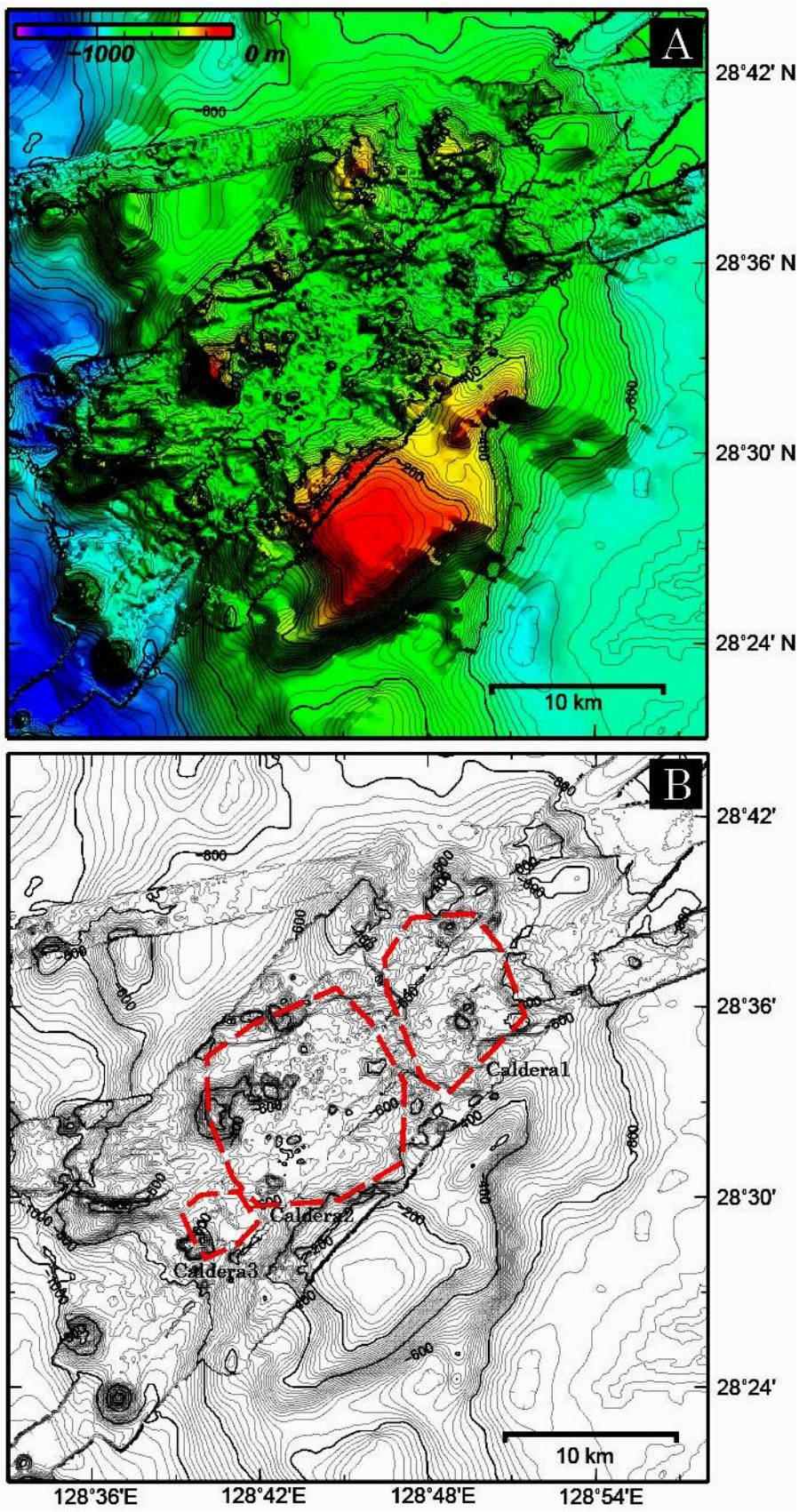

Figure 3. (A) Color shaded bathymetric map of the Amami Calderas (contour interval 20 m). (B) The polygons delineating the feature are shown in red dash lines (contour interval 20 m).

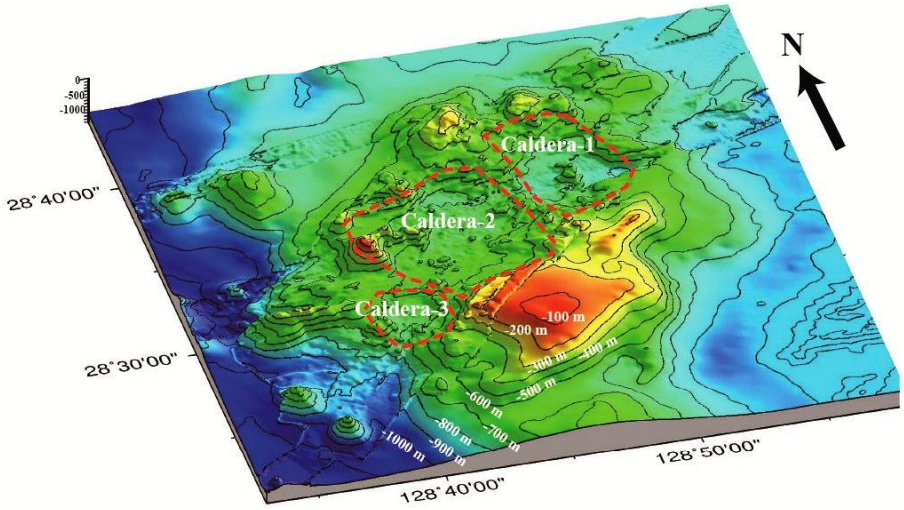

Figure 4. Three-dimentional perspective view of the Amami Calderas (contour interval 100 m) . The polygons delineating the feature are shown in red dash lines.

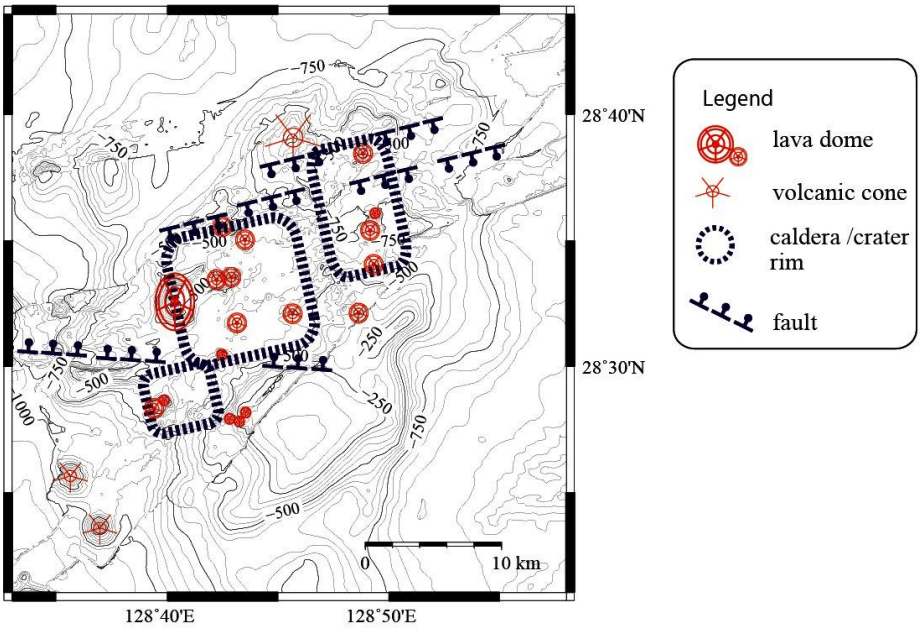

Figure 5. Geological interpretation (contour interval 50 m) of the Amami calderas area based on the volcanic geomorphology and dredge samples.