
Cruise level information
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cruise-id::RAMA08WT
cruise-name::RAMA LEG 8
cruise-narrative::purpose is near-bottom geological and geophysical study of the actively spreading Mariana Trough back-arc basin. Deep tow transponder-navigated surveys will examine the axis of spreading near 18N, 144.8W, a nearby cross-fracture that may be a transform fault, and two sites on the flanks of the spreading center.
science-themes::Geological Oceanography, Marine Geophysics
scientific-party-equipment::GRAVITY CORE, ROCK DREDGE, DEEP TOW SURVEY
scientists::LONSDALE, P. - CHIEF SCIENTIST - SCRIPPS INSTITUTION
scientists::LOWENSTEIN, C. - SPECIALIST - SCRIPPS INSTITUTION
scientists::BOEGEMAN, D. - SR DVLMT ENGR - SCRIPPS INSTITUTION
scientists::JAIN, J. - ASSOC DVLMT ENG - SCRIPPS INSTITUTION
scientists::GLEASON, D. - PR ENGR AID - SCRIPPS INSTITUTION
scientists::OTT, J. - COMPUTER TECH - SCRIPPS INSTITUTION
scientists::LAWHEAD, R. - PROGRAMMER - SCRIPPS INSTITUTION
scientists::LINZER, M. - ENGR. AID - SCRIPPS INSTITUTION
scientists::SMITHY, W. - PHOTOGRAPHER - SCRIPPS INSTITUTION
scientists::BALTUCK, M. - STUDENT - SCRIPPS INSTITUTION
scientists::DRAIGO, N. - STUDENT - NON-SCRIPPS EMPLOYEE
scientists::STOUT, P. - STUDENT - SCRIPPS INSTITUTION
scientists::WILSON, R. - RESIDENT TECH - SCRIPPS INSTITUTION
scientists::YORO, TAMIO - STAFF - JAPAN
scientists::KAWANAKA, TAKU - STAFF - JAPAN
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cruise-start-date::1980-12-03
cruise-start-port::AGANA,GUAM
latitude-start::13.444
longitude-start::144.56779
cruise-end-date::1981-01-29
cruise-end-port::AGANA,GUAM
latitude-end::17.01
longitude-end::133.49911
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latitude-minimum::13.444
longitude-minimum::133.49911
latitude-maximum::17.01
longitude-maximum::144.56779
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data-corrected-for-ship-draft::YES
data-corrected-for-tides::NO
data-types::
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pi-city-state-zip::La Jolla, CA 92093-0205
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SIO Log weekly reports
Rama Expedition Leg 08

Thomas Washington 121259Z January 1981. Struggled through first few days of bad weather, rampant seasickness, faulty gear and broken equipment. All now fixed. Completed one deep tow survey of part of the Mariana Trough backarc spreading axis at 17 deg 50 min north. Structurally similar to typical slow-spreading mid-ocean ridge, with one kilometer high rift walls, rift terraces with sediment veneer, and one kilometer wide inner rift with bare pillow lava plus axial peaks. Just like famous area. Extrusive zone for fissure eruptions only about one kilometer wide. Extended surveys to part of large east-west cross fractures at 17 deg, 38 min north. Fracture zone contains short echelon transforms linking three kilometers long spreading segments that are partly swamped with turbidites. So far no evidence for hydrothermal activity; we move on to more likely prospects next week. Lonsdale

Thomas Washington 200140Z January 81. 1. Explored varying structural styles of backarc spreading center in Mariana Trough. After deep tow study of typical slow-spread ridge made similar surveys of aberrant spreading segments marked by excessive volcanism and sedimentation. At 18 degrees north a monstrous volcano straddles the spreading axis: At 20 km long and 1 km high it is more like a Hawaiian shield of the crest of the fast-spread East Pacific Rise than a normal rift-valley central peak. Found that the volcano has a rift zone with pit craters etc., and is surrounded by wide plains of sheet and pillow lava, as yet underformed by tectonism though they smother zones of tensional faulting and a transform fault zone. By contrast at 17 degrees 30 min north where turbidity currents from the island arc have access to a spreading segment, the axis is a deep sediment-filled rift as in the Gulf of California. We photographed a few ridges of pillow lava standing above fissured and faulted sediment of rift floor, but mostly non-eruptive dike and sill intrusion. Current erosion of uplifted turbidite and diabase sequences now off-axis has etched out dikes as narrow as 50 meters high rock walls trending straight across rough scoured terrain. 2. Deep tow operations interrupted yesterday by break in middle of our 9000 meter tow cable, severing conductor, all inner armor , and some outer strands. Enough outer strands held to allow safe retrieval of fish. Now have 5400 meters useable tow cable. Lonsdale

Thomas Washington 262235Z January 81. Returning to Guam at end of lively deep tow leg in Mariana Trench. This week surveyed shallowest part of spreading axis at 18 degrees 12 minutes north and discovered ten patches of anomalously warm bottom water over very young lava flows of the linear volcano there. Thermal plumes mostly at flow fronts and maybe caused by shallow cooling of recent eruptions rather than a deep-seated hydrothermal system. On the summit of an abyssal hill with know high heat flow 40 km west of spreading axis we did map and photograph a chain of 25-50 meter high hydrothermal mounds similar in size and shape t those intensively studied near Galapagos Rift, and clusters of low 100-200 meter wide sediment domes also believed of hydrothermal origin. Left transponder array here so Anderson (Lamont) and Bender (Rhode Island) can further study and sample these structures on Leg 11. No large thermal plumes over mounds, but we found warm discharges at the fault-scarp margin of the hill, and dredging there yielded large mass of sinter deposit, mainly an unidentified white acicular minerals. Brief dredging campaign at sediment-smothered part of spreading axis got fresh and severely altered pillow lava and dolerite, intruded turbidities mud stones, and colorful metal oxide deposits. Mariana Trough back-arc axis a nice varied microcosm of the map or major plate-accretion system. Don t believe Guam posters though; weather generally lousy entire leg. Lonsdale

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MGD77 file information
4RAMA08WTMGD77           5533120030627SCRIPPS INSTITUTION OF OCEANOGRAPHY    01
USA               R/V THOMAS WASHINGTON1SHIP  YAYANOS A.                     02
RAMA LEG 8                                                                   03
19801203AGANA,GUAM                     19810129AGANA,GUAM                    04
SATNAV,AUTO LOG GYRO+2D DOPPLER SPD LOG LINEAR INTERP.BETWEEN ADJACENT FIXES 05
3.5KHZ/RAYTHEON UGR RECORDER/WIDE BEAM  ANALOGUE RECORDS,PUNCHED CARDS       06
VARIAN MFD PROTON PRECESSION MOD 4970   ANAL.RECORDS,CARDS                   07
ASKANIA GSS2,ANSCHUTZ ELECT. GYRO TABLE ANALOGUE RECORDS                     08
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A(I1,A8,I3,I4,3I2,F5.3,F8.5,F9.5,I1,F6.4,F6.1,I2,I1,3F6.1,I1,F5.1,F6.0,      10
F7.1,F6.1,F5.1,A5,A6,I1)                                                     11
0501SECONDSWEEP14630005 MINUTE INTERVAL                                      12
05006            04IGRF 1975   LIN. INTERP.POINTS WITHIN ONE DEGREE SQUARE   13
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