

GRADUATE SCHOOL OF OCEANOGRAPHY  
UNIVERSITY OF RHODE ISLAND  
KINGSTON, R.I. 02881

CRUISE REPORT FOR R/V TRIDENT 172

OBJECTIVE: Atmospherically Transported Ash Downwind From Selected Mediterranean Volcanic Eruptions

SCHEDULE: Departed Iraklion, Crete 1600hrs, 17th September, 1975  
Arrived Naples, Italy 1800hrs, 3rd October, 1975

FUNDING: National Science Foundation, Grant No. DES75-04877

SCIENTIFIC PARTY:

Norman D. Watkins	Chief Scientist	GSO/URI
Craig Amerigian	Graduate Student	GSO/URI
W. Kenneth Freed	Graduate Student	GSO/URI
Ter-Chien Huang	Research Scientist	GSO/URI
Haraldur Sigurdsson	Research Scientist	GSO/URI
Arthur G. Miller	Marine Technician	GSO/URI
Stephen F. Imms	Marine Technician	GSO/URI
Daniel Stanley	Research Scientist	Smithsonian Inst. (USA)
Henri Got	Research Scientist	Univ. Perpignon (France)
Dragoslav Ninkovich	Research Scientist	Lamont-Doherty (USA)
Stephen Sparks	Research Scientist	Univ. Lancaster (England)
Ian McDougall	Research Scientist	National Univ. (Australia)

SCIENTIFIC OBJECTIVE AND PERFORMANCE. The major objective of the cruise was to obtain a collection of piston cores and 3.5kHz records, in order to delineate in time and space the extent and age of volcanic ash from the archeologically significant eruptions of Santorini Island, in the Aegaen Sea. The associated intended laboratory studies include diverse aspects of the chemical and magnetic properties of the ash, and determination of the paleoexplosivity of the eruptions. Subordinate activities included the collection of a few piston cores downwind from Mt. Etna in eastern Sicily, and south of Mt. Vesuvius near Naples, in order that the potential value of large core collections in these areas can be estimated.

A total of four days of field work on Santorini, and on the slopes of Mt. Vesuvius were conducted immediately before and after the cruise, respectively, under the direction of Dr. Sparks, who has extensive experience in studies of tephra in both areas. A large collection of ashes from known stratigraphic levels was taken for use in arriving at an unambiguous chemical fingerprinting of different eruptions, and for other studies.

In keeping with the UNOLS philosophy, time was made available to scientists from another institution: Drs. Stanley and Got obtained a total of 750km of airgun profiles and six piston cores in the Zante Basin (immediately southwest of Zakynthos), to contribute to an understanding of the sedimentary processes in this small enclosed basin, which is part of a tectonically very active region.

During the cruise a total of 42 stations were occupied. The cruise tracks and stations are given in Figure 1. The track (Figure 1) was designed to include a cross spread normal to the suspect wind direction during the eruptions under study, so that sound net paleowind estimates could be arrived at, as we have described in a publication on the theoretical aspects of volcanic eruptions (Journ. Geophys. Res., vol. 79, p. 3087-3094, 1974). The exact locations, were lengths, and water depths of all stations are given in Table 1. No major instrumental difficulties were encountered on the cruise.

ACKNOWLEDGEMENTS. The performance of Captain Bennett and his crew are acknowledged. edged.

TRIDENT CRUISE 172: CORE LOCATIONS, LENGTHS, WATER DEPTHS

Core No.	Latitude	Longitude	Length (cm)	Depth (m)
172-1	35°33.42'N	25°27.95'W	210	370
2	35°48.3'	25°36.7'	82.0	1380
3	35°53.1'	25°16.4'	96	1835
4	36°05.2'	25°01.5'	325	1370
5	36°22.5'	25°03.8'	0	502
6*	36°37.7'	25°27.4'	10	320
7	36°03.9'	26°00.1'	53	960
8	35°41.2'	26°36.0'	275	1360
9	35°41.6'	26°57.2'	604.6	2505
10	35°25.2'	27°33.4'	450	1080
11	34°08.4'	28°58.7'	745.3	2585
12	33°54.2'	29°15.6'	364	2930
13	33°36.3'	28°52.0'	909	3045
14	33°02.9'	27°58.3'	338	3065
15	32°37.8'	26°49.8'	195	3025
16	32°41.5'	27°31.9'	254	3055
17	34°20.0'	28°20.5'	475	3050
18	34°13.2'	29°03.8'	301	3116
19	34°42.5'	30°00.1'	447	2354
20	35°12.7'	30°33.3'	156	2205
21	35°12.3'	29°45.0'	366	2650
22	35°15.3'	29°01.2'	528	3150
23	34°47.2'	28°49.4'	503	2485
24	34°53.0'	28°27.7'	434	2600
25	36°04.0'	27°15.0'	352	1545
26	36°00.8'	26°44.5'	460	1240
27	35°55.2'	26°03.0'	351	1200
28*	36°13.3'	25°35.7'	0	825
29*	36°16.0'	25°25.8'	46	160
30*	36°17.0'	25°22.9'	511	5600
31*	36°20.5'	25°16.8'	35	420
32	37°36.5'	20°24.6'	427	3345
33	37°25.6'	20°18.2'	340	3820
34	37°21.5'	20°19.2'	705	4060
35	37°21.8'	20°21.0'	612	4140
36	37°29.0'	20°34.0'	693	4147
37	37°38.2'	20°25.5'	277	1200
38	37°13.0'	16°25.9'	813	2860
39	37°21.0'	15°56.6'	0	2480
40	37°25.7'	15°47.2'	32	2320
41	39°17.0'	16°55.5'	340	3150
42	40°01.5'	14°33.1'	528	748

STANLEY  
&  
GOT

\* = gravity core