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Communication Plan for the Interim Tsunami Advisory Information Service to the Caribbean Sea and Adjacent Regions

23 July 2006 Version

NOAA Richard H. Hagemeyer
Pacific Tsunami Warning Center

Communication Plan for the Interim Tsunami Advisory Information Service for the Caribbean Sea and Adjacent Regions

29 June 2006 Version

NOAA Richard H. Hagemeyer Pacific Tsunami Warning Center

Introduction. In the aftermath of the unprecedented December 26, 2004 tsunami disaster that occurred in the Indian Ocean it has been widely recognized that tsunami mitigation measures must be put place in all oceans and seas with a tsunami hazard. Even when that hazard is relatively small, this event demonstrated that the consequences can be tragically and unacceptably great when no mitigation measures are in place.

One part of tsunami mitigation is an early warning system. Countries in the Caribbean region are taking steps to establish such a system and have formed the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions (ICG/CARTWS). However it will likely be some time before the required infrastructure is in place, training is complete, and the region can fully provide this service for itself.

In the interim, and based on discussions that began at the International Conference for the Development of a Tsunami and Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, organized by the UNESCO Intergovernmental Oceanographic Commission's IOCARIBE Sub-Commission jointly with the UN-ISDR, WMO, and UNEP CAR-CU, 1-3 June 2005 in Mexico City, Mexico, the NOAA Richard H. Hagemeyer Pacific Tsunami Warning Center (PTWC) has agreed to provide limited early warning services to the Caribbean Sea and Adjacent Regions (CAR).

Currently available seismic data from the region (Figure 1) will permit a preliminary earthquake evaluation within 10 to 20 minutes of the rupture. As additional stations become are added, this response time will decrease.

Currently available sea level data from the region (Figure 2) are insufficient to quickly detect if a tsunami exists nor measure its size from all the potential source regions. However, new deep ocean gauges have recently been deployed and new coastal gauges are planned to improve this coverage.

Utilizing these data, PTWC will issue "Tsunami Information Statements" for large earthquakes that may cause concern but do not have significant tsunamigenic potential, and "Tsunami Watch Messages" for large potentially tsunamigenic earthquakes as well as for confirmed teletsunamis.

The following sections describe in further detail the criteria for issuance of these products, the general content of the products, how products are disseminated, and recommended procedures for acting on the products.

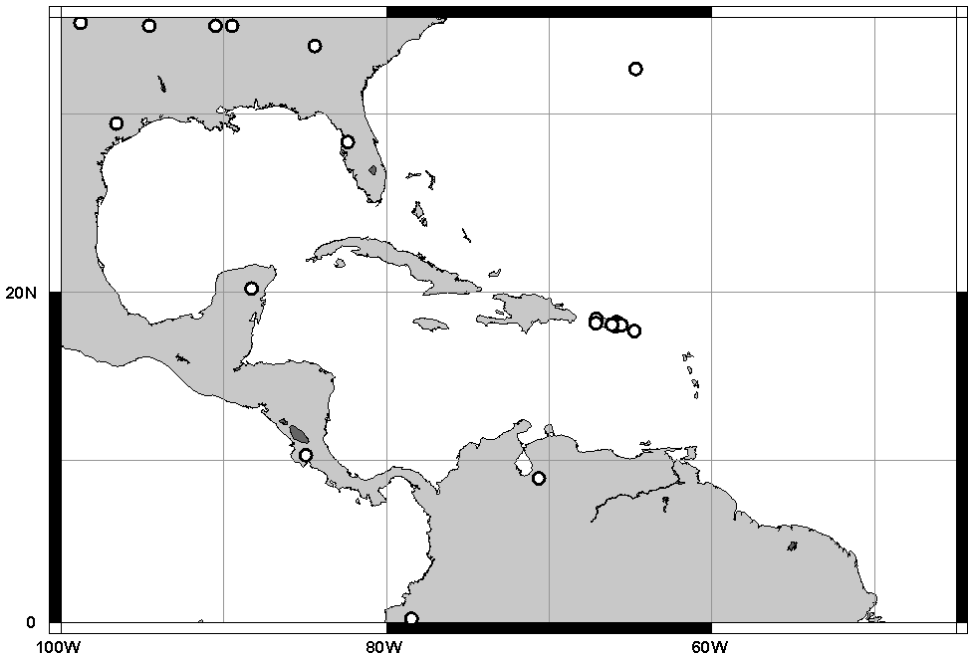

Figure 1. Location of seismic stations (open circles) in or near the Caribbean that provide real time waveform data to PTWC and are used for evaluating earthquakes in the region. A listing of all stations used by PTWC to evaluate earthquakes is provided in Appendix I.

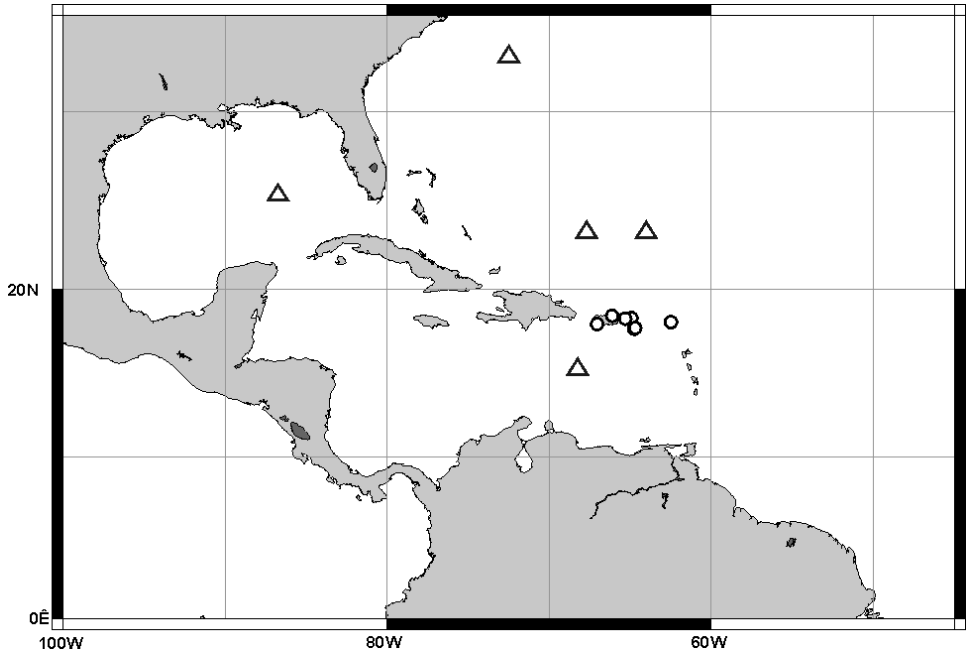

Figure 2. Coastal sea level stations (open circles) and DART deep ocean sea level stations (open triangles) in the Caribbean region with data available to PTWC in near real time. Additional coastal stations are needed to cover all likely tsunami source regions. A listing of stations is provided in Appendix II.

Product Issuance Criteria

There are three key earthquake parameters that can be determined quickly from seismic waveform data for the evaluation of an earthquake's tsunamigenic potential. They are: 1) location - whether the earthquake is located under or very near the sea, 2) depth - whether the earthquake is located close enough to the earth's surface to have caused a significant deformation of that surface and consequently a movement of the sea, and 3) magnitude - the size of the earthquake. Table 1 shows various combinations of these parameters and the types of products that will be issued for the CAR by PTWC for each case. These criteria are similar to what PTWC uses in the Pacific and Indian Oceans.

Table 1. Seismic criteria for PTWC's issuance of products in the CAR.

Earthquake Depth	Earthquake Location	Earthquake Magnitude (Mw)	Description of Tsunami Potential	Product Type
< 100 km	Under or very near the sea	6.0 to 7.0 Caribbean	Very small potential for a destructive local tsunami	Tsunami Information Statement
		6.5 to 7.8 Atlantic	Very small potential for a destructive ocean-wide tsunami	Tsunami Information Statement
		7.1 to 7.5 Caribbean	Potential for a destructive local tsunami	Local Tsunami Watch Message
		7.6 to 7.8 Caribbean	Potential for a destructive regional tsunami	Regional Tsunami Watch Message
		≥ 7.9 Caribbean & Atlantic	Potential for a destructive ocean-wide tsunami	Ocean-wide Tsunami Watch Message
	Inland	≥ 6.0 Carib ≥ 6.5 Atlan	No tsunami potential	Tsunami Information Statement
≥ 100 km	All Locations	≥ 6.0 Carib ≥ 6.5 Atlan	No tsunami potential	Tsunami Information Statement

Earthquake Magnitude: The magnitude used by PTWC is the moment magnitude, Mw. It is more accurate for large earthquakes than the more common Richter magnitude. The moment magnitude determined by PTWC for initial products is Mwp, based on the first arriving seismic P waves. Subsequent estimates of Mw may be made by methods based on later arriving seismic waves.

Local Tsunami: A local tsunami is one with destructive or life threatening effects usually limited to within 100 km of the epicenter.

Regional Tsunami: A regional tsunami is one with destructive or life threatening effects usually limited to within 1000 km of the epicenter.

Ocean-wide Tsunami: An ocean-wide tsunami is one with destructive or life threatening effects that can extend across an entire ocean basin.

Message Content

Products are divided into just a few general sections. A **header** gives the product number. It starts at 1 for each event and is incremented if subsequent products are issued for the same event. The header also indicates who issued the product, in this case PTWC, and the time the product is issued. The header is followed by a statement about **who the product is intended for** -- all areas of the Caribbean. The next line is a banner indicating the **type of product**, a Tsunami Information Statement or a Tsunami Watch Message. If a Tsunami Watch is in effect, the countries in a watch are indicated. This is followed by the **preliminary earthquake parameters** including the origin time, coordinates, location name, and earthquake magnitude. If any **sea level observations** are available, they are provided next. Until more real time reporting sea level gauges are installed, however, such observations will be very limited or non-existent. The next section is the **evaluation**. It contains descriptive language about the potential for a destructive tsunami. If a Tsunami Watch is issued, **estimated arrival times** for forecast points (Figure 3 and Table 2) within the Watch area are provided. Last is a statement about **if and when a subsequent product** will be issued for the event. Sample products are provided in Appendix III.

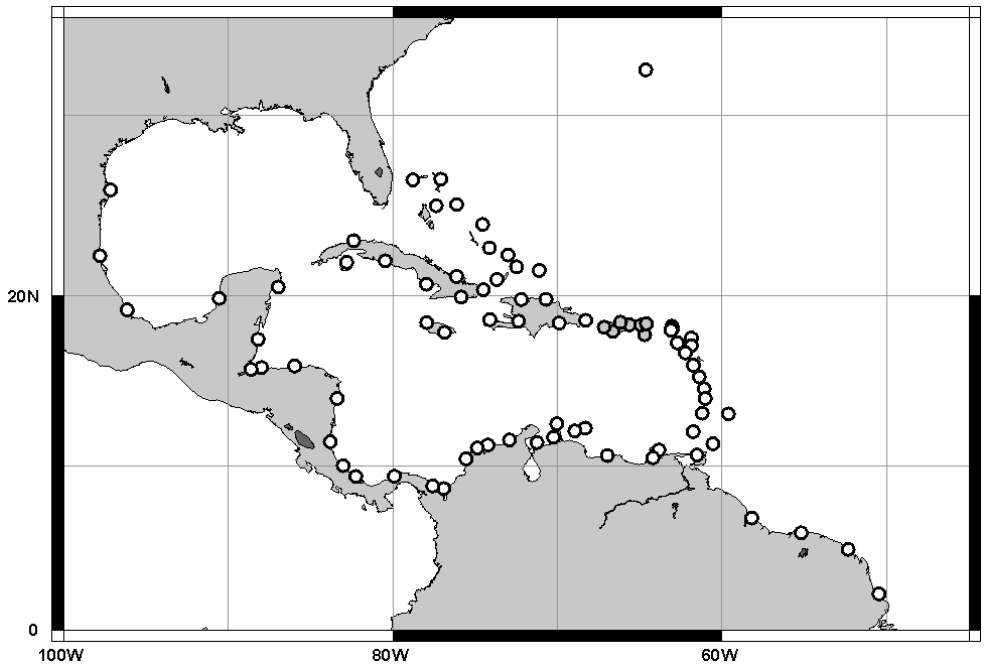

Figure 3. Preliminary forecast points for countries in the Caribbean region. Tsunami Watch Messages provide estimated times of arrival for forecast points in the region of the Tsunami Watch.

Table 2 List of preliminary forecast points for the Caribbean region.

COUNTRY	FORECAST POINT	LATITUDE (+N,-S)	LONGITUDE (+E,-W)
BAHAMAS	ABACO_IS	26.556	-77.079
	FREEPORT	26.514	-78.782
	NASSAU	25.094	-77.351
	ELEUTHERA_IS	25.157	-76.124
	SAN_SALVADOR	24.066	-74.547
	CROOKED_IS	22.747	-74.141
	MAYAGUANA	22.330	-72.999
	GREAT_INAGUA	20.948	-73.684
TURKS_N_CAICOS	WEST_CAICOS	21.671	-72.487
	GRAND_TURK	21.468	-71.107
BERMUDA	RUTHS_BAY	32.356	-64.637
CUBA	NUEVA_GERONA	21.922	-82.797
	CIENFUEGOS	22.007	-80.465
	SANTA_CRZ_D_SUR	20.682	-77.959
	LA_HABANA	23.151	-82.364
	GIBARA	21.119	-76.122
	BARACOA	20.356	-74.498
	SANTIAGO_D_CUBA	19.947	-75.850
JAMAICA	MONTEGO_BAY	18.471	-77.933
	KINGSTON	17.913	-76.854
HAITI	JEREMIE	18.641	-74.107
	CAP-HAITEN	19.792	-72.188
	PORT-AU-PRINCE	18.544	-72.369
DOMINICAN_REP	CABO_ENGANO	18.612	-68.290
	PUERTO_PLATA	19.813	-70.692
	SANTO_DOMINGO	18.455	-69.893
PUERTO_RICO	FAJARDO	18.346	-65.626
	PONCE	17.966	-66.637
	MAYAGUEZ	18.204	-67.173
	SAN_JUAN	18.489	-66.168
US_VIRGIN_IS	ST._JOHN	18.333	-64.810
	ST._CROIX	17.761	-64.709
	ST._THOMAS	18.315	-64.930
BR_VIRGIN_IS	TORTOLA	18.407	-64.601
ANGUILLA	THE_VALLEY	18.252	-63.051
SAINT_MARTIN	BAIE_BLANCHE	18.117	-63.010
SAINT_MAARTEN	SIMPSON_BAAI	18.034	-63.104
SAINT_KITTS	BASSETERRE	17.290	-62.718
BARBUDA	PALMETTO_POINT	17.578	-61.863
ANTIGUA	SAINT_JOHNS	17.131	-61.874
MONTSERRAT	PLYMOUTH	16.706	-62.234
GUADELOUPE	BASSE-TERRE	15.982	-61.737
DOMINICA	ROSEAU	15.297	-61.396
MARTINIQUE	FORT-DE-FRANCE	14.598	-61.082
SAINT_LUCIA	CASTRIES	14.017	-61.031
BARBADOS	BRIDGETOWN	13.091	-59.622
ST_VINCENT	KINGSTOWN	13.136	-61.214
GRENADA	SAINT_GEORGES	12.046	-61.754
TRINIDAD_TOBAGO	PIRATES_BAY	11.327	-60.559
	PORT-OF-SPAIN	10.641	-61.528

COUNTRY	FORECAST POINT	LATITUDE (+N,-S)	LONGITUDE (+E,-W)
VENEZUELA	PORLAMAR	10.948	-63.842
BONAIRE	ONIMA	12.256	-68.309
CURACAO	WILLEMSTAD	12.094	-68.934
ARUBA	ORANJESTAD	12.506	-70.042
BRAZIL	FORTALEZA	-3.707	-38.480
	SAO_LUIS	-2.470	-44.309
	ILHA_DE_MARACA	2.208	-50.488
FRENCH_GUIANA	CAYENNE	4.931	-52.350
SURINAME	PARAMARIBO	5.934	-55.198
GUYANA	GEORGETOWN	6.840	-58.196
VENEZUELA	CUMANA	10.469	-64.197
	MAIQUETIA	10.608	-66.966
	PUNTO_FIJO	11.707	-70.232
	GOLFO_VENEZUELA	11.399	-71.245
COLOMBIA	RIOHACHA	11.554	-72.920
	SANTA_MARTA	11.247	-74.225
	BARRANQUILLA	11.070	-74.866
	CARTAGENA	10.412	-75.563
	PUNTA_CARIBANA	8.624	-76.898
PANAMA	PUERTO_CARRETO	8.783	-77.573
	COLON	9.372	-79.914
	BOCAS_DEL_TORO	9.351	-82.242
COSTA_RICA	PUERTO_LIMON	10.001	-83.013
NICARAGUA	PUNTA_GORDA	11.437	-83.793
	PUERTO_CABEZAS	14.019	-83.374
HONDURAS	TRUJILLO	15.931	-85.958
	PUERTO_CORTES	15.850	-87.973
GUATEMALA	PUERTO_BARRIOS	15.745	-88.597
BELIZE	BELIZE_CITY	17.503	-88.178
MEXICO	COZUMEL	20.516	-86.955
	CAMPECHE	19.867	-90.539
	VERACRUZ	19.201	-96.116
	MADERO	22.291	-97.785
	TEXAS_BORDER	25.972	-97.141

Product Dissemination

The following circuits and methods will be used to disseminate products:

1) Global Telecommunications System of the World Meteorological Organization (WMO/GTS)
2) Internet Email
3) Telefax
4) U.S. NOAA Weather Wire
5) U.S. Advanced Weather Information Processing System (AWIPS)

The GTS is the backbone of the international dissemination system, but telefax and email are also widely utilized. The NOAA Weather Wire facilitates making all these products available to independent subscribers such as the media through the U.S. National Weather Service's Family of Services. AWIPS distributes the products to all U.S. Weather Forecast Offices.

Two levels of product are distinguished and given separate World Meteorological Organization (WMO) identifiers (Table 3).

Table 3. PTWC Caribbean Product IDs for WMO/GTS and AWIPS.

WMO/GTS ID	AWIPS ID	Product Type
WECA41 PHEB	TSUCAX	Tsunami Watch Message
WECA43 PHEB	TIBCAX	Tsunami Information Statement

Communications Tests

PTWC will conduct communications tests approximately four times per year to verify that communications links to designated contact points are functioning properly. The test will be issued with the product identifier of a Tsunami Watch Message (WEIO21 PHEB and TSUIOX), but it will only be a test. A sample communications test message is shown below.

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FROM: PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII

TO: TSUNAMI CONTACT POINTS FOR THE FOLLOWING COUNTRIES IN
    THE CARIBBEAN REGION

      BAHAMAS
      TURKS AND CAICOS
      BERMUDA
      CUBA
      JAMAICA
      HAITI
      DOMINICAN REPUBLIC
      PUERTO RICO
      US VIRGIN IS
      BRITISH VIRGIN IS
      ANGUILLA
      SAINT MARTIN
      SAINT MAARTEN
      SAINT KITTS
      BARBUDA
      ANTIGUA
      MONTSERRAT
      GUADELOUPE
      DOMINICA
      MARTINIQUE
      SAINT LUCIA
      BARBADOS
      SAINT VINCENT
      GRENADA
      TRINIDAD TOBAGO
      VENEZUELA
      BONAIRE
      CURACAO
      ARUBA
      BRAZIL
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      FRENCH GUIANA
      SURINAME
      GUYANA
      VENEZUELA
      COLOMBIA
      PANAMA
      COSTA RICA
      NICARAGUA
      HONDURAS
      GUATEMALA
      BELIZE
      MEXICO

    --- ALL OTHERS PLEASE DISREGARD ---

SUBJECT:  TSUNAMI DUMMY (COMMUNICATION TEST).

THIS IS A TEST TO VERIFY COMMUNICATION LINKS AND DETERMINE
TRANSMISSION TIMES INVOLVED IN DISSEMINATION OF TSUNAMI
ADVISORY INFORMATION TO THE CARIBBEAN REGION.

RECIPIENTS ARE REQUESTED TO PLEASE RESPOND BACK TO THE
PACIFIC TSUNAMI WARNING CENTER. THE RESPONSE SHOULD INCLUDE

   1 - NAME OF OFFICE THAT RECEIVED THIS TEST
   2 - METHOD OR METHODS BY WHICH OFFICE RECEIVED THIS TEST
   3 - INCLUDE EMAIL ADDRESS OR FAX NUMBER OF EACH METHOD
   3 - TIME OF RECEIPT OF THIS TEST BY EACH METHOD

PLEASE RESPOND VIA ONE OF THE FOLLOWING

   EMAIL   -  PTWC@PTWC.NOAA.GOV
   TELEFAX -  808-689-4543

THANK YOU FOR YOUR PARTICIPATION IN THIS COMMUNICATION TEST.
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Procedures for Acting on Products

It is the responsibility of the contact point for each country, where PTWC products are received, to establish procedures for acting on them in a way to save lives and reduce property damage. These procedures should include:

1) Rapid notification of decision-making authorities
2) Decision-making regarding the ordering of evacuations and other protective measures
3) If warranted, rapid and comprehensive notification of the public at risk
4) Procedures for evacuations including establishment of evacuation zones and routes
5) Response procedures in case of a tsunami disaster

A significant challenge associated with these procedures is the decision-making about evacuations, particularly since evacuations can be very costly and disruptive and there is a significant probability of false alarms owing to the current lack of adequate sea level data from the source region. Procedures can include pre-determined decisions, such as automatically notifying the media and public for nearby events when time is very limited.

Contact Points

Each country must designate an official focal point (or points) for receiving PTWC products. It is important to have an official designated point or points and a single authority to avoid confusion that could result if conflicting information is disseminated to the public from multiple authorities. Information about the focal point(s) must be kept up-to-date. Contact information should be submitted to IOC or IOCARIBE or PTWC. Necessary information is described on the form that follows.

PTWC may be contacted at the following coordinates:

Director	Day Tel:	808-689-8207
Pacific Tsunami Warning Center	24x7 Tel:	808-689-6655
91-270 Fort Weaver Road	Fax:	808-689-4543
Ewa Beach, HI 96706	Email:	charles.mccreery@noaa.gov
USA	Ops:	ptwc@ptwc.noaa.gov

Form for designating or updating official Interim Tsunami Watch contact information.

Name of Country:

Name and Address of Contact Person and Agency
Name of Person:
Title:
Agency:
Mailing Address 1:
Mailing Address 2:
Mailing Address 3:
Mailing Address 4:
Country:

Telephone numbers
Primary (24-hour):
1st alternate:
2nd alternate:

Station Location:
Latitude:
Longitude:

FAX numbers
Primary (24-hour):
1st alternate:
2nd alternate:

E-mail address
Primary (24-hour):
1st alternate:
2nd alternate:

Designated Communication Method for Products - GTS, fax, or email
Primary:
Secondary:

Date of this update:

Comments:

Appendix I. Broadband seismic stations providing real time continuous waveform data to PTWC.

STATION	LAT (+N,-S)	LON (+E,-W)
AAK	42.64	74.49
AAM	42.70	-84.39
ADK	51.88	-176.68
AFI	-13.91	-171.78
AGPR	18.47	-67.11
AHID	42.72	-112.85
AKUT	54.14	-165.77
ANMO	34.58	-107.70
ANTO	39.87	32.79
ARU	56.43	58.56
ATKA	52.20	-174.20
BAR	32.68	-116.67
BBSR	32.37	-64.70
BDFB	-15.64	-48.01
BFO	48.33	8.33
BILL	68.04	166.27
BMN	40.43	-117.22
BINY	42.72	-76.25
BJT	40.02	116.17
BGCA	5.18	18.42
BLA	37.21	-80.42
BMRM	60.96	-144.58
BOSA	-28.61	25.25
BOZ	45.65	-111.63
BRVK	53.06	70.28
BW06	42.77	-109.56
BZN	38.48	69.82
CBKS	38.65	-100.65
CBYP	18.27	-65.86
CCM	38.64	-92.53
CDVI	17.75	-64.77
CHTO	18.81	98.94
CEH	35.59	-80.33
CMB	38.03	-120.39
CPD	18.04	-65.92
COCO	-12.19	96.83
COLA	65.07	-149.45
COR	44.59	-123.03
CPUP	-26.33	-57.33
CRAG	55.47	-133.12
CTAO	-20.34	148.44
CWC	36.44	-118.08
DAC	36.28	-117.59
DBIC	6.67	-4.86
DGAR	-7.41	72.45
DIV	61.13	-145.77
DUG	40.20	-112.81

STATION	LAT (+N,-S)	LON (+E,-W)
DWPF	28.48	-82.37
EFI	-51.68	-58.06
ELK	40.68	-116.92
ERW	48.45	-122.63
ESK	55.32	-3.21
ESLA	39.67	-3.96
EYAK	60.55	-145.75
EYMN	47.80	-92.53
FFC	54.73	-101.98
FUNA	-8.53	179.20
GNI	40.05	44.72
GNW	47.56	-122.83
GOGA	33.56	-84.40
GUMO	13.59	144.87
GWDE	38.83	-75.62
H2O	27.88	-141.99
HAWA	46.39	-119.53
HIA	49.82	120.99
HKT	29.48	-96.58
HLID	43.73	-115.91
HNR	-9.43	159.95
HON	21.32	-158.01
HON1	21.32	-158.01
HOPS	38.99	-123.07
HRV	42.51	-71.56
HUMP	18.14	-65.85
HWUT	41.61	-111.57
INCN	37.63	128.12
ISA	35.66	-118.47
ISP	37.82	30.52
JCC	40.82	-124.03
JFWS	42.71	-91.51
JTS	10.29	-84.95
KHU	19.25	-155.62
KKM	6.04	116.21
KMBO	-1.13	37.25
KNB	37.02	-112.82
KWAJ	8.80	167.61
LBNH	44.74	-72.19
LBTB	-25.01	25.60
LON	46.75	-121.81
KAPI	-5.01	119.75
KBS	78.30	11.94
KCC	37.32	-119.32
KDAK	57.78	-152.58
KIP	21.42	-158.01
KIV	43.96	42.69

STATION	LAT (+N,-S)	LON (+E,-W)
KONO	59.65	9.60
KURK	50.72	78.62
LKWY	44.57	-110.40
LPAZ	-16.29	-68.13
LSCT	41.70	-74.22
LSZ	-15.28	28.19
LTX	29.33	-103.67
LVC	-22.61	-68.91
MA2	59.99	152.50
MAJO	36.54	138.21
MBAR	-0.60	30.74
MBWA	-21.16	119.73
MCK	63.73	-148.94
MCWV	39.66	-80.33
MIAR	34.58	-94.56
MIDW	28.22	-177.37
MLAC	37.63	-118.84
MNV	38.43	-118.15
MOD	41.90	-120.30
MPR	18.21	-67.14
MSEY	-4.67	55.48
MSKU	-1.66	13.61
MTP	18.09	-65.56
MYNC	35.59	-85.41
NEW	48.26	-117.12
NIKO	52.94	-168.87
NNA	-11.99	-75.84
NWAO	-32.93	117.23
OBN	55.93	36.60
OCWA	47.75	-124.18
OSI	34.61	-118.72
ORV	39.55	-121.50
OTAV	0.24	-78.45
OXF	34.58	-90.49
PAHR	39.66	-120.98
PALK	7.27	80.70
PAS	34.15	-118.17
PAYG	-0.67	-90.29
PET	53.02	158.65
PFO	33.61	-116.46
PKD	35.95	-120.54
JOHN	16.73	-169.53
PTCN	-25.07	-130.09
PLAL	34.58	-89.48
PLCA	-40.68	-71.17
PMG	-9.41	147.16
PMR	62.03	-151.50
POHA	19.76	-155.53
PMSA	-64.77	-64.09
PTGA	-0.73	-59.97
QIZ	19.03	109.84
RAO	-29.25	-177.92

STATION	LAT (+N,-S)	LON (+E,-W)
RAR	-21.21	-159.77
RCBR	-5.83	-35.90
RPN	-27.13	-109.33
RSSD	44.12	-104.04
RWW	46.96	-123.54
SAO	36.76	-121.45
SBA	-77.85	166.76
SDPT	55.35	-160.48
SDV	8.89	-70.63
SFJD	67.00	-50.62
SIT	57.06	-137.32
SJG	18.11	-66.15
SKAG	59.46	-135.33
SMY	52.73	174.10
SNCC	33.25	-119.52
SNZO	-41.31	174.70
SPA	-90.00	115.00
SPIA	57.18	-170.25
SSPA	40.64	-77.89
STC	19.39	-155.13
STKA	-31.88	141.60
SUR	-32.38	20.81
TATO	24.98	121.49
TAU	-42.91	147.32
TEIG	20.23	-88.28
TIXI	71.65	128.87
TLY	51.68	103.64
TNA	66.09	-169.79
TPH	38.64	-118.96
TPNV	36.95	-116.25
TRIS	-37.07	-12.32
TRQA	-38.06	-61.98
TUC	32.31	-110.78
ULN	47.80	107.05
UNV	53.85	-166.50
UXL	19.42	-155.29
VNDA	-77.52	161.85
WAKE	19.28	166.65
WCI	38.65	-87.44
WCN	39.65	-120.99
WDC	40.58	-122.54
WMOK	34.74	-98.78
WMQ	43.82	87.69
WRAB	-19.93	134.35
WUAZ	35.52	-111.37
WVOR	42.43	-118.64
WVT	36.13	-87.83
YAK	62.02	129.72
YBH	41.73	-122.71
YSNY	42.71	-79.30
YSS	46.96	142.76

Appendix II. Deep ocean (DART) and coastal sea level stations in the Caribbean region providing near real time data to PTWC.

LOCATION	LATITUDE	LONGITUDE	XMIT
DART_GulfMex,D087	25.4097	273.1997	60
DART_Atlantic,D072	32.9281	287.5303	60
DART_Caribbean,D068	15.2600	291.7706	60
DART_Atlantic,D067	23.3122	292.3606	60
DART_Atlantic,D064	23.3994	296.0992	60
Magueyes_Island	17.9767	292.9533	6
San_Juan	18.4617	293.8833	6
Culebra_Is.	18.3008	294.6972	6
Charlotte-Amalie	18.3333	295.0833	6
Limetree	17.7000	295.2500	6
St_Croix	17.7419	295.3078	6
Vieques	18.0939	297.5286	6

Appendix II. Sample Products

Tsunami Information Statement (for earthquakes in the Caribbean with Mw ≥ 6.0 or earthquakes in the Atlantic with Mw ≥ 6.5 that have no tsunamigenic potential or at most only a very small local tsunami potential)

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TSUNAMI STATEMENT NUMBER 001
PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
ISSUED AT 1343Z 24 APR 2006

THIS STATEMENT IS FOR ALL AREAS OF THE CARIBBEAN EXCEPT PUERTO
RICO AND THE VIRGIN ISLANDS. A SEPARATE PRODUCT WILL BE ISSUED
BY THIS CENTER FOR THOSE AREAS.

... TSUNAMI INFORMATION STATEMENT ...

THIS MESSAGE IS FOR INFORMATION ONLY.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

 ORIGIN TIME -  1310Z 24 APR 2006
 COORDINATES -  17.2 NORTH   61.6 WEST
 LOCATION    -  LEEWARD ISLANDS
 MAGNITUDE   -  6.6

EVALUATION

 A DESTRUCTIVE WIDESPREAD TSUNAMI THREAT DOES NOT EXIST BASED ON
 HISTORICAL EARTHQUAKE AND TSUNAMI DATA.

 HOWEVER - THERE IS A VERY SMALL POSSIBILITY OF A LOCAL TSUNAMI
 THAT COULD AFFECT COASTS LOCATED USUALLY NO MORE THAN A HUNDRED
 KILOMETERS FROM THE EARTHQUAKE EPICENTER. AUTHORITIES IN THE
 REGION NEAR THE EPICENTER SHOULD BE MADE AWARE OF THIS
 POSSIBILITY.

THIS WILL BE THE ONLY PRODUCT ISSUED BY THE PACIFIC TSUNAMI
WARNING CENTER FOR THIS EVENT UNLESS ADDITIONAL INFORMATION
BECOMES AVAILABLE.
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Local Tsunami Watch Bulletin (shallow, undersea earthquake; 7.1 ≤ Mw ≤ 7.5)

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TSUNAMI MESSAGE NUMBER 001
PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
ISSUED AT 1350Z 24 APR 2006

THIS MESSAGE IS FOR ALL AREAS OF THE CARIBBEAN EXCEPT PUERTO
RICO AND THE VIRGIN ISLANDS. A SEPARATE PRODUCT WILL BE ISSUED
BY THIS CENTER FOR THOSE AREAS.

... A LOCAL TSUNAMI WATCH IS IN EFFECT ...

A TSUNAMI WATCH IS IN EFFECT FOR

 ANTIGUA / MONTSERRAT / BARBUDA / GUADELOUPE / SAINT KITTS /
 DOMINICA / ANGUILLA / SAINT MAARTEN / SAINT MARTIN

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

 ORIGIN TIME -  1310Z 24 APR 2006
 COORDINATES -  17.2 NORTH   61.6 WEST
 LOCATION    -  LEEWARD ISLANDS
 MAGNITUDE   -  7.4
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EVALUATION

A DESTRUCTIVE WIDESPREAD TSUNAMI THREAT DOES NOT EXIST BASED ON HISTORICAL EARTHQUAKE AND TSUNAMI DATA.

HOWEVER - THERE IS THE POSSIBILITY OF A LOCAL TSUNAMI THAT COULD AFFECT COASTS LOCATED USUALLY NO MORE THAN A HUNDRED KILOMETERS FROM THE EARTHQUAKE EPICENTER. AUTHORITIES FOR THE REGION NEAR THE EPICENTER SHOULD BE AWARE OF THIS POSSIBILITY. AREAS FURTHER FROM THE EPICENTER COULD EXPERIENCE SMALL SEA LEVEL CHANGES AND STRONG OR UNUSUAL COASTAL CURRENTS.

DUE TO ONLY LIMITED SEA LEVEL DATA FROM THE REGION IT MAY NOT BE POSSIBLE FOR THIS CENTER TO RAPIDLY CONFIRM NOR EVALUATE THE STRENGTH OF A TSUNAMI IF ONE HAS BEEN GENERATED.

ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. THE TIME BETWEEN SUCCESSIVE TSUNAMI WAVES CAN BE FIVE MINUTES TO ONE HOUR.

LOCATION		COORDINATES		ARRIVAL TIME
ANTIGUA	SAINT JOHNS	17.2N	62.0W	1326Z 24 APR
MONTSERRAT	PLYMOUTH	16.7N	62.2W	1329Z 24 APR
BARBUDA	PALMETTO POINT	17.6N	61.9W	1331Z 24 APR
GUADELOUPE	BASSE-TERRE	16.0N	61.8W	1337Z 24 APR
SAINT KITTS	BASSETERRE	17.3N	62.7W	1341Z 24 APR
DOMINICA	ROSEAU	15.3N	61.5W	1348Z 24 APR
ANGUILLA	THE VALLEY	18.3N	63.1W	1349Z 24 APR
SAINT MAARTEN	SIMPSON BAAI	18.0N	63.1W	1354Z 24 APR
SAINT MARTIN	BAIE BLANCHE	18.1N	63.0W	1354Z 24 APR

THIS WILL BE THE ONLY PRODUCT ISSUED BY THE PACIFIC TSUNAMI WARNING CENTER FOR THIS EVENT UNLESS ADDITIONAL INFORMATION BECOMES AVAILABLE.

Local Tsunami Watch Bulletin Supplement

TSUNAMI MESSAGE NUMBER 002
PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
ISSUED AT 1348Z 24 APR 2006

THIS MESSAGE IS FOR ALL AREAS OF THE CARIBBEAN EXCEPT PUERTO RICO AND THE VIRGIN ISLANDS. A SEPARATE PRODUCT WILL BE ISSUED BY THIS CENTER FOR THOSE AREAS.

... A LOCAL TSUNAMI WATCH IS IN EFFECT ...

A TSUNAMI WATCH IS IN EFFECT FOR

ANTIGUA / MONTSERRAT / BARBUDA / GUADELOUPE / SAINT KITTS / DOMINICA / ANGUILLA / SAINT MAARTEN / SAINT MARTIN

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 1310Z 24 APR 2006
COORDINATES - 17.2 NORTH 61.6 WEST
LOCATION - LEEWARD ISLANDS
MAGNITUDE - 7.4

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

GAUGE LOCATION	LAT	LON	TIME	AMPL	PER
OWENGA CHATHAM	44.0S	176.4W	1821Z	0.42M	34MIN
KAHULUI MAUI	20.9N	156.5W	1836Z	0.16M	46MIN
HILO HAWAII	19.7N	155.1W	1752Z	0.14M	36MIN
NUKU HIVA MARQUESAS	8.9S	140.1W	1822Z	0.56M	34MIN

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 BALTRA GALAPAGS       0.4S  90.3W  1517Z   0.61M  34MIN
 EASTER               27.2S 109.4W  1818Z   0.28M  16MIN
 IQUIQUE              20.2S  70.2W  2006Z   0.49M  32MIN

 TIME - TIME OF THE MEASUREMENT
 AMPL - AMPLITUDE IN METERS FROM MIDDLE TO CREST OR MIDDLE
        TO TROUGH OR HALF OF THE CREST TO TROUGH
 PER  - PERIOD OF TIME FROM ONE WAVE CREST TO THE NEXT

EVALUATION

 SEA LEVEL READINGS INDICATE A TSUNAMI WAS GENERATED. IT MAY HAVE
 BEEN DESTRUCTIVE ALONG COASTS NEAR THE EARTHQUAKE EPICENTER. FOR
 THOSE AREAS - WHEN DAMAGING WAVES HAVE NOT OCCURRED FOR AT LEAST
 TWO HOURS THEN LOCAL AUTHORITIES CAN ASSUME THE THREAT IS PASSED.
 DANGER TO BOATS AND COASTAL STRUCTURES CAN CONTINUE FOR SEVERAL
 HOURS DUE TO RAPID CURRENTS.  AS LOCAL CONDITIONS CAN CAUSE A
 WIDE VARIATION IN TSUNAMI WAVE ACTION THE ALL CLEAR DETERMINATION
 MUST BE MADE BY LOCAL AUTHORITIES.

 NO TSUNAMI THREAT EXISTS FOR OTHER COASTAL AREAS IN THE
 CARIBBEAN ALTHOUGH SOME OTHER AREAS MAY EXPERIENCE SMALL SEA
 LEVEL CHANGES AND STRONG OR UNUSUAL COASTAL CURRENTS.

 DUE TO ONLY LIMITED SEA LEVEL DATA FROM THE REGION IT MAY NOT BE
 POSSIBLE FOR THIS CENTER TO RAPIDLY NOR ACCURATELY EVALUATE THE
 THE STRENGTH OF A TSUNAMI IF ONE HAS BEEN GENERATED.

ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES. ACTUAL ARRIVAL TIMES
MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. THE TIME
BETWEEN SUCCESSIVE TSUNAMI WAVES CAN BE FIVE MINUTES TO ONE HOUR.

 LOCATION                          COORDINATES     ARRIVAL TIME
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 ANTIGUA          SAINT JOHNS      17.2N  62.0W    1326Z 24 APR
 MONTSERRAT       PLYMOUTH         16.7N  62.2W    1329Z 24 APR
 BARBUDA          PALMETTO POINT   17.6N  61.9W    1331Z 24 APR
 GUADELOUPE       BASSE-TERRE      16.0N  61.8W    1337Z 24 APR
 SAINT KITTS      BASSETERRE       17.3N  62.7W    1341Z 24 APR
 DOMINICA         ROSEAU           15.3N  61.5W    1348Z 24 APR
 ANGUILLA         THE VALLEY       18.3N  63.1W    1349Z 24 APR
 SAINT MAARTEN    SIMPSON BAAI     18.0N  63.1W    1354Z 24 APR
 SAINT MARTIN     BAIE BLANCHE     18.1N  63.0W    1354Z 24 APR

THIS WILL BE THE FINAL PRODUCT ISSUED BY THE PACIFIC TSUNAMI
WARNING CENTER FOR THIS EVENT UNLESS ADDITIONAL INFORMATION
BECOMES AVAILABLE.
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Regional Tsunami Watch Bulletin (shallow, undersea earthquake; 7.6 ≤ Mw ≤ 7.8)

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TSUNAMI MESSAGE NUMBER 001
PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
ISSUED AT 1351Z 24 APR 2006

THIS MESSAGE IS FOR ALL AREAS OF THE CARIBBEAN EXCEPT PUERTO
RICO AND THE VIRGIN ISLANDS. A SEPARATE PRODUCT WILL BE ISSUED
BY THIS CENTER FOR THOSE AREAS.

... A REGIONAL TSUNAMI WATCH IS IN EFFECT ...

A TSUNAMI WATCH IS IN EFFECT FOR

 ANTIGUA / MONTSERRAT / BARBUDA / GUADELOUPE / SAINT KITTS /
 DOMINICA / ANGUILLA / SAINT MAARTEN / SAINT MARTIN /
 MARTINIQUE / SAINT LUCIA / BARBADOS / ST VINCENT / GRENADA /
 DOMINICAN REP / TRINIDAD TOBAGO / TURKS N CAICOS / BONAIRE /
 HAITI / BAHAMAS / CURACAO / ARUBA / CUBA / VENEZUELA /
 COLOMBIA / SURINAME / GUYANA
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AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 1310Z 24 APR 2006
COORDINATES - 17.2 NORTH 61.6 WEST
LOCATION - LEEWARD ISLANDS
MAGNITUDE - 7.7

EVALUATION

EARTHQUAKES OF THIS SIZE HAVE THE POTENTIAL TO GENERATE A DESTRUCTIVE LOCAL TSUNAMI AND SOMETIMES A DESTRUCTIVE REGIONAL TSUNAMI ALONG COASTS LOCATED USUALLY NO MORE THAN A THOUSAND KILOMETERS FROM THE EARTHQUAKE EPICENTER. AREAS FURTHER FROM THE EPICENTER COULD EXPERIENCE SMALL SEA LEVEL CHANGES AND STRONG OR UNUSUAL COASTAL CURRENTS.

HOWEVER - IT IS NOT KNOWN THAT A TSUNAMI WAS GENERATED. THIS WATCH IS BASED ONLY ON THE EARTHQUAKE EVALUATION. AUTHORITIES IN THE REGION SHOULD TAKE APPROPRIATE ACTION IN RESPONSE TO THIS POSSIBILITY. THE WATCH WILL NOT EXPAND TO OTHER AREAS OF THE CARIBBEAN UNLESS ADDITIONAL DATA ARE RECEIVED TO WARRANT SUCH AN EXPANSION.

DUE TO ONLY LIMITED SEA LEVEL DATA FROM THE REGION IT MAY NOT BE POSSIBLE FOR THIS CENTER TO RAPIDLY CONFIRM NOR EVALUATE THE STRENGTH OF A TSUNAMI IF ONE HAS BEEN GENERATED.

ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. THE TIME BETWEEN SUCCESSIVE TSUNAMI WAVES CAN BE FIVE MINUTES TO ONE HOUR.

LOCATION		COORDINATES		ARRIVAL TIME
ANTIGUA	SAINT JOHNS	17.2N	62.0W	1326Z 24 APR
MONTSERRAT	PLYMOUTH	16.7N	62.2W	1329Z 24 APR
BARBUDA	PALMETTO POINT	17.6N	61.9W	1331Z 24 APR
GUADELOUPE	BASSE-TERRE	16.0N	61.8W	1337Z 24 APR
SAINT KITTS	BASSETERRE	17.3N	62.7W	1341Z 24 APR
DOMINICA	ROSEAU	15.3N	61.5W	1348Z 24 APR
ANGUILLA	THE VALLEY	18.3N	63.1W	1349Z 24 APR
SAINT MAARTEN	SIMPSON BAAI	18.0N	63.1W	1354Z 24 APR
SAINT MARTIN	BAIE BLANCHE	18.1N	63.0W	1354Z 24 APR
MARTINIQUE	FORT-DE-FRANCE	14.5N	61.2W	1356Z 24 APR
SAINT LUCIA	CASTRIES	14.0N	61.2W	1400Z 24 APR
BARBADOS	BRIDGETOWN	13.1N	59.6W	1406Z 24 APR
ST VINCENT	KINGSTOWN	13.2N	61.3W	1410Z 24 APR
GRENADA	SAINT GEORGES	12.0N	61.8W	1424Z 24 APR
DOMINICAN REP	CABO ENGANO	18.6N	68.3W	1424Z 24 APR
	PUERTO PLATA	19.8N	70.7W	1434Z 24 APR
	SANTO DOMINGO	18.3N	69.8W	1452Z 24 APR
TRINIDAD TOBAGO	PIRATES BAY	11.3N	60.6W	1429Z 24 APR
	PORT-OF-SPAIN	10.7N	61.7W	1513Z 24 APR
TURKS N CAICOS	GRAND TURK	21.5N	71.1W	1440Z 24 APR
	WEST CAICOS	21.7N	72.5W	1455Z 24 APR
BONAIRE	ONIMA	12.3N	68.3W	1448Z 24 APR
HAITI	CAP-HAITEN	19.8N	72.2W	1452Z 24 APR
	JEREMIE	18.7N	74.0W	1520Z 24 APR
	PORT-AU-PRINCE	18.7N	72.3W	1553Z 24 APR
BAHAMAS	MAYAGUANA	22.3N	73.0W	1457Z 24 APR
	GREAT INAGUA	20.8N	73.7W	1503Z 24 APR
	CROOKED IS	22.7N	74.1W	1509Z 24 APR
CURACAO	WILLEMSTAD	12.0N	69.0W	1458Z 24 APR
ARUBA	ORANJESTAD	12.5N	70.0W	1506Z 24 APR
CUBA	BARACOA	20.5N	74.5W	1510Z 24 APR
VENEZUELA	MAIQUETIA	10.6N	67.0W	1510Z 24 APR
	CUMANA	10.5N	64.2W	1521Z 24 APR
	PORLAMAR	10.8N	63.8W	1559Z 24 APR
	PUNTO FIJO	11.7N	70.3W	1606Z 24 APR
	GOLFO VENEZUELA	11.4N	71.2W	1637Z 24 APR

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 COLOMBIA         RIOHACHA           11.7N  73.0W    1545Z 24 APR
 SURINAME         PARAMARIBO          5.9N  55.2W    1709Z 24 APR
 GUYANA           GEORGETOWN          6.8N  58.2W    1744Z 24 APR

THIS WILL BE THE ONLY PRODUCT ISSUED BY THE PACIFIC TSUNAMI
WARNING CENTER FOR THIS EVENT UNLESS ADDITIONAL INFORMATION
BECOMES AVAILABLE.
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Regional Tsunami Watch Bulletin Supplement

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TSUNAMI MESSAGE NUMBER 002
PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
ISSUED AT 1352Z 24 APR 2006

THIS MESSAGE IS FOR ALL AREAS OF THE CARIBBEAN EXCEPT PUERTO
RICO AND THE VIRGIN ISLANDS. A SEPARATE PRODUCT WILL BE ISSUED
BY THIS CENTER FOR THOSE AREAS.

... A REGIONAL TSUNAMI WATCH IS IN EFFECT ...

A TSUNAMI WATCH IS IN EFFECT FOR

 ANTIGUA / MONTSERRAT / BARBUDA / GUADELOUPE / SAINT KITTS /
 DOMINICA / ANGUILLA / SAINT MAARTEN / SAINT MARTIN /
 MARTINIQUE / SAINT LUCIA / BARBADOS / ST VINCENT / GRENADA /
 DOMINICAN REP / TRINIDAD TOBAGO / TURKS N CAICOS / BONAIRE /
 HAITI / BAHAMAS / CURACAO / ARUBA / CUBA / VENEZUELA /
 COLOMBIA / SURINAME / GUYANA

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

 ORIGIN TIME -  1310Z 24 APR 2006
 COORDINATES -  17.2 NORTH   61.6 WEST
 LOCATION    -  LEEWARD ISLANDS
 MAGNITUDE   -  7.7

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

 GAUGE LOCATION        LAT   LON    TIME    AMPL    PER
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 OWENGA CHATHAM      44.0S 176.4W  1821Z   0.42M  34MIN
 KAHULUI MAUI        20.9N 156.5W  1836Z   0.16M  46MIN
 HILO HAWAII         19.7N 155.1W  1752Z   0.14M  36MIN
 NUKU HIVA MARQUESAS  8.9S 140.1W  1822Z   0.56M  34MIN
 BALTRA GALAPAGS      0.4S  90.3W  1517Z   0.61M  34MIN
 EASTER              27.2S 109.4W  1818Z   0.28M  16MIN
 IQUIQUE             20.2S  70.2W  2006Z   0.49M  32MIN

 TIME - TIME OF THE MEASUREMENT
 AMPL - AMPLITUDE IN METERS FROM MIDDLE TO CREST OR MIDDLE
        TO TROUGH OR HALF OF THE CREST TO TROUGH
 PER  - PERIOD OF TIME FROM ONE WAVE CREST TO THE NEXT

EVALUATION

 SEA LEVEL READINGS INDICATE A TSUNAMI WAS GENERATED. IT MAY HAVE
 BEEN DESTRUCTIVE ALONG COASTS NEAR THE EARTHQUAKE EPICENTER.

 THE THREAT MAY CONTINUE FOR COASTAL AREAS LOCATED WITHIN ABOUT A
 THOUSAND KILOMETERS OF THE EARTHQUAKE EPICENTER. FOR THOSE AREAS
 WHEN NO MAJOR WAVES HAVE OCCURRED FOR AT LEAST TWO HOURS AFTER
 THE ESTIMATED ARRIVAL TIME OR DAMAGING WAVES HAVE NOT OCCURRED
 FOR AT LEAST TWO HOURS THEN LOCAL AUTHORITIES CAN ASSUME THE
 THREAT IS PASSED. DANGER TO BOATS AND COASTAL STRUCTURES CAN
 CONTINUE FOR SEVERAL HOURS DUE TO RAPID CURRENTS.  AS LOCAL
 CONDITIONS CAN CAUSE A WIDE VARIATION IN TSUNAMI WAVE ACTION THE
 ALL CLEAR DETERMINATION MUST BE MADE BY LOCAL AUTHORITIES.
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DUE TO ONLY LIMITED SEA LEVEL DATA FROM THE REGION IT MAY NOT BE POSSIBLE FOR THIS CENTER TO RAPIDLY NOR ACCURATELY EVALUATE THE THE STRENGTH OF A TSUNAMI IF ONE HAS BEEN GENERATED.

ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. THE TIME BETWEEN SUCCESSIVE TSUNAMI WAVES CAN BE FIVE MINUTES TO ONE HOUR.

LOCATION		COORDINATES	ARRIVAL TIME
ANTIGUA	SAINT JOHNS	17.2N 62.0W	1326Z 24 APR
MONTSERRAT	PLYMOUTH	16.7N 62.2W	1329Z 24 APR
BARBUDA	PALMETTO POINT	17.6N 61.9W	1331Z 24 APR
GUADELOUPE	BASSE-TERRE	16.0N 61.8W	1337Z 24 APR
SAINT KITTS	BASSETERRE	17.3N 62.7W	1341Z 24 APR
DOMINICA	ROSEAU	15.3N 61.5W	1348Z 24 APR
ANGUILLA	THE VALLEY	18.3N 63.1W	1349Z 24 APR
SAINT MAARTEN	SIMPSON BAAI	18.0N 63.1W	1354Z 24 APR
SAINT MARTIN	BAIE BLANCHE	18.1N 63.0W	1354Z 24 APR
MARTINIQUE	FORT-DE-FRANCE	14.5N 61.2W	1356Z 24 APR
SAINT LUCIA	CASTRIES	14.0N 61.2W	1400Z 24 APR
BARBADOS	BRIDGETOWN	13.1N 59.6W	1406Z 24 APR
ST VINCENT	KINGSTOWN	13.2N 61.3W	1410Z 24 APR
GRENADA	SAINT GEORGES	12.0N 61.8W	1424Z 24 APR
DOMINICAN REP	CABO ENGANO	18.6N 68.3W	1424Z 24 APR
	PUERTO PLATA	19.8N 70.7W	1434Z 24 APR
	SANTO DOMINGO	18.3N 69.8W	1452Z 24 APR
TRINIDAD TOBAGO	PIRATES BAY	11.3N 60.6W	1429Z 24 APR
	PORT-OF-SPAIN	10.7N 61.7W	1513Z 24 APR
TURKS N CAICOS	GRAND TURK	21.5N 71.1W	1440Z 24 APR
	WEST CAICOS	21.7N 72.5W	1455Z 24 APR
BONAIRE	ONIMA	12.3N 68.3W	1448Z 24 APR
HAITI	CAP-HAITEN	19.8N 72.2W	1452Z 24 APR
	JEREMIE	18.7N 74.0W	1520Z 24 APR
	PORT-AU-PRINCE	18.7N 72.3W	1553Z 24 APR
BAHAMAS	MAYAGUANA	22.3N 73.0W	1457Z 24 APR
	GREAT INAGUA	20.8N 73.7W	1503Z 24 APR
	CROOKED IS	22.7N 74.1W	1509Z 24 APR
CURACAO	WILLEMSTAD	12.0N 69.0W	1458Z 24 APR
ARUBA	ORANJESTAD	12.5N 70.0W	1506Z 24 APR
CUBA	BARACOA	20.5N 74.5W	1510Z 24 APR
VENEZUELA	MAIQUETIA	10.6N 67.0W	1510Z 24 APR
	CUMANA	10.5N 64.2W	1521Z 24 APR
	PORLAMAR	10.8N 63.8W	1559Z 24 APR
	PUNTO FIJO	11.7N 70.3W	1606Z 24 APR
	GOLFO VENEZUELA	11.4N 71.2W	1637Z 24 APR
COLOMBIA	RIOHACHA	11.7N 73.0W	1545Z 24 APR
SURINAME	PARAMARIBO	5.9N 55.2W	1709Z 24 APR
GUYANA	GEORGETOWN	6.8N 58.2W	1744Z 24 APR

THIS WILL BE THE FINAL PRODUCT ISSUED BY THE PACIFIC TSUNAMI WARNING CENTER FOR THIS EVENT UNLESS ADDITIONAL INFORMATION BECOMES AVAILABLE.

Ocean-Wide Tsunami Watch Bulletin (shallow, undersea earthquake; 7.9 ≤ Mw)

TSUNAMI MESSAGE NUMBER 001
PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
ISSUED AT 1353Z 24 APR 2006

THIS MESSAGE IS FOR ALL AREAS OF THE CARIBBEAN EXCEPT PUERTO RICO AND THE VIRGIN ISLANDS. A SEPARATE PRODUCT WILL BE ISSUED BY THIS CENTER FOR THOSE AREAS.

... A CARIBBEAN-WIDE TSUNAMI WATCH IS IN EFFECT ...

A TSUNAMI WATCH IS IN EFFECT FOR

ANTIGUA / MONTSERRAT / BARBUDA / GUADELOUPE / SAINT KITTS /
DOMINICA / ANGUILLA / SAINT MAARTEN / SAINT MARTIN /
MARTINIQUE / SAINT LUCIA / BARBADOS / ST VINCENT / GRENADA /
DOMINICAN REP / TRINIDAD TOBAGO / TURKS N CAICOS / BONAIRE /
HAITI / BAHAMAS / CURACAO / ARUBA / CUBA / VENEZUELA / BERMUDA /
JAMAICA / COLOMBIA / PANAMA / FRENCH GUIANA / HONDURAS /
MEXICO / COSTA RICA / SURINAME / BELIZE / NICARAGUA /
GUATEMALA / GUYANA / BRAZIL

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 1310Z 24 APR 2006
COORDINATES - 17.2 NORTH 61.6 WEST
LOCATION - LEEWARD ISLANDS
MAGNITUDE - 8.3

EVALUATION

EARTHQUAKES OF THIS SIZE HAVE THE POTENTIAL TO GENERATE A
WIDESPREAD DESTRUCTIVE TSUNAMI THAT CAN AFFECT COASTLINES ACROSS
THE ENTIRE CARIBBEAN REGION.

HOWEVER - IT IS NOT KNOWN THAT A TSUNAMI WAS GENERATED. THIS
WATCH IS BASED ONLY ON THE EARTHQUAKE EVALUATION. AUTHORITIES IN
THE REGION SHOULD TAKE APPROPRIATE ACTION IN RESPONSE TO THE
POSSIBILITY OF A WIDESPREAD DESTRUCTIVE TSUNAMI.

DUE TO ONLY LIMITED SEA LEVEL DATA FROM THE REGION IT MAY NOT BE
POSSIBLE FOR THIS CENTER TO RAPIDLY CONFIRM NOR EVALUATE THE
STRENGTH OF A TSUNAMI IF ONE HAS BEEN GENERATED.

ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES. ACTUAL ARRIVAL TIMES
MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. THE TIME
BETWEEN SUCCESSIVE TSUNAMI WAVES CAN BE FIVE MINUTES TO ONE HOUR.

LOCATION		COORDINATES		ARRIVAL TIME
ANTIGUA	SAINT JOHNS	17.2N	62.0W	1326Z 24 APR
MONTSERRAT	PLYMOUTH	16.7N	62.2W	1329Z 24 APR
BARBUDA	PALMETTO POINT	17.6N	61.9W	1331Z 24 APR
GUADELOUPE	BASSE-TERRE	16.0N	61.8W	1337Z 24 APR
SAINT KITTS	BASSETERRE	17.3N	62.7W	1341Z 24 APR
DOMINICA	ROSEAU	15.3N	61.5W	1348Z 24 APR
ANGUILLA	THE VALLEY	18.3N	63.1W	1349Z 24 APR
SAINT MAARTEN	SIMPSON BAAI	18.0N	63.1W	1354Z 24 APR
SAINT MARTIN	BAIE BLANCHE	18.1N	63.0W	1354Z 24 APR
MARTINIQUE	FORT-DE-FRANCE	14.5N	61.2W	1356Z 24 APR
SAINT LUCIA	CASTRIES	14.0N	61.2W	1400Z 24 APR
BARBADOS	BRIDGETOWN	13.1N	59.6W	1406Z 24 APR
ST VINCENT	KINGSTOWN	13.2N	61.3W	1410Z 24 APR
GRENADA	SAINT GEORGES	12.0N	61.8W	1424Z 24 APR
DOMINICAN REP	CABO ENGANO	18.6N	68.3W	1424Z 24 APR
	PUERTO PLATA	19.8N	70.7W	1434Z 24 APR
	SANTO DOMINGO	18.3N	69.8W	1452Z 24 APR
TRINIDAD TOBAGO	PIRATES BAY	11.3N	60.6W	1429Z 24 APR
	PORT-OF-SPAIN	10.7N	61.7W	1513Z 24 APR
TURKS N CAICOS	GRAND TURK	21.5N	71.1W	1440Z 24 APR
	WEST CAICOS	21.7N	72.5W	1455Z 24 APR
BONAIRE	ONIMA	12.3N	68.3W	1448Z 24 APR
HAITI	CAP-HAITEN	19.8N	72.2W	1452Z 24 APR
	JEREMIE	18.7N	74.0W	1520Z 24 APR
	PORT-AU-PRINCE	18.7N	72.3W	1553Z 24 APR
BAHAMAS	MAYAGUANA	22.3N	73.0W	1457Z 24 APR
	GREAT INAGUA	20.8N	73.7W	1503Z 24 APR
	CROOKED IS	22.7N	74.1W	1509Z 24 APR
	SAN SALVADOR	24.1N	74.5W	1510Z 24 APR
	ELEUTHERA IS	25.2N	76.0W	1523Z 24 APR
	ABACO IS	26.6N	77.1W	1536Z 24 APR
	NASSAU	25.1N	77.4W	1541Z 24 APR
	FREEPORT	26.5N	78.8W	1603Z 24 APR

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 CURACAO          WILLEMSTAD         12.0N  69.0W    1458Z 24 APR
 ARUBA            ORANJESTAD         12.5N  70.0W    1506Z 24 APR
 CUBA             BARACOA            20.5N  74.5W    1510Z 24 APR
                  SANTIAGO D CUBA    19.8N  75.8W    1525Z 24 APR
                  GIBARA             21.2N  76.0W    1528Z 24 APR
                  SANTA CRZ D SUR    20.7N  78.0W    1620Z 24 APR
                  CIENFUEGOS         22.0N  80.5W    1620Z 24 APR
                  LA HABANA          23.2N  82.4W    1732Z 24 APR
                  NUEVA GERONA       21.9N  82.8W    1737Z 24 APR
 VENEZUELA        MAIQUETIA          10.6N  67.0W    1510Z 24 APR
                  CUMANA             10.5N  64.2W    1521Z 24 APR
                  PORLAMAR           10.8N  63.8W    1559Z 24 APR
                  PUNTO FIJO         11.7N  70.3W    1606Z 24 APR
                  GOLFO VENEZUELA    11.4N  71.2W    1637Z 24 APR
 BERMUDA          RUTHS BAY          32.4N  64.6W    1520Z 24 APR
 JAMAICA          MONTEGO BAY        18.5N  77.9W    1544Z 24 APR
                  KINGSTON           17.9N  76.9W    1554Z 24 APR
 COLOMBIA         RIOHACHA           11.7N  73.0W    1545Z 24 APR
                  SANTA MARTA        11.3N  74.2W    1548Z 24 APR
                  BARRANQUILLA       11.2N  74.8W    1552Z 24 APR
                  CARTAGENA          10.5N  75.5W    1608Z 24 APR
                  PUNTA CARIBANA      8.6N  76.9W    1639Z 24 APR
 PANAMA           PUERTO CARRETO      8.8N  77.6W    1630Z 24 APR
                  COLON               9.3N  80.0W    1649Z 24 APR
                  BOCAS DEL TORO      9.4N  82.2W    1703Z 24 APR
 FRENCH GUIANA    CAYENNE             4.9N  52.3W    1648Z 24 APR
 HONDURAS         TRUJILLO           15.9N  86.0W    1702Z 24 APR
                  PUERTO CORTES      15.9N  88.0W    1712Z 24 APR
 MEXICO           COZUMEL            20.5N  87.0W    1704Z 24 APR
                  MADERO             22.3N  97.7W    1937Z 24 APR
                  VERACRUZ           19.2N  96.0W    1938Z 24 APR
                  TEXAS BORDER       26.0N  97.0W    1957Z 24 APR
                  CAMPECHE           19.8N  90.7W    2125Z 24 APR
 COSTA RICA       PUERTO LIMON       10.0N  83.0W    1707Z 24 APR
 SURINAME         PARAMARIBO          5.9N  55.2W    1709Z 24 APR
 BELIZE           BELIZE CITY        17.5N  88.2W    1724Z 24 APR
 NICARAGUA        PUNTA GORDA        11.3N  83.8W    1726Z 24 APR
                  PUERTO CABEZAS     14.0N  83.4W    1853Z 24 APR
 GUATEMALA        PUERTO BARRIOS     15.8N  88.7W    1734Z 24 APR
 GUYANA           GEORGETOWN          6.8N  58.2W    1744Z 24 APR
 BRAZIL           FORTALEZA           3.7S  38.5W    1840Z 24 APR
                  ILHA DE MARACA      2.2N  50.5W    1841Z 24 APR
                  SAO LUIS            2.5S  44.3W    2028Z 24 APR

THIS WILL BE THE ONLY PRODUCT ISSUED BY THE PACIFIC TSUNAMI
WARNING CENTER FOR THIS EVENT UNLESS ADDITIONAL INFORMATION
BECOMES AVAILABLE.
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Ocean-Wide Tsunami Watch Supplement

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TSUNAMI MESSAGE NUMBER 002
PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
ISSUED AT 1354Z 24 APR 2006

THIS MESSAGE IS FOR ALL AREAS OF THE CARIBBEAN EXCEPT PUERTO
RICO AND THE VIRGIN ISLANDS. A SEPARATE PRODUCT WILL BE ISSUED
BY THIS CENTER FOR THOSE AREAS.

... A CARIBBEAN-WIDE TSUNAMI WATCH IS IN EFFECT ...

A TSUNAMI WATCH IS IN EFFECT FOR

 ANTIGUA / MONTSERRAT / BARBUDA / GUADELOUPE / SAINT KITTS /
 DOMINICA / ANGUILLA / SAINT MAARTEN / SAINT MARTIN /
 MARTINIQUE / SAINT LUCIA / BARBADOS / ST VINCENT / GRENADA /
 DOMINICAN REP / TRINIDAD TOBAGO / TURKS N CAICOS / BONAIRE /
 HAITI / BAHAMAS / CURACAO / ARUBA / CUBA / VENEZUELA / BERMUDA /
 JAMAICA / COLOMBIA / PANAMA / FRENCH GUIANA / HONDURAS /
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MEXICO / COSTA RICA / SURINAME / BELIZE / NICARAGUA /
GUATEMALA / GUYANA / BRAZIL

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 1310Z 24 APR 2006
COORDINATES - 17.2 NORTH 61.6 WEST
LOCATION - LEEWARD ISLANDS
MAGNITUDE - 8.3

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

GAUGE LOCATION	LAT	LON	TIME	AMPL	PER
OWENGA CHATHAM	44.0S	176.4W	1821Z	0.42M	34MIN
KAHULUI MAUI	20.9N	156.5W	1836Z	0.16M	46MIN
HILO HAWAII	19.7N	155.1W	1752Z	0.14M	36MIN
NUKU HIVA MARQUESAS	8.9S	140.1W	1822Z	0.56M	34MIN
BALTRA GALAPAGS	0.4S	90.3W	1517Z	0.61M	34MIN
EASTER	27.2S	109.4W	1818Z	0.28M	16MIN
IQUIQUE	20.2S	70.2W	2006Z	0.49M	32MIN

TIME - TIME OF THE MEASUREMENT
AMPL - AMPLITUDE IN METERS FROM MIDDLE TO CREST OR MIDDLE
TO TROUGH OR HALF OF THE CREST TO TROUGH
PER - PERIOD OF TIME FROM ONE WAVE CREST TO THE NEXT

EVALUATION

SEA LEVEL READINGS INDICATE A TSUNAMI WAS GENERATED. IT MAY HAVE ALREADY HAVE BEEN DESTRUCTIVE ALONG COASTS NEAR THE EARTHQUAKE EPICENTER.

BASED ON THESE DATA THE THREAT CONTINUES FOR ALL COASTAL AREAS OF THE CARIBBEAN. FOR THOSE AREAS - WHEN NO MAJOR WAVES HAVE OCCURRED FOR AT LEAST TWO HOURS AFTER THE ESTIMATED ARRIVAL TIME OR DAMAGING WAVES HAVE NOT OCCURRED FOR AT LEAST TWO HOURS THEN LOCAL AUTHORITIES CAN ASSUME THE THREAT IS PASSED. DANGER TO BOATS AND COASTAL STRUCTURES CAN CONTINUE FOR SEVERAL HOURS DUE TO RAPID CURRENTS. AS LOCAL CONDITIONS CAN CAUSE A WIDE VARIATION IN TSUNAMI WAVE ACTION THE ALL CLEAR DETERMINATION MUST BE MADE BY LOCAL AUTHORITIES.

DUE TO ONLY LIMITED SEA LEVEL DATA FROM THE REGION IT MAY NOT BE POSSIBLE FOR THIS CENTER TO RAPIDLY NOR ACCURATELY EVALUATE THE THE STRENGTH OF A TSUNAMI IF ONE HAS BEEN GENERATED.

ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. THE TIME BETWEEN SUCCESSIVE TSUNAMI WAVES CAN BE FIVE MINUTES TO ONE HOUR.

LOCATION		COORDINATES		ARRIVAL TIME
ANTIGUA	SAINT JOHNS	17.2N	62.0W	1326Z 24 APR
MONTSERRAT	PLYMOUTH	16.7N	62.2W	1329Z 24 APR
BARBUDA	PALMETTO POINT	17.6N	61.9W	1331Z 24 APR
GUADELOUPE	BASSE-TERRE	16.0N	61.8W	1337Z 24 APR
SAINT KITTS	BASSETERRE	17.3N	62.7W	1341Z 24 APR
DOMINICA	ROSEAU	15.3N	61.5W	1348Z 24 APR
ANGUILLA	THE VALLEY	18.3N	63.1W	1349Z 24 APR
SAINT MAARTEN	SIMPSON BAAI	18.0N	63.1W	1354Z 24 APR
SAINT MARTIN	BAIE BLANCHE	18.1N	63.0W	1354Z 24 APR
MARTINIQUE	FORT-DE-FRANCE	14.5N	61.2W	1356Z 24 APR
SAINT LUCIA	CASTRIES	14.0N	61.2W	1400Z 24 APR
BARBADOS	BRIDGETOWN	13.1N	59.6W	1406Z 24 APR
ST VINCENT	KINGSTOWN	13.2N	61.3W	1410Z 24 APR
GRENADA	SAINT GEORGES	12.0N	61.8W	1424Z 24 APR
DOMINICAN REP	CABO ENGANO	18.6N	68.3W	1424Z 24 APR
	PUERTO PLATA	19.8N	70.7W	1434Z 24 APR
	SANTO DOMINGO	18.3N	69.8W	1452Z 24 APR

TRINIDAD TOBAGO	PIRATES BAY	11.3N	60.6W	1429Z 24 APR
	PORT-OF-SPAIN	10.7N	61.7W	1513Z 24 APR
TURKS N CAICOS	GRAND TURK	21.5N	71.1W	1440Z 24 APR
	WEST CAICOS	21.7N	72.5W	1455Z 24 APR
BONAIRE	ONIMA	12.3N	68.3W	1448Z 24 APR
HAITI	CAP-HAITEN	19.8N	72.2W	1452Z 24 APR
	JEREMIE	18.7N	74.0W	1520Z 24 APR
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	ILHA DE MARACA	2.2N	50.5W	1841Z 24 APR
	SAO LUIS	2.5S	44.3W	2028Z 24 APR

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