GIS Support for the Indian Ocean Tsunami Disaster

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Bureau of Intelligence and Research
U.S. Department of State

ESRI Federal Users Conference
Washington, D.C.
February 1, 2005

Unclassified

Earthquake/Tsunami Disaster
December 26, 2004

Information as of 1200, December 27

INR

9529 12-04 STATE (INR)

Country/Organization	Selected Offers of Specific Humanitarian Assistance
United Kingdom	Tents and plastic sheeting to Sri Lanka; $100K to help fund a WHO crisis response team.
Japan	Survey team to Indonesia; disaster and medical relief teams to Sri Lanka; Japanese Red Cross $965,250 to Sri Lanka.
Austria	MSF/Austria sending 32 tons of emergency goods to region.
China	$2.7 million to the region
Philippines	Aid workers to region
Australia	$7.6 million and two C-130 aircraft for regional response.
Israel	Medical team to Sri Lanka; search and rescue teams to India.
Turkey	General financial assistance to region
Malaysia	Malaysian private charities assisting in Malaysia and Indonesia; Government of Malaysia to assist Indonesia.
India	Military assisting Sri Lanka, the Maldives, and Thailand.
Taiwan	$250,000 donated to Indonesia, Sri Lanka, Thailand, India.
Pakistan	Pakistan's Navy is assisting in Malaysia and the Maldives; GOP sending tents, medicine and water to Sri Lanka.
France	100 aid workers to Sri Lanka
Sweden	Two rescue teams to Thailand
Greece	Medical personnel and 6 tons of medical supplies to Sri Lanka and India; offered 150K Euros to both countries.
Iran	Has pledged general assistance to the region.
Ireland	1 million Euros to region; $100K to WHO response team.
Kuwait	$1 million donated to the region
Singapore	Red Cross (Singapore) $613,000 appeal for region.
Switzerland	Providing 1million Swiss francs; humanitarian aid experts to Sri Lanka and India.
Russia	25 tons of humanitarian aid, a helicopter, and a rescue team to Sri Lanka; also promised assistance to Indonesia.
Indonesia	Cease-fire negotiated with ACEH rebels to enable aid.
Canada	$1 million in general assistance to the region via IFRC.
Germany	Providing $1.35 million in aid to region; German Caritas has donated 300K Euros to India and Sri Lanka; $100K to WHO.
EU	3 million Euros to the region.
UN/OCHA	Disaster assistance and coordination team (UNDAC) sent to Sri Lanka; other teams sent to Indonesia, Sri Lanka, India.
UNDP	UNDP has relaxed regulations to enable rapid purchase and distribution of aid in India.
WHO	Mobilizing funds for emergency supplies in affected states.
IFRC	Launched a worldwide appeal for $6.7 million in assistance; sent medical supplies for 100K people to Sri Lanka.
MSF/Belgium	32 tons of medical and sanitation materials to Indonesia.
CARE	Has sent assessment teams to Indonesia

Sabang
Andaman Sea
Banda Aceh
27,980
Lhoknga
Aceh Besar
107,740
Janthoe
Sigli
55,099
Pidie
Bireun
23,550
Bireuen
3,456
Lhokseumawe
28,470
Aceh Utara
1,849
Strait of Malacca
Mostly-destroyed coastal road
Aceh Jaya
31,465
Calang
9120 ft.
8497 ft.
8572 ft.
Takengon
Aceh Timur
Langsa
10,227
Karang Baru
Aceh Barat
Aceh Tengah
Aceh Nagan Raya
9793 ft.
Aceh
9022 ft.
Aceh Tamiang
INDIAN OCEAN
56,497
Meulaboh
Suka Makmue
10,497
Aceh Barat Daya
Gaya Lues
10330 ft.
9875 ft.
10957 ft.
3,180
Blangpidie
Belawan
Medan
At least 100,000 IDPs present
Kutacane
Aceh Selatan
Aceh Tenggara
Tapatuan
Sumatera Utara
Earthquake Epicenter
Simeulue
Sinabang
Aceh Singkil
Singkil
Tuangku
0 50 100 Kilometers
Major road
Minor road
Poor road
District boundary
District capital
56,497 Displaced persons in district (Information date: 1/12/05)
Unsurveyed district with significant numbers of displaced likely

Date: January 12, 2005 **COMMON OPERATING PICTURE FOR NORTHERN SUMATRA**

UNCLASSIFIED

Health Situation, IDP Locations, and US Government Assistance

Note:
District level boundary lines are currently being updated for the next series of map products.

Sources:
Government of Indonesia, 10 January 2005
UN Office for Coordination of Humanitarian Affairs, 10 January 2005
World Health Organization, 11 January 2005
International Federation of Red Cross, 11 January 2005
US Agency for International Development, 12 January 2005

	Areas Affected	Damage	Displaced	Injured	Missing	Deaths
Indonesia	Aceh: Districts (14 out of 21); 1 million people	172 sub-districts, 1550 villages, and 21,659 houses destroyed	605,849	1,443 hospitalized	10,078	113,306

WHO reports: no disease outbreaks, measles immunization campaigns have commenced. Tetanus and waterborne diseases remain a concern.

OCHA/HIC Assessments 10 Jan.
IDPs by District:
Aceh Besar: 107,740 IDPs
Aceh Barat: 56,497 IDPs
Pidie: 55,099 IDPs
Banda Aceh: 27,500 IDPs
Bireuen: 23,550 IDPs
Aceh Tengah: 3,454 IDPs
Aceh Timur: 1,849 IDPs

WHO-Assessed Health Needs
Medical and surgical treatment of injuries
Access to safe water supply
Disease surveillance
Mental health trauma
Health infrastructure reconstruction

Regional Map and Airport Staging Locations

BURMA
U-Tapao Airfield
THAILAND
Butterworth
Sultan Iskandarmuda
Polonia
MALAYSIA
INDONESIA
Kuala Lumpur
Subang Kuala Lumpur

Sigli: Camps with 20,500 IDPs

Lhokseumawe: Camps with 3,456 IDPs

Lamno: Eight camps with approximately 14,000 people.

USS Abraham Lincoln

Starting 31 Dec, USS Abraham Lincoln Carrier Strike Group 9 (ALCSG-9) and USS Bonhomme Richard Expeditionary Strike Group 5 (ESG-5) began conducting airlift, sealift and medical missions in support of relief operations along the western coast of Banda Aceh. ALCSG-9 responsible for area from the northern tip of Aceh to Meulaboh in the south. ESG-5 is responsible from Meulaboh to an area approximately 60 miles to the south.

USAID Assistance:
As of 12 January, USAID had committed over $31 million in assistance to Indonesia. In the health sector, assistance included grants to IFRC/Indonesian Red Cross, UNICEF, World Health Organization, International Organization of Migration, International Medical Corps, Church World Service, Save the Children/US, CARE, Mercy Corps, Johns Hopkins University, the Naval Medical Research Unit, and International Relief and Development.

Teunom: Camps with 7,000 IDPs

Langsa: Camps with 10,227 IDPs

Cot Seulamat: USAID/Disaster Assistance Reponse Team (DART) assessed village of 250 residents plus 200 IDPs.

USS Bonhomme Richard

Meulaboh: Four IDP camps with estimated population of 46,000.

Meulaboh: Only one functional hospital remains on the outskirts of the city, reportedly supported by MSF, with one emergency room, one surgical suite and one inpatient ward of 20 beds. Field hospitals are being deployed by the French army. Basic sanitation infrastructure is severely disrupted and safe water must be distributed from centralized points.

Earthquake Epicenter

26 Dec: A great earthquake occurred at 00:58:50 (UTC) on December 26, 2004. The epicenter of the magnitude 8.9 event was located at 3.298 N, 95.779 E, 250 km (155 miles) SSE of Banda Aceh, Sumatra, Indonesia. The quake generated a 10-meter-high tsunami hitting the northwest coast of Northern Sumatra.

Banda Aceh
Aceh Besar
Pidie
Bieruen
Aceh Utara
Aceh Barat
Aceh
Aceh Tengah
Aceh Timur
Aceh Selatan
Aceh Tenggara
Sumatra
Sumatera Utara
INDIAN OCEAN
INDONESIA
MEDAN

Earthquake epicenter
Province
District
City/Town
Village
Road
Railroad
Perennial/Permanent river
Non-Perennial/Intermittent/Fluctuating
Perennial/Permanent body of water
US Navy vessels

Airfields
Civil Airfield
Joint Mil/Civ Airport
Military Airfield
Airfield (few facilities)
Unusable
Heliport

Hospital Status
Limited
Operational

0 15 30 60 Kilometers

Humanitarian Information Unit
Department of State
202-203-7789
HIU_INFO@state.gov

UNCLASSIFIED

HIU Common Operating Picture:

- **Health,**
- **IDP Locations,**
- **USG Assistance**

USGS Response to Dec. 26 Tsunami

- USGS' Global Seismic Network (GSN) flashed seismic data minutes after quake to NOAA's Pacific Tsunami Warning Center (PTWC) and other GSN members.

- USGS' National Earthquake Information Center (NEIC) issued first alert of an 8.5 earthquake in the Indian Ocean.

- E-mails/Pager notifications to 25,000+ recipients, incl. those in affected countries.

- EROS Data Center on 12/27 began acquiring LandSat, ASTER, ALI, and Hyperion imagery [*NASA EOS: Terra, SRTM*]. Provided support under the International Charter: Space and Major Disasters (India and Sri Lanka activated the Charter).

- 12/28 began puchasing/licensing/posting of commercial, public domain, and USG GIS/RS data and derived products on public domain ftp site and USGS web site.

- NEIC by 12/29 produced "Shake Maps" (showing location/intensity of shaking) and PAGER maps (estimating numbers affected by strong ground shaking).

- Preparation of draft science plan for reconstruction and development.

The National Map Hazards Data Distribution System/Asian Tsunami - Microsoft Internet Explorer

File Edit View Favorites Tools Help

USGS science for a changing world

The National Map

Asian Tsunami Disaster Response

Home | Background | Imagery | Documents | Interactive Viewers | Related Links

The National Map Hazards Data Distribution System (HDDS)/Asian Tsunami

The The U.S. Geological Survey is playing a vital role through its National Center for Earth Resources Observation and Science (EROS) in relief efforts to nations impacted by the Asian tsunami disaster of December 26, 2004. EROS maintains the world's largest collection of civilian remotely sensed data of the Earth's land surface. Within hours after the disaster occurred, EROS began providing relief organizations worldwide with pre- and post-tsunami satellite images, as well as image-derived products that incorporate information on population density, elevation, and other relevant topics. These images and image-derived products are being used by relief organizations to make practical, well-informed decisions as to where relief efforts are most urgently needed and how best to carry out those efforts.

Download Data

Click to go to Interactive Viewer

http://gisdata.usgs.gov/Website/Disaster_Response/viewer.php?Box=30.0:-30.0:120.0:45.0

Internet

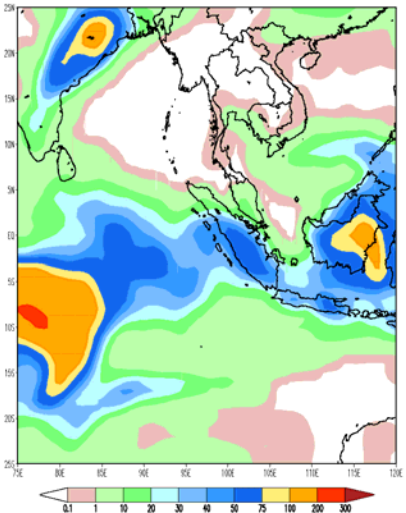
NOAA Tsunami Response

Immediate Assistance:

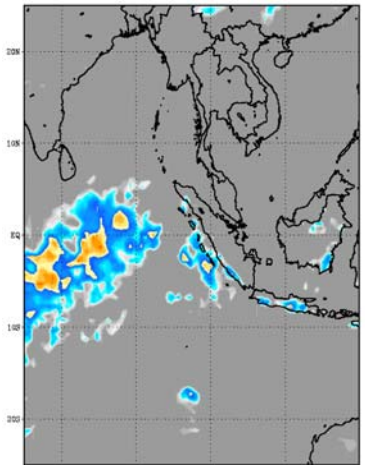
- Within minutes following an alarm signaling a strong earthquake, NOAA's Pacific Tsunami Warning Center in Hawaii issued a bulletin to Pacific governments indicating a magnitude 8.0 earthquake (later upgraded to 9.0) had occurred off the west coast of Northern Sumatra, Indonesia.
- Lead agency for International Charter: Space and Major Disasters, to coordinate for dissemination remotely sensed info and derived products.

Current Assistance:

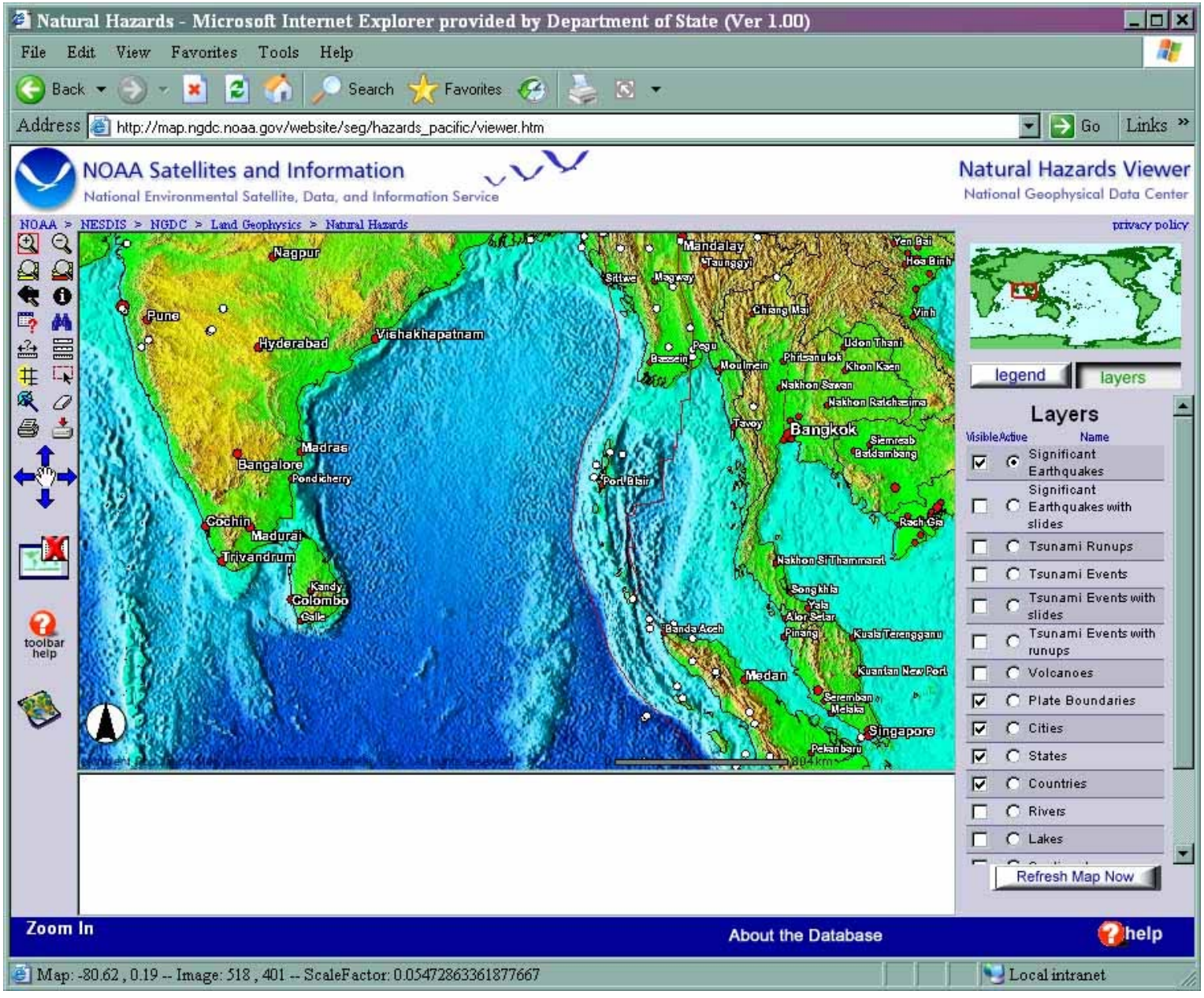
- Providing updated weather information to support recovery efforts.



International Charter Space and Major Disasters



NOAA ArcIMS


Natural Hazards - Microsoft Internet Explorer provided by Department of State (Ver 1.00)
File Edit View Favorites Tools Help
Back Search Favorites
Address http://map.ngdc.noaa.gov/website/seg/hazards_pacific/viewer.htm
Go Links
NOAA Satellites and Information
National Environmental Satellite, Data, and Information Service
Natural Hazards Viewer
National Geophysical Data Center
NOAA > NESDIS > NGDC > Land Geophysics > Natural Hazards
privacy policy
Nagpur
Pune
Hyderabad
Vishakhapatnam
Madras
Bangalore
Pondicherry
Cochin
Madurai
Trivandrum
Kandy
Colombo
Galle
Mandalay
Taunggyi
Sittwe
Magway
Pegu
Bassein
Moulmein
Chiang Mai
Yen Bai
Hoa Binh
Vinh
Udon Thani
Phitsanulok
Khon Kaen
Nakhon Sawan
Nakhon Ratchasima
Tavoy
Bangkok
Siemreab
Battambang
Port Blair
Rach Gia
Nakhon Si Thammarat
Songkhla
Yala
Alor Setar
Pinang
Kuala Terengganu
Banda Aceh
Medan
Kuantan New Port
Seremban
Melaka
Singapore
Pekanbaru
toolbar help
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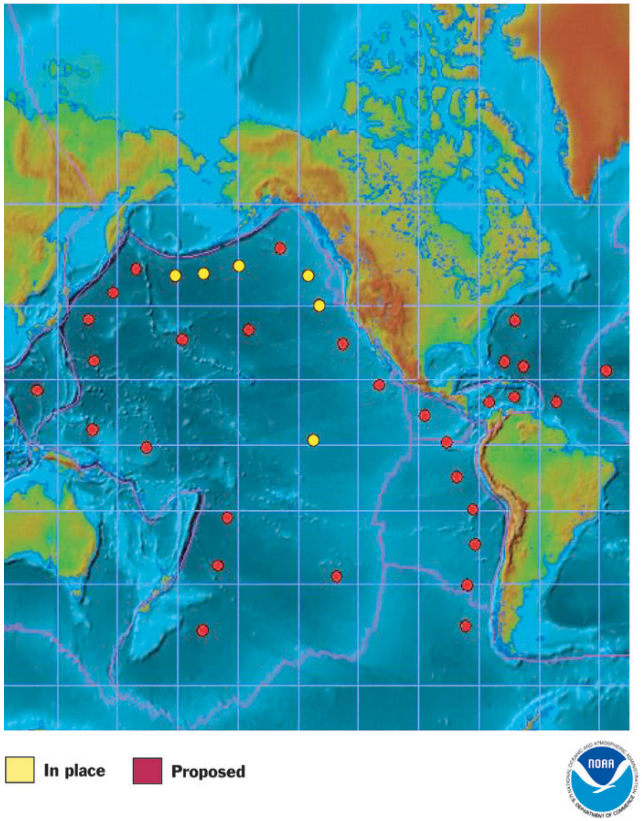
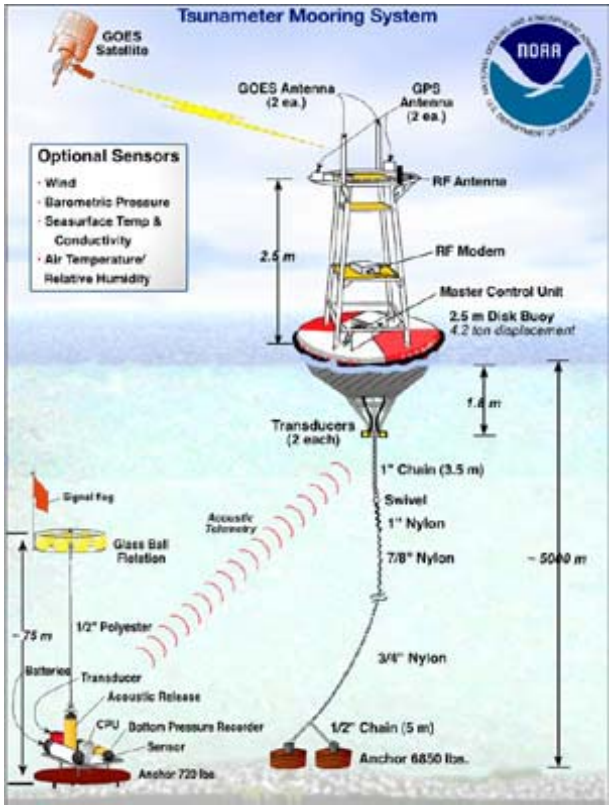
Significant Earthquakes
Significant Earthquakes with slides
Tsunami Runups
Tsunami Events
Tsunami Events with slides
Tsunami Events with runups
Volcanoes
Plate Boundaries
Cities
States
Countries
Rivers
Lakes
Refresh Map Now
Zoom In
About the Database
help
Map: -80.62 , 0.19 -- Image: 518 , 401 -- ScaleFactor: 0.05472863361877667
Local intranet

Planned NOAA Tsunami Assistance

- On January 14, 2005, the U.S. announced plans to expand the U.S. tsunami detection and warning capabilities as a contribution of the Global Earth Observation System of Systems, or GEOSS—the international effort to develop a comprehensive, sustained and integrated Earth observation system.

- NOAA will expand the deployment of its Deep-ocean Assessment and Reporting of Tsunamis (DART) buoy system to include the Indian Ocean, and work to enhance the dissemination of future tsunami warnings to potentially effected countries.



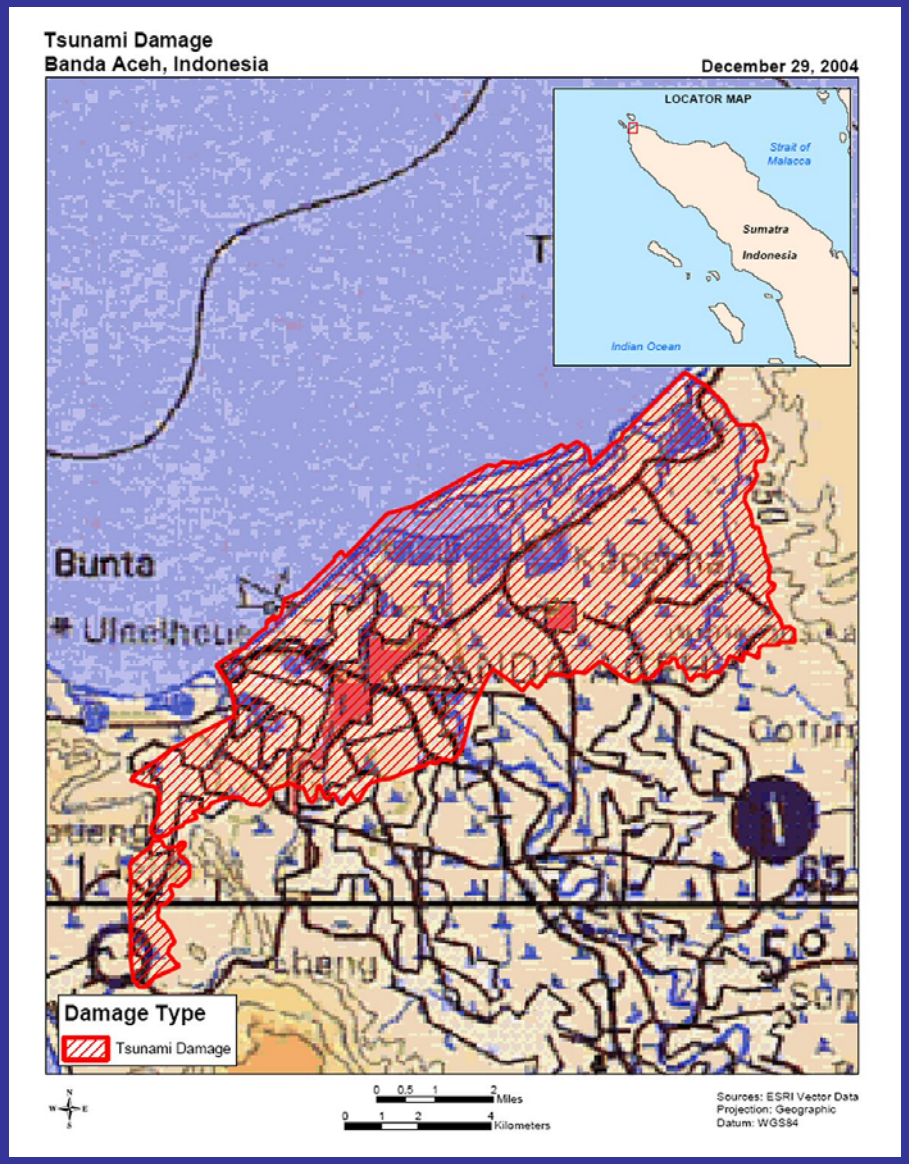


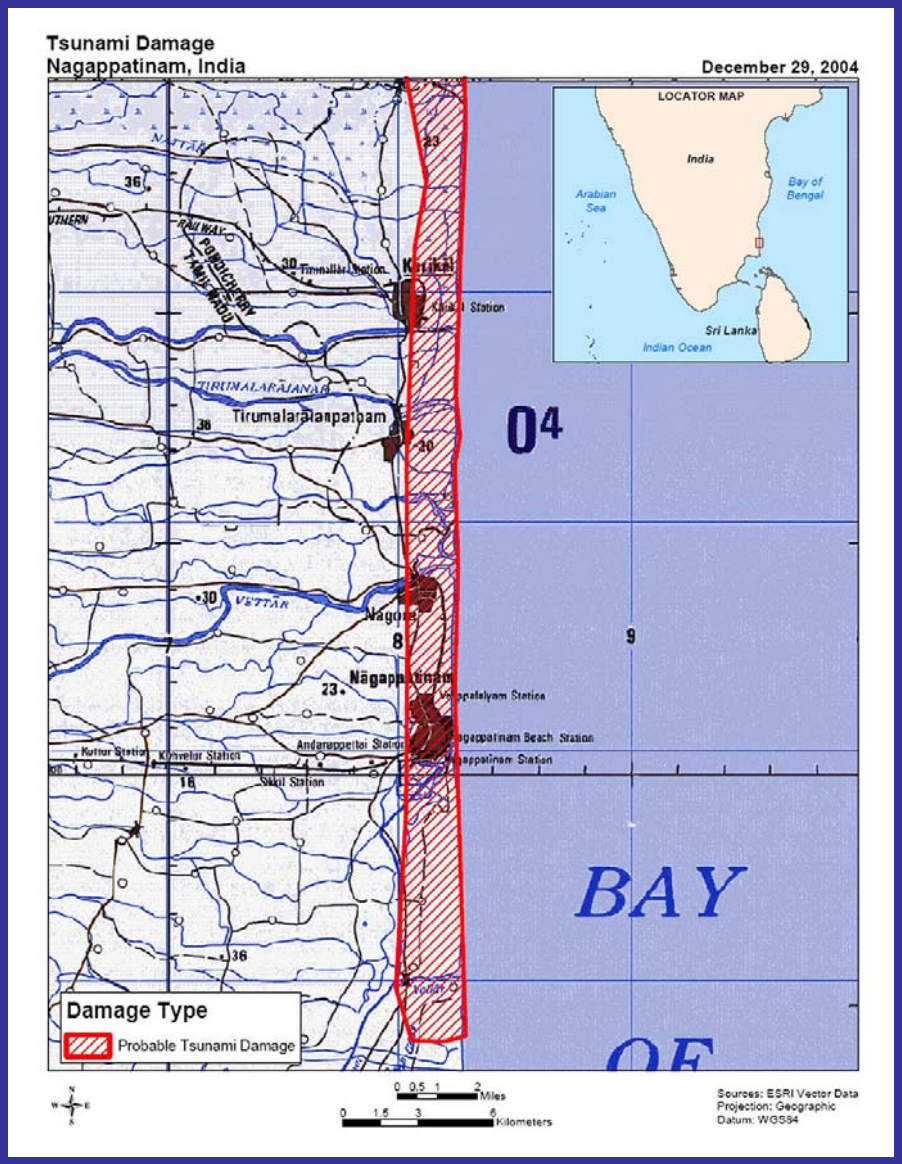
National Geospatial-Intelligence Agency (NGA) Tsunami Disaster Support

- Image City Maps produced
- SRTM 1 Elevation Data with void fill produced
- Controlled Imagery Base produced
- VMAP 1 and DFAD0 provided
- CADRG Raster Maps provided and produced
- Aeronautical information updates
- Over 100 GB of Commercial Imagery purchased (CSIL; PDC)

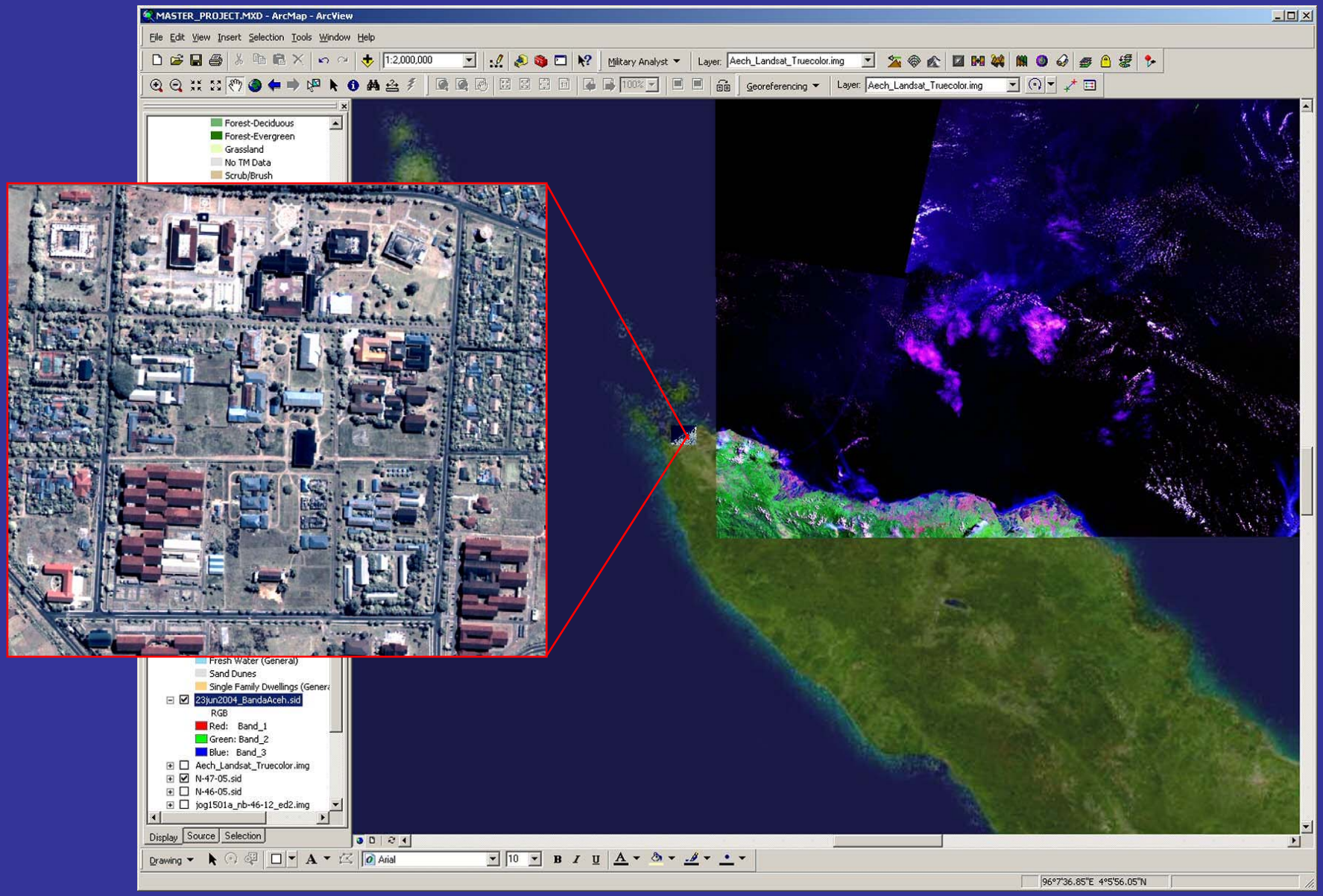
http:osis.nga.mil/IS/tsunami/index.cfm

Damage Assessment Maps and Shapefiles





Commercial Imagery Applications



Office of U.S. Foreign Disaster Assistance

FUNDING:

Humanitarian Information Center (HIC) in Sumatra, and UN OCHA/Field Information Support Unit (oversees HICs & chairs Geographic Information Support Team -- UN agencies, donors, others).

Cooperative Agreement with University of Georgia's Institute of Technology Outreach Services (ITOS) to maintain GIST Data Repository and provide processing, collection, and other services.

Seconded a staff member to HIC in Sumatra.

Agreement with USGS/EROS Data Center to obtain, process, analyze imagery.

PARTNERSHIPS:

Strategic input for data coordination effort within the humanitarian community via the GIST.

Work with NGA to obtain/distribute 1:50,000 scanned Indonesian maps for NW Sumatra.

Arranged with partners to provide vector base data, some created by extracting features off of large-scale Indonesian maps.

Distributed LandSat and VMAP1 data provided by USGS/EDC.

Arranged for and distributed two sets of damage area polygons and maps for the region, one developed by USGS/EDC using change detection techniques on LandSat data.

Arranged for and received IKONOS, QuickBird, and OrbView imagery from NGA. Worked with USGS/EDC to provide distribution in appropriate formats.

USAID Tsunami Relief

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USAID FROM THE AMERICAN PEOPLE — TSUNAMI RELIEF

You are here » Home » Asia and the Near East » Earthquake and Tsunamis

Indian Ocean Earthquake and Tsunamis

January 26, 2005

Total USG Humanitarian and Recovery Assistance Pledged: $350,000,000
Total USAID/OFDA Humanitarian Assistance Committed: $72,444,782
Total USG Humanitarian Assistance Committed[1]: $112,542,588

Fact Sheet #27 (PDF - 288 kb)
Map of Relief Activities #27 (PDF - 180 kb)

CURRENT SITUATION

Numbers Affected

- Estimates of the numbers of dead and affected from host country governments and international agencies continue to fluctuate due to new information and to changes in

HOW CAN I HELP?

The most effective way people can assist relief efforts is by making cash contributions to humanitarian organizations that are conducting relief operations, such as the ones on our List of Relief Organizations.

- **List of Relief Organizations Working in the Disaster Area**
- **USAID's Guide to Effective Giving/ Volunteer Information**
- **Center for International Disaster Information**

USAID encourages cash donations because they: allow aid professionals to procure the exact items needed (often in the affected region); reduce the burden on scarce resources (such as transportation routes, staff time, warehouse space, etc); can be transferred very quickly and without transportation costs; support the economy of the disaster-stricken region; ensure culturally

Home »
USAID Disaster Assistance »
USAID: Asia and Near East »
USGS Earthquake Information »
ReliefWeb »
Guidance for Submission of Proposals »
Guidance For Firms And Individuals Offering Commodities And Transportation Services »

LATEST NEWS

- 01/24/05: USAID/India: U.S. Commits Another $1 Million (Rs. 4.3 Crores) to Disaster Relief in Tamil Nadu
- 01/24/05: Fact Sheet #25 (PDF)
- 01/21/05: Fact Sheet #24 (PDF)
- 01/20/05: Fact Sheet #23 (PDF)
- 01/19/05: Fact Sheet #22 (PDF)
- 01/18/05: First Steps: Clearing the Rubble

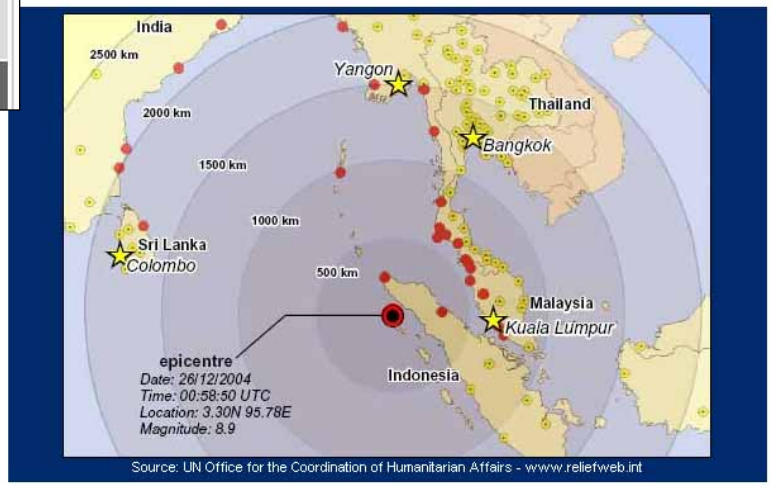
EMAIL

Sign up to receive Tsunami Relief

itude 9.0 earthquake on December 26, off the west coast of Northern Sumatra, Indonesia, triggered massive tsunamis ected several countries throughout South and Southeast Asia, as well as Somalia, Tanzania, and Kenya in East Africa. ocks from the December 26 earthquake continue to occur in the region.

on initial findings of USG assessment teams and on the recommendation of Secretary of State Powell and USAID strator Natsios, on December 31, President Bush committed $350 million toward earthquake and tsunami relief and y efforts. Dollar amounts in this Fact Sheet are part of the total pledge of $350 million and refer to specific funding actions ve been committed and programmed. USAID/OFDA welcomes proposals from qualified humanitarian assistance ations prepared to implement relief activities in response to the Indian Ocean Earthquake and Tsunami disaster.

At A Glance and Financial Assistance tables can be found in the **PDF version of this fact sheet**.

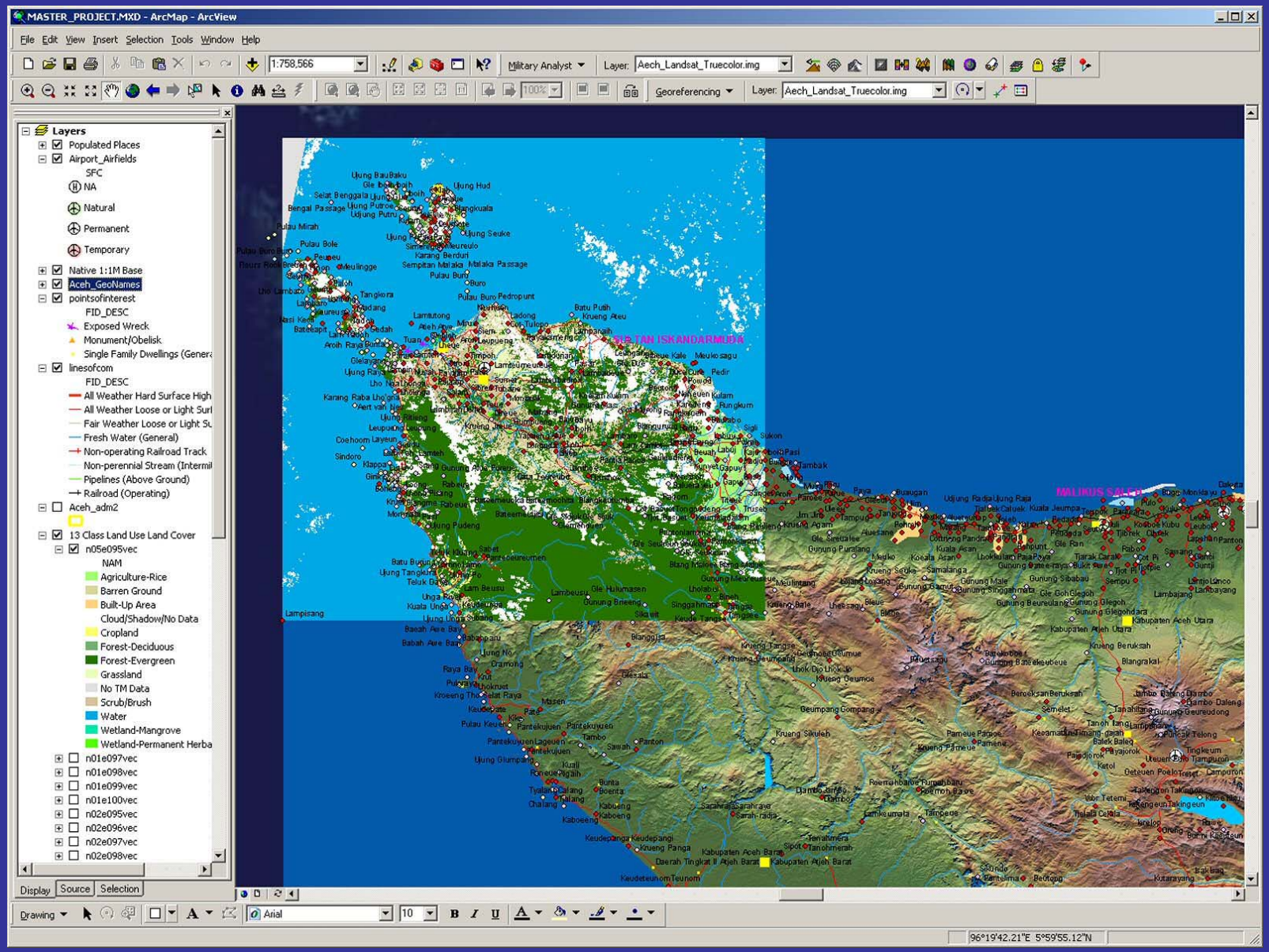


Source: UN Office for the Coordination of Humanitarian Affairs - www.reliefweb.int

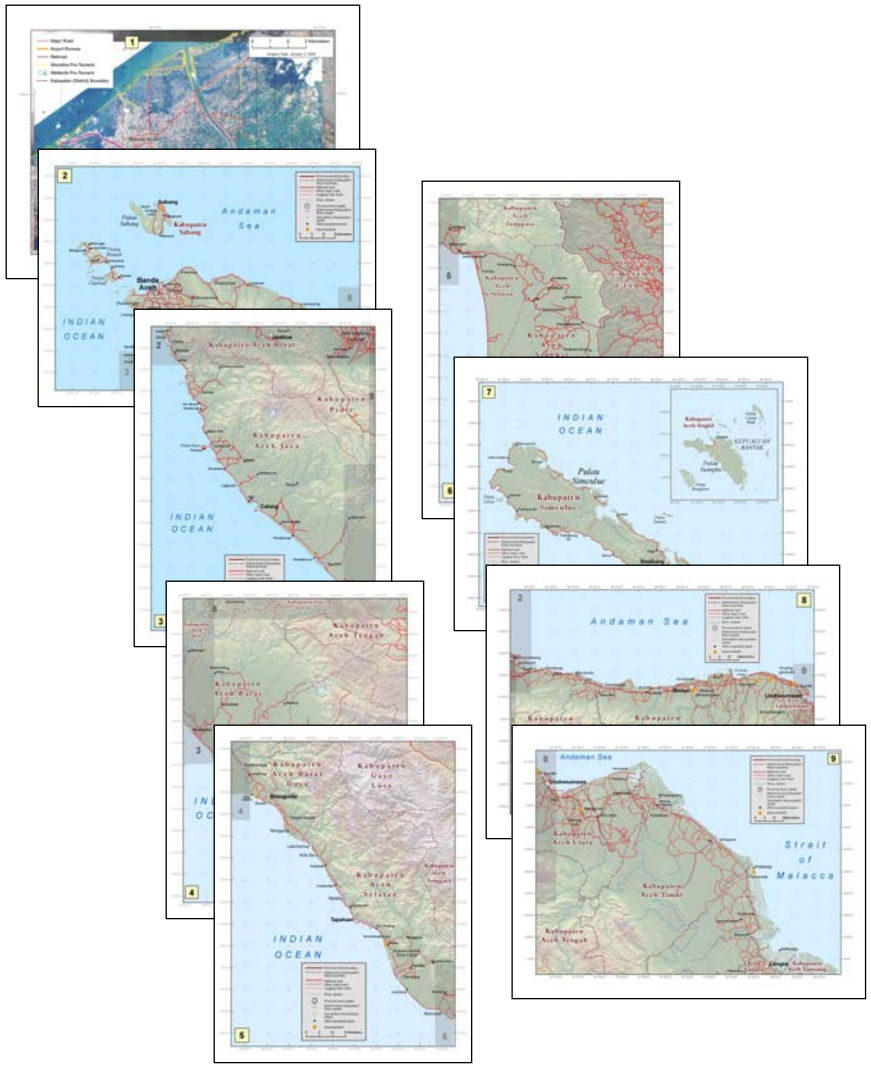
NGA GEOINT Support at the Department of State, INR/GGI

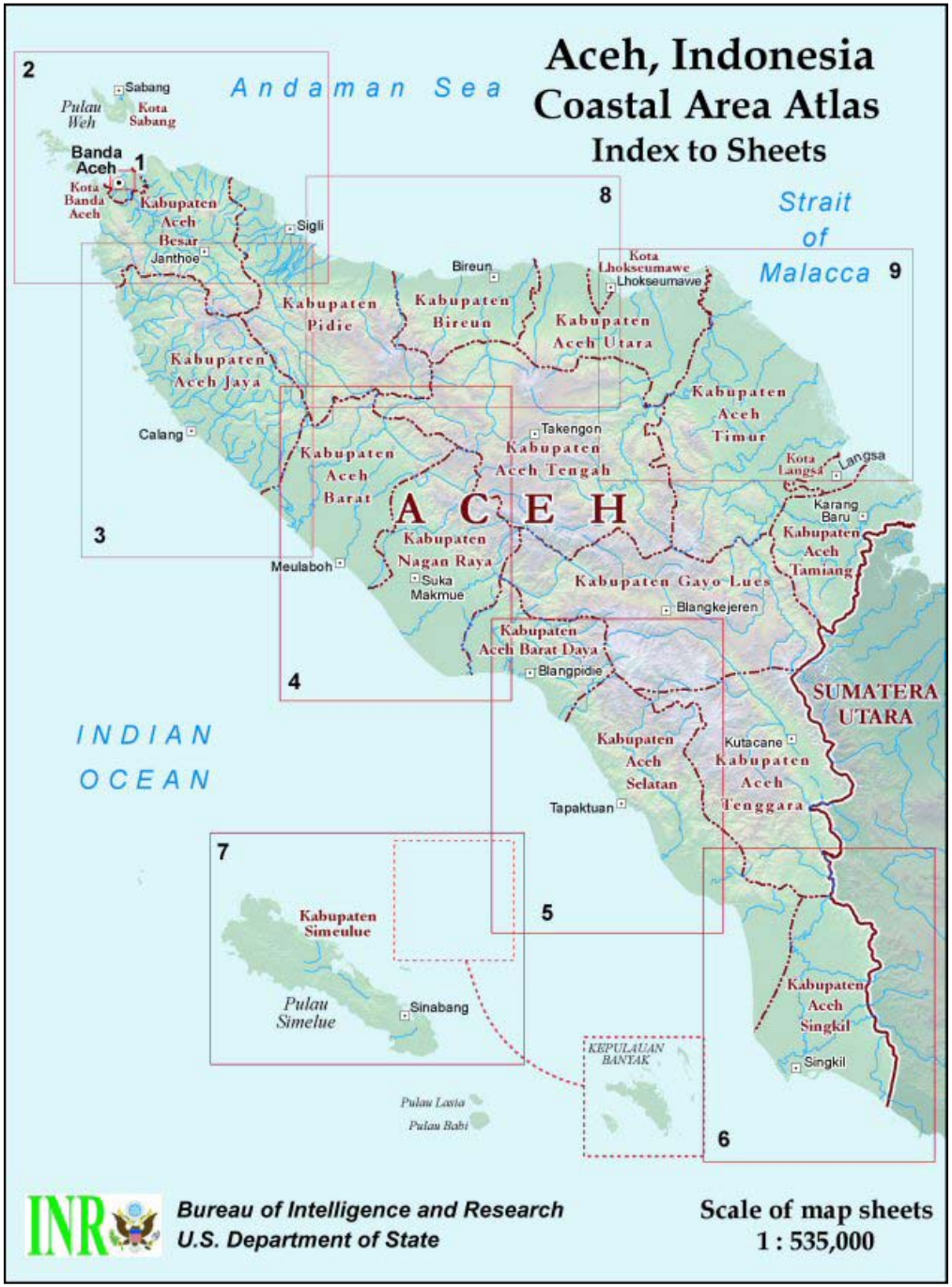
- **Damage Assessment Maps and Shapefiles**
  - INR/HIU, DoS Tsunami Task Force, USAID/OFDA
- **Aceh GIS Database**
  - INR/HIU, INR/GIU, USAID/OFDA, UN/OCHA - HIC
- **Mission Specific Transportation Data**
  - INR/HIU, INR/GIU, USAID/OFDA, INR/HIU,
- **GA support to the INR/GIU Atlas Project**
  - USAID/OFDA, INR/HIU, DoS Tsunami Task Force,
  - United Nations

Aceh GIS Database



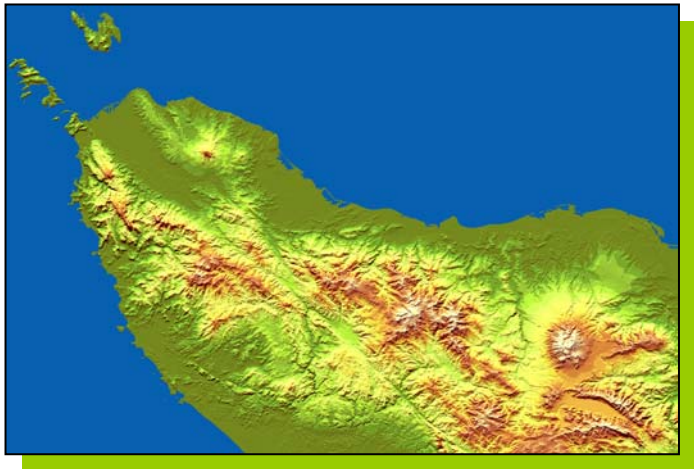
State INR/GGI
Aceh Coastal Atlas





2
Province-level boundary
District-level (Kabupaten/ Kota) boundary
National road
Other major road
Logging road, track
River, stream
Province-level capital
District-level (Kabupaten/ Kota) capital
Sub-district (Kecamatan) center
Other populated place
Airport/airfield
0 5 10 15 kilometers
Andaman Sea
INDIAN OCEAN
Sabang
Iboih
Aneuk Laot
Blangkuala
Meureulo
Pulau Sabang
Kabupaten Sabang
Meulingge
Leuenbale
Blangujung
Pulau Breueh
Paloh
Lampuyang
Lanteng
Deubab
Pulau Deubad
Neuheum
Banda Aceh
Lamnyong
Lambaro
Kota Banda Aceh
Lamteumeureue
Kruengraya
Lampanaih
Peokanbada
Lambaro
Lhonga
Sibree
Montasik
Indrapuri
Leupueng
Lam Teuba Droi
Beutong
Laweueng
Batee
Kabupaten Aceh Besar
Seulimeum
Padangtiji
Peukan Pidie
Sigli
Reubee
Seudu
Layeun
Girik
Lhong
Monmata
Pasi
Panca
Janthoe
Kabupaten Pidie
Asan Kumbang
Kamp. Asan
Beureueh
Tanjong
Lammeulo
Keumaladalam
3
8

Specific efforts were required to compile ***good*** data.



Repaired holes in SRTM level 1.

Added attributes to the geonames layer to distinguish administrative capitals.

Determined the best 2nd Order Administrative boundaries from more than 10 different sources.

Tsunami Humanitarian Information Sharing (THIS) Interagency Working Group

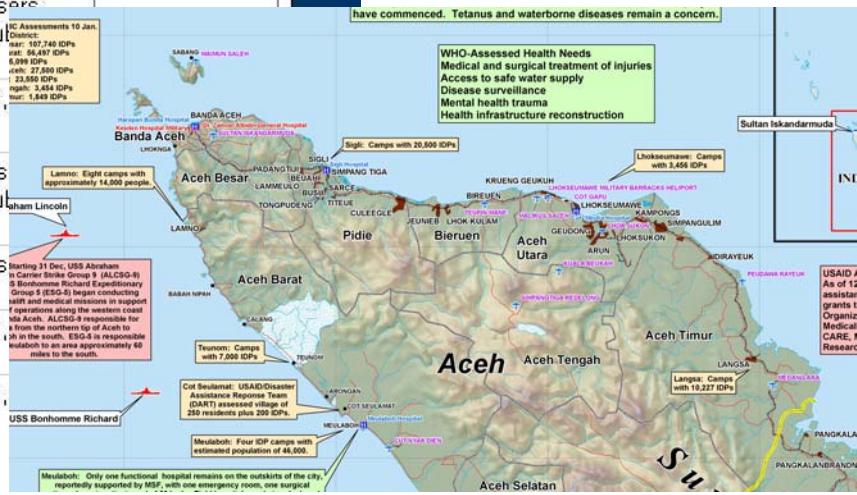
Humanitarian Information Unit

Friday January 28, 2005 — Interagency Community at Work

FrontPageinset.doc

Tsunami Information Links

Type	Name	Description	Audience
	-		
NEW	UN-HIC	UN Humanitarian Information Center for Sumatra	All
Data	CGIAR-CSI Consortium for Spatial Information	Comprehensive listing of GIS and remote sensing resources available via the Internet. Excellent source of information.	GIS/RS users, general pu
Data	Geodata.gov	Geospatial One-Stop E-Gov initiative's portal to provide access to geospatial data	GIS users,
Data	Satellite Images of Tsunami Affected Areas	Images acquired and processed by CRISP, National University of Singapore	GIS/RS us general pu
Data	Pacific Disaster Center	Pacific Disaster Relief Tsunami Information Page	GIS/RS us
Data	USGS	USGS National Map Hazards Data Distribution System	GIS users, public
News	NASA	User friendly tools to analyze several years of satellite data using animation	Scientists, public



Information about GIS services and availability of imagery was was disseminated through formal Dept. of State diplomatic channels (cable) to USG embassies around the world.

Welcome to the Pacific Disaster Center(PDC) - Microsoft Internet Explorer

File Edit View Favorites Tools Help

PACIFIC DISASTER CENTER

Managing Partner: EAST-WEST CENTER

Home | About PDC | Products | Hazard Info | Weather Imagery | Search | EMOPS | EWS

PDC Mission Statement

The Pacific Disaster Center's mission is to provide applied information research and analysis support for the development of more effective policies, institutions, programs, and information products for the disaster management and humanitarian assistance communities of the Asia Pacific region and beyond.

Fostering Disaster-Resistant Communities

Partnerships

East-West Center
Program Office

PDC Accomplishments

2003 Highlights

PDC NEWS | News archives

! Latest Information on the Great Sumatra Earthquake and Tsunami

PDC is collecting information resources for the public on this disaster. Click here for key overview resources, PDC news and updates, and other information products including preliminary damage maps for India, Thailand, Indonesia, Sri Lanka, and Somalia. . . . . more

Public Messages

last 24hr

- **PHFO HST Jan 19 06:45 GMT Jan 19 16:45**
  AUTOMATED WIND AND PRECIPITATION DATA FOR SELECTED HAWAII STATIONS - KNOTS
- **PHFO HST Jan 19 06:46 GMT Jan 19 16:46**
  HIGH SEAS FORECAST - N. PACIFIC
- **PHFO HST Jan 19 06:31 GMT Jan 19 16:31**
  AUTOMATED WIND AND PRECIPITATION DATA FOR SELECTED HAWAII STATIONS - KNOTS
- **PHFO HST Jan 19 05:58 GMT Jan 19 15:58**

SEARCH

PDC Perspectives

Email Notification List
- Register for PDC E-Mail News
- Feedback

WEATHER
Local Hourly Weather:
- Hawaiian Islands
- Yesterday in Hawaii

INFORMATION
- Hawaii Astronomical Tides
- Hawaii Civil Defense
- Hawaii Emergency Phone Numbers
- Honolulu Traffic Cam
- Maui County Hotline
- Warning Bulletins
- International News Links
- Homeland Security

Internet

South East Asia and Indian Ocean Tsunami Response Map Viewer - Microsoft Internet Explorer

PACIFIC DISASTER CENTER

South East Asia and Indian Ocean Tsunami Response Map Viewer

Quick link to tsunami information

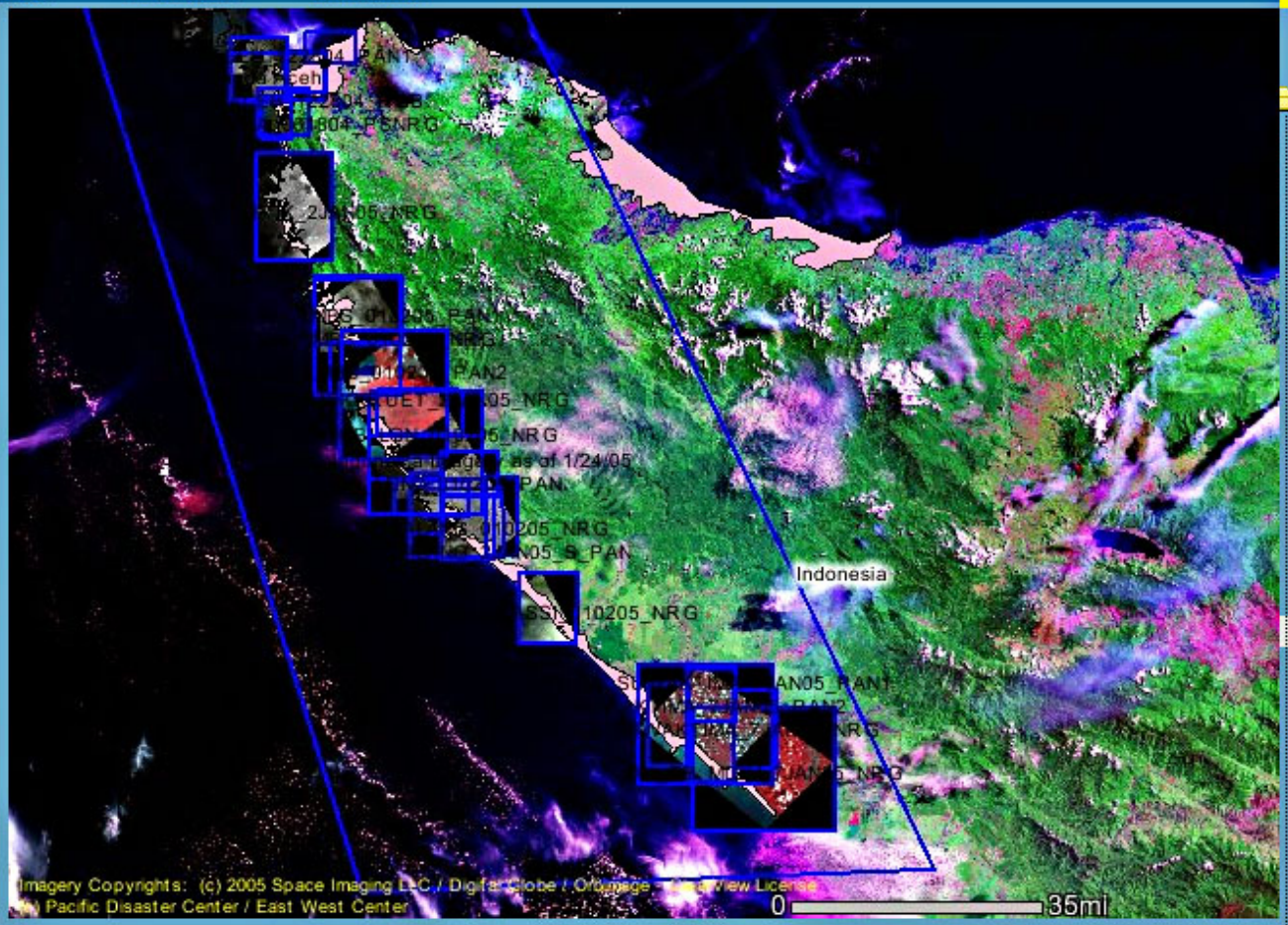
Download High-Res Imagery

PDC Homepage | Feedback | Disclaimer

Refresh Map

Tools

- Help
- Legend/Layers
- Overview
- Zoom In
- Zoom Out
- Full Extent
- Zoom Active
- Zoom Last
- Pan
- Identify
- Identify All
- Query
- Measure
- Set Units
- Select Box
- Clear
- Print



Layers

- All Layers
  - 26Dec04 Earthquake Epicenter
  - Recent Earthquakes
  - Tsunami Information
  - Baseline
    - Cities
    - Airports
    - Area of Interest
    - Coastlines
    - Country Boundaries
    - Country Labels
    - Population Density
  - Moderate Resolution Imagery
    - Pre-event
    - Post-event
  - High Resolution Imagery
    - CSIL Imagery Coverage
    - PDC Processed Imagery
    - Indonesia
      - Aceh Province
        - Pre-event
          - Banda Aceh IK (ps)nrg
          - Banda Aceh North(ps)rgb
          - Lhok Nga IK (ps)rgb
        - Post-event
          - Banda Aceh rgb QB
          - Banda Aceh pan1 QB
          - Banda Aceh pan2 QB
          - Breueh East pan QB
          - Breueh pan QB
          - Calang nrg QB
          - Calang rgb QB

Location of High Res images

Rec	ID	IMAGE	VERSIONS
1	0	IDN_QB_KPASSI_010205_NRG	_NRG, _RGB
2	0	Indonesia Imagery as of 1/24/05	

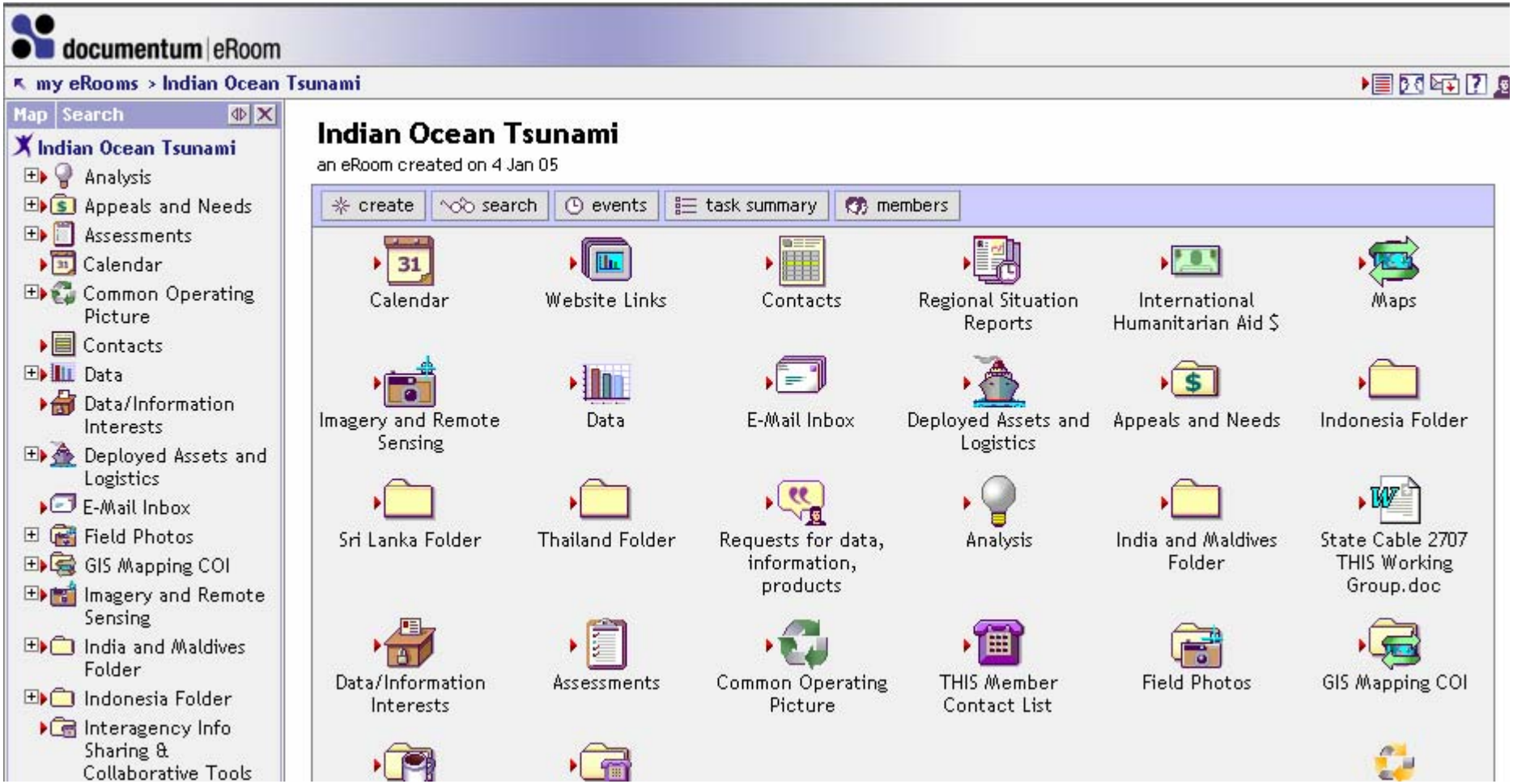
4° 7' 31' N 97° 8' 4' E

Internet

PDC GIS Efforts Supporting Sumatra Tsunami

- **Geospatial Data Processing and Distribution –**
  - Obtained and processed high-resolution satellite imagery from NGA; coordinating processing with USGS EDC, Mercy Corps and other organizations.
  - Launched ArcIMS-based "*Indian Ocean Tsunami Geospatial Information Service*" and the corresponding Internet-based *Map Viewer*. (http://www.pdc.org/tsunami). ESRI provided consultative services to support high-volume/high-availability site requirements.
  - Providing on-line access to the GIS data via the Internet map service, the viewer, and the ftp site at Maui High Performance Computing Center (MHPCC)
    - Non-mil. org with direct SkyMedia/CSIL access
    - Supporting USG Inter-Agencies and the international communities of interest
- **In-country GIS Data Collection & Usage -**
  - Used to characterize conditions in the disaster zone for USPACOM Joint Task Force (JTF).
  - Illustrated the before/after effects and computed geographical extent of damage.
  - Portrayed high population densities for Humanitarian Assistance target areas.
  - Used in identification of damaged areas to target P-3 flyovers (to acquire higher resolution imagery of downed bridges, roads, etc. for determining main supply routes, hospital locations, helicopter landing zones, refuge camps.)
  - Supported data collection efforts in Thailand and Indonesia
- **Earthquake Notification Solution**
  - Short term e-mail notification solution to Southeast Asian disaster managers for possible large aftershocks and earthquakes in the Indian Ocean

eRoom Collaborative Space
https://bceroom.state.gov/eroom

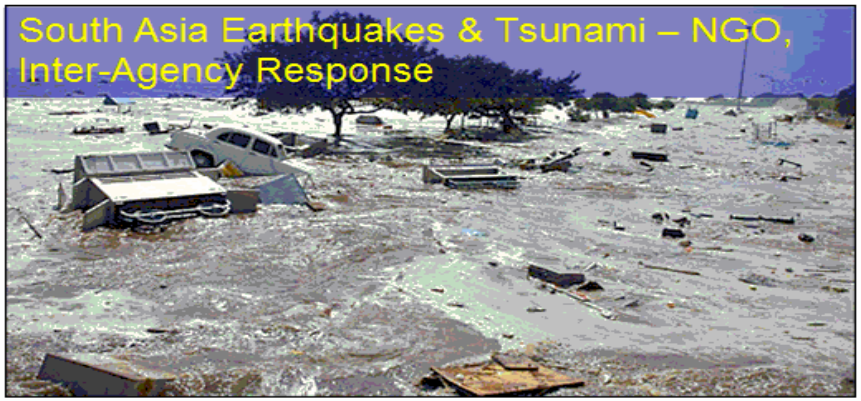


Groove Collaborative Space for the Field

South Asia Earthquake/Tsunami NGO Inter-Agency Response - Start Here - Groove

File Edit View Format Options Help | Workspaces | Contacts

Start Here



This space is an open NGO response space. Please use key files in the Small Files tool and larger background files in the Large Files tool.

Key Links:

- SAsia Countries: Also includes this specific space on Sri Lanka Tsunami Aid.grv
- News
- Discussion
- NGO sitreps (please add)

Start Here (2) | News (1) | Discussion (1) | Small Files For... | Large Files On... | SAsia Countries

Workspace Members

In Workspace
- Ted Okada/Groove
- Mark Smith/Virtual Methods
- Astor Chirinos/CARE
- Richard Eckel/Groove

Online
- AdamJonesGHNI
- James Alvord/Groove
- Jeff Seul/Groove
- Mark Prutsalis/Giist
- Rabih Torbay/GNT Okada
- Sanjana Hattotuwa
- Brenda Daniel
- Charles Zumbro/IRC
- Dave Evans/FHI
- Enver Cordido/CARE
- Eric Rasmussen/Strong Angel
- Gabriel Coch/Information Patterns
- Hanas
- Nick Daisley/PopG
- Nigel Snoad - UNJLC
- Rob Roy/Groove
- Sue Dwyer - IRC
- Susan Purdin - IRC

Offline
- allenbhiinc
- Andy Swarbrick/PopG

Invite to Workspace: More

-Enter name or email- Go

Chat

Common Tasks
- Send Message
- View Member Properties
- Set Alerts
- Change Role

Groove is ideally suited for collaboration and information sharing in austere environments. It is not web-based, is based on peer-to-peer connectivity, and users can access Groove "spaces" on their laptops without internet connectivity.

HIU Website
http://hiu.state.gov

Humanitarian Information Unit

Friday January 28, 2005 — Interagency Community at Work

ABOUT THE HIU

- HIU Overview
- Recent Highlights
- The People at HIU
- Directions & Contacts

edit | remove

HIU INTIATIVES

-President's Emergency Plan for AIDS Relief (PEPFAR)
-Iraq
-Sudan
-Afghanistan
-Countries of Humanitarian Interest and Concern(CHIC)
-Populations at Risk Information
-DoD Civil Information Management

edit | remove

SELECTED MAPS

-Darfur, Sudan; Burned Villages

Focus: Tsunami

Featured Tsunami Link: UN HIC Sumatra

Tsunami Information Links

Common Operating Picture Northern Sumatra, Jan.12,2005
(Health Situation, IDP Locations, and USG Assistance)

HIC
Humanitarian Information Centre for Sumatra

ABOUT HIC
- Contacts
- Services

COMMON SERVICES
- Security
- UNJLC
- UNHAS

COORDINATION
- Who What Where
- Contacts Database
- Meeting Schedules
- Sectoral Coordination

INFO CENTRE
- General Info
- Appeals / Donors
- Assessments
- P-codes
- Situation Reports
- Useful Links

MAP CENTRE
- Map Catalogue
- Geographic Maps
- Thematic Maps
- Satellite Images

more pictures

Welcome to the Humanitarian Information Centre (HIC) Sumatra

The HIC is a common service to the humanitarian community working in Sumatra. The HIC is managed by the United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA), and operates in coordination with a number of partners including;

read more

What's New

Jan 2005	Situation Reports
Jan 2005	Who What Where
Jan 2005	Assessments
Jan 2005	Map Catalogue

more updates

Map Centre

PHOTO GALLERY

Donors

DFID

USAID

ECHO Humanitarian Aid Office

The real story: role of commercial imagery, vendors, private concerns

UNOSAT - Microsoft Internet Explorer provided by Department of State - (V

UNCLASSIFIED

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Print Edit

Address http://unosat.web.cern.ch/unosat/asp/default.asp Go Links

LOGIN ok CODE

UNOSAT

satellite imagery for all

- Introduction
- Community
- Products & Services
- My UNOSAT

Post Tsunami - Regional Overview of Potential Land Affected

International Charter Space and Major Disasters

Product ID: 343

Potential Land Affected by Tsunami over the whole area

Source(s):
European Commission, Joint Research Institute

Regional land cover map generated by a partnership coordinated by JRC, part of Global Land Cover 2000 project

Asia_tsunami_07January_landcover.jpg (61Kb),
Asia_Tsunami_07January_landcover.pdf (560Kb)

Post Tsunami - Regional Overview of Potential Population Affected

International Charter Space and Major Disasters

Product ID: 342

Potential Population affected by Tsunami over the whole area.

Source(s):
European Commission, Joint Research Institute
Population density data from Landscan 2002
Elevation data from SRTM (NASA)

Asia_Tsunami_04January.jpg (57Kb),
Asia_Tsunami_04January.pdf (14031Kb)

Post Tsunami - Regional Change Analysis based on Medium Rsolution Satellite data

Local intranet

Start | Inbox - Microsoft ... | UNOSAT - Micro... | RE: Highlights Re... | Logistics Bottlene... | Microsoft PowerP... | 3:29 PM

German Aerospace Center: Center For Satellite-Based Crisis Information

DLR-DFD-ZKI Home Page - Microsoft Internet Explorer pr UNCLASSIFIED t of State - (Ver 3.0)

File Edit View Favorites Tools Help

Back Search Favorites History

Address http://www.zki.caf.dlr.de/applications/2004/indian_ocean/indonesia/sumatra_aceh_2005_en.html Go Links

Home / Imprint / Contact / Sitemap / Print / Deutsch / Login

DLR

Center for Satellite Based Crisis Information
- Emergency Mapping & Disaster Monitoring -

- DLR Home
- Cluster AF Home
- ZKI-Search

- ZKI Home
- Selected applications
  - Tsunami Indian Ocean 2004
  - Sudan/Darfur 2004
  - Flood Bangladesh 2004
  - Portuguese forest fires 2004
  - Earthquake Iran 2004
  - Blast Ukraine 2004
  - Earthquake Morocco 2004
  - Earthquake Iran 2003
  - Rhone flood South France 2003
  - Portuguese forest fires 2003
  - Missed mountaineer

Selected applications / Tsunami Indian Ocean 2004 / Sumatra/Aceh

ZKI satellite mappings support international humanitarian relief teams in southeast Asia

In the early morning of Dec. 26th a severe earthquake (30 km below sea level, magnitude 9) caused Tsunami flood waves in the Indian Ocean, which struck the coastal regions of Sumatra, Thailand, Sri Lanka and southern India. Due to the immense extent of the affected coastal areas, images from earth observing satellites have turned out to be a valuable support tool for international relief activities in the aftermath of the disaster.

In close cooperation with international partners such as UNOSAT, the Joint Research Centre JRC of the European Commission, Infoterra UK and SERTIT, the Centre for satellite-based Crisis Information ZKI of the German Aerospace Center DLR has taken over responsibility for the acquisition of satellite data, the generation of image maps and their dissemination to various relief organisations via internet. ZKI concentrates its activities on Sumatra and Thailand. This up-to-date mapping and the coverage of great areas enable disaster managers to achieve an overview on the recent situation, to assess the damages and to supply local logistic activities with reliable information.

Tsunami SE-Asia

Earthquake Dec. 26, 2004

Further maps and information on:

- RESPOND
- SERTIT maps for Sri Lanka
- UNOSAT maps
- UN Reliefweb
- USGS

Done Local intranet

Start Inbox - Microsoft Outlook RE: Kobe, etc - Message ... DLR-DFD-ZKI Home Pa... 10:11 AM

News & Publications

Indian Ocean Disaster

On December 26, 2004, a 9.0 earthquake in the Indian Ocean caused a series of forceful tsunamis to bring death and disaster to many countries that flank its shores.

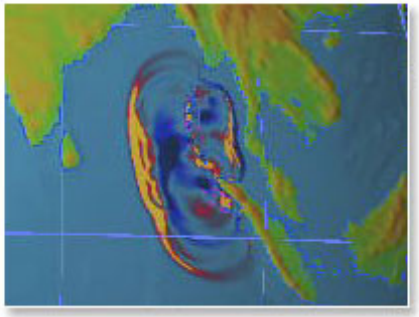
This page offers a collection of links to map and data resources relevant to the recent earthquake, tsunami, and disaster recovery efforts in the Indian Ocean region.

- Indian Ocean Disaster Data and Resources are available on Geodata.gov

  You'll find

  - Live Data and Maps
  - Imagery
  - Other Data Resources
  - Downloadable Maps
  - Tools
  - Emergency Resources
  - Other Resources
  - News

This map shows the population density of the area affected by the tsunami. View animation.



Tsunami simulation courtesy of NOAA.
View animations 1, 2.

geodata.gov - Microsoft Internet Explorer

File Edit View Favorites Tools Help

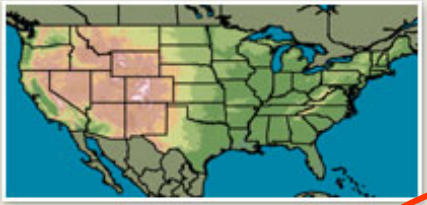
Address http://www.geodata.gov/gos Go

geodata.gov
U.S. Maps & Data

your one stop for federal, state & local geographic data

Make a Map

Launch:
The National Map



Search for Data

Search all the data in this site

About This Site

How to find the maps & data you need and how to publish your data here.

GOS Partnerships

Help

Quick Start Guide

Contact Us

The geodata.gov Marketplace

Find out about the latest geographic data sharing and acquisition initiatives.

Information Center

Geodata.gov is part of the Geospatial One-Stop E-Gov initiative providing access to geospatial data and information. For help use the Quick Start Guide.

To find geospatial data that meets your specific criteria:
Select "Search all data in this site", in left column,
-- OR --
For quick access to featured geospatial resources by subject:
Click on one of the Categories or Sub-Categories below.
Click '+' sign to see sub-categories.

Indian Ocean Disaster

Data Categories

- Administrative and Political Boundaries
- + Agriculture and Farming
- Atmosphere and Climatic
- + Biology and Ecology
- Business and Economic
- Business and Economic
- Cadastral
- + Cultural, Society, and Demographic
- + Elevation and Derived Products
- + Environment and Conservation

Internet

Indian Ocean Disaster

Open category:
---Indian Ocean Disaster

- What is new?
- Live Data and Maps
- Imagery
- In Country Resources
- Downloadable Maps
- Tools
- Emergency Resources
- Other Resources
- News
- About this Category
- Help

Introduction

This page provides links to web sites, resources, and maps relevant to the recent earthquake, tsunami, and disaster recovery efforts in the Indian Ocean region. Users worldwide are encouraged to post Live Data and Maps, Downloadable Data, Resources, and Maps related to the Indian Ocean Disaster on geodata.gov.

Go to main channel: Natural Disaster Events

Base Maps

1:50K Image Maps on Demand for Indian Ocean Area

Content Summary: These PDF map files present EarthSat NaturalVue 15m resolution satellite imagery, overlayed with populated place names from the NGA VMap Level 0 data set and airports from the NGA DAFIF data set. PDF maps cover coastal areas of the Indian Ocean region impacted by the Tsunami.

Content Purpose: Over 200 1:50K Image Maps on Demand are available for download in PDF format for the following regions: Sri Lanka; Thailand, Malacca Strait; Sumatra South, Indian Ocean; India, Bay of Bengal; Northeast India; and Sumatra, Andaman Sea.

Publisher: ESRI

Content Type: Static map image

VIEW DETAILS | GO TO WEBSITE ➤

NOAA Tsunami FTP website

GO TO WEBSITE ➤

World Historical Earthquake Locations

Content Summary: An earthquake is the motion or trembling of the ground produced by sudden displacement of rock in the Earth's crust. This data layer represents significant historical earthquake locations around the world. Each point contains information such as the date and magnitude of the earthquake. This data was compiled

Lessons Learned – working with geospatial data

- Nothing simple, automated, or clean about compiling the best data available. Phone calls, research, and tedious tweaking of data.

- Oftentimes, data with better attributes is better than more-detailed data with little or no attributes.

- Available data doesn't mean you end up with a good cartographic product. Much of the data needs to be edited, orthorectified, etc. (e.g. -different shorelines).

- Sources were compiled from the United Nations, Global Forest Watch, NGA, State Department Map Annex, Dartmouth Flood Observatory, World Bank, and NASA.

- Some of the best data came non-government sources (e.g. Global Forest Watch, Dartmouth).

- Networking with colleagues across different agencies, commercial vendors, businesses, and NGOs are necessary in the compilation of good datasets.

Lessons Learned – applying geospatial information

- Extent of Disaster/Footprint
- Populations at Risk
- Field-driven requirements
- GIS vs. IM and IT
- Appropriate Technology
- Relief vs. Rehabilitation