To: Registered Tsunami National Contacts (TNC) and Tsunami Warning Focal Points (TWFP) of the following countries: Brunei Darussalam, Cambodia, China (Peoples Republic of), Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam

cc.: Official National Coordinating Bodies for liaison with IOC
Permanent Delegates/Observer Missions to UNESCO of IOC Member States
National Commissions for UNESCO in IOC Member States
Directors of UNESCO and IOC Regional Offices in the Asia/Pacific Region
Regional Organizations cooperating with UNESCO/IOC
Director, Pacific Tsunami Warning Center
Director, International Tsunami Information Center
IOC Tsunami Unit

Subject: Starting of trial operations of the South China Sea Tsunami Advisory Center (SCSTAC) on 26 January 2018

As early as 2008, Member States around regional seas were encouraged to actively promote the development, establishment and sustained operation of national and sub-regional Tsunami Warning and Mitigation Systems within the framework of Intergovernmental Coordination Groups (ICGs) (Resolution EC-XLI.6).

In February 2009, a sub-regional Tsunami Warning and Mitigation System for the South China Sea region was established within the framework of the ICG/PTWS together with the Working Group for the South China Sea (WG-SCS) (Recommendations ICG/PTWS-XXIII.4 and 5).

At its 25th session (Vladivostok, September 2013), the ICG/PTWS agreed on forming a Task Team on the Establishment of a South China Sea Tsunami Advisory Centre (SCSTAC), and accepted the offer of the Government of China to host the SCSTAC at the National Marine Environmental Forecasting Center (NMEFC).
At its 27th session (Tahiti, April 2017), the ICG/PTWS decided to commence the trial operation of SCSTAC in late 2017, with specific date to be decided by the PTWS Steering Committee. At its virtual meeting on 11 September 2017, the PTWS SC accepted the proposal by Mr S. Tick Chan (China), Chair of WG-SCS, to start the trial issuance of SCSTAC products in January 2018. It will be effective on 26 January 2018.

Detailed information about SCSTAC products, geographical coverage, bulletins, forecast points and other technical aspects is available from the enclosed Technical Document: Tsunami Advisory Products for the South China Sea Regional Tsunami Warning and Mitigation System, October 2017. More information can be found at www.scstac.org.

During the trial issuance of SCSTAC products and until end of May 2018, you are welcome to send comments or suggestions via email about the enclosed Technical Document or the SCSTAC products to Dr Ye Yuan, Head for Tsunami Warning Division at NMEFC (yuanye@nmefc.gov.cn) and Mr Bernardo Aliaga, Programme Specialist at IOC Headquarters (b.aliaga@unesco.org).

The National Marine Environmental Forecasting Center (NMEFC) of the State Oceanic Administration of China (SOA), and the Secretariat will work together to make training available on the SCSTAC products to ensure that the products are understood, and that Member States know how to modify their Tsunami Warning Standard Operating Procedures (SOPs) accordingly. It is anticipated that a training will be hosted by NMEFC in the week of 7–11 May 2018. Details will be announced in due time.

With the assurances of my highest consideration, I remain,

Yours sincerely,

[signature]

Vladimir Ryabinin
Executive Secretary

Enclosure (1):

*Technical Document: Tsunami Advisory Products for the South China Sea Regional Tsunami Warning and Mitigation System, October 2017*
Technical Document

Tsunami Advisory Products for the South China Sea Regional Tsunami Warning and Mitigation System

October 2017
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1 Overview

1.1 Background

The South China Sea (SCS) and its adjoining basins Sulu Sea and Celebes Sea are identified as tsunami-prone areas due to high level of seismicity, and currently regional tsunami advisory services are provided by Northwest Pacific Tsunami Advisory Center (NWPTAC), the Japan Meteorological Agency (JMA) on an interim basis. The Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS) took the establishment of the SCS Tsunami Warning and Mitigation System as a priority action in the PTWS Medium-Term Strategy 2014-2021.

The ICG/PTWS-XXV Session in Vladivostok, Russia approved the proposal of the South China Sea Tsunami Warning and Mitigation System submitted by SCS Regional Working Group (WG-SCS), and decides further establish a Task Team on the Establishment of a South China Sea Tsunami Advisory Center (TT-SCSTAC). The 1st TT-SCSTAC Meeting, and the 3rd Meeting for ICG/PTWS WG-SCS that immediately followed, were both hosted by Hong Kong Observatory on 7-9 Apr. 2014. The WG-SCS adopted the recommendations of the TT-SCSTAC that the SCSTAC advisory products should comprise a suite of text and graphic products to keep pace with the PTWC New Enhanced Products, and the design of the SCSTAC advisory products should be accomplished and submitted for consideration to the WG-SCS in the 4th Regional Working Group Meeting. During the 4th WG-SCS Meeting hosted by BMKG in Jakarta, the WG-SCS instructed TT-SCSTAC to continue its work on the draft SCS advisory products, and submit to the 5th WG-SCS Meeting for approval. The WG-SCS at its 5th Meeting at Manila instructed IOC Secretariat to circulate the document on <Tsunami Advisory Products for the South China Sea Regional Tsunami Warning and Mitigation System> to all WG-SCS Member States for final comments with a time limit of one month, and finalize the SCS tsunami advisory products accordingly. As approved by the PTWS Steering Committee in July 2016, the SCSTAC advisory products were tested during the PacWave 17 Tsunami Exercise among the SCS Member States, and the post-exercise survey was conducted and reported to the 6th WG-SCS meeting (March 1–3, 2017, Shanghai) and the ICG/PTWS 27th Session (March 31 to April 3, 2017, Tahiti).

The provision of the SCS tsunami advisory products aims at allowing the recipient countries to take appropriate actions against regional threats, in collaboration with the Pacific ocean-wide service provided by PTWC. The development of tsunami advisory products that account for regional features and particular requirements of the SCS Member States is crucial for an effective regional tsunami warning and mitigation system. In that regard, the in-depth involvement of all Member States in the development of the SCS regional products during the design period is very important.

The SCS tsunami advisory products incorporate the state-of-the-art forecasting skills such
as tsunami scenario database, as well as real-time numerical modeling based on rapid CMT solution and GPU & OpenMP hybrid parallel computing technology. The benchmark of numerical model and validation of forecasting results are essential. The SCS tsunami advisory products will serve as the basis for the operation of the SCSTAC in 2018.

1.2 Geographical Coverage

The SCS Tsunami advisory products are issued when a major earthquake with moment magnitude 6.0 or greater is detected in the Area of Service (AoS) of the SCSTAC (hereinafter referred to as “the SCS region” in Figure 1), which consists of the main body of the SCS, the Sulu Sea and the Celebes Sea. For major earthquakes that occur outside the SCS region but may pose threat to it, the tsunami advisory products might be issued in parallel with those of PTWC and NWPTAC, with epicenter information identified by them.

![Figure 1 Geographic scope of the SCS and its adjoining basins](image)

1.3 Bulletin Types and Criteria

For a long time, PTWC had issued four basic categories of bulletins to PTWS Member States mainly based on earthquake magnitude and imminence/distance of expected tsunami threats on target areas. PTWC put each area into a warning or watch based primarily on an analysis of historical data.

At the ICG/PTWS 25th Session held 11-13 September 2013, all Member States agreed on a
changeover to the PTWC New enhanced Products suite since 1 October 2014. As each Member State is sovereign and thus responsible for taking actions to ensure the safety of its own population, the PTWC New Enhanced Products no longer use levels of alert (i.e., watch and warning) to define the tsunami bulletins, and instead provide levels of threat based on numerical modeling. The levels of threat now are provided as expected maximum tsunami wave amplitudes relative to the tide within four categories which are: i) less than 0.3 m, ii) 0.3 to less than 1 m, iii) 1 m to 3 m, and iv) greater than 3 m.

The SCS Tsunami Advisory Products stick to PTWC and NWPTAC’s practice to provide quantitative tsunami threat to recipients, rather than warning levels that are more meaningful for domestic warnings. According to numerical studies in the SCS region, the basin-wide tsunami triggered by Manila Trench will strike the Philippines within hour and arrive at China, Vietnam, Malaysia, Brunei in 1-4 hrs, thus there are not much time left for emergency response. Basically, SCSTAC will send out the initial bulletin as soon as possible mainly based on the preliminary earthquake parameters like location, magnitude and focal depth. Whether a Member State will be put into ‘threat area’ depends on the relatively conservative output of tsunami scenario database.

PTWC now use W-phase Centroid Moment Tensor (WCMT) analysis, which typically available about 10-20 minutes after the earthquake, to trigger the numerical model. It makes big stride that the WCMT can yield a more accurate initial condition which is critical to modeling result. While WCMT analysis is appropriate for Pacific Ocean-wide tsunamis, for regional and local tsunamis in the SCS region it might take too much time to provide the quantitative forecasts using this technique. Therefore, tsunami scenario database based on the preliminary earthquake parameters, in combination with rapid tsunami models, will be adopted to evaluate coastal threat levels quantitatively in the subsequent bulletin that comes up 3-5 minutes after the first one. After that, the supplementary bulletins may be issued if major earthquake magnitude revision occurs. SCSTAC will also run the high-resolution regional model when WCMT analysis is available, however the main purpose is to update and validate the preceding forecasting results.

<table>
<thead>
<tr>
<th>Bulletin type</th>
<th>Criteria</th>
<th>Content</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tsunami Information</td>
<td>Only one bulletin</td>
<td>EQ parameters and statement of ‘No tsunami threat’</td>
<td>5-10 min</td>
</tr>
<tr>
<td></td>
<td>Mag. of 6.0-6.4; or on land; or depth≥100km</td>
<td>EQ parameters and statement of ‘No tsunami threat’</td>
<td>5-10 min</td>
</tr>
</tbody>
</table>

Table 1 Criteria adopted by SCSTAC
### Tsunami Threat Message

<table>
<thead>
<tr>
<th>Bulletin with</th>
<th>Supplementary with</th>
<th>Final bulletin</th>
</tr>
</thead>
<tbody>
<tr>
<td>quantitative forecast</td>
<td>observations</td>
<td></td>
</tr>
</tbody>
</table>

- **EQ parameters and quantitative forecasts on threat level and Estimated Time of Arrival (ETA)**
  - 8-15 min
- **EQ parameters, quantitative forecast and tidal gauge observations**
  - If revision on EQ & tsunami forecasts, or observation available
- **Statement of ‘No tsunami confirmed or threat passed’**
  - Hazardous waves has passed or no significant tsunami observations

In Tsunami Information or Tsunami Threat Message, the tsunamigenic potential is provided based on preliminary earthquake parameters as follows:

#### Table 2 Tsunamigenic potential adopted by SCSTAC

<table>
<thead>
<tr>
<th>Magnitude (Mw)</th>
<th>Tsunami Potential Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0 ≤ M_w ≤ 7.0</td>
<td>There is no tsunami threat from this earthquake</td>
</tr>
<tr>
<td>7.1 ≤ M_w ≤ 7.5</td>
<td>Possibility of a destructive local tsunami confined to 100-300 km of the epicenter</td>
</tr>
<tr>
<td>M_w ≥ 7.6</td>
<td>Possibility of a destructive basin-wide tsunami</td>
</tr>
</tbody>
</table>

### 1.4 Implementation Timeline

According to <Proposal for the Tsunami Warning and Mitigation System of the South China Sea> approved by ICG/PTWS 25th session, SCSTAC should start its experimental operation at the end of 2016. Activities and timelines comprise:

- **February 2015**: Collecting revising comments on the SCSTAC products (Status: Finished and reported to 4th WG-SCS Meeting in Jakarta);
- **March 2015 - August 2015**: Continuous research on experimental products and associated tsunami scenario database and models (Status: Finished);
- **September 2015 - October 2015**: Experimental products submitted to TT-SCSTAC members for further comments (Status: Start in Oct. 2015 and completed in Jan. 2016);
- **December 2015 - March 2016**: Submitted to the 5th WG-SCS Meeting for approval (Status: Submitted to 5th WG-SCS Meeting in Manila; WG-SCS instructed IOC Secretariat to circulate the SCSTAC products among the SCS Member States for final comments with a time limit of one month);
April 2016 - May 2016: Finalization of SCSTAC products (Status: UNESCO/IOC Circular Letter 2624 for final comments on SCSTAC products);

June 2016 - September 2016: WG-SCS reporting to Steering Committee (SC) Meeting for ICG/PTWS in Hawaii on 29 June - 2 July 2016. (Status: The SC agreed to take the opportunity to include testing of the SCSTAC Tsunami Advisory Products at PacWave17 to be conducted on 15 to 17 February 2017; Exercise details would be discussed in 2nd Task Team Meeting on SCSTAC);

October 2016 - February 2017: Testing the SCSTAC advisory products at PacWave17;

January 2018: Experimental issuance of SCSTAC advisory products.

1.5 Dissemination of Products

According to experience adopted by PTWS, text message should be available to National Tsunami Warning Centers (NTWCs) via WMO Global Telecommunication System, Email, Website and Facsimile, while scientifically more complex graphical products should only be accessible to NTWCs and Tsunami Warning Focal Points (TWFPs) via excluded channels such as Email or Access-restricted website in order to minimize public confusion and misunderstanding. A public and NTWC accessible website is developed to facilitate the spread of tsunami advisories. The website is www.scstac.org.

<table>
<thead>
<tr>
<th>Approach</th>
<th>Services</th>
<th>Advantages &amp; Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>GTS</td>
<td>Text Message</td>
<td>● Fast, reliable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Not accessible for all MSs</td>
</tr>
<tr>
<td>Website</td>
<td>Text Message for public and graphical products for authorized users</td>
<td>● More information, flexible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Require stable Internet connection</td>
</tr>
<tr>
<td>Facsimile</td>
<td>Text Message for NTWCs and TWFPs</td>
<td>● Available to all MSs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Relatively slower</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Require stable connection</td>
</tr>
<tr>
<td>Email</td>
<td>Text and Graphical products for NTWCs and TWFPs</td>
<td>● Fast, Easily accessible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Require stable Internet connection</td>
</tr>
</tbody>
</table>

Table 3 Dissemination approaches
2 Tsunami Scenario Database, Forecast Model and Decision Support System

2.1 Description of Tsunami Scenario Database

The tsunami scenario database covering the NW Pacific and the SCS region was put into operation in NMEFC/SOA in 2015, with the objective to use preliminary earthquake parameters to retrieve pre-computed scenarios and provide real-time forecast of nearshore tsunami amplitude. Now NWPTAC operated by JMA takes this tool as the primary approach to yield numerical guidance on tsunami advisory. The database is developed for different levels of depth (2, 20, 40, 60, 80 & 100 km) and magnitudes (6.5, 7.0, 7.5, 8.0, 8.5, 9.0) for 2010 pre-defined sources covering the main thrust faults in the NW Pacific and the SCS region. Each source is separated with a spatial interval of 0.5 degree. The database adopts the Okada Model as the source model to calculate seismic deformation. The strike, dip angles are determined by statistically analyzing Harvard CMT catalogue and Slab 1.0 (Hayes et al., 2012), while the slip angles is set to 90 degree for conservation. The total scenarios sum up to 72360 cases.

Each scenario covers 5 S to 52 N latitude and 99 E to 160 E longitude with a grid space of 4 minutes. The simulating length is 15 hrs. The governing equation adopted is linear momentum equation that is not suitable for very shallow water. Hence the coastal forecast points are selected along the 50-800 meter isobath, and the coastal amplitudes along the 5, 10, 20 and 50 meter isobath are scaled by Green Law. Each coastal forecast point are spaced with an interval of 12 minutes (approximately 20 km) covering the SCS rim countries. The maximum wave amplitude, ETA at each coastal forecast point are stored in database for fast retrieval. Whenever an earthquake occurs, the closest scenarios to the event is extracted from the database and then interpolated to yield coastal amplitude forecast.
2.2 Description of Real-time Tsunami Forecast Model

Two sets of tsunami numerical forecasting model are in operation now in NMEFC/SOA. The first model is based on an GPU & OpenMP hybrid parallelized tsunami model based on COMCOT.

The computation domains for COMCOT include the SCS, NW Pacific and the whole Pacific with a resolution of 2, 4 and 5 arc-minute, respectively. The linear shallow water equation was adopted as the governing equation and the minimum water depth was 10 meters. For the focal mechanism input, the initial forecast could start when earthquake location and magnitude are available, while the strike, slip and dip angles are chosen based on the Harvard Global CMT catalog in a conservative manner. As a W-phase CMT solution becomes available, the model can be run again to generate a more accurate forecast. A 15-hr forecast for the SCS region model domain at 2-arc-min can be produced within 10 seconds, a 15-hr forecast for the NW Pacific model domain at 4-arc-min can be obtained within 8 seconds, and a 30-hr forecast for the entire Pacific region can be achieved in less
than 80 seconds.

### 2.3 Interpretation of Database and Model Results

The uncertainties associated with the tsunami propagation scenario database and numerical models come from the CMT solution, the interpolation among neighboring scenarios, numerical modeling of propagation, as well as Green’s Law Scaling. Each uncertainty could result in large errors. For example, numerical forecast results can vary easily by a factor of two because of uncertainties in the earthquake magnitude, depth and assumed mechanism; Green’s Law is very sensitive to local topography and bathymetry, coastal amplitude could be over- or under-estimated by a factor of 2-3 depending on coastal features; wave dispersion effect is non-negligible for distant propagation of tsunami wave.

Hence, how to comprehend numerical forecasts is very important for national recipients to recognize the tsunami threats correctly. Basically the main tsunami service providers like PTWC, NWPTAC interpret the numerical results by classifying them into several categories. The NWPTAC categorizes tsunami amplitude into ‘0.5 m; 1 m; 2 m; 3 m; 4 m; 6 m; 8 m; and Over 10 m’. In the PTWC New Enhanced Products, the coastal amplitude forecast at each forecast point is categorized into four threat levels of ‘<0.3 m; 0.3-1 m, 1-3 m and above 3 m’, which are illustrated by different colors along the coastlines.

### 2.4 Decision Support System

Decision support system (DSS) tailored for the SCSTAC has been put into operation since February 2016. The DSS is designed for watchstander to make decision in terms of Standard Operating Procedures and warning criteria. The SCSTAC text bulletins and graphical products can be finally generated through a series of functional modules including: Seismic module, tsunami observation module, tsunami scenario database and tsunami modeling modules, coastal impact assessment modules and bulletin production & dissemination modules.
3 Description of Products

SCSTAC should be committed to ensuring all NTWCs and TWFPs can receive, understand and respond appropriately to tsunami advisory products. Overall, the SCS advisory products should be informative, intuitive and comprehensive, and more importantly, be compatible with PTWC’s New Enhanced products so as to minimize confusion and facilitate usage.
### 3.1 Definition of Geographic Areas

Employing Flinn-Engdahl regionalization to name the region of epicenter.

<table>
<thead>
<tr>
<th>Southwestern Japan and Ryukyu Islands</th>
<th>Borneo – Sulawesi</th>
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<tr>
<td>231 SOUTH KOREA</td>
<td>261 BORNEO</td>
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<tr>
<td>232 WESTERN HONSHU, JAPAN</td>
<td>262 CELEBES SEA</td>
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<tr>
<td>233 NEAR S. COAST OF WESTERN HONSHU</td>
<td>263 TALAUD ISLANDS, INDONESIA</td>
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<td>234 NORTHWEST OF RYUKYU ISLANDS</td>
<td>264 NORTH OF HALMAHERA, INDONESIA</td>
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<td>265 MINAHASSA PENINSULA, SULAWESI</td>
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<td>243 TAIWAN REGION</td>
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<td>282 SOUTH OF JAVA, INDONESIA</td>
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<td>284 SOUTH OF BALI, INDONESIA</td>
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### Philippine Islands

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<td>PHILIPPINE ISLANDS REGION</td>
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<td>MINDANAO, PHILIPPINES</td>
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<tr>
<td>260</td>
<td>EAST OF PHILIPPINE ISLANDS</td>
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### Myanmar and Southeast Asia

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<thead>
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<td>FLORES REGION, INDONESIA</td>
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<td>MYANMAR-BANGLADESH BORDER REGION</td>
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<td>296</td>
<td>MYANMAR</td>
</tr>
<tr>
<td>297</td>
<td>MYANMAR-CHINA BORDER REGION</td>
</tr>
<tr>
<td>298</td>
<td>NEAR SOUTH COAST OF MYANMAR</td>
</tr>
<tr>
<td>299</td>
<td>SOUTHEAST ASIA (NOT IN USE)</td>
</tr>
<tr>
<td>300</td>
<td>HAINAN ISLAND, CHINA</td>
</tr>
<tr>
<td>301</td>
<td>SOUTH CHINA SEA</td>
</tr>
<tr>
<td>733</td>
<td>THAILAND</td>
</tr>
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<td>734</td>
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<tr>
<td>735</td>
<td>CAMBODIA</td>
</tr>
<tr>
<td>736</td>
<td>VIETNAM</td>
</tr>
<tr>
<td>737</td>
<td>GULF OF TONGKING</td>
</tr>
</tbody>
</table>

#### 3.2 Coastal Forecast Points

Tsunami amplitude and arrival time are provided for each coastal forecast point in the SCS region. These coastal forecast points were agreed-upon points chosen by the SCS Member States during the 3rd, 4th and 5th WG-SCS Meeting in Hong Kong, Jakarta and Manila,
respectively. They correspond to important coastal populated cities and sea-level gauges. In order to keep consistent, now majority of these coastal forecast points come from PTWC and NWPTAC’s forecast points for ETA and amplitude (refer to Appendix II). In the tsunami threat message, all forecast points with maximum amplitude greater than 0.3 meter are listed in groups that are entitled as Member States (Appendix I). Tsunami amplitude estimates are extracted and interpolated from tsunami scenario database and grouped into four bins of '<0.3 m; 0.3 to less than 1 m; 1 to 3 m and above 3 m'.

### 3.3 Text Message

Text message is available to the public and NTWCs. Typically the SCSTAC text product contains earthquake parameters, tsunamigenic potential, tsunami amplitude and ETA forecasts for each Coastal Forecast Point, tsunami observations, and recommended actions. The earthquake parameters for major earthquakes need to be coordinated and consistent with those of the PTWC bulletin (refer to Appendix I for bulletin templates).

### 3.4 Tsunami Energy Map

The tsunami energy map gives the color-filled distribution of maximum tsunami amplitude in the SCS region. Direction of tsunami energy beam and the threatened areas can be easily identified by different color scale. The contour map of Tsunami Travel Time (TTT) is shown in light-gray lines and overlapped on tsunami energy map.

### 3.5 Coastal Forecast Map

The coastal forecast Map gives a detailed view of tsunami threat on coasts in the SCS region. It divides the SCS coastlines into a number of Model Output Points (MOP). Each MOP is colored according to the tsunami amplitude of the model grid points closest to the point. The tsunami energy map is also overlapped in gray-shading style with illuminated effect and further have TTT contour lines placed upon.
4. Tsunami Scenarios and Product Samples

4.1 Manila Trench

Figure 4 Earthquake scenario in Manila Trench

1. Text Product

---------------------------------------------------------------BEGINNING OF BULLETIN---------------------------------------------------------------

WMO HEADING

TSUNAMI BULLETIN NUMBER 01

ISSUED BY SOUTH CHINA SEA TSUNAMI ADVISORY CENTER (SCSTAC)

ISSUED AT 2134 UTC JUL 14 2015

... POTENTIAL TSUNAMI THREAT EXISTS FOR BRUNEI, CHINA, INDONESIA, MALAYSIA, PHILIPPINES, VIETNAM...
**NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE*****NOTICE*****

THIS STATEMENT IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC SOUTH CHINA SEA SUB-REGIONAL TSUNAMI WARNING AND MITIGATION SYSTEM. NATIONAL AUTHORITIES WILL BE RESPONSIBLE FOR DETERMINATION OF THE APPROPRIATE LEVEL OF ALERT FOR EACH COUNTRY. THE PUBLIC SHOULD FOLLOW THE GUIDANCE OF NATIONAL AUTHORITIES.

**NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE*****NOTICE*****

[ PRELIMINARY EARTHQUAKE PARAMETERS (REVISION) ]

* MAGNITUDE 8.3
* ORIGIN TIME 2126 UTC NOV 15 2014
* COORDINATES 17.4N, 119.2E
* DEPTH 18 KM
* LOCATION SULU SEA

[ EVALUATION ]

THERE IS A POSSIBILITY OF A DESTRUCTIVE BASIN-WIDE TSUNAMI BASED ON AVAILABLE INFORMATION.

[ TSUNAMI AMPLITUDE AND ETA FORECASTS ]

<table>
<thead>
<tr>
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<th>COORDINATES</th>
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<td></td>
</tr>
<tr>
<td>MUARA</td>
<td>5.0N 115.1E</td>
<td>01:53</td>
<td>1-3</td>
</tr>
<tr>
<td>CHINA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SANYA</td>
<td>18.2N 109.5E</td>
<td>00:08</td>
<td>1-3</td>
</tr>
<tr>
<td>SHANWEI</td>
<td>22.8N 115.3E</td>
<td>00:51</td>
<td>&gt;3</td>
</tr>
<tr>
<td>HONG_KONG</td>
<td>22.3N 114.2E</td>
<td>01:47</td>
<td>&gt;3</td>
</tr>
<tr>
<td>MACAO</td>
<td>22.2N 113.6E</td>
<td>02:12</td>
<td>&gt;3</td>
</tr>
<tr>
<td>SHENZHEN</td>
<td>22.5N 113.9E</td>
<td>02:51</td>
<td>&gt;3</td>
</tr>
<tr>
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<td>Longitude</td>
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<td>-----------</td>
<td>------</td>
</tr>
<tr>
<td>ZHAPO</td>
<td>21.5N</td>
<td>111.8E</td>
<td>01:33</td>
</tr>
<tr>
<td>QINGLAN</td>
<td>19.6N</td>
<td>110.9E</td>
<td>23:57</td>
</tr>
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<td>KAOHSIUNG, TAIWAN</td>
<td>22.5N</td>
<td>120.3E</td>
<td>22:28</td>
</tr>
<tr>
<td><strong>INDONESIA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KEPULAUAN_RIAU</td>
<td>4.0N</td>
<td>108.5E</td>
<td>02:25</td>
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<tr>
<td><strong>MALAYSIA</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>K_TERENGGANU</td>
<td>5.3N</td>
<td>103.2E</td>
<td>07:25</td>
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<tr>
<td>BINTULU</td>
<td>3.2N</td>
<td>113.0E</td>
<td>03:03</td>
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<td>SANDAKAN</td>
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<td>118.1E</td>
<td>02:34</td>
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<td><strong>PHILIPPINES</strong></td>
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<td>SUBIC_BAY</td>
<td>14.8N</td>
<td>120.3E</td>
<td>22:55</td>
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<tr>
<td>CURRIMAO</td>
<td>18.0N</td>
<td>120.4E</td>
<td>21:44</td>
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<tr>
<td>LAOAG</td>
<td>18.2N</td>
<td>120.6E</td>
<td>21:51</td>
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<tr>
<td>SAN_FERNANDO</td>
<td>16.6N</td>
<td>120.3E</td>
<td>21:50</td>
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<tr>
<td>MANILA</td>
<td>14.6N</td>
<td>121.0E</td>
<td>00:12</td>
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<tr>
<td>ILOILO</td>
<td>10.7N</td>
<td>122.5E</td>
<td>23:47</td>
</tr>
<tr>
<td>PUERTO_PRINCESA</td>
<td>9.8N</td>
<td>118.8E</td>
<td>00:17</td>
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<tr>
<td>MAIMBUNG</td>
<td>5.9N</td>
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<td>6.1N</td>
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<td><strong>VIETNAM</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>VINH</td>
<td>18.6N</td>
<td>105.7E</td>
<td>04:49</td>
</tr>
<tr>
<td>QUI_NHON</td>
<td>13.7N</td>
<td>109.2E</td>
<td>00:06</td>
</tr>
<tr>
<td>BAC_LIEU</td>
<td>9.3N</td>
<td>105.8E</td>
<td>07:04</td>
</tr>
<tr>
<td>NHA_TRANG</td>
<td>12.3N</td>
<td>109.2E</td>
<td>00:38</td>
</tr>
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<td>DA_NANG</td>
<td>16.0N</td>
<td>108.3E</td>
<td>00:48</td>
</tr>
<tr>
<td>VUNG_TAU</td>
<td>10.3N</td>
<td>107.1E</td>
<td>03:14</td>
</tr>
</tbody>
</table>

* This list is grouped by countries, and country names is ordered according to threat levels.
* ETA - Estimated time of arrival for initial wave. Noting that in some coastal
AREA TSUNAMI WAVES MAY ARRIVE EARLIER THAN OUR ESTIMATE DUE TO COARSE BATHYMETRY USED BY MODEL.

* MAX. AMPL - MAXIMUM WAVE HEIGHT RELATIVE TO NORMAL SEA LEVEL, WHICH ARE EXTRACTED FROM MODEL RESULTS AND GROUPED INTO FOUR BINS OF '<0.3 M; 0.3 TO 1 M; 1 TO 3 M and ABOVE 3 M'. NOTING THAT THE INITIAL WAVE MAY NOT NECESSARILY THE LARGEST, AND WAVE ACTIVITIES MAY VARY SIGNIFICANT ALONG COASTS DUE TO LOCAL FEATURES.

[ RECOMMENDED ACTIONS ]

* LOCAL AUTHORITIES SHOULD PAY CLOSE ATTENTION ON THEIR NATIONAL TSUNAMI WARNING CENTER’S EVALUATION ON TSUNAMI HAZARD, AND TAKE APPROPRIATE ACTIONS IN RESPONSE TO THIS POTENTIAL HAZARD.

* PERSONS LOCATED IN THREATENED COASTAL AREAS SHOULD KEEP ALERT FOR WARNING INFORMATION AND FOLLOW INSTRUCTIONS FROM LOCAL AUTHORITIES.

[ UPDATES ]

THE NEXT BULLETIN WILL BE ISSUED AS MORE INFORMATION BECOMES AVAILABLE.

[ ADDITIONAL INFORMATION ]

* MORE DETAILED INFORMATION CAN BE FOUND AT WEBSITE WWW.SCSTAC.ORG.

* TSUNAMI BULLETIN REGARDING THIS EVENT MAY BE ISSUED BY PACIFIC TSUNAMI WARNING CENTER AND NORTHWEST PACIFIC TSUNAMI ADVISORY CENTER. IN CASE OF CONFLICTING INFORMATION, MORE CONSERVATIVE INFORMATION SHOULD BE ADOPTED.

* TEL: +86-10-62104561

* EMAIL: TSU@NMEFC.GOV.CN

---------------------------------------------END OF BULLETIN---------------------------------------------

2. Graphic Products

19
Figure 5 Tsunami scenario in Manila Trench: a. Coastal Amplitude Map; b. Tsunami Energy Map.
4.2 Sulu Sea

Figure 6 Earthquake scenario in Sulu Sea

1. Text Product

---------------------------------------------BEGINNING OF BULLETIN---------------------------------------------

WMO HEADING

TSUNAMI BULLETIN NUMBER 01

ISSUED BY SOUTH CHINA SEA TSUNAMI ADVISORY CENTER (SCSTAC)

ISSUED AT 2208 UTC JUL 14 2015

... POTENTIAL TSUNAMI THREAT EXISTS FOR MALAYSIA, PHILIPPINES...

****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****

THIS STATEMENT IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC
SOUTH CHINA SEA SUB-REGIONAL TSUNAMI WARNING AND MITIGATION SYSTEM. NATIONAL AUTHORITIES WILL BE RESPONSIBLE FOR DETERMINATION OF THE APPROPRIATE LEVEL OF ALERT FOR EACH COUNTRY. THE PUBLIC SHOULD FOLLOW THE GUIDANCE OF NATIONAL AUTHORITIES.

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE ****

[ PRELIMINARY EARTHQUAKE PARAMETERS ]

* MAGNITUDE 8.3
* ORIGIN TIME 2157 UTC JUL 14 2015
* COORDINATES 11.8N, 121.9E
* DEPTH 18 KM
* LOCATION SULU SEA

[ EVALUATION ]

THERE IS A POSSIBILITY OF A DESTRUCTIVE BASIN-WIDE TSUNAMI BASED ON AVAILABLE INFORMATION.

[ TSUNAMI AMPLITUDE AND ETA FORECASTS ]

<table>
<thead>
<tr>
<th>FORECAST POINTS</th>
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<th>COAST_MAX_AMP(m)</th>
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<td></td>
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<tr>
<td>Sandakan</td>
<td>5.9N</td>
<td>118.1E</td>
<td>01:39</td>
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<td>Subic_Bay</td>
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<td>00:04</td>
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<tr>
<td>Iloilo</td>
<td>10.7N</td>
<td>122.5E</td>
<td>22:52</td>
</tr>
<tr>
<td>Puerto_Princesa</td>
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<td>118.8E</td>
<td>23:22</td>
</tr>
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<td>Maimbung</td>
<td>5.9N</td>
<td>121.0E</td>
<td>00:01</td>
</tr>
</tbody>
</table>

* THIS LIST IS GROUPED BY COUNTRIES, AND COUNTRY NAMES IS ORDERED ACCORDING TO THREAT LEVELS.

* ETA - ESTIMATED TIME OF ARRIVAL FOR INITIAL WAVE. NOTING THAT IN SOME COASTAL AREA TSUNAMI WAVES MAY ARRIVE EARLIER THAN OUR ESTIMATE DUE TO COARSE BATHYMETRY USED BY MODEL.
* MAX. AMPL - MAXIMUM WAVE HEIGHT RELATIVE TO NORMAL SEA LEVEL, WHICH ARE EXTRACTED FROM MODEL RESULTS AND GROUPED INTO FOUR BINS OF '<0.3 M; 0.3 TO 1 M; 1 TO 3 M and ABOVE 3 M'. NOTING THAT THE INITIAL WAVE MAY NOT NECESSARILY THE LARGEST, AND WAVE ACTIVITIES MAY VARY SIGNIFICANT ALONG COASTS DUE TO LOCAL FEATURES.

[ RECOMMENDED ACTIONS ]

* LOCAL AUTHORITIES SHOULD PAY CLOSE ATTENTION ON THEIR NATIONAL TSUNAMI WARNING CENTER’S EVALUATION ON TSUNAMI HAZARD, AND TAKE APPROPRIATE ACTIONS IN RESPONSE TO THIS POTENTIAL HAZARD.

* PERSONS LOCATED IN THREATENED COASTAL AREAS SHOULD KEEP ALERT FOR WARNING INFORMATION AND FOLLOW INSTRUCTIONS FROM LOCAL AUTHORITIES.

[ UPDATES ]

THE NEXT BULLETIN WILL BE ISSUED AS MORE INFORMATION BECOMES AVAILABLE.

[ ADDITIONAL INFORMATION ]

* MORE DETAILED INFORMATION CAN BE FOUND AT WEBSITE WWW.SCSTAC.ORG.

* TSUNAMI BULLETIN REGARDING THIS EVENT MAY BE ISSUED BY PACIFIC TSUNAMI WARNING CENTER AND NORTHWEST PACIFIC TSUNAMI ADVISORY CENTER. IN CASE OF CONFLICTING INFORMATION, MORE CONSERVATIVE INFORMATION SHOULD BE ADOPTED.

* TEL: +86-10-62104561

* EMAIL: TSU@NMEFC.GOV.CN

---------------------------------------------END OF BULLETIN---------------------------------------------

2. Graphic Products
Figure 7 Tsunami scenario in Sulu Sea: a. Coastal Amplitude Map; b. Tsunami Energy Map.
Annex I Products Templates

A. Tsunami Information (NO TSUNAMI THREAT: (1)Earthquake magnitude 6.0-6.5; (2)Earthquake occurs inland; (3)Earthquake occurs at a depth of 100 km or more; (4)Minor tsunami expected for entire area with earthquake magnitude 6.6-7.0)

A.1 TSUNAMI INFORMATION (EARTHQUAKE MAGNITUDE 6.0-6.4)

WMO HEADING

TSUNAMI BULLETIN NUMBER 01
ISSUED BY SOUTH CHINA SEA TSUNAMI ADVISORY CENTER (SCSTAC)
ISSUED AT 1028 UTC MAY 15 2014

... TSUNAMI INFORMATION ...

****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE*****NOTICE*****

THIS STATEMENT IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC SOUTH CHINA SEA SUB-REGIONAL TSUNAMI WARNING AND MITIGATION SYSTEM. NATIONAL AUTHORITIES WILL BE RESPONSIBLE FOR DETERMINATION OF THE APPROPRIATE LEVEL OF ALERT FOR EACH COUNTRY. THE PUBLIC SHOULD FOLLOW THE GUIDANCE OF NATIONAL AUTHORITIES.

**** NOTICE **** NOTICE ****NOTICE *** NOTICE **** NOTICE ****NOTICE*****NOTICE*****

[ PRELIMINARY EARTHQUAKE PARAMETERS ]

*MAGNITUDE  6.3
*ORIGIN TIME  1016 UTC MAY 15 2014
*COORDINATES  9.4N, 122.1E
*DEPTH  15 KM
*LOCATION  SULU SEA
[ EVALUATION ]

THERE IS NO TSUNAMI THREAT FROM THIS EARTHQUAKE BASED ON PRELIMINARY EARTHQUAKE PARAMETERS.

[ RECOMMENDED ACTIONS ]

NO ACTIONS IS REQUIRED.

[ UPDATES ]

THIS WILL BE THE ONLY BULLETIN REGARDING THIS EVENT UNLESS MAJOR REVISION ON EARTHQUAKE PARAMETERS BECOME AVAILABLE OR TSUNAMI WAVES ARE CONFIRMED.

[ ADDITIONAL INFORMATION ]

* MORE DETAILED INFORMATION CAN BE FOUND AT WEBSITE WWW.SCSTAC.ORG
* TEL: +86-10-62104561
* EMAIL: TSU@NMEFC.GOV.CN

---------------------------------------------END OF BULLETIN---------------------------------------------

A.2 TSUNAMI INFORMATION (EARTHQUAKE OCCURS INLAND)

WMO HEADING

TSUNAMI BULLETIN NUMBER 01
ISSUED BY SOUTH CHINA SEA TSUNAMI ADVISORY CENTER (SCSTAC)
ISSUED AT 0912 UTC JUL 10 2014

... TSUNAMI INFORMATION ...

****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****
THIS STATEMENT IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC SOUTH CHINA SEA SUB-REGIONAL TSUNAMI WARNING AND MITIGATION SYSTEM. NATIONAL AUTHORITIES WILL BE RESPONSIBLE FOR DETERMINATION OF THE APPROPRIATE LEVEL OF A LERT FOR EACH COUNTRY. THE PUBLIC SHOULD FOLLOW THE GUIDANCE OF NATIONAL AUTHORITIES.

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE****

[ PRELIMINARY EARTHQUAKE PARAMETERS ]

*MAGNITUDE* 6.9

*ORIGIN TIME* 0900 UTC JUL 10 2014

*COORDINATES* 17.5N, 121.2E

*DEPTH* 30 KM

*LOCATION* LUZON, PHILIPPINES

[ EVALUATION ]

THERE IS NO TSUNAMI THREAT FROM THIS EARTHQUAKE BASED ON PRELIMINARY EARTHQUAKE PARAMETERS.

[ RECOMMENDED ACTIONS ]

NO ACTIONS IS REQUIRED.

[ UPDATES ]

THIS WILL BE THE ONLY BULLETIN REGARDING THIS EVENT UNLESS MAJOR REVISION ON EARTHQUAKE PARAMETERS BECOME AVAILABLE OR TSUNAMI WAVES ARE CONFIRMED.

[ ADDITIONAL INFORMATION ]

* MORE DETAILED INFORMATION CAN BE FOUND AT WEBSITE WWW.SCSTAC.ORG

* TSUNAMI BULLETIN REGARDING THIS EVENT MAY BE ISSUED BY PACIFIC TSUNAMI WARNING CENTER AND NORTHWEST PACIFIC TSUNAMI ADVISORY CENTER. IN CASE OF CONFLICTING INFORMATION, MORE CONSERVATIVE INFORMATION SHOULD BE ADOPTED.

* TEL: +86-10-62104561
**A.3 TSUNAMI INFORMATION (EARTHQUAKE OCCURS AT A DEPTH OF 100 KM OR MORE)**

WMO HEADING

TSUNAMI BULLETIN NUMBER 01
ISSUED BY SOUTH CHINA SEA TSUNAMI ADVISORY CENTER (SCSTAC)
ISSUED AT 0525 UTC DEC 02 2014

... TSUNAMI INFORMATION ...

****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE*****NOTICE*****

THIS STATEMENT IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC SOUTH CHINA SEA SUB-REGIONAL TSUNAMI WARNING AND MITIGATION SYSTEM. NATIONAL AUTHORITIES WILL BE RESPONSIBLE FOR DETERMINATION OF THE APPROPRIATE LEVEL OF ALERT FOR EACH COUNTRY. THE PUBLIC SHOULD FOLLOW THE GUIDANCE OF NATIONAL AUTHORITIES.

**** NOTICE **** NOTICE ****NOTICE **** NOTICE **** NOTICE *****NOTICE*****

[ PRELIMINARY EARTHQUAKE PARAMETERS ]

* MAGNITUDE 6.6
* ORIGIN TIME 0511 UTC DEC02 2014
* COORDINATES 6.2N, 123.1E
* DEPTH 614 KM
* LOCATION MORO GULF, PHILIPPINES
[ EVALUATION ]

THERE IS NO TSUNAMI THREAT FROM THIS EARTHQUAKE BASED ON PRELIMINARY EARTHQUAKE PARAMETERS.

[ RECOMMENDED ACTIONS ]

NO ACTIONS IS REQUIRED.

[ UPDATES ]

THIS WILL BE THE ONLY BULLETIN REGARDING THIS EVENT UNLESS MAJOR REVISION ON EARTHQUAKE PARAMETERS BECOME AVAILABLE OR TSUNAMI WAVES ARE CONFIRMED.

[ ADDITIONAL INFORMATION ]

* MORE DETAILED INFORMATION CAN BE FOUND AT WEBSITE WWW.SCSTAC.ORG

* TSUNAMI BULLETIN REGARDING THIS EVENT MAY BE ISSUED BY PACIFIC TSUNAMI WARNING CENTER AND NORTHWEST PACIFIC TSUNAMI ADVISORY CENTER. IN CASE OF CONFLICTING INFORMATION, MORE CONSERVATIVE INFORMATION SHOULD BE ADOPTED.

* TEL: +86-10-62104561

* EMAIL: TSU@NMEFC.GOV.CN

---------------------------------------------------------------
END OF BULLETIN ---------------------------------------------------------------

A.4 TSUNAMI INFORMATION (MINOR TSUNAMI EXPECTED WITH EARTHQUAKE MAGNITUDE 6.5-7.0)

WMO HEADING

TSUNAMI BULLETIN NUMBER 01
ISSUED BY SOUTH CHINA SEA TSUNAMI ADVISORY CENTER (SCSTAC)
ISSUED AT 1024 UTC NOV 21 2014
***NOTICE***NOTICE****NOTICE****NOTICE****NOTICE****NOTICE*****NOTICE*****

THIS STATEMENT IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC SOUTH CHINA SEA SUB-REGIONAL TSUNAMI WARNING AND MITIGATION SYSTEM. NATIONAL AUTHORITIES WILL BE RESPONSIBLE FOR DETERMINATION OF THE APPROPRIATE LEVEL OF ALERT FOR EACH COUNTRY. THE PUBLIC SHOULD FOLLOW THE GUIDANCE OF NATIONAL AUTHORITIES.

*** NOTICE *** NOTICE ****NOTICE **** NOTICE **** NOTICE ***** NOTICE *****

[ PRELIMINARY EARTHQUAKE PARAMETERS ]

*MAGNITUDE* 6.9
*ORIGIN TIME* 1010 UTC NOV21 2014
*COORDINATES* 2.1N, 127.0E
*DEPTH* 10 KM
*LOCATION* HALMAHERA INDONESIA

[ EVALUATION ]

THERE IS NO TSUNAMI THREAT FROM THIS EARTHQUAKE BASED ON HISTORICAL EARTHQUAKE AND TSUNAMI DATA. HOWEVER, NON-DESTRUCTIVE SEA LEVEL FLUCTUATIONS MAY BE GENERATED ALONG COASTS NEAR THE EPICENTER.

[ RECOMMENDED ACTIONS ]

PERSONS ALONG COASTAL AREAS NEAR THE EPICENTER SHOULD BE AWARE OF POSSIBILITY OF MINOR TSUNAMI WAVES AND UNUSUAL CURRENT. NO OTHER ACTION IS REQUIRED.

[ UPDATES ]

THIS WILL BE THE ONLY BULLETIN REGARDING THIS EVENT UNLESS MAJOR REVISION ON EARTHQUAKE PARAMETERS BECOME AVAILABLE OR TSUNAMI WAVES ARE CONFIRMED.
[ ADDITIONAL INFORMATION ]

* MORE DETAILED INFORMATION CAN BE FOUND AT WEBSITE WWW.SCSTAC.ORG

* TSUNAMI BULLETIN REGARDING THIS EVENT MAY BE ISSUED BY PACIFIC TSUNAMI WARNING CENTER AND NORTHWEST PACIFIC TSUNAMI ADVISORY CENTER. IN CASE OF CONFLICTING INFORMATION, MORE CONSERVATIVE INFORMATION SHOULD BE ADOPTED.

* TEL: +86-10-62104561

* EMAIL: TSU@NMEFC.GOV.CN

END OF BULLETIN

A.5 TSUNAMI INFORMATION (SUPPLEMENTAL BULLETIN WITH MINOR TSUNAMI OBSERVATION)

WMO HEADING

TSUNAMI BULLETIN NUMBER 02
ISSUED BY SOUTH CHINA SEA TSUNAMI ADVISORY CENTER (SCSTAC)
ISSUED AT 1024 UTC NOV 21 2014

... TSUNAMI INFORMATION SUPPLEMENT ...

****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE*****

THIS STATEMENT IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC SOUTH CHINA SEA SUB-REGIONAL TSUNAMI WARNING AND MITIGATION SYSTEM. NATIONAL AUTHORITIES WILL BE RESPONSIBLE FOR DETERMINATION OF THE APPROPRIATE LEVEL OF ALERT FOR EACH COUNTRY. THE PUBLIC SHOULD FOLLOW THE GUIDANCE OF NATIONAL AUTHORITIES.

**** NOTICE **** NOTICE ****NOTICE **** NOTI CE **** NOTICE *****NOTICE*****

[ PRELIMINARY EARTHQUAKE PARAMETERS ]
*MAGNITUDE 6.9
*ORIGIN TIME 1010 UTC NOV21 2014
*COORDINATES 2.1N, 127.0E
*DEPTH 10 KM
*LOCATION HALMAHERA INDONESIA

[ TSUNAMI OBSERVATIONS ]

<table>
<thead>
<tr>
<th>GAUGE NAME</th>
<th>REGION</th>
<th>COORDINATES</th>
<th>TIME (UTC)</th>
<th>MAX. AMPL</th>
</tr>
</thead>
<tbody>
<tr>
<td>BITUNG</td>
<td>INDONESIA</td>
<td>1.4N, 125.2E</td>
<td>1100</td>
<td>0.13 M</td>
</tr>
<tr>
<td>DAVAO</td>
<td>PHILIPPINES</td>
<td>7.1N, 125.6E</td>
<td>1310</td>
<td>0.08 M</td>
</tr>
</tbody>
</table>

* MAX. AMPL - TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL.

[ EVALUATION ]

ACCORDING TO AVAILABLE SEA LEVEL READINGS, THERE IS NO TSUNAMI THREAT FROM THIS EARTHQUAKE.

* TSUNAMI OBSERVATIONS INDICATE MINOR TSUNAMI WAVES WERE ACTUALLY GENERATED BY EARTHQUAKE. TSUNAMI AMPLITUDES MAY VARY ALONG COASTS DUE TO LOCAL FEATURES.

[ RECOMMENDED ACTIONS ]

PERSONS ALONG COASTAL AREAS NEAR THE EPICENTER SHOULD BE AWARE OF POSSIBILITY OF MINOR TSUNAMI WAVES AND UNUSUAL CURRENT. NO OTHER ACTION IS REQUIRED.

[ UPDATES ]

THIS WILL BE THE FINAL BULLETIN REGARDING THIS EVENT UNLESS FURTHER INFORMATION BECOMES AVAILABLE.

[ ADDITIONAL INFORMATION ]

* MORE DETAILED INFORMATION CAN BE FOUND AT WEBSITE WWW.SCSTAC.ORG.
* TSUNAMI BULLETIN REGARDING THIS EVENT MAY BE ISSUED BY PACIFIC TSUNAMI WARNING CENTER AND NORTHWEST PACIFIC TSUNAMI ADVISORY CENTER. IN CASE OF CONFLICTING INFORMATION, MORE CONSERVATIVE INFORMATION SHOULD BE ADOPTED.
* TEL: +86-10-62104561
B. Tsunami Threat Message (POSSIBILITY OF TSUNAMI THREAT: (1) with tsunami amplitude forecast; (2) Supplemental bulletin with revision on earthquake information or tsunami observations)

B.1 TSUNAMI THREAT MESSAGE (SUPPLEMENT WITH MAJOR REVISION)

WMO HEADING

TSUNAMI BULLETIN NUMBER 01
ISSUED BY SOUTH CHINA SEA TSUNAMI ADVISORY CENTER (SCSTAC)
ISSUED AT 0242 UTC NOV 15 2014

... POTENTIAL TSUNAMI THREAT EXISTS FOR PHILIPPINES ...

****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****

THIS STATEMENT IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC SOUTH CHINA SEA SUB-REGIONAL TSUNAMI WARNING AND MITIGATION SYSTEM. NATIONAL AUTHORITIES WILL BE RESPONSIBLE FOR DETERMINATION OF THE APPROPRIATE LEVEL OF ALERT FOR EACH COUNTRY. THE PUBLIC SHOULD FOLLOW THE GUIDANCE OF NATIONAL AUTHORITIES.

**** NOTICE **** NOTICE ****NOTICE **** NOTICE **** NOTICE *****NOTICE*****

[ PRELIMINARY EARTHQUAKE PARAMETERS ]

*MAGNITUDE* 7.4
*ORIGIN TIME* 0232 UTC NOV 15 2014
*COORDINATES* 18.4N, 119.3E
*DEPTH* 25 KM
[ LOCATION ]  LUZON, PHILIPPINES

[ EVALUATION ]

THERE IS A POSSIBILITY OF A DESTRUCTIVE LOCAL TSUNAMI CONFINED TO 100-300 KM OF THE EPICENTER BASED ON AVAILABLE INFORMATION.

[ TSUNAMI AMPLITUDE AND ETA FORECASTS ]

<table>
<thead>
<tr>
<th>FORECAST POINT</th>
<th>COORDINATES</th>
<th>ETA (UTC)</th>
<th>MAX. AMPL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHILIPPINES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CURRIMAO</td>
<td>18.0N, 120.5E</td>
<td>0330</td>
<td>0.3-1 M</td>
</tr>
</tbody>
</table>

* THIS LIST IS GROUPED BY COUNTRIES, AND COUNTRY NAMES IS ORDERED ACCORDING TO THREAT LEVELS.

* ETA - ESTIMATED TIME OF ARRIVAL FOR INITIAL WAVE. NOTING THAT IN SOME COASTAL AREA TSUNAMI WAVES MAY ARRIVE EARLIER THAN OUR ESTIMATE DUE TO COARSE BATHYMETRY USED BY MODEL.

* MAX. AMPL - MAXIMUM WAVE HEIGHT RELATIVE TO NORMAL SEA LEVEL, WHICH ARE EXTRACTED FROM MODEL RESULTS AND GROUPED INTO FOUR BINS OF '<0.3 M; 0.3 TO 1 M; 1 TO 3 M and ABOVE 3 M'. NOTING THAT THE INITIAL WAVE MAY NOT NECESSARILY THE LARGEST, AND WAVE ACTIVITIES MAY VARY SIGNIFICANT ALONG COASTS DUE TO LOCAL FEATURES.

[ RECOMMENDED ACTIONS ]

* LOCAL AUTHORITIES SHOULD PAY CLOSE ATTENTION ON THEIR NATIONAL TSUNAMI WARNING CENTER'S EVALUATION ON TSUNAMI HAZARD, AND TAKE APPROPRIATE ACTIONS IN RESPONSE TO THIS POTENTIAL HAZARD.

* PERSONS LOCATED IN THREATENED COASTAL AREAS SHOULD KEEP ALERT FOR WARNING INFORMATION AND FOLLOW INSTRUCTIONS FROM LOCAL AUTHORITIES.

[ UPDATES ]

THE NEXT BULLETIN WILL BE ISSUED AS MORE INFORMATION BECOMES AVAILABLE.

[ ADDITIONAL INFORMATION ]
B.2 TSUNAMI THREAT MESSAGE (SUPPLEMENTAL BULLETIN WITH MAJOR REVISION ON EARTHQUAKE MAGNITUDE AND TSUNAMI FORECASTS)

1. TEXT PRODUCT

WMO HEADING

TSUNAMI BULLETIN NUMBER 02
ISSUED BY SOUTH CHINA SEA TSUNAMI ADVISORY CENTER (SCSTAC)
ISSUED AT 0248 UTC NOV 15 2014

... POTENTIAL TSUNAMI THREAT EXISTS FOR PHILIPPINES, CHINA, VIETNAM, MALAYSIA, BRUNEI...

****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****

THIS STATEMENT IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC SOUTH CHINA SEA SUB-REGIONAL TSUNAMI WARNING AND MITIGATION SYSTEM. NATIONAL AUTHORITIES WILL BE RESPONSIBLE FOR DETERMINATION OF THE APPROPRIATE LEVEL OF ALERT FOR EACH COUNTRY. THE PUBLIC SHOULD FOLLOW THE GUIDANCE OF NATIONAL AUTHORITIES.

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE *****NOTICE*****
[ PRELIMINARY EARTHQUAKE PARAMETERS (REVISION) ]

*MAGNITUDE 8.8

*ORIGIN TIME 0232 UTC NOV15 2014

*COORDINATES 18.4N, 119.3E

*DEPTH 25 KM

*LOCATION LUZON, PHILIPPINES

[ EVALUATION ]

THERE IS A POSSIBILITY OF A DESTRUCTIVE BASIN-WIDE TSUNAMI BASED ON AVAILABLE INFORMATION.

[ TSUNAMI AMPLITUDE AND ETA FORECASTS (REVISION) ]

<table>
<thead>
<tr>
<th>FORECAST POINT</th>
<th>COORDINATES</th>
<th>ETA (UTC)</th>
<th>MAX. AMPL</th>
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<td></td>
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<tr>
<td>CURRIMAO</td>
<td>18.0N, 120.5E</td>
<td>0310</td>
<td>&gt;3 M</td>
</tr>
<tr>
<td>SUBIC_BAY</td>
<td>14.8N, 120.3E</td>
<td>0330</td>
<td>&gt;3 M</td>
</tr>
<tr>
<td>LUBANG</td>
<td>13.8N, 120.2E</td>
<td>0350</td>
<td>1-3 M</td>
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<tr>
<td>CHINA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QINGLAN</td>
<td>19.6N, 110.8E</td>
<td>0435</td>
<td>&gt;3 M</td>
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<tr>
<td>SHENZHEN</td>
<td>22.5N, 113.9E</td>
<td>0540</td>
<td>&gt;3 M</td>
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<tr>
<td>HONG KONG, CHINA</td>
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<td></td>
</tr>
<tr>
<td>QUARRY_BAY</td>
<td>22.3N, 114.3E</td>
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<tr>
<td>VIETNAM</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>QUI_NHON</td>
<td>13.8N, 109.3E</td>
<td>0440</td>
<td>1-3 M</td>
</tr>
<tr>
<td>VUNG_TAU</td>
<td>10.3N, 107.1E</td>
<td>0520</td>
<td>0.3-1 M</td>
</tr>
<tr>
<td>MALAYSIA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAPAR</td>
<td>5.7N, 115.9E</td>
<td>0510</td>
<td>0.3-1 M</td>
</tr>
<tr>
<td>BRUNEI</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

36
* THIS LIST IS GROUPED BY COUNTRIES, AND COUNTRY NAMES IS ORDERED ACCORDING TO THREAT LEVELS.

* ETA - ESTIMATED TIME OF ARRIVAL FOR INITIAL WAVE. NOTING THAT IN SOME COASTAL AREA TSUNAMI WAVES MAY ARRIVE EARLIER THAN OUR ESTIMATE DUE TO COARSE BATHYMETRY USED BY MODEL.

* MAX. AMPL - MAXIMUM WAVE HEIGHT RELATIVE TO NORMAL SEA LEVEL, WHICH ARE EXTRACTED FROM MODEL RESULTS AND GROUPED INTO FOUR BINS OF '<0.3 M; 0.3 TO 1 M; 1 TO 3 M and ABOVE 3 M'. NOTING THAT THE INITIAL WAVE MAY NOT NECESSARILY THE LARGEST, AND WAVE ACTIVITIES MAY VARY SIGNIFICANT ALONG COASTS DUE TO LOCAL FEATURES.

[ RECOMMENDED ACTIONS ]

* LOCAL AUTHORITIES SHOULD PAY CLOSE ATTENTION ON THEIR NATIONAL TSUNAMI WARNING CENTER'S EVALUATION ON TSUNAMI HAZARD, AND TAKE APPROPRIATE ACTIONS IN RESPONSE TO THIS POTENTIAL HAZARD.

* PERSONS LOCATED IN THREATENED COASTAL AREAS SHOULD KEEP ALERT FOR WARNING INFORMATION AND FOLLOW INSTRUCTIONS FROM LOCAL AUTHORITIES.

[ UPDATES ]

THE NEXT BULLETIN WILL BE ISSUED AS MORE INFORMATION BECOMES AVAILABLE.

[ ADDITIONAL INFORMATION ]

* MORE DETAILED INFORMATION CAN BE FOUND AT WEBSITE WWW.SCSTAC.ORG.

* TSUNAMI BULLETIN REGARDING THIS EVENT MAY BE ISSUED BY PACIFIC TSUNAMI WARNING CENTER AND NORTHWEST PACIFIC TSUNAMI ADVISORY CENTER. IN CASE OF CONFLICTING INFORMATION, MORE CONSERVATIVE INFORMATION SHOULD BE ADOPTED.

* TEL: +86-10-62104561

* EMAIL: TSU@NMEFC.GOV.CN

-----------------------------------------------------------------------------------------------------------------------------------END OF BULLETIN -----------------------------------------------------------------------------------------------------------------------------------

2. TSUNAMI ENERGY MAP
SCSTAC Tsunami Amplitude Forecast
This map should not be used to estimate coastal tsunami amplitudes or impacts. Deep-ocean amplitudes are usually much smaller than coastal amplitudes.

Figure A.1 Tsunami Energy Map
3. COASTAL TSUNAMI AMPLITUDE MAP

SCSTAC Coastal Tsunami Maximum Amplitude

Actual amplitudes at the coast may vary from forecast amplitudes due to uncertainties in the forecast and local features.

Figure A.2 Coastal Tsunami Amplitude Map
B.3 TSUNAMI THREAT MESSAGE (SUPPLEMENTAL BULLETIN WITH TSUNAMI OBSERVATIONS REPORTED)

WMO HEADING

TSUNAMI BULLETIN NUMBER 03
ISSUED BY SOUTH CHINA SEA TSUNAMI ADVISORY CENTER (SCSTAC)
ISSUED AT 0450 UTC NOV 15 2014

...POTENTIAL TSUNAMI THREAT EXISTS FOR BRUNEI, CHINA, MALAYSIA, PHILIPPINES, VIETNAM...

****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE*****NOTICE*****

THIS STATEMENT IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC SOUTH CHINA SEA SUB-REGIONAL TSUNAMI WARNING AND MITIGATION SYSTEM. NATIONAL AUTHORITIES WILL BE RESPONSIBLE FOR DETERMINATION OF THE APPROPRIATE LEVEL OF ALERT FOR EACH COUNTRY. THE PUBLIC SHOULD FOLLOW THE GUIDANCE OF NATIONAL AUTHORITIES.

**** NOTICE **** NOTICE ****NOTICE **** NOTICE **** NOTICE ****NOTICE*****

[ PRELIMINARY EARTHQUAKE PARAMETERS ]

*MAGNITUDE 8.8
*ORIGIN TIME 0232 UTC NOV 15 2014
*COORDINATES 18.4N, 119.3E
*DEPTH 25 KM
*LOCATION LUZON, PHILIPPINES

[ TSUNAMI OBSERVATIONS ]

<table>
<thead>
<tr>
<th>GAUGE NAME</th>
<th>REGION</th>
<th>COORDINATES</th>
<th>TIME (UTC)</th>
<th>MAX. AMPL</th>
</tr>
</thead>
<tbody>
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<td>PHILIPPINES</td>
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<td>6.9 M</td>
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<td>COORDINATES</td>
<td>ETA (UTC)</td>
<td>MAX. AMPL</td>
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<tr>
<td>CHINA</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHENZHEN</td>
<td>22.5N, 113.9E</td>
<td>0540</td>
<td>1-3 M</td>
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</tr>
<tr>
<td>HONG KONG, CHINA</td>
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<td></td>
</tr>
<tr>
<td>QUARRY_BAY</td>
<td>22.3N, 114.3E</td>
<td>0510</td>
<td>&gt;3 M</td>
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<tr>
<td>VIETNAM</td>
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<td></td>
</tr>
<tr>
<td>VUNG_TAU</td>
<td>10.3N, 107.1E</td>
<td>0520</td>
<td>0.3-1 M</td>
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<tr>
<td>MALAYSIA</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>PAPAR</td>
<td>5.7N, 115.9E</td>
<td>0510</td>
<td>0.3-1 M</td>
<td></td>
</tr>
<tr>
<td>BRUNEI</td>
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<td></td>
</tr>
<tr>
<td>JERUDONG</td>
<td>5.0N, 114.8E</td>
<td>0522</td>
<td>0.3-1 M</td>
<td></td>
</tr>
</tbody>
</table>

* THIS LIST IS GROUPED BY COUNTRIES, AND COUNTRY NAMES IS ORDERED ACCORDING TO THREAT LEVELS.

* ETA - ESTIMATED TIME OF ARRIVAL FOR INITIAL WAVE. NOTING THAT IN SOME COASTAL AREA TSUNAMI WAVES MAY ARRIVE EARLIER THAN OUR ESTIMATE DUE TO COARSE BATHYMETRY USED BY MODEL.

* MAX. AMPL - MAXIMUM WAVE HEIGHT RELATIVE TO NORMAL SEA LEVEL, WHICH ARE EXTRACTED FROM MODEL RESULTS AND GROUPED INTO FOUR BINS OF '<0.3 M; 0.3 TO 1 M; 1 TO 3 M and ABOVE 3 M'. NOTING THAT THE INITIAL WAVE MAY NOT NECESSARILY THE LARGEST, AND WAVE ACTIVITIES MAY VARY SIGNIFICANT ALONG COASTS DUE TO LOCAL FEATURES.

* MAX. AMPL - TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL.

[ EVALUATION ]

THERE IS A POSSIBILITY OF A DESTRUCTIVE BASIN-WIDE TSUNAMI IN THE SCS BASED ON AVAILABLE DATA AND MODEL RESULTS.

[ TSUNAMI AMPLITUDE AND ETA FORECASTS (REVISION) ]
[ RECOMMENDED ACTIONS ]

* LOCAL AUTHORITIES SHOULD PAY CLOSE ATTENTION ON THEIR NATIONAL TSUNAMI WARNING CENTER’S EVALUATION ON TSUNAMI HAZARD, AND TAKE APPROPRIATE ACTIONS IN RESPONSE TO THIS POTENTIAL HAZARD.

* PERSONS LOCATED IN THREATENED COASTAL AREAS SHOULD KEEP ALERT FOR WARNING INFORMATION AND FOLLOW INSTRUCTIONS FROM LOCAL AUTHORITIES.

[ UPDATES ]

THE NEXT BULLETIN WILL BE ISSUED AS MORE INFORMATION BECOMES AVAILABLE.

[ ADDITIONAL INFORMATION ]

* MORE DETAILED INFORMATION CAN BE FOUND AT WEBSITE WWW.SCSTAC.ORG.

* TSUNAMI BULLETIN REGARDING THIS EVENT MAY BE ISSUED BY PACIFIC TSUNAMI WARNING CENTER AND NORTHWEST PACIFIC TSUNAMI ADVISORY CENTER. IN CASE OF CONFLICTING INFORMATION, MORE CONSERVATIVE INFORMATION SHOULD BE ADOPTED.

* TEL: +86-10-62104561

* EMAIL: TSU@NMEFC.GOV.CN

---------------------------------------------END OF BULLETIN---------------------------------------------

C. Final bulletin (Tsunami not confirmed by observations; Tsunami threat has passed)

C.1 FINAL BULLETIN (TSUNAMI NOT CONFIRMED BY OBSERVATIONS)

WMO HEADING

TSUNAMI BULLETIN NUMBER 02
ISSUED BY SOUTH CHINA SEA TSUNAMI ADVISORY CENTER (SCSTAC)
ISSUED AT 0350 UTC NOV 15 2014
... TSUNAMI THREAT NOT CONFIRMED...

****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE*****NOTICE*****

THIS STATEMENT IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THEUNESCO/IOC SOUTH CHINA SEA SUB-REGIONAL TSUNAMI WARNING AND MITIGATION SYSTEM. NATIONAL AUTHORITIES WILL BE RESPONSIBLE FOR DETERMINATION OF THE APPROPRIATE LEVEL OF ALERT FOR EACH COUNTRY. THE PUBLIC SHOULD FOLLOW THE GUIDANCE OF NATIONAL AUTHORITIES.

**** NOTICE **** NOTICE ****NOTICE **** NOTICE **** NOTICE *****NOTICE*****

[ PRELIMINARY EARTHQUAKE PARAMETERS ]

* MAGNITUDE 7.4  
* ORIGIN TIME 0232 UTC NOV15 2014  
* COORDINATES 18.4N, 119.3E  
* DEPTH 25 KM  
* LOCATION LUZON, PHILIPPINES

[ EVALUATION ]

NO EVIDENCE SHOWED A DESTRUCTIVE TSUNAMI ACTUALLY OCCURED BASED ON ALL AVAILABLE INFORMATION. HOWEVER, NATIONAL TSUNAMI WARNING CENTERS SHOULD CONTINUOUSLY MONITOR THEIR OWN SEA LEVEL STATIONS DUE TO RELATIVELY SPARSE OBSERVING NETWORKS IN THIS REGION.

[ RECOMMENDED ACTIONS ]

* LOCAL AUTHORITIES MAY ASSUME NO TSUNAMI THREAT EXISTS WHEN NO OBVIOUS SEA LEVEL FLUCTUATION OBSERVED FOR TWO HOURS AFTER THE ESTIMATED TIME OF ARRIVAL.

* PERSONS LOCATED IN THREATENED COASTAL AREAS SHOULD KEEP ALERT FOR WARNING INFORMATION AND FOLLOW INSTRUCTIONS FROM LOCAL AUTHORITIES.

[ UPDATES ]

43
THIS WILL BE THE FINAL BULLETIN REGARDING THIS EVENT UNLESS ADDITIONAL INFORMATION BECOMES AVAILABLE.

[ADDITIONAL INFORMATION]

* MORE DETAILED INFORMATION CAN BE FOUND AT WEBSITE WWW.SCSTAC.ORG.

* TSUNAMI BULLETIN REGARDING THIS EVENT MAY BE ISSUED BY PACIFIC TSUNAMI WARNING CENTER AND NORTHWEST PACIFIC TSUNAMI ADVISORY CENTER. IN CASE OF CONFLICTING INFORMATION, MORE CONSERVATIVE INFORMATION SHOULD BE ADOPTED.

* TEL: +86-10-62104561

* EMAIL: TSU@NMEFC.GOV.CN

---------------------------------------------END OF BULLETIN---------------------------------------------

C.2 FINAL BULLETIN (TSUNAMI THREAT HAS PASSED)

WMO HEADING

TSUNAMI BULLETIN NUMBER 04
ISSUED BY SOUTH CHINA SEA TSUNAMI ADVISORY CENTER (SCSTAC)
ISSUED AT 1250 UTC NOV 15 2014

... TSUNAMI THREAT HAS PASSED...

****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE****NOTICE*****NOTICE******

THIS STATEMENT IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC SOUTH CHINA SEA SUB-REGIONAL TSUNAMI WARNING AND MITIGATION SYSTEM. NATIONAL AUTHORITIES WILL BE RESPONSIBLE FOR DETERMINATION OF THE APPROPRIATE LEVEL OF ALERT FOR EACH COUNTRY. THE PUBLIC SHOULD FOLLOW THE GUIDANCE OF NATIONAL AUTHORITIES.

**** NOTICE **** NOTICE ****NOTICE **** NOTICE **** NOTICE ****NOTICE*****
[ PRELIMINARY EARTHQUAKE PARAMETERS ]

*MAGNITUDE* 8.8

*ORIGIN TIME* 0232 UTC NOV15 2014

*COORDINATES* 18.4N, 119.3E

*DEPTH* 25 KM

*LOCATION* LUZON, PHILIPPINES

[ EVALUATION ]

BASED ON ALL AVAILABLE DATA, TSUNAMI THREAT NO LONGER EXISTS. HOWEVER, DUE TO LOCAL FEATURES MINOR SEA LEVEL FLUCTUATIONS MAY CONTINUE FOR HOURS.

[ RECOMMENDED ACTIONS ]

* LOCAL AUTHORITIES MAY ASSUME NO TSUNAMI THREAT EXISTS WHEN NO OBVIOUS SEA LEVEL FLUCTUATION OBSERVED FOR TWO HOURS AFTER THE ESTIMATED TIME OF ARRIVAL OR HAZARDOUS WAVES HAVE NOT OCCURRED FOR AT LEAST TWO HOURS.

* PERSONS LOCATED IN THREATENED COASTAL AREAS SHOULD KEEP ALERT FOR WARNING INFORMATION AND FOLLOW INSTRUCTIONS FROM LOCAL AUTHORITIES.

[ UPDATES ]

THIS WILL BE THE FINAL BULLETIN REGARDING THIS EVENT UNLESS ADDITIONAL INFORMATION BECOMES AVAILABLE.

[ ADDITIONAL INFORMATION ]

* MORE DETAILED INFORMATION CAN BE FOUND AT WEBSITE WWW.SCSTAC.ORG.

* TSUNAMI BULLETIN REGARDING THIS EVENT MAY BE ISSUED BY PACIFIC TSUNAMI WARNING CENTER AND NORTHWEST PACIFIC TSUNAMI ADVISORY CENTER. IN CASE OF CONFLICTING INFORMATION, MORE CONSERVATIVE INFORMATION SHOULD BE ADOPTED.

* TEL: +86-10-62104561

* EMAIL: TSU@NMEFC.GOV.CN

---------------------------------------------END OF BULLETIN---------------------------------------------
# Annex II List of Coastal Forecasting Points for ETA and Amplitude

Table II.1 List of Coastal Forecasting Points

<table>
<thead>
<tr>
<th>COUNTRY/PLACE</th>
<th>LOCATION</th>
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<th>LONGITUDE</th>
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Figure A.3 Coastal Forecasting Points for the SCS tsunami advisory products