Annex IV

JMA/WMO WORKSHOP ON EFFECTIVE TROPICAL CYCLONE WARNING IN SOUTHEAST ASIA

Tokyo, Japan
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(COUNTRY REPORT TEMPLATE)

Summary of Jakarta TCWC Activities 2013

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Summary

Jakarta Tropical Cyclone Warning Centre (Jakarta TCWC) officially operated on March 24, 2008 and managed by Indonesian Agency for Meteorology Climatology and Geophysics (BMKG), cover the area of responsibility between 0 - 10°S and 090 - 141°E, with slight modification between 125 - 141°E. Jakarta TCWC has 2 (two) major tasks and responsibilities, forecasts and warnings for the general population (tropical cyclones warning for coastal and land areas of Indonesia) and forecast and warning for open sea (tropical cyclone warning covering the area of responsibility).

A GUIDE TO PREPARE A COUNTRY REPORT AND PRESENTATION

1. Tropical Cyclone Monitoring, Analysis and Forecasting

1.1 Tropical Cyclone Monitoring

1.1.1 Tropical Cyclogenesis Monitoring

The cyclogenesis analysis will be conducted whenever we found some indicator :

- a consisten surface pressure decrease in the last 6 or 12 hour
- identified from NWP, the deep convection area, low pressure area and nearly cyclonic circulation
- identified from satellite image, the significan cloud feature

When two out of three condition identified, the analysis will be continued with Cyclogenesis Analysis by using the Cyclogenesis Checksheet.

27 cyclogenesis identification step was conducted every 12 hour on this analysis, covering Suspect area identification, Braodscale Environment condition (current & 72 hours trend), Development of Circulation & Development of Deep Convection.

The cyclogenesis checksheet was adopted from Bureau of Meteorology Australia

1.1.2 Tropical Depression (TD) Warnings

TD warning will be issued when Cyclogenesis analysis found the suspect area is favourable to develop as a TC within next 24 hours. TD warning will be disseminated through website & email.

1.1.3 Challenges, Needs and Improvement Plans

As Indonesia is located in low latitude area, most of the TC case is only in the early stage and it's quite challenging to make a TC analysis at this stage.

Another challenge is regarding the remote impact of developed TC. As Indonesia is not directly impacted by TC, but still we have an indirect impact of TC that developed in Northwest Pacific and Southeast Indian Ocean.

To deals with those two challenge we need a training that focus on early stage analysis & indirect impact.

1.2 Tropical Cyclone Analysis

1.2.1 Parameters and Methods

Parameter	Time (UTC)	Methods	Other sources
- position *- direction & speed* *- central pressure,* *- maximum sustainable wind*	*00.00 Z* *12.00 Z*	*- satellite-based method : Dvorak analysis* *- non satellite-based methods : NWP model output*	*- JTWC* *- CIMMS* *- NRL TC Page* *- RAMMB CIRA*

1.2.2 Challenges, Needs and Improvement Plans

Need a training on TC remote/indirect impact

1.3 Tropical Cyclone Forecasting

1.3.1 Parameter and Method

Parameter	Issuance Time (UTC)	Lead time (hours)	Methods
- position *- direction & speed* *- central pressure,* *- maximum sustainable wind* *- radius of max wind* *- uncertainty area*	*00.00 Z* *12.00 Z*	72 hours	*Source numerical track guidance products of foreign Members :* *- JTWC* *- ECMWF* *TC Intensity forecast was issued by using DVorak analysis & NWP model output*

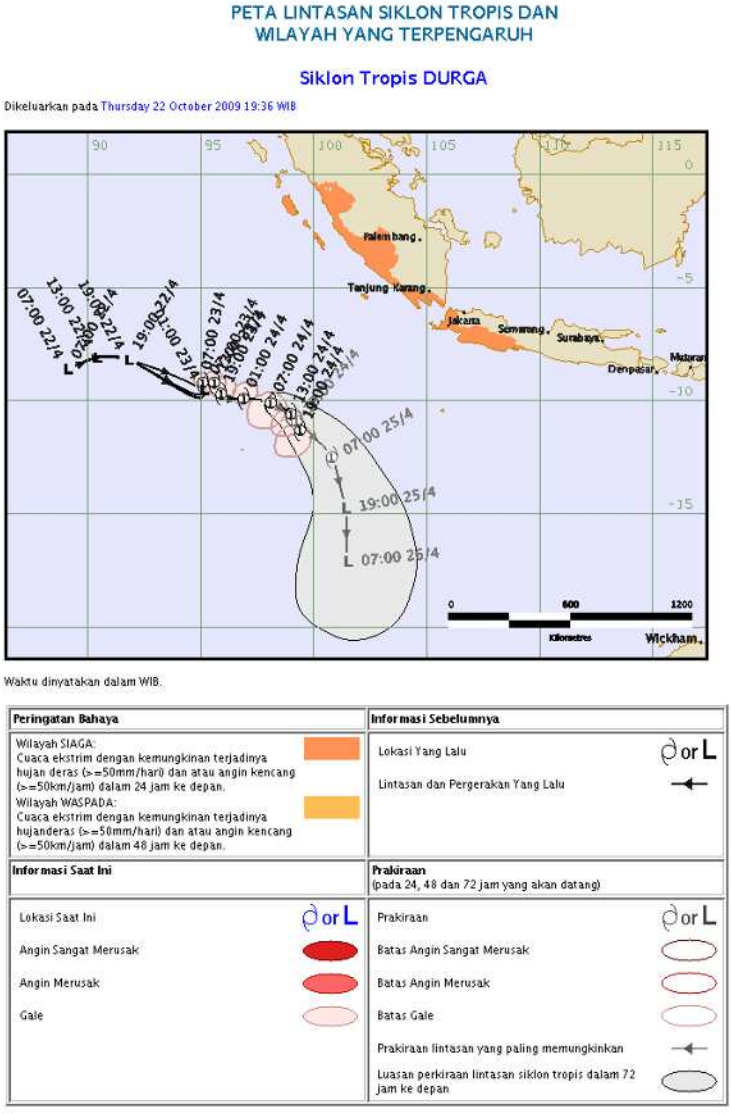
1.3.2 Challenges, Needs and Improvement Plans

Need a training on TC forecast on low latitude area

1.4 Tropical Cyclone Products

1.4.1 TC Products

a. Tropical Cyclone Outlook.
b. Public Information Bulletin
c. TC technical bulletin
d. TC Warning (SMS).
e. Extreme Weather Warning.
f. TC Track and Impact Map.
g. Coastal Zone Warning.
h. High Seas Warning.



1.4.2 Challenges, Needs and Improvement Plans

Need a training on forecasting TC remote/indirect impact area

1.5 Computing Platform (including software)

The software for the utilization for making TC analysis, forecasts and products in Jakarta TCWC is “Tropical Cyclone Module” supported by Australian Government, Bureau of Meteorology.

2 Numerical Weather Prediction Status for Effective Warning

Currently BMKG Indonesia is not make alocal NWP run

2.1 NWP in Operational Use

Model	Domain (square degree)	Resolution (horizontal & vertical)	Initial Time	Forecast Range (hours)	Run by (own/foreign centers)
ACCESS-G	Global	80 km &	00 & 12 UTC	+162 (per 6 hrs)	BoM
GDAPS (KMA)	Global	25 km & 70 vl	00 & 12 UTC	+84 (per 6 hrs)	KMA
GFS1.0	Global	110 km & 22 vl	00 & 12 UTC	+120 (per 3 hrs)	NCEP
ARPEGE0.5	Global	55 km & 14 vl	00 & 12 UTC	+72 (per 6 hrs)	MFI
ARPEGE1.5	Global	165 km & 14 vl	00 & 12 UTC	+72 (per 6 hrs)	MFI
ECMWF2.5	Global	275 km & 5 vl	00 & 12 UTC	+48 (per 6 hrs)	?

2.2 Application Techniques of NWP Products for Operational Forecasts

Most NWP products used for operational forecasts in Jakarta TCWC are ready available in graph format. Forecasting are performed by interpreting model outputs by forecaster. Skill of forecaster plays an important role in the performance of the forecast products.

2.3 Challenges, Needs and Improvement Plans

Need a training on TC forecast on low latitude area

3. Storm Surge

1) Storm Surge Information

a. ~~Issuing~~ b. not issuing

(For those who answered "b." in 1))

2) What is the reason?

a. ~~No use (inland / no storm surge)~~ b. ~~No forecast are available~~

c. Other (still have no sufficient information about standard format of storm surge information)

(For those who answered "a." in 1))

3) How the information is issued?

a. Independent storm surge information b. Included in TC information

c. Other ( )

4) What products (observations /forecasts) are referred to?

5) If your Service runs a storm surge model by yourself, please describe the way in detail.

Model	Domain and resolution	Forecast Range (hours)	Frequency	Considered factors (Tide/ensemble/ inundation, etc.)

6) **In case your Service issue storm surge forecast without your own model, please briefly explain the operational procedure.**

4. Effective Warnings

4.1 Emergency Response for TC Disasters

4.1.1 Legal Framework for TC Disaster Management

Based on “Act of Republic of Indonesia Number 31 year 2009 about Meteorology, Climatology and Geophysics”, broadcasting agencies should provide time allocation to disseminate meteorological early warning, including TC warning.

Basen on Jakarta TCWC Operational Directive 2013 :

- Coordination with local government will be done when an area potentially affected by disaster caused by tropical cyclone occurring
- Coordination with related agencies will be done to inform the potential of disaster that could happen associated to tropical cyclone.

  Related agencies above are :

  - BNPB (Indonesian National Board for Disaster Management)
  - Basarnas (National Search and Rescue Agency)
  - PMI (Indonesian Red Cross Societies)
  - Ministry of Communication & Information

4.1.2 Emergency Response Mechanism

- Jakarta TCWC BMKG will inform the potential of disaster that could happen associated to tropical cyclone to local government and related agencies
- Local government and related agencies will decide action to be taken (evacuation, etc)

4.1.3 Organs Responsible for Warnings and Evacuation Orders

Severe Weather Phenomena	Organs responsible for Warnings	Organs responsible for Evacuation Orders
Tropical Cyclone	*Jakarta TCWC BMKG*	• *BNPB (Indonesian National Board for Disaster Management)* • *Basarnas (National Search and Rescue Agency)* • *Local government*
Heavy Rain	BMKG	• *BNPB (Indonesian National Board for Disaster Management)* • *Basarnas (National Search and Rescue Agency)* • *Local government*
Strong Wind	BMKG	• *BNPB (Indonesian National Board for Disaster Management)* • *Basarnas (National Search and Rescue Agency)* • *Local government*
River Flood	BNPB (Indonesian National Board for Disaster Management)	• *BNPB (Indonesian National Board for Disaster Management)* • *Basarnas (National Search and Rescue Agency)* • *Local government*
Storm Surge	Still not issued storm surge warning yet	

4.2 Warnings/Advisories for Severe Weather Phenomena

[You are invited to provide details on warnings/advisories for tropical cyclones as well as associated severe weather phenomena, i.e., heavy rainfall, strong wind, flood, inundation and storm surge, in the following formats respectively.]

4.2.1 Tropical Cyclone

Warnings/Advisories and corresponding emergency responses	1. *Tropical Cyclone technical bulletin* 2. *Public Information Bulletin* 3. *SMS Warning* 4. *TC Track & impact map* 5. *High seas warning* 6. *Coastal zone warning* 7. *Extreme weather warning*
Potential Disaster Risks	*Of the point of 1 to 7, potential disasters risks will be higher*
Target (warning areas)	- *Provinces and regencies in Indonesia* - *Indonesian waters, coast*
Meteorological variables/indices used for criteria/thresholds for warnings/advisories	- *Wind* - *Precipitation* - *State of sea (sea wave)*
Criteria/Thresholds	- *Wind speed above 20 knots* - *Precipitation :* *moderate 21-50 mm/24hrs* *heavy >50 mm/24hrs* - *Sea wave :* *High wave > 3 m*
Contents of Warning/Advisory Message	***Tropical Cyclone Information Bulletin will consist ofthe following information:*** – *The cyclone name (if it has been named)* – *The latest observed location of the cyclone centre* – *The expected developments (path and intensity)* – *A statement of longer term threats.* – *high seas and coastal waters threatened by cyclones (refer to marine warning)* ***Tropical Cyclone Information Bulletin will consist ofthe following information:*** – *The cyclone name (if it has been named)* – *The latest observed location of the cyclone centre* – *The expected developments (path and intensity)* – *A statement of longer term threats.*

	– *high seas and coastal waters threatened by cyclones (refer to marine warning)* ***Tropical Cyclone Threat Map will contain the following information:*** - *The cyclone name* - *Reference to the associated Advice* - *A map including the recent track of the cyclone and forecast track up to 48 hours hence.* - *The latest position with a graphical representation of the current and forecast extent of gale-force (62 km/h), storm-force (89 km/h) and hurricane-force (117 km/hr) winds.* - *A grey zone uncertainty depicting the likely range of movement of the cyclone.* - *Graphical representation of the Warning and watch zones* - *The intensity category of the cyclone (1 - weak to 5 - strong)* - *Some technical information in text format, including uncertainty.* - *Some advisory information extracted from the Tropical Cyclone Advice* - *The expected issue time for the next map*
Sample Warning/Advisory Message	IDJ21030 BADAN METEOROLOGI KLIMATOLOGI DAN GEOFISIKA Tropical Cyclone Warning Centre (TCWC) Jakarta BULETIN INFORMASI SIKLON TROPIS Dikeluarkan oleh TROPICAL CYCLONE WARNING CENTRE JAKARTA Pada: 20:19 WIB 18/12/2013 TC BRUCE Kondisi tanggal 18/12/2013 pukul 19:00 WIB : Posisi : 11.5LS, 94.4BT (sekitar 1220 km sebelah barat daya Bengkulu) Arah Gerak : barat barat daya, kecepatan 12 knots (21 km/jam) bergerak menjauhi wilayah Indonesia Kecepatan Angin Maksimum: 50 knots (95 km/jam) Prediksi 24 jam, tanggal 19/12/2013 pukul 19:00 WIB : Posisi : 12.8LS, 91.2BT (sekitar 1580 km sebelah barat daya Bengkulu) Arah Gerak : Barat Daya bergerak menjauhi wilayah Indonesia Kecepatan Angin Maksimum: 70 knots (130 km/jam) Prediksi 48 jam, tanggal 20/12/2013 pukul 19:00 WIB : Posisi : 13.8LS, 87.3BT Arah Gerak :Barat Daya bergerak menjauhi wilayah Indonesia Kecepatan Angin Maksimum: 90 knots (165 km/jam) Prediksi 72 jam, tanggal 21/12/2013 pukul 19:00 WIB : Posisi : 15.3LS, 82.6BT Arah Gerak : Barat daya bergerak menjauhi wilayah Indonesia Kecepatan Angin Maksimum: 95 knots (175 km/jam) DAMPAK TERHADAP CUACA DI INDONESIA : Siklon Tropis BRUCE memberikan dampak terhadap cuaca di Indonesia berupa : - Hujan ringan - sedang di Bengkulu bagian barat, Lampung bagian barat dan selatan, Banten, Jakarta dan Jawa bagian Barat. - Gelombang 3 - 4 meter di Perairan Kep. Nias, Perairan barat Padang, Perairan barat Lampung, Samudera Hindia selatan Banten. - Gelombang 4 - 6 meter di Perairan Kep. Mentawai, Perairan Enggano - Bengkulu, Samudera Hindia barat Mentawai hingga Lampung.

4.2.2 Heavy Rain

Warnings/Advisories and corresponding emergency responses	*Heavy rain warning issued by BMKG and will be referred by other government agencies to take a necessary action.*

Potential Disaster Risks	*Flood & landslide*
Target (warning areas)	*Kabupaten (District area)*
Meteorological variables/indices used for criteria/thresholds for warnings/advisories	*Heavy rain > 50mm/day*
Criteria/Thresholds	*Heavy rain > 50mm/day*
Contents of Warning/Advisory Message	*[Please describe contents of warning/advisory message for heavy rain.]*
Sample Warning/Advisory Message	*[Please provide a sample warning/advisory message for heavy rain.]*

4.2.3 Strong Wind

Warnings/Advisories and corresponding emergency responses	*[Please list warnings/advisories issued for strong winds and corresponding emergency responses by relevant authorities and residents.]*

Potential Disaster Risks	*[Please describe potential disaster risks when the respective warnings/advisories listed above are issued.]*
Target (warning areas)	*[Please specify unit of warning areas (e.g. prefectural government).]*
Meteorological variables/indices used for criteria/thresholds for warnings/advisories	*[Please describe meteorological variables/indices used for criteria/thresholds for warnings/advisories.]*
Criteria/Thresholds	*[Please describe how the above criteria/thresholds for warnings/advisories are determined.]*
Contents of Warning/Advisory Message	*[Please describe contents of warning/advisory message for strong winds.]*
Sample Warning/Advisory Message	*[Please provide a sample warning/advisory message for strong winds.]*

4.2.4 River Flood

Warnings/Advisories and corresponding emergency responses	*[Please list warnings/advisories issued for river floods and corresponding emergency responses by relevant authorities and residents.]*

Potential Disaster Risks	*[Please describe potential disaster risks when the respective warnings/advisories listed above are issued.]*
Target (warning areas)	*[Please specify unit of warning areas (e.g. prefectural government).]*
Meteorological variables/indices used for criteria/thresholds for warnings/advisories	*[Please describe meteorological variables/indices used for criteria/thresholds for warnings/advisories.]*
Criteria/Thresholds	*[Please describe how the above criteria/thresholds for warnings/advisories are determined.]*
Contents of Warning/Advisory Message	*[Please describe contents of warning/advisory message for river floods.]*
Sample Warning/Advisory Message	*[Please provide a sample warning/advisory message for river floods.]*

4.2.5 Storm Surge

Warnings/Advisories and corresponding emergency responses	*[Please list warnings/advisories issued for storm surges and corresponding emergency responses by relevant authorities and residents.]*

Potential Disaster Risks	*[Please describe potential disaster risks when the respective warnings/advisories listed above are issued.]*
Target (warning areas)	*[Please specify unit of warning areas (e.g. prefectural government).]*
Meteorological variables/indices used for criteria/thresholds for warnings/advisories	*[Please describe meteorological variables/indices used for criteria/thresholds for warnings/advisories.]*
Criteria/Thresholds	*[Please describe how the above criteria/thresholds for warnings/advisories are determined.]*
Contents of Warning/Advisory Message	*[Please describe contents of warning/advisory message for storm surges.]*
Sample Warning/Advisory Message	*[Please provide a sample warning/advisory message for storm surges.]*

4.3 Supporting Meteorological Information for Warning/Advisory Messages

[Please describe supporting meteorological information which provides supplementary explanation on warning/advisory messages to support emergency responses of recipients, if any.]

Name of Information	Potential Disaster Risks	Target (areas)	Issuance (update) Time	Contents
[Please describe name of information.]	*[Please describe potential disaster risks when the this information is issued.]*	*[Please specify unit of target areas (e.g. prefectural government).]*	*[Please describe timing of issuance of this information.]*	*[Please describe contents of this information.]*

4.4 Institutional Coordination

4.4.1 Coordination with Disaster Management Authorities

Warning Coordination	- Corodination meeting with related government agency before the rainy season started
Needs from Disaster Management Authorities	- *Information should be delivered in public language and understood by them, not too technical*

4.4.2 Partnership and Coordination with Media

Warning Coordination	- *E-mail* - *Sms* - *Phone* - *Press conference* - *Tv crawler*
Needs from Media	- *Information should be delivered in public language and understood by them, not too technical*

4.5 Challenges (and Future Plan)

Continuation promotion on public awareness