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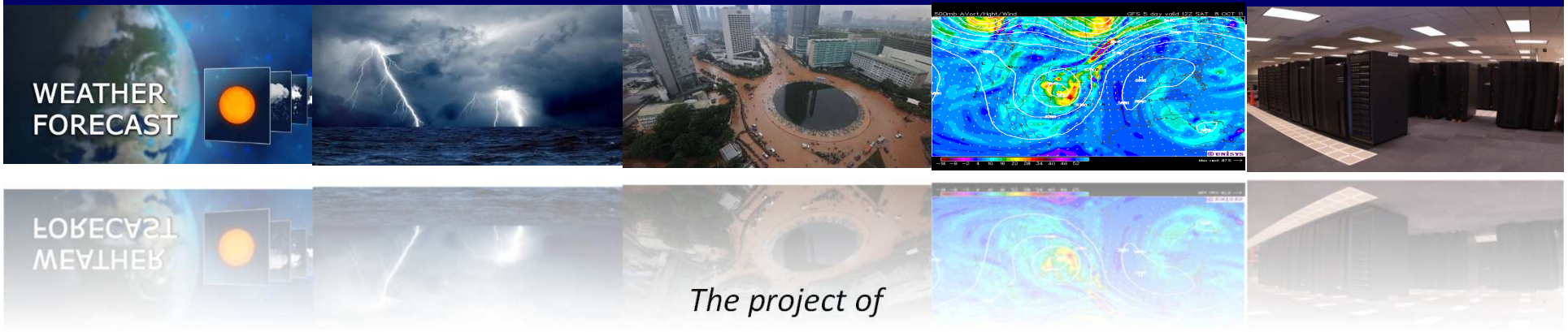
KEY ACHIEVEMENTS, LESSON LEARNT AND SUGGESTIONS FOR FUTURE OPPORTUNITIES



The project of

Strengthening Multi-Hazard Risk Assessment and Early Warning Systems in Pacific Islands Countries

Center for Public Weather Service, BMKG

Nuku'alofa, 26-27 April 2018

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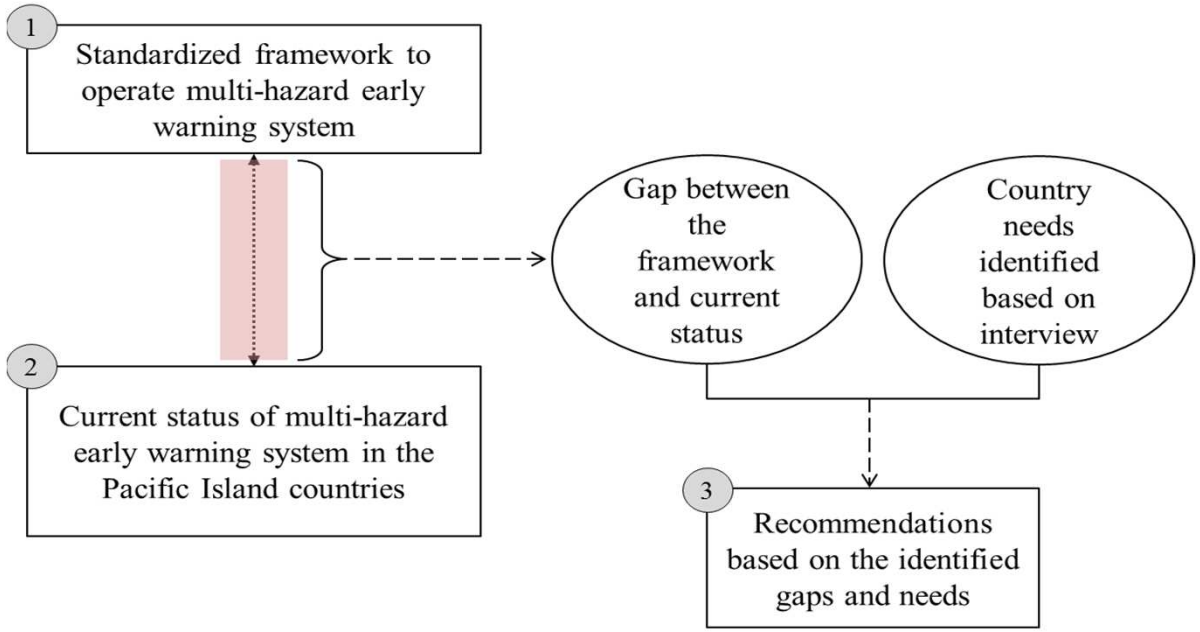
GAPS AND NEEDS ANALYSIS STUDY

Overall workflow of the gap analysis



Identify requirements for well-defined MHEWS

Identify current status

Analyse gaps & suggest recommendations

Literature Review

In-person Interview

Capacity building training & pilot projects

TRAINING IN JAKARTA

- ✓ 12 participants from 6 countries (Fiji, PNG, Samoa, Solomon Islands, Tonga and Vanuatu.
- ✓ Participants from NMS and NDMO.

Training Agenda

Week 1: Overview of multi-hazard early warning system and risk identification
Week 2: Forecasting and assessment
Week 3: Warning and communications & immediate response
Week 4: Recommendation and national action plan

Draft of national work-plan

a) **Fiji:** Flood Early Warning System
b) **PNG:** Climate Field Schools
c) **Samoa:** Geoportal System
d) **Solomon Islands:** Flood Early Warning System
e) **Tonga:** Common Alert Protocol
f) **Vanuatu:** Tsunami Early Warning System

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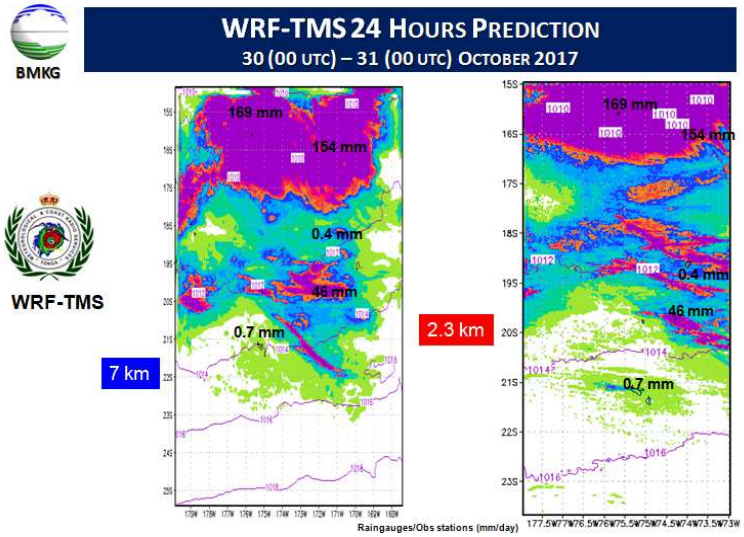
PILOT PROJECT 1: TONGA

Objectives:

1. *To strengthen MHEWS of PICs through:*
   - ✓ *enhancing institutional capacity building*
   - ✓ *developing national mid-term work plans on MHEWS by using space technology and GIS*
2. *to promote regional cooperation platforms for sharing geospatial data on EWS in Pacific region.*

Key Achievements

1. Optimize global weather model in TMS dan customize NWP products to mesoscale model to have spatial resolution to 7 km and 2.3 km
2. Increase time resolution of TMS weather forecast from 3 hourly to 1 hourly
3. Connecting TMS to WMO Hub through operationalization of CAP --> TMS products went to global system
4. Provides an online platform based high resolution model in TMS
5. Provides hands on training to system operator and administrator in TMS



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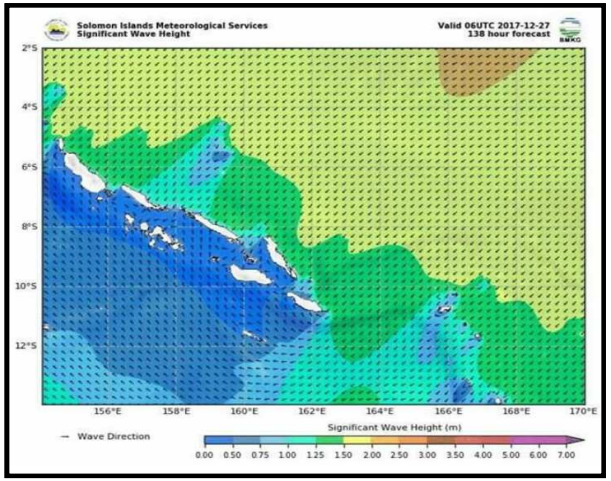
PILOT PROJECT 2: SOLOMON ISLANDS

Objectives:

Improved capacity and quality of operating multihazard early warning systems through improvement of MET services by building the backbone phase of Future Flood Forecast Early Warning System



Key Achievements

1. Provide and operationalize seawave model Wavewatch3 with Solomon Islands domain in SIMS
2. Provide, customize, and operationalize WRF weather model to have spatial resolution of 7 km
3. Provides hands on training to system operator and administrator in SIMS
4. Assist in a managerial level meeting of stakeholders related with flood hazard management

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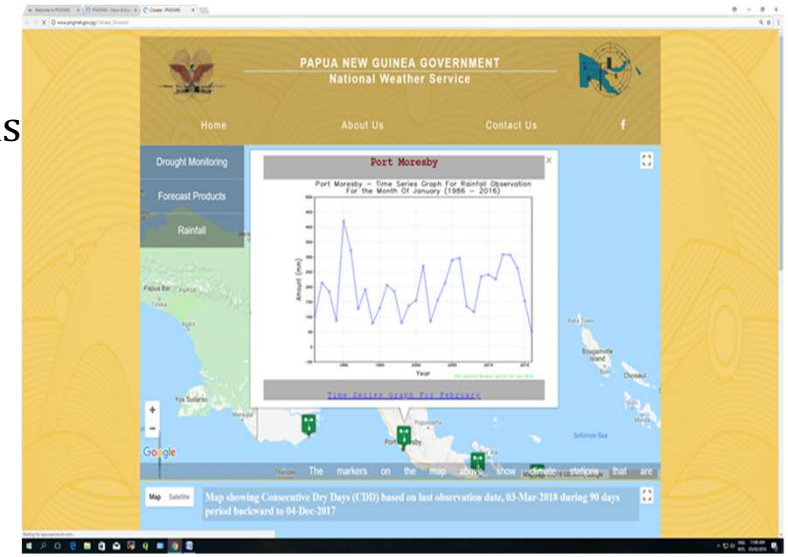
PILOT PROJECT 3: PAPUA NEW GUINEA

Objectives:

Improved capacity and quality of operating multihazard early warning systems through improvement drought monitoring and forecasting system

Key Achievements

1. Establishment of Drought Monitoring System
2. On-site capacity building session on installing, running and managing drought monitoring system as an operational program for PNG NWS
3. Improving the interactive dissemination of Drought Monitoring Information for stakeholders
4. Focus Group Discussion with National Agriculture Research Institute (NARI) and National Disaster Center (NDC) to enhance the climate awareness for stakeholder



BASIC NUMERICAL PREDICTION TO IMPROVE WEATHER EARLY WARNING

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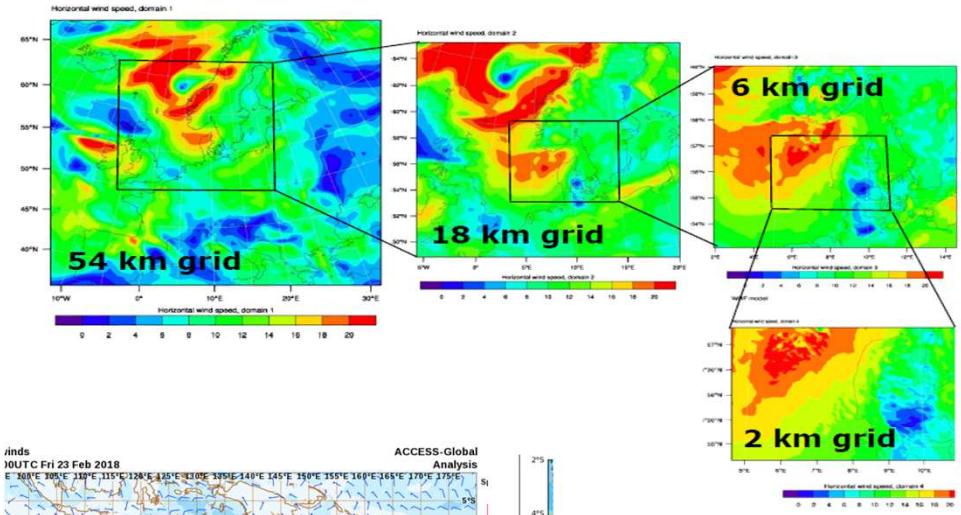
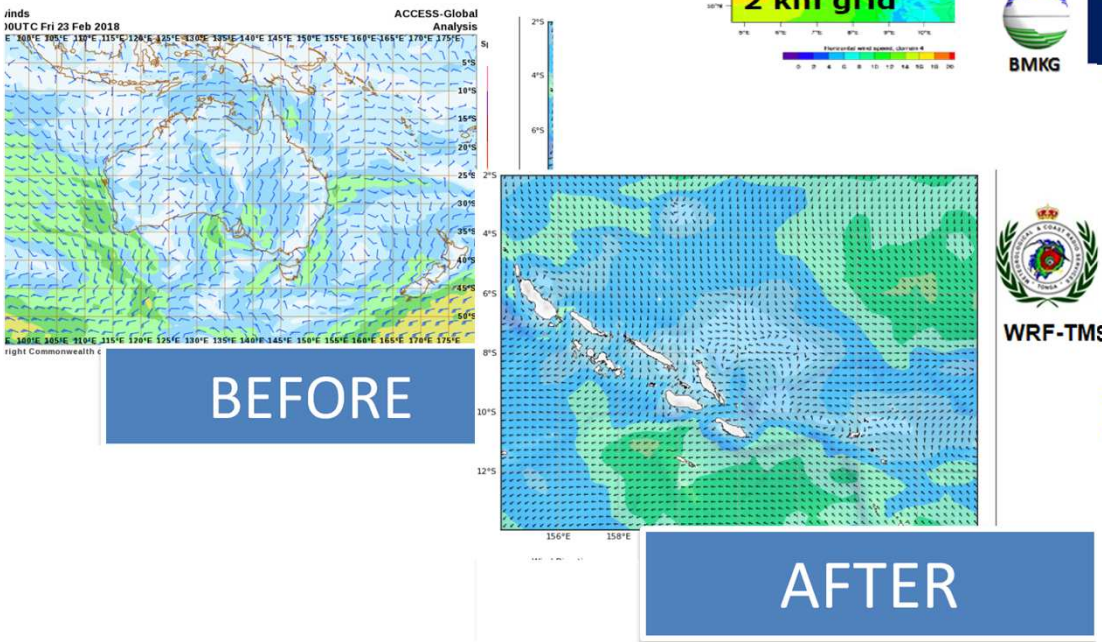
DTU

From large scale to small scale forecasts



WRF is a state-of-the-art atmospheric modeling system designed for both meteorological research and numerical weather prediction. It offers a host of options for atmospheric processes and can run on a variety of computing platforms.



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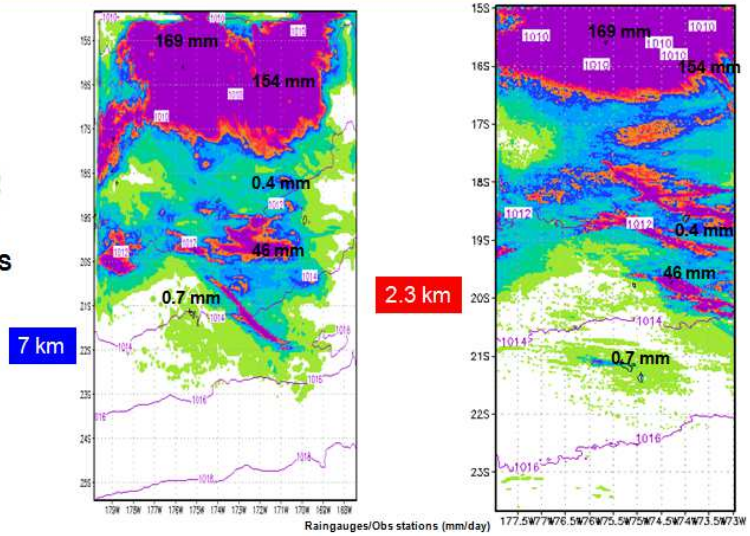
WRF-TMS 24 HOURS PREDICTION
30 (00 UTC) – 31 (00 UTC) OCTOBER 2017



WRF – TMS ON TC GITA

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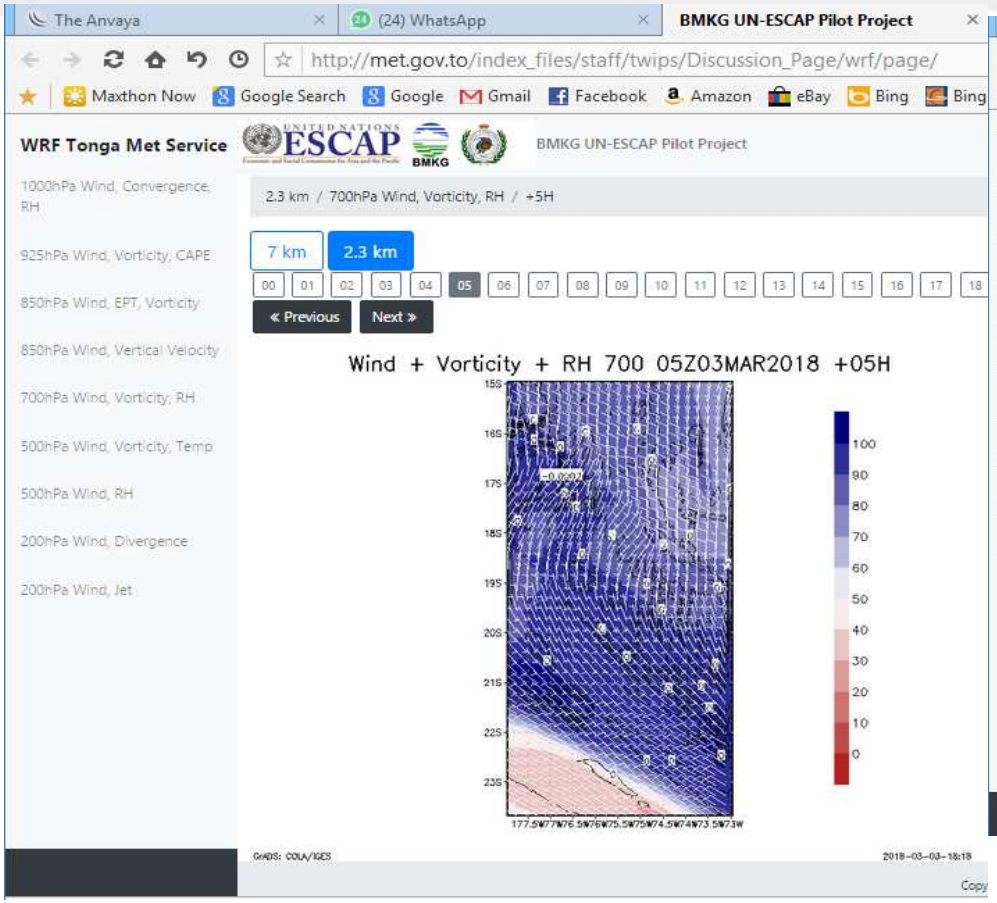
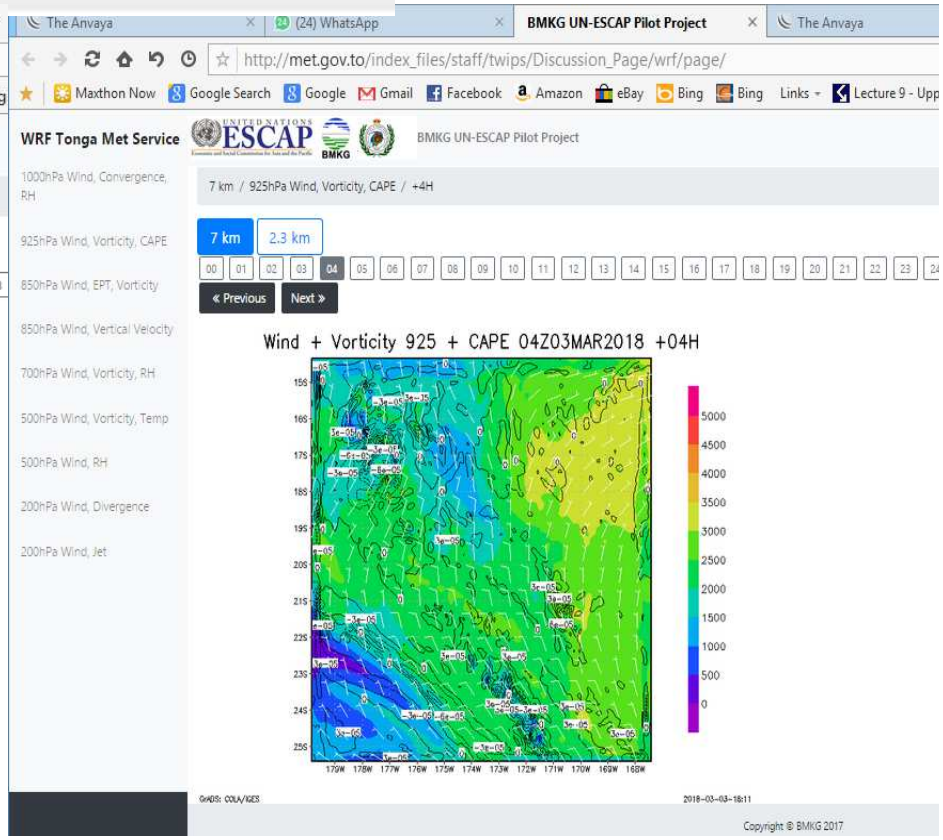
HURRICANE NEWS

Tropical Cyclone Gita Hammers Tonga: 30 Injured, Homes Destroyed

By Chris Dolce and Sean Breslin and Ada Carr | Feb 13 2018 04:00 PM EST | weather.com





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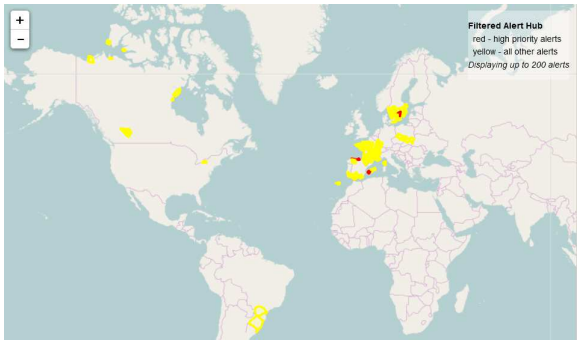
CONNECTING TO WMO ALERT HUB TROUGH COMMON ALERT PROTOCOL PLATFORM

CAP serves as a "universal adaptor" for alert messages
With CAP, an alert sender can activate multiple warning systems with a single input and emergency managers can compile diverse alert sources for situational awareness.



All-Hazards

fire,
flood,
landslide,
earthquake,
volcano,
tsunami,
typhoon/
hurricane,
disease

Common Alerting Protocol

All-Media

sirens,
television,
telephones,
cell phones,
satellites,
Internet,
radio,
fax

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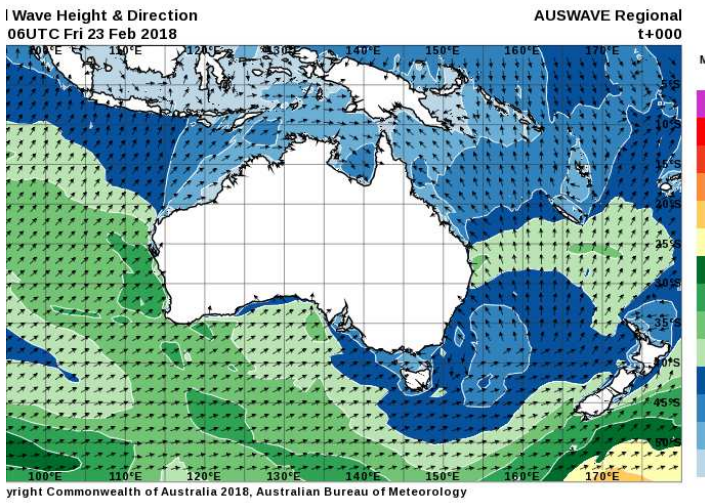
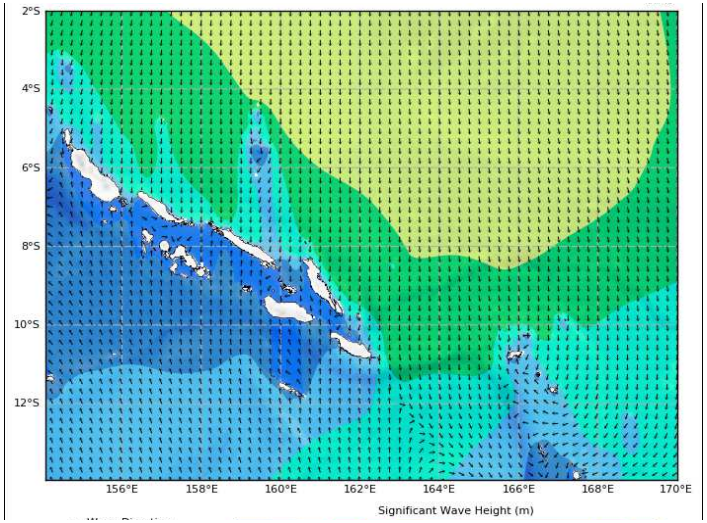
OCEAN MODEL OUTPUT
SIGNIFICANT WAVE HEIGHT





Before

After

External Sources To Internal Sources with Customization

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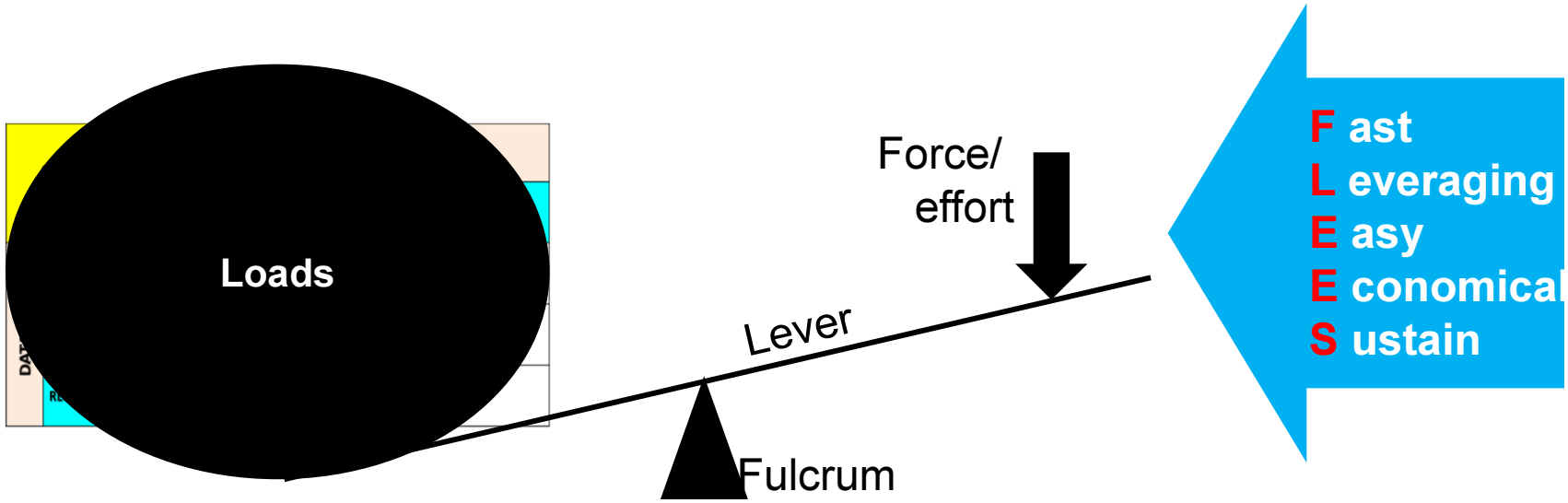
A STRATEGY TO STRENGTHEN REGIONAL CAPACITY IN EWS

Global initiatives on
NO COUNTRY LEFT BEHIND / LEAVING NO ONE BEHIND

EVERY ONE WORKING TOGETHER



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CONCLUSION

FLEES

F ast
L everaging
E asy
E conomical
S ustain

Sister countries

- Tools
- Customization
- SOP development
- Capacity development
- Continues support

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CONCLUSION

With high spirit, commitment, and hardwork

Indonesia is READY,

and happy to work together with Pacific Island Countries

to strengthen regional and global capacity in EWS

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BADAN METEOROLOGI KLIMATOLOGI DAN GEOFISIKA

Terima Kasih

JL. ANGKASA I NO. 2 KEMAYORAN
JAKARTA PUSAT – INDONESIA 10720

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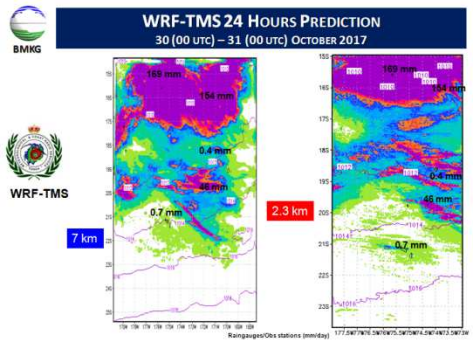
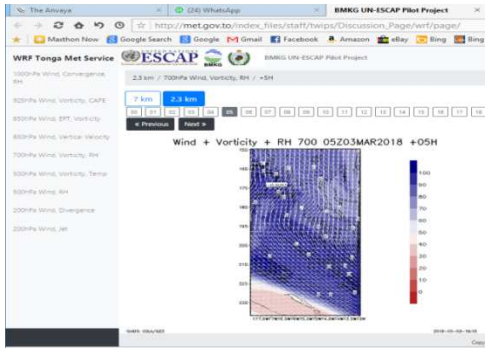
KINGDOM TONGA PILOT PROJECT

Before	After
1. Use GFS global model with spatial resolution of 32 km for weather forecasting. 2. Provide weather forecast with 3 hourly interval. 3. Early Warning available for national community. 4. Interface using Smart Met. 5. Limited capacity in NWP basic knowledge and technique.	1. Availability of mesoscale model (spatial resolution 7 km) and high resolution model (spatial resolution 2.3 km). 2. Weather forecast available in hourly interval. 3. Early warning connected with WMO hub through CAP. TMS products goes global. 4. Other online platform available, with high resolution model basis. 5. Increased capacity through training in modelling, weather forecast and early warning





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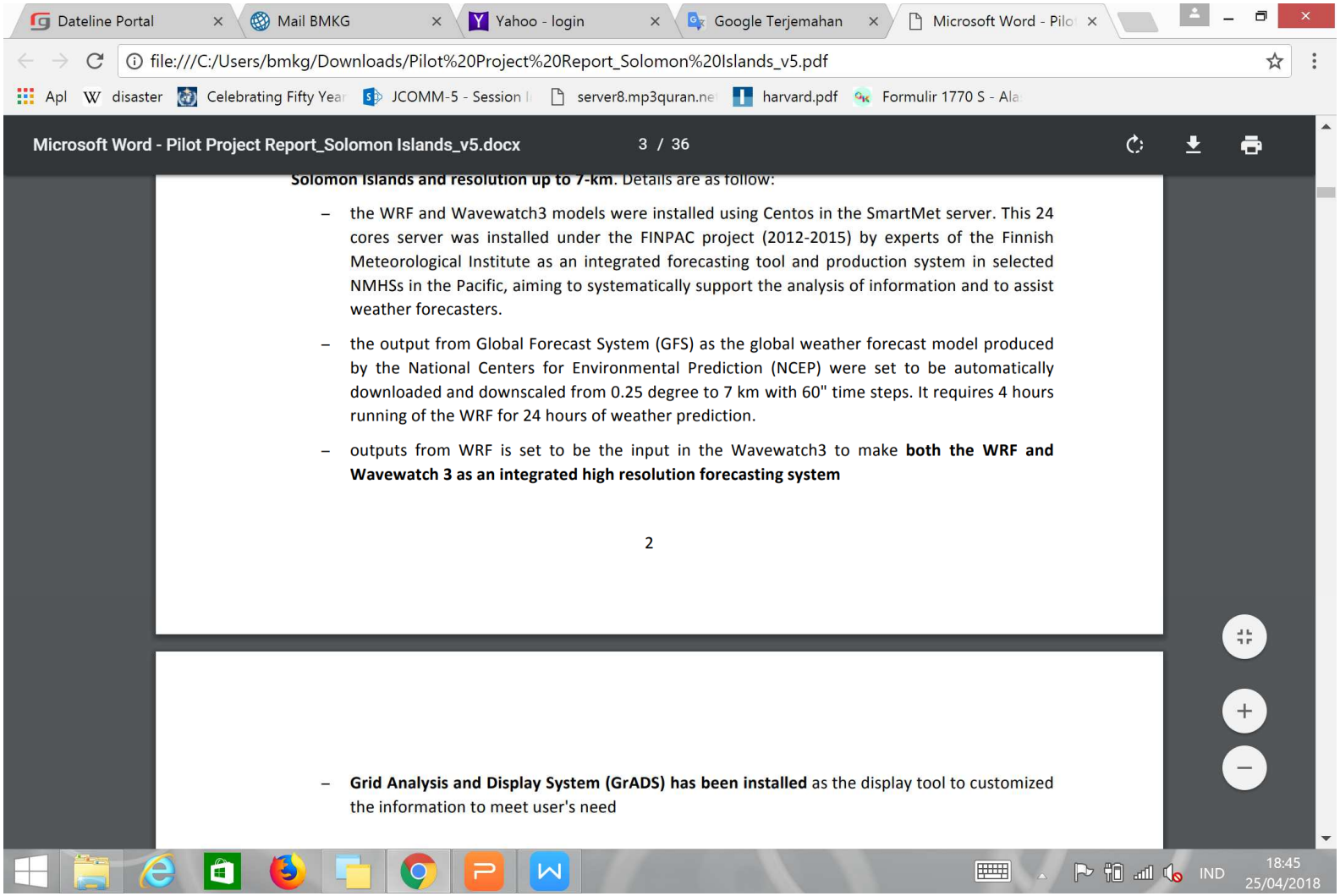
SOLOMON ISLANDS PILOT PROJECT



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PNG PILOT PROJECT

Before

- 14 rain observation data in PNG not optimally analized.
- One climate product available (drought information using SPI software)

After

- Satellite data (GSMAP &TRMM) available, downloaded automatically.
- Satellite based drought monitoring system available.
- Installation, optimalization and customization of climate tools
- Increased capacity through training in drought monitoring
- Increased inter-agency coordination in agriculture and disaster sector through FGD.

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1. Implementation of the “Sister country” concept
   - ✓ tools provided should supplemented with SOP development, continues support, cepacity development
   - ✓ Sustainable and customized system is preferred to meet each country's specific needs

2. Indonesia/BMKG is ready and able to play an active role in strengthening regional and global capacity on MHEWS
   - ✓ NWP, Himawari satellite data , weather advance service, collage and RTC, the upcoming HPC facility
   - ✓ Global platform of early warning (GMAS) for the Pacific, coordinated by BMKG through the consent of WMO