



**BMKG**

# COMPARATIVE TEST OF PUBLIC OUTREACH METHODS ABOUT IBF INFORMATION UNDERSTANDING THROUGH THE MOSAIC PROGRAM

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1<sup>st</sup> WMO/WWRP

## WEATHER & SOCIETY

CONFERENCE, February 28 - 11 March 2022





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# The Background



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1

Is it enough to deliver weather information to community without making sure they understand what it means?

2

How well does the community understand our informations?

3

Does the community know about the weather impact?

4

How to make information shared faster and more widely?

5

How to get the public interested in observing the dynamics of the atmosphere?

**BMKG needs "AMBASADORs"**



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# MOSAIC and WRN

- MOSAIC is public outreach which is conducted by Agency for Meteorology, Climatology, and Geophysics of Indonesia (BMKG).
- The objective of MOSAIC program is all informations published by BMKG are delivered and well understood by everyone in Indonesia. It can make Indonesia more ready to face hydrometeorological disaster.
- Actually the MOSAIC is implementation of Phase 6 of WRN Program which is **Public awareness and outreach.**





# The Method

## Method 1 (duration 1 day)

- Location determination
- Compiling MOSAIC book vol. 1
- Planning of outreach materials, i.e.:
  - The general theory about weather and its impact in Indonesia
  - Introduction of BMKG product and its utilization
  - The experience of BPBD and Tagana in disaster management due to the impact of TC Cempaka hitting DI Yogyakarta
- Delivering outreach materials and followed by question and answer session
- FGD to discuss weather phenomena impacting on people's lives in Yogyakarta and weather information dissemination strategy

## Method 2 (duration 2 days)

- **Participant sector determination**
- Location determination
- Recompiling MOSAIC book vol. 1 (it's also called vol. 2)
- Planning of outreach materials, i.e.:
  - The general theory about weather and its impact in Indonesia
  - Introduction of BMKG product and its utilization
  - **The theory about impact of climate and weather dynamic in Maluku**
- Delivering outreach materials and **followed by quiz**
- FGD to discuss weather phenomena impacting on people's lives in Maluku and weather information dissemination strategy

## Method 3 (duration 3 days)

- Participant sector determination
- Location determination
- **Compiling MOSAIC book vol. 3 (Tourism Sector)**
- Planning of outreach materials, i.e.:
  - The general theory about weather and its impact in Indonesia
  - Introduction of BMKG product and its utilization
  - **The theory about impact of climate and weather dynamic in local tourism activity**
- **Pre Test**
- Delivering outreach materials
- **Playing team games at the end of each presentation session related to the materials that have been given**
- **Post Test**
- **Visit session to the nearest BMKG meteorological station**



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# The Method

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The 3 methods will be compared with each other to find out which method has the highest effectiveness and level of sustainability in providing education to the public regarding the impact of weather. There are 3 things that measure the success of this outreach, namely:

- 1. Participants involvement during outreach session**
- 2. Improvement of understanding of participants**
- 3. Communication between BMKG and participants after counseling activities**



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# The Result

## Method 1





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# Result Method 1



Presented at **Pre-MOSAIC**  
on **April 11, 2018** in  
**Yogyakarta**



## Why Yogyakarta?

In 2017, Yogyakarta was directly hit by **TC Cempaka** and they overcame that disaster successfully.

**Program objective**

hearing the experiences of volunteers about natural disaster management.

4

**4 Considerations**

- Readiness
- Coordination
- Experience
- Stakeholder need for meteorological outreach



# Result Method 1



## MOSAIC BOOK Vol. 1

As a complete review of the material presented in Pre-MOSAIC.





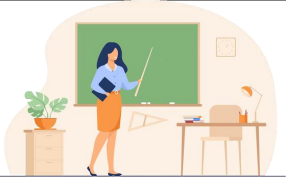
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# Result Method 1



## Delivering Outreach Materials

Referring to **MOSAIC BOOK vol. 1**

- Pre-MOSAIC was attended by 43 people from various groups/agencies (planned for 30 people).
- The materials were presented using simple analogies to make it easier for participants to understand.
- The materials are:

- Brief explanation about WRN and its collaboration with BMKG
- BMKG weather and climate information service products
- Extreme weather phenomena and how to deal with it

**BMKG HQ**

- Climate service products of Mlati Climatology Station, Yogyakarta

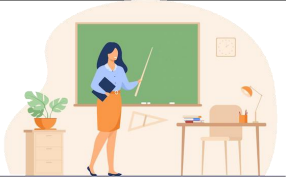
**BMKG Regional Office**

- Experience about disaster management in Yogyakarta when there is TC Cempaka

**Regional Disaster Manager**



# Result Method 1



## Delivering Outreach Materials

Referring to **MOSAIC BOOK vol. 1**

The Aim

**FGD**

Discussion Topics

- Evaluating the PreMOSAIC learning outcomes
- Gathering input from participant as stakeholder about BMKG products

1. Hydrometeorological disasters that often occur in Yogyakarta
2. Identification of sectors affected by hydrometeorological disasters
3. The best way to disseminate BMKG's information
4. Utilization of BMKG's information in Yogyakarta



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# Result Method 1



## Evaluation

Something which can be improved supposedly

- In general, Pre-MOSAIC went smoothly. The material can be fully presented and participants can understand it very well that is known in discussion sessions.
- Evaluation:
  1. Determination of participants should be clear prior event was began, both about “who” and “how many”.
  2. There were a few participants who seemed passive during discussion indicating the material delivery was too serious and theoretical, even though the participants are disaster volunteers working more practical.
  3. The presenter needs to occasionally ask participants to open a MOSAIC book to show that the book is very useful in dealing with hydrometeorological disasters.
  4. Need more time to deliver all of material.
  5. The improvement in participants' understanding cannot be objectively measured
  6. There is no following up of communication between BMKG and participants after the event.



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# The Result

## Method 2





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# Result Method 2



Presented at **MOSAIC** on  
**Oktober 15, 2018** in  
**Maluku**



## Why Maluku?

Maluku has a lot of experiences to share in term of dealing with La Nina's impact.

### Program objective

sharing knowledge to disaster manager/volunteer about weather/climate information and its impact on community

4

### Considerations

- Readiness
- Coordination
- Experience
- Stakeholder need for meteorological outreach



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# Result Method 2



## MOSAIC BOOK Vol. 2

As a complete review of the material presented in MOSAIC.

In general the MOSAIC book vol.2 is the same with vol.1.  
We only did **editing process** (typo, word selection, illustration image update, etc.)





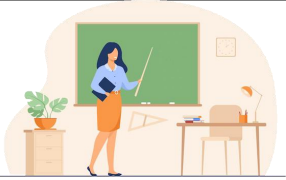
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# Result Method 2



## Delivering Outreach Materials

Referring to **MOSAIC BOOK vol. 2**

- MOSAIC was attended by 40 people from various groups/agencies.
- In general, the materials were same with PreMOSAIC.
- The materials are:

- Opportunities and challenges in delivering meteorology, climate, and geophysics information
- Extreme weather and disaster potential in Indonesia

**BMKG HQ**

- Weather information product and how it's disseminated to stakeholders, disaster volunteers, and communities

**BMKG Regional Office**

- Impact of weather and climate variability in Ambon

**Regional Disaster Manager**





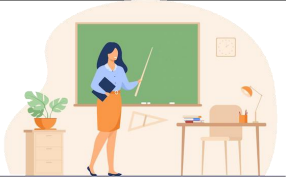
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# Result Method 2



## Delivering Outreach Materials

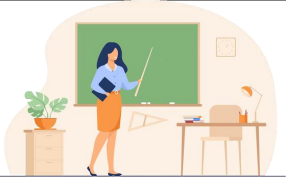
Referring to **MOSAIC BOOK vol. 2**

### QUIZ

It's done to engage the participant so that material can be delivered without easier and to assess how well participant understand the materials.

1. Before the first material is presented, participants were divided into 5 groups
2. When every material is fully presented, the committee team gave 3 questions to be answered by a participant from each grup
3. The fastest team who answer the quiz and it's true answer, would get a prize

# Result Method 2



## Delivering Outreach Materials

Referring to **MOSAIC BOOK vol. 2**

### The Aim

- Evaluating the MOSAIC learning outcomes
  - Gathering input from participant as stakeholder about BMKG products

### FGD in 5 groups

### Discussion Topics

1. Impact of weather dynamics in Maluku
2. Hydrometeorological disasters that often occur in Maluku
3. Classification of sectors affected by hydrometeorological disasters
4. The best way to deliver BMKG information
5. The most suitable information format in Maluku
6. Utilization of BMKG information in Maluku



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# Result Method 2



## Evaluation

**Something which can be improved supposedly**

- Participant segmentation is more controllable and various because there is a confirmation process one day before the event starts.
- Evaluation:
  1. In this method, there is no quantitative testing to assess participant's understanding.
  2. The outreach duration is still too short.
- Positive impact:
  1. Different from Method 1, Method 2 has the continuity of communication between participants and BMKG, even MOSAIC in Maluku had strengthened collaboration between participants and BMKG.
  2. Maluku is one of pilot project of IBF implementation in Indonesia.



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# The Result

## Method 3





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# Result Method 3



Presented at **MOSAIC** on **Agustus 6-8, 2019 (Belitung)**  
and **September 24-26, 2019 (Lombok)**



## Why Belitung and Lombok?

Belitung and Lombok have a very busy tourism activity. In those 2 areas, beach is the main tourism destination.

### Program objective

sharing knowledge to every part in tourism sector about weather/climate and its impact on tourism activities

4

### Considerations

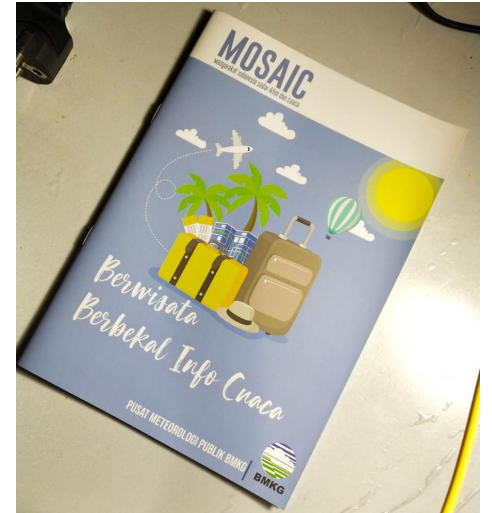
- Readiness
- Coordination
- **Experience**
- Stakeholder need for meteorological outreach

# Result Method 3



## MOSAIC BOOK Vol. 3

As a full review of the material presented in MOSAIC for Tourism



The MOSAIC book vol.3 is different with previous MOSAIC books in most of content.

In vol.3, we wrote about **how the weather can drive tourism activities.**

Can community be weather observer?

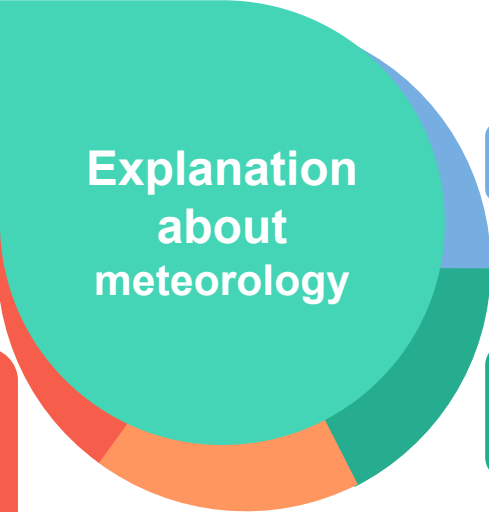
Why do we need to know weather conditions?



BMKG products and how to access them



Atmospheric phenomena that occur frequently in Indonesia.



Climate and weather

Climate and weather elements



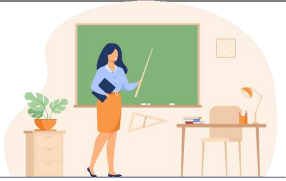
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# Result Method 3



## Delivering Outreach Materials

Referring to **MOSAIC BOOK vol. 3**

- MOSAIC for tourism was attended by 40 people from various groups/agencies.
- The materials are:

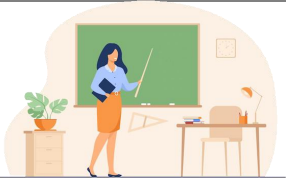
- Description Pre-MOSAIC
- Explanation about weather and climate dynamic in Indonesia
- Information about weather and climate and its dissemination
- Basic concept of impact based forecast (IBF)

**BMKG HQ**

- Climate informasi iklim terkini dan prakiraan iklim 3 bulan kedepan di provinsi NTB
- Informasi iklim untuk pariwisata NTB
- Informasi geofisika untuk sektor pariwisata

**BMKG Regional Office**

# Result Method 3



## Delivering Outreach Materials

Referring to **MOSAIC BOOK vol. 3**

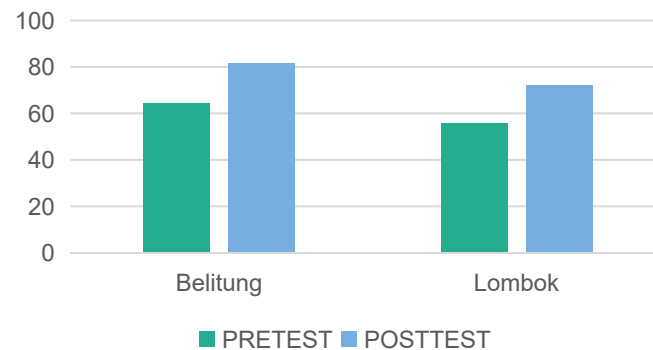
### PreTest and PostTest

Another thing that makes this MOSAIC be different is pretest and posttest.

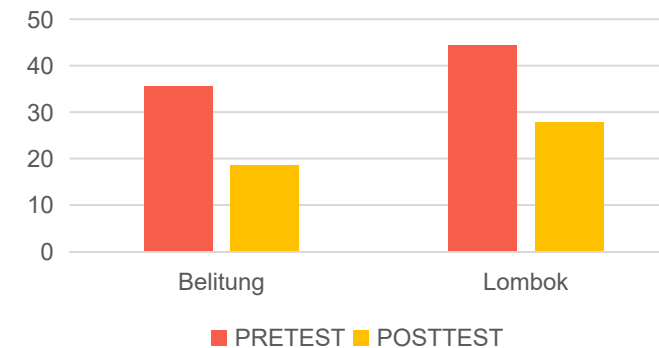
Through pre-test and post-test, we could assess some variables i.e.:

1. Level of understanding of participant about meteorology
2. A reference for determining which parts need to be reviewed more detail
3. Improvement of understanding of participant after joining MOSAIC

Percentages of True Answer

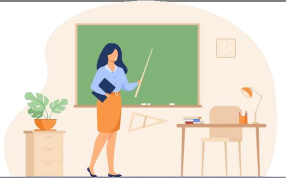


Percentages of False Answer





# Result Method 3



## Delivering Outreach Materials

Referring to **MOSAIC BOOK vol. 3**

In the last day, participants did a visit to the nearest Meteorological Station for learning observation and forecasting process in BMKG.





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# Result Method 3



## Evaluation

Something which can be improved supposedly

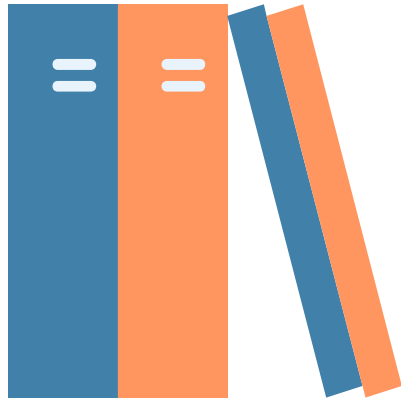
- Evaluation:
  1. Trainer team working in Lombok and Belitung were not same. Regarding that condition, need a sharing session between those 2 trainer teams.
  2. A lot of theory had been explained in MOSAIC. It would be better if it's followed by practical session using some instrumentals/tools to illustrate explained theory.
- Positive Impact:
  1. Most of problem in previous MOSAIC event has been solved in this method.
  2. Belitung became a pilot project for IBF implementation in provincial level
  3. The engagement between BMKG and part that work in tourism sector is getting stronger after MOSAIC.



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# 4

## Summary

- Conclusion
- Future plan





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# Summary

In this study, MOSAIC was carried out using 3 methods. The results of the comparison of the 3 methods show that there are things that contribute to make it success, namely:

- The adjustment of the material which initially contained theories related to meteorology and its impacts in general became a very simple analogy that was adapted to the historical local conditions.
- There are Pre Test and Post Test sessions to assess the improvement in participants' understanding.
- Team games at the end of each presentation session related to the outreach material can build closeness between the trainer team and participants.
- Field visit to the nearest BMKG regional office/ meteorological station makes participants know how BMKG works in observing and forecasting the weather

The best method for these 4 MOSAIC events is Method 3, based on these following points:

1. Participants involvement during class session
2. Improvement of understanding after joining MOSAIC
3. Sustainability of communication between BMKG and participant after event

## Future Plan

In the middle of this year BMKG will collaborate with Red Cross of Indonesia for hosting a MOSAIC for Red Cross volunteers in Indonesia



**BMKG**

# Thank You

By: Nanda A. (BMKG-Indonesia)

