

Vanuatu
Cloud Nasara
tool kit

El Niño and La Niña: from information to action!



Cloud Nasara is a collaboration between Red Cross and the Australian Government's Pacific-Australia Climate Change Science and Adaptation Planning (PACCSAP) Program. The project was implemented by the Red Cross, the Australian Bureau of Meteorology, the Commonwealth Scientific and Industrial Research Organisation (CSIRO), the Vanuatu Meteorology and Geo-hazard Department (VMGD) and the SPC-GIZ Climate Change Program.

This resource tool kit was developed by the Cloud Nasara project team – Philip Malsale, Salesa Kaniaha, Rebecca McNaught, Jill Rischbieth, Brad Murphy, Christopher Bartlett and Ula Majewski.

A very special thank you to the wonderful Pele and Epao communities, and to all the individuals and organisations, across Vanuatu and the Pacific region, that provided invaluable assistance, advice and feedback throughout the development of the Cloud Nasara animation.

French translation by Alliance Française of Port Vila under the Regional Cooperation program (Vanuatu/Nouvelle-Calédonie), and François Delage and Brad Murphy of the Bureau of Meteorology in Australia.

Bislama translation by Philip Malsale, Melinda Natapei and Mike Waiwai, VMGD.

Artwork by Joseph Siri, Jamie Clennett and Lindy Lou.

Design by Lea Crosswell.

For more information about the use of this resource:

www.pacificclimatechangescience.org/cloudnasara

Email: paccsap@cawcr.gov.au, pacmetdesk@sprep.org

July 2013



Welcome to the Cloud Nasara!



Welcome to the Cloud Nasara!

This resource ‘tool kit’ is designed to help facilitators and educators link the information presented in the Cloud Nasara animation to decision-making and action. It may assist those working in fields like climate change adaptation, disaster risk management, health, education, food security, community planning, environmental protection, agriculture and natural resource management.

The islands of Vanuatu can experience very dry or very wet conditions as a result of El Niño and La Niña events. These conditions, along with extreme events like cyclones, can have serious impacts on water quality, food security, infrastructure (like houses and roads), livelihoods and health. However, good quality climate and weather information, warnings and forecasts can help us anticipate and prepare for changing risks.

The Cloud Nasara animation and this tool kit aim to increase awareness of the science of El Niño and La Niña and their impacts. The tool kit also seeks to encourage discussion around how communities, schools, organisations, government departments and businesses in Vanuatu can access forecast information from the Vanuatu Meteorology and Geo-hazard Department (VMGD), pro-actively communicate and work together with other stakeholders, and take early action to prepare for future El Niño and La Niña events. Addressing the ups and downs of these events can also help adaptation to human-induced climate change.

This tool kit provides resources designed to facilitate a workshop or lesson based around the animated film. It is designed to be very flexible and can be tailored to different audiences, meeting topics or timeframes. The sessions could easily be included in the wider program of a training day, workshop or planning session. This tool kit is available on DVD, in print and is also freely available for download from www.pacificclimatechangescience.org/cloudnasara.

How to use this tool kit – a short guide for facilitators and educators

The most important thing to do before your workshop is to watch the Cloud Nasara animation a few times, so you’re familiar with the story, the characters and the key messages.

The Cloud Nasara toolkit contains two templates outlining suggested agendas for the workshop – one is targeted at communities and schools, and the other is targeted at organisations, government departments and businesses.

Choose the template that is most appropriate for your audience.

The template is a guide only – you can choose to use some or all sessions shown in the template and can tailor the workshop to particular audiences, meeting topics or timeframes.

When you are planning a session or lesson, it is important to consider how much time you have to facilitate the workshop and identify some objectives – for example, what is it that you want people to walk away knowing or doing? Then you can choose which workshop sessions you would like to include. The workshop template provides a brief explanation of what each session is designed to achieve, and outlines the tools and materials you will need to facilitate that session.

Before the workshop, it is important to familiarise yourself with all the sessions’ details and content and make sure you have the support materials you need to facilitate the workshop. If possible, do a ‘practice run’ of your workshop on some friends or colleagues beforehand.

At the back of this handbook, there is a glossary that explains some key terms and also a list of places you can go to access more information if you need it.

Contents

1 Welcome to the Cloud Nasara!

1 How to use this tool kit

Section 1: Templates for workshops

3 Cloud Nasara workshop for communities or schools

4 Cloud Nasara workshop for organisations, government departments or businesses

Section 2: 'How to' guides and other resources

7 Introducing the Cloud Nasara

8 How to facilitate the weather and climate exercise

10 Cloud Nasara quiz

13 How to facilitate the Early Warning Early Action scenario exercise (options 1 and 2)

16 Vanuatu Tropical Cyclone Tracking Map

17 How to access the latest forecasts and warnings

18 How to facilitate the Vanuatu Future Climate exercise

19 How to play Speed Dating (versions 1 and 2)

20 Frequently asked questions and answers for facilitators and educators

22 Glossary of key terms

23 For more information



Section 1: Templates for workshops

Cloud Nasara workshop for communities or schools

This workshop could easily become part of a regular training, lesson plan, workshop or community planning session. The template is designed to be flexible and you should use it as a guide only. Choose the sessions that best suit the needs of your workshop and feel free to use some or all sessions shown.

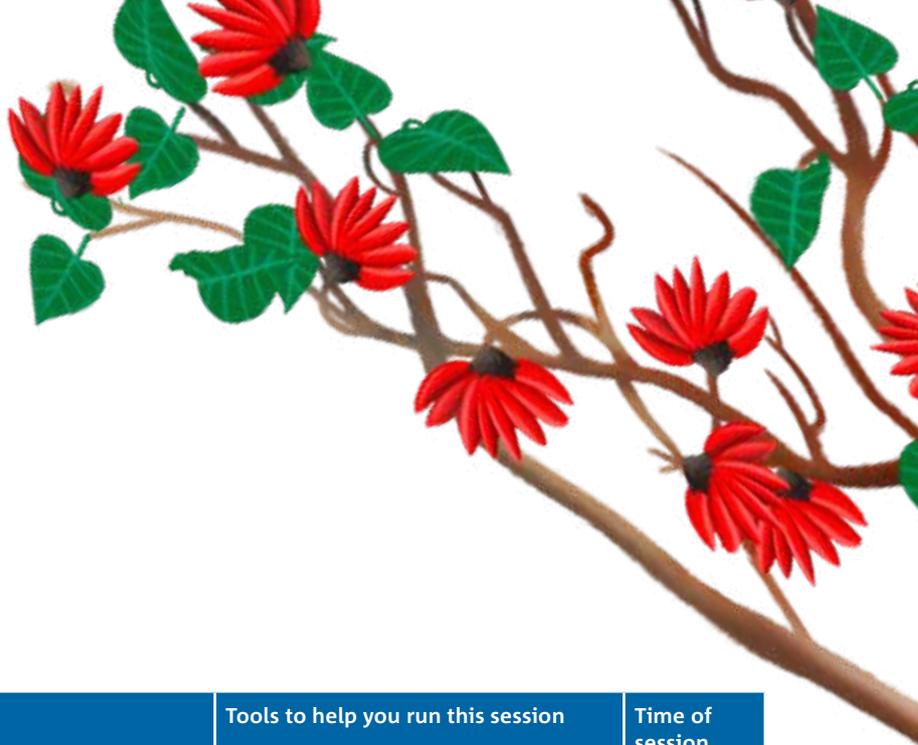
Workshop session	Session details	Tools to help you run this session	Time of session
Introducing the Cloud Nasara	This session will give participants a clear understanding of the aims and agenda of the workshop. You can also use this session to facilitate introductions between the participants.	<ul style="list-style-type: none"> • See page 7 for some key points that you may like to raise in the workshop introduction. 	15 minutes
Weather and climate exercise	This exercise will help participants to learn about the differences between weather and climate.	<ul style="list-style-type: none"> • How to facilitate the weather and climate exercise (see page 8) • A whiteboard or a large piece of paper • Coloured markers • Small pieces of paper 	30 minutes
Screening of the Cloud Nasara animation	Showtime! All you need to do is press play.	<ul style="list-style-type: none"> • Cloud Nasara animation • Something to play the animation on – for example, a DVD player and TV or a computer and projector 	5 minutes
Question time!	This session is an open forum where participants can ask questions related to the animation. There is a list of some common questions and answers to help you.	<ul style="list-style-type: none"> • Frequently asked questions and answers for facilitators and educators (see page 20) 	15 minutes
Cloud Nasara quiz	The quiz is a good way to reinforce the participants' understanding of key messages from the animation. You have two different quiz options here – you can choose to play either Cloud Bingo or the Cloud Game Show.	<ul style="list-style-type: none"> • How to play Cloud Bingo (see page 10) • How to play the Cloud Game Show (see page 11) • Cloud Nasara quiz questions and answers for facilitators (see page 12) • Cloud Bingo cards • Bingo chips • Some prizes 	30 minutes
Early Warning Early Action scenario exercise for communities and schools	This exercise helps people to see how they can use warnings and forecasts from the VMGD and turn these into practical low cost actions, which will help their community or school to be better prepared.	<ul style="list-style-type: none"> • How to facilitate the Early Warning Early Action scenario exercise (option 1) (see page 13) • Set of 'best practice' action picture cards. The picture cards are included in your resource kit and on the Cloud Nasara DVD or you can download them from www.pacificclimatechangescience.org/cloudnasara and print them out before your workshop • Vanuatu Tropical Cyclone Tracking Map (see page 16) • Some big pieces of paper • Coloured markers 	90 minutes

Cloud Nasara workshop for organisations, government departments or businesses

This workshop could easily become part of a regular training, workshop or planning session. The template is designed to be flexible and you should use it as a guide only. Choose the sessions that best suit the needs of your workshop and feel free to use some or all sessions shown.

*A Cloud Nasara PowerPoint presentation (with notes) has been designed to help you facilitate this workshop (if you have access to a computer and a projector). This presentation can be copied from the Cloud Nasara DVD or you can download it from www.pacificclimatechangescience.org/cloudnasara.

Workshop session	Session details	Tools to help you run this session	Time of session
Introducing the Cloud Nasara	This session will give participants a clear understanding of the aims and agenda of the workshop. You can also use this session to facilitate introductions between the participants.	<ul style="list-style-type: none"> • See page 7 for some key points that you may like to raise in the workshop introduction. 	15 minutes
Weather and climate exercise	This exercise will help participants learn about the differences between weather and climate.	<ul style="list-style-type: none"> • How to facilitate the weather and climate exercise (see page 8) • A whiteboard or a large piece of paper • Coloured markers • Small pieces of paper 	30 minutes
Optional extra: Speed Dating (version 1)	This exercise is a good icebreaker that will encourage participants to start thinking about how weather and climate can impact upon their organisation, department or business.	<ul style="list-style-type: none"> • How to play Speed Dating (version 1) (see page 19) • A stopwatch or a watch with a second hand • Chairs 	45 – 60 minutes
Cloud Nasara slideshow presentation	This presentation will help you to increase participants' understanding of: <ul style="list-style-type: none"> – Different timeframes and what they mean in terms of weather and climate – The difference between climate change and climate variability – Current climate trends and projections for Vanuatu Make sure you leave some time for questions at the end of the slideshow.	<ul style="list-style-type: none"> • PowerPoint slides and notes* • Computer and projector 	30 minutes
Screening of the Cloud Nasara animation	Showtime! All you need to do is press play.	<ul style="list-style-type: none"> • Cloud Nasara animation • Something to play the animation on – for example, a DVD player and TV or a computer and projector 	5 minutes
Question time!	This session is an open forum where participants can ask questions related to the animation. There is a list of some common questions and answers to help you.	<ul style="list-style-type: none"> • List of Frequently Asked Questions and Answers for facilitators and educators (see page 20) 	15 minutes



Workshop session	Session details	Tools to help you run this session	Time of session
Early Warning Early Action scenario exercise for organisations, departments and businesses	This exercise helps people to see how they can use warnings and forecasts from the VMGD and turn these into practical low cost actions, which will help their organisation, department or business to be better prepared.	<ul style="list-style-type: none"> • How to facilitate the Early Warning Early Action scenario exercise (option 2) (see page 13) • PowerPoint slides and notes showing some ‘best practice’ examples of organisational action* • Computer and projector • Vanuatu Tropical Cyclone Tracking Map (see page 16) • Some big pieces of paper • Coloured markers 	90 minutes
Coming soon ... the latest forecasts and warnings	This session will increase participants’ understanding of warnings and forecasts from the VMGD. You can show everyone the latest seasonal forecasts and any relevant current warnings. For example, you could show the workshop what a cyclone forecast or severe weather warning looks like. These can be used as useful tools to start a group discussion about what may be coming up in the months ahead and how to access this information.	<ul style="list-style-type: none"> • Latest seasonal forecasts from the VMGD and other relevant warnings (see page 17) 	15 – 30 minutes
The Vanuatu Future Climate exercise	This game will help to reinforce participants’ understanding of key information relating to Vanuatu’s future climate. This information is a very important tool that participants can use to make well-informed decisions and to take appropriate action.	<ul style="list-style-type: none"> • How to facilitate the Vanuatu Future Climate exercise (see page 18) • PCCSP brochure on Vanuatu trends and projections (see page 18 for information on where to access this document) • Some big pieces of paper • Coloured markers 	45 – 60 minutes
Optional extra: Speed Dating (version 2)	This exercise is a great way to finish the workshop. It will encourage participants to start thinking about an action that they could take in their organisation, department or business in the near future.	<ul style="list-style-type: none"> • How to play Speed Dating (version 2) (see page 19) • A stopwatch or a watch with a second hand • Chairs 	45 – 60 minutes

Section 2: *'How to' guides and other resources*



Introducing the Cloud Nasara

Keep the workshop introduction short and sweet.

Introduce yourself and briefly explain your role and where you work.

Introduce the broad aims of your workshop. You could include the following aims:

To increase awareness of the science and impacts of climate and weather in Vanuatu;

- To increase people's understanding of important climate and weather information, warnings and forecasts from the VMGD; and
- To encourage discussions around how communities, schools, organisations, departments and businesses in Vanuatu can take early action to prepare for the impacts of future El Niño and La Niña events and adapt to climate change.

You could also highlight the following points:

- Extreme climate and weather events and climate change impact on every sector, every organisation, every community and every individual in Vanuatu;
- There are very useful warnings, forecasts and other services provided by the VMGD that are freely available to everyone;
- These warnings, forecasts and other services can be linked with smart decision-making and practical action to best prepare Vanuatu for the impacts of future extreme climate and weather events; and,
- It is important to pro-actively communicate and work together with other communities, schools, organisations, government departments and businesses.

Outline the agenda. Once you have decided which parts of the workshop template you would like to use, you can write up your customised agenda.

Check to see if anyone has any questions and, if appropriate, facilitate introductions between the workshop participants.



How to facilitate the weather and climate exercise

Equipment needed

- A whiteboard or a large piece of paper (flip chart) stuck onto the wall
- Different coloured markers with which to write (permanent or whiteboard)
- Some small pieces of paper and something to stick them onto the table with (for example, white masking tape or blu-tack)

Preparation

Draw this table (see below) on the whiteboard or on a large piece of paper stuck to the wall.

Write or print out the scenarios onto the small pieces of paper (see next page: make sure you don't include the answers for participants!). You should have one separate piece of paper for each scenario.

How to play!

1. First ask participants what they think the difference is between weather and climate. You can confirm the answer and give a couple of examples with the information below.

Answer:

Weather = current conditions like rainfall, temperature, wind speed, at a particular place and time. Example: Today's temperature is 32 degrees.

Climate = average pattern of weather for a place over a long period of time (i.e. 30 years or more). Example: Port Vila has a pronounced wet season and dry season.

There is a useful phrase that can help to distinguish weather from climate: *'Climate is what we expect. Weather is what we get.'*

2. Hand each person in the group one of the scenarios (see next page).

3. Ask the participants to think about if their scenario could be classified as 'weather' or 'climate' and why.

4. Ask each person to stick their pieces of paper under the relevant heading on the table you have provided.

5. As a group, go through each of the scenarios one by one and discuss whether each scenario is indeed weather or climate and why (the answers have been provided to help you). Move scenarios to the other heading if needed.

Weather	Climate



Scenarios *answers in italics*

Yesterday it was very hot at the picnic

Weather – temperature at a specific time and place is a short-term condition.

Vanuatu has a wet season and a dry season

Climate – the season you expect is based on long-term observations.

The cyclone season runs from November to April in Vanuatu

Climate – the season you expect is based on long-term observations.

The radio presenter announced that a category 3 tropical cyclone is likely to hit the northern provinces of Vanuatu tomorrow morning

Weather – cyclone conditions at a specific time and place are short-term conditions.

Anti's house might get flooded because it has been raining very heavily this week and more rain is forecast today

Weather – rainfall at a specific time and place is a short-term condition.

In Vanuatu the average maximum temperature in January is hotter than the average maximum temperature in August

Climate – the maximum temperatures in January and August are averaged over time.

The forecast for tomorrow morning is mostly fine, with a chance of showers

Weather – short-term conditions.

A tsunami alert has been issued in the Pacific at 10:00am today

This is a trick question – a tsunami is a geological hazard caused by an earthquake and therefore is not linked to weather or climate.

The average rainfall for March in Port Vila is 323mm

Climate – rainfall for March is averaged over time.

Usually La Niña events bring wetter conditions to Vanuatu and El Niño brings drier conditions

Climate – these are conditions that you can expect based on observations over long periods of time.

Jon might not go fishing tomorrow because it is too windy

Weather – wind at a specific time and place is a short-term condition.

Droughts occur in Vanuatu from time to time and cause water shortages and damage to agriculture

Climate – we can say this as droughts and their impacts have been observed many times over many years.



Cloud Nasara quiz

The quiz is a good way to reinforce participants' understanding of key messages from the Cloud Nasara animation. You have two different quiz options here – you can choose to play either Cloud Bingo or the Cloud Nasara Climate Game.

How to play Cloud Bingo

Equipment needed

- Cloud Bingo cards (you can find these on the Cloud Nasara DVD or in your Cloud Nasara folder. They are also freely available to download from www.pacificclimatechangescience.org/cloudnasara).
- Bingo chips (these can be rocks, shells, beans, buttons etc.)
- A prize for the winning person or team (for example, a bag of lollies or chocolate, or a Cloud Nasara sticker).
- Section 1 of the questions and answers sheet for the game facilitator (see page 12).

Facilitators

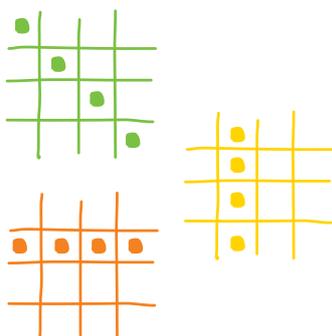
1. One facilitator to be the Bingo 'caller', who calls out the questions to the group.
2. One facilitator to be an answer checker – to keep track of the questions and to check the answers match up when someone calls Bingo.

How to play!

1. Hand out Cloud Bingo cards (each one is different) and 10 – 15 chips to each player in the group. If you don't have enough cards for every player to have one each, then arrange the group into teams and they can share a card.
2. Explain the rules of the game (see below) to the players and show them the winning prize.
3. The Bingo caller picks a question at random from 'Section 1' of the question and answer list and calls it out. The answer checker should make a note of which questions the caller has asked so they can check the correct answers when someone calls Bingo. They can do this by making a note of the questions asked on a piece of paper (or copying the questions and answers sheet before the session and marking off the questions asked by the caller).
4. If a player has the correct answer marked on their Cloud Bingo card, they can place a chip on it.
5. The Bingo caller keeps picking questions at random from the list and calling them out.
6. Once a player has four chips in a row, then they must call out 'BINGO!'.
7. The game then stops and the answer checker must check to see that the player has marked the correct answers to the questions asked by the Bingo caller.
8. If the player has marked all the correct answers to form their row of four chips, then they are the winner!
9. To wrap up the session, you can bring the group together and facilitate a short discussion about the four winning questions and answers.

Cloud Bingo Rules

1. The facilitator will call out a number of questions related to the animation.
2. If you or your group has the right answer to any of the questions on your Bingo Card, place a chip on that answer.
3. If you get four chips in a row, call out BINGO.
4. The first player or group to call out BINGO wins the game (providing they have the correct answers on their card).



How to play the Cloud Game Show

Equipment needed

- A prize for the winning team (for example, a bag of lollies or chocolate, or a Cloud Nasara sticker)
- Questions and answers sheet for game facilitator (see next page)

Facilitators

1. One facilitator to ask the questions. This facilitator will also need to keep track of the time it takes for game participants to answer questions.
2. One facilitator to keep score.

How to play!

1. Arrange your group into two teams. This is easy: just number people off as 'one' or 'two' (or divide the room down the middle) and get them to stand or sit in their groups.

Each team has a dedicated spokesperson who will make a sound when their team has the answer (this person will be a human 'buzzer' – to make it fun they could make the sound of an animal as their buzzer).

2. The first team of people gets given a question. The team has a maximum of one minute to answer (team members can discuss the answers amongst each other).

3. When the team thinks it has the answer, the spokesperson sounds their buzzer (for example, makes an animal sound).

4. If the team answers a question from Section 1 correctly, the team gets one point. If the team answers a question from Section 2 correctly, the team gets two points.

If the team answers incorrectly, or takes too long (the facilitator must keep track of time), the other team gets the opportunity to answer the question and take the points

5. Take it in turns from one team to the next to try and answer all the questions. The team with the most points at the end wins!



Cloud Nasara quiz questions and answers for facilitators

Section 1.

Q: In July, is it the wet season or the dry season in Vanuatu?

A: Dry season

Q: Do cyclones usually come to Vanuatu in the wet season or the dry season?

A: Wet season

Q: Multiple-choice question: What does the VMGD call the Cloud Nasara?

A. The North Pacific Convergence Zone? B. The South Pacific Place of Clouds? Or C. The South Pacific Convergence Zone?

A: South Pacific Convergence Zone

Q: Does the water in the Cloud Nasara come from a warm pool or a cold pool in the Pacific?

A: Warm pool

Q: What pushes the clouds to their meeting place in the nasara?

A: Trade winds

Q: In January, is it the wet season or the dry season in Vanuatu?

A: Wet season

Q: Are crops more likely to get waterlogged in Vanuatu during a La Niña or an El Niño event?

A: La Niña

Q: During an El Niño, are the trade winds strong or weak?

A: Weak

Q: During an El Niño, does the Cloud Nasara move closer to Vanuatu, or further away?

A: Further away

Q: During an El Niño, does Vanuatu usually get more rain or less rain than normal?

A: Less rain

Q: You can hear forecasts from the VMGD on the radio. True or false?

A: True

Q: What music does the parrot like?

A: Reggae

Q: During a La Niña, does the Cloud Nasara move towards Vanuatu or away from Vanuatu?

A: Towards

Q: Is flooding more likely to happen in Vanuatu during an El Niño or a La Niña?

A: La Niña

Q: El Niño and La Niña are climate change. True or false?

A: False

Q: There are many low or no cost actions that communities can take to prepare for El Niño and La Niña events. True or false?

A: True

Q: Are water shortages more likely to occur in Vanuatu during La Niña or El Niño?

A: El Niño

Q: Who makes seasonal forecasts about rainfall for the months ahead in Vanuatu?

A: VMGD (or the Meteo Office)

Q: If we take actions to prepare for El Niño and La Niña, it will help us to prepare for long-term climate change. True or false?

A: True

Section 2.

Q: What are two usual impacts of an El Niño event?

A: Dry conditions, water runs out, crops fail, less food (you may think of more!)

Q: What are two usual impacts of a La Niña event?

A: Wet conditions, possible flooding, damage to roads, some crops get waterlogged (you may think of more!)

Q: What are two actions you could take to prepare for a period of low rainfall?

A: Actions could include holding a community meeting aimed at agreeing on some joint actions, water rationing and wise water use, fixing leaky taps, mulching crops, hand washing and maintaining good hygiene standards, building shelter for your animals, planting yams or manioc crops and preserving food (you may think of more!)

Q: What are two actions you could take to prepare for a period of high rainfall?

A: Actions could include holding a community meeting aimed at agreeing on some joint actions, erosion control, destroying mosquito breeding grounds, hand washing and maintaining good hygiene standards, building shelter for your animals, planting bananas, preserving food, making sure your community has an evacuation centre or safe house on high ground, clearing drains and digging drainage ditches (you may think of more!)

How to facilitate the Early Warning Early Action scenario exercise (options 1 and 2)

Option 1 is targeted at communities and schools and Option 2 is targeted at organisations, government departments and businesses.

This exercise will help people in communities, schools, organisations, government departments and businesses to see how they can use warnings and forecasts from the VMGD, and turn this information into informed decisions and practical actions that will help them to be better prepared.

Equipment needed

- Two copies of each scenario (see next page)
- Big pieces of paper for groups to record their ideas
- Different coloured markers with which to write
- Vanuatu Tropical Cyclone Tracking Map. You can copy this map from page 16
- For option 1: Cloud Nasara picture cards. You will have copies of these in your toolkit and on your DVD or you can download and print them from www.pacificclimatechangescience.org/cloudnasara
- For option 2: PowerPoint slides and notes for the Early Warning Early Action scenario exercise. A computer (and projector if available)

Preparation

For both exercises

1. On some big pieces of paper or on a whiteboard, copy out the discussion questions (see page 15) and display them somewhere where everyone can see them.
2. Write the scenarios out by hand on separate pieces of paper or print them out. Make sure you have two copies of each scenario (just in case you have a large workshop).

For option 2 only.

Set the projector up and get the scenario exercise slideshow ready to go. We have provided some slides for you with the discussion questions and the scenarios if you would prefer to use this. There are also some slides of 'best practice' actions, which you can use at the end of the exercise.

How to facilitate the exercise

1. Divide the workshop participants up into five small groups. You can organise the groups so people from the same or similar organisations, sectors or backgrounds are grouped together (for example, you could have a youth group, or a group of people who work in health), or you can number people off into different groups.
2. Outline the scenarios (see next page) to the whole group. You can show the group the Vanuatu Tropical Cyclone Tracking Map when discussing the tropical cyclone warning scenario. Then talk through the discussion questions.
3. Provide each group with a piece of paper outlining a different scenario (see next page), some big pieces of paper and markers to write with. Each group should have one scenario only. Give a copy of the Vanuatu Tropical Cyclone Tracking Map to the group discussing the tropical cyclone warning (scenario 5).
4. Ask each group to nominate someone to present back to the big group and someone to take notes.
5. Check to see if anyone has any questions about the exercise.

6. Ask the groups to work through the discussion questions using their particular scenario. Let them know that they will have 45 minutes to discuss the questions and come up with ideas.

7. Let the groups know when they have five minutes left and then after time's up, bring the groups back together and ask the nominated speaker from each group to take five to ten minutes to present their ideas and actions back to the large group. Allow some time for questions at the end of each presentation.

8. At the end of the presentations ...

Option 1: use the Cloud Nasara picture cards as real life examples to generate discussion about what early actions other communities are taking across Vanuatu. Hold up each picture card and use the notes on the back to explain what the activity is and where it is happening. This part of the session is a great chance to inspire participants to go home and motivate their community or school to take early action.

Option 2: you can use the slideshow to demonstrate real life examples and generate discussion about what early preparedness actions are being taken across Vanuatu. This part of the session is a great chance to inspire participants to go back to work and motivate their organisations, departments or businesses to take early action.

Scenarios

These scenarios are based on real warnings and forecasts that the VMGD has released in the past.

Seasonal forecast scenarios

Scenario 1: Above average rainfall

There is a La Niña in the Pacific. The VMGD forecasts above average rainfall for the coming three months in your province. High rainfall and floods may be possible.

Scenario 2: Below average rainfall

There is an El Niño in the Pacific. The VMGD forecasts below average rainfall for the coming three months in your province. They also release a drought advisory stating that most islands in Vanuatu may experience water shortages and that drought conditions are expected for the next six months. They advise people to take measures to minimise the impact of drought.

Scenario 3: Cyclone season

It is the beginning of the rainy season in Vanuatu. VMGD releases the tropical cyclone outlook for the season. There are 9 – 12 tropical cyclones forecast for the Pacific region and Vanuatu is likely to experience close to normal or slightly above normal tropical cyclone activity. The VMGD forecasts that 2 – 4 cyclones may affect the country. The VMGD asks the people of Vanuatu to remain vigilant at all times during this cyclone season.

Weather forecast scenarios

Scenario 4: Severe weather warning

It is the middle of the rainy season in Vanuatu. The VMGD releases a severe weather warning. Winds of 65 km/hour are expected inland over Vanuatu in the next 24 – 36 hours and heavy rain is forecast to continue for much of Vanuatu. Flooding is expected over low-lying areas and areas close to riverbanks. High seas and marine wind warnings are also in place.

Scenario 5: Tropical cyclone warning

It is cyclone season and a Category 3 cyclone is approaching Vanuatu. The VMGD and the National Disaster Management Office (NDMO) release an updated warning on Tropical Cyclone Frank. At 2:00pm today, Severe Tropical Cyclone Frank was located in square letter D, number 1 (D, 1) of the Vanuatu tropical cyclone tracking map and is moving in a general southeasterly direction.

Very Destructive Storm to Hurricane force winds of 110km/hour to 145km/hour are forecast over the next 24 – 48 hours. Heavy rainfall and flooding, including coastal flooding is also expected. Very rough seas with phenomenal (very large) swells are expected over all open waters of Vanuatu. The next warning on Severe Tropical Cyclone Frank will be issued at 6:00pm. People over Vanuatu should continue to listen to all Radio Outlets to get the latest information on this system.

Discussion questions

Option 1: Communities and schools

1. Impacts

List the typical impacts of this scenario on your province.

1. Can you remember a time that this has happened before?
2. What impacts did this have on agriculture, water supplies, people's health, infrastructure like buildings and roads etc?

2. Information

1. What are the names in your kastom language for this scenario?
2. Do you know of any traditional indicators in your area that are linked with this scenario? Can these be used as triggers for preparedness?
3. Where can you get scientific warnings and information about this scenario?

3. Solutions

1. What are the low or no cost actions that your community or school can take to get ready? How would these actions link into your existing community structures (for example, community disaster committee, church group etc)?
2. Is there a way that some of these ideas could be turned into action?
3. Which other communities, schools, government departments or organisations could you could talk to and work together with to take action?

Option 2: Organisations, government departments and businesses

1. Impacts

List the typical impacts of this scenario on your organisation or sector.

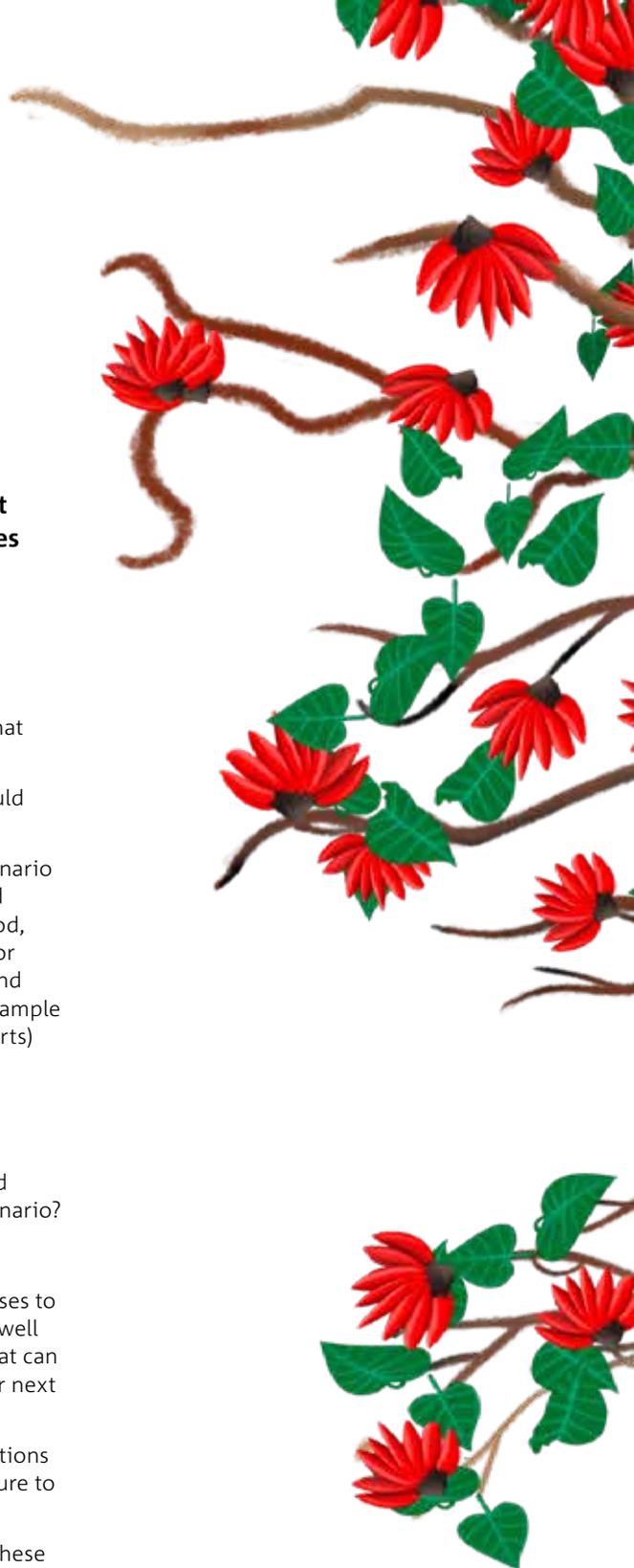
1. Can you remember a time that this has happened before?
2. What economic impacts could this scenario have?
3. What impacts could this scenario have on resource access and availability (for example, food, water and electricity), staff or volunteer capacity, health and safety, infrastructure (for example – roads, buildings and airports) and the way that resources are managed?

2. Information

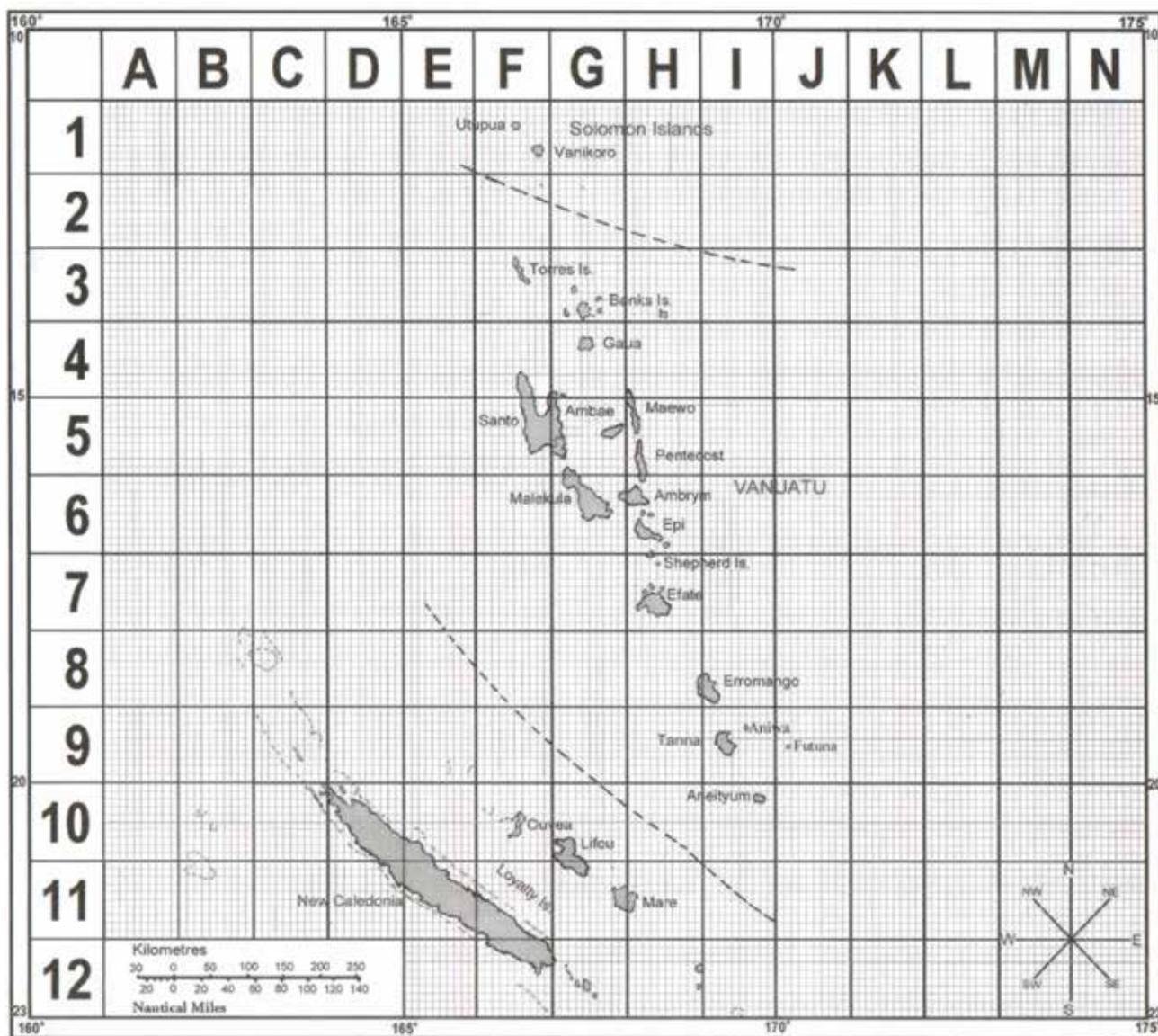
Where can you get warnings and more information about this scenario?

3. Solutions

1. Think about existing responses to these impacts. What works well that can be done more? What can be done differently or better next time?
2. What no cost or low cost actions can be taken in the near future to prepare for this scenario?
3. How would you make sure these actions are implemented in your workplace into the future (not once-off)? Is there a way to make these actions part of the standard procedures in your workplace?
4. Which other organisations, departments or businesses could you talk to and work together with to take action?



Vanuatu Tropical Cyclone Tracking Map



How to access the latest forecasts and warnings

The scientists at the VMGD publish regular seasonal forecasts, including the Vanuatu Climate Update, the Vanuatu Rainfall Outlook, and a Tropical Cyclone Seasonal Outlook. VMGD also release media alerts and warnings if an El Niño or La Niña event is forecast. Regular weather updates, including cyclone warnings, severe weather warnings and marine warnings are also distributed by the VMGD.

There are many ways to access the latest VMGD forecasts and warnings.

Listen to **98FM, 100FM, 107FM or AM1125** on the radio.

Visit the VMGD website: **www.meteo.gov.vu**

For specific VMGD products, visit the links below

Vanuatu Climate Update:

www.meteo.gov.vu/VMSLinks/Publications/tabid/179/Default.aspx

Vanuatu Rainfall Outlook:

www.meteo.gov.vu/climate

Tropical Cyclone Seasonal Outlook:

www.meteo.gov.vu/Prediction/TropicalCycloneSeasonalOutlook/tabid/201/Default.aspx

ENSO media alerts:

www.meteo.gov.vu/ClimateForecastsRainfall/ENSOAlertreport/tabid/225/Default.aspx

Telephone the VMGD on **23866** or **24686**

Visit the VMGD Office in person. The Port Vila office is located on the Lini Highway in Nambatu. Outside of Efate, you can also access information from VMGD's Provincial Synoptic Sites. These are located in Whitegrass, Tanna, Analguahat, Aneityum, Lamap, Malekula, Pekoa, Santo, Saratamata, Ambae and Sola, Vanua Lava.





How to facilitate the Vanuatu Future Climate exercise

Equipment needed

- The Pacific Climate Change Science Program's brochure 'Current and future climate of Vanuatu', which is available in English and Bislama. You can find a copy of this on your Cloud Nasara DVD or you can download it from www.pacificclimatechangescience.org/publications2.html
- Big pieces of paper and something to stick them up on the walls with
- Coloured markers with which to write

Preparation

1. Write the following climate change projections on the top of your big pieces of paper (one projection per sheet) and stick them up around the room (make sure you leave lots of space under each heading for people to write on later)
 - Temperatures will continue to increase
 - More very hot days
 - Changing rainfall patterns
 - More extreme rainfall days
 - Less frequent but more intense cyclones (meaning that more of those that do occur will be very intense)
 - Sea level will continue to rise
 - Ocean acidification will continue
2. Set out some markers to write with and some spare paper at each place where you have stuck up a climate change projection.

How to facilitate

1. Show participants the Pacific Climate Change Science Program's brochure 'Current and future climate of Vanuatu' and explain that this exercise is based around climate projections sourced from this publication. If you have included the Cloud Nasara PowerPoint presentation in your workshop, participants should already have an understanding of some of the information contained in this brochure.

Make sure everyone knows that this brochure is freely available online in Bislama and English at www.pacificclimatechangescience.org/publications2.html

2. Ask workshop participants to divide into small groups of two or three people (depending on how many people you have in the workshop).

3. Assign one climate change projection to each group. For example, one group stands at sea-level rise, and another group takes temperature rise etc.

4. Ask each group to take 15 minutes to brainstorm what impacts they think these changes may have for Vanuatu over the course of this century. Each group should list these impacts under their particular projection, using the spare paper if needed. You can help kick start group discussions by asking people to think about impacts related to health, agriculture, water, ecosystems or disasters. For example, an impact of more extreme rainfall events in Vanuatu may lead to more flooding which can cause damage to infrastructure (houses/roads/bridges) and threaten people's livelihoods and safety.

5. Get everyone back together in a big group and walk around the room as each small group explains their answers. Participants from the other small groups can be encouraged to add to the list of impacts.

After you have gone through all the different impacts, you can facilitate a general group discussion. Here are some useful questions and points that you can use to guide this discussion:

- Are these impacts things that people in Vanuatu might already be familiar with? Which are/ aren't familiar?
- You can point out that some impacts are related to long-term change, while others will come as extreme events
- Do a brainstorm as a group to think of other factors that might make these impacts worse (for example, other vulnerabilities such as economic, environmental, social factors)
- You can make the point that it isn't climate change alone that will cause the greatest impact. It is the intersection of climate change with many other challenges, such as El Niño and La Niña. We can work on preparing for the 'shocks' (like extreme weather events) as well as the slow changes (such as changes to seasons) and we can also work on some of these other factors to reduce vulnerability and increase people's resilience to changes that might occur (for example, reducing environmental degradation).

Make sure you capture any key points on a whiteboard or on paper.

How to play Speed Dating (versions 1 and 2)

Equipment needed

- Chairs – make sure you have enough chairs for everyone in the group
- A stopwatch (most mobile phones will have a stopwatch) or a watch with a second hand

Preparation

1. Take half the chairs and arrange them in a circle facing outwards.
2. Arrange the other half of the chairs in a bigger circle, with each chair facing one of the chairs in the first circle.

How to play

1. Ask everyone in the workshop to sit down in a chair. Once everyone is sitting down, there should be two circles of people facing each other.
2. Explain the game.
 - For **'Speed Dating 1'**, each person will need to tell the person sitting opposite them their name, their organisation and give them one example of how the weather and climate affects their workplace.
 - For **'Speed Dating 2'**, each person will need to tell the person sitting opposite them their name, their organisation and give them one example of an early action that they are going to take in their workplace.
3. Give the participants three minutes to think about which example they are going to use.
4. Then start the game! Each person sitting in the inside circle of chairs has 45 seconds to tell the person sitting opposite them their name, organisation and example.
5. The facilitator must keep an eye on the time. Give the group a warning at 35 seconds – you can call out '10 seconds to go!' – and once the clock reaches 45 seconds, call out 'time!' or 'change!' or make a loud buzzer sound.
6. Then it's the turn of each person sitting in the outside circle, who has 45 seconds to explain to the person sitting opposite them THEIR name, organisation and example.
7. Once the facilitator has called 'time', all the people sitting in the outside circle must stand up and move one chair to the left and sit down so that they are facing a new person.
8. The cycle then starts again, until the people in the outside circle have returned back to the seat that they were sitting in at the start of the exercise.
9. Wrap up the session by reinforcing and sharing some of the 'highlights'. Ask four or five participants to tell the group what they thought was:
 - The most interesting example of how the weather or climate affected their partners place of work (if you're playing version 1)
 - The most inspiring or 'smart' example of an early action that their partner planned to take in their workplace (if you're playing version 2)

At the end, ask all the participants to stand up and give themselves a big clap!



Frequently asked questions and answers for facilitators and educators

This list of frequently asked questions and answers is designed to help you answer some questions that may arise. If you don't know the answer to a question and it is not covered in this list, be honest and tell people you will find out for them (make sure you do get back to them!). That way you and the participant both learn something new!

Why do the clouds in the cloud meeting place form above the warm pool?

Clouds form where there is moisture and rising air. The warm waters of the warm pool provide both of these. The warm waters heat the air above the warm pool, which causes it to rise and adds lots of moisture to the air.

What time of the year do El Niño and La Niña happen and how long do they last?

Every El Niño and La Niña is different, but they usually start around the middle of the year and last until early the following year. Sometimes they can last for another full year.

How often do El Niño or La Niña happen?

El Niño and La Niña don't happen every year, and there is no regular pattern of how often an El Niño or La Niña will occur. This is why it is important to keep up to date with seasonal forecasts. Over the period from 1979 to 2012 there were ten El Niños and six La Niñas. Some decades have more El Niños and La Niñas than others. For example, during the decade 2000-2010 four El Niño events and two La Niña events occurred.

Are the impacts of El Niños and La Niñas always the same?

No, they are all different. Scientists can measure and forecast different aspects of El Niño and La Niña. The impact that they have on temperature, rainfall, the location and intensity of tropical cyclones and changes to sea level can be different depending on the strength of the event. For example, in Vanuatu, an El Niño may not always mean there will be a drought, but two out of the last three El Niños have resulted in official droughts being declared in Vanuatu.

It is important to remember that the strength of an El Niño or La Niña event only provides an indication of how widespread and severe associated impacts are likely to be. It does not provide certainty regarding the severity of impacts in specific locations. The best way to anticipate if an El Niño or La Niña event is likely to bring too much or too little rainfall to your area, is to monitor seasonal forecasts for your country.

Are El Niño and La Niña linked to climate change and why are they different to climate change?

El Niño and La Niña occur naturally and are a normal part of our climate. Just like our seasons, they will still occur and affect year-to-year climate variations even when the climate is changing over a long period of time. In the future El Niño and La Niña will continue to occur and affect our climate. However, because our climate is changing, some aspects of El Niño and La Niña may be different in the future. The average climate is changing. For example, the atmosphere is warming, which means

it can hold more moisture, so rainfall may become more intense in some places. This also means that the effects of El Niño and La Niña have on rainfall may also be different in the future. Also, sea level is rising due to climate change. This means that any high sea level events that happen, for example due to La Niña, may be more severe because of the higher average sea levels due to climate change. Scientists are also researching whether El Niño and La Niña might happen more or less often, or be more or less intense in the future, but at the moment the science suggests these will not change significantly.

How accurate are the VMGD's seasonal forecasts?

The VMGD provides forecasts of El Niño and La Niña, and of their impacts. They can fairly accurately forecast whether an El Niño or La Niña event is likely to happen from a few months or more ahead, depending on the time of year and the strength of the signs. However, impacts such as an increase or decrease in rainfall are harder to predict and so these forecasts don't provide certainty, but we can still take 'low cost' measures to prepare. The impacts of past El Niño and La Niña events also guide us as to how the climate for the coming seasons is likely to be different from normal. For example, in 2009 the VMGD released forecasts and warnings indicating that Vanuatu was likely to experience an El Niño event and possible drought conditions. Over the next few months, parts of Vanuatu experienced very dry conditions as a result of this El Niño, which resulted in water shortages, bush fires, and problems with food crops in many places.



What if the forecast high rainfall doesn't happen – have I wasted my time preparing?

Forecasts are probabilities, not certainties. This means that there is a chance or a risk of something happening (for example, high rainfall). Just because we don't have certainty doesn't mean we shouldn't prepare. It is always better to be safe than sorry. There are many actions we can take that will mean we are more prepared for next time and that are good to practice regardless of whether the rainfall forecast happens or not – for example, encouraging hand washing and good hygiene practices.

Where can I find seasonal forecasts and what can I do with them?

See page 17 to find out how you can access the latest seasonal forecasts.

If, over the coming months, seasonal forecasts for your area show a higher chance of below or above normal rainfall, it is important to start thinking through possible preparedness measures. Some questions to consider when you are thinking about possible measures are:

- What would too much or too little rainfall mean in terms of water and food availability, health problems and income?;
- What can be done to prepare? What kind of 'low-cost' actions could be taken early on that would help to manage these impacts? ('low-cost'

actions are things that are good to do anyway, regardless of whether a forecast event happens or not – for example, hand washing and maintaining good hygiene standards or mulching gardens); and,

- Do you have a community disaster committee and has the committee discussed possible preparedness and response measures?

What if I can't understand the seasonal forecast? Who can I ask for help?

The VMGD can provide you with more information and advice.

Can you get droughts and dry spells when it's not El Niño and can you get floods and heavy rain when it's not La Niña?

Yes, you can. El Niño and La Niña are the biggest drivers of year-to-year climate variations in the Pacific, but there are many other forces at work as well that can bring floods, like tropical cyclones, or dry spells, such as delays to the start of the wet season.

Where can I get more information about El Niño, La Niña and climate change?

See the 'For more information' section at the end of this booklet.

What actions can I take to prepare for the impacts of El Niño, La Niña and climate change and where can I get more information and advice?

The VMGD can help explain forecasts. The Vanuatu National Disaster Management Office (NDMO) can provide advice on disaster preparedness measures appropriate for the hazards you face (for example flood or drought preparedness). Vanuatu Red Cross is also available to assist with disaster preparedness information and advice across Vanuatu.



Glossary of key terms

Adaptation: Adjustments in response to actual or expected climate change, to reduce negative impacts or take advantage of opportunities.

Climate: the average pattern of weather for a particular place over a long period of time (for example, 30 or more years). 'Climate' is different from 'weather'. One popular phrase can help distinguish weather from climate: 'Climate is what we expect. Weather is what we get.'

Climate change: Changes in the Earth's climate, generally referring to those due to human activities but can also include natural processes. These changes can include more intense extreme events such as droughts, floods, and tropical cyclones, and changes in average rainfall patterns. Climate change due to human activity has happened and is expected to continue much more quickly than natural changes in the climate, due to the unprecedented rate of increase in greenhouse gases.

Climate projection: a description of what the climate may be like in the coming decades and centuries. These are generally produced by climate models taking into account various scenarios of possible future greenhouse gas emissions.

Climate system: The linked system of the atmosphere, oceans, land surface, cryosphere (parts of the world covered in ice – for example, glaciers) and biosphere (parts of the world where life is found – for example, forests) and the interactions between them all. The climate system is normally described in terms of pressure, temperature, rainfall, winds and currents and other variables, as well variations like the El Niño Southern Oscillation (ENSO). The state of the climate system is determined by physical conditions such as the location and shape of continents and islands, solar (sun) output, amounts of greenhouse gases and the Earth's orbit and angle.

Climate variability: Variations in the climate due to natural processes. Important climate variability occurs from month-to-month, season-to-season, year-to-year and even decade-to-decade. In the Pacific

region, the main driver of climate variability from year-to-year is the El Niño Southern Oscillation (ENSO).

Cloud Nasara: A cloud meeting place, such as the South Pacific Convergence Zone.

Dry season: The period of one or more months that occurs every year when there is the lowest amount of rain. The 'dry season' is the opposite of the 'wet season'. In Vanuatu, the dry season usually happens from May to October.

El Niño: This is what scientists call the time when the trade winds in the Pacific weaken, warmer waters move to the east and the cloud meeting places move closer together. In Vanuatu, an El Niño usually brings less rainfall than normal.

El Niño Southern Oscillation (ENSO): This is what scientists call the ups and downs of El Niño and La Niña across the Pacific. ENSO causes changes to rainfall, cyclone risk, winds, sea levels and temperatures.

Forecast: A prediction of future conditions or events. Weather Forecasts give the most likely conditions (e.g. expected temperature and if it will rain) for the coming days (out to about a week), while Seasonal Forecasts give the probabilities of a condition occurring (e.g. the chance of getting above normal rainfall) for the coming months or season. All forecasts are uncertain. However, just because we don't have certainty doesn't mean we can't prepare. It is always better to be safe than sorry.

Hazard: Something natural or man-made that may cause disruption or damage to life, property and/or environment.

La Niña: This is what scientists call the time when the trade winds in the Pacific get stronger, pushing warmer water to the west and the cloud meeting places further apart. This is the opposite of El Niño. In Vanuatu, a La Niña usually brings more rainfall than normal.

Nasara: a meeting place.

Preparedness: Measures taken in anticipation of a hazard to reduce the level of damage.

Seasonal forecast: The forecasting of likely conditions (for example, of rainfall) in a region for a period of one or more months, based on the conditions in the ocean and atmosphere. These forecasts can help to prepare for different extreme impacts, from tropical cyclone damage to malaria.

South Pacific Convergence Zone: The Cloud Nasara. A place where clouds meet and rainfall occurs.

Trade winds: The prevailing winds in the tropics, which generally blow from the east.

VMGD: The Vanuatu Meteorology and Geo-hazard Department. Also commonly known as the Meteo Office.

Vulnerability: The degree to which life, property and/or environment is open to being affected by, or unable to cope with, adverse effects of hazard impacts.

Warm pool (also known as West Pacific Warm Pool and Indo-Pacific Warm Pool): A very large pool of the world's warmest water, with temperatures exceeding 28 – 29°C, extending from the central Pacific to the far eastern Indian Ocean.

Weather: The state of the atmospheric, such as temperature, rainfall and wind speed, over a short period of time – a few hours or a few days. Weather changes from day to day and the changes are easy to see. 'Weather' is different from 'climate'. One popular phrase can help distinguish weather from climate: 'Climate is what we expect. Weather is what we get.'

Wet season: The period of one or more months that occurs every year when there is the highest amount of rain. The 'wet season' is the opposite of the 'dry season'.

For more information

For more information on weather, climate, forecasts and warnings, visit the VMGD website – www.meteo.gov.vu – or contact the VMGD. You can telephone the VMGD on 23866 or 24686 or visit the VMGD Office in person. The Port Vila office is located on the Lini Highway in Nambatu. Outside of Efate, you can also access information from VMGD's Provincial Synoptic Sites. These are located in Whitegrass, Tanna, Analguahat, Aneityum, Lamap, Malekula, Pekoa, Santo, Saratamata, Ambae and Sola, Vanua Lava.

For more information on disaster preparedness actions, contact the Vanuatu National Disaster Management Office (NDMO) via telephone on 22699 or by post – Private Mail Bag 9107, Port Vila.

Vanuatu Red Cross can also help you with information and advice about disaster preparedness and taking early action. You can telephone the Vanuatu Red Cross on 27418 or visit a Red Cross branch in your area.

There are also some fantastic online resources that you can access.

- Vanuatu's National Advisory Board's (NAB) portal – www.nab.vu
- The Pacific Climate Change Science site www.pacificclimatechangescience.org
- The Pacific Climate Change Portal www.pacificclimatechange.net
- The Pacific Disaster Net www.pacificdisaster.net



