

CALL FOR WATER

This game was prepared by Louise Crochemore, Christiana Photiadou, Carolina Cantone and Ilias Pechlivanidis (SMHI). If you use this game, the authors would be grateful for feedback on your usage and results so as to help improve future versions of the game and justify further development efforts.

This game is funded by the H2020 CLARA project www.clara-project.eu

This game is part of HEPEX activities www.hepex.org

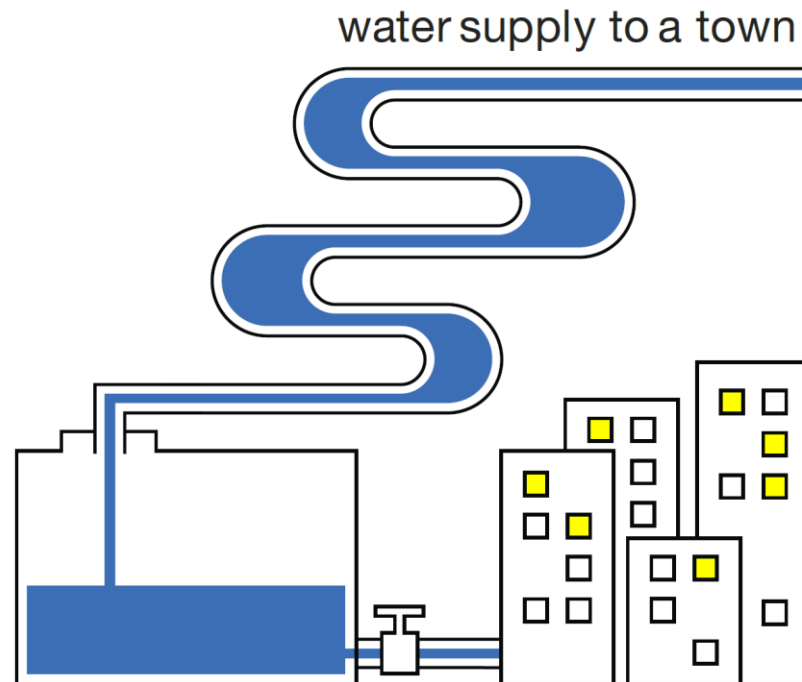
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Instructions – Lake Bottiglietta

You are the newly appointed **water manager** for Lake Bottiglietta

It is a reservoir that serves water uses for **Thirsty Town**



Instructions – Lake Bottiglietta

Thursty Town needs water for the period June-July-Aug. To ensure the different water uses of Thursty Town all summer, Lake Bottiglietta has to contain **at least 60 Mm³ on June 1st**.



**60 Mm³
on June 1st**

Instructions – Decision options

As manager of the lake, you have to take a decision on **June 1st**.

- **Do nothing**: if you expect your reservoir to reach **60 Mm³** on June 1st
- **Sell the surplus water**: if you expect your reservoir to reach **100 Mm³** or more on June 1st
- **Contact your neighbours**: If you do **not** expect to ensure the minimum threshold of **60 Mm³** in the reservoir on June 1st
- **Wait and see**: If you judge that the forecast information is not adequate to take a decision and wish to wait until the next forecast comes out

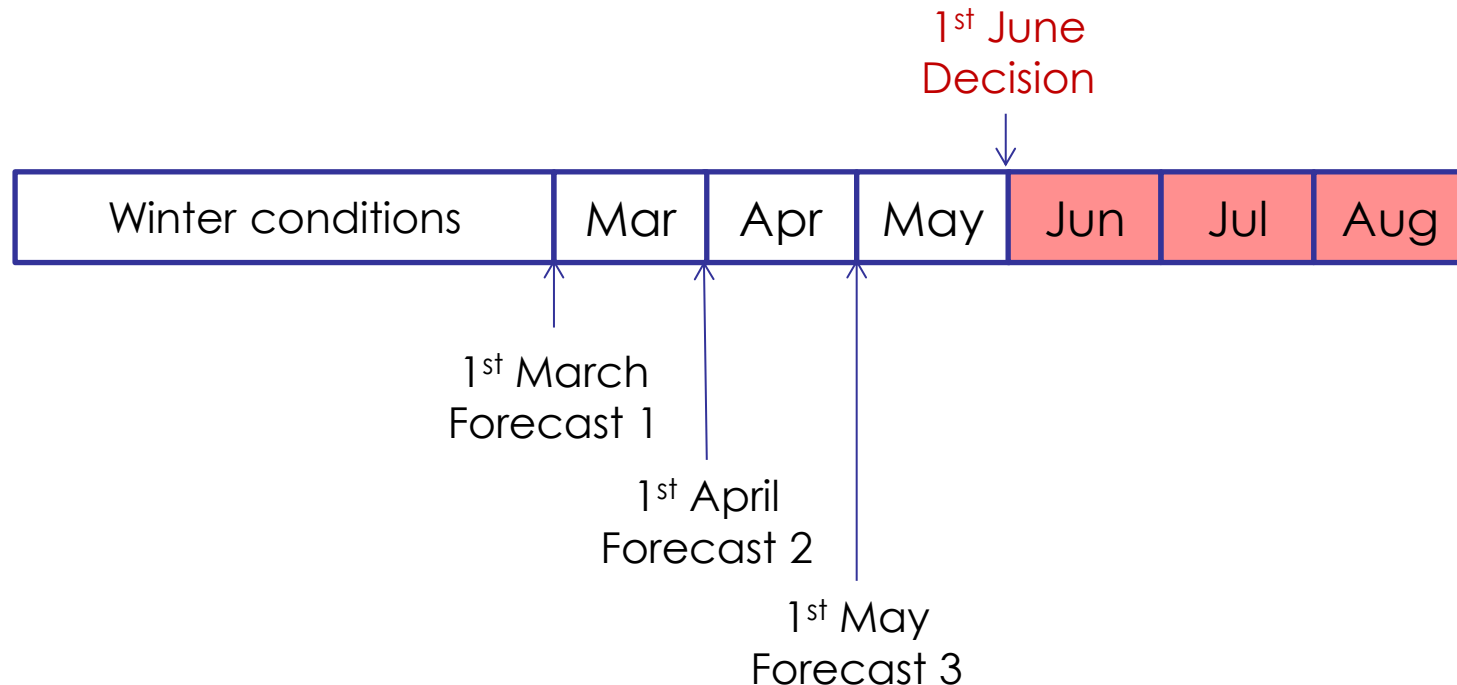
		Wait & see	Do <u>nothing</u>	<u>Sell surplus water</u>	Contact neighbours
Year 1	<u>March</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Instructions – Forecasts

To help you make this decision:

- You will receive **probabilistic forecasts** of reservoir levels for **June 1st**, issued on **March 1st**, **April 1st** and **May 1st** and their **reliability**.

After each forecast, you have to make a **decision** for June 1st.

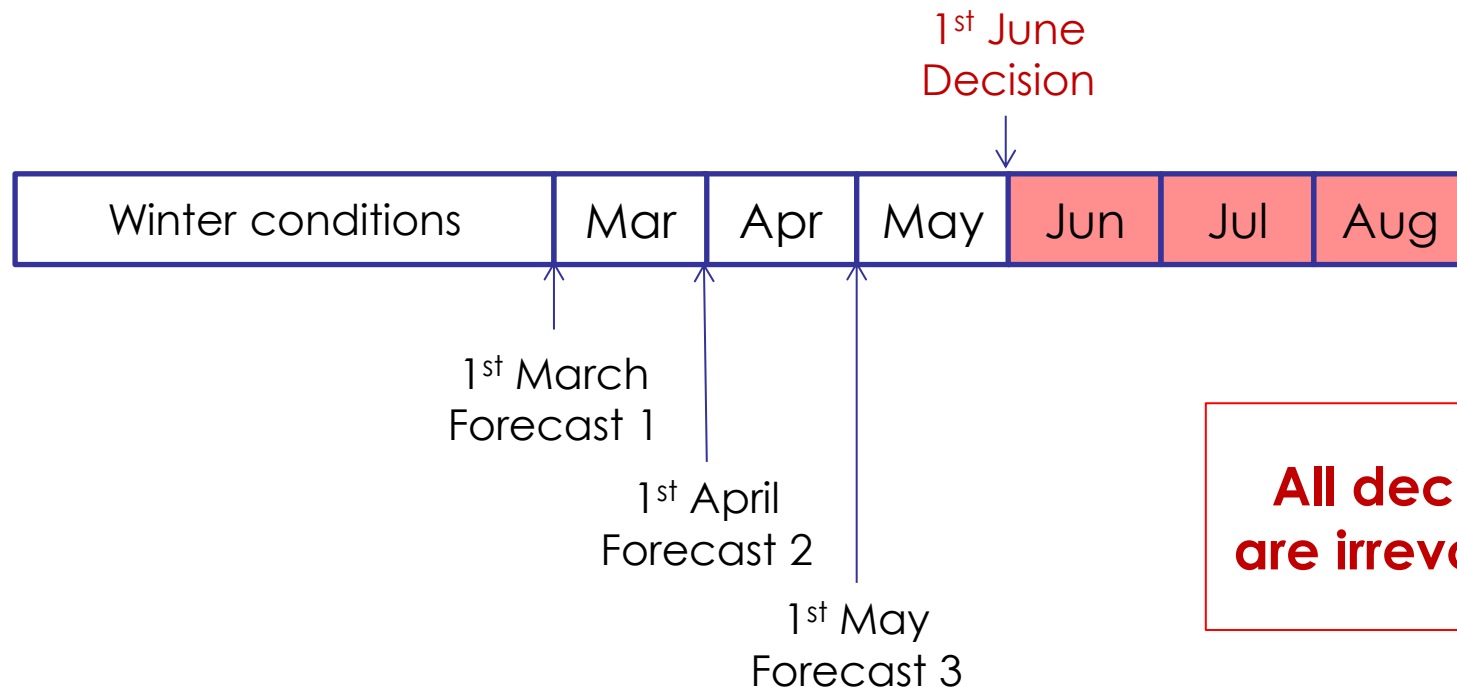


Instructions – Forecasts

To help you make this decision:

- You will receive **probabilistic forecasts** of reservoir levels for **June 1st**, issued on **March 1st**, **April 1st** and **May 1st** and their **reliability**.

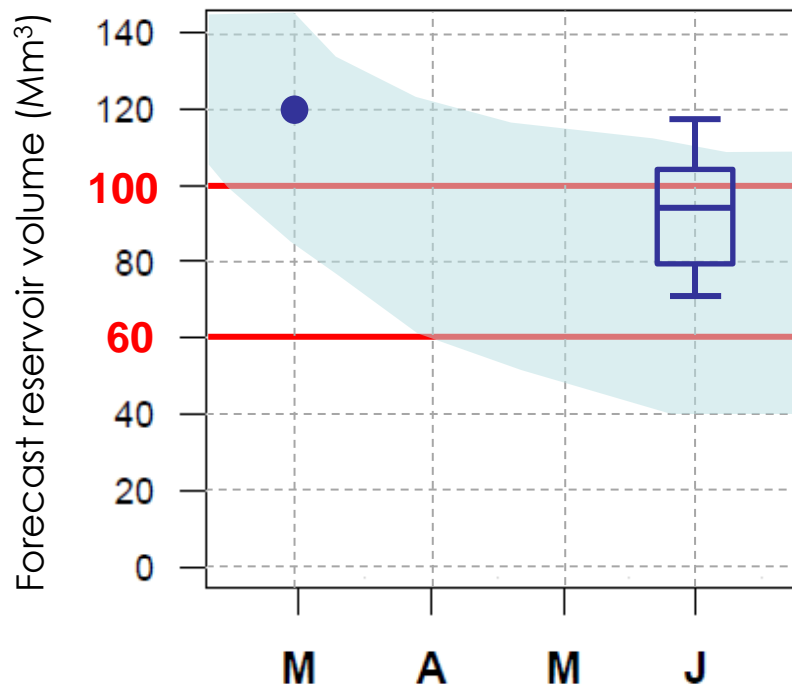
After each forecast, you have to make a **decision** for June 1st.



Instructions – Forecasts

To help you make this decision:

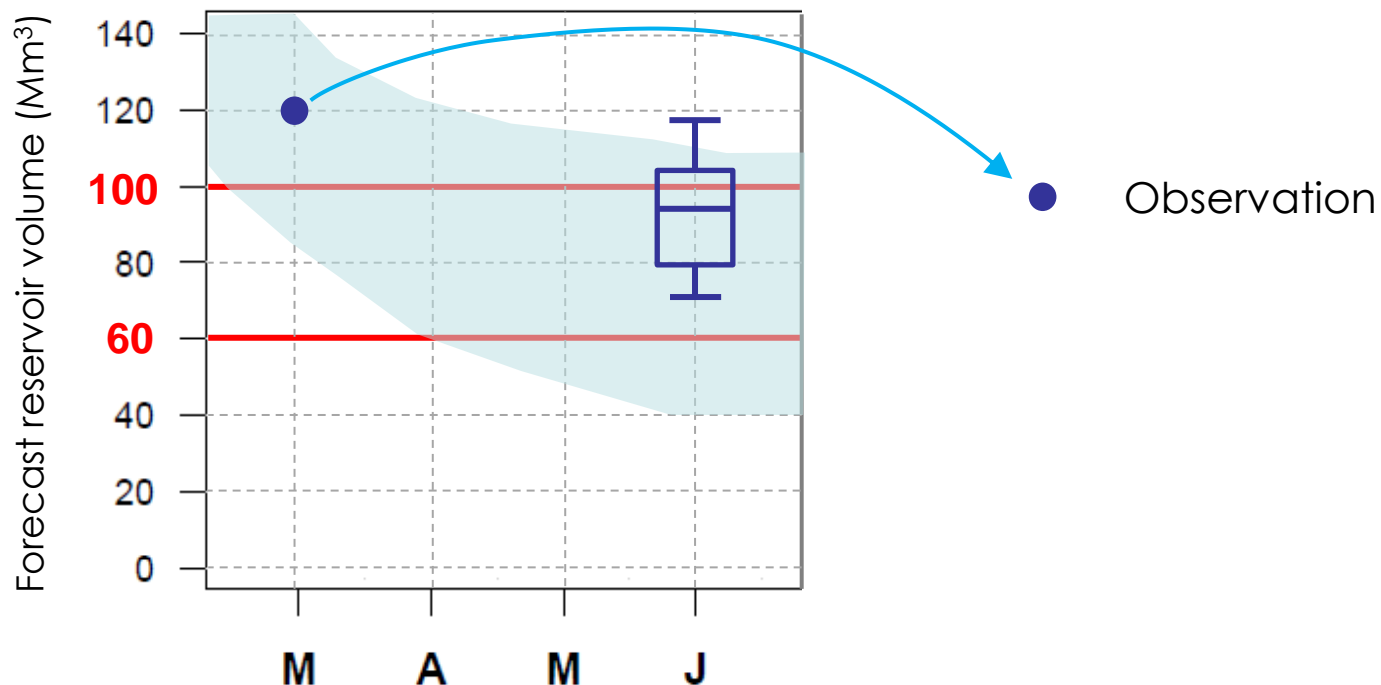
- You will receive **probabilistic forecasts** of reservoir levels for **June 1st**, issued on **March 1st**, **April 1st** and **May 1st** and their **reliability**.



Instructions – Forecasts

To help you make this decision:

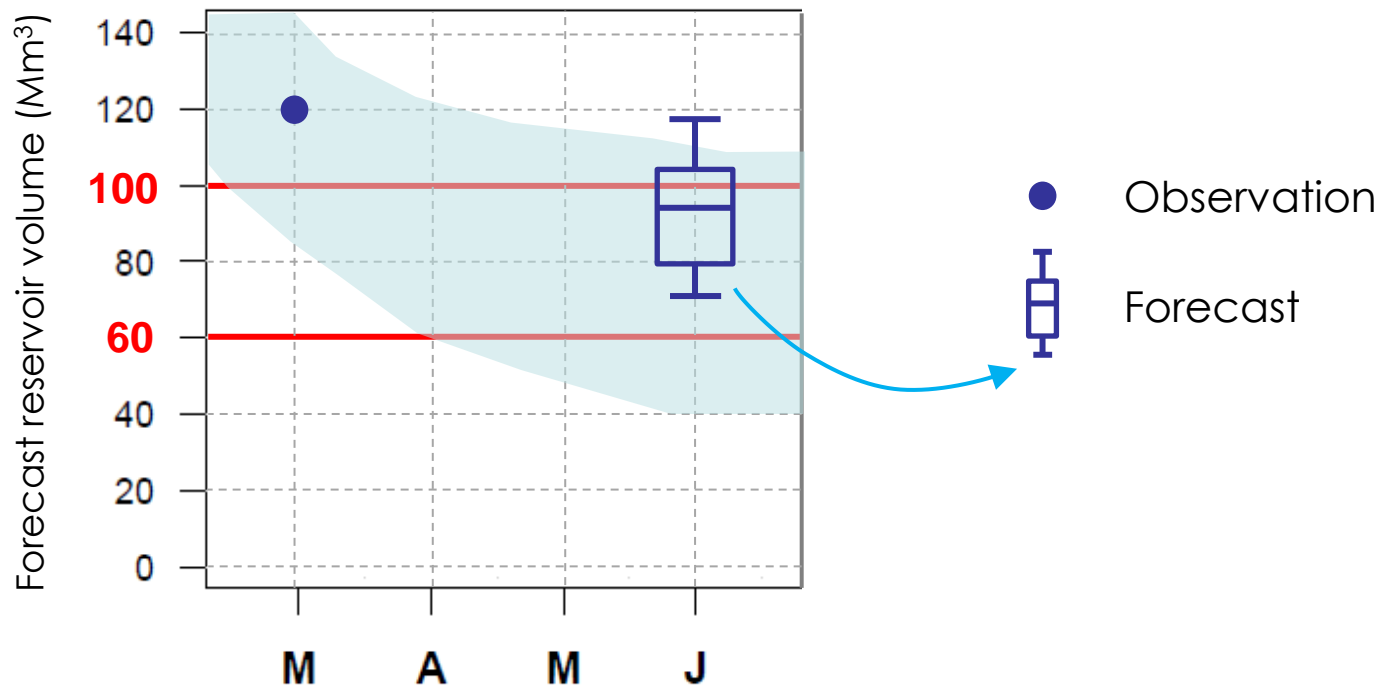
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Instructions – Forecasts

To help you make this decision:

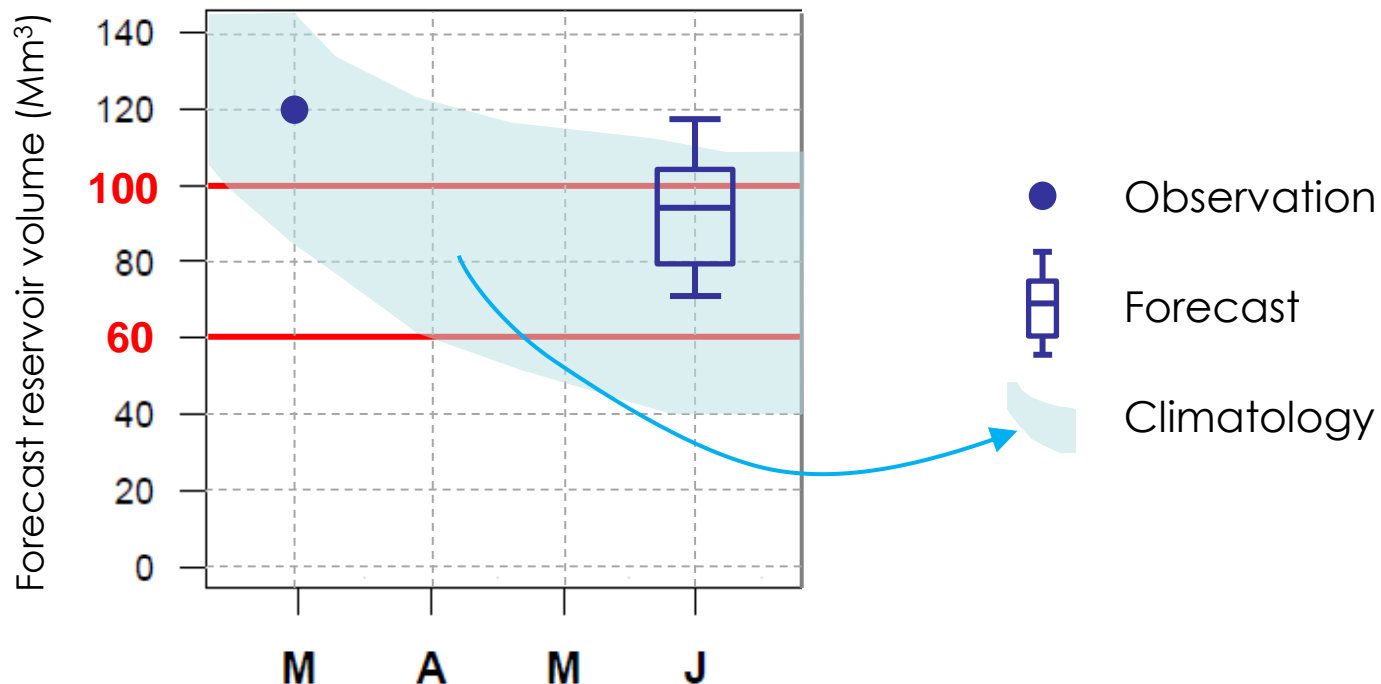
- You will receive **probabilistic forecasts** of reservoir levels for **June 1st**, issued on **March 1st**, **April 1st** and **May 1st** and their **reliability**.



Instructions – Forecasts

To help you make this decision:

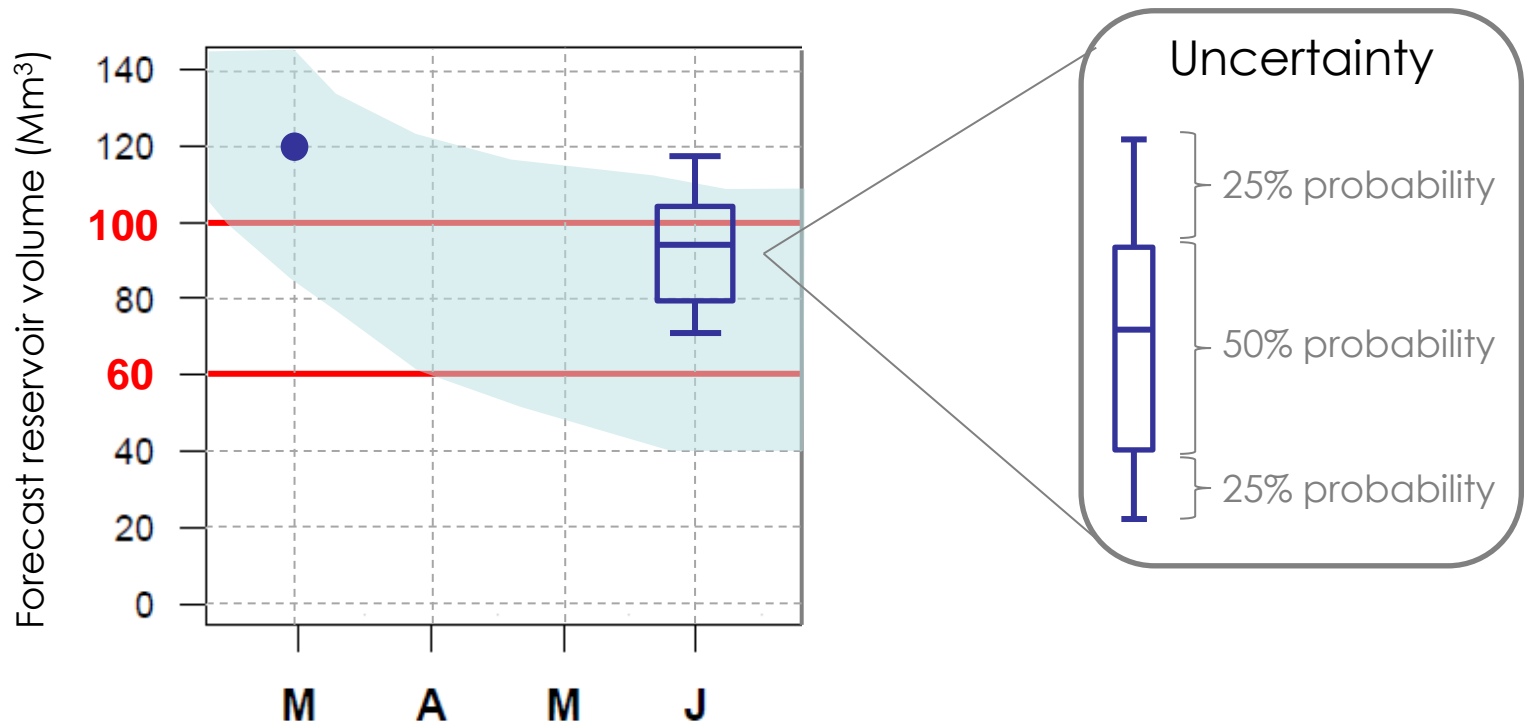
- You will receive **probabilistic forecasts** of reservoir levels for **June 1st**, issued on **March 1st**, **April 1st** and **May 1st** and their **reliability**.



Instructions – Forecast Uncertainty

To help you make this decision:

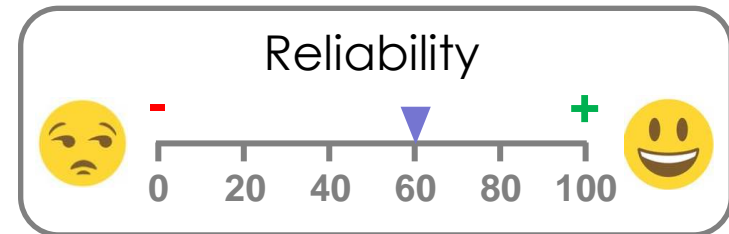
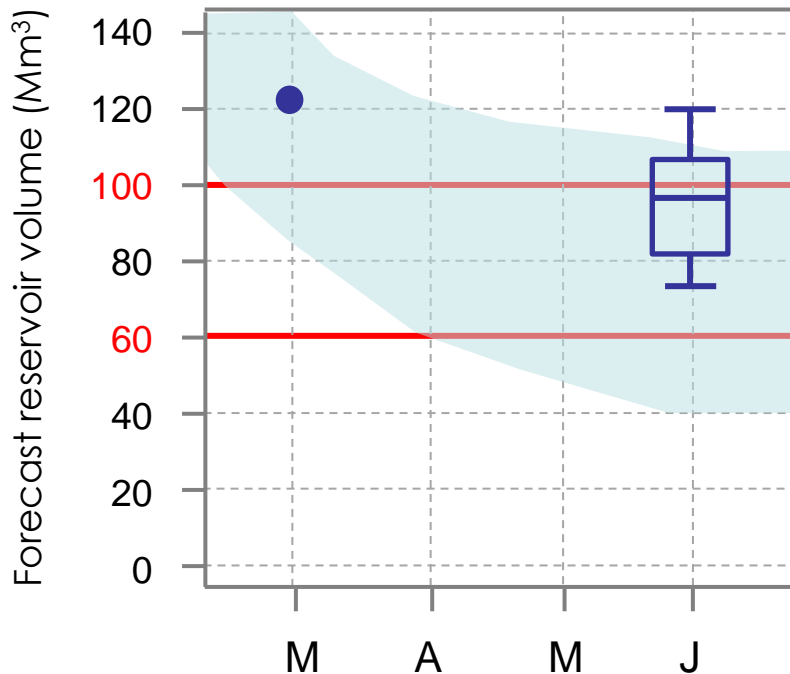
- You will receive **probabilistic forecasts** of reservoir levels for **June 1st**, issued on **March 1st**, **April 1st** and **May 1st** and their **reliability**.



Instructions – Forecast Reliability

To help you make this decision:

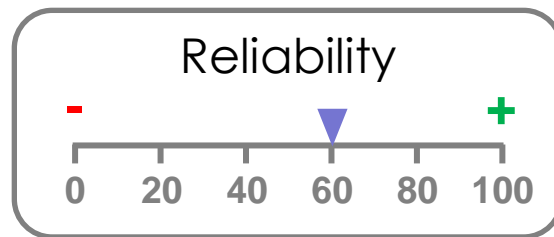
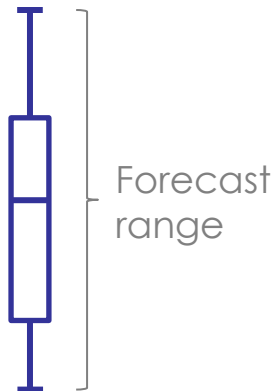
- You will receive **probabilistic forecasts** of reservoir levels for **June 1st**, issued on **March 1st**, **April 1st** and **May 1st** and their **reliability**.



Instructions – Forecast Reliability

To help you make this decision:

- You will receive **probabilistic forecasts** of reservoir levels for **June 1st**, issued on **March 1st**, **April 1st** and **May 1st** and their **reliability**.



Historically, the observation is X % within the forecast range



- **0 %** means that the a posteriori observation is **never** in the forecast range

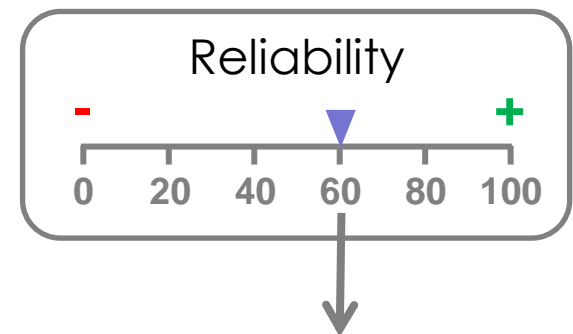
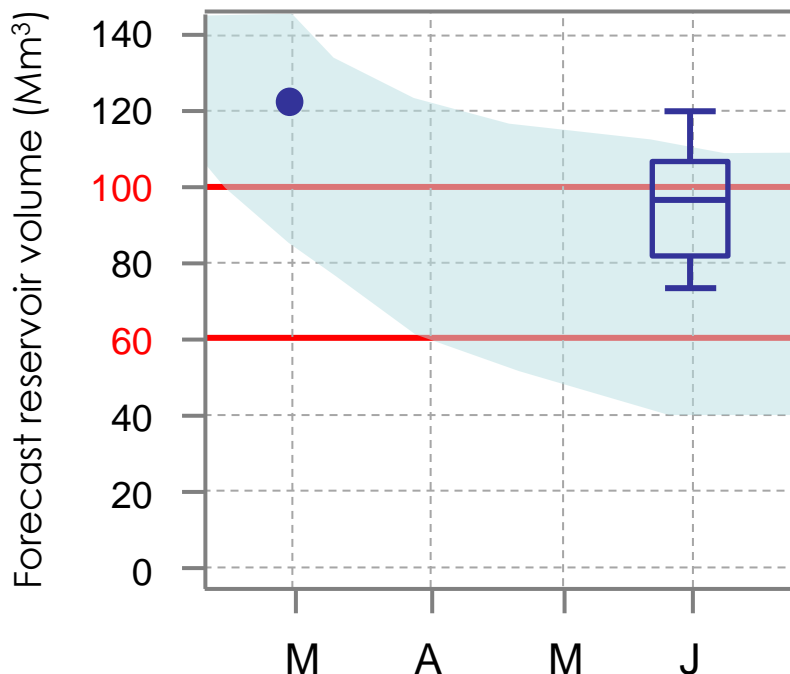


+ **100 %** means that the a posteriori observation is **always** in the forecast range

Instructions – Forecast

To help you make this decision:

- You will receive **probabilistic forecasts** of reservoir levels for **June 1st**, issued on **March 1st**, **April 1st** and **May 1st** and their **reliability**.



The observation a posteriori fell **60%** of the times within the forecast range

Instructions – Forecast

To help you make this decision:

- You will receive **probabilistic forecasts** of reservoir levels for **June 1st**, issued on **March 1st**, **April 1st** and **May 1st** and their **reliability**.
- If you judge that the forecast information is not adequate to take a decision, you can choose to **Wait & see**

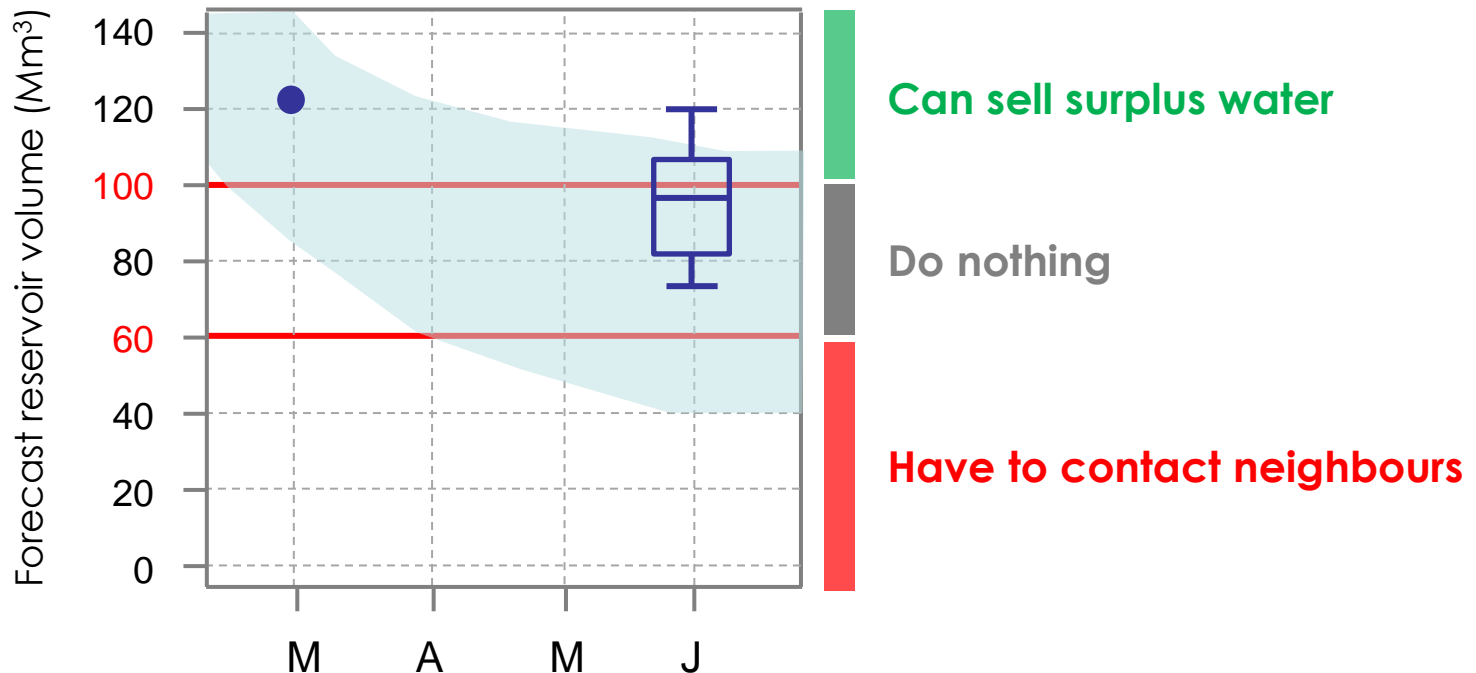
		Wait & see	Do <u>nothing</u>	<u>Sell surplus water</u>	<u>Contact neighbours</u>
<u>Year 1</u>	<u>March</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<u>April</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<u>May</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<u>June 1st</u>	50 000 + - =			

Instructions – Forecast

To help you make this decision:

- You will receive **probabilistic forecasts** of reservoir levels for **June 1st**, issued on **March 1st**, **April 1st** and **May 1st** and their **reliability**.

After each forecast, you have to make a **decision** for June 1st.



Instructions – Game rules

Your initial budget is: 50 000 tokens

If you **contact neighbouring water providers**, you pay:

March: - **1 000**

April: - **2 000**

May: - **5 000**

If you **sell surplus water** and have **more than 100 Mm³** on June 1st, you gain:

March: + **6 000**

April: + **4 000**

May: + **2 000**

If you **cannot provide water to Thursty town** (60 Mm³ on June 1st), you pay a fine of - **10 000**

If you **sold surplus water** and your reservoir **did not reach 100 Mm³** on June 1st, you pay - **12 000** tokens: **10 000** for not being able to provide water to Thursty Town and an additional **2 000** for the loss in reputation.

Before starting!

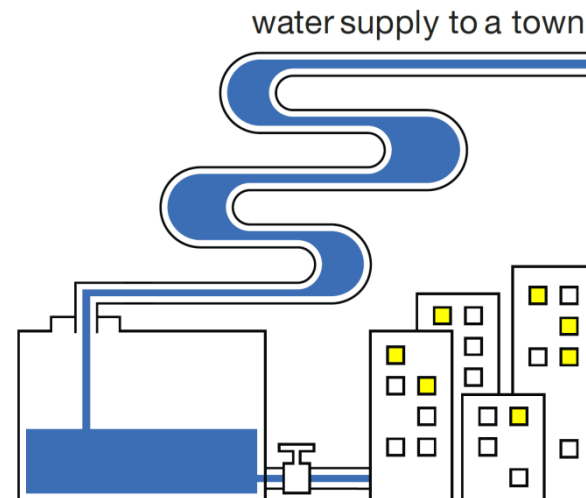
- ✓ Your main responsibility is to **ensure 60 Mm³** in the reservoir on June 1st.

The **WINNER** of the game:

1. **Always 60 Mm³** in her/his reservoir
2. **Largest budget** among those that fulfill 1

- ✓ **Round 1** **Each year** of the 1st round you will receive **an independent set of forecasts**


- ✓ **Round 2** You will be given the option to **pay for improved forecasts**.



Before starting: Worksheet

You have a worksheet to mark your decisions!

Remember to return it after the game!


		Seasonal forecasting for water management in different certainty and reliability contexts				
A		PRELIMINARY QUESTIONS				
Professional background : <input type="checkbox"/> Hydrology / <input type="checkbox"/> Climate / <input type="checkbox"/> Meteorology / <input type="checkbox"/> Economy / <input type="checkbox"/> Other:						
Sector: <input type="checkbox"/> Energy / <input type="checkbox"/> Water resources / <input type="checkbox"/> Risk prevention / <input type="checkbox"/> Agriculture / <input type="checkbox"/> Health / <input type="checkbox"/> Other:						
Role / Task in the company : <input type="checkbox"/> Forecaster / <input type="checkbox"/> Decision-maker / <input type="checkbox"/> Trader / <input type="checkbox"/> Researcher / <input type="checkbox"/> Consultant / <input type="checkbox"/> Other:						
Experience : <input type="checkbox"/> < 5 years / <input type="checkbox"/> 6-10 years / <input type="checkbox"/> 11-15 years / <input type="checkbox"/> 16-25 years / <input type="checkbox"/> > 25 years						
Country :						
REMEMBER THE RULES!						
Your initial budget is: 50 000 tokens						
If you cannot provide water to Thursty town for the season (60 Mm³ on June 1 st), you get a fine of - 10 000						
If you decided to sell surplus water: - and you have more than 100 Mm³ on June 1 st , you gain: + 6 000 if you first sold in March + 4 000 if you first sold in April + 2 000 if you first sold on May 1 st - and you don't reach 100 Mm³ on June 1 st , you lose - 12 000 because you did not provide Thursty Town and lose reputation						
If you had to contact neighbouring water providers, you pay: - 1 000 if you informed them as early as March - 2 000 if you informed them in April - 5 000 if you informed them on May 1 st						
B		ROUND 1				
		Start budget: 50 000				
			Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 1	March		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st		50 000 + - =			
Year 2	March		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	 + - =			
Year 3	March		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	 + - =			
Year 4	March		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	 + - =			
Year 5	March		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	 + - =			
		Final budget:				

Before starting: Worksheet

You have a worksheet to mark your decisions!

Fill in your details in section A of the worksheet

Seasonal forecasting for water management in different certainty and reliability contexts



A PRELIMINARY QUESTIONS

Professional background :
☐ Hydrology / ☐ Climate / ☐ Meteorology / ☐ Economy / ☐ Other:

Sector:
☐ Energy / ☐ Water resources / ☐ Risk prevention / ☐ Agriculture / ☐ Health /
☐ Other:

Role / Task in the company :
☐ Forecaster / ☐ Decision-maker / ☐ Trader / ☐ Researcher / ☐ Consultant /
☐ Other:

Experience :
☐ < 5 years / ☐ 6-10 years / ☐ 11-15 years / ☐ 16-25 years / ☐ > 25 years

Country :

B ROUND 1

Start budget: 50 000

		Wait & see	Do nothing	Sell surplus water
Year 1	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + -		
Year 2	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st + -		
Year 3	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st + -		
	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st + -		

REMEMBER THE RULES!

Your initial budget is: 50 000 tokens

If you cannot provide water to Thursty town for the season (60 Mm³ on June 1st), you get a fine of - 10 000

If you decided to sell surplus water:

Before starting: Worksheet

You have a worksheet to mark your decisions!

You can look at the options and costs at any time!

Experience : <input type="checkbox"/> < 5 years / <input type="checkbox"/> 6-10 years / <input type="checkbox"/> 11-15 years / <input type="checkbox"/> 16-25 years / <input type="checkbox"/> > 25 years Country :										
<div style="border: 2px solid red; padding: 10px;"><p style="text-align: center;">REMEMBER THE RULES!</p><p>Your initial budget is: 50 000 tokens</p><p>If you cannot provide water to Thursty town for the season (60 Mm³ on June 1st), you get a fine of - 10 000</p><p>If you decided to sell surplus water: - and you have more than 100 Mm³ on June 1st, you gain: + 6 000 if you first sold in March + 4 000 if you first sold in April + 2 000 if you first sold on May 1st - and you don't reach 100 Mm³ on June 1st, you lose - 12 000 because you did not provide Thursty Town and lose reputation</p><p>If you had to contact neighbouring water providers, you pay: - 1 000 if you informed them as early as March - 2 000 if you informed them in April - 5 000 if you informed them on May 1st</p></div>					Year 2		March	<input type="checkbox"/>	<input type="checkbox"/>	
					Year 2		April	<input type="checkbox"/>	<input type="checkbox"/>	
					Year 2		May	<input type="checkbox"/>	<input type="checkbox"/>	
					Year 2		June 1 st+.....		
					Year 3		March	<input type="checkbox"/>	<input type="checkbox"/>	
Year 3		April	<input type="checkbox"/>	<input type="checkbox"/>						
Year 3		May	<input type="checkbox"/>	<input type="checkbox"/>						
Year 3		June 1 st+.....							
Year 4		March	<input type="checkbox"/>	<input type="checkbox"/>						
Year 4		April	<input type="checkbox"/>	<input type="checkbox"/>						
Year 4		May	<input type="checkbox"/>	<input type="checkbox"/>						
Year 4		June 1 st+.....							
Year 5		March	<input type="checkbox"/>	<input type="checkbox"/>						
Year 5		April	<input type="checkbox"/>	<input type="checkbox"/>						
Year 5		May	<input type="checkbox"/>	<input type="checkbox"/>						
Year 5		June 1 st+.....							

Final budget: ...

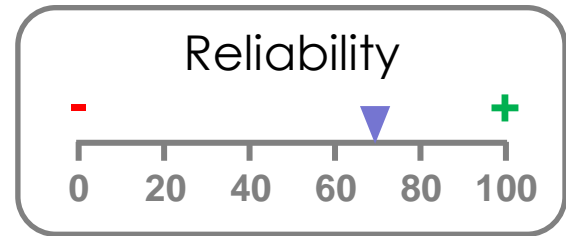
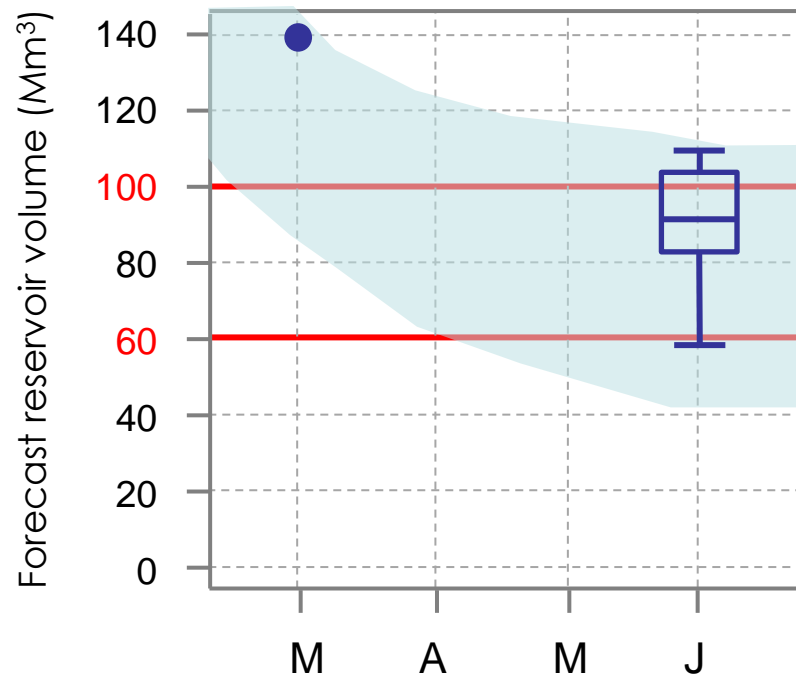
Game Start

To represent the group...
We need a VOLUNTEER !
Who in the room?



It's March 1st from Year 1

This is the probabilistic forecast issued on March 1st for June 1st



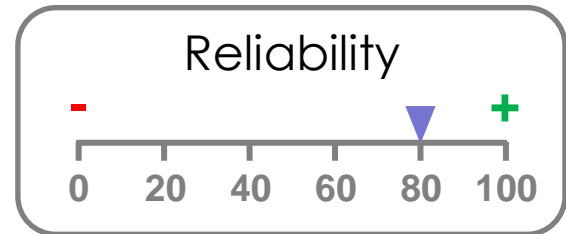
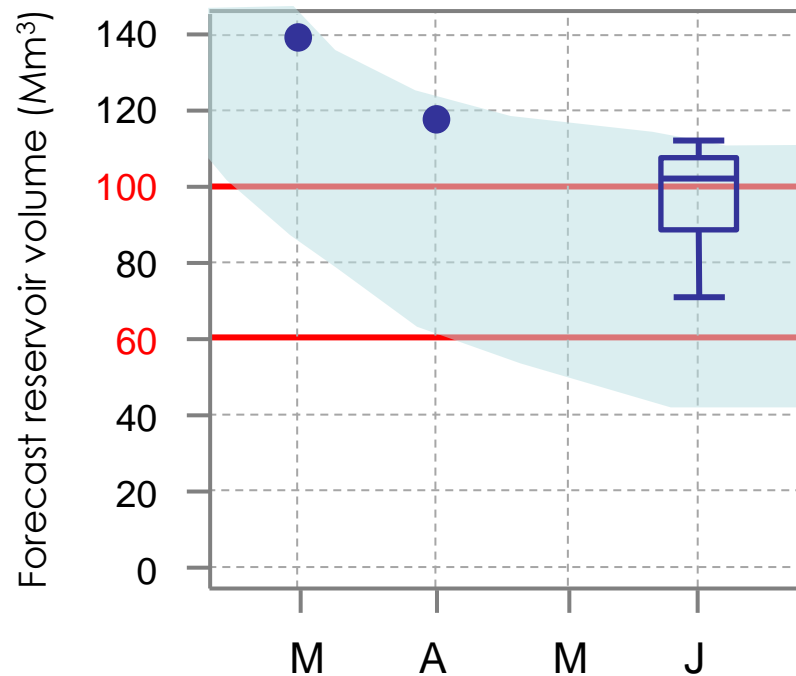
What do you decide
for June 1st ?
Fill in the sheet!



		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 1	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's April 1st from Year 1

This is the probabilistic forecast issued on April 1st for June 1st



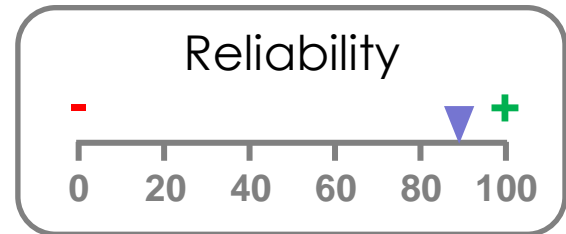
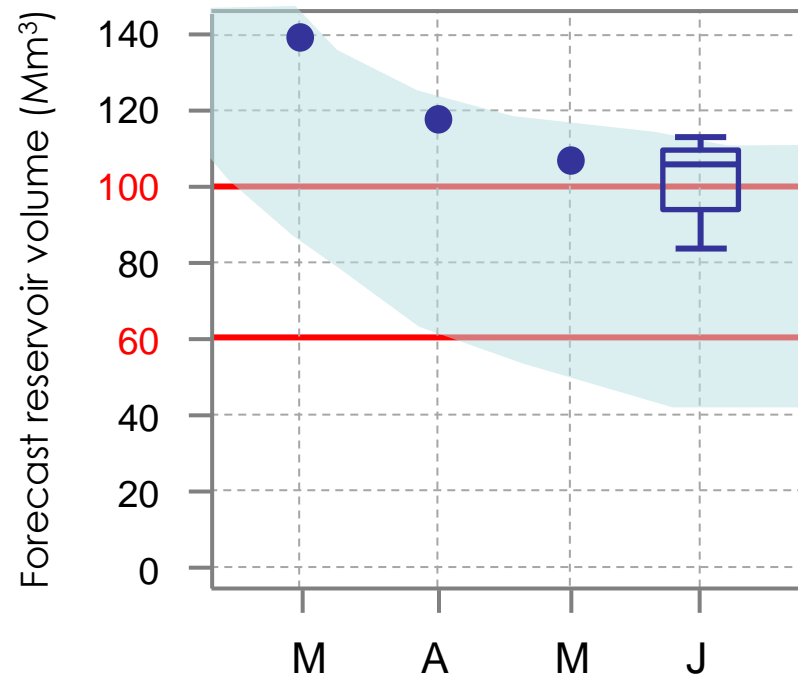
What do you decide
for June 1st ?
Fill in the sheet!



		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 1	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's May 1st from Year 1

This is the probabilistic forecast issued on May 1st for June 1st



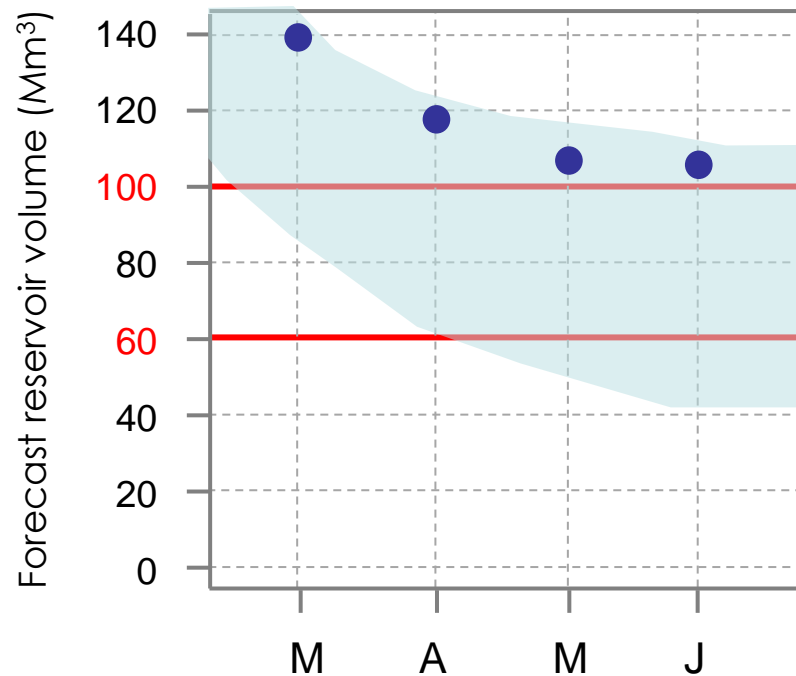
What do you decide
for June 1st ?
Fill in the sheet!



		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 1	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's June 1st !!

This is the observed reservoir volume on June 1st



The reservoir volume
on June 1st
is 105 Mm³ !

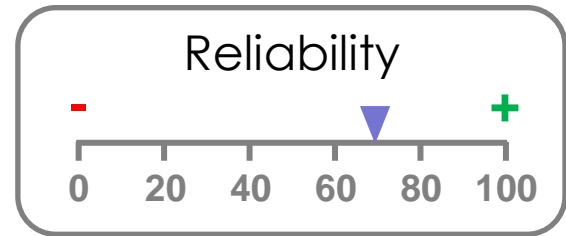
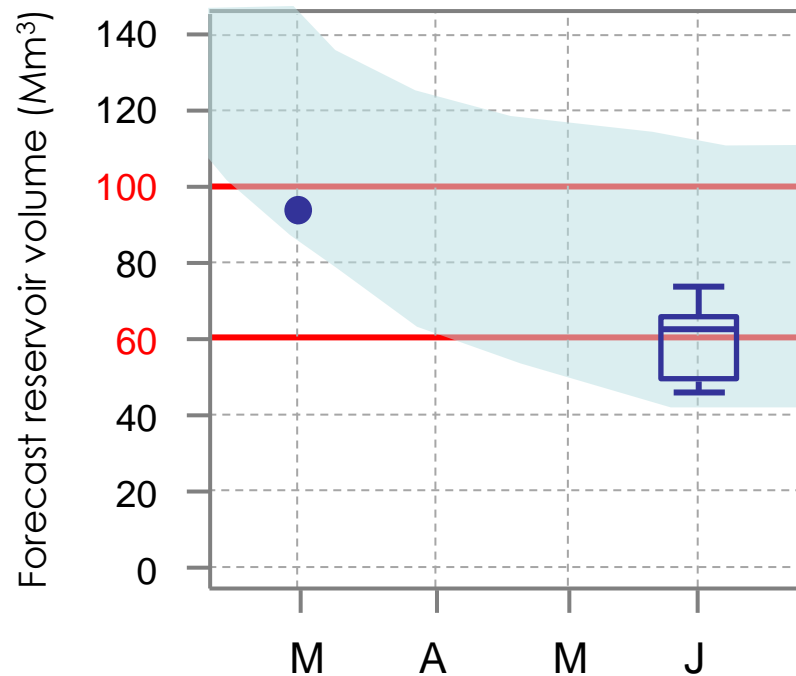
Update your budget
In the sheet!

50 000 - loss = New budget

		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 1	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's March 1st from Year 2

This is the probabilistic forecast issued on March 1st for June 1st



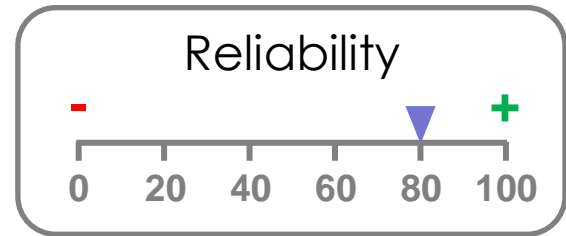
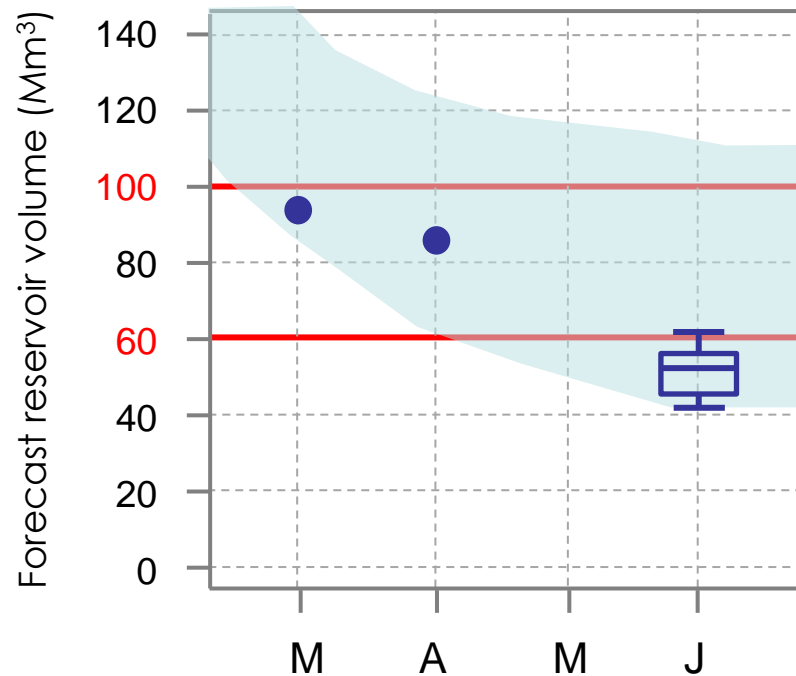
What do you decide
for June 1st ?
Fill in the sheet!



		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 2	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's April 1st from Year 2

This is the probabilistic forecast issued on April 1st for June 1st



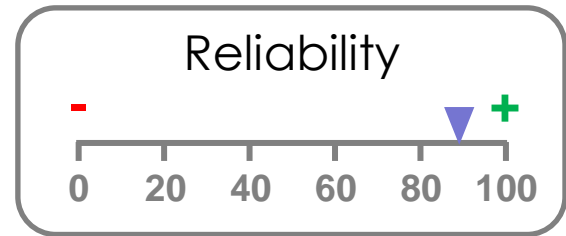
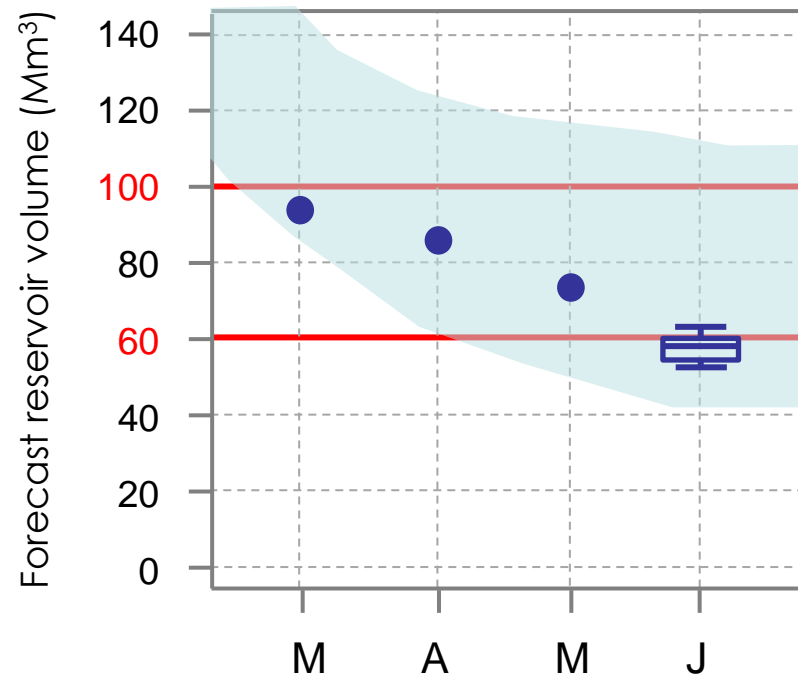
What do you decide
for June 1st ?
Fill in the sheet!



		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 2	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's May 1st from Year 2

This is the probabilistic forecast issued on May 1st for June 1st



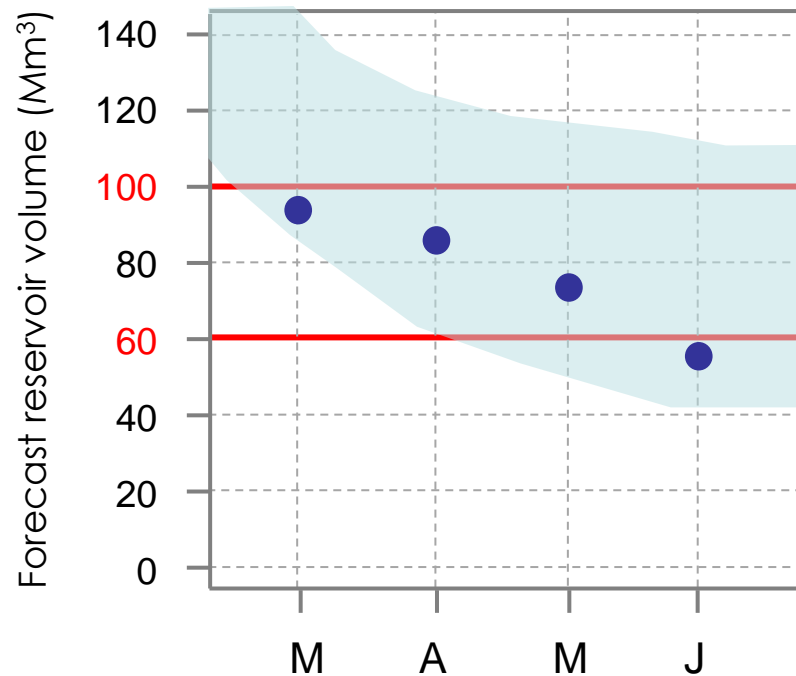
What do you decide
for June 1st ?
Fill in the sheet!



		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 2	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's June 1st !!

This is the observed reservoir volume on June 1st



The reservoir volume
on June 1st
is 55 Mm³ !

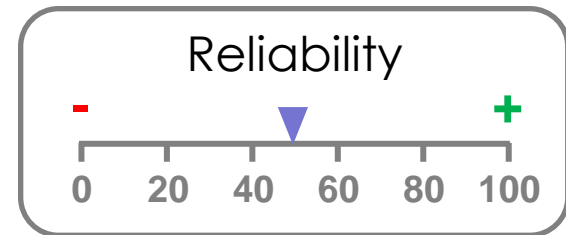
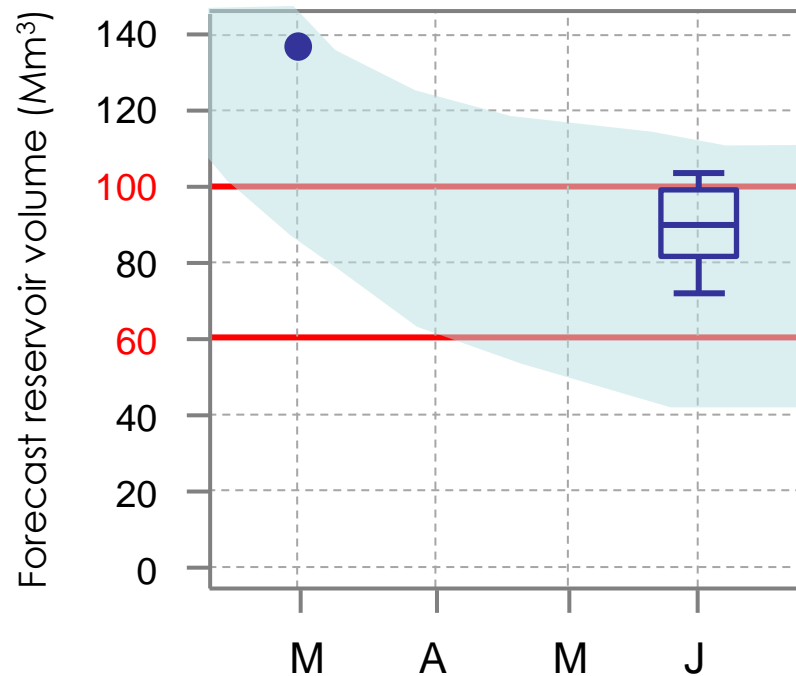
Update your budget
In the sheet! →

Previous budget - loss = New budget

		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 2	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's March 1st from Year 3

This is the probabilistic forecast issued on March 1st for June 1st



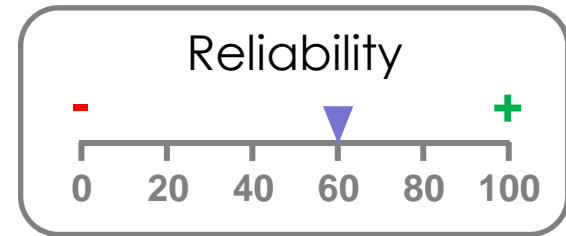
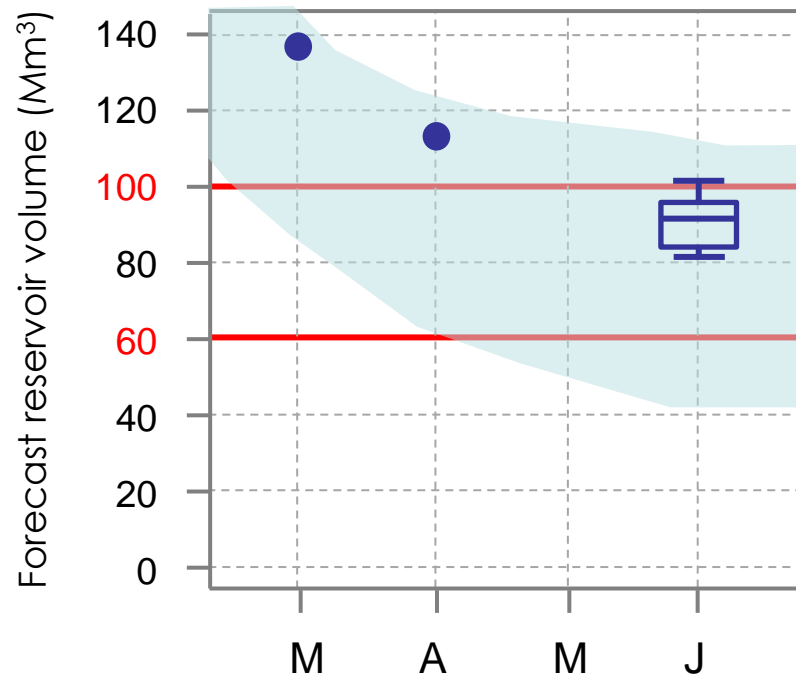
What do you decide
for June 1st ?
Fill in the sheet!



		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 3	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's April 1st from Year 3

This is the probabilistic forecast issued on April 1st for June 1st



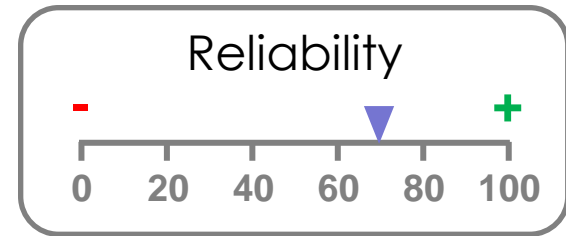
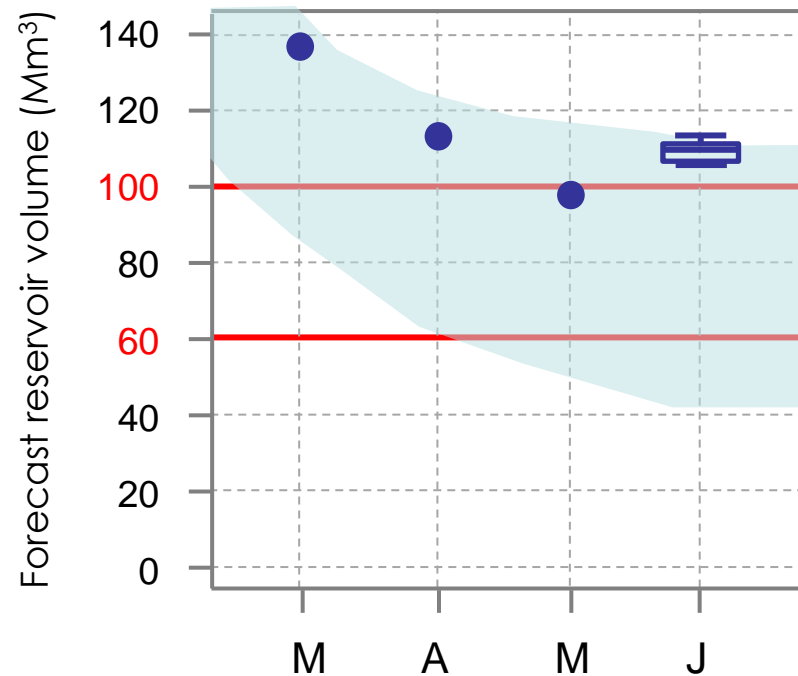
What do you decide
for June 1st ?
Fill in the sheet!



		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 3	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's May 1st from Year 3

This is the probabilistic forecast issued on May 1st for June 1st



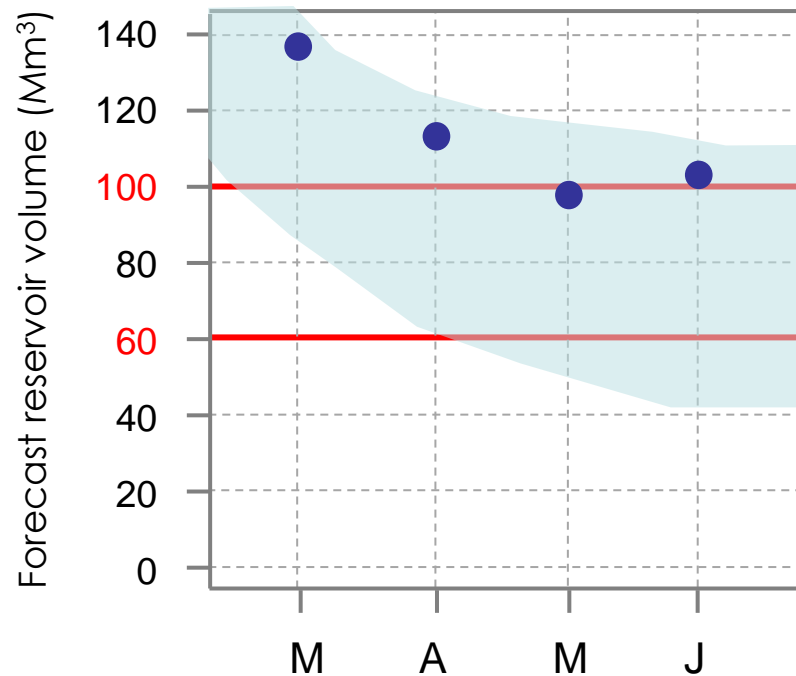
What do you decide
for June 1st ?
Fill in the sheet!



		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 3	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's June 1st !!

This is the observed reservoir volume on June 1st



**The reservoir volume
on June 1st
is 103 Mm³ !**

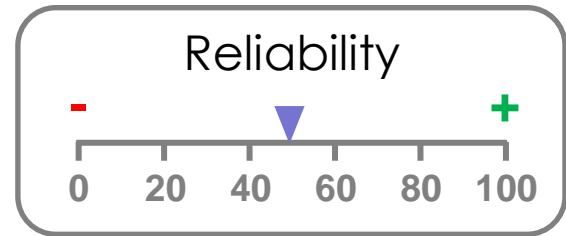
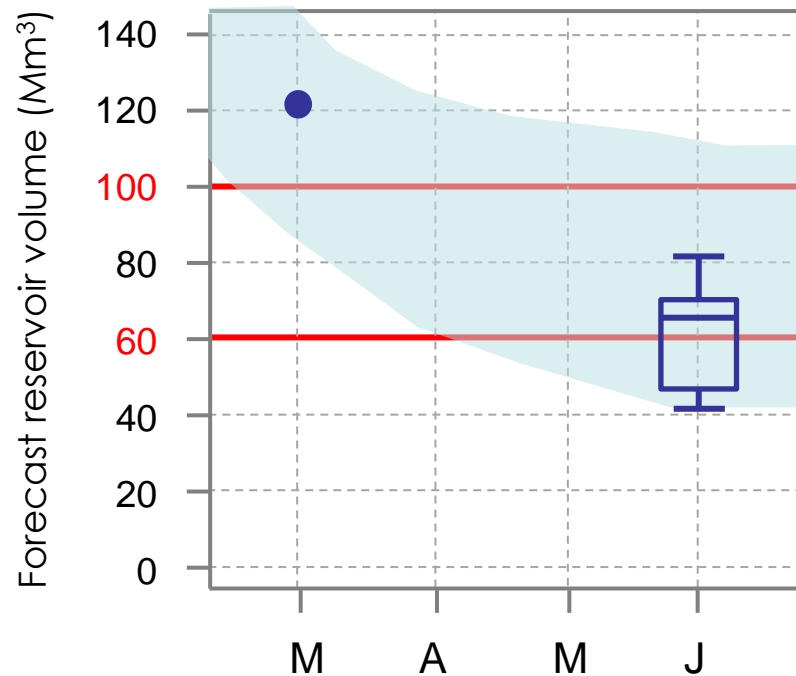
**Update your budget
In the sheet!**

Previous budget - loss = New budget

		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 3	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's March 1st from Year 4

This is the probabilistic forecast issued on March 1st for June 1st



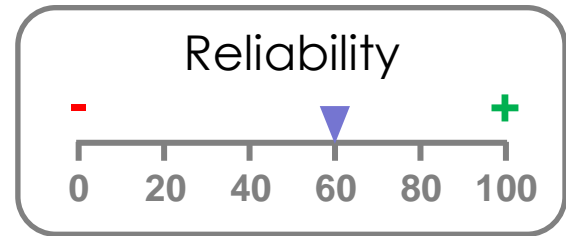
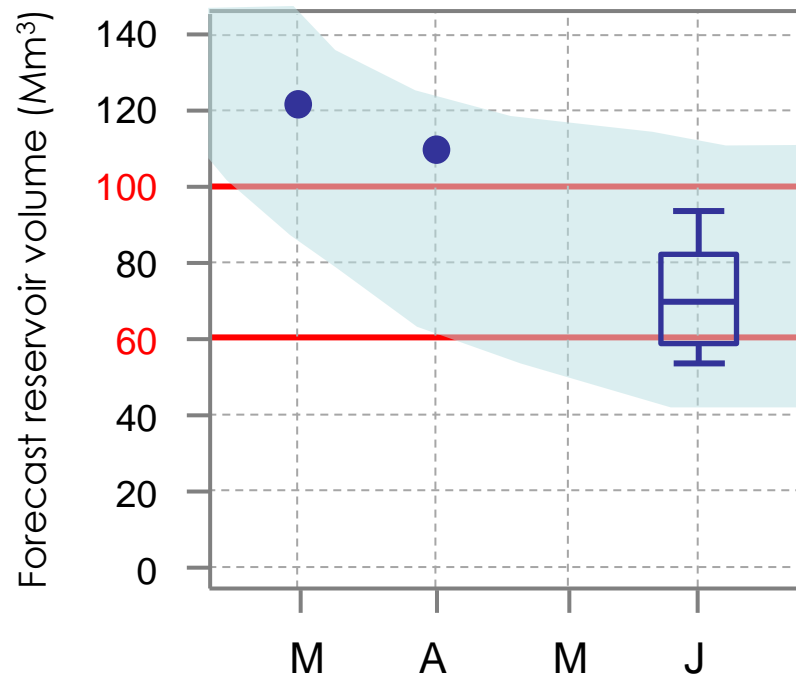
What do you decide
for June 1st ?
Fill in the sheet!



		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 4	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's April 1st from Year 4

This is the probabilistic forecast issued on April 1st for June 1st



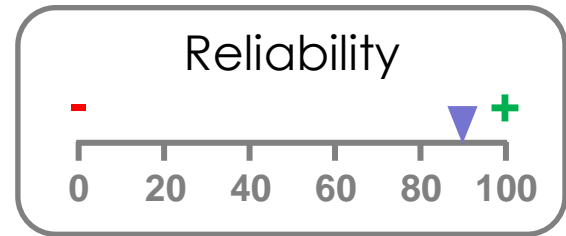
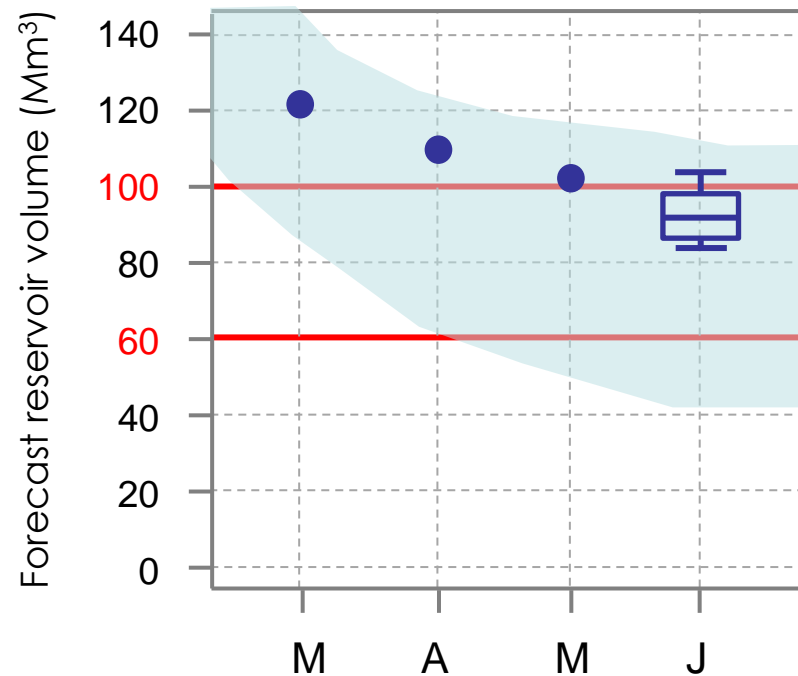
What do you decide
for June 1st ?
Fill in the sheet!



		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 4	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's May 1st from Year 4

This is the probabilistic forecast issued on May 1st for June 1st



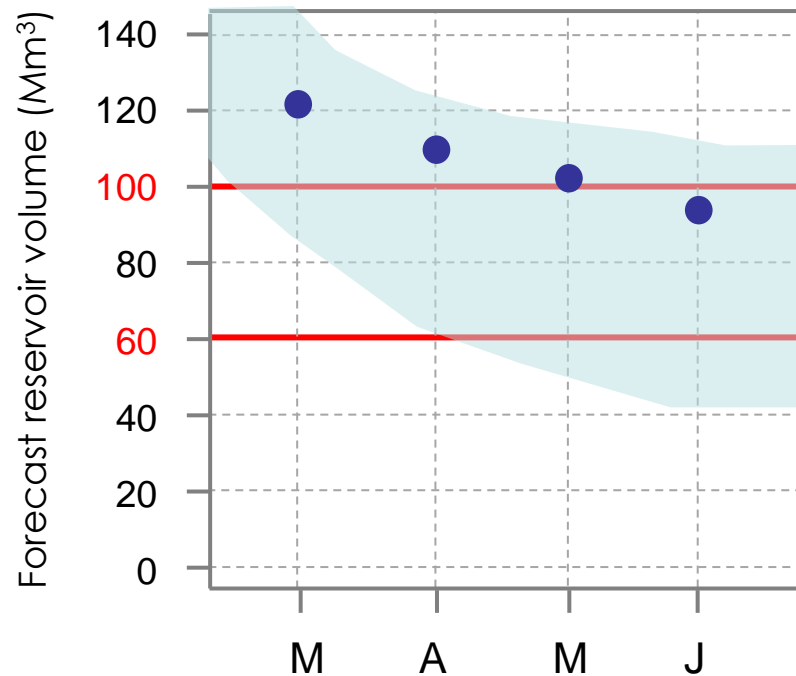
What do you decide
for June 1st ?
Fill in the sheet!



		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 4	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's June 1st !!

This is the observed reservoir volume on June 1st



The reservoir volume
on June 1st
is 92 Mm³ !

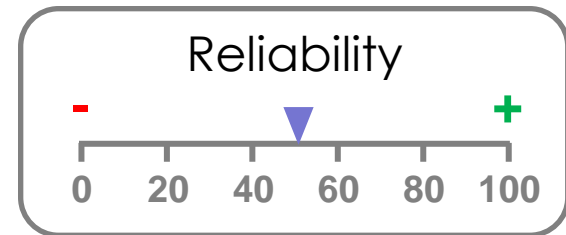
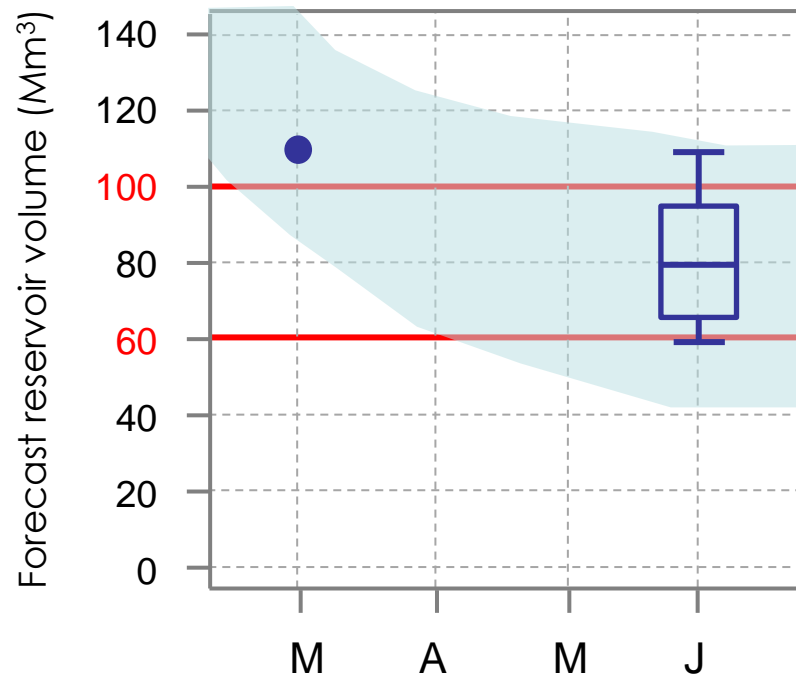
Update your budget
In the sheet!

Previous budget - loss = New budget

		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 4	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's March 1st from Year 5

This is the probabilistic forecast issued on March 1st for June 1st



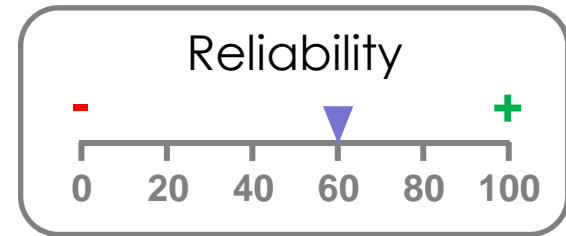
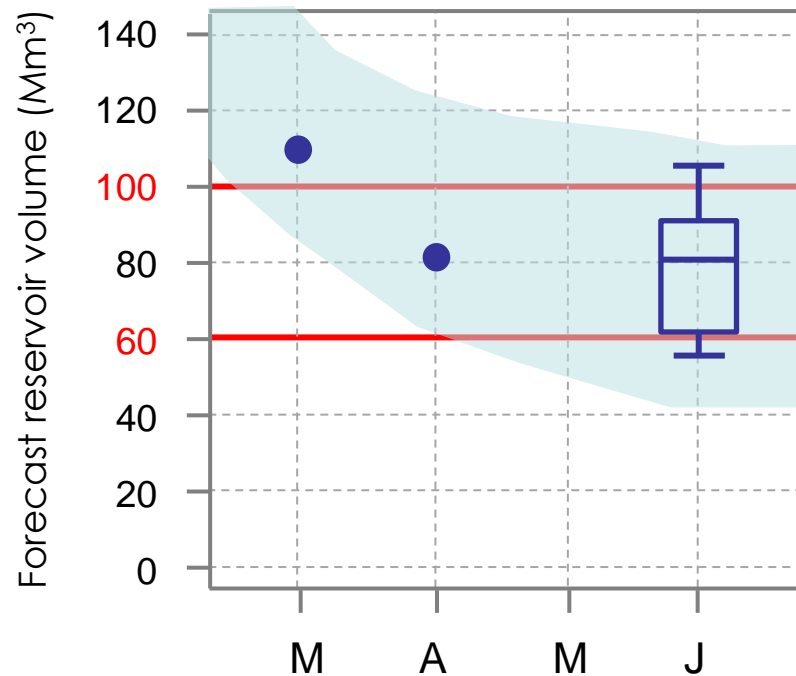
What do you decide
for June 1st ?
Fill in the sheet!



		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 5	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's April 1st from Year 5

This is the probabilistic forecast issued on April 1st for June 1st



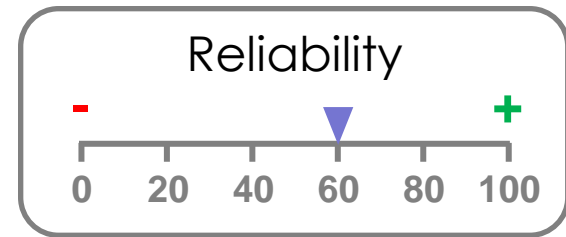
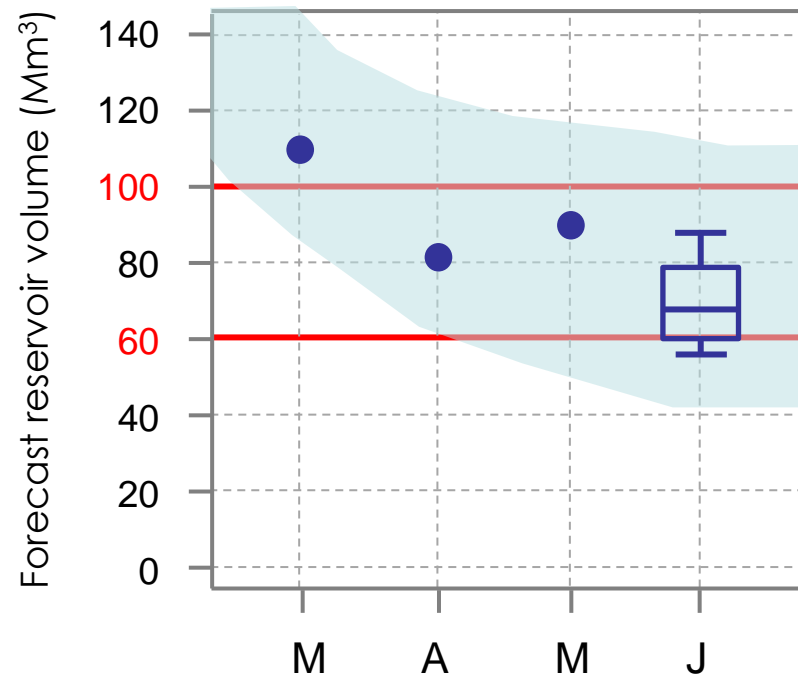
What do you decide
for June 1st ?
Fill in the sheet!



		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 5	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's May 1st from Year 5

This is the probabilistic forecast issued on May 1st for June 1st



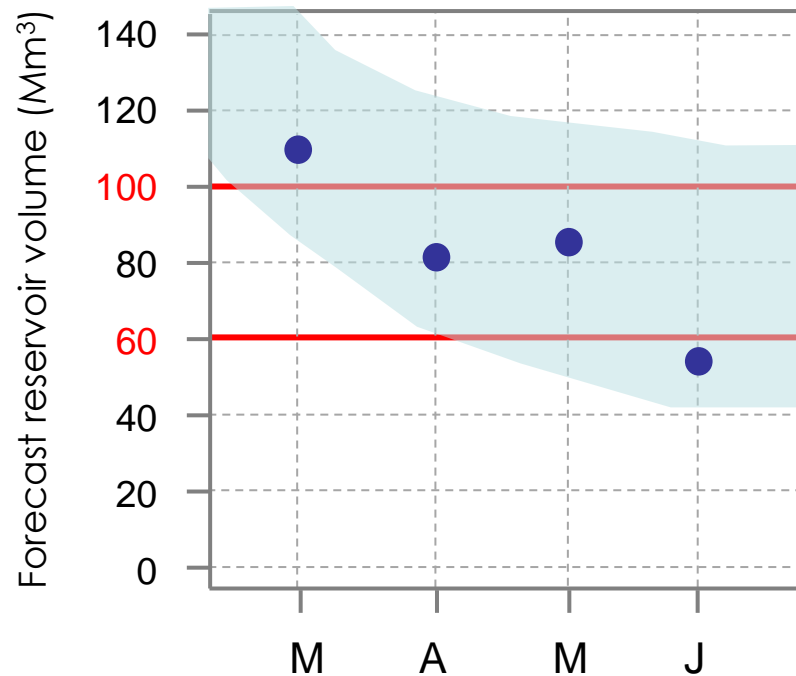
What do you decide
for June 1st ?
Fill in the sheet!



		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 5	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

It's June 1st !!

This is the observed reservoir volume on June 1st



The reservoir volume
on June 1st
is 51 Mm³ !

Update your budget
In the sheet! →

Previous budget - loss = New budget

		Wait & see	Do nothing	Sell surplus water	Contact neighbours
Year 5	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	June 1 st	50 000 + - =			

END OF ROUND 1

Did you ensure the 60 Mm³ for the summer season ?

What is your budget at the end of this round ?



START OF ROUND 2

Will you pay for improved forecasts?

You will manage the reservoir for **5 more years**. The bank gives you **10 000 tokens** which you add to your previous balance.

Seasonal forecasting for water management in different certainty and reliability contexts

C

ROUND 2

Default 0
Silver -1000
Gold -2000

Previous budget + 10 000 :

			Wait & see	Do nothing	Sell surplus	Contact neighbours	
Y 1	Membership:	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> worthy <input type="checkbox"/> acceptable <input type="checkbox"/> not worthy
	<input type="checkbox"/> Default	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> Silver	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> Gold	June 1 + - =				
Y 2	Membership:	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> worthy <input type="checkbox"/> acceptable <input type="checkbox"/> not worthy
	<input type="checkbox"/> Default	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> Silver	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

D

QUESTIONS & DISCUSSION

How useful did you find the following information in y

	Not useful	Slightly useful	Useful
Reliability information			
Forecast range			

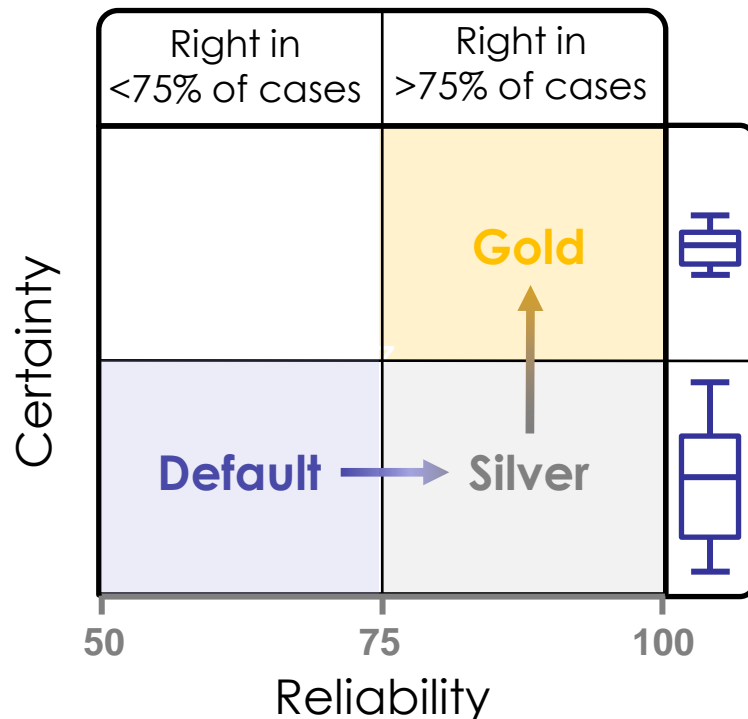
What minimum level of reliability would allow you to

☐ 0 (always wrong) / ☐ 20 / ☐ 40 / ☐ 60 /

START OF ROUND 2

Will you pay for improved forecasts?

The forecasters of your region have now made available **two improved forecast systems**. You have the option to **subscribe** to one of the forecast systems for a 1-year period, which you will be able to renew or change every year.



Yearly cost

Default

0 token

Silver

1 000 tokens

Gold

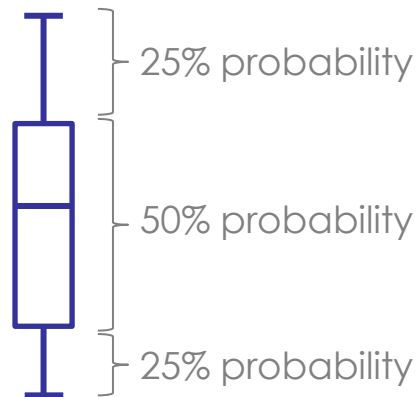
2 000 tokens

START OF ROUND 2

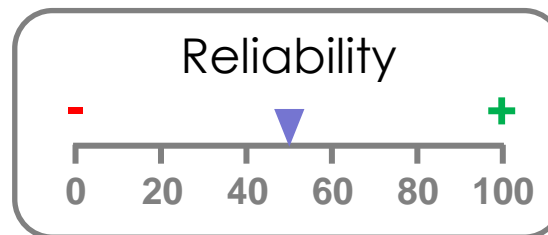
Will you pay for improved forecasts?

The forecasters of your region have now made available **two improved forecast systems**. You have the option to **subscribe** to one of the forecast systems for a 1-year period, which you will be able to renew or change every year.

Uncertainty reminder!



Reliability reminder!



Historically, the observation falls 50 % of the times within the forecast range

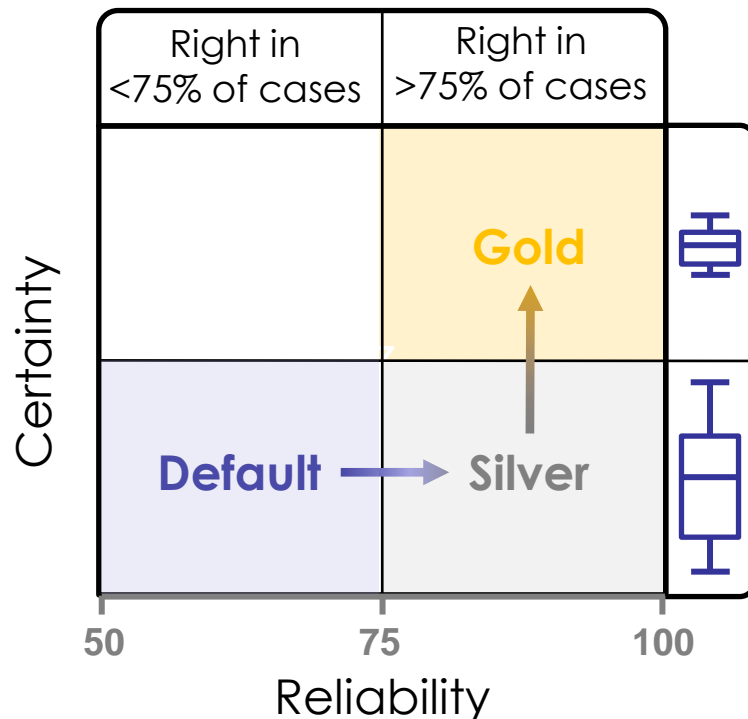
0 % means that the a posteriori observation is **never** in the forecast range

100 % means that the a posteriori observation is **always** in the forecast range

START OF ROUND 2

Will you pay for improved forecasts?

The forecasters of your region have now made available **two improved forecast systems**. You have the option to **subscribe** to one of the forecast systems for a 1-year period, which you will be able to renew or change every year.



Yearly cost

Default

0 token

Silver

1 000 tokens

Gold

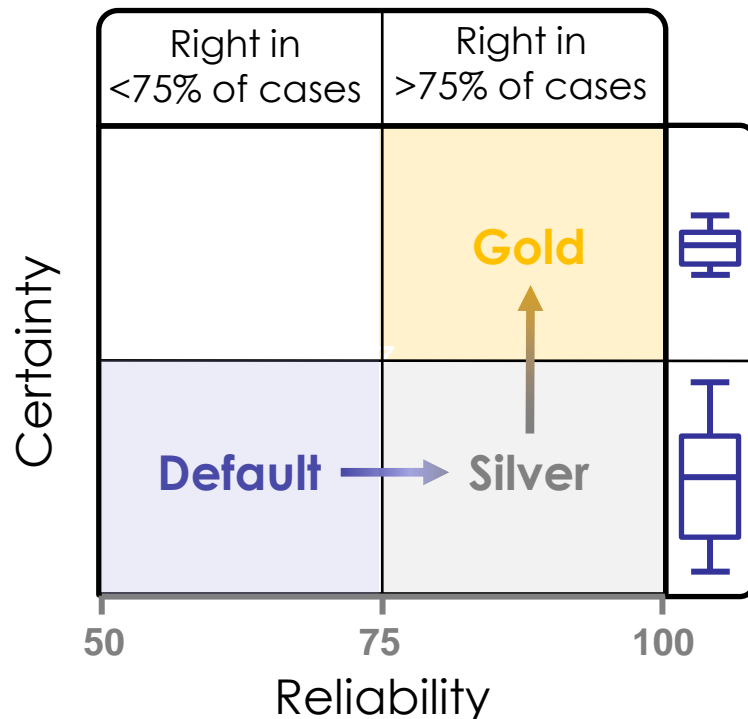
2 000 tokens

START OF ROUND 2

Will you pay for improved forecasts?

Each year you will be able to change/cancel your subscription

Each subscription will play simultaneously but on different years



Yearly cost

Default

0 token

Silver

1 000 tokens

Gold

2 000 tokens

Let's start!

Choose your subscription
for Year 1

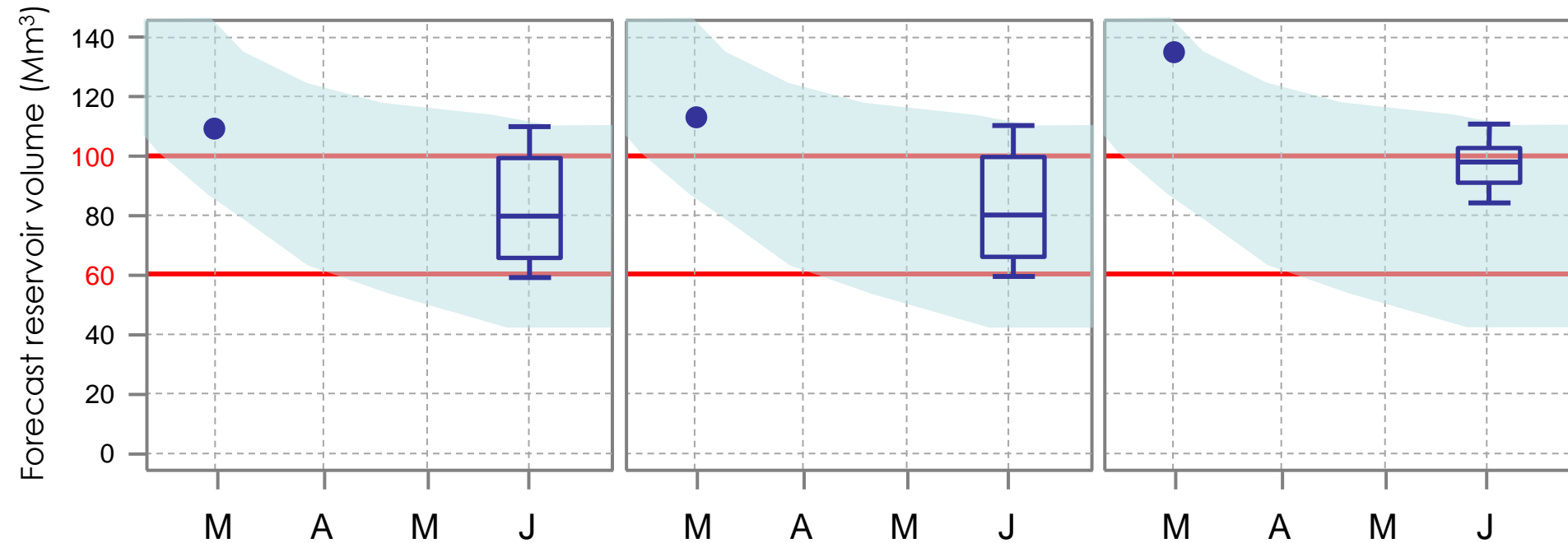
It's March 1st from Year 1

This is the probabilistic forecast issued on March 1st for June 1st

Default

Silver

Gold



What do you decide for June 1st ?

Fill in the sheet!

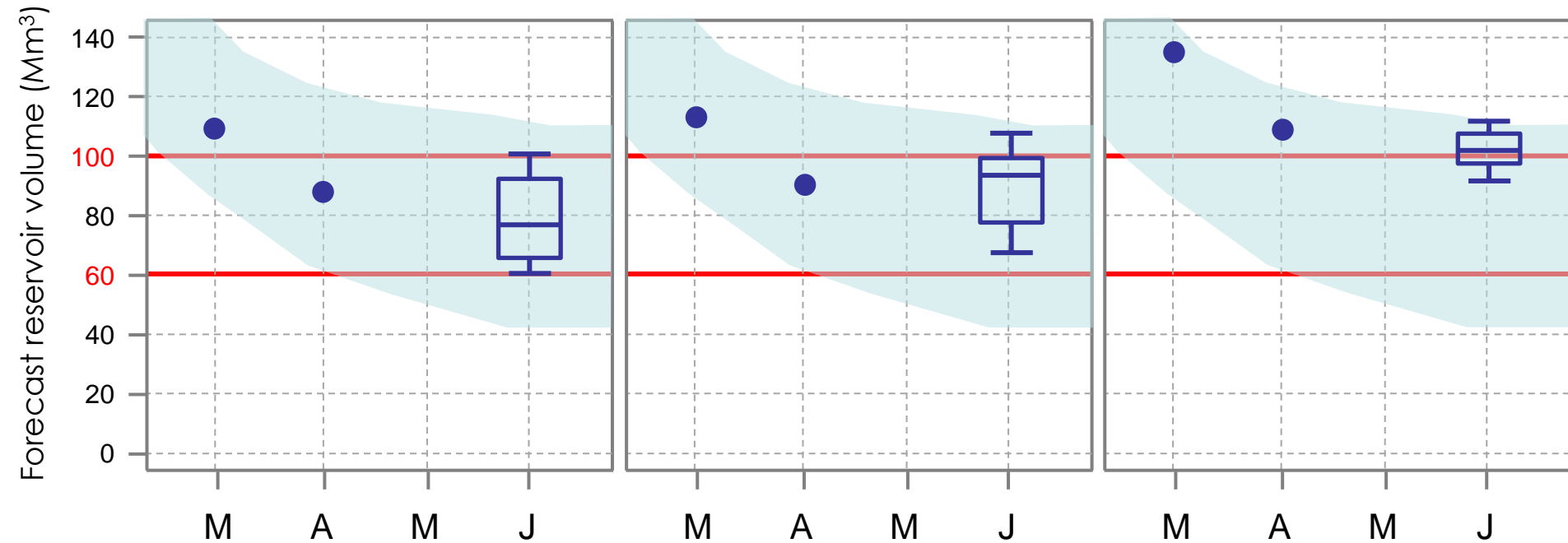
It's April 1st from Year 1

This is the probabilistic forecast issued on April 1st for June 1st

Default

Silver

Gold



What do you decide for June 1st ?

Fill in the sheet!

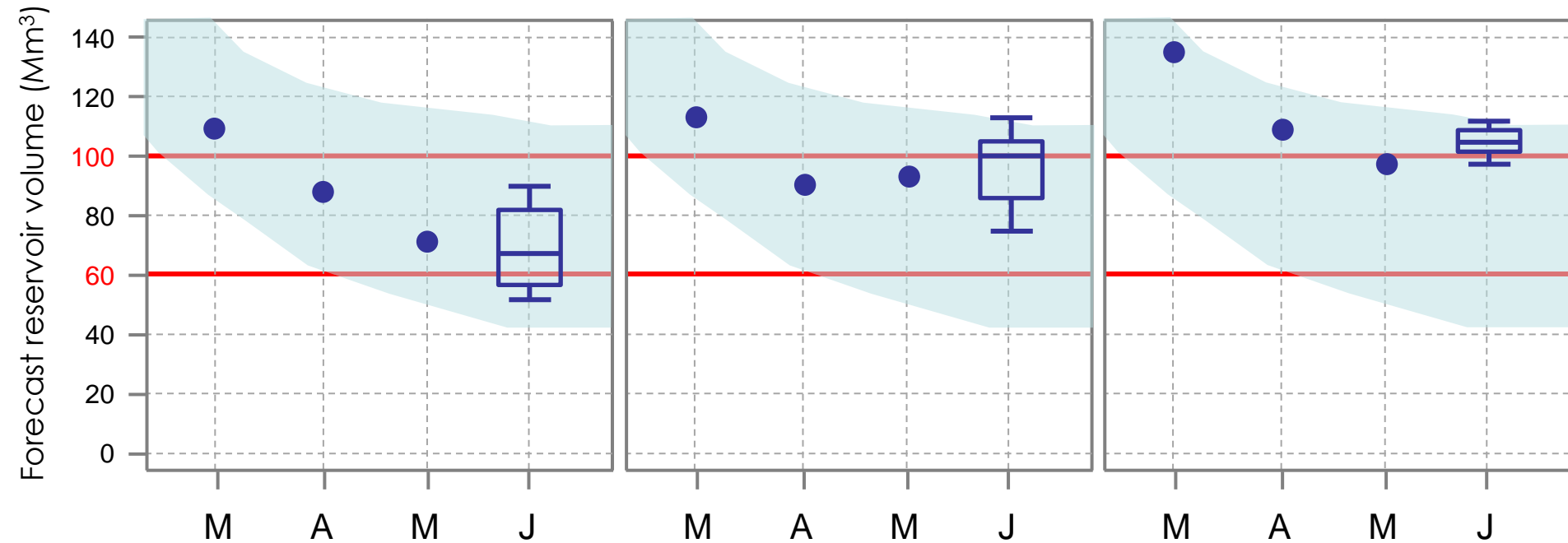
It's May 1st from Year 1

This is the probabilistic forecast issued on May 1st for June 1st

Default

Silver

Gold



What do you decide for June 1st ?

Fill in the sheet!

It's June 1st !!

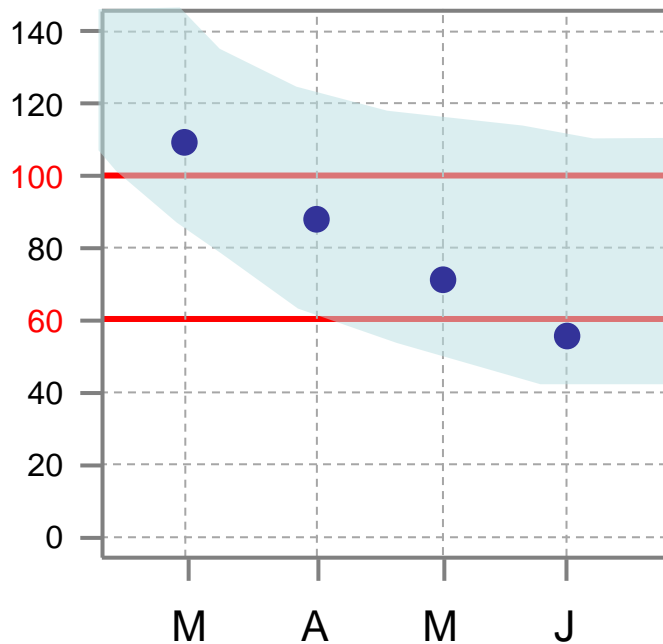
This is the observed reservoir volume on June 1st

Default

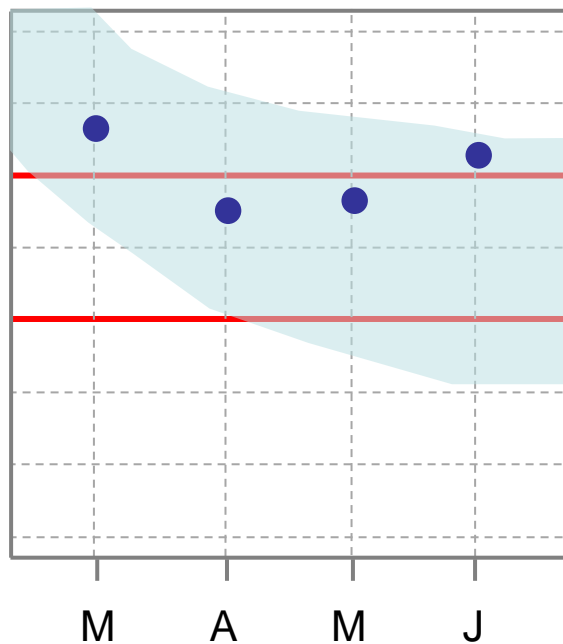
Silver

Gold

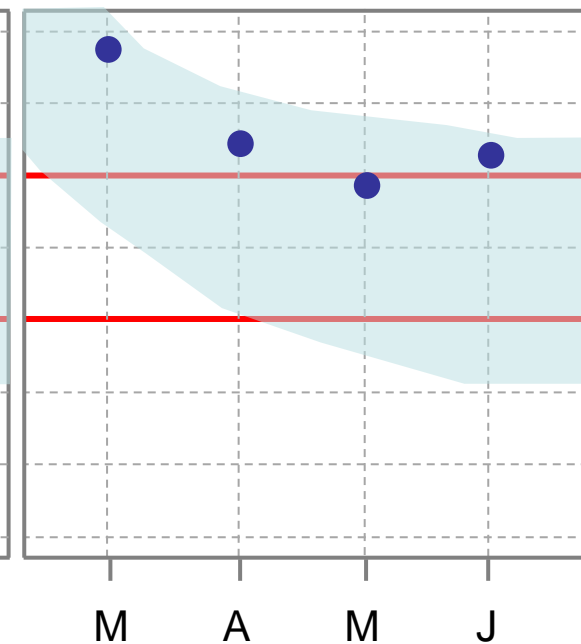
Forecast reservoir volume (Mm³)



55 Mm³



105 Mm³



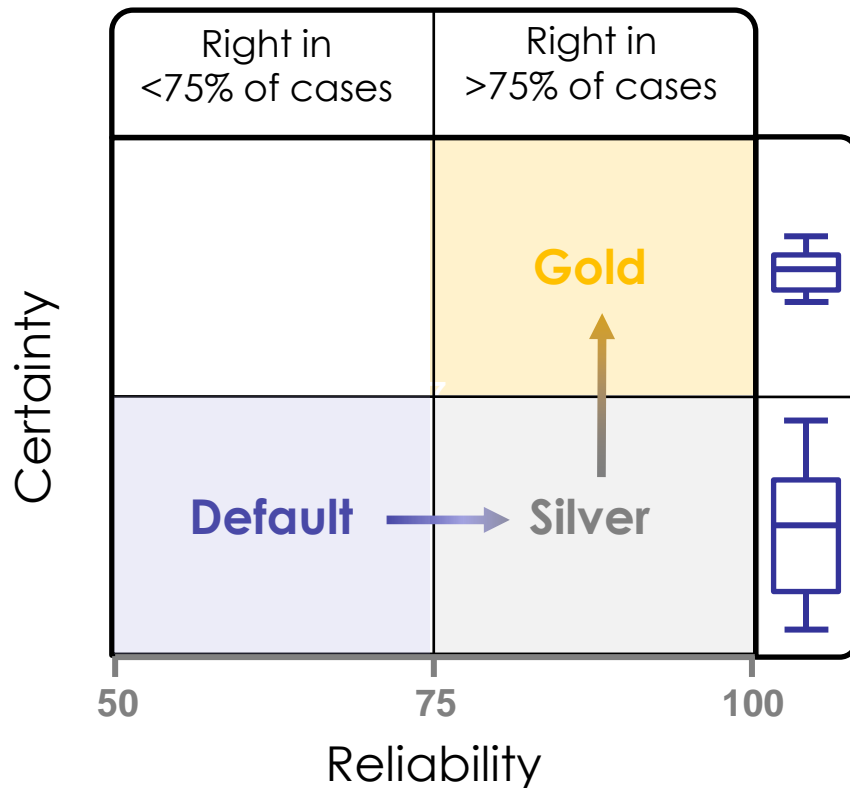
105 Mm³

Update your budget in the sheet!

Budget- ~~loss~~ = New budget

ROUND 2 – YEAR 2

**Choose your subscription
for Year 2 !**



Yearly cost

Default

0 token

Silver

1 000 tokens

Gold

2 000 tokens

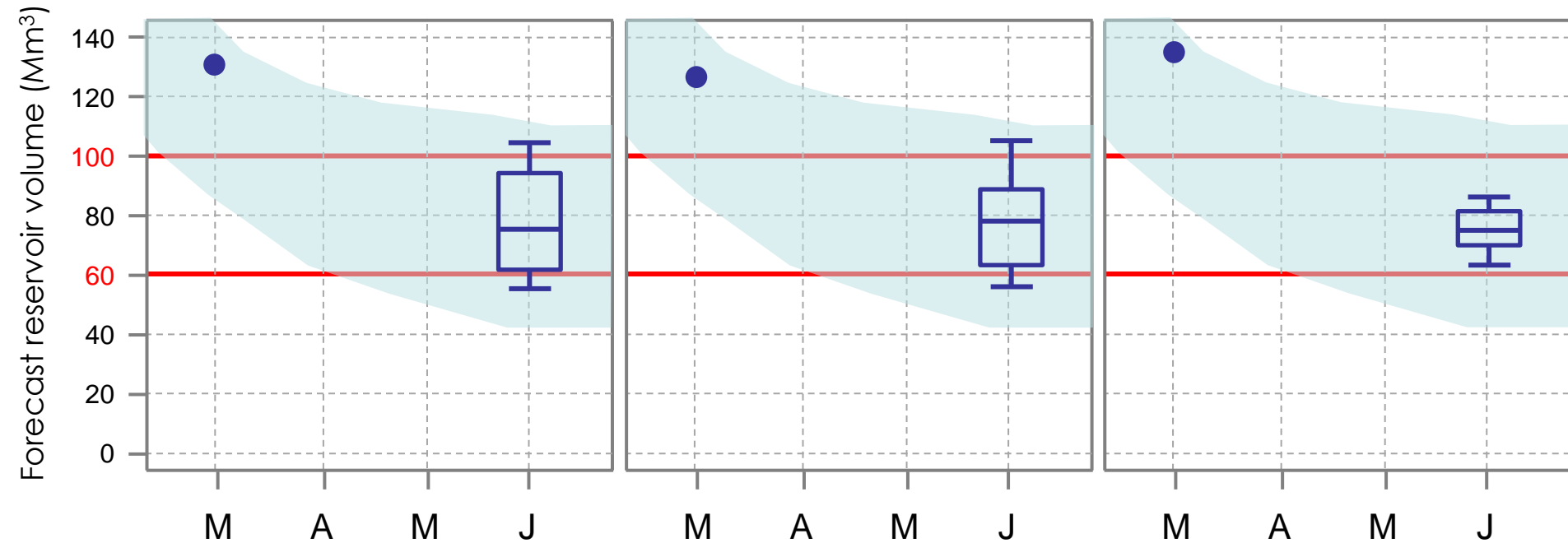
It's March 1st from Year 2

This is the probabilistic forecast issued on March 1st for June 1st

Default

Silver

Gold



What do you decide for June 1st ?

Fill in the sheet!

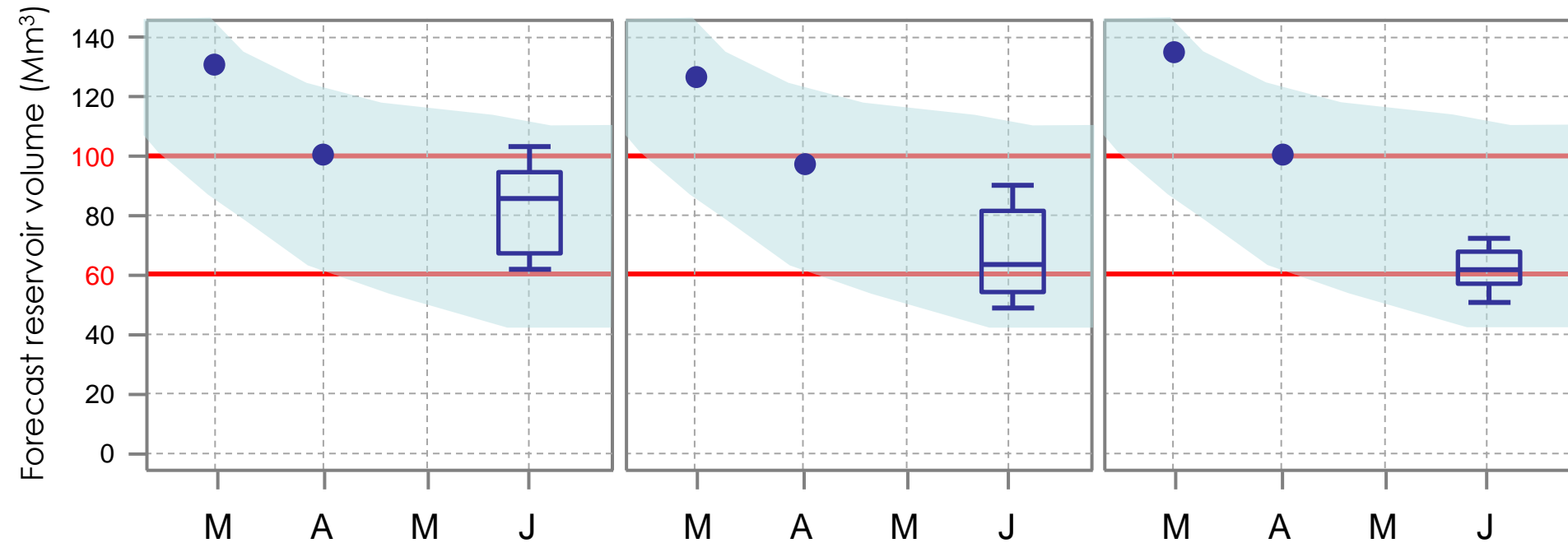
It's April 1st from Year 2

This is the probabilistic forecast issued on April 1st for June 1st

Default

Silver

Gold



What do you decide for June 1st ?

Fill in the sheet!

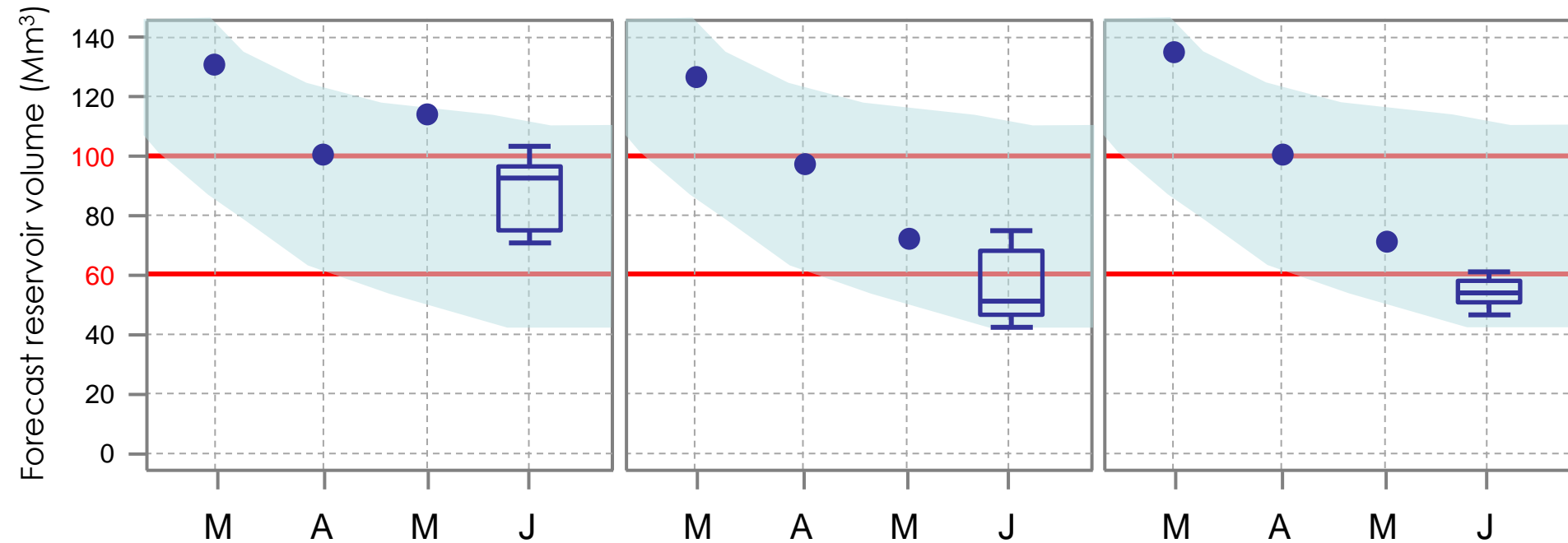
It's May 1st from Year 2

This is the probabilistic forecast issued on May 1st for June 1st

Default

Silver

Gold



What do you decide for June 1st ?

Fill in the sheet!

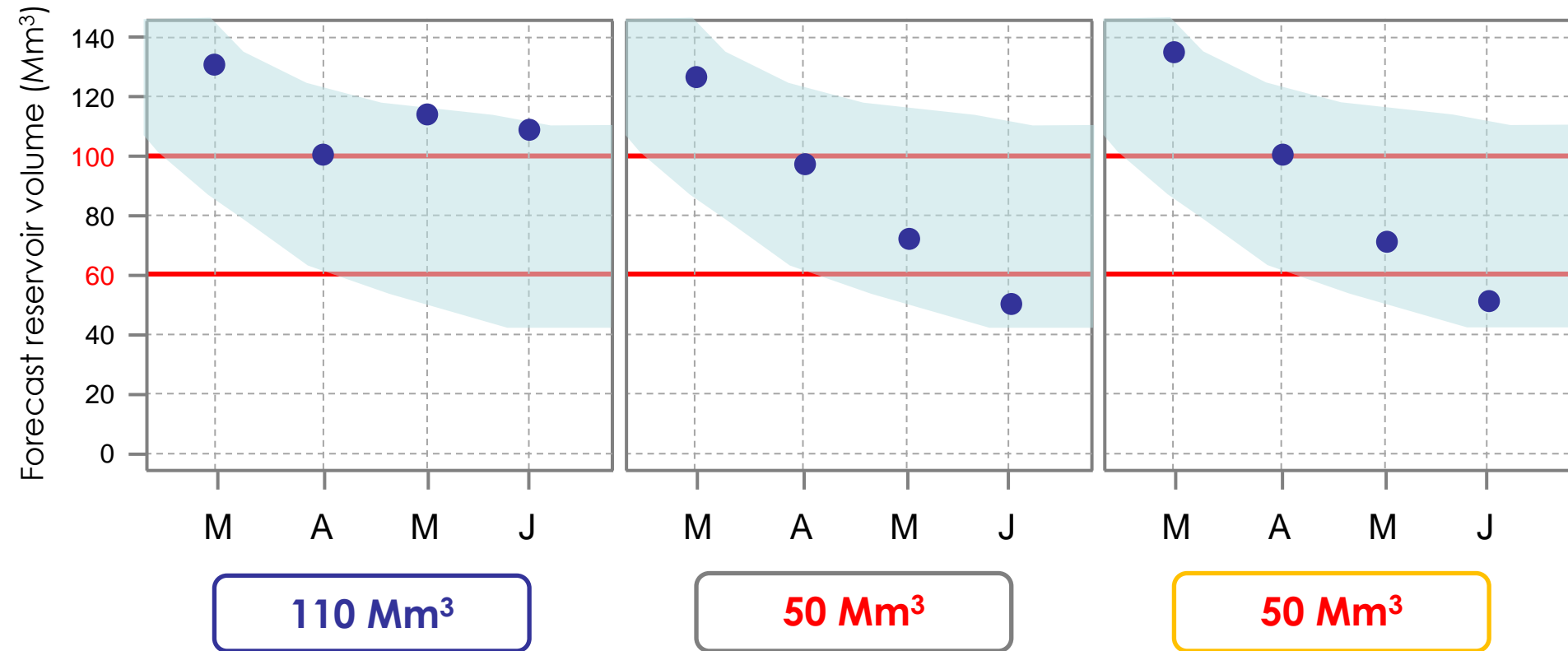
It's June 1st !!

This is the observed reservoir volume on June 1st

Default

Silver

Gold

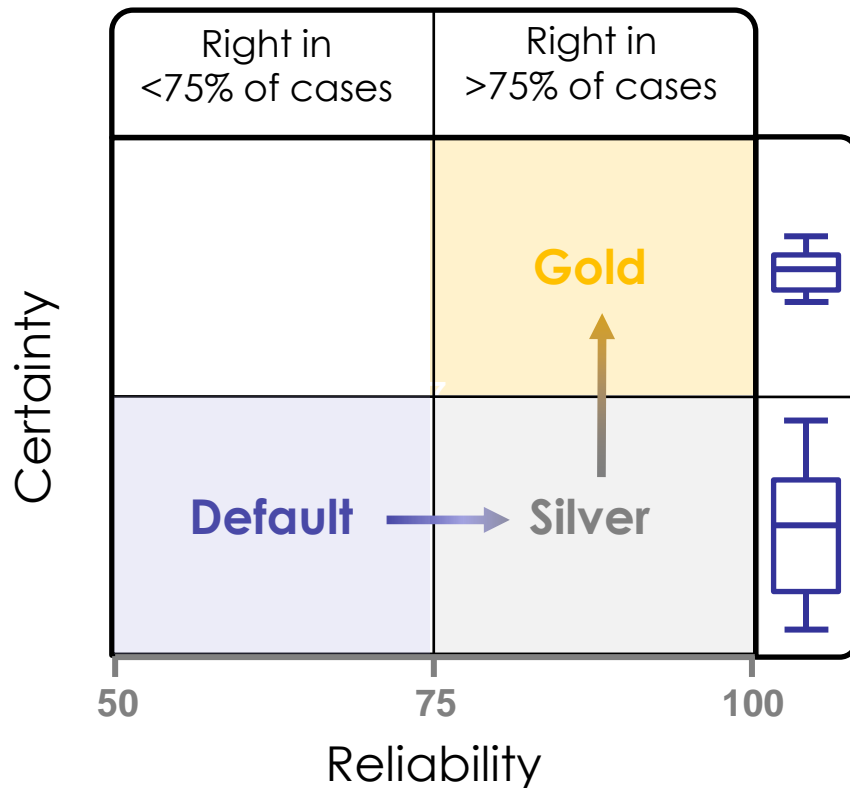


Update your budget in the sheet!

Budget- ~~loss~~ = New budget

ROUND 2 – YEAR 3

**Choose your subscription
for Year 3 !**



Yearly cost

Default

0 token

Silver

1 000 tokens

Gold

2 000 tokens

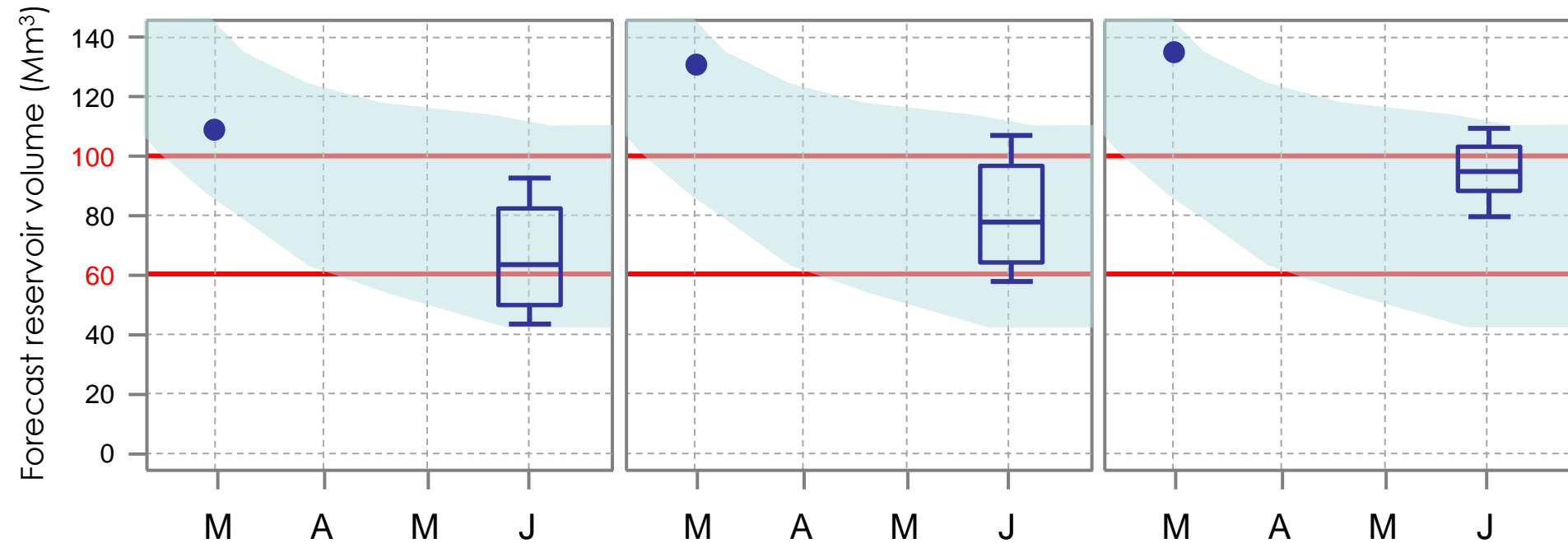
It's March 1st from Year 3

This is the probabilistic forecast issued on March 1st for June 1st

Default

Silver

Gold



What do you decide for June 1st ?

Fill in the sheet!

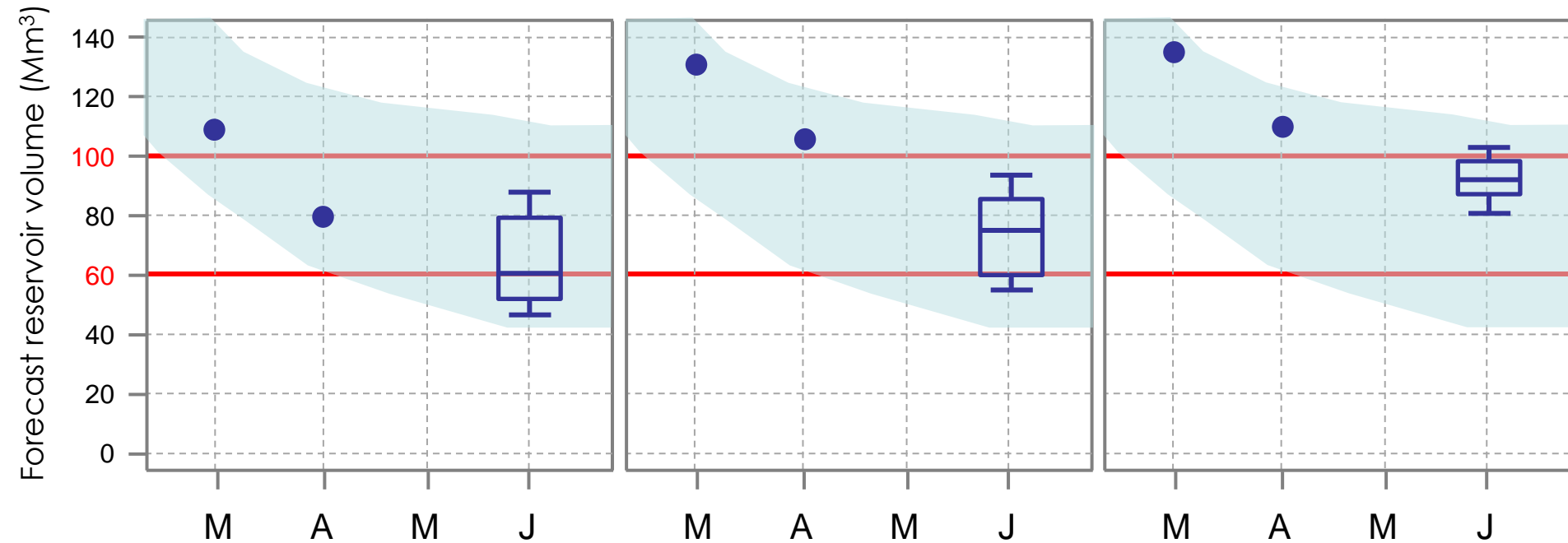
It's April 1st from Year 3

This is the probabilistic forecast issued on April 1st for June 1st

Default

Silver

Gold



What do you decide for June 1st ?

Fill in the sheet!

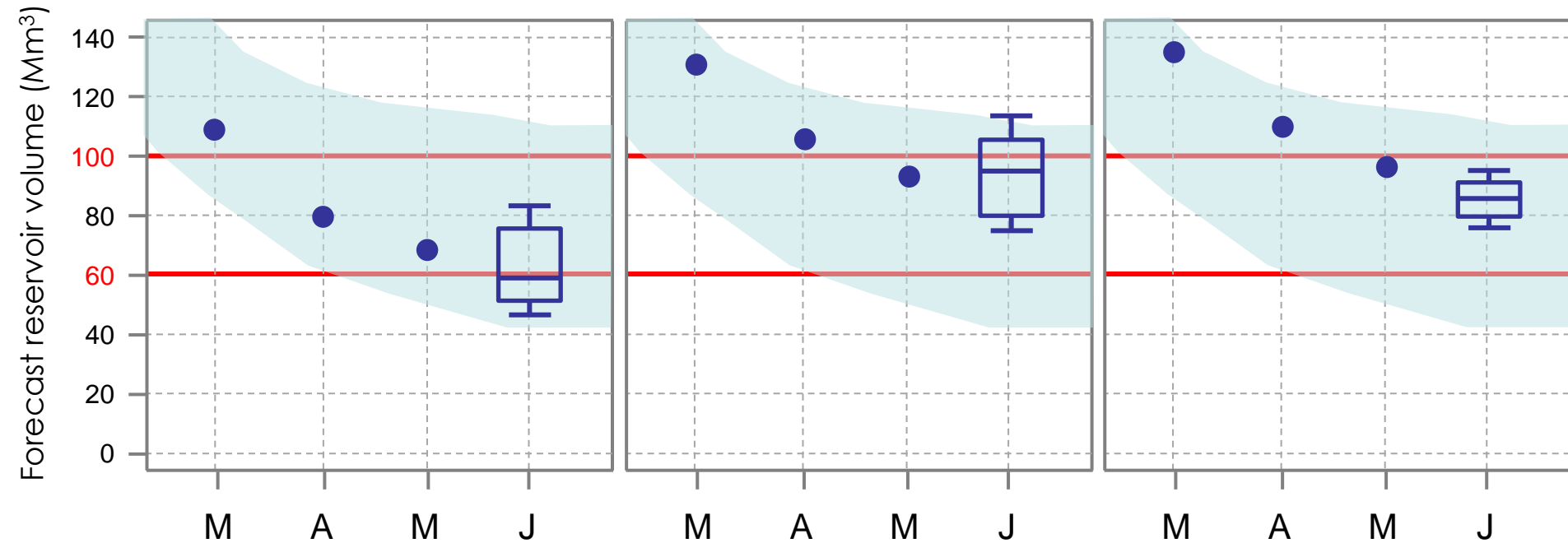
It's May 1st from Year 3

This is the probabilistic forecast issued on May 1st for June 1st

Default

Silver

Gold



What do you decide for June 1st ?

Fill in the sheet!

It's June 1st !!

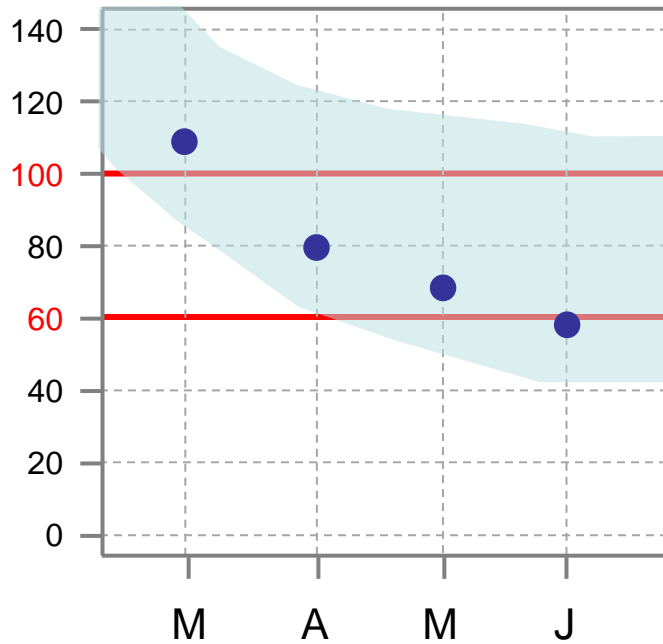
This is the observed reservoir volume on June 1st

Default

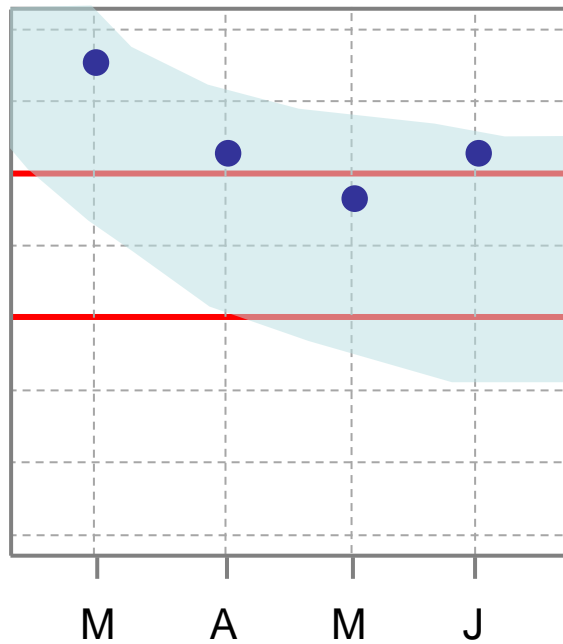
Silver

Gold

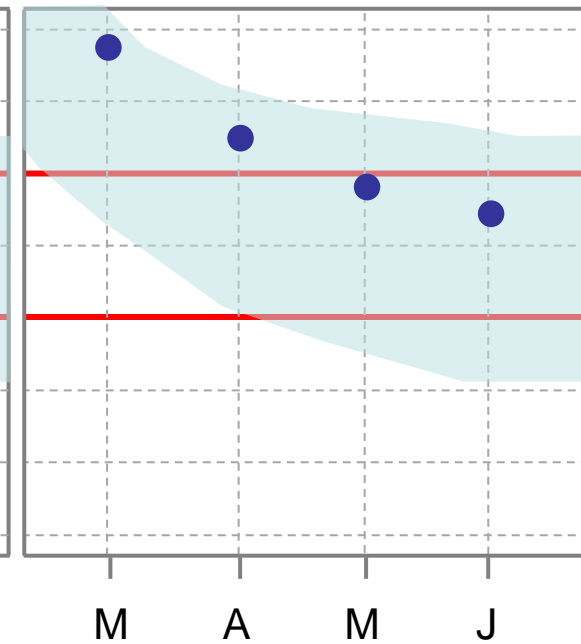
Forecast reservoir volume (Mm³)



55 Mm³



105 Mm³



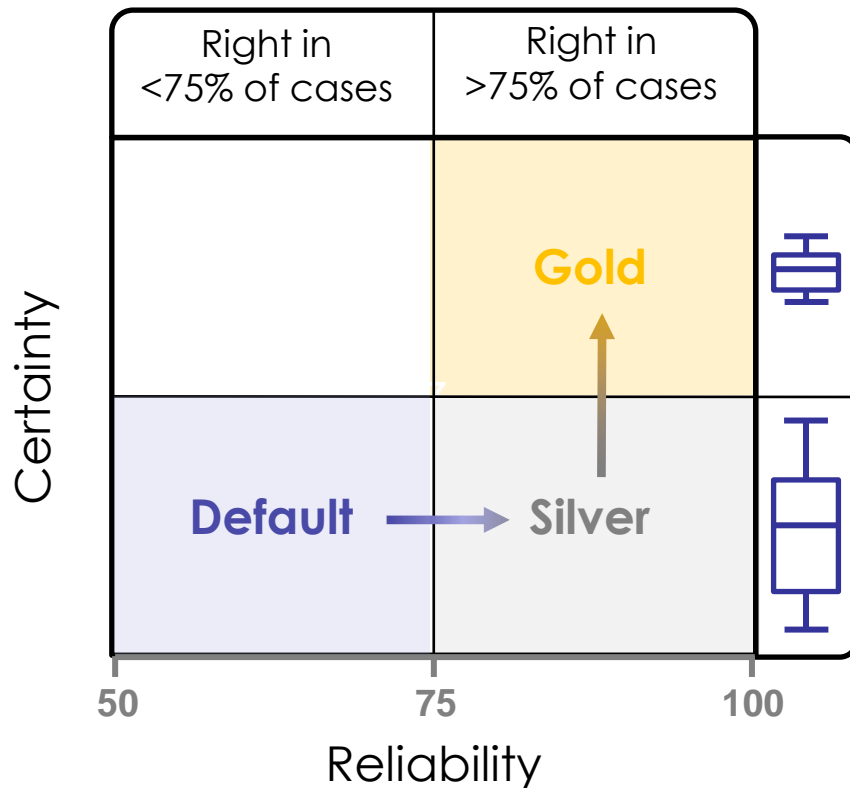
87 Mm³

Update your budget in the sheet!

Budget- **loss** = New budget

ROUND 2 – YEAR 4

**Choose your subscription
for Year 4 !**



Yearly cost

Default

0 token

Silver

1 000 tokens

Gold

2 000 tokens

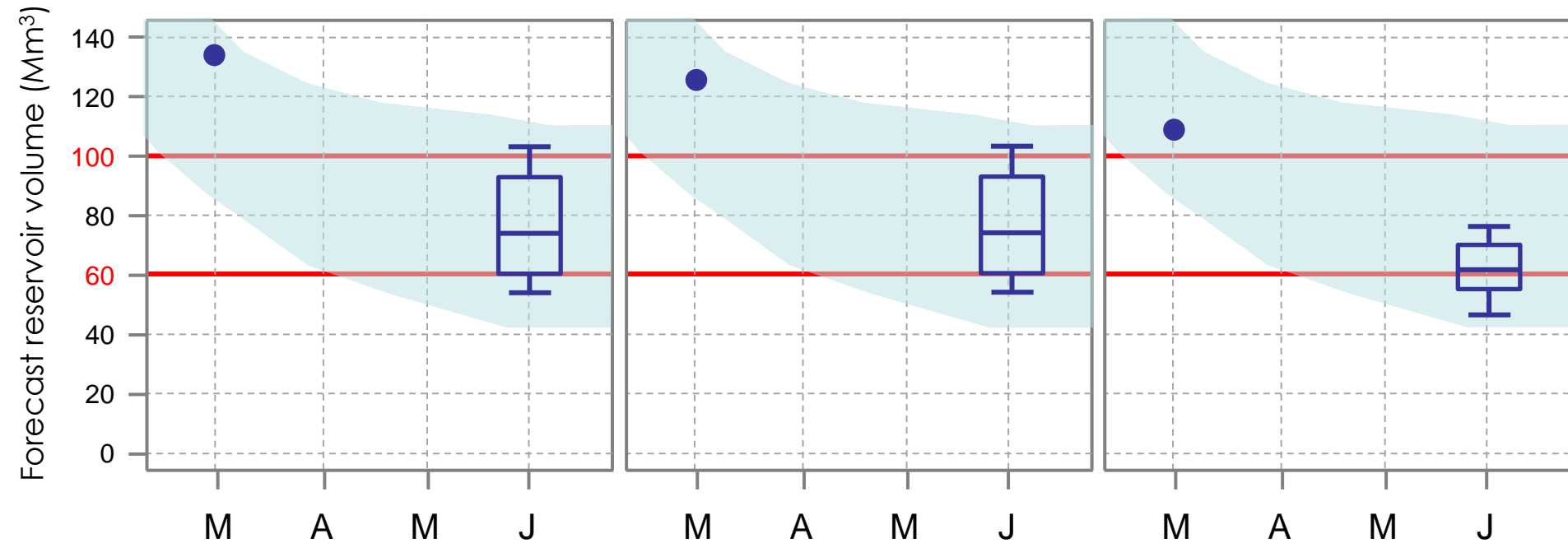
It's March 1st from Year 4

This is the probabilistic forecast issued on March 1st for June 1st

Default

Silver

Gold



What do you decide for June 1st ?

Fill in the sheet!

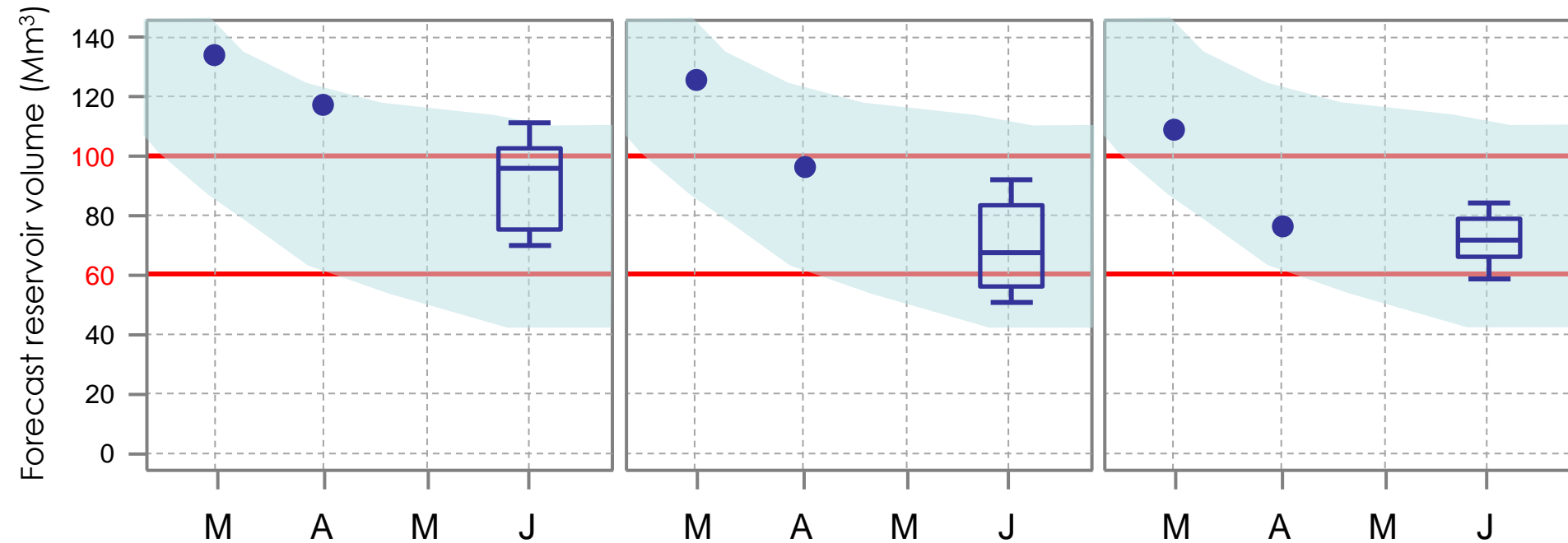
It's April 1st from Year 4

This is the probabilistic forecast issued on April 1st for June 1st

Default

Silver

Gold



What do you decide for June 1st ?

Fill in the sheet!

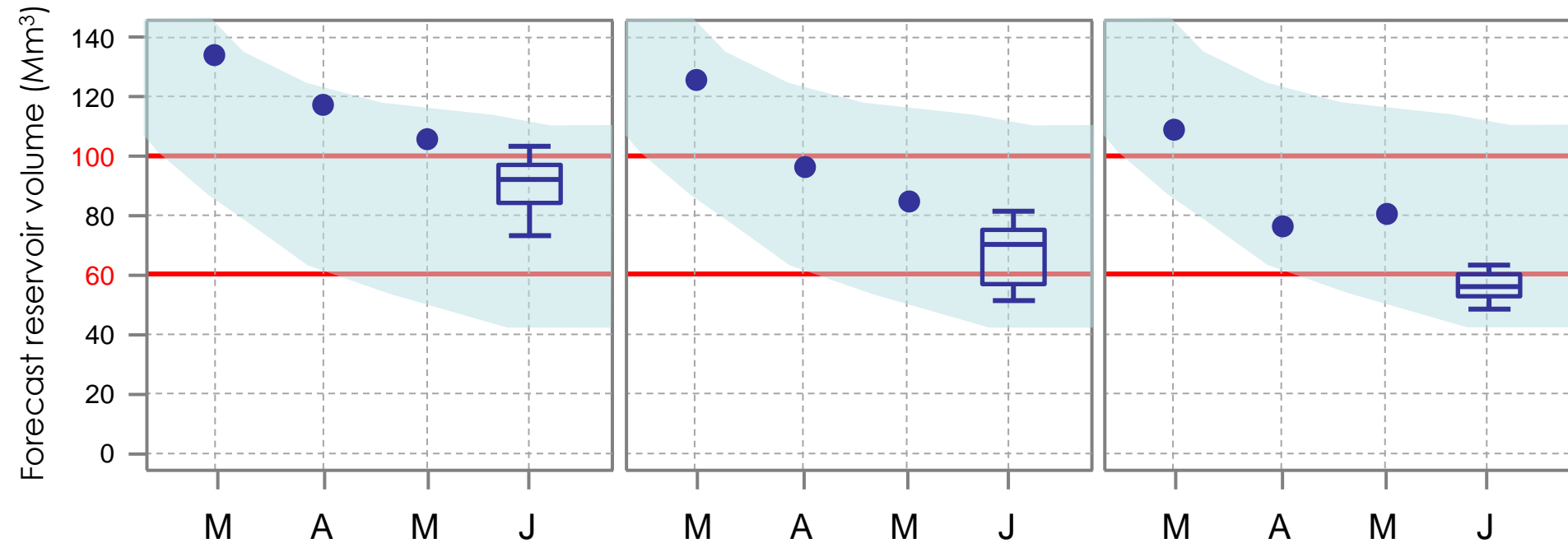
It's May 1st from Year 4

This is the probabilistic forecast issued on May 1st for June 1st

Default

Silver

Gold



What do you decide for June 1st ?

Fill in the sheet!

It's June 1st !!

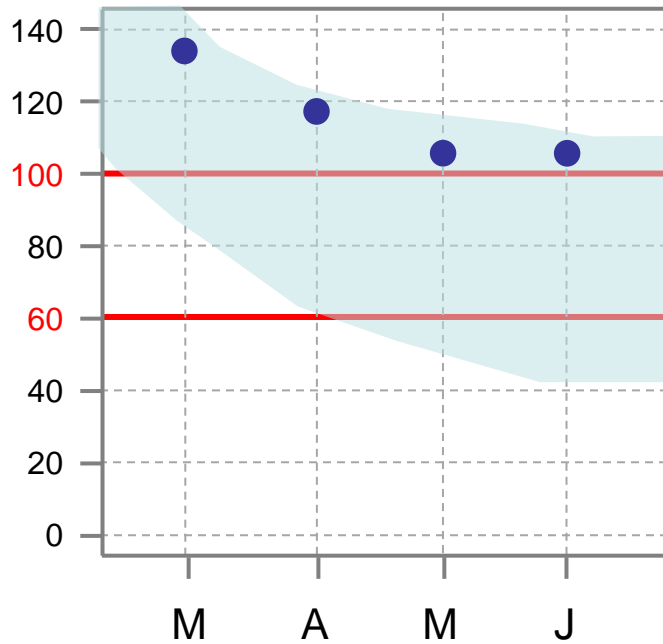
This is the observed reservoir volume on June 1st

Default

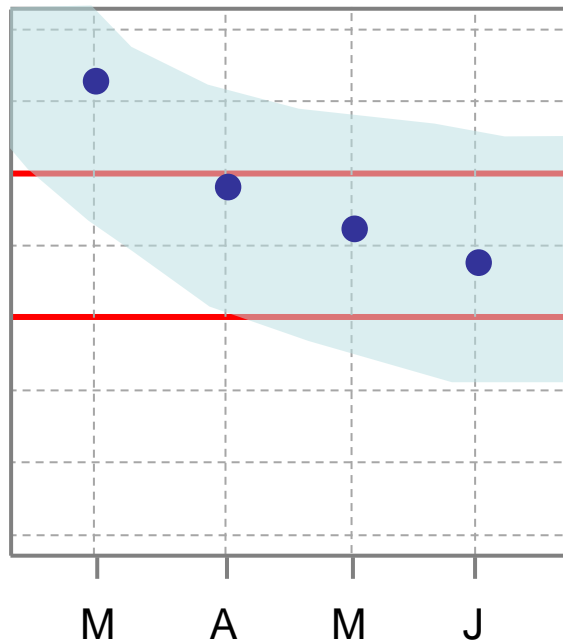
Silver

Gold

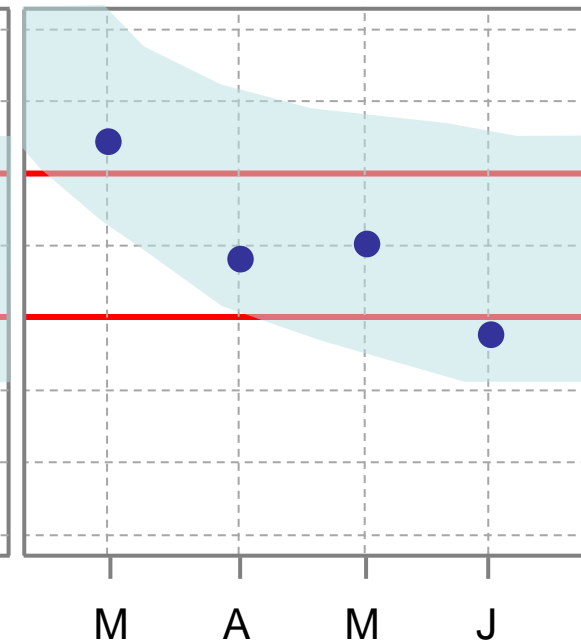
Forecast reservoir volume (Mm³)



105 Mm³



75 Mm³



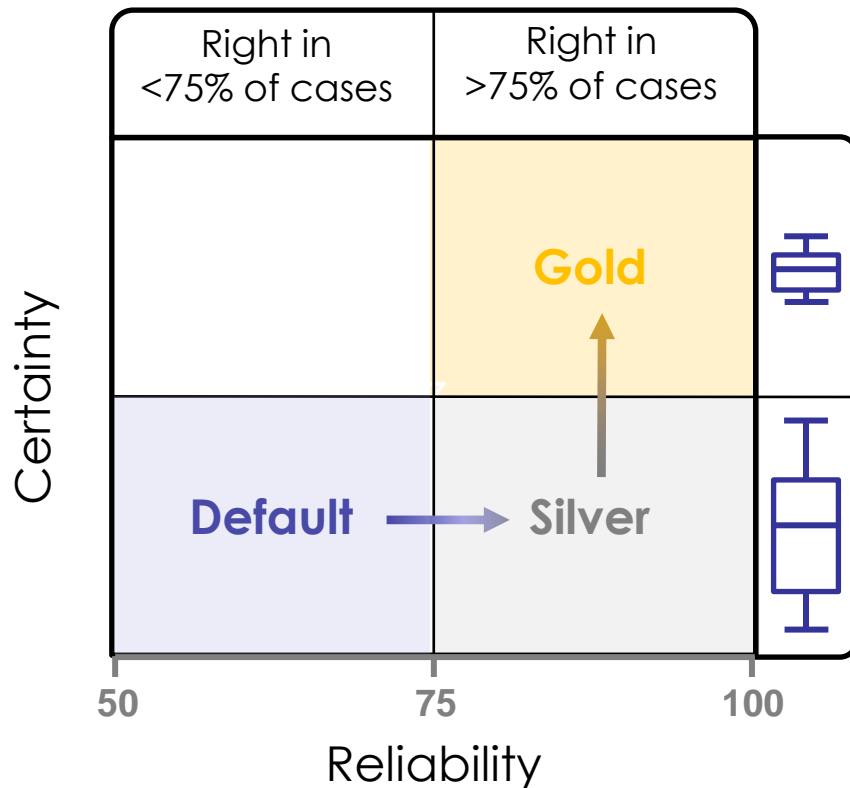
55 Mm³

Update your budget in the sheet!

Budget- **loss** = New budget

ROUND 2 – YEAR 5

**Choose your subscription
for Year 5 !**



Yearly cost

Default

0 token

Silver

1 000 tokens

Gold

2 000 tokens

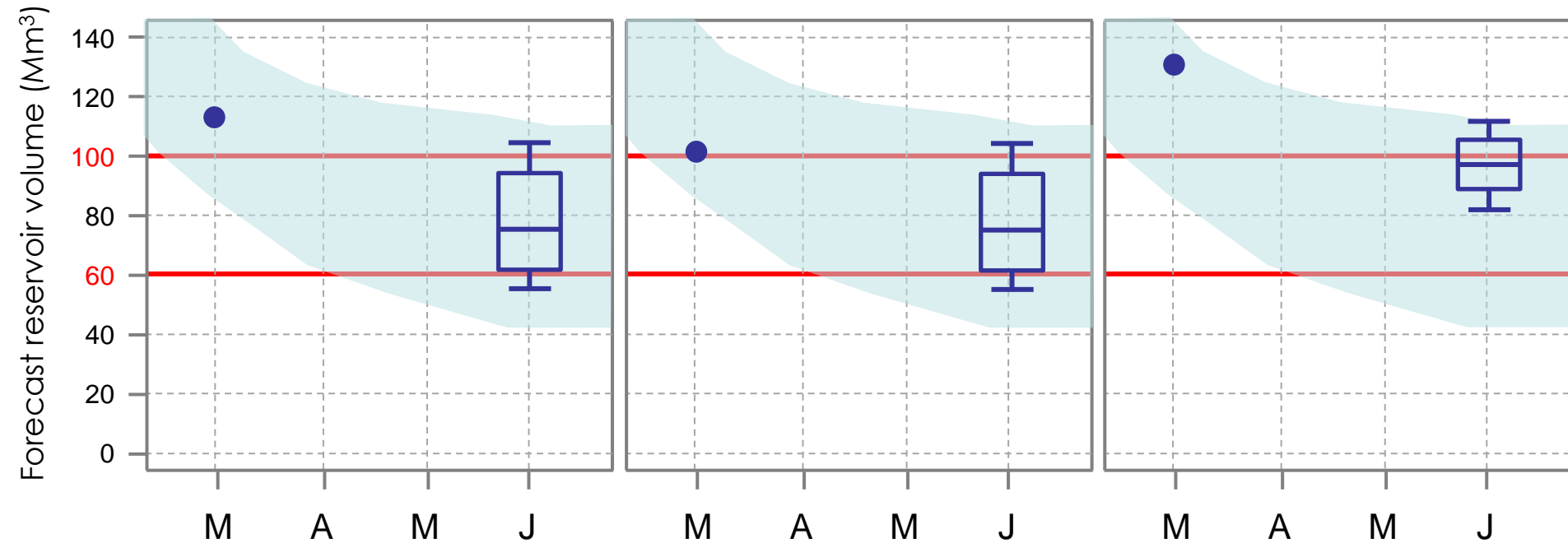
It's March 1st from Year 5

This is the probabilistic forecast issued on March 1st for June 1st

Default

Silver

Gold



What do you decide for June 1st ?

Fill in the sheet!

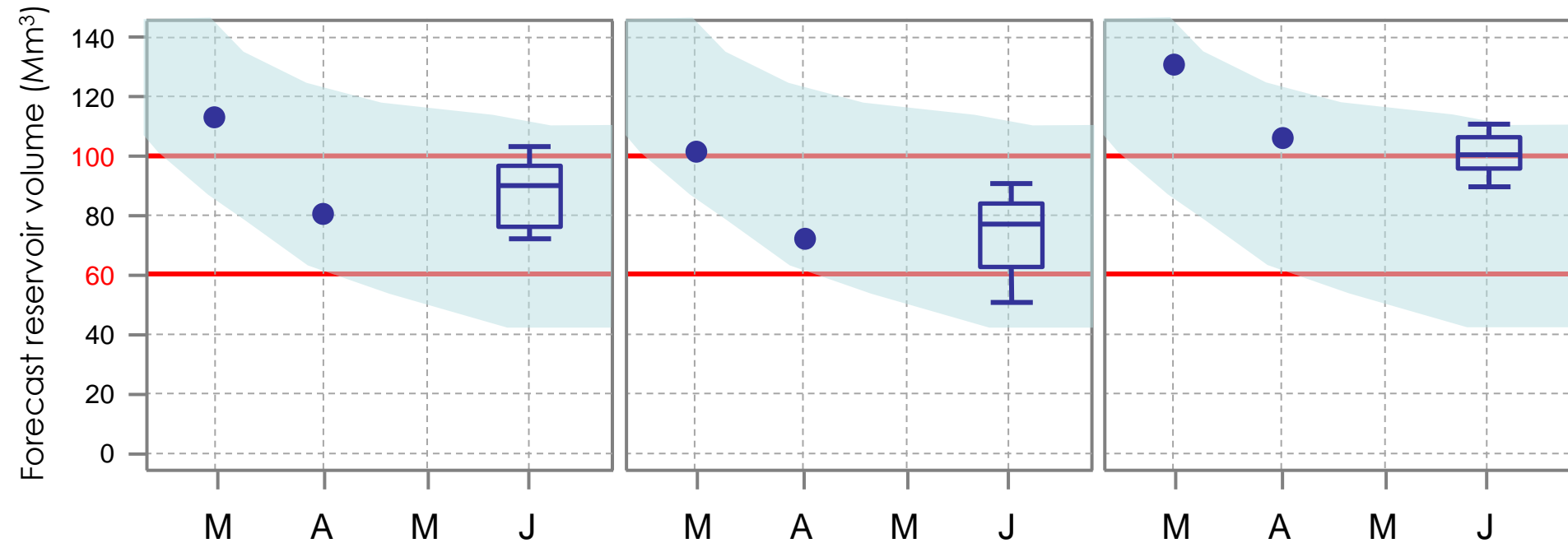
It's April 1st from Year 5

This is the probabilistic forecast issued on April 1st for June 1st

Default

Silver

Gold



What do you decide for June 1st ?

Fill in the sheet!

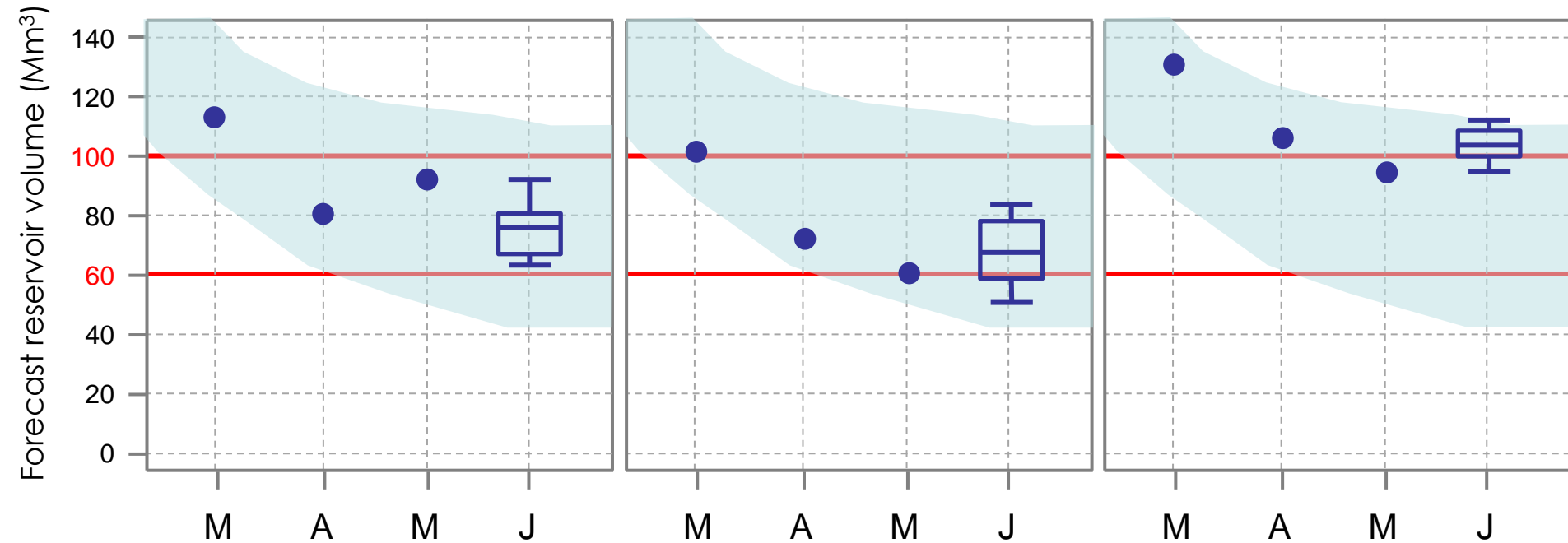
It's May 1st from Year 5

This is the probabilistic forecast issued on May 1st for June 1st

Default

Silver

Gold



What do you decide for June 1st ?

Fill in the sheet!

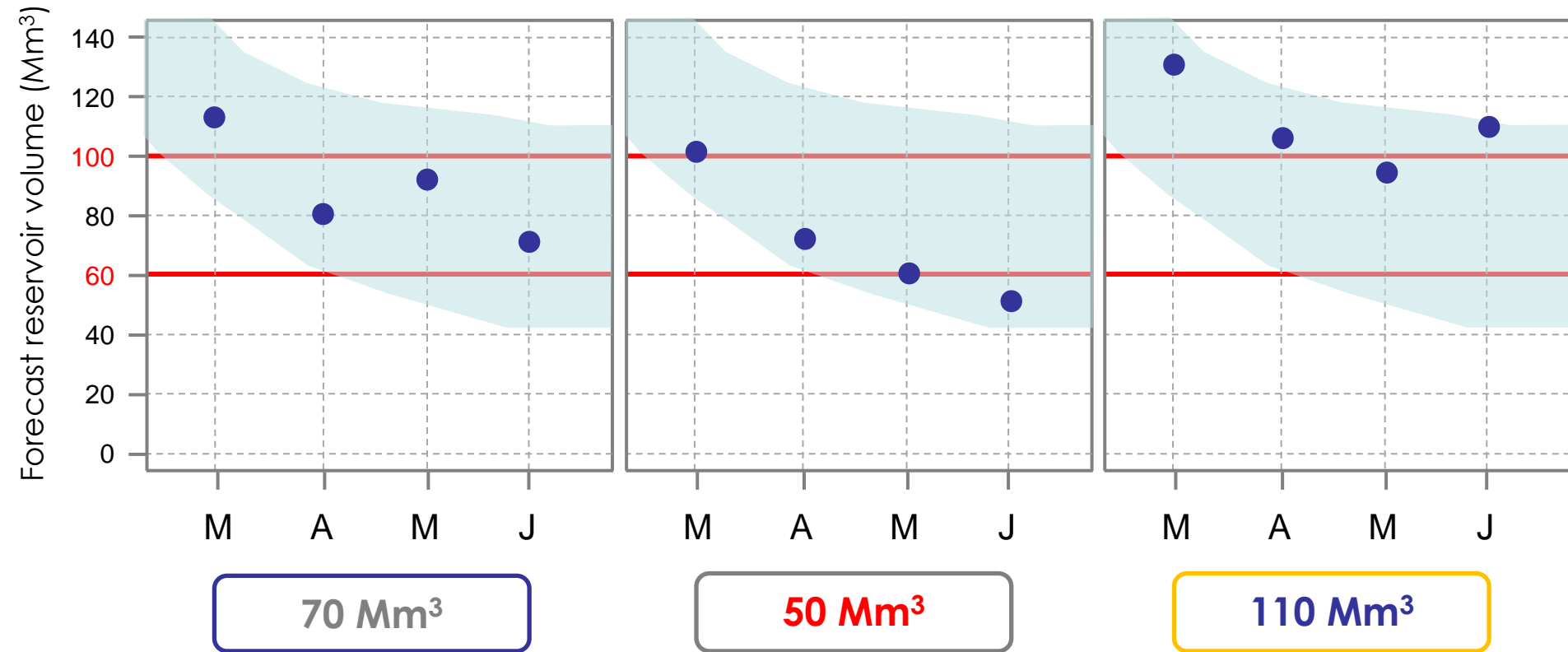
It's June 1st !!

This is the observed reservoir volume on June 1st

Default

Silver

Gold



Update your budget in the sheet!

Budget- ~~loss~~ = New budget

END OF ROUND 2

Did you ensure the 60 Mm³ for the summer season ?

What is your budget at the end of this round ?




Water management game: **worksheet**

You have a worksheet to mark your decisions!

Remember to return it after the game!

Fill in your answers in section D of the worksheet

Seasonal forecasting for water management in different certainty and reliability contexts							
<div><div>C</div><div>ROUND 2</div></div> <div><div>Default 0 Silver -1000 Gold -2000</div><div>Previous budget + 10 000 :</div></div>							
			Wait & see	Do nothing	Sell surplus	Contact neighbours	
Y 1	Membership:	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> worthy <input type="checkbox"/> acceptable <input type="checkbox"/> not worthy
	<input type="checkbox"/> Default	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> Silver	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> Gold	June 1+.....-.....=.....				
Y 2	Membership:	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> worthy <input type="checkbox"/> acceptable <input type="checkbox"/> not worthy
	<input type="checkbox"/> Default	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> Silver	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> Gold	June 1+.....-.....=.....				
Y 3	Membership:	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> worthy <input type="checkbox"/> acceptable <input type="checkbox"/> not worthy
	<input type="checkbox"/> Default	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> Silver	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> Gold	June 1+.....-.....=.....				
Y 4	Membership:	March	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> worthy <input type="checkbox"/> acceptable <input type="checkbox"/> not worthy
	<input type="checkbox"/> Default	April	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> Silver	May	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> Gold	June 1+.....-.....=.....				

D

QUESTIONS & DISCUSSION

How useful did you find the following information in your decision-making?

	Not useful	Slightly useful	Useful	Very useful	Did not use it
Reliability information					<input type="checkbox"/>
Forecast range					<input type="checkbox"/>

What minimum level of reliability would allow you to make a forecast-based decision?
☐ 0 (always wrong) / ☐ 20 / ☐ 40 / ☐ 60 / ☐ 80 / ☐ 100 (perfect)

What minimum level of certainty would allow you to make a forecast-based decision?
☐ 0 (climatology) / ☐ 20 / ☐ 40 / ☐ 60 / ☐ 80 / ☐ 100 (deterministic)

From which month were you willing to make a decision for June 1st?
☐ Mar / ☐ Apr / ☐ May

Have your decision criteria changed during the game? If so, how?
.....
.....
.....

Comments
.....
.....

END OF THE GAME

Thank you for playing the game



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