TOOLBOX

FOR FLOOD HAZARD EDUCATION AND INFORMATION

2025 - ENGLISH VERSION

Université de Montréal
ARIACTION

CREATED IN COLLABORATION WITH THE ARIACTION RESEARCH TEAM AT UNIVERSITÉ DE MONTRÉAL

ARIAction

Adaptation – Resilience – Innovation – Action

is a research team created by Isabelle Thomas from the Faculty of Environmental Design at Université de Montréal dedicated to researching the topics of vulnerability, adaptation, and resilience in living environments. The research team works to identify resilience challenges and opportunities while promoting recommendations, strategies, and tools that help territories become more resilient and stakeholders better adapt to flood risks.

The fable of the hummingbird

The fable of the hummingbird is from the oral tradition of the Quechua, an Indigenous people in South America. As retranscribed by Michael Nicoll Yahgulanaas, it tells the story of the hummingbird, a tiny bird with a long beak. In short, one day a huge fire engulfed the forest where the hummingbird lived, and all the animals started to flee. All except the hummingbird. Armed with its courage, the hummingbird flew back and forth to the river, trying to douse the fire one drop at a time. The other animals watched it, puzzled, and one of them asked why it was doing that. The hummingbird replied, “I’m doing everything I can. I do my part.”

Inspired by the fable of the hummingbird, the ARIAction team’s mission is to act through action-research projects to improve the resilience of communities gradually.

Reference: Yahgulanaas, M.N. (2008). Flight of the Hummingbird: A Parable for the Environment. Canada: Greystone Books

Natural Resources Canada Ressources naturelles Canada

Canada

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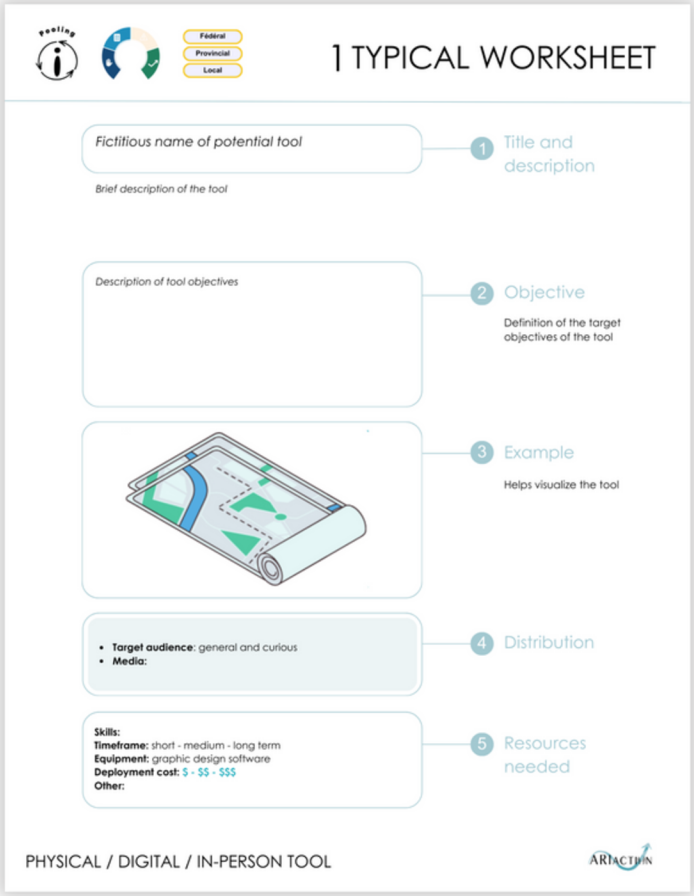
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Introduction

The goal of the toolbox is to offer existing or innovative communication tools for flood hazards and mapping. It contains a rich variety of tools to reach a wide range of people, thus helping to build a risk culture in Canada. This toolbox promotes knowledge sharing with its complementary formats and tool types.
A local diagnosis of the population's hazard perception and progress in the communication strategy deployed by the agency using this toolbox must be carried out before implementing the communication strategy and creating tools (can be done by ARIAction).



Tool type symbols
Tools are divided into three types: pooling, storytelling, and scenario. "Pooling" tools are purely informative and preventive. "Storytelling" tools are designed to reach the public through emotions and identification. "Scenario" tools are designed to bolster the knowledge of the population by calling upon them to be responsible and mobilizing a proactive approach to information and education. Combining these tools will improve the quality of the communication. The symbols below, which appear in the header of each worksheet, indicate the tool type.



Risk phase symbols
Risk communication strategies must follow an approach that is included in the four phases of risk management: prevention, preparedness, intervention, and recovery. Communication tools must cover all phases. The symbols below, which appear in the header of each worksheet, indicate the phases corresponding to each tool.



Scale symbols
Floor hazard and mapping communication must be done at different levels: federal, provincial and local. There must be communication tools adapted to each level of governance to ensure relevant information reaches the right people in a timely manner. The symbols below, which appear in the header of each worksheet, indicate the adapted scale of the tool. The provincial scale includes the level of governance of Canadian territories.



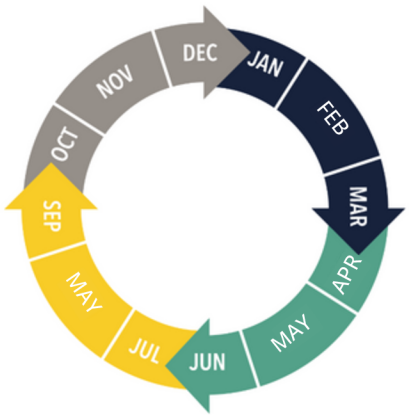
This worksheet type presents communication tools while ensuring that all important aspects are covered and easily accessible. The first part of the worksheet presents an overall view, describing how it works and identifying the goals of this tool.
A visual example is also included. The example presented for the tools is taken from past ARIAction projects with Québec municipalities, existing tools in Canada and around the world and innovative tools designed by the research team.
The second part specifies how the tool will be circulated, focusing on the target audience and the type of media that will be used. The last section summarizes the various resources needed to implement and use the tool, including:

- Skills, which can be multidisciplinary;
- Timeframes over a short (two to eight weeks), medium (two to six months) and long-term (six months to one year); Equipment needed;
- Rollout cost, split into three categories: 0 to 5,000 dollars ($); 5,000 to 20,000 dollars ($$); and over 20,000 dollars ($$$);
- Other resources that may be needed to roll out the tool.

The target audiences mentioned are:

- **The general public,** seeking answers to specific questions;
- **The curious public**, seeking to learn more about a topic;
- **The younger public,** children who are more physically and mentally vulnerable;
- **The older public,** seniors who are more physically and mentally vulnerable.

For the best possible communication strategies, tools need to be distributed at various times of the year (see attached report for more information). The distribution process must be adapted to local realities. This means creating a communication tool distribution schedule that corresponds with sensitive periods in the area. The various communication tools presented in the communication tool worksheets can be used within the periods determined by this annual phasing. This phasing is at the discretion of the provinces and municipalities. The diagram below represents the different phasing periods that provinces and municipalities may apply.



The implementation of these tools needs to follow various communication strategies based in particular on the scale, risk management phase and tool type. The symbols illustrating these elements appear in the header of each worksheet.

Note that in the PDF version of the toolbox, the blue underlined links are clickable. .

Sources: Information, education, and communication action type symbol, ARIAction, 2024; Four phases of risk symbol, ARIAction, 2024; Communication tool scale, ARIAction, 2024; Annual phasing, ARIAction, 2024

What's next?

This toolbox was designed to simplify the work of public professionals in communicating flood hazards and mapping. The tools are designed to educate, inform and prepare the general public to face floods by emphasizing flood hazard understanding. This helps raise awareness and educate citizens on how to understand flood risks. Local and provincial decision-makers, as well as federal agencies, can rely on these tools to create clear, effective and precise communication strategies.

These tools must be used in a strategic and targeted manner. Combining various tool categories, depending on the scale, type and risk phase, will help you create an impactful flood hazard communication. The tools must also be adapted to territorial contexts and the various needs of target audiences.

After using this communication toolbox to prepare a communication strategy, users are encouraged to target internally available resources and external contractors essential in creating and producing their customized tools. Agencies preparing to create tools will need to choose a price range depending on their resources and needs. If they would like to be assisted in this process, ARIAction offers guidance workshops focused on choosing and implementing communication tools (see worksheet 34).

To maximize its effectiveness, the toolbox needs to be updated regularly to add new tools corresponding to available technology. Its users must also learn to apply it, particularly through the guidance workshop hosted by ARIAction and communication strategy training courses.

The toolbox is a key element for effective flood hazard communication and helps build a society that is more resilient to flood hazards.

Federal
Provincial
Local

1 INFORMATIVE GUIDE

1 Title and description

"Flood mapping: A step-by-step guide to understand and plan for floods"

This tool is a complete guide combining various resources to promote the usefulness of flood hazard maps for an uninformed public. This guide includes visual materials and a simplified learning process to acquire basic mapping knowledge.

2 Objective

Definition of the target objectives of the tool

The purpose of this informative guide is to provide a complete and accessible resource on the usefulness of maps for illustrating and preventing flood hazards, as well as raising awareness in an uninformed public about how to use various map types to understand flood hazards. This guide emphasizes training illustrated by various visual media such as maps, diagrams and videos (if the guide is online) explaining the map creation process. The information is simplified to make flood hazard mapping accessible to all.

3 Example

Helps visualize the tool







Saint-Raymond, 2022, ARIAction team

More information on the ARIAction website

4 Distribution

- **Target audience:** general
- **Media:** primary and secondary schools, day camps, community centres, town halls, grocery stores and shops

5 Resources needed

Skills: risk management, geomatics, graphic art
Timeframe: long term
Equipment: graphic design software
Deployment cost: $$
Other: printing service

PHYSICAL TOOL

Federal
Provincial
Local

2 DOOR HANGER

1 Title and description

"Hang tight!"

The door hanger is a communication tool used in flood risk prevention to inform and raise awareness among residents in at-risk areas of what they can do to prepare and what actions they can take in the event of a flood.

2 Objective

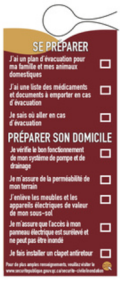
Definition of the target objectives of the tool

This informative sign is hung from a dwelling's door handle. It includes diagrams and instructions that are concise, clear and easy to understand, and provide information about the hazard. Door hangers can also include emergency telephone numbers, links to online resources or other relevant information to help residents understand the flood hazard and prepare to react appropriately. Door hangers provide residents in an area at risk of flooding with quick, concise information and instructions to help them make informed decisions for their safety and that of their family. These communication tools are typically distributed by local authorities (firefighters), disaster management services or other agencies involved in flood prevention and management, particularly in their disaster awareness and preparedness campaigns.

3 Example

Helps visualize the tool





More information on the ARIAction website

Source: ARIAction tool visual preview

4 Distribution

- **Target audience:** general, older
- **Media:** door to door

5 Resources needed

Skills: communication, graphic art, education
Timeframe: medium term
Equipment: graphic design software, printing service
Deployment cost: $
Other: distribution to be carried out

PHYSICAL TOOL

Federal
Provincial
Local

3 INFORMATIVE MAGNET

1 Title and description

"Flood of info"

Magnet with information about flood hazards. It can be very informative and include what can be done to prepare for the risk and what actions can be taken in the event of a flood. It can also be colourful and fun to reach a younger audience. Magnets can also include emergency telephone numbers, links to online resources or other relevant information to help residents understand the flood hazard and prepare to react appropriately to the flood risk.

2 Objective

Its goal is to provide information for the public to learn and remember in a clear, concise and illustrated manner. Magnets can also focus on different themes related to the flood hazard issue and can even combine games and awareness to reach children. It is very practical because it can be placed in strategic everyday places, such as a refrigerator, and reinforce what has been learned.

Definition of the target objectives of the tool

3 Example



More information on the ARIAction website

Source: ARIAction tool visual preview

Helps visualize the tool

4 Distribution

- **Target audience:** general, older, younger
- **Media:** primary and secondary schools, day camps, community centres, town halls, grocery stores and shops

5 Resources needed

Skills: writing, graphic art
Timeframe: short term
Equipment: graphic design software
Deployment cost: $
Other: printing service

PHYSICAL TOOL

Federal
Provincial
Local

4 FLOOD-LEVEL MARKS AND FLOOD-LEVEL MARK MAPS

1 Title and description

"Haz-Marker"

Flood-level marks are visual indicators used to mark the water levels reached during floods in the past. Flood-level mark maps show the location of flood level marks.

2 Objective

Definition of the target objectives of the tool

These marks can take on different forms, from painted or engraved marks on buildings to marked poles located along rivers and streams. This information allows local populations to better understand flood risks in a given area. Flood-level marks are also a visual reminder of the devastating effects of past floods, raising local awareness about the potential dangers and promoting urban planning that is more resilient to natural hazards. These marks can also be accompanied by explanation panels. A digital map of flood-level marks helps residents position themselves and develop hazard awareness in their physical surroundings and on maps.

3 Example

Helps visualize the tool



Saint-Raymond, ARIAction, 2023



Saint-André-d'Argenteuil, ARIaction, 2022

More information on the ARIAction website

4 Distribution

- **Target audience:** general and curious
- **Media:** walls of buildings, barriers or other (installation on public roads) and digital map of flood-level marks

5 Resources needed

Skills: graphic art, printing
Timeframe: short term
Equipment: graphic art software
Deployment cost: $
Other: requires historic floods to be shown

Federal
Provincial
Local

5 CHILDREN'S COMICSTRIP

1 Title and description

"Little Mappers"

Comic strips can be used as an awareness and prevention tool in flood hazard management. They help convey important information about hazards in a playful and accessible way to a broad audience, from children to young adults and even adults.

2 Objective

Definition of the target objectives of the tool

Comic strips can: combine visuals and text to tell a story by presenting crisis situations, various flooding scenarios and actions to implement; include characters and a story that represent a community affected by a risk, which encourages the reader to identify with the characters and project them into the story; explain the characteristics of the flood hazard and its consequences; give tips and information through character dialog and interaction; raise awareness among the population by evoking emotions such as fear or hope, which can affect readers and help create a risk culture; recognize good behaviour by including a resilience officer's diploma at the end of the comic strip.

3 Example

Helps visualize the tool





More information on the ARIAction website

Source: ARIAction tool visual preview

4 Distribution

- **Target audience:** general, younger
- **Media:** schools, day camps, municipalities, NPOs, libraries, online

5 Resources needed

Skills: drawing, graphic art, education
Timeframe: short to medium term
Equipment: paper, pencils, computer
Deployment cost: $$
Other: distribution to be carried out (physically or online)

Federal
Provincial
Local

6 MAGNETIC WATERSHED PUZZLE

1 Title and description

"Watersheds in My Area"

Magnetic puzzles are an innovative educational tool combining a magnetic game with detailed watershed maps to help residents understand how territories and the flood hazard are interdependent.

2 Objective

Definition of the target objectives of the tool

This puzzle is an educational tool showing watershed, stream, and floodplain maps in a given territory as a magnetic puzzle. The legends and symbols help audiences understand the geographic characteristics and their associated flood hazards. With its magnetic pieces, it can be easily placed on metallic surfaces, making important information visible every day.

3 Example

Helps visualize the tool



Source: Simulated image created for the purposes of this project, ARIAction 2024

4 Distribution

- **Target audience:** general, younger
- **Media:** schools and educational institutions, environmental awareness NPOs

5 Resources needed

Skills: geography, graphic design, illustration
Timeframe: medium to long term
Equipment: graphic design software, high-quality magnetic paper, and non-toxic printing ink
Deployment cost: $$
Other: tests and certification to ensure the product is safe and complies with toy safety and educational standards

Federal
Provincial
Local

7 MAGNETIC SELF-ANALYSIS TOOL

1 Title and description

"Magna-Hazard"

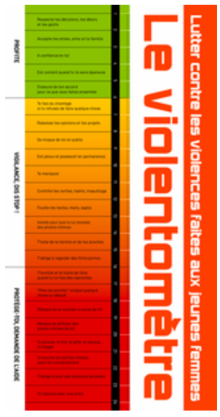
Featuring a danger indicator, this magnet is a self-analysis tool that allows users to gauge their exposure to flood hazards. The magnet can also include emergency telephone numbers, links to online resources or other relevant information to help residents understand the flood hazard.

2 Objective

Its goal is to provide information for the public to learn and remember in a clear, concise and illustrated manner. It helps users assess their exposure to flood hazards. It is also very practical because it can be placed in strategic everyday places, such as a refrigerator and reinforce what has been learned.

Definition of the target objectives of the tool

3 Example



Source: Violence indicator, L'escale Solidarité Femmes

Source: Indicator, City of Nice



Helps visualize the tool

4 Distribution

- **Target audience:** general
- **Media:** primary and secondary schools, day camps, community centres, town halls, grocery stores and shops

5 Resources needed

Skills: writing, graphic art
Timeframe: short term
Equipment: computer, magnets
Deployment cost: $
Other: specialized printer

Federal
Provincial
Local

8 DIGITAL SELF-ANALYSIS TOOL

1 Title and description

"Analyze Your Hazard"

This digital flood hazard self-analysis tool is an indicator available on a website. It assesses the user's exposure to flood hazards depending on their situation.

2 Objective

Definition of the target objectives of the tool

This digital tool is intended to raise flood hazard awareness and identifies the major threats inherent to this hazard. A danger indicator and a quiz are available for users to gauge their flood hazard exposure. This tool helps an uninformed public become aware of flood hazards and develop their understanding, leading to better protective practices.

3 Example

Helps visualize the tool



Source: https://www.canada.ca/fr/campagne/pre...l

4 Distribution

- **Target audience:** general
- **Media:** website

5 Resources needed

Skills: web design, UI design
Timeframe: short term
Equipment: web design platform
Deployment cost: $
Other: question creation and drafting

Storytelling

Federal
Provincial
Local

9 GRAPHIC NOVEL

1 Title and description

"Washed Away"

This tool can be used to raise awareness among children and adults through an illustrated story about a real or potential flood.

2 Objective

Definition of the target objectives of the tool

Graphic novels are an interesting tool to explain what causes floods, how they occur and how we can plan ahead using hazard mapping and other prevention, preparedness, intervention, and recovery measures, all illustrated to encourage a better understanding of the stories that are told. They help simplify a field that can sometimes seem complex and give tools to learn about local issues and implement adaptation strategies accessible to readers. They encourage identification and overall conscientization.

3 Example

Helps visualize the tool





Source: Résister et fleurir, Jean-Félix Chénier and Yoakim Bélanger

4 Distribution

- **Target audience:** curious
- **Media:** bookstores, shops, libraries

5 Resources needed

Skills: drafting, drawing, education
Timeframe: long term
Equipment: computer, printer, design software
Deployment cost: $$$
Other: specialized printer, writers and sketch artist

ARIACTION

1 Title and description

"Watercolours: Discovering the Mysteries of Water and Floods"

Educational colouring sheets are designed to explain water movement and raise flood hazard awareness in a playful, educational way.

2 Objective

Definition of the target objectives of the tool

Colouring sheets illustrate simplified maps showing watersheds, streams and floodplains with clear legends and symbols. Participants, mainly a young audience, need to colour the different zones according to the instructions. This interactive approach helps them learn how water flows in an area and where flood risks are highest. The understanding of basic mapping concepts and water flow mechanisms in the environment is simplified using a visual approach.

3 Example

Helps visualize the tool



Source: California Department of Water Resources

4 Distribution

- **Target audience:** general, younger
- **Media:** various educational settings (schools, educational organizations), environmental awareness NPOs

5 Resources needed

Skills: education, mapping, geography, graphic art
Timeframe: medium term
Equipment: paper and other drawing materials, computers and graphic design software, high-quality printing
Deployment cost: $
Other: communication with schools

Federal
Provincial
Local

11 BOARD GAMES

1 Title and description

"HazardQuest: Flood Mapping Challenge"

The board game simulates flooding scenarios and gets players involved in making decisions based on maps, which helps them intuitively understand hazards, impacts and risk management strategies.

2 Objective

Definition of the target objectives of the tool

Using a board game is an innovative and interactive approach to flood education. A simple game transforms complex concepts and technical data into a playful experience, making learning more accessible and engaging. It also makes it easier for players to discuss and exchange ideas about urban planning and hazard resilience, helping create a flood preparedness and response culture. By offering an immersive experience, the board game acts as a catalyst to raise awareness for the importance of using flood hazard maps effectively to protect communities.

3 Example

Helps visualize the tool



Source: Ministère de la Transition écologique et de la Cohésion des territoires – Jeu «Boîte à risques»

4 Distribution

- **Target audience:** general
- **Media:** various educational settings (schools, educational organizations), environmental awareness NPOs

5 Resources needed

Skills: illustration, game design
Timeframe: long term
Equipment: computer, design software
Deployment cost: $$
Other: specialized printer

Federal
Provincial
Local

12 COMMUNICATION STRATEGY

1 Title and description

"[Year] Strategy"

Communication plan adapted to map publication, new data or other tools for the general public rolled out annually.

2 Objective

This plan organizes texts, videos, links and images in a posting schedule for social media used by the target audience (LinkedIn, TikTok, X, Instagram, Facebook, newspapers). It also proposes a set of press releases adapted to a hypothetical awareness campaign on using maps available in a given province, territory, RCM or municipality.

Definition of the target objectives of the tool

3 Example



Helps visualize the tool

4 Distribution

- **Target audience:** general
- **Media:** social media, traditional media

5 Resources needed

Skills: writing, public relations, communication, graphic art, photography, community management
Timeframe: short term
Equipment: computer, applicable software licences, contacts and accounts for various diffusion networks
Deployment cost: $
Other: campaign spokesperson (expert, politician, community member) (optional)

Federal
Provincial
Local

13 EMAIL NEWSLETTER

1 Title and description

"InfoMap"

Information tool where a monthly newsletter is emailed to a list of subscribers. Each edition offers informative articles, illustrated tutorials, mapping anecdotes, and updates on the latest technologies and techniques in geomatics.

2 Objective

Definition of the target objectives of the tool

Intended for a varied audience, this newsletter simplifies knowledge related to mapping and flood hazards for subscribers. InfoMap educates subscribers about mapping basics, map interpretation techniques and understanding environmental issues such as flood hazards.

3 Example

Helps visualize the tool



Source: infolettre de la transition climatique et énergétique - MELLCFP (Infolettre de la transition climatique et énergétique - gouv.qc.ca)

4 Distribution

- **Target audience:** general and curious
- **Media:** email

5 Resources needed

Skills: geography, communication, writing, graphic art
Timeframe: medium term
Equipment: computer, design software
Deployment cost: $
Other: subscribers database, professional email campaign platform allowing newsletters to be customized and monitored

Storytelling

Federal
Provincial
Local

14 THEMED VIDEO

1 Title and description

"Flooding ABCs"

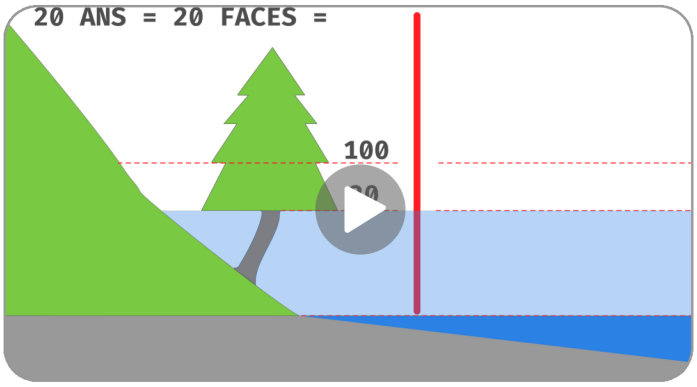
This short motion design video is intended to raise awareness among the general public about two essential factors when consulting a flood map: recurrence (probabilities) and depth (or strength of the current).

2 Objective

This video must bypass the hurdles in understanding a detailed map and focus on the main principles to remember. In so doing, regardless of the technicalities and specificities of the tools available to the citizen, this video aims to convey the essential points to which citizens must pay attention. The advantages of motion design are its reasonable cost and ability to produce videos without filming.

Definition of the target objectives of the tool

3 Example



Source: L'Aléa D'Inondation educational video, ARIAction Team, 2024

Helps visualize the tool

More information on the ARIAction website

4 Distribution

- **Target audience:** general
- **Media:** social media, official websites

5 Resources needed

Skills: graphic art, motion design, sound recording
Timeframe: short to medium term
Equipment: graphic art and animation software, recording studio, appropriate computer equipment
Deployment cost: $$
Other: video narration

ARIACTION

Federal
Provincial
Local

15 THEMED VIDEO

1 Title and description

"The Basics of Hazard Mapping"

This video is a communication tool that simplifies the scientific basics of geomatics applied to various flood maps.

2 Objective

The video is in motion design. It needs to address how data are collected and processed, modelling and map creation principles and the various organizations that regulate practices. Its purpose is to convey map methodology to more seasoned audiences to clarify the processes and avoid false interpretations.

Definition of the target objectives of the tool

3 Example



Source: Alberta Environment and Protected Areas

Helps visualize the tool

4 Distribution

- **Target audience:** curious
- **Media:** social media, official websites

5 Resources needed

Skills: graphic art, motion design, sound recording, scientific popularization
Timeframe: short to medium term
Equipment: graphic art and animation software, recording studio, appropriate computer equipment
Deployment cost: $$
Other: video narration

1 Title and description

"Types of Flood Maps"

Series of videos describing the four main types of maps depicting floodplains (flood inundation maps, flood hazard maps, flood risk maps, flood awareness maps).

2 Objective

Definition of the target objectives of the tool

This series, made in motion design, would be comprised of very short clips about each type of map and may address the following questions: What is this type of map? What information does it contain? Who is this useful for? What kind of decisions can be made using it? In theory, by using motion design, this tool can be produced at a minimal cost.

3 Example

Helps visualize the tool



Mapping Rising Flood Risk

Source: FEMA, https://www.youtube.com/@FEMA/playlists

4 Distribution

- **Target audience:** curious
- **Media:** social media, official websites

5 Resources needed

Skills: graphic art, motion design, sound recording
Timeframe: medium term
Equipment: graphic art and animation software, recording studio, appropriate computer equipment
Deployment cost: $$
Other: video narration

Federal
Provincial
Local

17 THEMED VIDEO

1 Title and description

"Go check!"

Video promoting a province- or territory-specific flood map to encourage the public to check their situation.

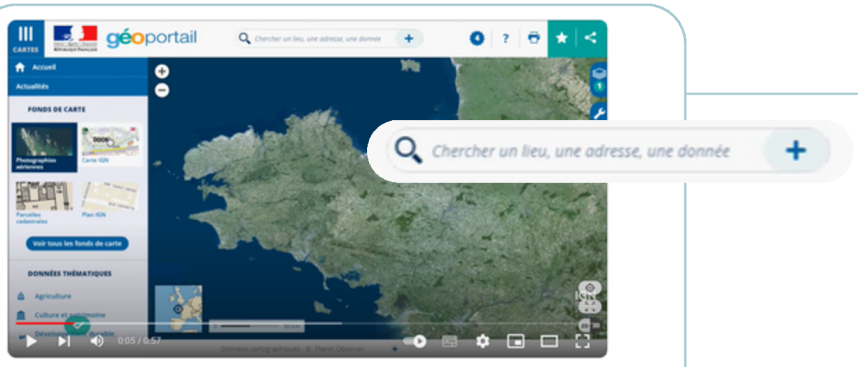
2 Objective

Definition of the target objectives of the tool

The promotional video must comply with the principles of attention optimization on social media, particularly by being very succinct and to the point: introduce the tool; explain how to access it, how to use it, and how to interpret your situation once the diagnosis has been determined; and include resources to learn more. It must directly address the audience to help them identify with the video and become interested in the status of their property.

3 Example

Helps visualize the tool



Source: Geoportail IGN communication - (https://www.youtube.com/watch?v=IFy...)

4 Distribution

- **Target audience:** general
- **Media:** social media, official websites

5 Resources needed

Skills: graphic art, motion design, sound recording
Timeframe: short to medium term
Equipment: graphic art and animation software, recording studio, appropriate computer equipment
Deployment cost: $$
Other: video narration

Federal
Provincial
Local

18 INTERACTIVE MAP

1 Title and description

"Interactive Flood Map"

This tool is an interactive platform displaying how floods on a given territory change in real time. It helps prevent floods by improving hazard knowledge among the population.

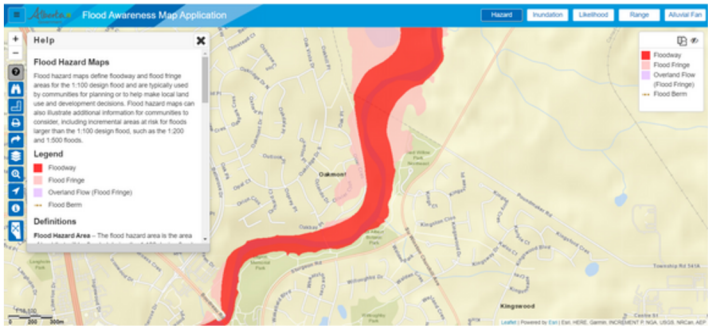
2 Objective

Definition of the target objectives of the tool

This tool is based on interactive maps highlighting the evolution of floods. It allows users to monitor how floods change in real time. These maps warn populations and ensure the evacuation process is quick and effective. The goal of this tool is to make the evolution of floods accessible through interactive maps and raise flood hazard awareness among non-expert populations. These interactive flood hazard maps can even be the starting point for conscientization and make evacuation procedures more effective.

3 Example

Helps visualize the tool



Source : https://floods.alberta.ca/?N=&app_code=FH&mapType=Final

4 Distribution

- **Target audience:** general
- **Media:** web page hosted by ArcGIS or a similar service provider, shared links on social media, official websites

5 Resources needed

Skills: geomatics, hazard geography
Timeframe: medium term
Equipment: computer, server, geomatics software subscription
Deployment cost: $$
Other: flood data

Pooling Storytelling

Federal
Provincial
Local

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STORYMAP

"Flood Hazard Mapping"

1 Title and description

A StoryMap is an interactive geographic representation combining mapping elements and narration to present information in a visually engaging manner.

A StoryMap allows users to explore specific locations on a map while accessing multimedia content such as texts, images, videos, and graphics. This creates an immersive experience that can be used to educate, inform and raise awareness about flood hazard data, history, and even prevention and preparedness measures.

2 Objective

Definition of the target objectives of the tool



Source: https://storymaps.arcgis.com/stories/dfe18bde4e29466ba9815874605cb870

3 Example

Helps visualize the tool

- **Target audience:** general
- **Media:** web page hosted by ArcGIS or a similar service provider, shared links on social media, official websites

4 Distribution

Skills: geomatics, hazard geography, web design
Timeframe: medium term
Equipment: computer, server, geomatics software subscription
Deployment cost: $$
Other: flood data

5 Resources needed

ARIACTION

Storytelling

Federal
Provincial
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20 SHORT DOCUMENTARY FILM

1 Title and description

"Deep in a Flooded Town"

Video analyzing the role of maps in municipal administration.

2 Objective

Definition of the target objectives of the tool

The purpose of this documentary video is to emphasize the importance of the relationship between maps and municipal administration. It must explain how towns improve their understanding of the territory and therefore their decision-making using available maps. This video, intended for a specialized audience, must follow a corporate documentary tradition to convey to the target professional stakeholders the benefits of optimal map use and related data.

3 Example

Helps visualize the tool



Source: *Coaticook en action face aux inondations*, ARIAction Team

More information on the ARIAction website

4 Distribution

- **Target audience:** curious
- **Media:** specialized social media, conventions, conferences, training courses, official websites

5 Resources needed

Skills: graphic art, motion design, sound recording
Timeframe: medium term
Equipment: graphic art and animation software, recording studio, appropriate computer equipment
Deployment cost: $$$
Other: video narration required

1 Title and description

"Let's Talk Floods"

A podcast is an audio recording in the form of an interview, discussion or information session. In the case of flood hazards, it can raise awareness, inform and provide courses of action.

2 Objective

Definition of the target objectives of the tool

The podcast format is useful for addressing questions that need to be developed. It is inexpensive and requires little time to produce. It is therefore possible to take the time to talk generally about floods or a specific situation in a given area with an expert or a local/national stakeholder. The podcast can be shared and listened to again and many platforms offer free hosting.

3 Example

Helps visualize the tool



Source: *Revue des inondations (2023)*, ARIAction Team

More information on the ARIAction website

4 Distribution

- **Target audience:** general and curious
- **Media:** social media, community radio stations, sponsored content on platforms

5 Resources needed

Skills: radio (audio) production, writing/research
Timeframe: short term
Equipment: recording studio or microphones and recording devices
Deployment cost: $$
Other: podcast host

Storytelling

Federal
Provincial
Local

22 TESTIMONIAL FORUM

1 Title and description

"Testimonial Forum"

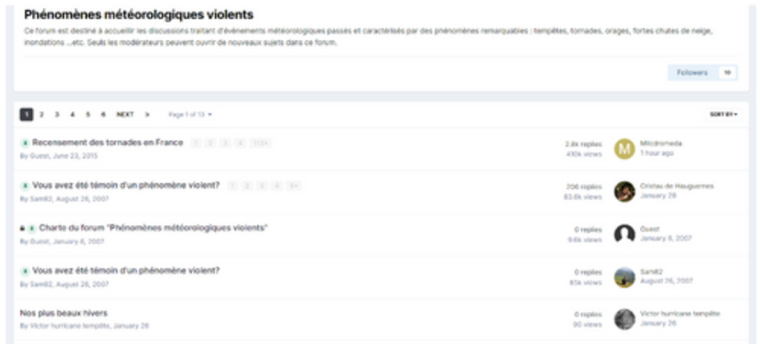
Testimonial forum on an official website

2 Objective

The testimonial forum on an official website gathers citizens' experience on flood map use and/or flooding in an online discussion forum. The forum can also redirect people who need more assistance on a variety of topics, such as: flood maps in their territories, explanations about flooding in a format other than a video clip, etc.

Definition of the target objectives of the tool

3 Example



Source: Les forums d'Infoclimat

Helps visualize the tool

4 Distribution

- **Target audience:** general and curious
- **Media:** discussion forum on an official website, link sharing

5 Resources needed

Skills: web development, user experience skills
Timeframe: medium term
Equipment: servers
Deployment cost: $$
Other: moderator

ARIACTION

Federal
Provincial
Local

23 Q&A FORUM

1 Title and description

"Q&A Forum"

The Q&A forum is hosted on a site promoting accessible mapping to an uninformed public. On this forum, users can ask their questions about flood hazards.

2 Objective

Definition of the target objectives of the tool

This online Q&A forum is where people can show their interest in flood hazard mapping, share their questions, and report their experiences in the field. This forum would encourage resilience and learning about new flood hazard mapping methods. The goal of this tool is to make mapping inclusive and open to all. Certified government specialists will be available to answer these questions, helping the audience learn more.

3 Example

Helps visualize the tool



Source: https://bibliopresto.typeform.com...

4 Distribution

- **Target audience:** general and curious
- **Media:** official website, link sharing

5 Resources needed

Skills: web development, user experience skills
Timeframe: short term
Equipment: hosting website
Deployment cost: $$
Other: moderator

Federal
Provincial
Local

24 QUICK REFERENCE

1 Title and description

"Flood Hazards"

The quick reference for technical concepts (such as flood hazards, using hazard maps, etc.) simplifies information to its most relevant components using diagrams and texts that are clear and easy to understand.

2 Objective

Definition of the target objectives of the tool

The effectiveness of quick references in communicating technical concepts lies in their ability to simplify complex information into essential, easy-to-understand points. This targeted approach helps users quickly understand the basic principles without being flooded by densely packed information or complex technical terms. The quick reference is a bridge between specialized knowledge and the general public, providing an introduction that can then be explored in greater depth depending on the readers' needs and interest.

3 Example

Helps visualize the tool



Source: Quick reference Multicriteria Approach for Resilience Assessment in Flood Zones, ARIAction Team

More information on the ARIAction website

4 Distribution

- **Target audience:** general and curious
- **Media:** official websites, social media

5 Resources needed

Skills: writing, reflection, communication, graphic art
Timeframe: short-term
Equipment: computer
Deployment cost: $
Other: access to and knowledge of the information to simplify

1 Title and description

"Mapping Progress Newsletter"

The newsletter promotes technological progress, issues encountered, and solutions adopted as part of mapping projects. It serves as a platform to announce new initiatives, share successful case studies and encourage public participation and experience sharing, which is essential for projects to continue to improve.

2 Objective

Definition of the target objectives of the tool

The newsletter on the progress of mapping by the federal and provincial governments plays a crucial role in conveying key information to the public and stakeholders. By providing regular and detailed updates, it promotes greater transparency of government operations and a better understanding of the efforts made in hazard mapping. This direct communication helps build a relationship of trust between citizens and government bodies, ensuring that important information is accessible and easy to understand.

3 Example

Helps visualize the tool



Source: Vivre en Ville newsletter, October

4 Distribution

- **Target audience:** general and curious
- **Media:** mail, social media, email

5 Resources needed

Skills: writing, graphic art
Timeframe: short-term
Equipment: computer, paper
Deployment cost: $
Other: high-quality printer

Federal
Provincial
Local

26 SCHOOL MODULE

1 Title and description

"Using Maps to Understand Flood Hazards"

Module integrated in the school program, in collaboration with history and geography teachers, to teach students to understand flood hazards and train future ambassadors in this field.

2 Objective

Definition of the target objectives of the tool

In collaboration with history and geography teachers, students in primary schools, secondary schools, and colleges will explore flood maps and learn how to interpret them. This module will be structured around several chapters adapted to the level, objectives and available time: understanding mapping basics, learning how to read and interpret flood maps, understanding flood prevention measures. The approach must be interactive and balance theory, practice, and creativity.

3 Example

Helps visualize the tool



Source: Encyclopédie du MEM (montreal.qc.ca)

4 Distribution

- **Target audience:** general, younger
- **Media:** module in primary schools, secondary schools, and colleges

5 Resources needed

Skills: geography, mapping, education, facilitation and group management
Timeframe: medium to long term
Equipment: flood and geographic maps, including interactive maps, multimedia equipment (projectors, computers, tablets), office equipment (paper, markers, pencils, model equipment, etc.)
Deployment cost: $

Federal
Provincial
Local

27 GIANT FLOOR MAP

1 Title and description

"Hazard Explorers"

Educational workshop based on using giant floor mats to teach young students about reading maps and understanding watersheds, water movement, and flood hazards.

2 Objective

The "Hazard Explorers" workshops teach young students about reading maps and understanding watersheds and flood hazards. Students can physically move around on these interactive floor mats for an immersive learning experience. Workshops include practical activities and educational games, such as flashcards or challenges.

Definition of the target objectives of the tool

3 Example



Source: Canadian Geographic (cangeoeducation.ca)

Helps visualize the tool

4 Distribution

- **Target audience:** general, younger
- **Media:** various educational settings (schools, educational organizations), environmental awareness NPOs

5 Resources needed

Skills: mapping, geography, graphic art, education
Timeframe: medium to long term
Equipment: giant floor map, high-quality paper for flashcards
Deployment cost: $$
Other: room for the giant floor map, facilitator training

Storytelling Scenario Federal Provincial Local

28 COMMEMORATIVE EVENT

1 Title and description

"Water Memorial, the Flood of [YEAR]"

A commemoration is an event that can involve an exhibit with panels, videos, photos or texts in a magazine, describing and evoking the progression of a disaster that occurred in an area. Meeting and sharing stories about traumatic events help strengthen social ties and create a risk culture and memory.

2 Objective

Definition of the target objectives of the tool

The commemoration helps recall a past flooding event, raises awareness, and strengthens the risk culture in an area that has not experienced a flooding event in some time. Through the testimonials of people who were affected, such as elected officials or agencies who implemented measures since the flood, it highlights the lessons learned from the experience and the methods used to adapt. Flood-level marks are very effective tools, since they physically mark the water levels reached during floods.

3 Example

Helps visualize the tool



Source: Commemoration of the flood of 1866 in the Loire Basin

4 Distribution

- **Target audience:** general and curious
- **Media:** municipalities, NPOs

5 Resources needed

Skills: writing, graphic art, photography, cinema
Timeframe: medium term
Equipment: computer, posters, panels
Deployment cost: $$
Other: specialized printer

1 Title and description

"Flood Mapping and Hazards"

Awareness course on map reading and monitoring (in an emergency) for the occupational health and safety executive (HSE) in medium and large businesses, as well as small-business owners in floodplains.

2 Objective

The goal of this awareness course is to teach map reading to an untrained audience to better understand the information conveyed in maps, better read maps and, therefore, better understand flood hazard risks. Professionals who follow this training will be able to better understand the flood hazard information communicated by the government.

Definition of the target objectives of the tool

3 Example



Helps visualize the tool

4 Distribution

- **Target audience:** general
- **Media:** dissemination to local businesses through municipalities

5 Resources needed

Skills: mapping, geography, geomatics, communication, education
Timeframe: long term
Equipment: visual materials, maps
Deployment cost: $$

Federal
Provincial
Local

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WEBINAR

1 Title and description

"Mastering Flood Mapping - Keys to Understanding and Prevention"

Free flood mapping workshop in webinar format.

2 Objective

The purpose of this webinar is to educate curious audiences about flood hazard mapping methods and tools, illustrating how this information is crucial to flood risk management and prevention. The goal is to provide practical knowledge that can be applied to environmental awareness and natural disaster preparedness, and spark interest in geography and environmental sciences among different generations.

Definition of the target objectives of the tool

3 Example



ECCC WEBINAR: CLIMATE CHANGE IN FLOOD HAZARD MAPPING
Source: Canadian Water Ressources Association, 2024

Helps visualize the tool

4 Distribution

- **Target audience:** curious
- **Media:** link in official provincial, municipal and other websites; various educational settings (schools, educational organizations); environmental awareness NPOs

5 Resources needed

Skills: mapping, geography, geomatics, communication, education
Timeframe: medium term
Equipment: technical equipment (computer, microphone, HD webcam), software and platforms (Zoom, GIS, content creation tools)
Deployment cost: $
Other: technical support

Federal
Provincial
Local

31 WALKING ROUTE

1 Title and description

"Flood Hazard Route"

Educational walking route combining theory with direct terrain observation to raise public awareness about hazards and the importance of floodplain mapping.

2 Objective

Definition of the target objectives of the tool

At each stage of the path, participants can read panels with educational information about flood hazards, mapping methods, and preventive and protective measures. They can also directly observe areas likely to be affected by floods. The route is designed to be followed at each walker's own pace or as part of a guided tour for an immersive and educational experience.

3 Example

Helps visualize the tool



Source: OpenAI. ChatGPT. Version 4. 2024

4 Distribution

- **Target audience:** general
- **Media:** natural pedestrian area

5 Resources needed

Skills: path design and landscaping, geography, mapping, communication
Timeframe: long term
Equipment: weather-resistant informative panels, equipment for the path, signage, benches and rest areas, public lighting, brochures
Deployment cost: $$
Other: maintenance staff and tour guides

Federal
Provincial
Local

32 PUBLIC INSTALLATION

1 Title and description

"Flood Box"

A public installation plunges visitors into an artistic representation of flood hazards, with visuals and sounds evoking rising waters and floodplains.

2 Objective

Definition of the target objectives of the tool

Through sculptures and interactive installations, locals can explore flood dynamics and risk mapping while learning about environmental issues. This immersive experience is intended to educate and inspire, offering a new perspective on the relationship between humans and water while encouraging action and preparedness against natural disasters. By combining art, science and community engagement, this installation encourages deep thought on human vulnerability to nature and the importance of resilience in urban planning. A public installation can be created by recycling materials or installations that are no longer in use.

3 Example

Helps visualize the tool



Fictional example, Source: OpenAI. ChatGPT. Version 4. 2024

4 Distribution

- **Target audience:** general
- **Media:** public area, park or pedestrian road in a municipality

5 Resources needed

Skills: sculpture and art installations, geomatics, education
Timeframe: medium term
Equipment: depending on the type of installation, preferably recycled
Deployment cost: $-$$$

Federal
Provincial
Local

33 IMMERSIVE MODEL

1 Title and description

"Aqu'action Model"

An immersive model is an awareness tool designed to offer an educational experience on flood risks and how to manage them effectively. The physical or virtual tool must allow users to interact with various risk scenarios in highly realistic simulations.

2 Objective

Definition of the target objectives of the tool

The model can represent a variety of environments, such as urban or rural areas, or specific flood-prone sites. Each defined environment is precisely modelled to reflect the associated degree of risk. Users can navigate in the environment they choose and interact with various hazard or vulnerability components to make decisions that affect the course of events. This immersive interaction promotes a better understanding of the consequences of each action.
Finally, risk scenarios based on real data and modelled projections can be included to teach users how to identify, assess and react effectively to threats.

3 Example

Helps visualize a portion of the tool



Source: Sainte-Marie, Québec, 2023

4 Distribution

- **Target audience:** general and curious
- **Media:** neighbourhood physical location

5 Resources needed

Skills: digital (animation, design) and manual skills
Timeframe: medium to long term
Equipment: computer, website, photos, videos, animations
Deployment cost: $$

1 Title and description

"Choosing a Communication Strategy and Complementary Tools"

Guidance workshop offered by the ARIAction research team to help municipal, provincial, and federal decision-makers choose communication tools and design a communication strategy using tools adapted to their realities. Can be done in person or online.

2 Objective

Definition of the target objectives of the tool

The purpose of the guidance workshop is to help decision-makers choose the communication tools best suited to raise awareness about flood risks. Through interactive sessions and case studies, participants will be guided in assessing the specific needs of their community and choosing the most effective tools. The participatory approach promotes a better understanding of the challenges related to flood hazards and helps decision-makers make informed choices to improve their region's resilience. The workshop is organized ahead of time to produce a local diagnosis.

3 Example

Helps visualize a portion of the tool



4 Distribution

- **Target audience:** professionals and municipal, provincial and federal decision-makers
- **Media:** federal and provincial agencies

5 Resources needed

Timeframe: one-day workshop
Data: notable facts and information about the region to produce the local diagnosis ahead of time
Deployment cost: **$5,000 + taxes**



Adaptation - Resilience -
Innovation - Action