



<b>RETURN RESPONSES TO: RETOURNEZ VOS RÉPONSES À</b>  <b>Response Receiving - Environment Canada / Réponse recevant – Environnement Canada</b>  Samantha Hatzinikou Samantha.hatzinikou@ec.gc.ca   <b>REQUEST FOR INFORMATION DEMANDE D'INFORMATION</b>	<b>Title – Titre</b> Request for Information regarding the provision of Artificial Intelligence Models for Translation of Free-Format Text between Canadian French, Canadian English and Inuktitut (and its dialects)	
	<b>EC Request for Information No. /SAP No. – N° de la demande d'information EC / N° SAP</b> 5000077998	
	<b>Date of Request for Information (YYYY-MM-DD) – Date de la demande d'information (AAAA-MM-JJ)</b> 2024-02-02	
	<b>Request for Information Closes (YEAR-MM-DD) - La demande d'information prend fin (AAAA-MM-JJ)</b>  2024-03-19 at 3:00 p.m.	<b>Time Zone – Fuseau horaire</b>  Eastern Daylight Time
	<b>Address Enquiries to - Adresser toutes questions à</b> Samantha Hatzinikou Samantha.hatzinikou@ec.gc.ca	
	<b>Telephone No. – N° de téléphone</b> 873-500-0150	
	<b>Destination - of Services/ Destination des services</b> Canada	
	<b>Security / Sécurité</b> There is a security requirement associated with this requirement.	
	<b>Vendor/Firm Name and Address - Raison sociale et adresse du fournisseur/de l'entrepreneur</b>  	
	<b>Telephone No. – N° de téléphone</b>  	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm: (type or print) / Nom et titre de la personne autorisée à signer au nom du fournisseur/de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>  		
<b>Signature</b>  	<b>Date</b>  	



**Request for Information**  
**Regarding the provision of Artificial Intelligence Models for Translation of Free-Format Text**  
**between Canadian French, Canadian English and Inuktitut (and its dialects)**

**Contents**

1.	Background and Purpose.....	3
1.1	Introduction.....	3
1.2	Request for Information (RFI) Purpose.....	4
2.	Response Information.....	5
2.1	Objectives of this RFI.....	5
2.2	Nature of RFI.....	5
2.3	Confidentiality .....	5
2.4	Response Costs .....	6
2.5	Process to Submit Responses and Closing Date .....	6
2.6	Response Structure .....	6
2.7	Treatment of Responses.....	7
2.8	Reserved Rights.....	8
3.	Response Template – Requirements.....	9
3.1	Corporate Profile .....	9
	Annex A	
	Technical Requirements .....	10
	Appendix A to Annex A	
	Response Table for Technical Requirements.....	12
	Annex B	
	General Requirements.....	15
	Appendix A to Annex B	
	Response Table for General Requirements .....	16
	Annex C	
	Examples of text in Canadian French and English and Current Translation Process .....	18



## 1. Background and Purpose

### 1.1 Introduction

Currently, the Meteorological Service of Canada (MSC) issues its meteorological alerts (such as special weather statements, freezing rain warnings and tropical cyclone information statements) in both French and English. An alert may be issued at any time during the day (24/7). All MSC alerts can include a portion of free-format text composed by a meteorologist. This free-form text is composed in either French or English and must be translated to the other official language prior to dissemination. As a federal institution, the MSC must adhere to the [Office of the Commissioner of Official Languages](#) which states that communications are published simultaneously in both official languages and are of equal quality in English and French.

Currently, the Translation Bureau provides translations via a two-stage process. An automated machine translation is provided to human translators who vet and correct what they receive. (**Annex C** provides examples of this process.) These human translators are available 24/7 and specialize in translating meteorological text. The automated machine translation is received alongside the original text. The machine translation tool is based on a corpus composed solely of information from previous bulletins and alerts the team has translated. It is intended to give the best first pass translation possible. Automated machine translation is intended to improve turnaround times of translation jobs. More specific technical details on the current translation system can be made available upon request.

The current Service Level Agreement between the MSC and the Translation Bureau requires that each individual translation job be performed within two minute or less for 90% of the jobs at the highest priority level. Alerts of the lowest priority are assigned longer response times, up to a maximum of 30 minutes.

Note that in the fiscal year of 2022-2023 the MSC issued approximately 39300 meteorological alerts and bulletins (2 153 588 words were translated). The average alert or bulletin was 55 words. Eighty-three percent of the files translated had less than 100 words. Ninety-eight percent of the files translated had less than 200 words.

There are major challenges that the MSC currently faces regarding the dissemination of alerts:

- The translation of free form text is currently a human intensive activity performed by a dedicated team (the *Translation Bureau*) who specialize in translating the domain specific jargon found in meteorological text from an automated machine translation
- Translators must be available at all times (24/7) to respond during periods of threatening weather
- The volume of alerts can be very high over short periods, especially during the summer months

These challenges contribute significant cost and uncertainty to the dissemination of MSC alerts and bulletins.

The MSC seeks to have faster translation turnaround times, which is important for high impact priority alerts. Turnaround times should be as close to real-time as possible, support both official languages as input, and ensure equal quality for both official languages as output.



The MSC wishes to investigate a fully automated state-of-the-art translation solution which will accomplish this. A complicating factor to this is the ambition for a solution which can support other languages, such as translations into Inuktitut and its dialects.

## 1.2 Request for Information (RFI) Purpose

This is a Request for Information (RFI) only, and not a bid solicitation. Participation in this process is encouraged but is not mandatory. A contract will not be awarded as a result of this RFI.

The purpose of this Request for Information (RFI) is to gather information from respondents regarding their potential ability to provide a translation solution based on cutting edge technologies. The MSC expects to receive information from respondents that will demonstrate to the MSC that viable options for an automated translation system are available.

The MSC is interested in systems capable of translating the meteorological jargon in alerts with high fidelity (no loss of language quality in both Canadian French and English), which provides, at a minimum, support for translations between Canadian French and Canadian English. The MSC also wishes to explore innovative multi-language solutions capable of translations to Indigenous languages such as Inuktitut and its dialects.

Respondents must identify and describe the proposed solution for automated translation that will best meet the requirements of the MSC as described above and in **Annex A** and **Annex B**. Respondents should make best efforts to describe the entirety of the solution, including the maintenance of the proposed solution as well as any training, or retraining, of the translation algorithms required to establish, or improve, the solution. In support of this, **Annex C** provides example inputs and outputs from the current translation system in use for free-format text in Canadian French and Canadian English.



## **2. Response Information**

### **2.1 Objectives of this RFI**

A RFI is used when detailed information and feedback are required from respondents. This request outlines a potential requirement, and requests respondents to describe their ability to satisfy all or a portion of the requirements and to provide ideas and suggestions on how a solicitation might be structured. Responses will be used to assist MSC to finalize its plan for the requirement and to develop achievable objectives and deliverables.

The main objectives of the RFI are to:

- a) Inform ECCC on potential options for external services that meet the needs of the requirement;
- b) Offer suggestions regarding potential alternative solutions that would meet requirements, such as solution with a lower environmental impact;
- c) Provide information to assist ECCC to determine whether to proceed with requirements/strategy as planned, and if so, further developing internal planning, approval and solicitation documents that may potentially lead to a solicitation;
- d) Refine the procurement strategy, project structure, cost estimate, timelines, requirements definition, and other aspects of the requirements;
- e) Become a more "informed buyer" with an enhanced understanding of industry goods and service offerings in the areas of interest; and
- f) Assess potential alternative solution concepts that would meet its requirement, such as environmentally preferable solutions.

### **2.2 Nature of RFI**

This RFI will not necessarily result in any procurement action. This RFI is for informational purposes only and does not constitute a commitment by the Government of Canada. Responses to this RFI will not constitute a commitment from the industry provider. Potential suppliers of any goods or services described in this RFI should not allocate resources or incur undue costs as a result of any information contained in this RFI. Nor will this RFI result in the creation of any source list. Therefore, whether or not any potential supplier responds to this RFI will not preclude that supplier from participating in any future procurement.

This RFI contains draft requirements that may be used in future procurement action. This document remains a work in progress and respondents should not assume that requirements will not be added, changed or removed from any bid solicitation that is ultimately published by the ECCC. Comments regarding any aspect of the requirements are welcome.

### **2.3 Confidentiality**

All information obtained with this RFI will be treated as confidential.

- a) Although the ECCC is seeking detailed responses from respondents to this RFI, it is understood that respondents may not be willing or able to address all of the information sought by ECCC.
- b) Nevertheless, and in an effort to encourage respondents to be as forthcoming as possible, it is understood and agreed that the ECCC shall, during and after the period of the RFI, treat as confidential and not divulge, unless authorized in writing by respondents, any information



obtained from respondents that has been identified by respondents as “confidential” or “proprietary”, within their written response to this RFI.

- c) Although one of the primary purposes of this RFI is to obtain information and recommendations directly from industry knowledge leaders that will be used to support the ECCC’s preparation in project planning, the ECCC will in no way make any direct attribution of any information obtained from respondents that has been identified by respondents as “confidential” or “proprietary” within their responses.
- d) The ECCC will also not impose any future obligations or commitments on respondents with respect to claims or cost information contained within their responses to this RFI.

## 2.4 Response Costs

ECCC will not reimburse any respondent for expenses incurred in the preparation of responses to this RFI. This RFI will not result in the award of any contract. Potential suppliers of any goods or services described in this RFI should not reserve stock or facilities, nor allocate resources, as a result of any information contained in this RFI.

## 2.5 Process to Submit Responses and Closing Date

1. Responses are to be submitted electronically to the Contracting Authority.
2. It is requested that responses are not submitted by facsimile (fax) or physical mail, but rather only in softcopy format, submitted to the electronic mailing address above.
3. Any response submitted will become the sole property of the Government of Canada and will not be returned to the Respondent. The response will be used to assist the ECCC in further analysing the presented requirement and, as such, may be used in the development of a future solicitation process to be posted on Buy and Sell.
4. Because this is not a bid solicitation, Canada will not necessarily respond to enquiries in writing or by circulating answers to all potential suppliers. However, respondents with questions regarding this RFI may direct their enquiries to:

Contracting Authority: Samantha Hatzinikou  
Email Address: [samantha.hatzinikou@ec.gc.ca](mailto:samantha.hatzinikou@ec.gc.ca)

5. Responses are required by the closing date: 2024-03-19 at 3:00 p.m. (Eastern Daylight Time).

## 2.6 Response Structure

- a) **Cover Page:** Respondents are requested to indicate on the front cover page the RFI number and the full legal name of the Respondent, as well as the title of the response.
- b) **Title Page:** The first page after the cover page, should be the title page should contain:
  - (i) the title of the Respondent’s response.
  - (ii) the name and address of the Respondent.
  - (iii) the name, address and telephone number of the Respondent’s contact.
  - (iv) the date; and
  - (v) the RFI number.



- c) Response Template:** In order to facilitate a consistent and structured assessment of the information provided to the Department within the responses, respondents are asked to structure their responses to match the order in which questions are asked in the “Response Template” in Section 3 of this RFI package.

Respondents are requested to provide comments, concerns and, where applicable, alternative recommendations, regarding how the requirements or objectives described in this RFI could be satisfied. Respondents are also invited to provide comments regarding the content, format and/or organization of any draft documents included in this RFI. Respondents should explain any assumptions made in their responses.

- d) Documentation and Number of Copies:** Respondents are requested to provide one (1) softcopy of their response and one (1) softcopy of any product datasheets, user, system and/or other manuals that describe the functionality and technical specifications of the Respondent’s product / solution. The documentation should be in one of the following file formats – PDF, MS Word or HTML.
- e) Additional Capabilities:** Respondents may also provide explanations of additional functionality (e.g. functionality not mentioned in Section 3 that the supplier believes may be relevant to the Department’s business requirements) or extended capabilities (e.g. functionality that exceeds the requirements set out in Section 3). Respondents wishing to provide such information are asked to clearly identify where their response deviates from the RFI template, and may include with their submission a separate attachment that clearly itemizes additional functionality elements and extended capabilities, providing a brief description and including page references where more complete descriptions can be found in their documentation.
- f) Numbering System:** Respondents are requested to prepare their response using a numbering system corresponding to the one in the Response Template in Section 3 of this RFI. All references to descriptive material, technical manuals and brochures included as part of the response should be referenced accordingly.
- g) Complete Responses:** Respondents are requested to address all concepts outlined in the Response Template in Section 3 of this RFI package where possible, however responses will still be accepted if the proposed solution only meets part of the requirements. It is preferable that respondents clarify up front which aspects can be met, and why others are out of scope.

Product brochures and other vendor documentation provided **without** an RFI response will not be evaluated. The ECCC reserves the right to determine which RFI response will be evaluated based on the quality and completeness of the responses received.

## 2.7 Treatment of Responses

- a) Use of Responses:** Responses will not be formally evaluated. However, the responses received may be used by the ECCC to develop or modify procurement strategies or any draft documents contained in this RFI. The ECCC will review all responses that are received by the RFI closing date.
- b) Review Team:** A review team composed of representatives of the ECCC will review the responses. The ECCC reserves the right to hire any independent consultant or use any Government resources that it considers necessary to review any response. Not all members of the review team will necessarily review all responses.



- c) Confidentiality:** Respondents should mark any portions of their response that they consider *Proprietary* or *Confidential*. The ECCC will handle the responses in accordance with the *Access to Information Act*.

Although one of the primary purposes of this RFI is to obtain information directly from industry that will be used by the ECCC to develop or modify procurement strategies or any draft documents contained in this RFI, the ECCC will in no way make any direct attribution of any information obtained from respondents that has been identified by respondents as “confidential” or “proprietary” within their Responses.

- d) Follow-up Activity:** Should respondents include information which is of particular relevance and interest to the ECCC, and should the ECCC (at its exclusive option) determine that follow-on clarification meeting(s) with one or more respondents would be of potential benefit to the ECCC, then the ECCC may (at its exclusive option) invite selected respondents to participate in one-on-one “clarification meeting(s)” to provide clarification on their response(s), demonstrate their technologies or make a presentation to the ECCC Representatives, in order for the ECCC to learn more about the capabilities and features of their Response.

In the event of such an occurrence, any requested clarification meetings may take place at the ECCC’s facilities, location to be determined, or may take place via teleconference or other mutually convenient means, as agreed to between the ECCC and the selected respondents.

The ECCC will not reimburse any respondent for expenses incurred in responding to this RFI. Respondents will be responsible for all costs associated with the preparation and submission of any response to this RFI, including any costs associated with accepting the ECCC’s invitation(s) to participate in any clarification meeting(s).

## 2.8 Reserved Rights

In addition to any other expressed or implied rights, the ECCC reserves the right to:

- a) Cancel this RFI process at any time;
- b) Issue a new RFI for the same or similar information;
- c) Change the structure of the RFI process;
- d) Vary or extend any date or time in this RFI at any time, and for such period as ECCC, in its absolute discretion, considers appropriate;
- e) Make changes, including substantial changes to the requirements as described in this RFI. Substantial changes will be communicated to all potential respondents;
- f) Request written clarification or the submission of supplementary information from any or all respondents, or provide additional information or clarification;
- g) Contact any customer or reference provided within a respondent’s response, as part of its assessment process (contacting references); and
- h) Not consider any response which contains information which the ECCC (in its exclusive opinion) believes to contain misrepresentations or any other inaccurate, suspicious or misleading information.





### **3. Response Template – Requirements**

In order to gain the greatest value from responses to this RFI and to facilitate a consistent and structured assessment of the information provided to the ECCC, respondents are asked to structure their responses in accordance with the following sections, Annex A, Annex B and Appendices to Annex A and B. Some sub-sections are posed as questions, while others provide further details about what specifications the system should include. Comments are encouraged under every sub-section, including a NIL response.

The questions provided in Appendices to Annex A and B are not intended to limit Respondents' submissions but rather to provide a framework for ECCC to gather information from respondents regarding their potential ability to provide a translation solution based on cutting edge technologies. ECCC expects to receive information from respondents that will demonstrate to ECCC that viable options for an automated translation system are available. Respondents are encouraged to provide any additional information or innovative equipment and/or services and brochures, not specifically outlined elsewhere in this Request for Information. The template is provided for convenience but is not mandatory.

#### **3.1 Corporate Profile**

Please provide basic information on the company providing the Response, including:

- a) number of years in business;
- b) countries in which the respondent does business;
- c) listing of current meteorological clients (to include private and public sector on an international scale);
- d) number and location of Canadian offices;
- e) identity, including a brief description and location, of any partners in Canada;
- f) current accreditation status, or other relevant certifications;
- g) other related business lines/products;
- h) number of staff currently employed, and any sub-contracting relationships;
- i) level of government security clearance, if available.
- j) other related business lines/products; and
- k) recent corporate highlights (e.g. accomplishments, awards, etc.).



## **Annex A Technical Requirements**

- 1) The response must demonstrate support for the minimum (and mandatory) requirement of translations between Canadian French and Canadian English
- 2) For translation between Canadian French and Canadian English, regardless of input language and chosen output language, the ECCC requires that the quality of language is maintained for all translation jobs:
  - a) The response should detail how language quality will be ensured with the proposed solution.
  - b) The response should detail what metrics are provided/prescribed to assess translation quality.
  - c) The response should detail quality estimation or error-detection mechanisms, which can be applied to the input text and/or the output translation (to record unknown words, unusual phrasing, etc.), to identify suspicious texts for validation.
- 3) The ECCC prefers a solution with multi-language support, with particular interest for inclusion of Indigenous languages which are not commonly supported languages. The response should detail how translation support would be expanded for languages like Inuktitut, specifically detailing:
  - a) Training methodologies.
  - b) Data required for training.
  - c) Data preparation required for training.
  - d) What roles are performed by the ECCC and by the respondent.
  - e) How quality would be expected to improve over time, and through which mechanisms improvements would be made.
- 4) Responses should describe, in as much detail as possible, the underlying technology on which the solution is based.
- 5) The response must include APIs for programmatic access to the translation system by ECCC applications which at a minimum include the ability to:
  - a) Identify the priority of the job.
  - b) Identify the input language.
  - c) Identify the desired output language(s)
  - d) Respondents are encouraged to describe other features and functions of their APIs not mentioned above.
- 6) It is expected that a fully automated translation system would reduce the time required to complete translation jobs to near real-time. The response must indicate how, in addition to meeting other requirements, this will be achieved while keeping in mind the following:
  - a) Response times are expected to be as near to real-time as possible for all translation jobs
  - b) Translation jobs will continue to require prioritization so that the most critical jobs are the first to receive attention by the system, when clearing the queue of translation requests
  - c) Alerts are generated from prediction centres across the country (Vancouver, Edmonton, Winnipeg, Toronto, Montreal, Dartmouth, Gander) and it is expected that latency could be an issue in the submission of translation jobs and/or the receipt of a response. The response must describe a strategy that would minimize latency for all forecast centres.
  - d) Respondents are encouraged to include other factors that they deem to have importance to ensuring the near real-time system responses.



- 7) It is expected that the volume of translation jobs will be significantly greater during the summer convective weather season, and it is difficult for the ECCC to predict peak loads to the system at this time; the response must provide baseline performance information of the proposed solution and explain how the solution will be architected to respond to periodic increased loads.
- 8) ECCC alerting is a mission critical activity; requiring 100% uptime; as such, the response must demonstrate how this will be achieved by discussing strategies, which may include, but are not limited to:
  - a) System redundancies for safe fall over
  - b) System hardening (to shield against attacks that affect uptime)
  - c) System logging (to monitor system performance)
  - d) Respondents are encouraged to describe other approaches that will contribute to ensuring uptime not mentioned above.
- 9) The response should detail reporting capacity provided within the proposed solution, including but not limited to:
  - a) Volume of translation jobs per specified time
  - b) Priority of translation jobs per specified time
  - c) Average fulfillment time of translation jobs per specified time
- 10) Respondents are encouraged to describe the methods by which new technologies (AI/ML or physical hardware) will be integrated into the solution to continuously improve translation quality and system performance.



**Appendix A to Annex A  
Response Table for Technical Requirements**

1) The response must demonstrate support for the minimum (and mandatory) requirement of translations between Canadian French and Canadian English. Does your solution provide translations between Canadian French and Canadian English?
Response:
Comments:
2) For translation between Canadian French and Canadian English, regardless of input language and chosen output language, the ECCC requires that the quality of language is maintained for all translation jobs:  a) Provide details on how language quality will be ensured with the proposed solution.  b) Provide details of what metrics are included to assess translation quality.  c) Provide a detailed quality estimation or error-detection mechanisms, which can be applied to the input text and/or the output translation (to record unknown words, unusual phrasing, etc.), to identify suspicious texts for validation.
Response:
Comments:
3) The ECCC prefers a solution with multi-language support, with particular interest for inclusion of Indigenous languages which are not commonly supported languages. Provide details on how translation support would be expanded for languages like Inuktitut, specifically:  a) Training methodologies.  b) Data required for training.  c) Data preparation required for training.  d) What roles are performed by the ECCC and by the respondent.  e) How quality would be expected to improve over time, and through which mechanisms improvements would be made.
Response:
Comments:
4) Describe, in as much detail as possible, the underlying technology on which the solution is based.
Response:
Comments:
5) Describe the APIs for programmatic access to the translation system by ECCC applications which at



<p>a minimum include the ability to:</p> <ul style="list-style-type: none"> <li>a) Identify the priority of the job.</li> <li>b) Identify the input language.</li> <li>c) Identify the desired output language(s).</li> <li>d) Any other features and functions of their APIs not mentioned above.</li> </ul>
Response:
Comments:
<p>6) It is expected that a fully automated translation system would reduce the time required to complete translation jobs to near real-time. Indicate how, in addition to meeting other requirements, this will be achieved while keeping in mind the following:</p> <ul style="list-style-type: none"> <li>a) Response times are expected to be as near to real-time as possible for all translation jobs.</li> <li>b) Translation jobs will continue to require prioritization so that the most critical jobs are the first to receive attention by the system, when clearing the queue of translation requests.</li> <li>c) Alerts are generated from prediction centres across the country (Vancouver, Edmonton, Winnipeg, Toronto, Montreal, Dartmouth, Gander) and it is expected that latency could be an issue in the submission of translation jobs and/or the receipt of a response. The response must describe a strategy that would minimize latency for all forecast centres.</li> <li>d) Respondents are encouraged to include other factors that they deem to have importance to ensuring the near real-time system responses.</li> </ul>
Response:
Comments:
<p>7) It is expected that the volume of translation jobs will be significantly greater during the summer convective weather season, and it is difficult for ECCC to predict peak loads to the system at this time. Provide baseline performance information of the proposed solution and explain how the solution will be architected to respond to periodic increased loads.</p>
Response:
Comments:
<p>8) ECCC alerting is a mission critical activity; requiring 100% uptime; as such, describe how this will be achieved by discussing strategies, which may include, but are not limited to:</p> <ul style="list-style-type: none"> <li>a) System redundancies for safe fall over.</li> <li>b) System hardening (to shield against attacks that affect uptime).</li> <li>c) System logging (to monitor system performance).</li> </ul>



d) Respondents are encouraged to describe other approaches that will contribute to ensuring uptime not mentioned above.
Response:
Comments:
9) Provide details on reporting capacity provided within the proposed solution, including but not limited to: a) Volume of translation jobs per specified time b) Priority of translation jobs per specified time c) Average fulfillment time of translation jobs per specified time
Response:
Comments:
10) Describe the methods by which new technologies (AI/ML or physical hardware) will be integrated into the solution to continuously improve translation quality and system performance.
Response:
Comments:



## Annex B General Requirements

- The ECCC is interested in a fully automated solution. Responses must identify whether proposed solutions are fully automated or not, and where not describe:
  - Where and which types of human intervention is required
  - Which skillsets are required of the human intervenors
  - What steps are required to move towards full automation, and how the ECCC and the respondent would collaborate towards this goal;
  - Which skillsets or expert knowledge are required by those involved in working towards this goal
  
- The response must detail all client engagement options that provide clients access to the proposed solution(s), such as but not limited to:
  - Zero cost, solution is free and open source software
  - The one-time purchase of license(s) for the solution installed on-premise, plus a description of which licensing options are available
    - Unlimited users
    - 1 license per person
    - License Pool for x number of concurrent users, with the number registered in the pool being unlimited
  - A fully hosted solution with annual subscription fees, such as, but not limited to:
    - Pay-per-use (fee-per word, or job up to a certain number of characters/words)
    - Unlimited number of translation jobs per year
  
- The response must detail all ancillary costs associated with the realization of the solution, such as, but not limited to:
  - Custom software development (including model training)
  - Software installation and configuration
  - Infrastructure requirements, such as, but not limited to:
    - Servers
    - CPUs
    - GPUs
    - Memory
    - Hardware installation and configuration
  - Ongoing service costs (maintenance and support)
  - API hosting costs
  - Cost per token (if using Large Language Models (LLMs) like ChatGPT/Bard/etc.)
  - Data corpus cleaning
  - Data scientists/linguists
  
- The response must also detail the training, or fine tuning, process necessary to meet the stated ECCC requirements, as part of initial setup and as part of ongoing maintenance, commenting at a minimum, the points below:
  - Training/tuning methodologies
  - Training/tuning frequency
  - Data required for training/tuning
  - Data preparation required for training/tuning
  - Time required for training/tuning
  - Costs associated with the system training/tuning
  - Which roles are performed by the ECCC and by the respondent
  - Which skillsets or expert knowledge are required by those involved in training/tuning



**Appendix A to Annex B  
Response Table for General Requirements**

<p>1) The ECCC is interested in a fully automated solution. Identify and provide details on whether proposed solutions are fully automated or not, and where not describe:</p> <ul style="list-style-type: none"> <li>a) Where and which types of human intervention is required?</li> <li>b) Which skillsets are required of the human intervenors?</li> <li>c) What steps are required to move towards full automation, and how the ECCC and the respondent would collaborate towards this goal?</li> <li>d) Which skillsets or expert knowledge are required by those involved in working towards this goal?</li> </ul>
Response:
Comments:
<p>2) Provide details on all client engagement options that provide clients access to the proposed solution(s), such as but not limited to:</p> <ul style="list-style-type: none"> <li>a) Zero cost, solution is free and open source software.</li> <li>b) The one-time purchase of license(s) for the solution installed on-premise, plus a description of which licensing options are available: <ul style="list-style-type: none"> <li>i) Unlimited users</li> <li>ii) 1 license per person</li> <li>iii) License Pool for x number of concurrent users, with the number registered in the pool being unlimited.</li> </ul> </li> <li>c) A fully hosted solution with annual subscription fees, such as, but not limited to: <ul style="list-style-type: none"> <li>i) Pay-per-use (fee-per word, or job up to a certain number of characters/words).</li> <li>ii) Unlimited number of translation jobs per year.</li> </ul> </li> </ul>
Response:
Comments:
<p>3) Provide details on all ancillary costs associated with the realization of the solution, such as, but not limited to:</p> <ul style="list-style-type: none"> <li>a) Custom software development (including model training)</li> <li>b) Software installation and configuration</li> <li>c) Infrastructure requirements, such as, but not limited to:</li> </ul>





<ul style="list-style-type: none"><li>i) Servers</li><li>ii) CPUs</li><li>iii) GPUs</li><li>iv) Memory</li><li>v) Hardware installation and configuration</li></ul> <p>d) Ongoing service costs (maintenance and support)</p> <p>e) API hosting costs</p> <p>f) Cost per token (if using Large Language Models (LLMs) like ChatGPT/Bard/etc.)</p> <p>g) Data corpus cleaning</p> <p>h) Data scientists/linguists</p>
Response:
Comments:
<p>4) Provide details on the training, or fine tuning, process necessary to meet the stated ECCC requirements, as part of initial setup and as part of ongoing maintenance, commenting at a minimum, the points below:</p> <ul style="list-style-type: none"><li>a) Training/tuning methodologies</li><li>b) Training/tuning frequency</li><li>c) Data required for training/tuning.</li><li>d) Data preparation required for training/tuning.</li><li>e) Time required for training/tuning.</li><li>f) Costs associated with the system training/tuning.</li><li>g) Which roles are performed by the ECCC and by the respondent?</li><li>h) Which skillsets or expert knowledge are required by those involved in training/tuning</li></ul>
Response:
Comments:



**Annex C**

**Examples of text in Canadian French and English and Current Translation Process**

The left column is the source text sent by the forecaster.

The middle column is the current automated machine translation.

The right column is the final text postedited by the Translation Bureau.

<p><b>Source Text</b> Technical Hurricane Statement (494 words) EN-FR</p>	<p><b>Automated Machine Translation</b></p>	<p><b>Final Text Postedited by Translation Bureau</b></p>
<p>Tropical Cyclone Technical Information Statement issued by the Canadian Hurricane Centre of Environment Canada at 9.05 am ADT Wednesday 13 September 2023.</p> <p>The next statement will be issued by 3.00 pm ADT.</p> <p>1. Current position, strength, central pressure and motion</p> <p>At 9.00 am ADT, hurricane Lee was located near latitude 26.0 N and longitude 67.0 W, about 401 nautical miles or 743 km south-southwest of Bermuda. Maximum sustained winds are estimated at 100 knots (185 km/h) and central pressure at 948 mb. Lee is moving north-northwest at 5 knots (9 km/h).</p> <p>2. Forecast position, central pressure and strength</p> <p>DATE TIME LAT LON MSLP MAX WIND ADT MB KTS KMH SEP 13 9.00 AM 26.0N 67.0W 948 100 185 SEP 13 9.00 PM 27.5N 67.5W 950 95 176 SEP 14 9.00 AM 29.5N 68.1W 952 90 167 SEP 14 9.00 PM 31.8N 68.2W 955 85 157 SEP 15 9.00 AM 34.6N 67.7W 955 80 148 SEP 15 9.00 PM 37.9N 67.4W 960 75 139 SEP 16 9.00 AM 41.0N 67.3W 965 65 120 SEP 16 9.00 PM 43.8N 67.3W 970</p>	<p>Bulletin technique sur les cyclones tropicaux émis par le Centre canadien de prévision des ouragans d'Environnement Canada à 09h05 HAA le mercredi 13 septembre 2023.</p> <p>Le prochain bulletin sera émis d'ici 15h00 HAA</p> <p>1. Position, intensité, pression centrale et trajectoire actuelles</p> <p>À 09h00 HAA, l'ouragan vents était située près de la latitude 26,0 nord et de la longitude 67,0 w, soit à environ 401 milles marins ou 743 km au sud-sud-ouest des Bermudes. Les vents maximums soutenus sont approximativement de 100 noeuds (185 km/h) et la pression centrale est à 948 MB. vents se déplace vers le nord-nord-ouest à 5 noeuds (9 km/h).</p> <p>2. Position, pression centrale et intensité prévues</p> <p>Date heure lat long PMNM vents maximums HAA mb noeuds km/h 13 sept 09h00 26,0N 67,0W 948 100 185 13 sept 21h00 27,5N 67,5W 950 95 176 14 sept 09h00 29,5N 68,1W 952 90 167 14 sept 21h00 31,8N 68,2W 955 85 157 15 sept 09h00 34,6N 67,7W 955 80 148 15 sept 21h00 37,9N 67,4W 960</p>	<p>Bulletin technique sur les cyclones tropicaux émis par le Centre canadien de prévision des ouragans d'Environnement Canada à 09h05 HAA le mercredi 13 septembre 2023.</p> <p>Le prochain bulletin sera émis d'ici 15h00 HAA.</p> <p>1. Position, intensité, pression centrale et trajectoire actuelles</p> <p>À 09h00 HAA, l'ouragan Lee se trouve près de la latitude 26,0 N et de la longitude 67,0 W, soit à environ 401 milles marins ou 743 km au sud-sud-ouest des Bermudes. Les vents maximums soutenus soufflent à environ 100 noeuds (185 km/h) et la pression centrale est de 948 mb. Lee se déplace vers le nord-nord-ouest à 5 noeuds (9 km/h).</p> <p>2. Position, pression centrale et intensité prévues</p> <p>Date heure lat long PMNM vents maximums HAA mb noeuds km/h 13 sept 09h00 26,0N 67,0W 948 100 185 13 sept 21h00 27,5N 67,5W 950 95 176 14 sept 09h00 29,5N 68,1W 952 90 167 14 sept 21h00 31,8N 68,2W 955 85 157 15 sept 09h00 34,6N 67,7W 955 80 148 15 sept 21h00 37,9N 67,4W 960</p>



<p>60 111 SEP 17 9.00 AM 46.7N 65.9W 980 45 83 POST-TROPICAL SEP 17 9.00 PM 49.3N 61.6W 990 40 74 POST-TROPICAL SEP 18 9.00 AM 51.6N 55.4W 992 35 65 POST-TROPICAL</p>	<p>75 139 16 sept 09h00 41,0N 67,3W 965 65 120 16 sept 21h00 43,8N 67,3W 970 60 111 17 sept 09h00 46,7N 65,9W 980 45 83 post-tropicale 17 sept 21h00 49,3N 61,6W 990 40 74 post-tropicale 18 sept 09h00 51,6N 55,4W 992 35 65 post-tropicale</p>	<p>75 139 16 sept 09h00 41,0N 67,3W 965 65 120 16 sept 21h00 43,8N 67,3W 970 60 111 17 sept 09h00 46,7N 65,9W 980 45 83 post-tropicale 17 sept 21h00 49,3N 61,6W 990 40 74 post-tropicale 18 sept 09h00 51,6N 55,4W 992 35 65 post-tropicale</p>
<p>3. TECHNICAL DISCUSSION</p>	<p>3. Discussion technique</p>	<p>3. Discussion technique</p>
<p>A. ANALYSIS</p>	<p>A. Analyse</p>	<p>A. Analyse</p>
<p>Hurricane Lee had lost some organization overnight and early this morning. The large eyewall was intermittently cloud covered on IR satellite and had been exposed in the western quadrant as some drier air wrapped in from the north. However, cloud tops have cooled again near the eyewall with some temperatures below -70 C in the eastern semi-circle and there appears to be some reorganization over the last hour near the eyewall. Lee is now moving generally in a northerly direction as it rounds an area of mid-atlantic high pressure to the east.</p>	<p>Vents de force ouragan est devenu un peu moins organisé au cours de la nuit et tôt ce matin. La vaste intermittently mur de l'oeil a couvert sur l'imagerie infrarouge et l'imagerie a été exposées dans le quadrant ouest alors que de l'air plus sec a depuis le nord. Toutefois, les températures au sommet des nuages a chuté à nouveau près du mur de l'oeil, où les températures sont inférieures à - 70c dans le demi-cercle est et il semble peu réorganisation au cours de la dernière heure près du mur de l'oeil. Vents se déplace maintenant généralement dans le nord à mesure qu'elle séries d'une zone de haute pression sur la côte du milieu de l'est.</p>	<p>L'ouragan Lee était devenu un peu moins organisé au cours de la nuit et tôt ce matin. Le vaste mur de l'oeil était voilé par moments sur l'imagerie infrarouge et a été exposé dans le quadrant ouest lorsque de l'air plus sec s'est enroulé dans le système depuis le nord. Toutefois, la température de la couverture de nuages a chuté à nouveau près du mur de l'oeil, atteignant jusqu'à -70 degrés Celsius dans le demi-cercle est, et le tout semble s'organiser un peu plus depuis la dernière heure près du mur de l'oeil. Lee se déplace généralement vers le nord tout en contournant une zone de haute pression à l'est sur l'Atlantique centre.</p>
<p>B. PROGNOSTIC</p>	<p>B. Pronostic</p>	<p>B. Pronostic</p>
<p>Lee is expected to continue to the north-northwest for the next several days with an increase in forward speed once it tracks to the west of Bermuda between the high pressure to the east and a short-wave trough tracking eastward across the Greak Lakes. In about 3 days, Lee may interact with a lingering mid-level trough over the Northeastern United States. This feature may pull the centre of Lee more towards the northwest as it approaches the Maritimes marine district. The current track is more aligned with the ECMWF and GFS thinking in that the centre may approach the Gulf of Maine and towards the Bay of Fundy on</p>	<p>Vents devrait poursuivre sa route vers le nord nord-ouest au cours des prochains jours et prendre de la vitesse lorsqu'elle passera à l'ouest des Bermudes entre l'anticyclone à l'est et un creux greak onde se dirigeant vers l'est sur les lacs. En environ 3 prochains jours, vents pourrait interagir avec un creux persistant altitude sur le nord-est des États-Unis. Ce système pourrait s'le centre de vents plus vers le nord-ouest en s'approchant du secteur maritime des Maritimes. Compte tenu de la trajectoire actuelle est plus dans le même sens que les conditions dans le modèle</p>	<p>Lee devrait poursuivre son chemin vers le nord-nord-ouest au cours des prochains jours; il prendra de la vitesse une fois à l'ouest des Bermudes entre l'anticyclone à l'est et un creux d'onde courte qui se déplace vers l'est sur les Grands Lacs. Dans environ trois jours, Lee pourrait interagir avec un creux persistant à moyenne altitude sur le nord-est des États-Unis. Ce creux pourrait tirer le centre de Lee davantage vers le nord-ouest à mesure que Lee s'approchera des eaux des Maritimes. La trajectoire actuelle cadre davantage avec les</p>



<p>Saturday, but there still remains a considerable amount of spread in the ensemble tracks from each of the global models beyond day 2. Lee should begin to gradually decrease in strength once it moves north out of the warm waters of the Gulf Stream and encounters more westerly shear. Lee is also expected to transition to a post-tropical storm prior to approaching land. Regardless, Lee's wind field will continue to expand well away from the centre.</p>	<p>du cepmmt et le modèle gfs que le centre pourrait de nouveau s'approcher du golfe du Maine et vers la baie de Fundy samedi, mais il y a encore considérablement d'écart dans l'ensemble de chacune des modèles globaux se déplacera au-delà de 2 jours. Vents devraient commencer graduellement diminuer d'intensité une fois qu'elle se sera déplacée au nord et quittera les eaux chaudes du gulf stream et rencontrera un cisaillement plus à l'ouest. Vents devrait aussi se transformer en tempête post-tropicale avant de s'approchant les terres. On prévoit toutefois le champ de vents continuera de exand à bonne distance du centre.</p>	<p>données des modèles CEPMMT et GFS voulant que le centre puisse s'approcher du golfe du Maine et ensuite de la baie de Fundy samedi; toutefois, il y a encore beaucoup d'écart dans les données d'ensemble de chaque modèle global au-delà du jour 2. Lee devrait progressivement commencer à diminuer d'intensité à mesure qu'il se déplacera vers le nord, quittera les eaux chaudes du Gulf Stream et rencontrera un cisaillement plus de l'ouest. Lee devrait aussi se transformer en tempête post-tropicale avant d'approcher les régions terrestres. Dans tous les cas, le champ de vents de Lee continuera de s'étendre à bonne distance du centre.</p>
<p><b>Source Text</b> Tropical Cyclone Information Statement (495 words) EN-FR</p>	<p><b>Automated Machine Translation</b></p>	<p><b>Final Text Postedited by Translation Bureau</b></p>
<p>The next information statement will be issued at 3:00 a.m. ADT.</p> <p>For Hurricane Lee - this is a Saturday event for the strongest impacts with lingering weaker conditions on Sunday.</p> <p>Approaching category-1 hurricane becoming post-tropical at landfall in eastern Maine or southern New Brunswick.</p> <p>1. Summary of basic information at 9:00 p.m. ADT.</p> <p>Location: 27.9 degrees North 67.7 degrees West.</p> <p>About 575 km south-southwest of Bermuda.</p> <p>Maximum sustained winds: 165 kilometres per hour.</p> <p>Present movement: North-northwest around 17 kilometres per hour.</p>	<p>Le prochain bulletin d'information sera émis à 03h00 HAA.</p> <p>Pour l'ouragan vents - ceci est un impact significatif samedi pour les plus faibles et on en ressentira les conditions dimanche.</p> <p>L'ouragan de catégorie 1 devenant post-tropicale au moment de toucher terre dans l'est du Maine ou du sud du Nouveau-Brunswick.</p> <p>1. Résumé des renseignements généraux à 21h00 HAA.</p> <p>Secteur : 27,9 degrés nord 67,7 degrés ouest.</p> <p>Environ 575 km au sud-sud-ouest des Bermudes.</p> <p>Vents maximums soutenus : 165 kilomètres à l'heure.</p> <p>Déplacement actuel : vers le nord-nord-ouest à environ 17 kilomètres à l'heure.</p>	<p>Le prochain bulletin d'information sera émis à 03h00 HAA.</p> <p>Pour l'ouragan Lee : les plus importantes répercussions se feront sentir samedi, mais des effets plus faibles persisteront dimanche.</p> <p>Approche d'un ouragan de catégorie 1 qui deviendra post-tropical au moment de toucher terre dans l'est du Maine ou le sud du Nouveau-Brunswick.</p> <p>1. Résumé des renseignements généraux à 21h HAA.</p> <p>Emplacement : 27,9 degrés nord et 67,7 degrés ouest.</p> <p>Environ 575 km au sud-sud-ouest des Bermudes.</p> <p>Vents maximums soutenus : 165 kilomètres à l'heure.</p> <p>Déplacement actuel : vers le nord-nord-ouest à environ 17 kilomètres à l'heure.</p>



<p>Minimum central pressure: 954 millibars.</p> <p>2. Public weather impacts and warnings summary.</p> <p>Hurricane Lee is now on its northward course toward the Maritime provinces and the state of Maine. This hurricane is quite large and is expected to grow in size as it approaches. On the other hand the intensity (which is based on the peak winds in the storm) will be decreasing and is expected to be just below hurricane status when it is passing just west of Yarmouth Saturday afternoon.</p> <p>This timing and location will likely change over the next 3 days but that is the official most likely scenario at this stage. The centre of Lee could make landfall anywhere from Downeast Maine to western Nova Scotia as a strong tropical storm or post-tropical low.</p> <p>Our latest assessment is that western Nova Scotia and southern New Brunswick stand to see the most wind while western New Brunswick northward into parts of the Bas-St-Laurent and Gaspésie regions of Quebec are at risk of the heaviest rainfall. High waves and elevated water levels will be more widespread due to the large size of the storm - the most impacted areas likely covering much of the Atlantic coast of mainland Nova Scotia and the Fundy coast of New Brunswick.</p> <p>NOTE: In addition to Lee, the Maritime provinces may experience bands of training</p>	<p>Pression centrale minimale : 954 millibars.</p> <p>2. Répercussions sur les prévisions publiques et résumé des avertissements.</p> <p>Vents de force ouragan est maintenant sur sa course vers le nord en direction des Maritimes et sur l'état du Maine. Cet ouragan est très vaste et devrait augmenter à mesure que celle-ci s'approchera. D'autre part, l'intensité (qui est selon les vents maximums dans la tempête) seront diminuant et devrait être juste en dessous du niveau ouragan lorsqu'il passera juste à l'ouest de Yarmouth samedi après-midi.</p> <p>En ce moment se changera probablement en pluie au cours des 3 prochains jours, mais cette situation est et le risque le plus probable associé à ce stade. Le centre de vents pourraient toucher terre entre downeast du Maine à l'ouest de la Nouvelle-Écosse en tant que forte tempête tropicale ou la dépression.</p> <p>Selon nos plus récentes évaluations que l'ouest de la Nouvelle-Écosse et du sud du Nouveau-Brunswick recevra la plus grande quantité de stand tout l'ouest du Nouveau-Brunswick vers le nord jusque dans certaines régions du Bas-St-Laurent et de la Gaspésie au Québec, il y a risque de pluie la plus forte. De hautes vagues et des niveaux d'eau élevés seront plus généralisées à cause de la grosse d'une pièce de la tempête - la plus touchée et quelques secteurs qui couvre la majeure partie de la côte atlantique de la péninsule de la Nouvelle-Écosse et la côte de Fundy au Nouveau-Brunswick.</p> <p>Note : en plus des vents, des</p>	<p>Pression centrale minimale : 954 millibars.</p> <p>2. Répercussions sur les prévisions publiques et résumé des avertissements</p> <p>L'ouragan Lee suit maintenant sa trajectoire vers le nord en direction des provinces maritimes et de l'État du Maine. Cet ouragan est assez vaste et devrait s'agrandir davantage lors de son approche. Cependant, l'intensité (qui est calculée en fonction des vents maximums dans la tempête) sera à la baisse et devrait s'établir juste en deçà du seuil de force ouragan lorsque le système passera juste à l'ouest de Yarmouth samedi après-midi.</p> <p>Le moment de son passage et la trajectoire qu'il suivra changeront probablement au cours des trois prochains jours, mais le scénario présenté ici est le scénario officiel le plus probable à l'heure actuelle. Le centre de Lee pourrait toucher terre n'importe où entre la côte est du Maine et l'ouest de la Nouvelle-Écosse sous forme d'une forte tempête tropicale ou dépression post-tropicale.</p> <p>Selon les plus récentes données, l'ouest de la Nouvelle-Écosse et le sud du Nouveau-Brunswick risquent de connaître les vents les plus forts tandis que l'ouest du Nouveau-Brunswick et les régions plus au nord, y compris certaines parties du Bas-Saint-Laurent et de la Gaspésie, au Québec, sont susceptibles de recevoir la pluie la plus forte. Les hautes vagues et les niveaux d'eau élevés seront plus répandus en raison de la taille importante de la tempête : les régions les plus touchées comprendront probablement une bonne partie de la côte atlantique de la péninsule de la Nouvelle-Écosse ainsi que la côte de Fundy au Nouveau-Brunswick.</p>
---	--	--





<p>downpours travelling from southwest to northeast. These bands are notoriously difficult to predict but it is important to understand there is a flooding risk with these bands well before the arrival of Lee. These complex effects are indirectly related to the hurricane. Additional rainfall from Lee itself could exacerbate the risk of flooding.</p> <p>a. Wind.</p> <p>Breakdown of winds and impacts will appear here in later bulletins. Most likely region for worst impacts: western Nova Scotia as well as Grand Manan and Coastal Charlotte County region of New Brunswick. Tropical Storm and Hurricane Watches will be posted for some areas at midnight tonight for possible gusts to 120 km/h (hurricane-force) Saturday.</p> <p>b. Rainfall.</p> <p>Breakdown of rainfall and impacts will appear here in later bulletins. Most likely region for heaviest rain: western New Brunswick and northward into Quebec.</p> <p>c. Surge/Waves.</p> <p>Breakdown of surge/waves and impacts will appear here in later bulletins. Most likely region for worst impacts: Atlantic coastal mainland Nova Scotia and areas around the Bay of Fundy.</p> <p>3. Marine weather impacts and warnings summary.</p> <p>Greatest waves and winds expected around the Bay of</p>	<p>Maritimes pourraient avoir cause des bandes de pluies torrentielles qui se déplace du sud-ouest au nord-est. Ces bandes de neige sont très difficiles à prévoir, mais il est important de understand il y a des risques sous ces bandes de neige bien avant l'arrivée des vents. Ces orages sont effets directement liée à l'ouragan. On prévoit une quantité de pluie de vent pourraient s'amplifier le risque d'inondation.</p> <p>a. vents.</p> <p>Une analyse des vents et des impacts de Vous trouverez dans ce secteur plus tard dans les bulletins à venir. La région la plus probable : les pires répercussions sur l'ouest de la Nouvelle-Écosse ainsi que le comté de Grand Manan et le littoral du comté de Charlotte et la région du Nouveau-Brunswick. Des veilles de tempête tropicale et d'ouragan pourraient être émis pour certains secteurs à minuit ce soir et cette nuit pour une possibilité de rafales de force ouragan (120 km/h) samedi.</p> <p>b. pluie.</p> <p>Tableau des quantités de pluie et des impacts de Vous trouverez dans ce secteur plus tard dans les bulletins à venir. Pour les régions plus susceptibles d'être les pluies les plus fortes : l'ouest du Nouveau-Brunswick et vers le nord et envahira le Québec.</p> <p>c. onde/vagues.</p> <p>Tableau des répercussions onde/vagues Vous trouverez dans ce secteur et plus tard dans les bulletins à venir. La région la plus probable : les pires répercussions de la côte atlantique de la péninsule de la Nouvelle-Écosse et les secteurs près de la baie de Fundy.</p> <p>3. Répercussions sur les prévisions maritimes et résumé des</p>	<p>Remarque : en plus de Lee, les provinces maritimes pourraient connaître des bandes successives de pluies torrentielles se déplaçant du sud-ouest au nord-est. Ces bandes sont très difficiles à prévoir, mais il faut savoir qu'elles présenteront un risque d'inondation bien avant l'arrivée de Lee. Ces effets complexes sont indirectement liés à l'ouragan. La pluie supplémentaire provenant de Lee lui-même pourrait exacerber le risque d'inondation.</p> <p>a. Vent</p> <p>Une analyse des vents et de leurs répercussions sera publiée ici dans les bulletins à venir. Régions les plus à risque de subir les plus importantes répercussions : l'ouest de la Nouvelle-Écosse ainsi que Grand Manan et le littoral du comté de Charlotte au Nouveau-Brunswick. Des veilles de tempête tropicale et d'ouragan pourraient être émises pour certains secteurs à minuit cette nuit en raison de possibles rafales à 120 km/h (force ouragan) samedi.</p> <p>b. Pluie</p> <p>Une analyse des pluies et de leurs répercussions sera publiée ici dans les bulletins à venir. Régions les plus à risque de connaître la plus importante quantité de pluie : l'ouest du Nouveau-Brunswick et les régions au nord, y compris une partie du Québec.</p> <p>c. Onde/vagues</p> <p>Une analyse de l'onde de tempête et des vagues ainsi que de leurs répercussions sera publiée ici dans les bulletins à venir. Régions les plus à risque de subir les plus importantes répercussions : la côte atlantique de la péninsule de la</p>
---	--	---



<p>Fundy, Gulf of Maine and southwest Maritimes marine district.</p>	<p>avertissements.</p> <p>Les vagues les plus importantes et vents attendus près de la baie de Fundy, du golfe du Maine et du sud-ouest du secteur maritime des Maritimes.</p>	<p>Nouvelle-Écosse et les secteurs près de la baie de Fundy.</p> <p>3. Répercussions sur les prévisions maritimes et résumé des avertissements.</p> <p>Les vagues les plus grandes et les vents les plus forts sont attendus près de la baie de Fundy, du golfe du Maine et de la partie sud-ouest du secteur maritime des Maritimes.</p>
--	--	---

<p><b>Source Text Snowfall Warning (196 words EN-FR)</b></p>	<p><b>Automated Machine Translation</b></p>	<p><b>Final Text Postedited by Translation Bureau</b></p>
<p>10 to 15 cm of snow beginning Monday night and ending Tuesday.</p> <p>Southern Saskatchewan will see its first blast of winter tonight. Heavy snow will develop over the southwestern corner of the province later today and spread east-northeast through the night. The heaviest snow will track between Regina and Saskatoon early Tuesday morning.</p> <p>The snow will continue towards the Yorkton region before dissipating later Tuesday.</p> <p>The snow associated with this system is expected to be relatively intense with snowfall rates as high as 2-3 cm per hour. While some snow will likely melt on contact with the relatively warm ground, the high intensity will still likely allow 10 to 15 cm of snow to pile up along the swath of heaviest accumulations.</p> <p>In addition to the snow, moderate</p>	<p>De 10 à 15 cm de neige à compter de lundi soir et se terminant mardi.</p> <p>Le sud de la Saskatchewan connaîtra le premier épisode de temps hivernal ce soir et cette nuit. La neige forte commencera à tomber sur le sud-ouest de la province plus tard aujourd'hui et se propagera à l'est-nord-est au cours de la nuit. La neige la plus abondante se dirigera entre Regina et Saskatoon en début de matinée mardi.</p> <p>La neige continuera de se propager vers la région de Yorkton avant de se dissiper plus tard mardi.</p> <p>La neige associée à ce système devrait être relativement intense avec une accumulation de neige atteignant de 2 à 3 centimètres à l'heure. Bien qu'un peu de neige fondera probablement au contact du sol relativement chaud, les chutes de neige intenses permettront probablement une accumulation de 10 à 15 cm de neige le long des zones neige plus forte.</p>	<p>De 10 à 15 cm de neige de lundi soir à mardi.</p> <p>Le sud de la Saskatchewan connaîtra le premier épisode de temps hivernal ce soir et cette nuit. De la neige forte commencera à tomber sur l'extrême sud-ouest de la province plus tard aujourd'hui et se propagera vers l'est-nord-est au cours de la nuit. La neige la plus forte tombera entre Regina et Saskatoon tôt mardi matin.</p> <p>La neige continuera de se propager vers la région de Yorkton avant de se dissiper plus tard mardi.</p> <p>La neige associée à ce système devrait être relativement intense et tomber à un rythme pouvant atteindre de 2 à 3 centimètres à l'heure. Bien qu'un peu de neige fondera probablement au contact du sol relativement chaud, le fort taux de précipitation permettra probablement une accumulation de 10 à 15 cm de neige dans les zones de la neige la plus forte.</p> <p>En plus de la neige, des vents</p>



<p>northerly winds will develop along with this system, bringing in colder temperatures and resulting in local areas of blowing snow. We recommend that travellers be prepared for poor visibilities and accumulating snow or slush on roadways.</p> <p>If travelling during or in the wake of this storm, refer to the Highway Hotline to see the latest road conditions along your route: <a href="https://hotline.gov.sk.ca/map">https://hotline.gov.sk.ca/map</a></p>	<p>En plus de la neige, des vents modérés du nord se lèveront avec ce système, ce qui causera une chute des températures et des zones de poudrière par endroits. Les voyageurs doivent être prêts à composer avec une visibilité réduite et de la gadoue qui s'accumule ou de la gadoue sur les routes.</p> <p>Si vous devez vous déplacer pendant ou juste après cette tempête, veuillez consulter les conditions routières le long de votre itinéraire : <a href="https://hotline.gov.sk.ca/map">https://hotline.gov.sk.ca/map</a>.</p>	<p>modérés du nord se lèveront sous l'effet de ce système, et occasionneront une chute des températures et des zones de poudrière par endroits. Les voyageurs doivent être prêts à composer avec une mauvaise visibilité et une accumulation de neige ou de gadoue sur les routes.</p> <p>Si vous devez vous déplacer pendant cette tempête ou après son passage, veuillez consulter les conditions routières pour votre itinéraire : <a href="https://hotline.gov.sk.ca/map">https://hotline.gov.sk.ca/map</a>.</p>
<p align="center"><b>Source Text Special Weather Statement (169 words EN-FR)</b></p>	<p align="center"><b>Automated Machine Translation</b></p>	<p align="center"><b>Final Text Postedited by Translation Bureau</b></p>
<p>Pattern change to colder temperatures with first shot of accumulating snow coming this week for southern Saskatchewan and southern Manitoba.</p> <p>The mild fall weather will come to an abrupt end this week across the Prairies as a cold front slumping southward will usher in the first Arctic air of the season.</p> <p>Highs will drop to the single digits through much of the week before colder air moves in late week with temperatures in the -5 to -10 degree range likely by next weekend and into Halloween.</p> <p>The colder temperatures will bring accumulating snow to western Saskatchewan later this afternoon into Tuesday. The area of snow will move across the province on tonight into Tuesday and then into western Manitoba on Tuesday</p>	<p>On observera cette semaine un changement de configuration avec un refroidissement des températures et la première accumulation de neige pour le sud de la Saskatchewan et le sud du Manitoba.</p> <p>Le temps doux automnal prendra abruptement fin cette semaine dans les Prairies, alors qu'un front froid descendant vers le sud occasionnera des averses et amènera le premier épisode d'air arctique de la saison.</p> <p>Les températures maximales seront inférieures à 10 degrés pendant une bonne partie de la semaine avant que de l'air plus froid n'arrive en fin de semaine, avec des températures de -5 à -10 degrés probables pour la fin de semaine prochaine et jusqu'à Halloween.</p> <p>Les températures plus froides, apportera de la neige qui s'accumule à l'ouest de la Saskatchewan plus tard cet après-midi jusqu'à mardi. La zone de neige se déplacera sur la province</p>	<p>Changement de configuration météo cette semaine : une baisse des températures et la première accumulation de neige dans le sud de la Saskatchewan et le sud du Manitoba.</p> <p>Le temps doux automnal prendra abruptement fin cette semaine dans les Prairies, alors qu'un front froid qui descend vers le sud fera affluer de l'air arctique pour la première fois de la saison.</p> <p>Les températures maximales seront inférieures à 10 degrés pendant une bonne partie de la semaine, puis de l'air encore plus froid arrivera vers la fin de la semaine et occasionnera probablement des températures de -5 à -10 degrés en fin de semaine prochaine et jusqu'à l'Halloween.</p> <p>Le temps plus froid permettra une accumulation de neige sur l'ouest de la Saskatchewan plus tard cet après-midi et jusqu'à mardi. La zone de neige traversera la province ce soir, cette nuit et</p>





<p>into Wednesday.</p> <p>For Southern Manitoba, confidence is increasing on a snowfall event mid to late week but it remains too early to nail down amounts and location at this time.</p> <p>Be sure to stay tuned to <a href="http://weather.gc.ca">weather.gc.ca</a> for updated watches, warnings and forecasts through the week.</p>	<p>lundi soir et dans la nuit de lundi à mardi jusqu'à mardi, puis elle envahira l'ouest du Manitoba mardi et mercredi.</p> <p>Pour le sud du Manitoba, le degré de certitude augmente concernant la possibilité d'un épisode de neige vers le milieu ou la fin de la semaine, mais il est encore trop tôt pour estimer les accumulations de neige attendues et leur emplacement pour le moment.</p> <p>Suivez les mises à jour du site <a href="http://meteo.gc.ca">meteo.gc.ca</a> pour connaître les veilles, les avertissements et les prévisions tout au long de la semaine.</p>	<p>mardi, puis elle envahira l'ouest du Manitoba mardi et mercredi.</p> <p>Un épisode de neige dans le sud du Manitoba vers le milieu ou la fin de la semaine semble de plus en plus probable, mais il est encore trop tôt pour prévoir la quantité de neige et les régions qui seront touchées.</p> <p>Consultez <a href="http://meteo.gc.ca">meteo.gc.ca</a> pour suivre les mises à jour des veilles, des avertissements et des prévisions tout au long de la semaine.</p>
<p><b>Source Text</b> Marine Weather Statement (104 words EN-FR)</p>	<p><b>Automated Machine Translation</b></p>	<p><b>Final Text Postedited by Translation Bureau</b></p>
<p>Marine Weather Statement for the Pacific Waters issued by Environment Canada at 10:24 a.m. PDT Tuesday 24 October 2023.</p> <p>A low south of Vancouver Island combined with a ridge over the interior will give strong to gale force outflow winds through the mainland inlets today and tonight before easing Wednesday morning.</p> <p>Additionally, northerly gales over central waters and west of Vancouver Island will prevail. Across the inner south coast, northeast gales will develop over Haro Strait and Strait of Georgia - south of Nanaimo this evening. These gales will gradually ease Wednesday morning as the low moves to the Washington coast and weakens.</p>	<p>Communiqué maritime pour les eaux du Pacifique émis par Environnement Canada à 10h24 HAP le mardi 24 octobre 2023.</p> <p>Une dépression au sud de l'île de Vancouver, combiné à une crête sur l'intérieur donnera des vents d'ouest forts à force coup de vent de terre sur les inlets du continent aujourd'hui, ce soir et cette nuit avant de faiblir mercredi matin.</p> <p>De plus, des vents du nord de force coup de vent se lèveront ce matin sur les eaux centrales et à l'ouest de l'île de Vancouver. Sur la côte des détroits, des vents du nord-est de force coup de vent se lèveront sur le détroit de Haro et le détroit de Géorgie - au sud de Nanaimo ce soir. Ces vents de force coup de vent faibliront peu à peu mercredi matin lorsque la dépression se déplacera vers la côte de l'état de Washington et faiblira.</p>	<p>Communiqué maritime pour les eaux du Pacifique émis par Environnement Canada à 10h32 HAP le mardi 24 octobre 2023.</p> <p>Une dépression au sud de l'île de Vancouver et une crête sur l'intérieur produiront des vents de terre de forts à force coup de vent sur les inlets du continent aujourd'hui, ce soir et cette nuit. Les vents de terre devraient faiblir mercredi matin.</p> <p>De plus, les vents du nord de force coup de vent sur les eaux centrales et à l'ouest de l'île de Vancouver persisteront. Sur la côte des détroits, des vents du nord-est de force coup de vent se lèveront sur le détroit de Haro et le détroit de Géorgie - au sud de Nanaimo ce soir. Ces vents de force coup de vent faibliront peu à peu mercredi matin à mesure que la dépression gagnera la côte de l'État de Washington et faiblira.</p>
<p><b>Source Text</b> Severe Thunderstorm Warning (45 words FR-EN)</p>	<p><b>Automated Machine Translation</b></p>	<p><b>Final Text Postedited by Translation Bureau</b></p>
<p>À 14h35, les météorologues</p>	<p>At 02:35 PM, météorologues from</p>	<p>At 2:35 pm, Environment Canada</p>



<p>d'Environnement Canada surveillent des averses et orages pouvant produire de la pluie forte.</p> <p>Les environs de Sacré-Coeur, de la Rivière-Sainte-Marguerite, de l'Anse-de-Roche, de Rivière-Éternité et de Petit-Saguenay sont les plus à risque de recevoir de grandes quantités de pluie cet après-midi.</p>	<p>Environment Canada meteorologists showers and thunderstorms capable to produce heavy rainfall.</p> <p>The vicinity of Sacré-Coeur, Rivière-Sainte-Marguerite, Anse-de-Roche, Rivière-Éternité and Petit-Saguenay have the greatest potential to get big quantities showers this après-midi.</p>	<p>meteorologists are tracking showers and thunderstorms capable of producing heavy rain.</p> <p>The vicinity of Sacré-Coeur, Rivière-Sainte-Marguerite, Anse-de-Roche, Rivière-Éternité and Petit-Saguenay are most at risk of receiving significant rainfall amounts this afternoon.</p>
<p><b>Source Text</b> <b>Severe Thunderstorm Warning</b> <b>(49 words EN-FR)</b></p>	<p><b>Automated Machine Translation</b></p>	<p><b>Final Text Postedited by Translation Bureau</b></p>
<p>This cluster of severe thunderstorms is located from 15 kilometres south of Sprague to 20 kilometres south of Stratton, moving north at 80 km/h.</p> <p>Hazard: Toonie size hail, 90 km/h wind gusts and heavy downpours.</p> <p>Locations impacted include: Lake of the Woods Provincial Park, Rainy River and Harris Hill.</p>	<p>Cette grappe d'orages violents s'étire d'un point à 15 kilomètres au sud de Sprague à 20 kilomètres au sud de Stratton, qui se déplace vers le nord à 80 km/h.</p> <p>: risque d'une pièce de deux dollars, des rafales à 90 km/h et des pluies torrentielles.</p> <p>Les secteurs affectés incluent : le parc provincial du lac des Bois, du Saguenay et de Harris Hill.</p>	<p>Cette grappe d'orages violents s'étend depuis un point à 15 kilomètres au sud de Sprague jusqu'à un point à 20 kilomètres au sud de Stratton et se déplace vers le nord à 80 km/h.</p> <p>Dangers : grêle de la taille d'une pièce de 2 dollars, rafales à 90 km/h et pluie torrentielle.</p> <p>Les régions touchées incluent : le parc provincial du Lac-des-Bois, Rainy River et Harris Hill.</p>
<p><b>Source Text</b> <b>Snowsquall Warning</b> <b>(56 words EN-FR)</b></p>	<p><b>Automated Machine Translation</b></p>	<p><b>Final Text Postedited by Translation Bureau</b></p>
<p>Snowsqualls will form this morning in the lee of Lake Winnipeg.</p> <p>Expect visibilities to be significantly reduced due to heavy snow. 10 to 15 cm of snow is possible under heavy, stationary bands that form. Conditions are expected to improve this evening.</p> <p>Cold air moving over the relatively warm lake waters is causing snowsqualls to form.</p>	<p>Des bourrasques de neige se formeront ce matin sous les vents du Lac Winnipeg.</p> <p>Il faut s'attendre à une visibilité réduite de façon importante à cause de la forte neige. De 10 à 15 cm de neige sont possibles sous l'effet des bandes de neige stationnaire, qui se formeront. Les conditions devraient s'améliorer ce soir.</p> <p>L'air froid passant sur les eaux relativement chaudes des lacs causent des bourrasques de neige se formeront.</p>	<p>Des bourrasques de neige se formeront sous le vent du lac Winnipeg ce matin.</p> <p>Il faut s'attendre à une visibilité considérablement réduite sous la neige forte. Il pourrait tomber de 10 à 15 cm de neige sous les bandes stationnaires de neige forte qui se formeront. Les conditions devraient s'améliorer ce soir.</p> <p>Le passage de l'air froid sur les eaux relativement chaudes du lac entraîne la formation de bourrasques de neige.</p>