NATIONAL WEATHER SERVICE

Building a Weather-Ready Nation



Breaking Through Barriers

NWS AI Translation Services and Multilingual Weather Content for Underserved Communities

Monica L. Bozeman,Feng Ding, Chris Rohrbach, Kevin Farina, Nhan Dang, Faye Morrone, Nelson Vaz, Rebecca Duell, Jim Calkins

January 15, 2025

105th AMS Annual Meeting - 2025 - New Orleans, LA

Session - Building Trust Through Equity: Effective Engagement Strategies for At-Risk Communities

What did we accomplish in 2024?

- Refined the Vietnamese model and introduced French
- NHC regularly used the AI to provide Spanish tropical products in the Atlantic & East Pacific
- Developed code to experiment with sharing Spanish AI translated products over NOAA Weather Radio and/or phone system
- Additional languages added to the Hazards Map page

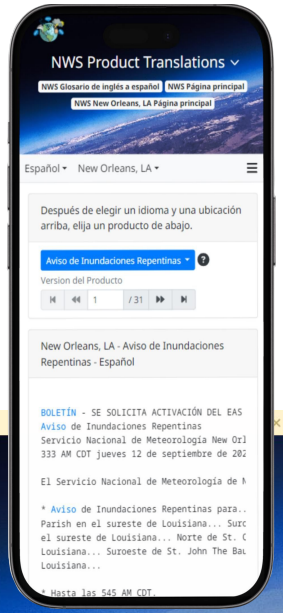


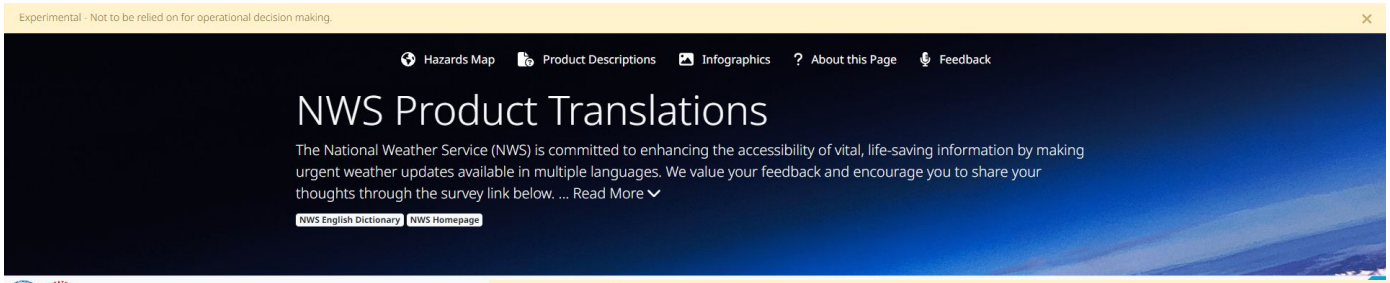
Outline for this presentation…

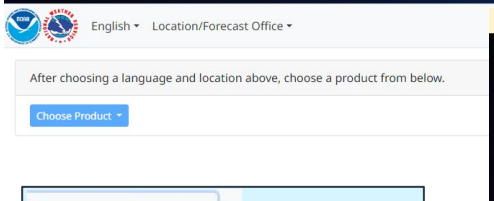
- **Outreach feedback/strategies & website analytics analysis**
  - **Website improvements**
  - **Gain user insights**

Experimental Website - Products

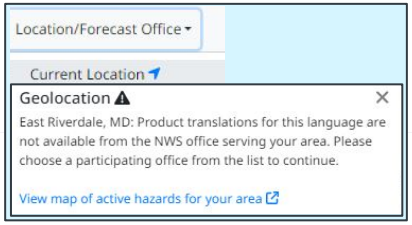
Mobile View:

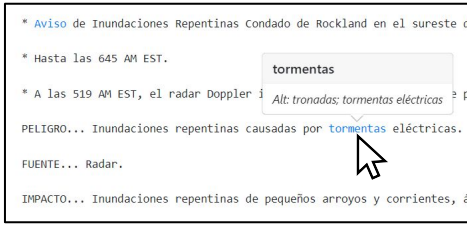


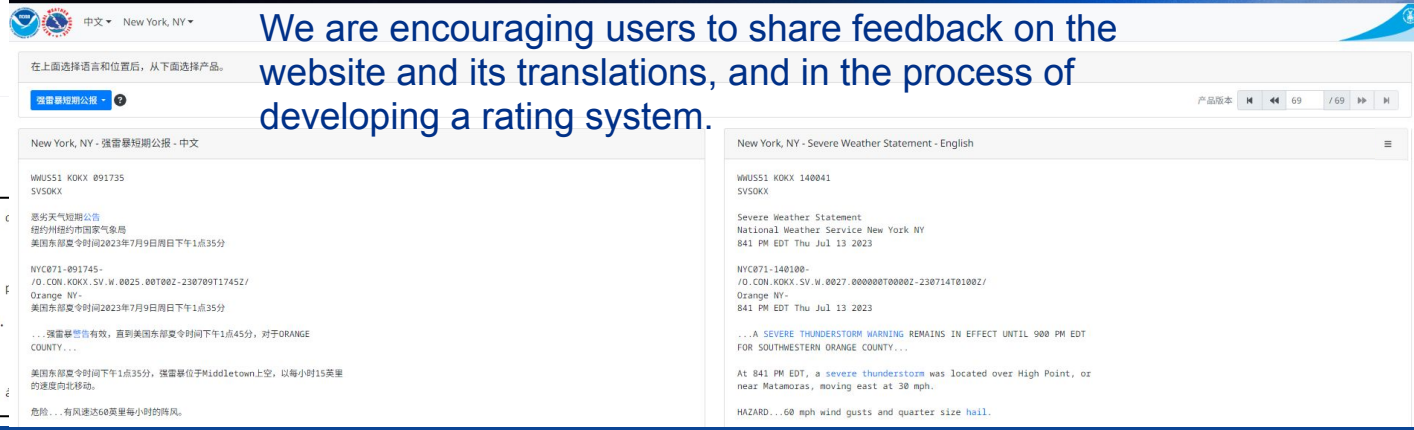








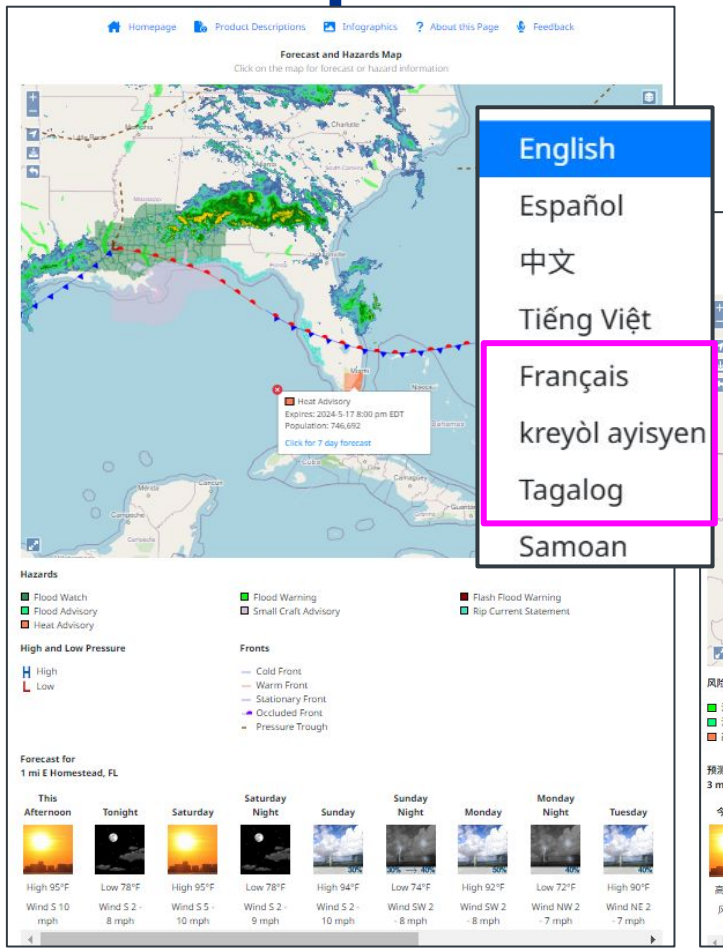


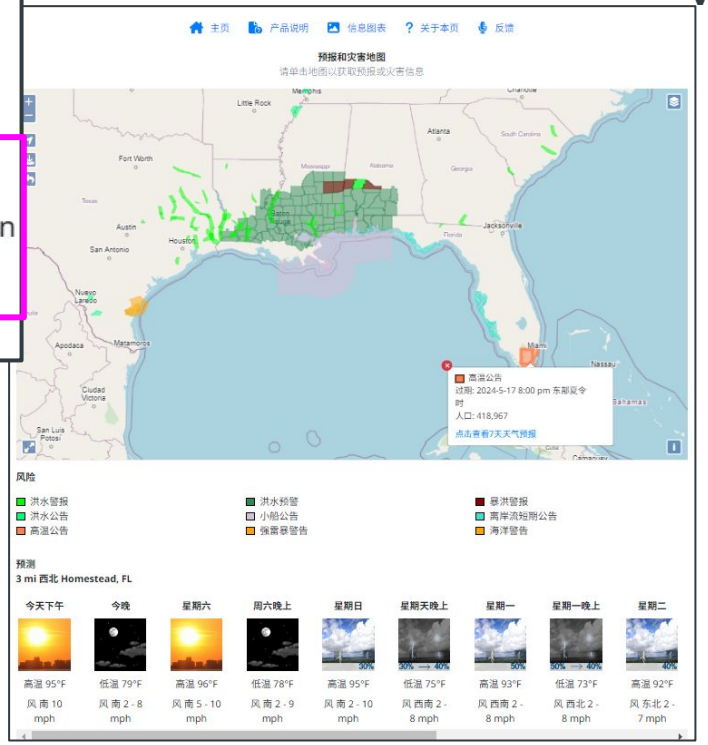


We are encouraging users to share feedback on the website and its translations, and in the process of developing a rating system.

Experimental Website - Hazards Map

NEW: Translated Point & Click 7-day forecast! &
MORE languages!





Mobile View:



Experimental Website: Infographics







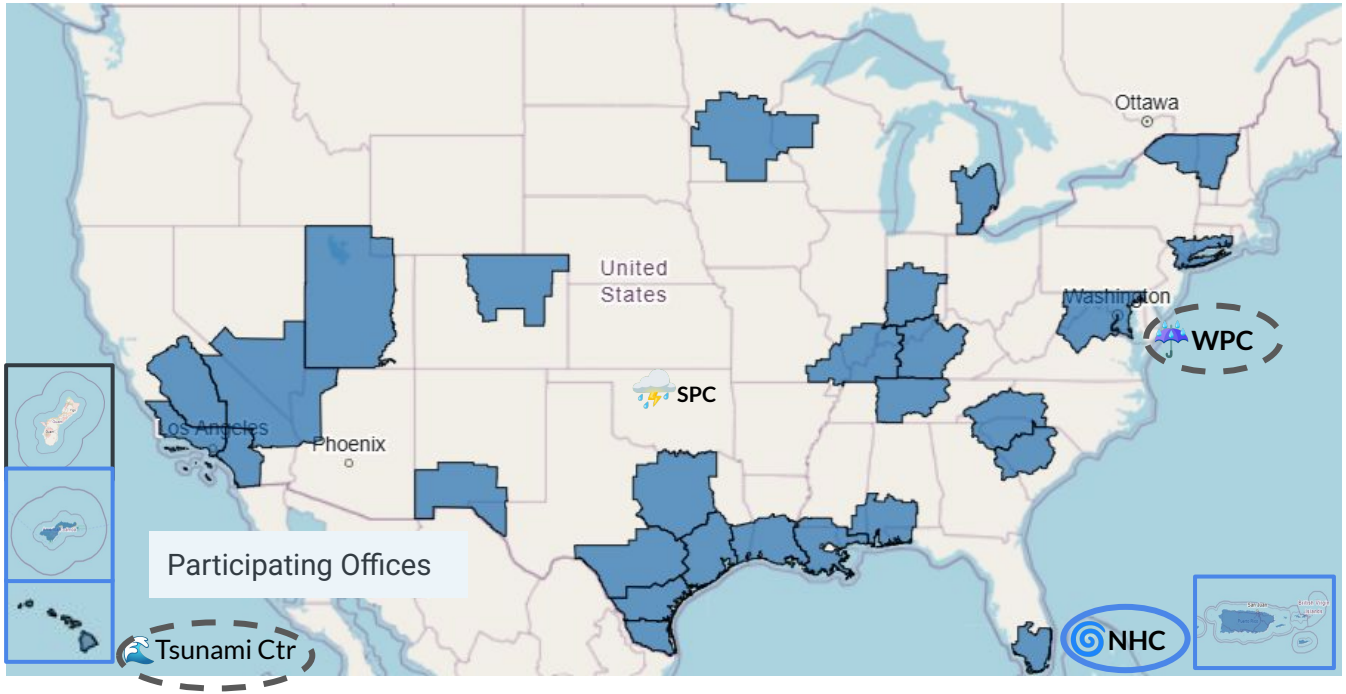
We invite you to become a weather ambassador by sharing these infographics online with your community, friends, and partners and using the hashtag *#NWSTranslate*

Please contribute to the awareness and understanding of weather events by integrating these visuals into your outreach programs, presentations, and educational initiatives.

** text for screen readers! **

Infographic translations are done by bilingual NWS staff, (powered by AI) due to the long shelf life of these images

Where can you find NWS AI Translations?



Weather Forecast Office	2019 CENSUS LEP Top 10 Language Count by greatest #'s (12 Total Grps)
Los Angeles ✅	11 languages
New York City ✅	11 languages
Washington/ Baltimore ✅	10 languages
Philadelphia	10 languages
Monterey/San Francisco	8 languages
San Diego ✅	8 languages
Boston	7 languages
Chicago	7 languages
Seattle	7 languages
Dallas/Ft Worth ✅	6 languages

*** Pace of additional languages and Offices is determined by level of funding**

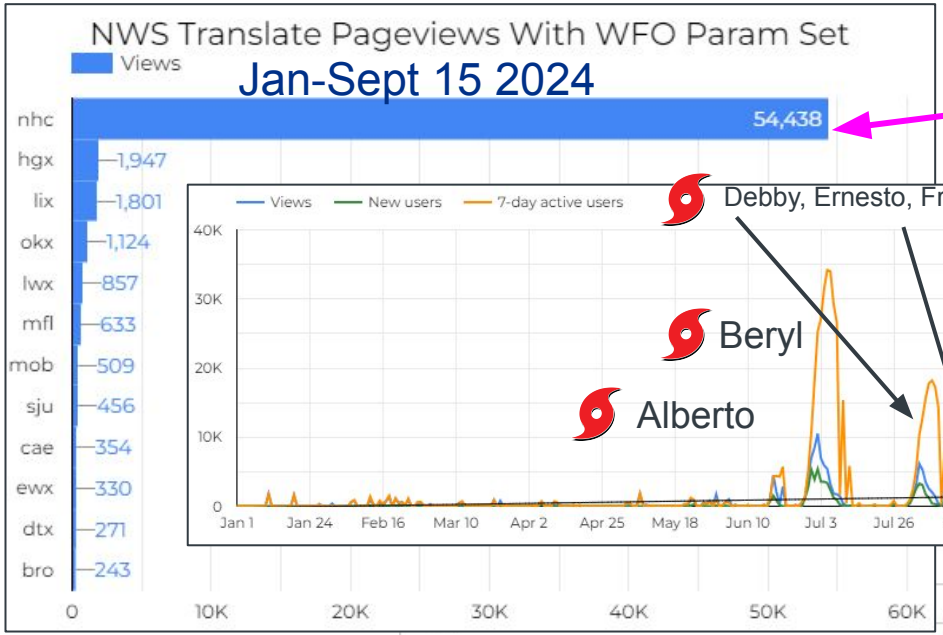
-Future Languages: Arabic, Haitian Creole, Korean, Portuguese, Russian, Somali

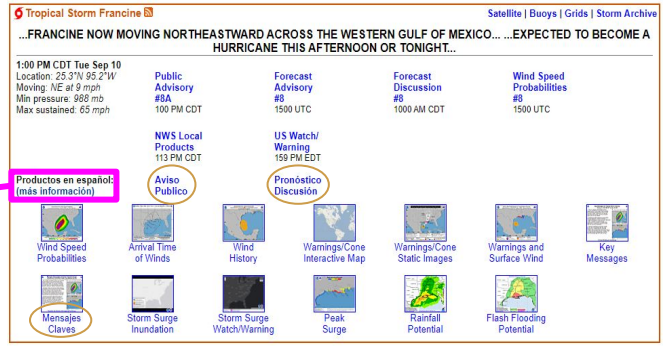
-Current AI languages: **Spanish**, **Simplified Chinese, Vietnamese, French, Samoan**

⇒ **12M+ Spanish & 800k+ *non-Spanish* languages = 13M+ (of the 25M) LEP people** potentially served at participating WFOs

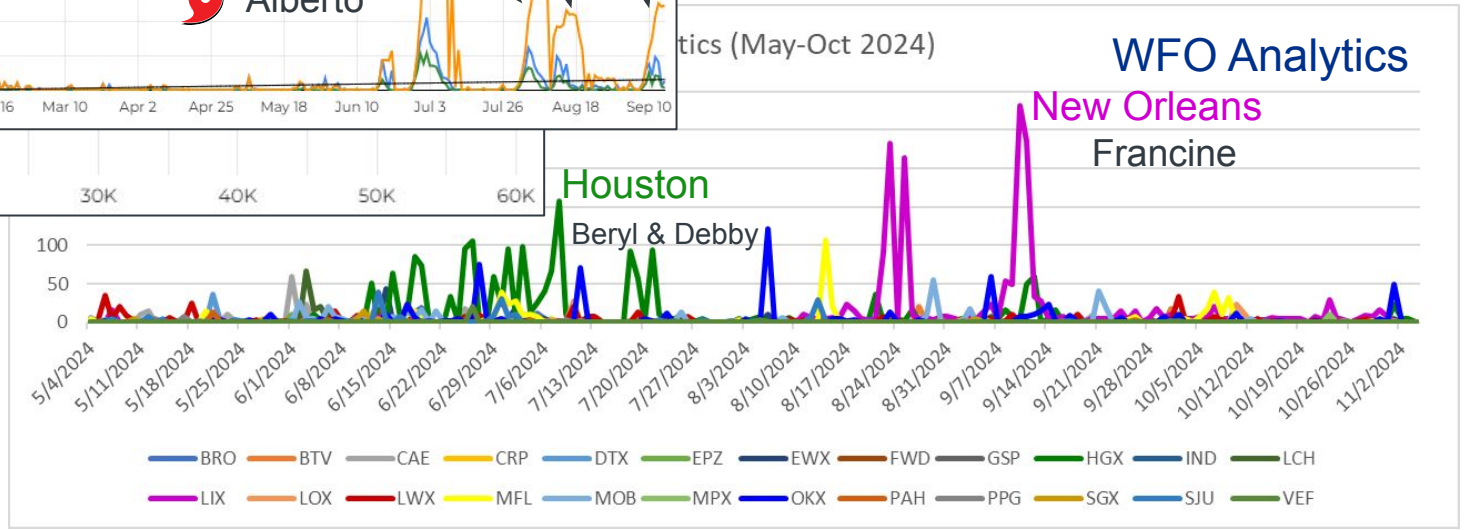
So what have we learned in 2024?

Popular Content:Hurricanes

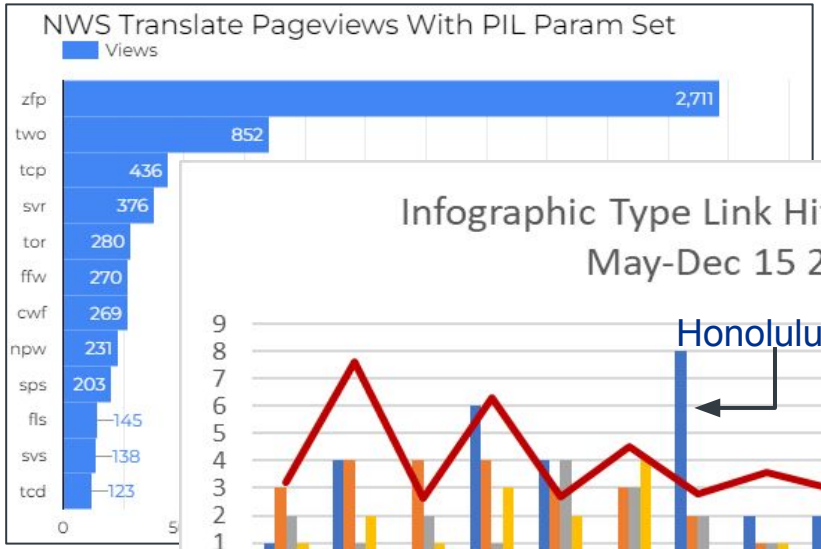


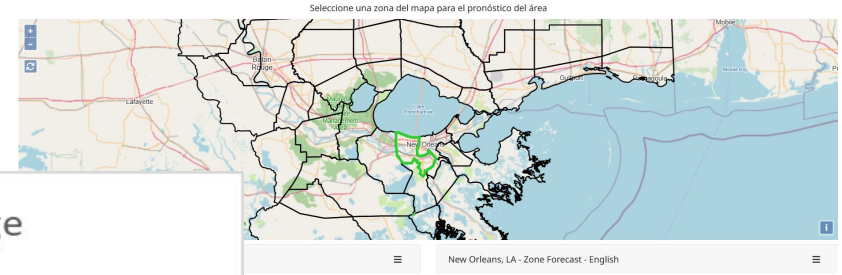


Note: Analytics can only capture the ***first*** page/referred page a user **lands on** to interact with the site



Popular Content: ZFP & Infographics





Note: Analytics can only capture the ***first*** page/referred page a user **lands on** to interact with the site

May-Dec 2024

	Page Groupings	Views
1.	Translate Home Page	278,614
2.	Hazards Page	38,417
3.	Infographics Page	7,365
4.	About Page	2,200
5.	other	33
6.	Feedback Page	25
7.	Product Descriptions...	24
	Grand total	**326,678**

Winter Hazards & Refugees

Takeaways from Immigrant/Refugee Discussions

- Collaborate with local chapters of the **US Committee for Refugees and Immigrants**
  - **This group will provide live translators at events**



- Many immigrants come from warm climates and may not be prepared for cold weather and hazards.
  - **Consider increased outreach content on how to dress warmly, winter driving, and ice safety.**

NWS Burlington



NWS Staff & a volunteer demonstrate how to properly layer winter clothing

IPAWS
Celebrating 10 Years of Wireless Emergency Alerts

FCC Actions Affecting Wireless Emergency Alerts



- Refugee & English Second Language (ESL) groups encourage setting cell phones to English to learn the language
  - However, this poses problems for receiving translated WEAs



New infographics inspired by talks with refugee organizations

Best Practices Reaching Communities

- **Go old school - hand out paper fliers,newspaper articles, use QR codes**
  - Let people read these on their own time
  - Share at cultural heritage events, language schools, public schools, libraries, ESL classes/organizations, Tai Chi gatherings, food festivals, consulate or embassy events
- **Collaborate with cultural radio stations and newspapers to amplify your warnings and messages**



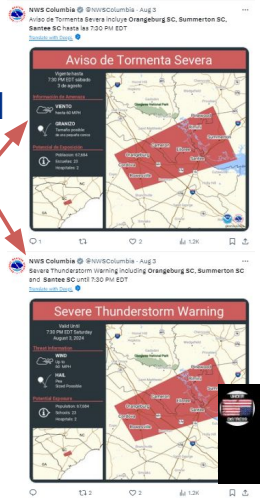
- **At outreach events, provide multilingual signage (and fliers!)**
  - Participate at public school science fairs - lean on bilingual children to educate families
- **Be strategic about HOW you post multilingual content to social media**



Image Credit: freepik.com

A Tale of a few Tweets…

Automated Twitter Posts (multiple)

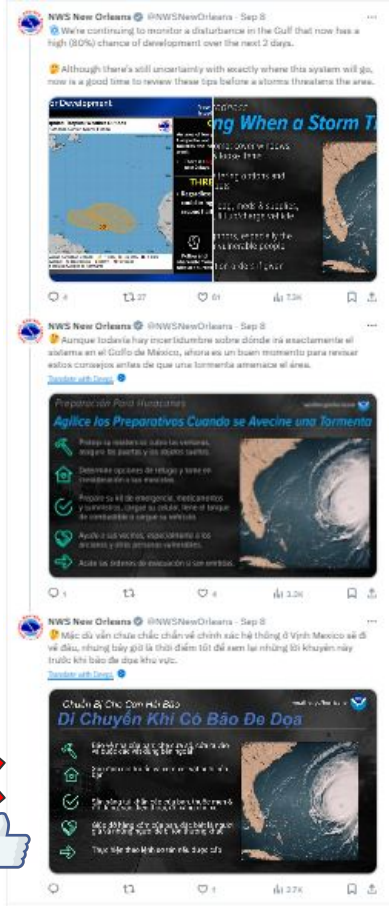


All in one post





Reply in thread



Multiple posts in feed



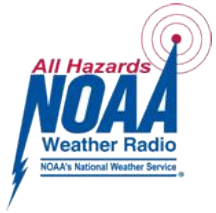
Twitter/X feed displays are tricky for multilingual posts

TWITTER TAKEAWAYS:

- X posts in timeline order, angers English speakers to search for their content → multiple multilingual posts
- Strategize multilingual posts → “All in one” or Replies

Work in 2025

- **Progress towards existing WFOs transmitting Spanish via NWR to use Lilt instead of local solutions**
  - Looking for WFOs willing to test capability for new service
- **Experimental testing of wide NWS access to AI capability to translate ppts & docs *within 15 mins***
  - Work with NWS regions to test capability
  - Continuing to pursue option for web applications → IDSS briefings
- **Prototyping AI translations of Tsunami products**
- **Prototype translation of auto-X graphics**
- **Strategic partnerships on Language models**
  - Partnership with Environment Canada - **French**
  - NWS Gulf coast SeaGrant work with The Boat People - **Vietnamese**
- **Adding more languages to the Hazards Map**
  - Partnership with Minnesota Public Media (TPTNow) for ***Somali & Hmong*** map legend and infographics
- **Explore options for operational implementation of the AI translated products with NWS Office of Dissemination**







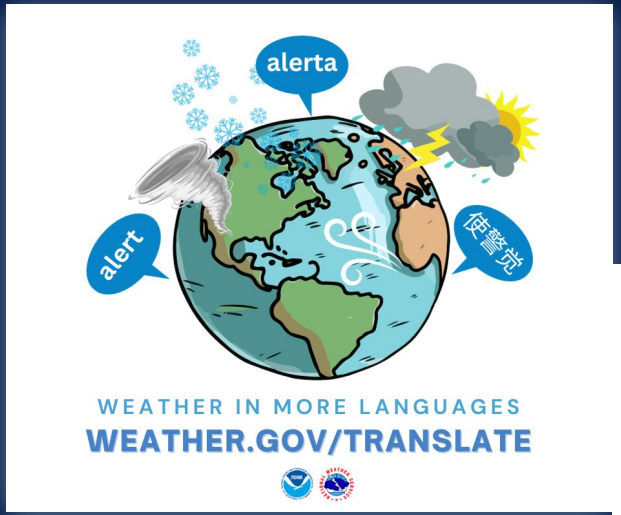






Thank you!

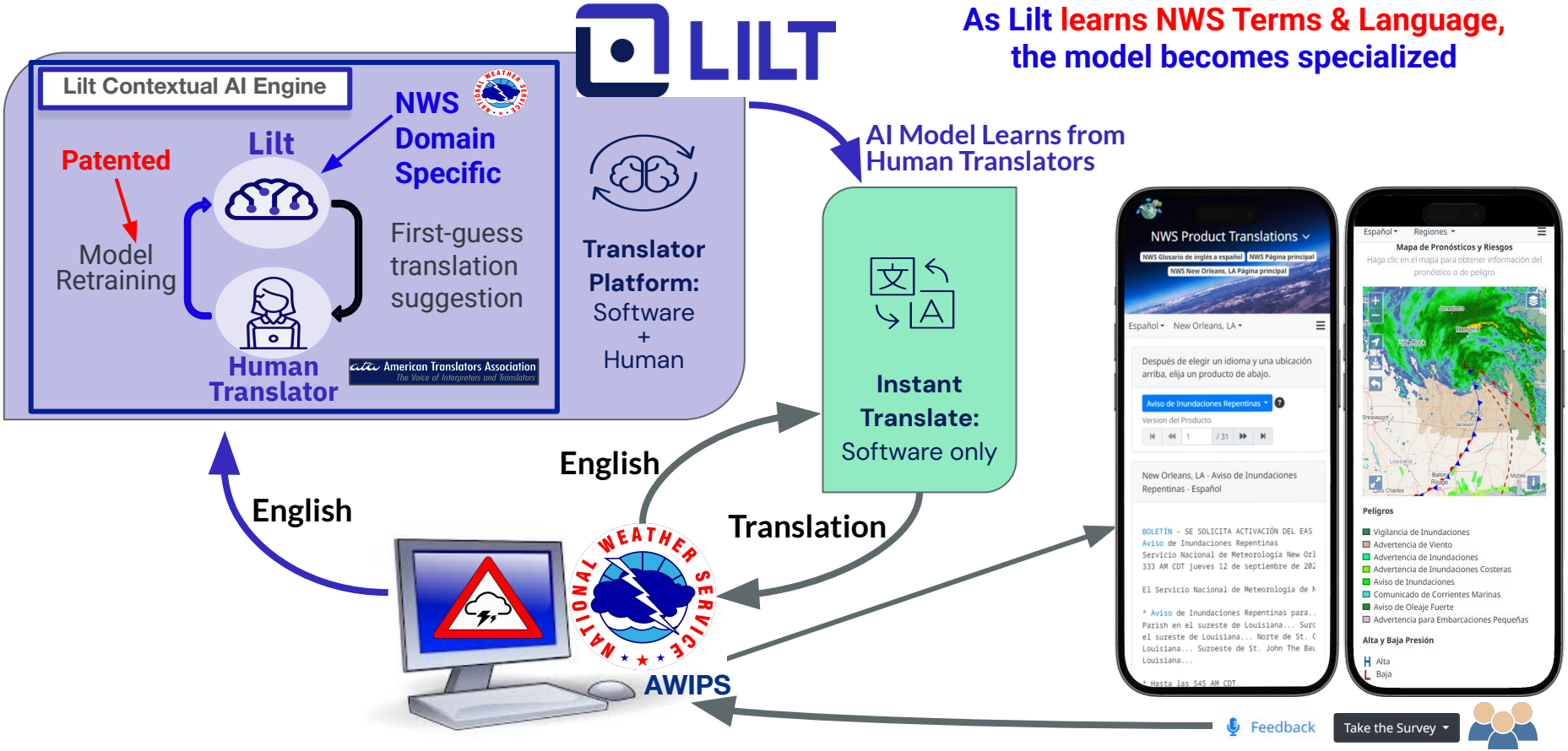
monica.bozeman@noaa.gov
nws.translate@noaa.gov





Reference Slides

Translation Tools & Path to Public



Multilingual Resources

Public Resources:

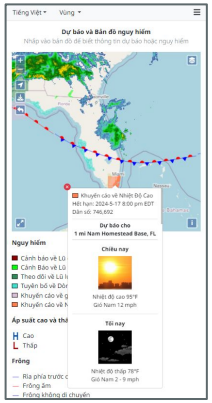
1. Weather.gov/Translate:

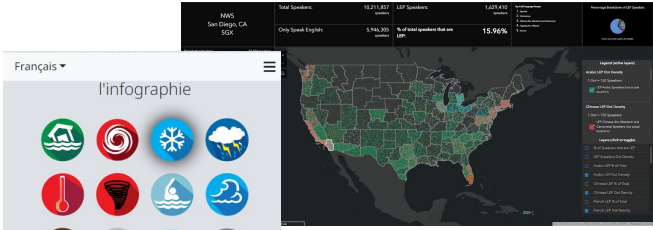


   a. Hazards Map
      i. NWS Watches/Warnings/Advisories
      ii. 7-day forecast
      iii. Forecast & Hazards Map screenshot button
   b. Infographics Page
   c. Product Descriptions Page
2. Census GIS Dashboard for LEP

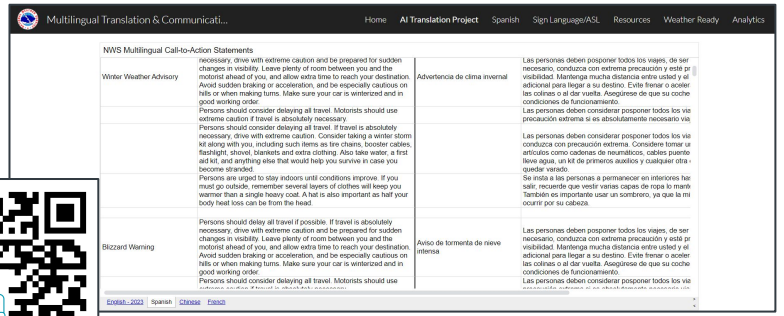
NWS-only Resources:

3. NWS Multilingual Communication Google Site
   a. Multilingual Call to Action Statements
   b. Multilingual WEA messages
4. Beta version of Translation API GDrive folder





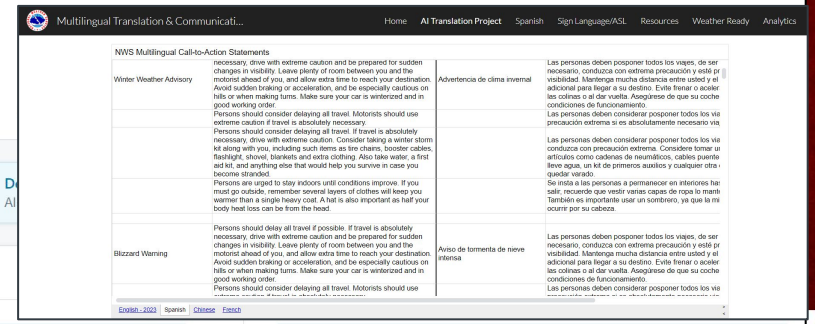




Multilingual Resources - Open Source

Combine DeepL translation with the Multilingual WWA names + Call to Action Statements and/or Product Descriptions to translate your social media posts!





We are working on a glossary page to assist with NWS terms and product names