GREEN SCENT

SMART CITIZEN EDUCATION FOR A GREEN FUTURE

Communicating the environmental crisis to non-specialist audiences: A quality assessment of machine translated subtitles into three different languages
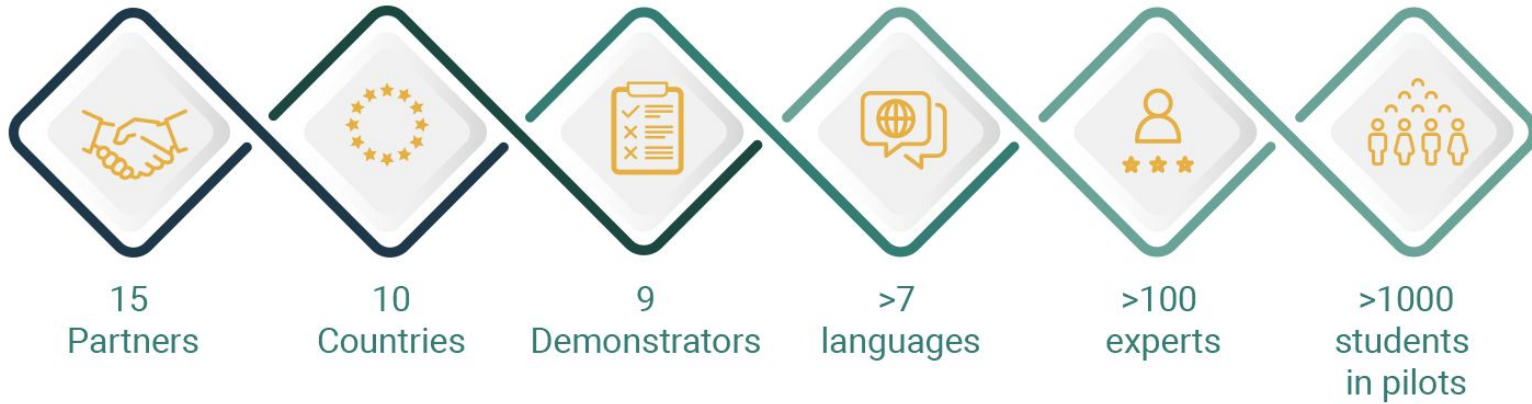
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We are pangeanic
Language Technology AI

➔ GreenSCENT Project

➔ Context

➔ Pangeanic machine translation engines

➔ Exploratory study

◆ Methodology

◆ Results

◆ Preliminary conclusions

GreenSCENT at a glance

15 Partners

10 Countries

9 Demonstrators

>7 languages

>100 experts

>1000 students in pilots

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davidattenborough ✔

davidattenborough ✔ David Attenborough has spent a lifetime travelling, exploring the wild places of our planet and documenting the living world in all its variety and wonder. He's also witnessed the damaged caused. Saving our planet is now a communications challenge. We know what to do, we just need the will.

That's why we want to share this message on Instagram. Because there is hope and together, we can inspire change. Social media isn't David's usual habitat so while he's recorded messages solely for Instagram, like the one in this post, we're helping to run this account. In case you're wondering, 'we' are Jonnie and Colin and we worked with David on A Life On Our Planet. So, as well as sharing the messages he's recorded especially for this account we'll also post some exclusive clips and behind the scenes content.

Stay tuned.

134w

18,290,190 views
SEPTEMBER 24, 2020

Growing interest in climate change (I)
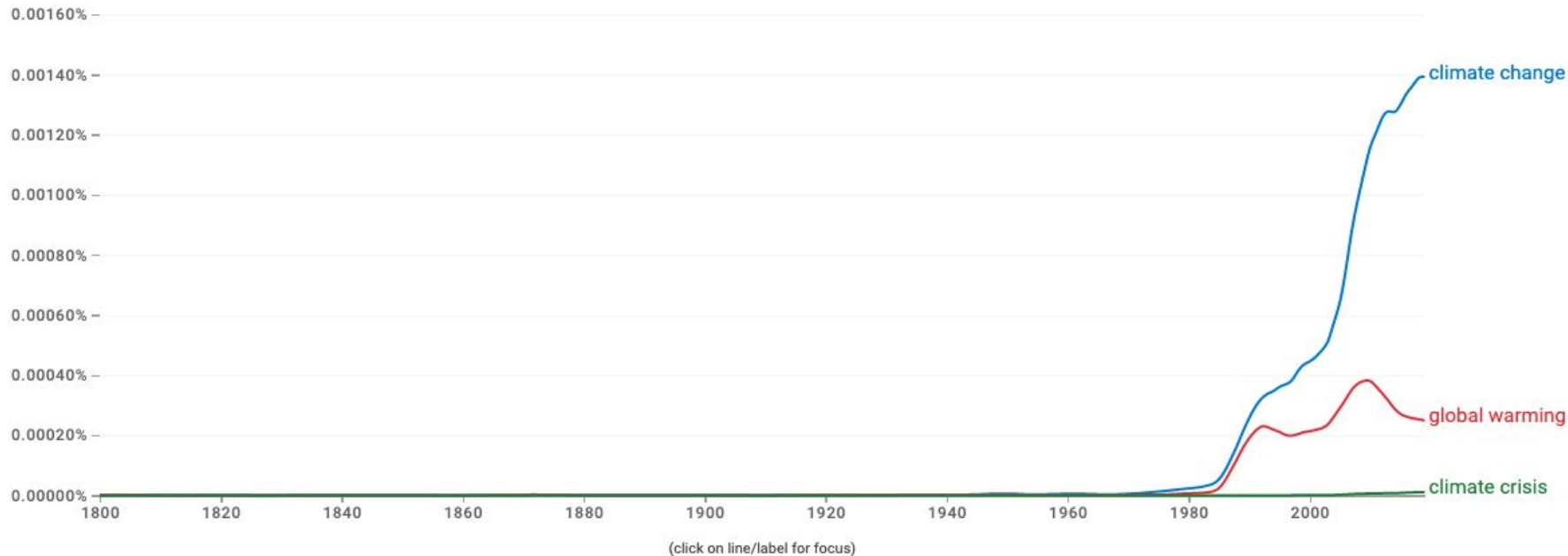
Evolution of environmental term(s)
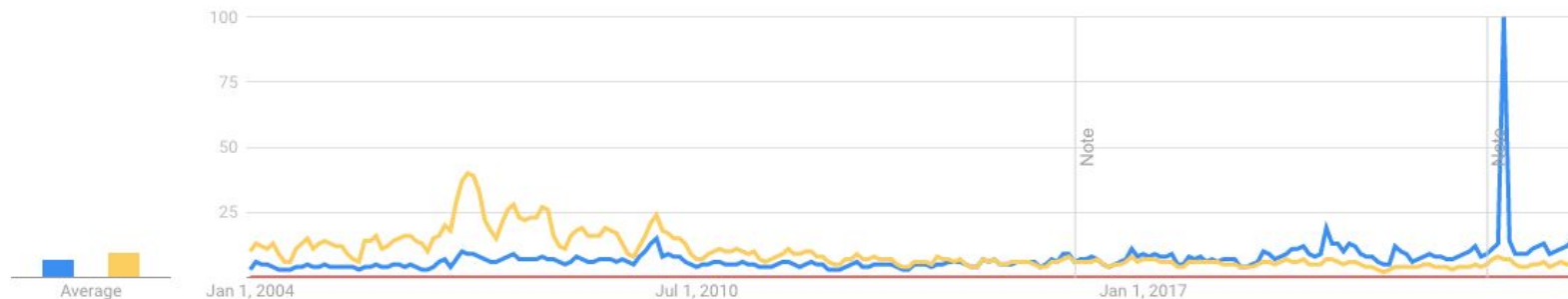
🕐 This article is more than **3 years old**

Why the Guardian is changing the language it uses about the environment

From now, house style guide recommends terms such as 'climate crisis' and 'global heating'

- The language and terms used to describe the environmenal situation have increased in urgency (Carrington 2019; Vinter 2021).
- This has coincided with an increase in environmental information, with agencies and organisations sharing up-to-date ecological data with policymakers and the public.
- Potential of machine translation to provide up-to-date environmental information in a variety of different languages

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Welcome to ECO

This is ECO web application providing machine translation services for Green SCENT organization.

Green SCENT GreenScent – Smart Citizen Education for a Green Future – aims to change citizens' behaviors allowing them to be the ones who act to implement the policies of the European Commission in the context of the Green Deal. The behavioral change of citizens through the stimulation of their empathy for social and global issues due to climate change is fundamental for the achievement of the objectives set by GreenScent and, more broadly, by the European Commission in the context of the Green Deal and the achievement, on the part of the European Continent, of Climate Neutrality by 2050.

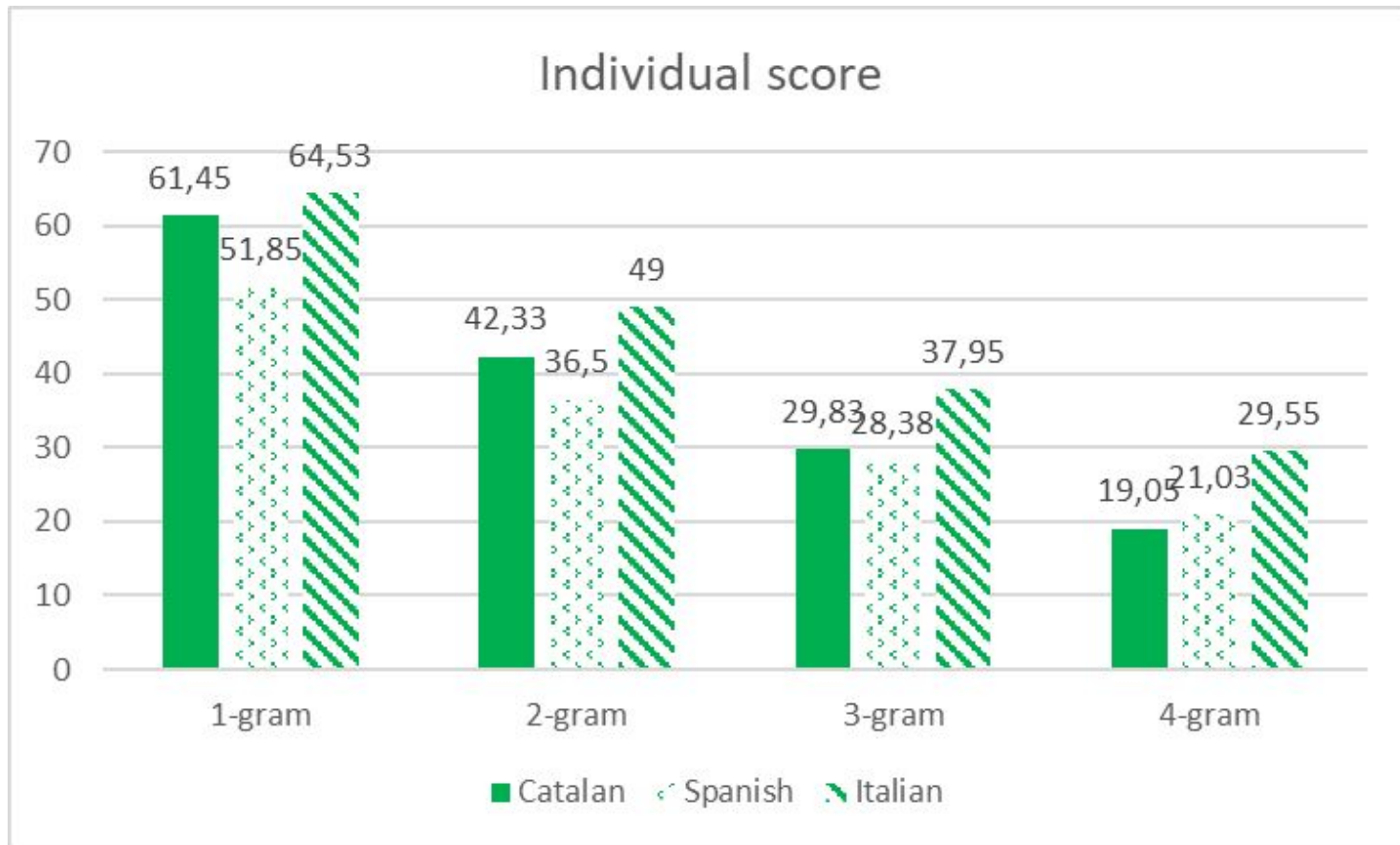# Source Text: GreenSCENT introductory video

Methodology

- Measure the quality of machine translated subtitles from English into three different languages:

  - **Italian**
  - **Spanish**
  - **Catalan**

- Calculate accuracy using the **Bilingual Language Evaluation Understudy (BLEU)** using an online calculator

- Quality is evaluated by comparing the machine translated subtitles in each language with those created by humans.

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BLEU scores results

	Catalan	Spanish	Italian
Total score	34.87	32.6	41.93

Quantitative Results: BLEU Scores

Individual score

	1-gram	2-gram	3-gram	4-gram
Catalan	61,45	42,33	29,83	19,05
Spanish	51,85	36,5	28,38	21,03
Italian	64,53	49	37,95	29,55

■ Catalan   Spanish   ↘ Italian

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Quantitative Results: BLEU Scores

Cumulative score

	1-gram	2-gram	3-gram	4-gram
Catalan	61,45	51	42,65	34,87
Spanish	51,85	43,51	37,73	32,6
Italian	62,36	54,34	47,67	41,93

■ Catalan ∴ Spanish ＼ Italian

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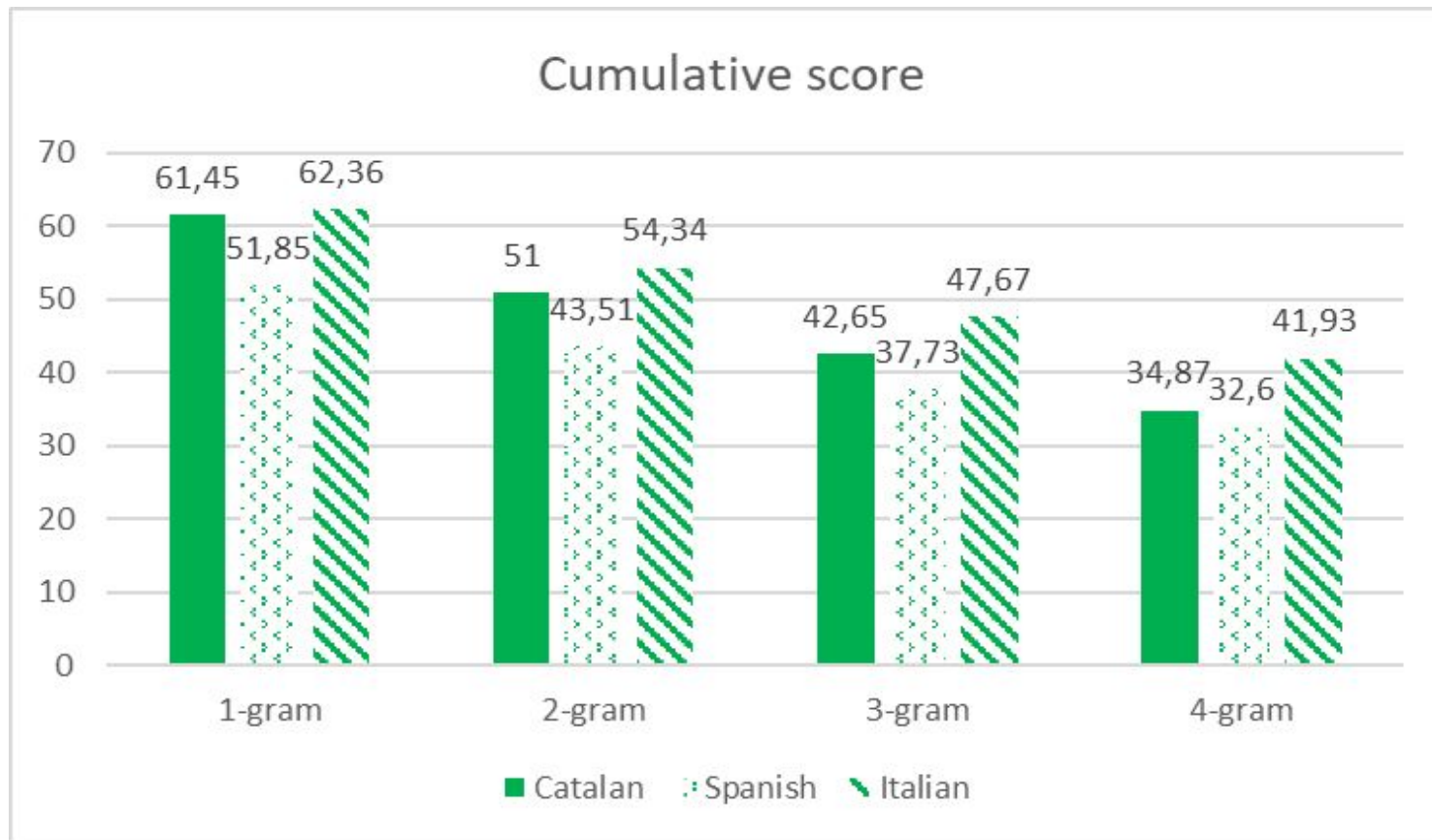
BLEU Scores: Catalan

Sentence 1	BLEU	Length ratio	Text
Source	-	-	Modern living is causing the Earth's temperature to increase changing the world we live in.
Human	100.00	1.00	La vida moderna fa que la Terra s ' escalfi
Machine	17.83	1.20	La vida moderna està fent que la temperatura de la Terra augmenti

Sentence 5	BLEU	Length ratio	Text
Source	-	-	while dressed in a t-shirt.
Human	100.00	1.00	Bevem aigua en ampolletes de plàstic .
Machine	13.49	1.29	De beure aigua en petites ampolles de plàstic ,

BLEU Scores: Spanish

Sentence 17	BLEU	Length ratio	Text
			We can all become allies of the planet.
Source	-	-	we will engage people with climate and environmental issues
Human	100.00	1.00	Podemos ser aliados del planeta .
Machine	36.56	1.33	Todos podemos convertirnos en aliados del planeta .

Sentence 5	BLEU	Length ratio	Text
			From drinking water in small plastic bottles,
Source	-	-	while dressed in a t-shirt.
Human	100.00	1.00	Bebemos agua en botellas de pl � stico .
Machine	31.46	1.44	Del agua potable en peque � as botellas de pl � stico ,

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Sentence 1	BLEU	Length ratio	Text
Source	-	-	Modern living is causing the Earth's temperature to increase changing the world we live in.
Human	100.00	1.00	La vita moderna sta causando l ' aumento della temperatura della terra .
Machine	28.15	0.77	La vita moderna sta facendo aumentare la temperatura della Terra

we will engage people with climate and environmental issues

Sentence 10	BLEU	Length ratio	Text
Source	-	-	GreenSCENT believes that we can all be changemakers.
Human	100.00	1.00	della crisi ambientale attraverso le nostre azioni .
Machine	51.70	1.00	di questioni ambientali attraverso le nostre azioni .

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Limitations of study

- Size and type of corpus

- Limitations of machine translation metrics (BLEU and METEOR)
  - BLEU bias towards translations that match the reference translation
  - BLEU does not take into account meaning or fluency
  - While METEOR has the advantage of being more robust to variations in word order and sentence structure and can also capture the semantic content of the translation, it has its limitations when evaluating translation in other languages, particularly in languages with different word order or syntax to English.

Preliminary Conclusions

➔ Potential of machine translation to support translation of important climate information

➔ However, post-editing is necessary to improve fluency and adhere to subtitling conventions

➔ Faster access to translated information vs trade off between efficiency and fluency

➔ Questions of energy efficiency of MT (Strubell et al. 2019)

➔ Need for clear communication when communicating the climate crisis

➔ Development of terminology we use to discuss the current environmental situation is evolving in response to it.

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- **30 November - 1 December 2023**
- [Call for Papers](#)
- Deadline for workshop proposals: **19 May 2023**
- Deadline for abstract submission: **1 June 2023**
- Notification of acceptance or rejection: **15 July 2023**

References

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