

# Communicating Uncertainty about Climate Change

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## Introduction

- The huge variation in projections of climate change models is due to incomplete information and other uncertainties.
- These uncertainties have to be communicated effectively to policy makers and to the public.

## Motivation

- Linguistic expressions of uncertainty (e.g., likely, probable) convey the imprecision underlying the information. Words are used quite consistently by most people, but not across people – One person’s “likely” is another’s “possible”. This creates an “Illusion of communication”

- This research examined (a) how the public understands the Intergovernmental Panel of Climate Change (IPCC)’s communication of uncertainty and (b) demonstrates the efficacy of an alternative reporting format.

## Method

- Sample: 223 paid volunteers (F:139, M:84); (Mean Age = 29.6 yrs old; SD=12.5; 40% non-students) from the UIUC community

- They read sentences containing probabilistic pronouncements from the IPCC report and estimated
  - (a) the probability intended by the report’s authors;
  - (b) the lowest and highest possible values consistent with the authors’ intentions.
- Example: It is *very likely* that hot extremes, heat waves, and heavy precipitation events will continue to become more frequent.

IPCC Likelihood Scale	
Phrase	Likelihood of Occurrence
Virtually certain	> 99%
Very likely	> 90%
Likely	> 66%
More likely than not	> 50%
About as likely as not	33% to 66%
Unlikely	< 33%
Very unlikely	< 10%
Exceptionally Unlikely	< 1%

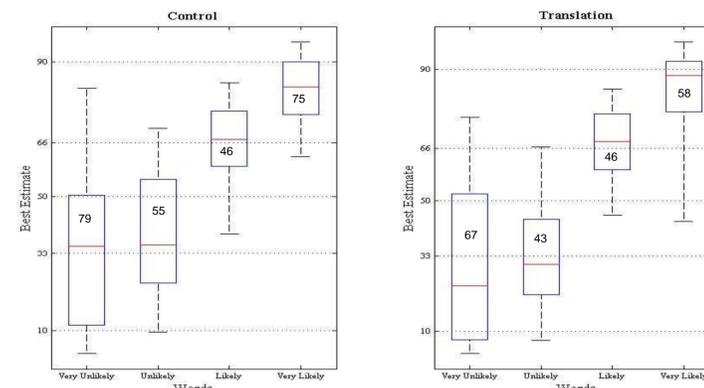
## Results

- *Control Grp*: Read the sentences without the translation table
- *Translation Grp*: Are provided access to the translation table

Are subjects’ lowest and highest estimates consistent with IPCC guidelines?

Group	Consistent with IPCC guidelines? (%)		
	Yes	Partially	No
Control	13	62	25
Translation	19	57	24
Total	16	59	25

Are subjects’ best estimates consistent with IPCC guidelines?



The central 90% of the distributions of subjects’ best estimates of the meanings of four probability terms are presented. The numbers in the boxes indicate the % of judgments inconsistent with the IPCC guidelines, and their placement above or below the medians indicates the direction of the misinterpretation.

## Results

- The level of consistency with the IPCC guidelines is low
- Accessibility to translation tables improves performance only slightly

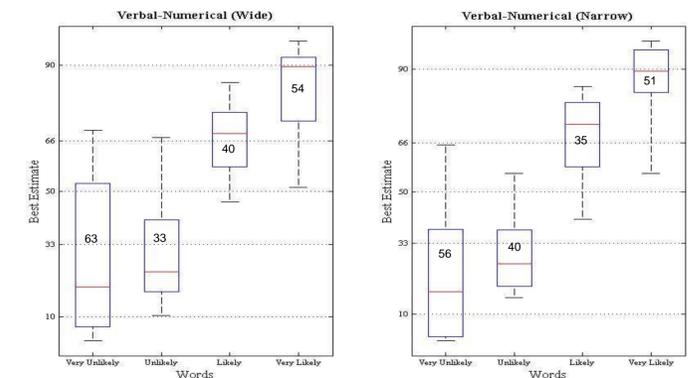
### Verbal-Numerical Groups

- Every linguistic term in the text is accompanied by a numerical range of values
- We ran groups with “wide” and “narrow” ranges

Are subjects’ lowest and highest estimates consistent with IPCC guidelines?

Group	Consistent with IPCC guidelines? (%)		
	Yes	Partially	No
Control + Trans	16	59	25
Verbal-Numerical	32	48	20
Total	22	55	23

Are Subjects’ Estimates Sensitive to the Range?



- Consistency with the IPCC guidelines doubled
- Respondents are sensitive to the range of values

## Recommendations

- To convey imprecise probabilities, it is advisable to use a combination of words and numbers.
- Adjust the width of the numerical ranges to match the uncertainty of the target events

## Acknowledgement

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