**Introduction**

- Despite strong evidence of climate change and high degree of scientific consensus about global warming, much of the public remains insufficiently motivated to pursue precautionary action to mitigate it.
- Reasons remain unclear. Possible cognitive factors:
  - Time discounting: concern for far-future events might be less than for near-future events
  - Concreteness: abstract global forecasts might seem less relevant than local forecasts
  - Wide variation among scientists’ estimates: could result in distrust of scientists
  - Experts are reluctant to incorporate uncertainty estimates, although such estimates have been shown to increase plausibility of weather forecasts (Joslyn & LeClerc, 2012). Is reluctance warranted?
  - Present research systematically manipulates variables believed to affect public’s perception of climate change forecasts, focusing on forecast expression. Expressions that increase concern about forecasts and trust in climate scientists could be used to increase precautionary action against climate change.

**Research Questions**

1. What cognitive factors influence people’s interpretation of climate change forecasts?
2. Does the inclusion of forecast uncertainty estimates affect concern about forecasts and trust in climate scientists?

**Method**

- 10-item questionnaire, posted online on popular Pacific NW weather blog
- 783 respondents (31% female)

**Forecasts**

- Temperature: increase of 3"F
- Sea level: increase of 6" over 20th century average

Same for all participants

**3 variables**, fully crossed between participants

<table>
<thead>
<tr>
<th>Time</th>
<th>2015</th>
<th>2025</th>
<th>2050</th>
<th>2100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place</td>
<td>Global</td>
<td>forecast for global average</td>
<td>Local</td>
<td>forecast for Puget Sound</td>
</tr>
<tr>
<td>Format</td>
<td>Deterministic</td>
<td>single-value forecast</td>
<td>Range</td>
<td>single-value forecast + 90% confidence interval</td>
</tr>
</tbody>
</table>

**Forecast Format**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Deterministic</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>[3.0, 3.3]</td>
<td>[3, 3.4]</td>
</tr>
<tr>
<td>Sea level</td>
<td>[6, 7]</td>
<td>[6, 7]</td>
</tr>
</tbody>
</table>

- Scientists estimate that the average global temperature by 2050 will be 3°F greater than the 20th century average, with a 90% chance the increase will be between 2°F and 4°F.
- Puget Sound residents estimated higher changes in temperature than non-residents did.
- But no difference between global and local forecasts: no effect of “concreteness” manipulation with this sample.

**Results**

- **Time**
  - Participants estimated higher temperature and sea level over time.
  - Low bias: participants estimated change in temperature and sea level below forecasted values.
  - Participants estimated greater uncertainty over time.
  - Differences in concern and trust ratings between time points, but no discounting effect.

- **Place**
  - Puget Sound residents estimated higher changes in temperature than non-residents did.
  - But no difference between global and local forecasts: no effect of “concreteness” manipulation with this sample.

- **Forecast Format**
  - Range participants had greater concern and trust than deterministic participants did, F(1, 782) = 4.64, p = .03.
  - But no difference in accuracy of forecast range between deterministic and range participants.

- **Conclusions**
  - Uncertainty estimates increased concern about climate change forecasts and increased trust in scientists’ estimates. These results suggest experts’ reluctance to include uncertainty estimates may be unfounded.
  - Time effect, but no time discounting: Respondents did not express decreased concern and trust over time. But they did estimate increase in parameter values and uncertainty over time.
  - “Concreteness” of forecast (place variable) did not significantly influence participants’ estimates and ratings. Residents gave similar ratings to local and global forecasts.
  - Future research will use a larger, more diverse sample and will focus on the source of the forecast uncertainty (e.g., disagreement between scientists vs. uncertainty produced by computer model).

**References**

For further information, please contact Jared LeClerc at jleclerc@uw.edu.