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Agreeing to disagree: Uncertainty management in assessing climate change, impacts and responses by the IPCC

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► **To cite this version:**

Rob Swart, Lenny Bernstein, Minh Ha-Duong, Arthur Petersen. Agreeing to disagree: Uncertainty management in assessing climate change, impacts and responses by the IPCC. *Climatic Change*, 2009, 92 (1-2), pp.1-29. 10.1007/s10584-008-9444-7 . halshs-00086987v2

HAL Id: halshs-00086987

<https://shs.hal.science/halshs-00086987v2>

Submitted on 18 Dec 2007

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Lexical analysis of IPCC Third Assessment Reports dealing with risk and uncertainty

Electronic supplement to Swart et al. (2006) working paper on Uncertainty management in assessing climate change, impacts and responses : the evolution from the first to the fourth IPCC Assessment

Mis en ligne par Minh Ha Duong
18 juillet 2006

Top words (>4000 uses)

How to read : In the IPCC Third Assessment Report, Working Group III volume, the word "emission" is used 3967 times.

| WG I | WG II | WG III | Total | | WG I | WG II | WG III |
|------|-------|--------|-------|---------------|------|-------|--------|
| 5501 | 11269 | 2586 | 19356 | <change> | 3040 | 5180 | 1890 |
| 5947 | 9427 | 2159 | 17533 | <climate> | 3290 | 4330 | 1580 |
| 5894 | 1890 | 1322 | 9106 | <model> | 3260 | 869 | 970 |
| 669 | 4307 | 952 | 5928 | <impact> | 370 | 1980 | 700 |
| 2400 | 2273 | 1151 | 5824 | <global> | 1330 | 1040 | 840 |
| 1265 | 531 | 3967 | 5763 | <emission> | 700 | 240 | 2900 |
| 1113 | 3442 | 169 | 4724 | <water> | 610 | 1580 | 120 |
| 10 | 813 | 3546 | 4369 | <cost> | 10 | 370 | 2590 |
| 228 | 498 | 3588 | 4314 | <energy> | 130 | 230 | 2620 |
| 2305 | 1912 | 89 | 4306 | <temperature> | 1270 | 880 | 60 |

Left, number of occurrences in TAR working group. In order to correct the size bias (reports from WG I and II were about the same size, but WG III report was 34% shorter), the right side of these tables show frequencies (% text coverage times 10000, abusively rounded).

Comment : Nothing surprising here. After "Climate change", the most frequent words used in the IPCC report vary across working groups. WG I uses "model", "global" and "temperature". In WG II we read "impact" "water" and "global" . The third working group writes about "emissions", "energy" and "cost". The word "model" is frequent also in WG II and III.

Risk & uncertainty vocabulary

Note that patterns within <single> brackets are lexical (i.e. words are put in canonical form before counting). Patterns within <<double>> brackets are morphological (i.e. counting sequences of letters).

| WG I | WG II | WG III | Total | | WG I | WG II | WG III |
|------|-------|--------|-------|---------------|------|-------|--------|
| 1231 | 695 | 462 | 2388 | <<uncertain>> | 680 | 320 | 340 |

| | | | | | | | |
|-----|------|-----|------|-------------|-----|-----|-----|
| 34 | 1217 | 294 | 1545 | <risk> | 20 | 560 | 210 |
| 381 | 671 | 429 | 1481 | <<possib>> | 210 | 310 | 310 |
| 43 | 506 | 452 | 1001 | <<strateg>> | 20 | 230 | 330 |
| 17 | 222 | 590 | 829 | <decision> | 10 | 100 | 429 |
| 128 | 342 | 91 | 561 | <<proba>> | 70 | 160 | 70 |
| 62 | 76 | 271 | 409 | <choice> | 30 | 30 | 200 |
| 61 | 47 | 15 | 123 | <<plausib>> | 30 | 20 | 10 |
| 12 | 55 | 16 | 83 | <<surpris>> | 10 | 30 | 10 |

Comment : There is no need for statistical tests to see that each working group uses a different strategy to write about risk and uncertainty. WG I almost banished the word "risk" in favor of words in the "uncertain" and "possible" family. In contrast, WG II uses "risk" a lot. "decision" takes first place in WG III. "surpris" seems under-used compared to the real degree of concern for abrupt climate change.

Vocabulary from the guidelines

This section refers to Moss and Schneider (2000) Uncertainties in the IPCC TAR : Recommendations to lead authors figures 3 and 4.

Numbers represent upper bounds, since I did not check if in context they have been used referring to the guidelines.

| WG I | WG II | WG III | Total | III. Guidelines vocabulary | WG I | WG II | WG III |
|------|-------|--------|-------|------------------------------------------|------|-------|--------|
| 8 | 240 | 4 | 252 | <high><confidence> | 10 | 330 | 10 |
| 0 | 161 | 1 | 162 | <medium><confidence> | 0 | 220 | 0 |
| 3 | 43 | 6 | 52 | <low><confidence> | 0 | 60 | 10 |
| 11 | 444 | 11 | 466 | <i>Total for confidence levels</i> | | | |
| WG I | WG II | WG III | Total | | WG I | WG II | WG III |
| 9 | 22 | 12 | 43 | <well><establish> | 10 | 30 | 30 |
| 0 | 27 | 2 | 29 | <establish><but> | 0 | 40 | 0 |
| 10 | 18 | 8 | 36 | <speculative> | 10 | 10 | 10 |
| 0 | 18 | 1 | 19 | <compete><explanation> | 0 | 20 | 0 |
| 19 | 85 | 23 | 127 | <i>Total for qualitative uncertainty</i> | | | |

Comments : The usual bias against negative results is clearly visible. WG II used vocabulary from the guidelines much more than the other two working groups. Note that these figures do NOT include text from the Technical Summaries.

Data and methods

The full TAR text was taken from the IPCC TAR CD-ROM, also available online

Methods are formally defined in the attached script. Text was converted from HTML to 7-bit clean using the html2text script, and cat and sed standard Unix tools. Content was analysed using the « locate pattern » functions in UNITEX 1.2, an open-source corpus processing system based on automata-oriented technology.

Documents joints

