Uncertainties

Recent assessments: Sum of projections for each term in the LSL equation; combination of individual PDFs.

Problem: Different types of uncertainties (Manning and Petit, 2003):

Uncertainty	Class	LSL forcing process
Incomplete or imperfect observations	aleatory	vertical land motion, reference frame, oceanographic observations;
Incomplete conceptual framework	epistemic	with respect to climate system: Yes; with respect to mass-LSL relation: No;
Inaccurate description of known processes	epistemic	one-dimensional models, incomplete mass redistribution, gravitationally inconsistent models, programming errors;
Chaos	epistemic	With respect to climate system (including ocean circulation): Yes; for mass-LSL relation: No;
Lack of predictability	epistemic	ice sheet behavior, mass exchange, ocean warming, circulation changes.

Treatment of uncertainties in the mapping of plausible LSL trajectories:

- Aleatory (statistical): values and PDF estimates from past observations;
- Epistemic (systemic): research; scenario approach: realistic assumptions concerning forcing; Ensemble studies (chaos, lack of predictability)