Live Discussions

WG2: Collection of ideas and uncertainties

IS-ENES Partners:

Live Discussion

Live Discussion: Summary of key points

Short questions list and Priorities

- Ensembles and uncertainties
  - Impact models can be as complex as climate models
  - Impact models uncertainties
  - Subsetting if needed to a few "representative" of uncertainties span
- Scales: spatial and temporal
- Statistical downscaling and bias correction (calibration)
- Physical consistency (spatial, temporal, variables)
- Variable-dependent methods
- Errors: data observations and/or methods
- Limitations by datasets

Live Discussion

Two main themes for **two Working Groups**. New ideas but also critics of what we are currently doing. Identify key points.

1. Methods and datasets requirements: diversity of downscaling and data correction methods and datasets with strengths/limitations, wrt user needs. Trends and stationarity.

>7 people

2.Collection of ideas and uncertainties: new approaches for the analysis of a large number of scenarios in the context of downscaling and climate impacts. Best practices to deal with climate scenarios and uncertainties.

>8 people

- ***Collection of ideas and uncertainties***: new approaches for the analysis of a large number of scenarios in the context of downscaling and climate impacts. Best practices to deal with climate scenarios and uncertainties.

- Ensembles and uncertainties
  - Impact models can be as complex as climate models
  - Impact models uncertainties
  - Subsetting if needed to a few "representative" of uncertainties span

- Scales: spatial and temporal

- Statistical downscaling and bias correction (calibration)

- Physical consistency (spatial, temporal, variables)

- Variable-dependent methods

- Errors: data observations and/or methods

- Limitations by data sets

- ***Collection of ideas and uncertainties***: new approaches for the analysis of a large number of scenarios in the context of downscaling and climate impacts. Best practices to deal with climate scenarios and uncertainties.

- Ensembles and uncertainties
  - Impact models can be as complex as climate models
  - Impact models uncertainties
    - Start using ensembles (multi model input)
    - Stochastic models (take pdf directly; only few exist)

  - Sub-setting if needed to a few "representative" of uncertainties span
    - Span the CC range: Use dT/dP plots (for the region of interest), other variables as model's sensitivity request in relation to uncertainty of that variable
    - Not only consider delta of the mean but also higher order moments
    - Need new methods here
    - Select the best models (minimum bias)? Weighting in bayesian methods
    - Do downscaling before (local e.g. topography) / after (global generic) selection
    - Consider model family tree (models are not independent, neither are scenarios)
    - Do (part of) above close to the archive to prevent unneeded data transfer, need to facilitate

- ***Collection of ideas and uncertainties***: new approaches for the analysis of a large number of scenarios in the context of downscaling and climate impacts. Best practices to deal with climate scenarios and uncertainties.

- Ensembles and uncertainties
  - Impact models can be as complex as climate models

  - Methods to choose
    - Largely climate data determined in practice
    - Impact model data demands need more attention (don't do more dsbc than needed)
    - Use local meteo/impact expertise when available to choose/tune method
    - May depend on season
    - Bias correction effects are part of the total uncertainty

  - New emergent approaches
    - Use initial state ensembles to characterise internal variability -> allow for better determination of threshold crossing
    - Time of emergence approaches, linked to (?) adaptation turning points concepts

- ***Collection of ideas and uncertainties***: new approaches for the analysis of a large number of scenarios in the context of downscaling and climate impacts. Best practices to deal with climate scenarios and uncertainties.

- Ensembles and uncertainties

  - Impact models can be as complex as climate models

  - Best practice recommendations possible ?
    - Cross-fertilisation between methods used in NWP, S2D vs CC; e.g. in terms of verification
    - In stochastic methods be aware of under-sampling effects, e.g. in analogue methods / neighbour selection
    - Be aware of all sources of uncertainties (models, parameters, data, methods) don't try to reduce this too much

- ***Collection of ideas and uncertainties***: new approaches for the analysis of a large number of scenarios in the context of downscaling and climate impacts. Best practices to deal with climate scenarios and uncertainties.

- Matrix of uncertainties
  - Scenario uncertainty separate; matter of choice and time horizon
  - Model uncertainty (structural + parameter): span selection recommendations
    - Family tree or more objective clustering (possible?)
  - IV/ initial state uncertainty: relevant for higher order statistics
  - Correction uncertainty: use i.s. ensembles, different training periods
    - StarMIP
    - Compare watermip vs agmip vs isimip products
    - Provide globally corrected products as input to local downscaling products?
  - Data uncertainty: homogenisation, correction (e.g. P-undercatch, UHI encroachment), representativeness, weather typing methodology
  - 'Perfect model' approaches; stationarity verification
  - How to extract the certainties: the robust patterns despite uncertainties
  - TAYLORING is a long term cooperation between C, I and stat experts based on specific questions

- ***Collection of ideas and uncertainties***: new approaches for the analysis of a large number of scenarios in the context of downscaling and climate impacts. Best practices to deal with climate scenarios and uncertainties.

- Threshold approaches

Uncertainty source			
Obs. Data			
Corr. Method	Ideally use 2-3 a-priori selected methods		
Internal Variability			
Parameter / structural			