ScenarioMIP design

Rogelj et al.

O’Neill et al., 2016

SLIDES kindly provided by Detlef van Vuuren – THANKS!
IAM scenarios for ScenarioMIP

Work on SSP scenarios by IAM is finished and fully documented in Special Issue Global Environmental Change (16 papers; published November 2016)

Based on Riahi et al., 2016
Next activity IAM → ESMs

<table>
<thead>
<tr>
<th>Variable</th>
<th>Subcategories</th>
<th>Resolution</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land use</td>
<td>Crop, pasture, urban area, vegetation, forest (latter two both primary and secondary).</td>
<td>Spatial maps indicating land use and transition matrices</td>
<td>Methods for historical data and scenarios developed by LUMIP</td>
</tr>
<tr>
<td>Emissions of long-lived greenhouse gases</td>
<td>CO₂, N₂O, halogenated gases</td>
<td>Spatial maps and/or emissions by region.</td>
<td>Historical data described in Meinshausen et al. (2016)</td>
</tr>
<tr>
<td>Concentrations of long-lived greenhouse gases</td>
<td>CO₂, N₂O, halogenated gases</td>
<td>Time series</td>
<td>Historical data described to be provided by the Community Emissions Data System (CEDS) project (<a href="http://www.globalchange.umd.edu/ceds/ceds-cmip6-data/">http://www.globalchange.umd.edu/ceds/ceds-cmip6-data/</a>)</td>
</tr>
<tr>
<td>Emissions of air pollutants</td>
<td>CH₄, SO₂, NOₓ, VOC, CO, NH₃, BC, OC</td>
<td>Spatial maps</td>
<td></td>
</tr>
<tr>
<td>Short-lived forcing</td>
<td>Ozone, optical depth</td>
<td>Spatial maps</td>
<td></td>
</tr>
</tbody>
</table>

Historical data

- Land
- Air pollutant
- GHG

IAM output

- Land
- Air pollutant
- GHG

Historical data

- George Hurtt (LUMIP/ScenarioMIP)
- Steve Smith/individual teams
- Small climate model
Activities IAM $\rightarrow$ ESMs

Emissions

- Teams submit as closely as possible harmonised emissions in detailed emission categories.
- Algorithms do last harmonisation and downscale to grid – based on generic or more specific rules (population/income, land use).
- Checks on quality.

Example – sulphur from energy system.
Activities IAM $\rightarrow$ ESMs

**Land use**

*Hurtt et al. (2009, 2011)*

- Develop consensus land-use history reconstruction
- Minimize differences between end of historical reconstruction and beginning of future projections
- Preserve as much information from IAMs on future as possible
Timing

– Land use harmonisation / downscaling → aimed at December, 31 2016

– Emission (air pollutants, some GHGs) harmonisation/downscaling → aimed at December, 31 2016


– Last review; handover May, 2017