

IAMC Scientific Working Group on Data Protocols & Management

Wednesday, October 30, 2013

This document summarizes the discussions and decisions made during the session of the scientific working group (SWG) on data protocols and management. Five areas of activity were identified at the meeting for which subgroups are being established that will work on these different areas:

- Continuation of time-series data template activity
- Development of spatial data exchange formats
- Development of meta-database for data sets relevant to IAM development
- Harmonized region definitions
- Harmonized model documentation

In addition to the volunteers that either have been involved in these activities in the past or have signed up for participation in these subgroups during the IAMC annual meeting, other interested researchers should get in touch with the interim chair persons of the different subgroups to join them and get involved in the activities. The chair persons are then responsible for organizing conference calls to initiate more detailed discussions on the relevant topics.

Continuation of time-series data template activity

- Publication of current *output data template* for time series data (so-called *super-template* which unifies the variables sets developed as part of different activities) and finalize the document that summarizes the underlying principles for constructing new variable names
- Expansion of output variables in areas that are currently underdeveloped
 - land-use related variables (currently done as part of SSP process)
 - energy end-use variables
- Development of standards for archiving (parametric) input assumptions
- Development of standard protocols/interfaces for data exchange between model system components
- Group (based on previous activities and new nominations): Volker Krey (IIASA, chair, krey@iiasa.ac.at), Kate Calvin (PNNL), Leon Clarke (PNNL), Jae Edmonds (PNNL), Tatsuya Hanaoka (NIES), Mikiko Kainuma (NIES), Jiang Kejun (ERI), Peter Kolp (IIASA), Elmar Kriegler (PIK), Toshi Masui (NIES), Alexander Popp (PIK), Keywan Riahi (IIASA), Bas van Ruijven (NCAR), Detlef van Vuuren (PBL), Kenichi Wada (RITE), John Weyant (Stanford)

Development of spatial data exchange formats

- Development of standard output format for spatial data, building off the RCP experience, where standards were developed together with climate and atmospheric chemistry modeling communities (NetCDF)
- Beyond the exchange with the climate and atmospheric chemistry modeling communities suitability for exchange of data between IAM teams and with other

communities (e.g., IAV community) and publication of spatial data should also be taken into account when deciding on the format.

- Specifically, there is the need to establish a link to the climate model intercomparisons project 6 (CMIP6) and in particular the scenario, land-use, and aerosol MIPs within CMIP6. This process needs to be initiated immediately given that decisions on CMIP6 will be made in the course of the coming year.
- Group (new nominations): Kate Calvin (PNNL, chair, katherine.calvin@pnnl.gov), Jan Philip Dietrich (PIK, nominated by Elmar Kriegler), Laurent Drouet (FEEM), Nils Johnson (IIASA), Peter Lawrence (NCAR, nominated by Brian O'Neill), Detlef van Vuuren (PBL)

Development of meta-database for data sets relevant to IAM development

- Compiling historical data sets for different areas of IAM development, including energy end-use, water, or model validation (in particular “hindcasting”) is labor intensive and therefore sharing these data sets would be beneficial for the IAM community.
- Collecting and redistributing the data sets turns out to be a significant task, but as an initial step building a meta database of existing data sets will have a lot of benefits while creating a much smaller coordination overhead. In addition, the owners of the data retain full control over their data sets whereas otherwise a model for data sharing would need to be established that provides incentives for the data owners to share the data.
- Types of data sets that would be of particular value for the community:
 - energy end-use data (useful energy, energy services, energy use by device/appliance)
 - data on water use
 - long-term historical data sets for model validation (hindcasting)
 - data on renewable resources and grid integration constraints
- Linking up with other data activities such as geoshare (<http://geoshareproject.org/>), ISI-MIP would be worthwhile in this context.
- Group (new nominations): Gunnar Luderer (PIK, chair, luderer@pik-potsdam.de), Leiwen Jiang (NCAR, household survey data) (nominated by Brian O'Neill), Shonali Pachauri (IIASA, household survey data), John Weyant (Stanford, validation data), ADVANCE energy end-use work package representatives – Detlef van Vuuren (PBL)/Keywan Riahi (IIASA)

Harmonized region definitions

- A set of harmonized regions at a finer resolution than the 5 RCP regions is needed. In addition, taking into account policy relevant region definitions (e.g., countries like the United States, China and India or regions like the European Union) when defining these regions would be beneficial.
- Some model inter-comparison projects (e.g., RCP, LIMITS) have developed a higher resolution region set than worked at least for a number of IAMs without too large deviations.

- Given that adjusting region definitions are not easily changed in models, defining a “wish list” of regional definitions might be useful so that modeling teams can take these definitions into consideration when revising regions in a bigger model update.
- Identifying meaningful criteria for separating regions, such as energy supplying regions or highly populated regions in the future (not just today) might help informing the discussion on region definitions.
- Group (new nominations): David McCollum (IIASA, chair, mccollum@iiasa.ac.at), Kate Calvin (PNNL), Elmar Kriegler (PIK), PR Shukla (IIM)

Harmonized model documentation

- At the IAMC annual meeting an interest was expressed to engage in a public feedback/review process for the model documentation currently being developed under the European FP7 project ADVANCE. The purpose of the review would be to develop a community standard for some sort of comparable documentation and also provide a hosting service where this documentation (currently implemented as a moderated Wiki) would be accessible.
- Publishing a paper about the purpose and history of IAMs as discussed during the plenary of the IAMC annual meeting strongly relates to this documentation activity which could be launched along with the publication of such a paper.
- Group (new nominations): Volker Krey (IIASA, chair, krey@iiasa.ac.at), Gunnar Luderer (PIK), UCL colleagues

Potential additional activities

- Fundraising for community data sharing