

Chemistry Working Group

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CWG's Prospective Roles in Community and SMG

- Act as First Point of Contact for UKCA Community on matters concerning chemistry
 - Representing community in UKCA SMG
 - Coordinating mechanism/model development
 - Working with other UKCA WGs
 - Networking with “neighbouring” communities (such as, dry deposition, land surface, etc.)
- Act as focal points in SMG on matters concerning chemistry
 - Coordinating ongoing science
 - Minimizing potentially overlapping efforts
 - Identifying research priorities in the UKCA chemistry community
 - Exploiting synergies, connecting research groups
 - Seeking out new areas of research in chemistry modelling
 - Identifying hot topics and emerging fields of research
 - Facilitating integration in UKCA

What are “Matters Concerning Chemistry”? - a snapshot

- Surface and 3D emissions
 - Probably outside our scope - this is a choice for users
 - Simplifying implementation of new emissions in UKCA - under discussion elsewhere
- Photolysis
 - FastJx - maintenance of code, implementation of updates
- Chemical reactions
 - Underpinning data: reaction rate coefficients, photolysis cross-sections, uptake coefficients
 - Maintenance of numerical solvers
 - ASAD - will the Backward Euler continue?
- Deposition schemes
 - Surface dry deposition
 - Wet removal
- Maintenance of code
- Evaluation of chemistry

UKCA Implementations - many and diverse - where next?

- UKCA standalone versions
 - UKCA box model
 - UKCA column model
- UKCA VM
 - Facilitating development and testing of new code
- UKCA in the UM
 - Needs to satisfy divergent roles of chemistry in Earth system, climate and air quality modelling
 - Variable degree of complexity in the chemistry
 - Emphasis on different species with potentially divergent mechanisms
 - MO GAX.y configurations
 - UKESM configurations
 - Existing schemes such as ExTC, Backward-Euler solvers
 - Implementing and review (by the community?) of new schemes
 - Whole atmosphere chemistry schemes
 - Air quality schemes

What are we looking to improve? (suggestions only, feedback welcome)

- The UKCA VM has been a fantastic addition to development
 - How do we maintain it?
 - How do we update it for future releases?
- Model integrations are expensive and time-consuming
 - Could we do a better job of archiving output for community use?
- How do we let people know what's going on and help them to get involved?
 - Improving information flow with the Wiki?
 - Regular telecons? Side meetings?
 - Networking beyond Chemistry
 - other UKCA WGs
 - other WGs with Close Relation to Chemistry (e.g., dry deposition, land surface, etc.)

What are we thinking about?

- Near-term (< 1 year)
 - Gathering intelligence (community consultation); some suggested topics for discussion :
 - Adding CRI as an option for UKCA
 - Implementing Heterogeneous chemistry diagnostics
 - Investigating how to facilitate further updates to FastJx in UKCA
 - Leveraging opportunities for networking (CWG BoG)
 - Improving UKCA evaluation suite (collaboration with **E**valuation **W**orking **G**roup)
- Mid-term (1 to 3 years)
 - Establishing UKCA experiment repository
 - Releasing UKCA standalone (box/column) model
- Long-term (> 3 years)
 - Database of reaction data
 - Automatic mechanism/code generation



For all of this

WE NEED YOUR INPUT!



contact the CWG at

cwg.ukca@gmail.com

Join CWG at Slack

<https://cwgukca.slack.com>

(email us for an invitation)

or email your suggestions/requests/concerns directly to

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