

Major Findings

- ESGF focus on CMIP6 for now – CMIP5/6, obs4MIPS, CORDEX, MIPs
- Need to make robust and operational with more urgency
- Integrated data+compute environment is essential for ease of use of data
 - Includes server-side functions, flexible processing power and other capabilities around data
 - interoperable data/services and standards (API + data)
- Future of ESGF will need to include technology refresh (HW, network) including more knowledge discovery and programmatic access. Likely more APIs than just fully canned deployment.
- Annual meeting is getting better each time, and looks very productive. Shows the breadth of activity, and user communities that are being supported.
- Group is clearly **very** supportive of each other. Social dynamic is very good
- Clearly impressive work taking place by many groups
- Annual report, supplements and publications are extremely useful and high impact for participating organizations.
- Survey and dashboard both provide much clearer details about community need and usage. And it is very compelling on the need.

Governance Issues

- Interface between key stakeholders, responsibilities, risks are currently informal only -> not good governance from an SC perspective. SC will write to various stakeholders in new year once completed a review (e.g. WIP, CMIP model groups, WCRP).
- Overall impact measures for ESGF are not clear. No agreed key performance indicators
- Dependencies and responsibilities are not known between major programs, wgcm, wip
- The federation of large international nodes, many components of software, and data management has value beyond current ESGF architecture. Need to realise and support that value in the longer term.
- Some funding may be allocated for ESGF but not executed due to informal or unclear effort tracking.
- Response to XC Chair is not uniform or urgent enough across the XC
- Support of ESGF with professional project management – will need to include contributions from major funding/resources.
- Additional annual meeting for SC, XC and team leads on project milestones & deliverables
- SC and XC to be renewed to ensure strong alignment and sense of urgency.
- SC to have a set quarterly schedule for the XC to report formal measures.
- Funding continues to be unstable at major organizations and likely to continue to be that way. Some uncertainties indicated for staff at sites. SC will seek more information, such as changes in external projects (e.g. es-ines <-> copernicus). There are gaps and in some cases the key gaps are unknown.

Are we operationally ready for CMIP6? There are plenty of indications to say “no”. This is **the** major concern for the XC to address.

XC to address and report to SC:

- Clear definition of Tier 1, 2.
 - Must include uniform set of well-used server side capabilities on all Tier 1.
- Regular Traffic light tracking of sites (Tier 1), reasons for issues and how will be addressed
- Operational procedures
 - for software release, security, data mgt and support within the federation for ensuring robust.
 - Schedule for implementation that is reviewed by all the SC and consistent report to SC with traffic lights
- Dev/test/ops must be implemented - including associated federation(s).
 - This may require sites to have more resources
 - May also relate to what is tier 1 and tier 2.
- (automated) Unit testing procedures need to be implemented, both to ensure status of the node as well as part of development.
- Ensuring data release process has already passed QA/QC.
- Data management processes clearer and responsibilities of CDNOT and ESGF.
- Related issues to be shown to work in teted way:
 - Replication
 - Less errata, and more about new citable versions
 - Revocation processes
- Full data replication testing and operational procedures to be urgently implemented
- DOI and Provenance to be implemented for all sites. Clear user guides for how to use.