

ECMWF Time-critical applications

Options 2 and 3

Dominique Lucas

Reference:

<https://confluence.ecmwf.int/display/UDOC/Time+Critical+applications>



Content

- Time-Critical (TC) applications - history
- TC-1: Option 1 - Simple Member States (MS) jobs - see next talk on ECaccess services
- TC-2: Options 2 - ecflo suites managed by MS and monitored by ECMWF
- TC-3: Option 3 – ecflo suites managed and monitored by ECMWF
- Review of TC services

History of Time Critical (TC) services

- Before 2004:
 - Since 1991, MS jobs triggered by the ECMWF operational suite: basic TC-1 service.
 - Late 1990-ties, increased interest by MS in ENS data: first embryonic TC-2 services.
 - Early 2000, several activities run for MS, including NORLAMEPS and HRES hourly data produced for 2004 Olympic games in Athens: first TC-3 service.
- 2004:
 - ECMWF makes proposal for TC framework to the Technical Advisory Committee, including 3 options.
 - Council approves the TC framework.
- 2005:
 - 3 TC options being implemented, with guidelines to users.

Option 2: Member State ecFlow suites monitored by ECMWF:

- Suitable for more complex applications comprising several tasks with interdependencies between them.
- The suites will be developed according to the technical guidelines described in [this document](#).
- Monitored by ECMWF.
- To be requested by the TAC representative of the relevant Member State.

Option 2: Current activities

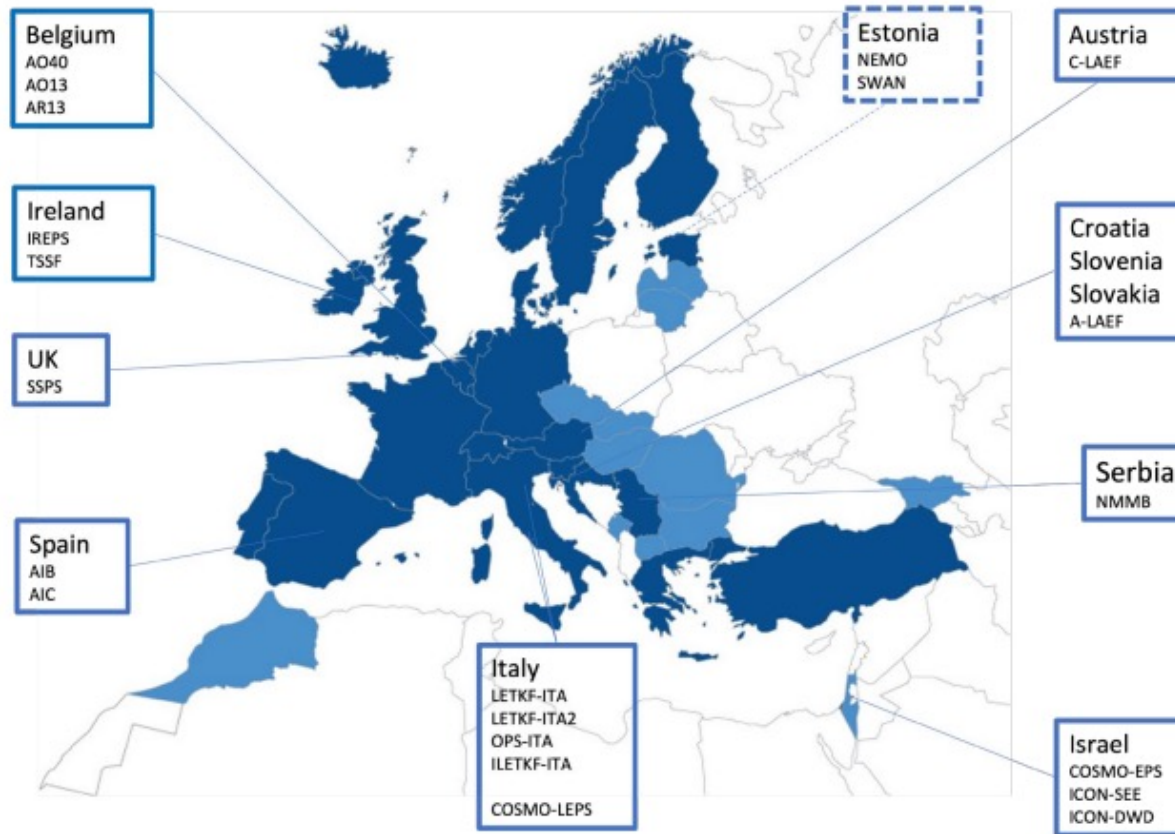
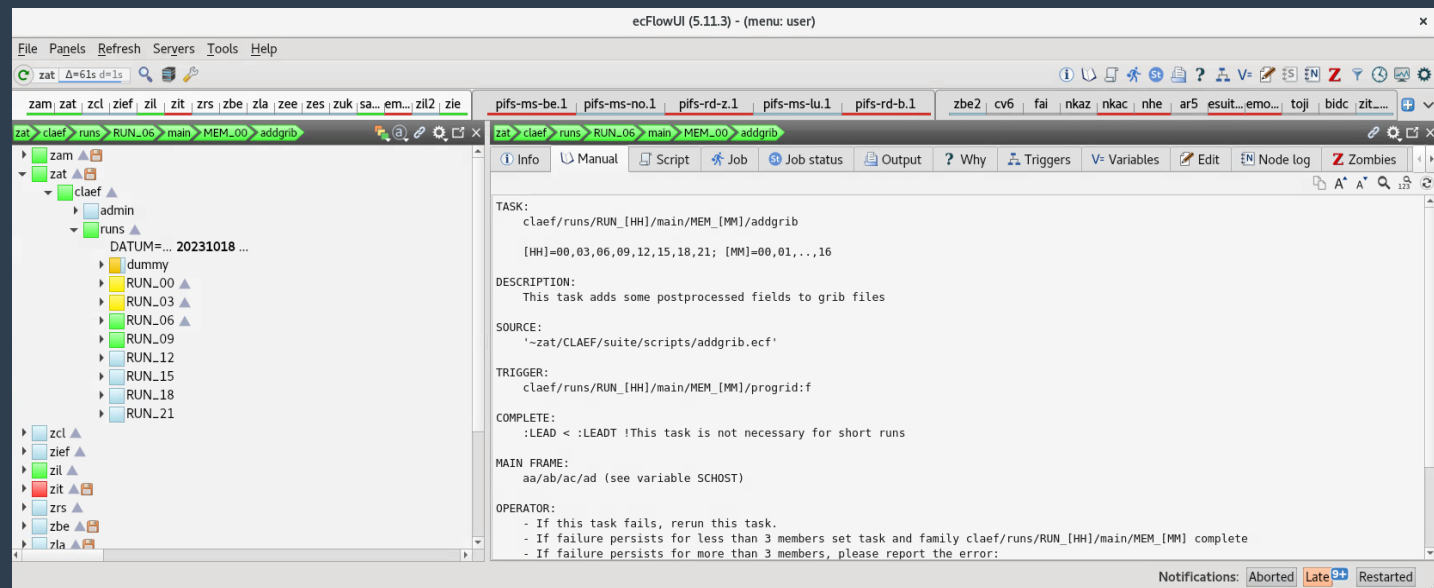


Figure 1: Time-critical option 2 suites as of 1 September 2023. Estonia is expected to start running its NEMO and SWAN suites and the UK its Decoupler/StAGE suite under option 2 of the Framework before the end of this year which will bring the total to 22 suites run by 10 countries.

Option 2: Privileged User Environment

- Special TC-2 user IDs used
- Access to all 4 Atos HPC complexes
- Access to high priority queues
- Access to multiple HPC local LUSTRE file systems
- Eflow suites, monitored by our operators, who will follow instructions in man pages to resolve any issue
- Access to the ECMWF Production Data Store for data transmission (Input and Output)



Option 3: Member State ecFlow suites managed by ECMWF

- Further enhancement of Option 2.
- Requires an ecFlow suite, which has usually been developed under Option 2 of this TC Framework.
- Application developed, tested and maintained by the Member State.
- It must be possible to test the application using ECMWF pre-operational (e-suite) data.
- Member State suite handed over to ECMWF.
- Member State responsible for the migration of the application, e.g. when supercomputer changes.
- Monitored by ECMWF.
- ECMWF will provide first-level on-call support, while second-level support would be provided by the Member State.
- To be requested by the TAC representative of the relevant Member State.

Option 3: Current activities

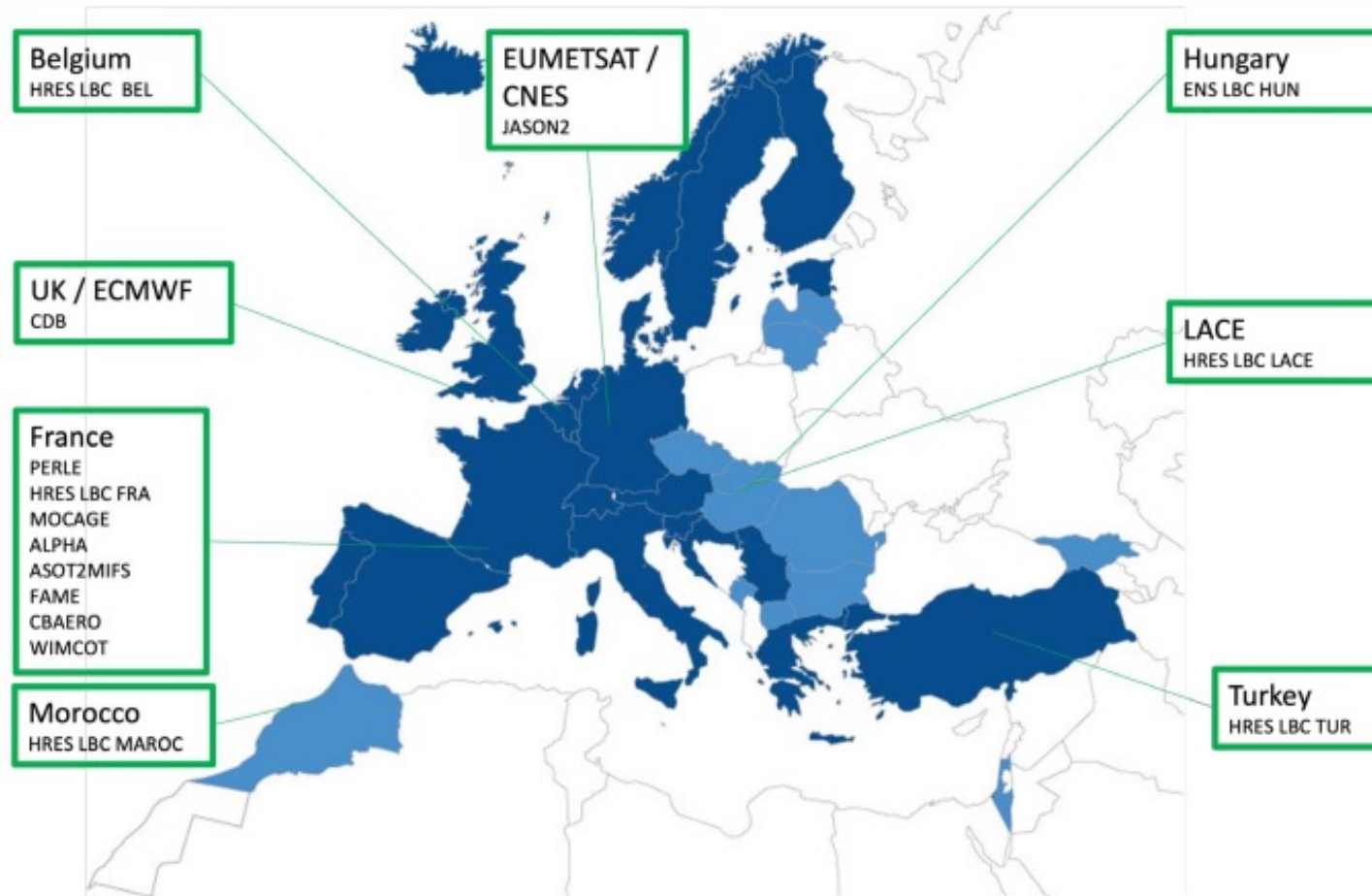


Figure 2: Time-critical option 3 suites as of 1 September 2023.

TC activities review

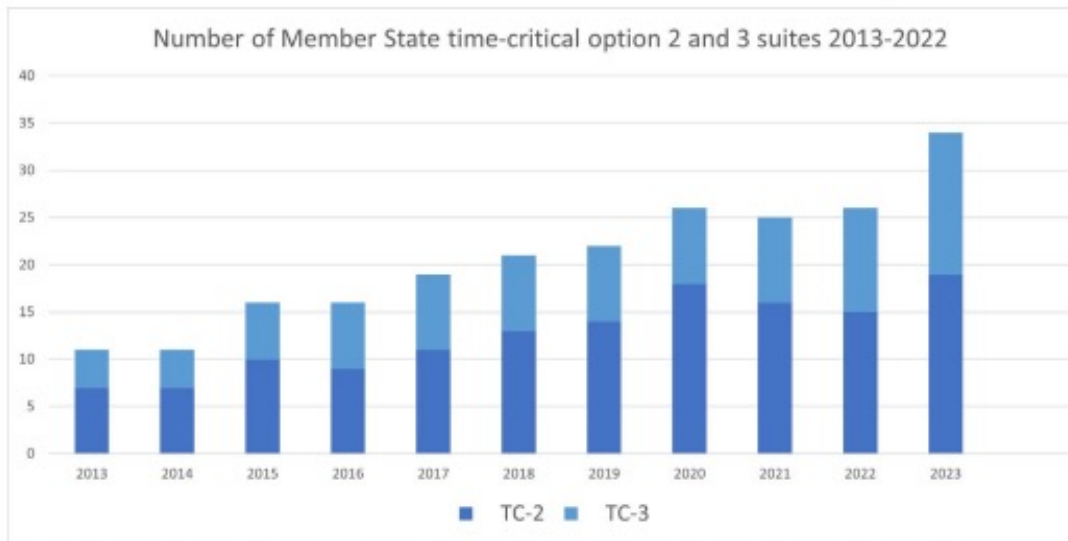


Figure 3: Numbers of time-critical option 2 (TC-2) and option 3 (TC-3) suites being run at ECMWF by the end of each year from 2013 to 2023

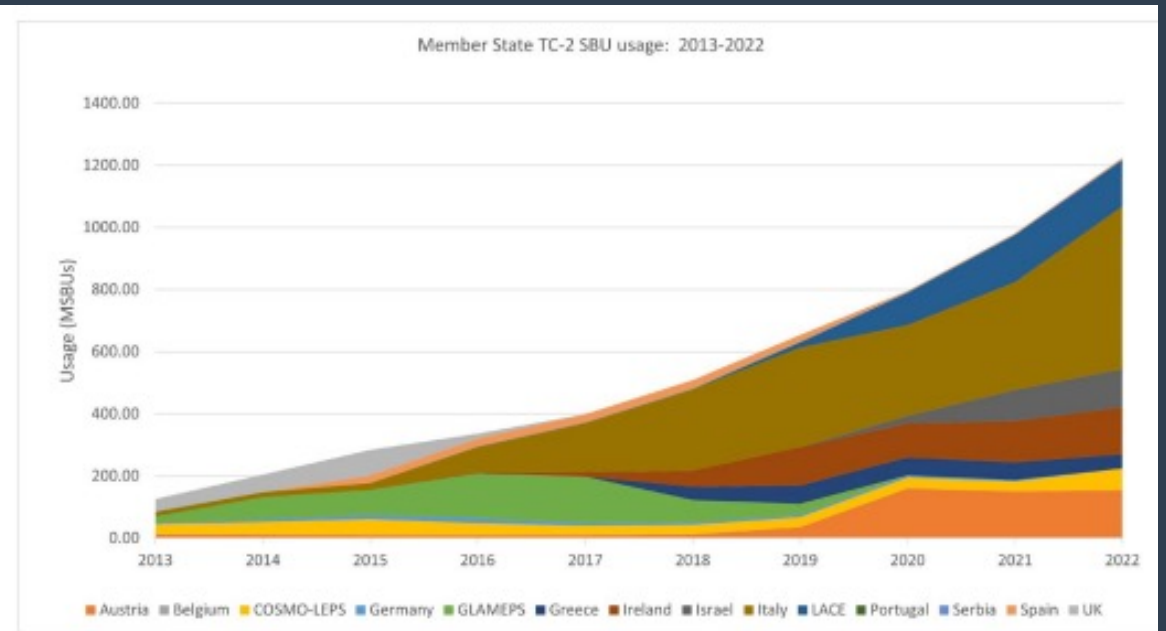


Figure 4: SBU usage by Member State time-critical option 2 activity from 2013 to 2022.

TC activities review

- More systematic usage of git to store ecflow files, scripts, source code
- Upgrade process of TC suites to be clarified
- European Weather Cloud can be used for TC activities
- TC activities could happen as containerised workload on the Atos HPC
- Harmonise all TC suite for easier monitoring and support by the shift staff
- Improved documentation (ecflow man pages) for more efficient support by ECMWF shift staff, ECMWF second level support staff, possibly also by MS shift staff
- Workshop with MS TC users to advertise changes and share experience

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