Fact sheet on applications for ESM computing time projects on JUWELS

1. Prospective users can apply for computing time twice a year at defined periods of time synchronized with the GCS calls for computing time. The dates for the next call can be found on the [JSC website](#).

2. Eligible to apply for ESM resources are researches from all HGF institutions (Helmholtz Association of German Research Centres) in the research field Earth and Environment together with their national cooperation partners outside the HGF. The project's principal investigator (PI) must have a proven scientific record (preferable a PhD or comparable degree) and must be able to successfully accomplish the proposed tasks.

3. Projects which will expire in the ending allocation period can be extended in the upcoming allocation period. On-going projects *cannot be extended* in the upcoming call.

4. Applications are accepted *online only*. Applications via email will *not be accepted*. The call deadlines are strict deadlines, requests for applying after the deadline *will be rejected*. Applications that do not use the required templates for the project description and the status report *might be rejected*.

5. **Please note:** Computing and data resources, as well as access to the JSC HPC infrastructure, are provided to the best of our ability. However, approved resources are not guaranteed. We reserve the right to limit the availability of resources if external conditions such as force majeure, obligations to save electricity, or other circumstances make this necessary. Resources lost in such cases will not be refunded.

6. **Important note:** The effective computing power per core-hour of JUWELS differs for each module. Thus, computing time requirements for more than one module cannot be specified coherently by adding up core-hours over the individual modules. To take this into account, resource requirements for each resource type in core-hours will be converted to floating point operations in units of 10^{18} (EFLOP[1]) based on the theoretical peak performance of the requested module. The project's total demand is given by adding up the requested computing time in EFLOP for all modules[2]. In the electronic questionnaire, computing time requirements have to be specified per resource type either, like previously, in million core-hours (Mcore-h) or in EFLOP. Both units will be converted into each other on the fly and displayed in due consideration of the requested resource types. Nonetheless, resources will be granted, allocated and accounted in core-hours only for each resource type.

Available ESM resources on JUWELS:

JUWELS (Jülich Wizard for European Leadership Science)		
Resource type	Node Configuration	Available Resources[3]
Cluster Module (CPU)	Two Intel Intel Xeon Platinum 8168 "Skylake", (2.7 GHz, 24 cores each), 48 cores/node • 2271 nodes: 96 GB main memory (~2 GB memory/core) • 240 nodes: 192 GB main memory (~4 GB memory/core)	~60 Mcore-h or about 18500 EFLOP per call
Cluster Module (GPU)	Two Intel Intel Xeon Gold 6148 "Skylake", (2.4 GHz, 20 cores each), 40 cores/node, 4 NVIDIA V100 • 56 nodes: 192 GB main memory (~4 GB/CPU-core)	~1 Mcore-h or about 3000 EFLOP per call
Booster Module	Two AMD EPYC Rome 7402 (2.8 GHz, 24 cores each), 48 cores/node, 4 NVIDIA A100 with 40 GB HBM2e each • 936 nodes: 512 GB main memory (~10 GB memory/core)	~11.5 Mcore-h or about 69000 EFLOP per call
Hint		
Approx. 10 applications were competing for the given resources in the past[4].		
Remarks		
General remark Access to the ESM partition of JUWELS for testing and code porting purposes as well as for preparing applications for a regular computing time project is possible at any time (rolling call). Please contact the coordination office for computing time (coordination-office@fz-juelich.de) for further information about the application procedure. **Cluster Module (GPU)/Booster** On nodes with GPUs host core-hours are accounted. For further details about JUWELS, please visit the JUWELS [website](#).		

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[1] EFLOP reflects the amount of floating-point operations per year available to approved projects.

[2] Example: 1 million core-hours (Mcore-h) on the JUWELS Cluster Module CPU nodes correspond to about 310 EFLOP, 1 Mcore-h on the Cluster Module GPU nodes to about 3000 EFLOP and 1 Mcore-h on the JUWELS Booster Module to about 6000 EFLOP. This gives as total computing requirement about 9310 EFLOP. These example values have been rounded for better readability.

[3] The exact conversion factors (core-hour to FLOP in units of EFLOP/Mcore-h) as used in the electronic questionnaire are: 311.04 (Cluster Module CPU), 2976.48 (Cluster Module GPU) and 6012.00 (Booster Module).

[4] Provided to help applicants to estimate how many core-h can be **realistically** requested per application.

Link to apply
https://esm.application.fz-juelich.de/login

Please fill out the sections of the online application form considering the following information:

- **Section *Application lists*:** If you have an extensible project (see point 3. of this fact sheet) and you would like to continue studies on the topic of the project, please extend this project by providing the corresponding project ID and click on EXTEND.
- **Section *Resources*:** Please choose the resources you would like to apply for. Furthermore, you can import data of another application in this section, if applicable.
- **Section *Scientific Objectives*:** Please fill out the point "Other applications for computing time" carefully - incomplete information may lead to a significant cutback of resources or even to the rejection of the proposal. Please provide this information in the online form only and not in the project description.
- **Section *Upload files*:** Please upload here your detailed project description in PDF. Please use the template which is available for Word, LaTeX and in PDF and observe the guidelines. Since the templates may change from call to call make sure to use always the latest version using the links above. Please be aware, that the size of the description is limited to 18 pages (font size 11pt) and 60MB. In case you apply for a project extension, please upload here also the status report as a separate file (PDF). Please use the template which is available for Word, LaTeX and in PDF. The status report is limited to 10 pages (font size 11pt) and 60MB.
- **Section *Finalize*:** After pressing the FINALIZE button you will get back to the application list. Here you can find this application in the list of "finalized applications". Please use the PRINT button for printing the application form and the PI agreement, sign both and send it to the Coordination Office for the Allocation of Computing Time preferred by email (coordination-office@fz-juelich.de). Sending it additionally by regular mail is not necessary.

Collection of relevant links

Call information, guidelines and applications
- Modular Supercomputer JUWELS
  https://www.fz-juelich.de/en/ias/jsc/systems/supercomputers/juwels
- Information about the application process for ESM computing time projects
  https://www.fz-juelich.de/en/ias/jsc/systems/supercomputers/apply-for-computing-time/esm
- ESM project applications
  https://esm.application.fz-juelich.de/login
- Content of Agreements
  Each PI needs to sign a PI agreement, *which will be send to the PI electronically after finalization of an application*. Users of accepted projects need to agree to the usage agreement electronically *in JuDoor*. Here you can find *examples* of these agreements *for your information only*:
  PI agreement: https://application.fz-juelich.de/PublicFiles/Agreements/PI-Agreement.pdf
  Usage agreement: https://application.fz-juelich.de/PublicFiles/Agreements/Usage-Agreement.pdf

Templates for project descriptions
- Word
  https://esm.application.fz-juelich.de/PublicFiles/Description/ESM-Template-project-application.docx
- LaTeX
  https://esm.application.fz-juelich.de/PublicFiles/Description/ESM-Template-project-application.zip
- PDF
  https://esm.application.fz-juelich.de/PublicFiles/Description/ESM-Template-project-application.pdf

Templates for status and final reports
- Word
  https://esm.application.fz-juelich.de/PublicFiles/Report/ESM-Template-Report.docx
- LaTeX
  https://esm.application.fz-juelich.de/PublicFiles/Report/ESM-Template-Report.zip
- PDF
  https://esm.application.fz-juelich.de/PublicFiles/Report/ESM-Template-Report.pdf