



Italian National Agency for New Technologies,
Energy and Sustainable Economic Development

Presentation of the CRESCO annual report: Research activities and results 2019 Accounting 2020 (reduced version)

Online, 10/06/2021

Guido Guarnieri, Giuseppe Santomauro – TERIN-ICT-HPC – Portici



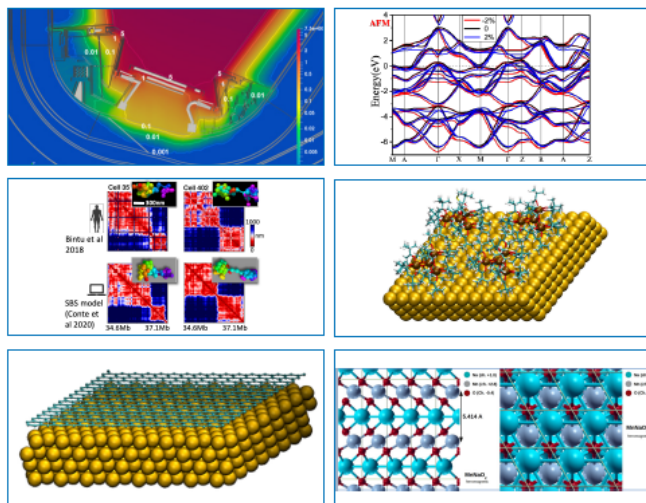
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The 2019 Report

Accounting 2020

Cresco report 2019 overview

High Performance Computing on CRESCO infrastructure: research activities and results 2019



December 2020

Number of papers:	42
Total number of authors:	127
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PDF size (web version):	Not available due to new accessibility rules

Contributions provided by a selection of users of the CRESCO infrastructure

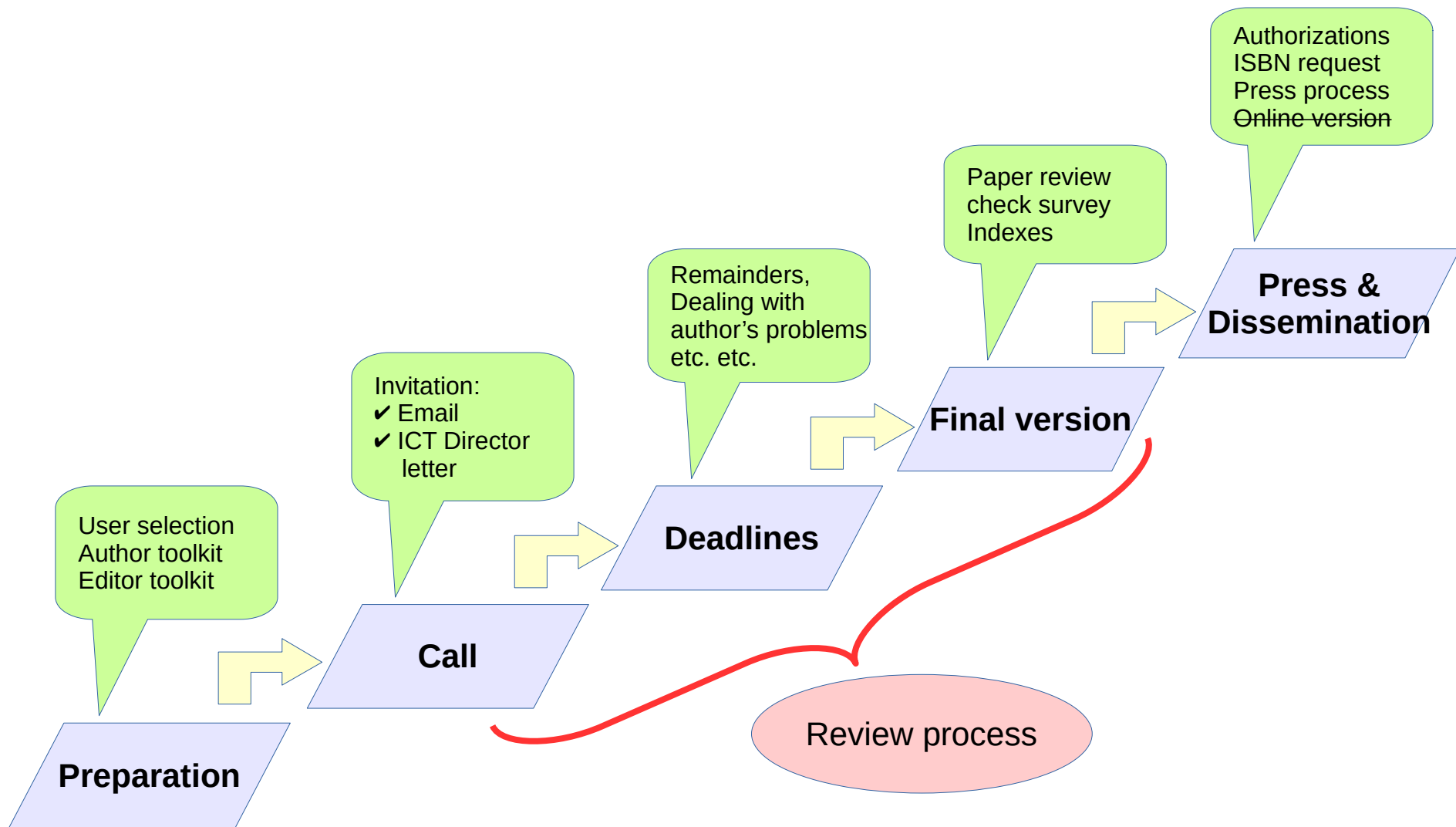
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See also: [/afs/enea.it/project/eneagrid/html/SystemAdministration/CRESCO_Reports](https://afs.enea.it/project/eneagrid/html/SystemAdministration/CRESCO_Reports)
https://www.eneagrid.enea.it/SystemAdministration/CRESCO_Reports/report2019/17-pubblicazione/stampa/final/report_cresco_2018_for_print.pdf

Report Preparation



Report preparation history

- 2020-05:
 - user selection from: Isf accounting (info from kerberos lists and mailing lists);
 - survey tool kit (limesurvey: <http://sondaggi.enea.it/index.php/>): user list, mails;
 - author tool kit (reporter: <http://reporter.enea.it/>): templates;
 - some tools for the reporter system:
 - <http://reporter.enea.it/repsummary2b.php?order=date&root=206>;
 - <http://reporter.enea.it/userlist.php?order=date>;
 - <http://reporter.enea.it/findroots.php>;
- 2020-06-15: invitation mail (~100 invited users);
- 2020-09-25: first deadline (~20 contributions only, despite the many reminders);
- 2020-10-16: deadline extensions, reminders, solicitations, mails, review;
- 2020-12: authorization process for the publication by REL-PROM;
- 2020-12: final check, author index, samples for the cover (by A.Trolese);
- 2021-01: press & dissemination;
- 2021-06: presentation prepared (this presentation).

50 printed copies, distributed by the ICT administrative office (by T.Procaccini)

➤ **~~Compressed PDF version online:~~**

➤ **No publication online at:**

<https://www.enea.it/it/seguici/pubblicazioni/edizioni-enea/>

https://www.cresco.enea.it/CRESCO_reports/

Invited Users

100/133 users invited

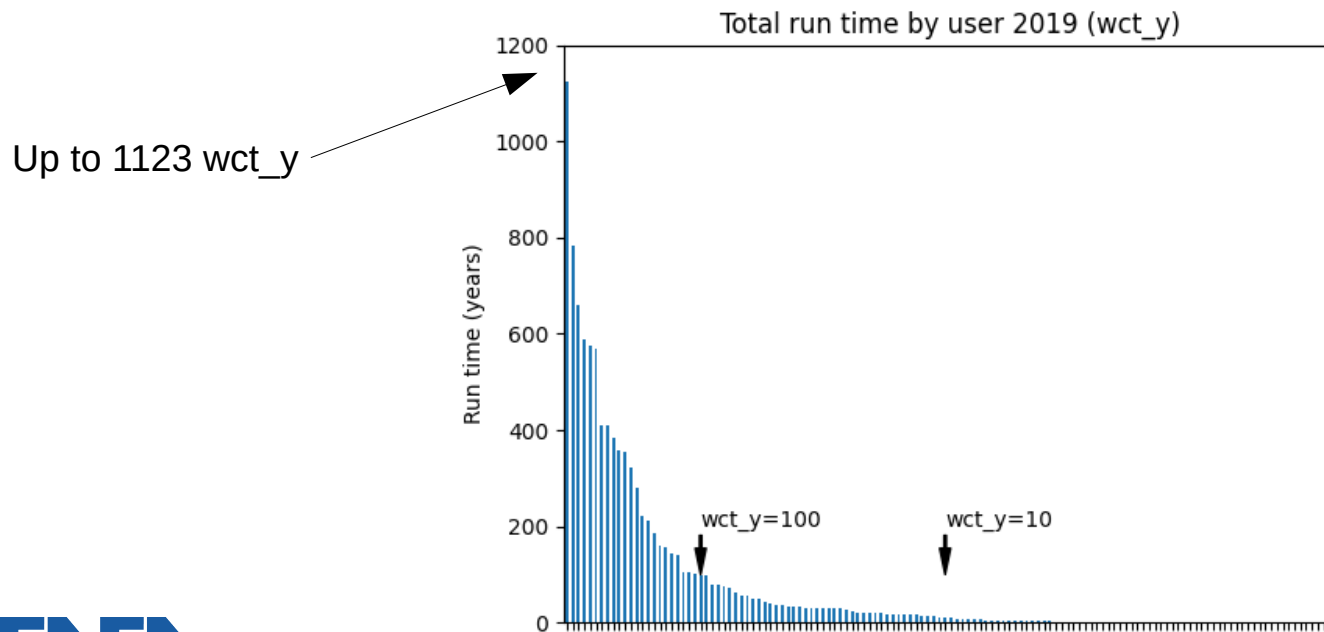
Selection criterium is:

wct_y > 1.0 || (av_totcore* > 5000)

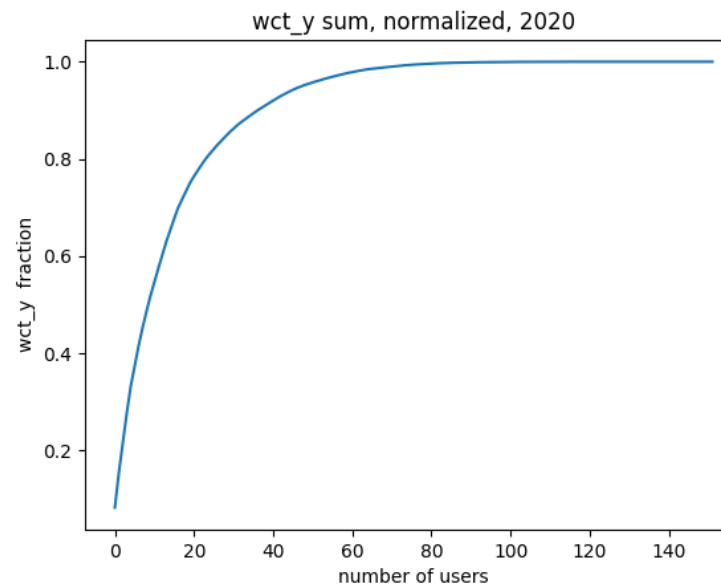
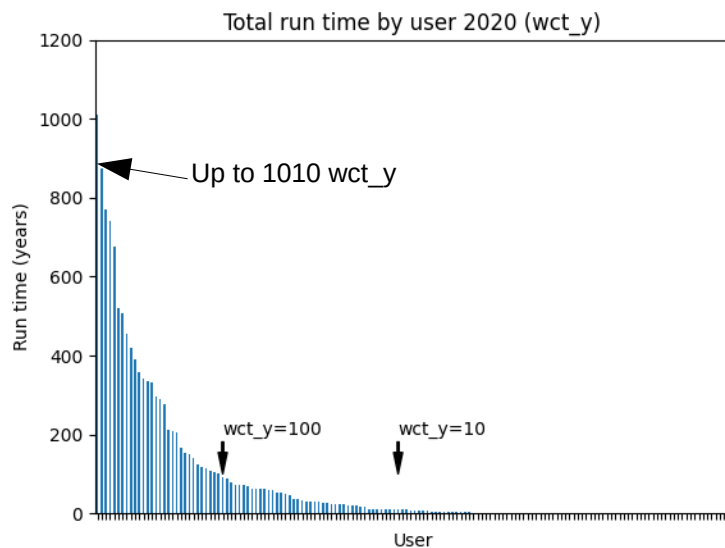
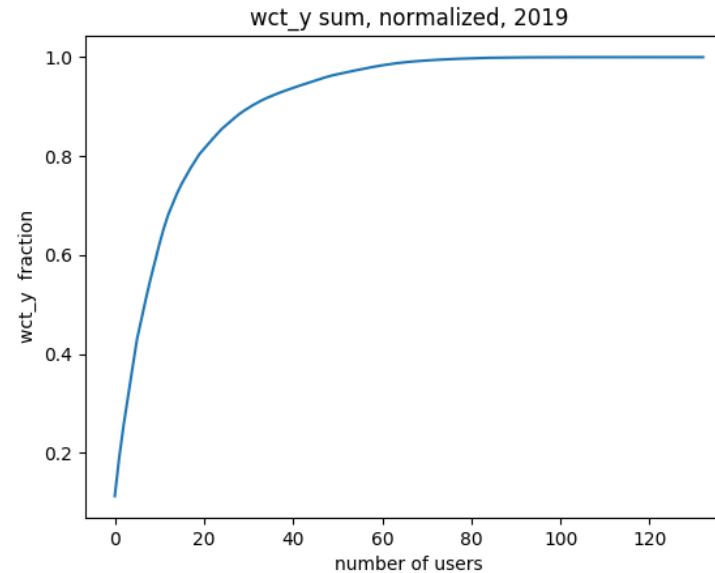
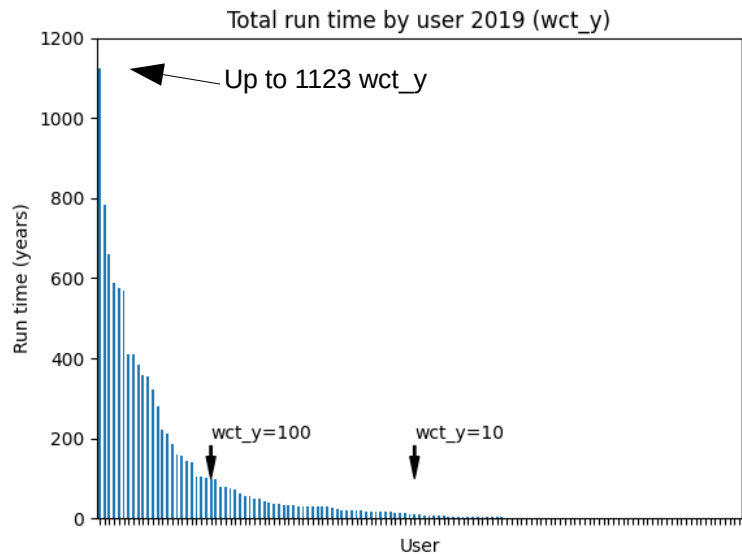
[in 2018: wct_y > 1.0 || (wct_y > 0.5 && njobs > 500 && av_totmem > 100000)

[in 2016/2017: wct_y > 1.0 || njobs > 100 || av_mem > 1000]

wct_y: total wall clock time (years)
njobs: number of submitted jobs
av_mem: average requested memory per core (MB)
av_nc: average number of used cores
av_totmem: av_nc*av_mem
av_totcore: njobs*av_nc



Wall clock time by user



In 2020

**~10 users are:
60-70%
of wct_y**

**~20 users are
~80%
of wct_y**

**Statistics
lead by
few power
users**

This has been reported
since the 2013
presentation
by Funel

Accounting

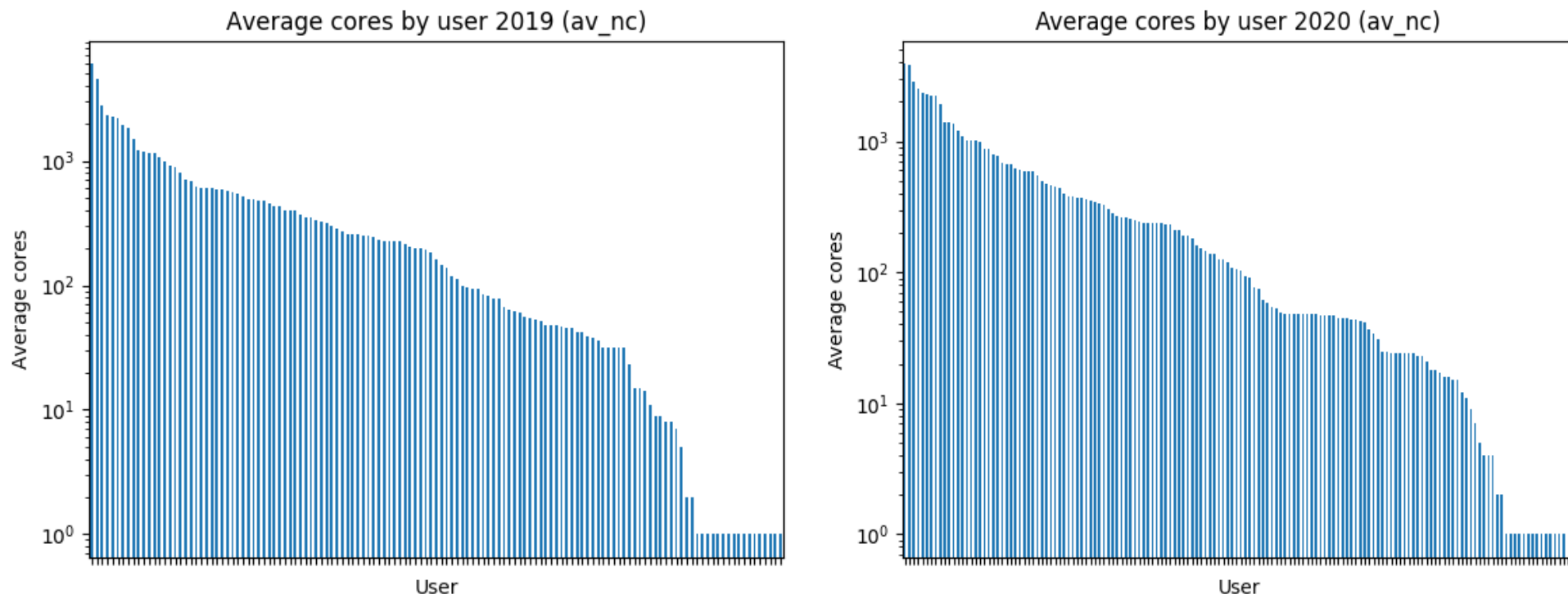
Accounting details 2019 - 2020

Cresco in 2020

Year	jobs	wct_y
2017	571258	3895
2018	1321623	4853
2019	1675438	9992
2020	1637704	12277

In 2021 something like 2020?

Average number of cores by user 2019-2020



Half users use more than 100 cores

Some users with more than 1000 cores in 2018-2019

CRESCO6 has ~20000 cores.

Were there users who used more than 10000 cores in 2020?

No! There is a limit on LSF: up to 6144 cores (unless system queue for admin).

The 2020 CRESCO Users

Users 152

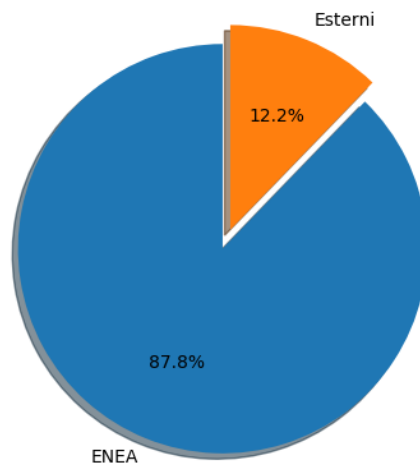
ENEA	108
TERIN	44
FSN	39
SSPT	21
other	4

External	44
UniNa	9
UniRoma1	5
UniRoma2	4
UniFi	3
CNR	1
UniCal	1
UniSa	2
UniCam	2
UniRc	1
Univpm	1
UNIRCJMadrid	2
UniZhejiang	1
AVIO	1
AriaNet	2
Himet	1
Do	1
Simularia	2
ACBoilers	2
F4E	1
CRA	1
UniBo	1

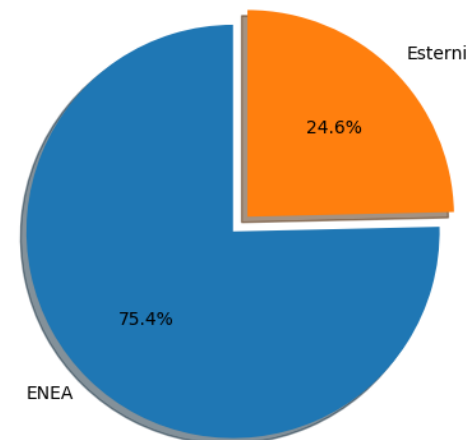
ENEA and External usage 2019-2020

2019

Number of jobs 2019: ENEA and External Users

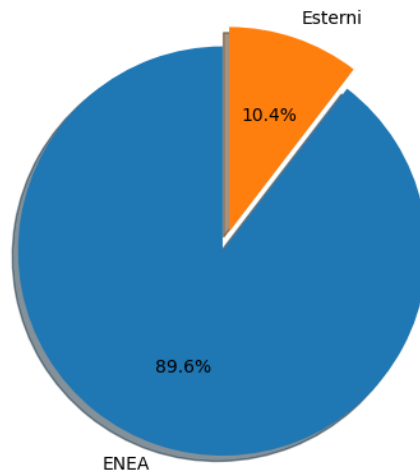


Total run time 2019: ENEA and External Users

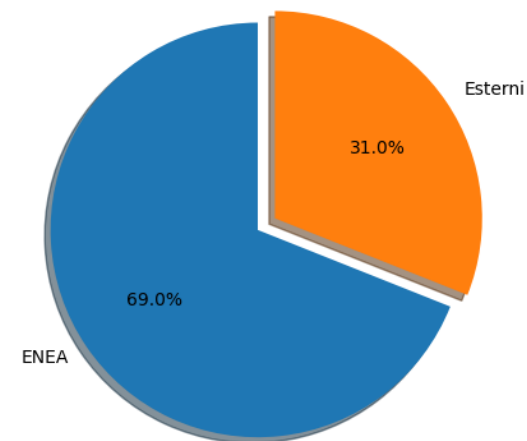


2020

Number of jobs 2020: ENEA and External Users

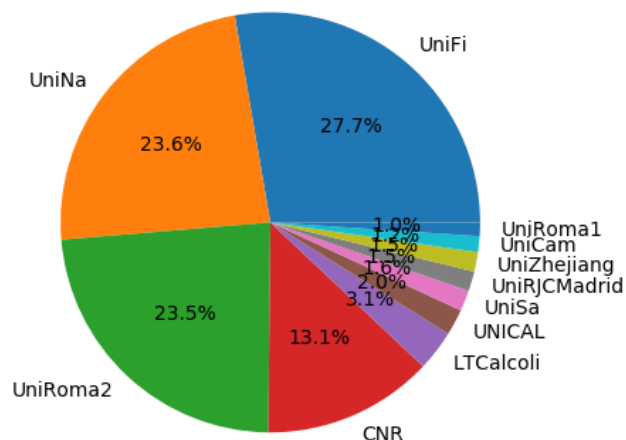


Total run time 2020: ENEA and External Users

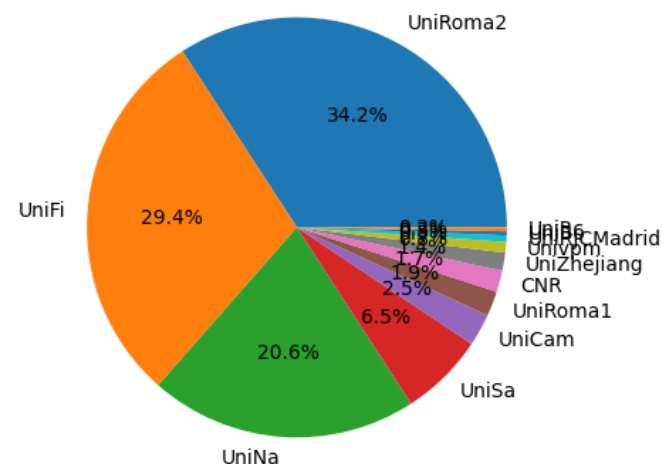


Usage by external institute – wct_y 2019-2020

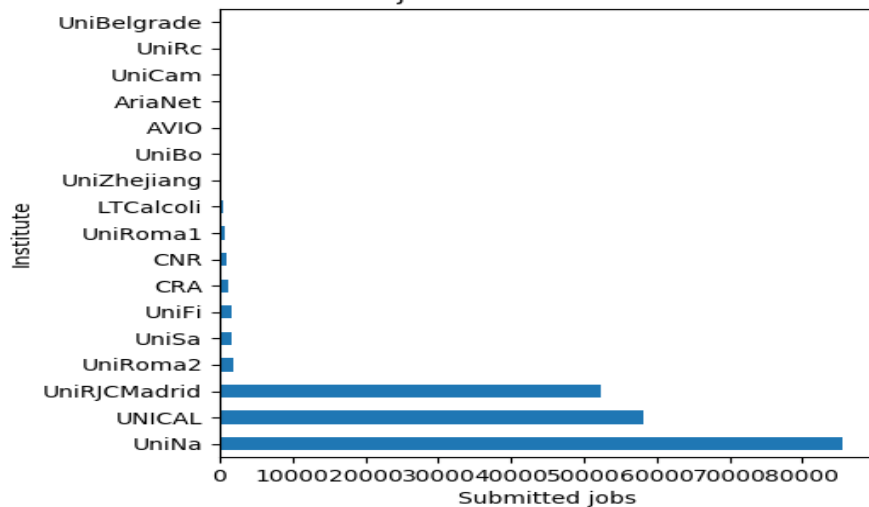
Total run time 2019 for external institutes (wct_y>10)



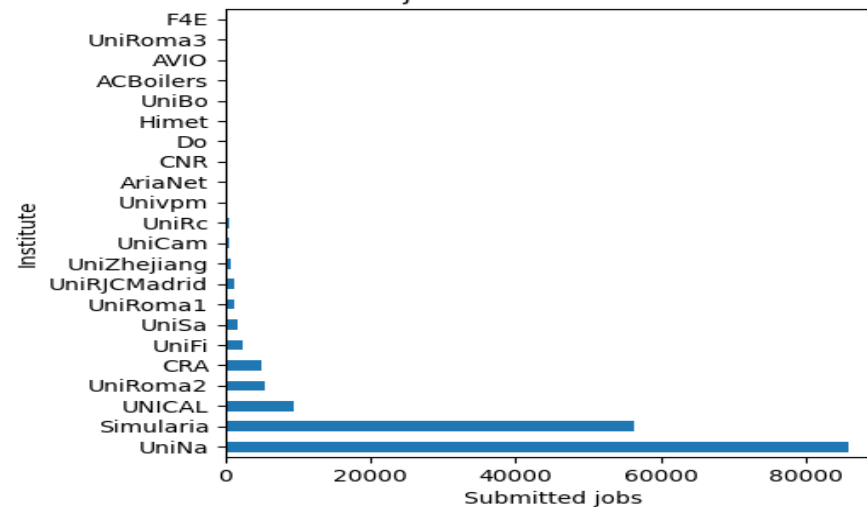
Total run time 2020 for external institutes (wct_y>10)



Submitted jobs 2019 for external institutes



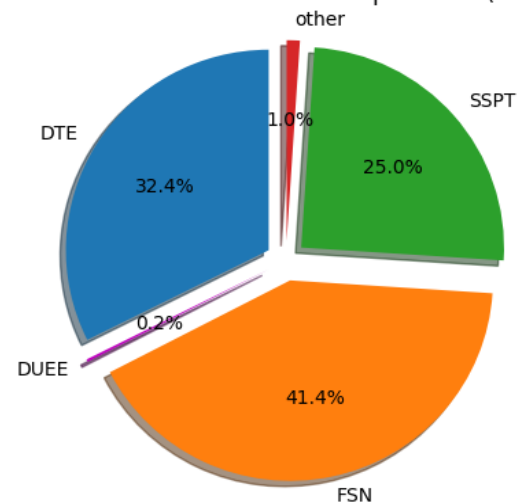
Submitted jobs 2020 for external institutes



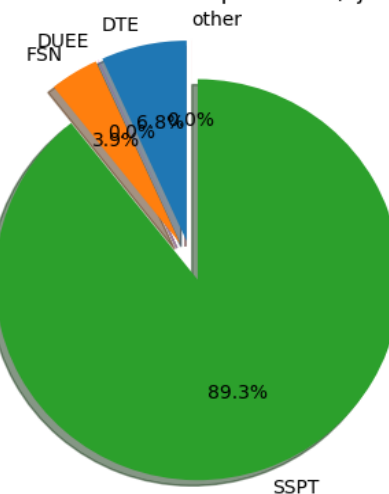
Usage by ENEA department 2019-2020

2019

Total run time 2019 for ENEA department (wct_y)

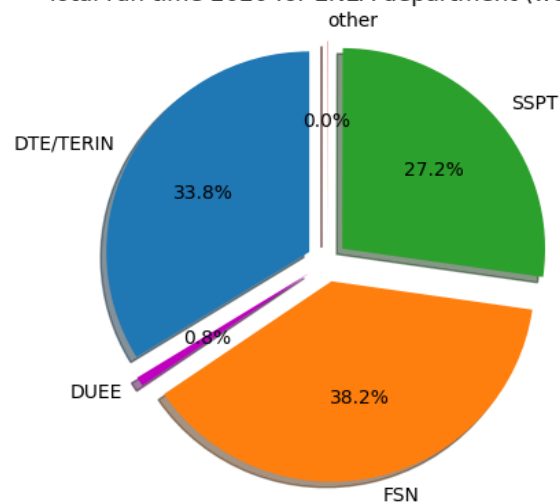


Jobs 2019 for ENEA department (njobs)

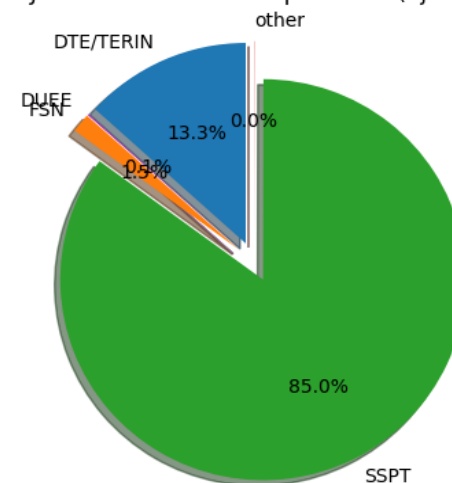


2020

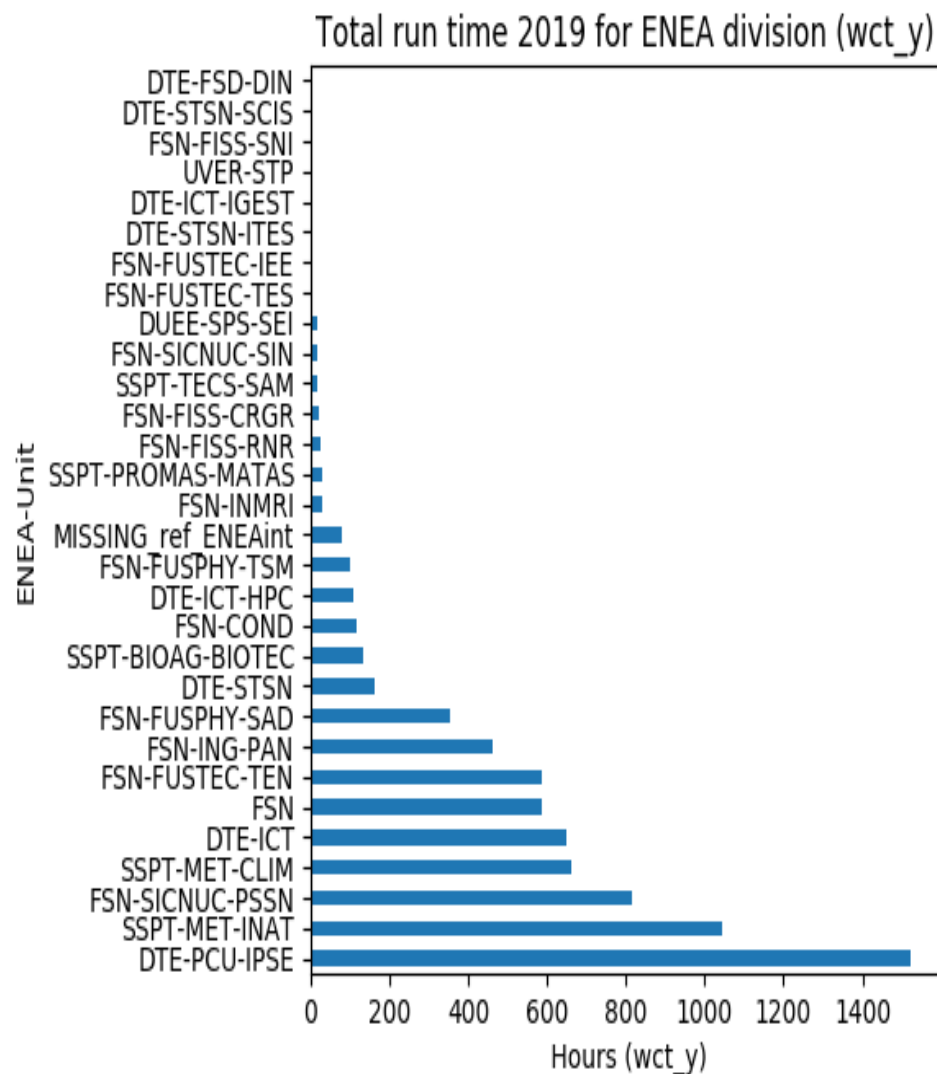
Total run time 2020 for ENEA department (wct_y)



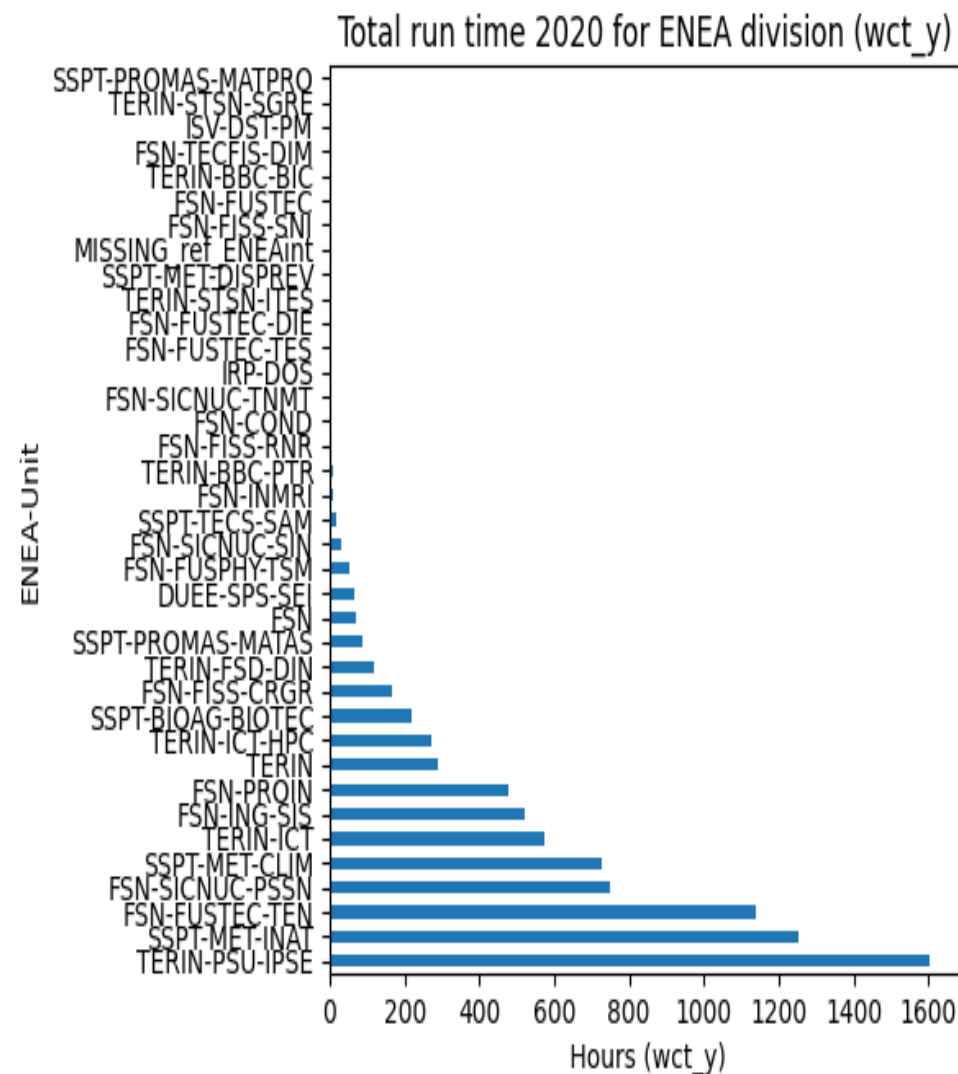
Jobs 2020 for ENEA department (njobs)



ENEA usage 2019-2020

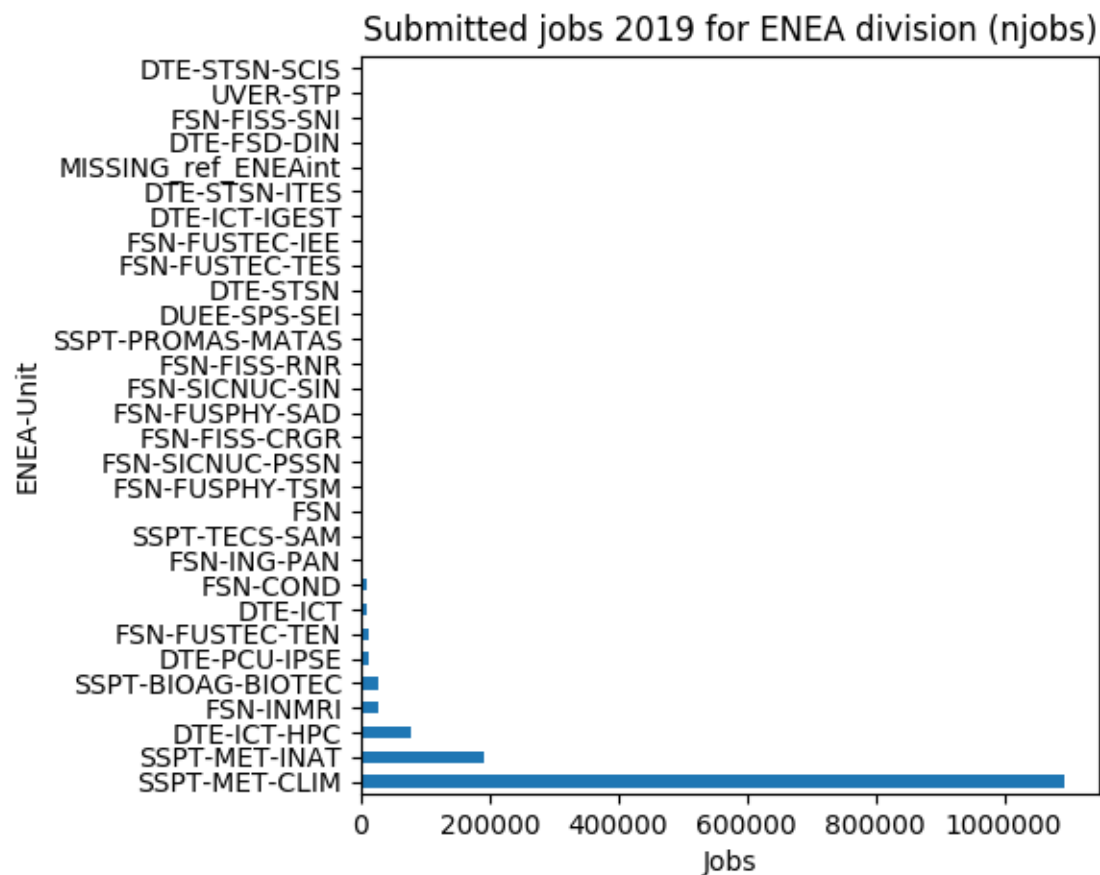


(DTE-PCU-IPSE: Giacomazzi, Picchia et al, combustion studies)



(TERIN-PSU-IPSE: Giacomazzi, Picchia et al, combustion studies)

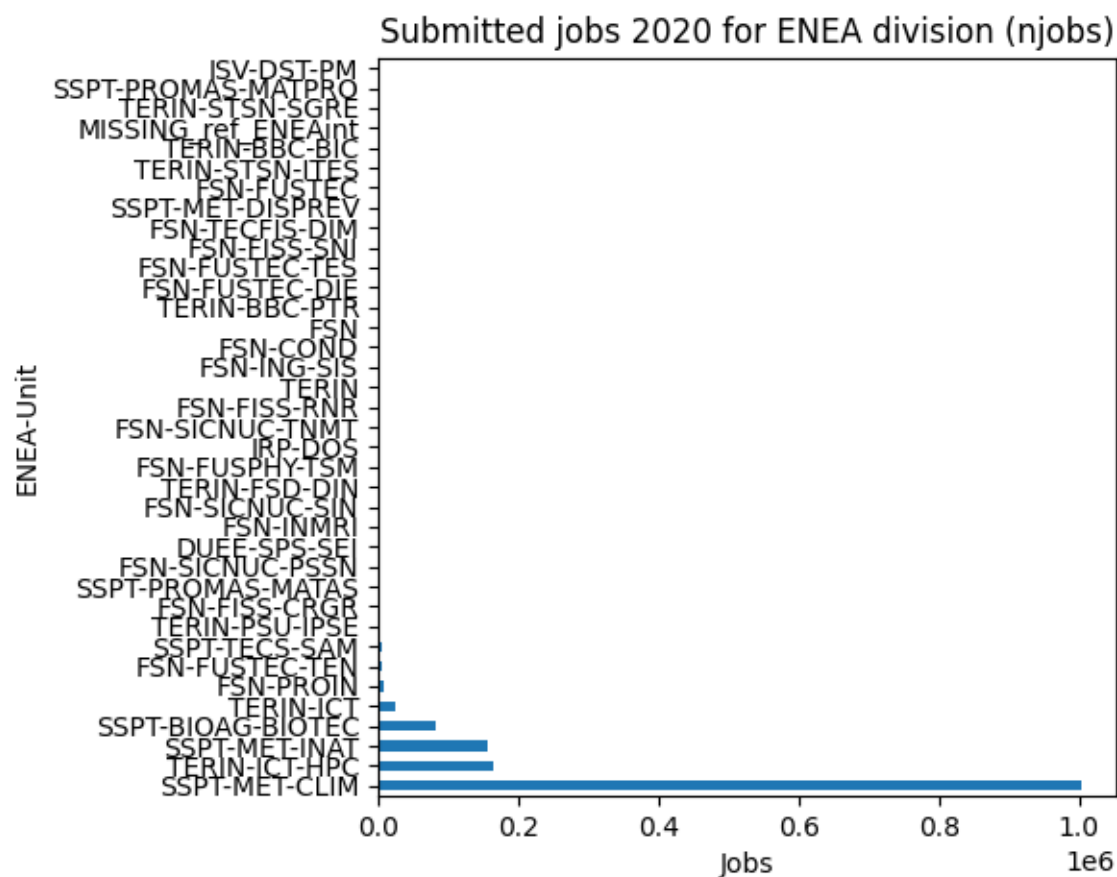
Usage by ENEA division - jobs 2019



Many jobs for climate and pollutants transport models

DIV	njobs
SSPT-MET	1283738
DTE-ICT	236251
DTE-???	50801
FSN-INMRI	27205
SSPT-BIOAG	26816
DTE-PCU	12599
FSN-FUSTEC	11732
FSN-COND	7499
FSN-ING	3709
FSN-FUSPHY	2916
SSPT-TECS	2805
FSN	2293
SSPT-PROMAS	2108
FSN-SICNUC	2019
FSN-FISS	1342
SSPT-PVS	880
DUEE-SPS	293
DTE-STSN	283
SSPT-PROTER	108
FSN-???	32
DTE-FSD	6
UVER-STP	3

Usage by ENEA division - jobs 2020



Many jobs for climate and HPC

DIV	njobs
SSPT-MET	1214808
TERIN-ICT	296510
SSPT-BIOAG	88462
TERIN-???	87479
FSN-PROIN	8780
FSN-FUSTEC	6971
SSPT-TECS	4342
SSPT-PROMAS	3632
TERIN-PSU	3208
FSN-FISS	2371
FSN-SICNUC	2256
FSN-FUSPHY	1164
DUEE-SPS	1138
FSN-INMRI	1056
TERIN-FSD	637
FSN-TECFIS	535
IRP-DOS	397
TERIN	320
FSN-ING	287
FSN-COND	247
FSN	208
SSPT-PROTER	194
TERIN-BBC	170
TERIN-STSN	5
MESSINA	3
ISV-DST	1

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The whole CRESCO team:

always working hard to maintain the clusters alive

The CRESCO users:

for their contributions to the 2019 annual report

Any questions?

