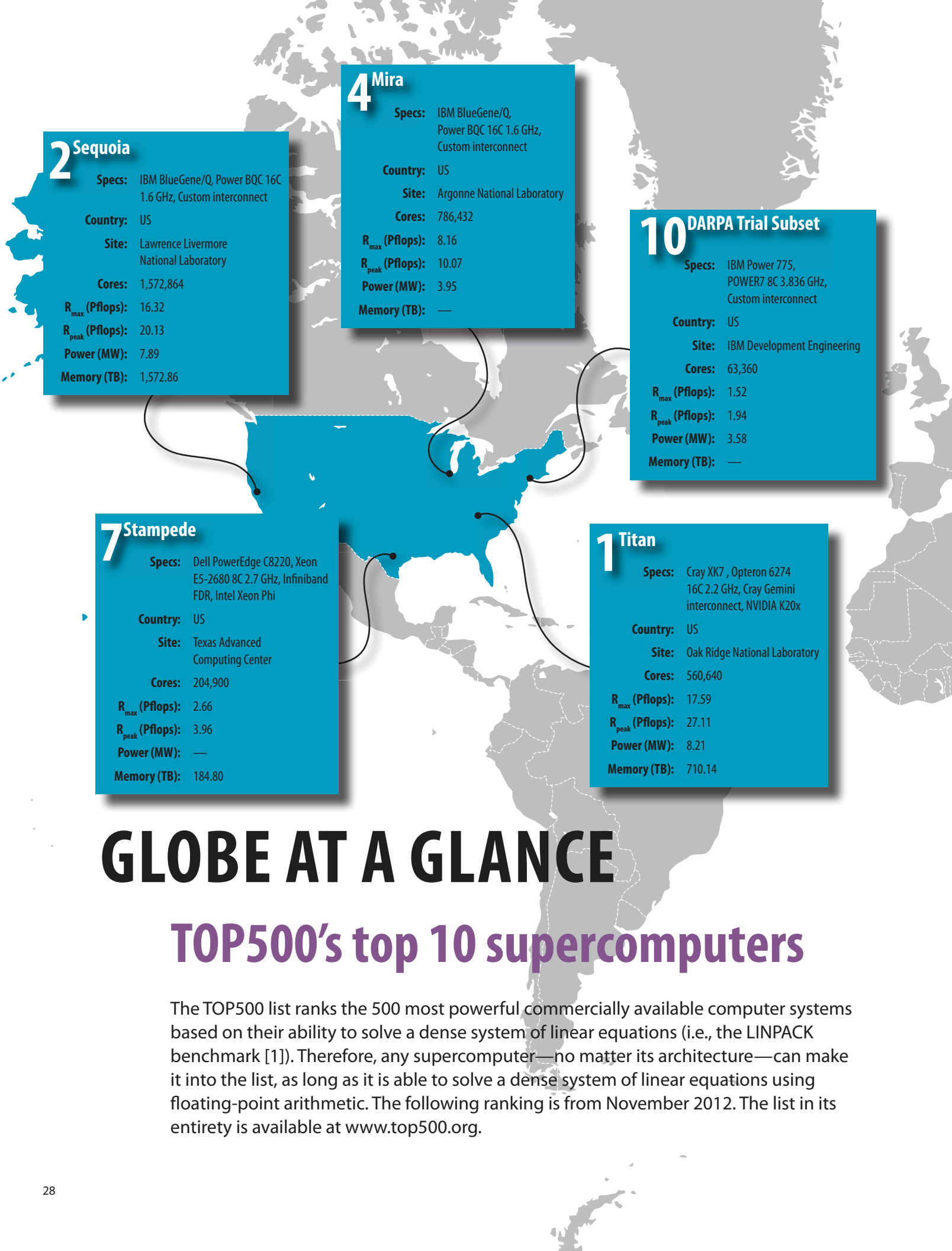
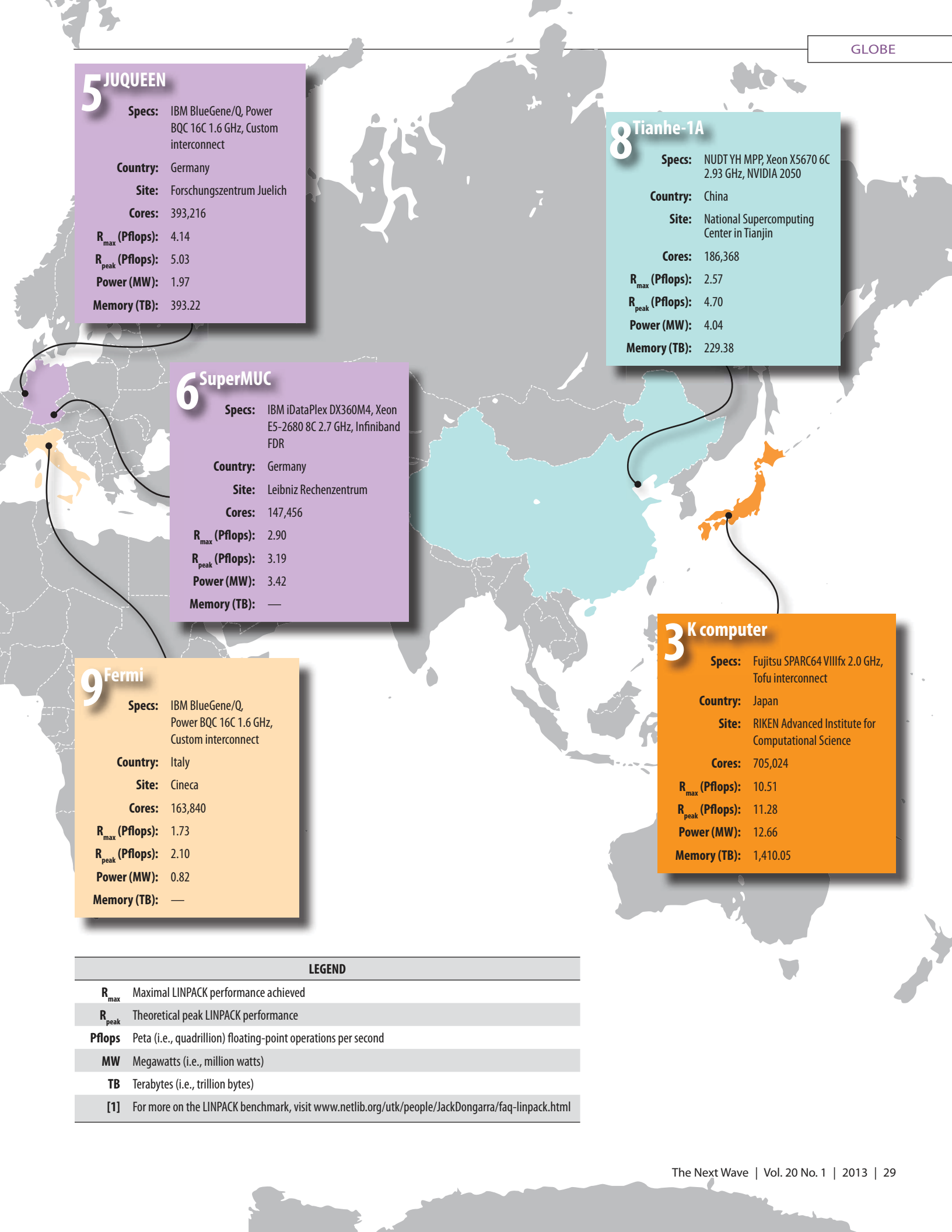


GLOBE AT A GLANCE

TOP500's top 10 supercomputers

The TOP500 list ranks the 500 most powerful commercially available computer systems based on their ability to solve a dense system of linear equations (i.e., the LINPACK benchmark [1]). Therefore, any supercomputer—no matter its architecture—can make it into the list, as long as it is able to solve a dense system of linear equations using floating-point arithmetic. The following ranking is from November 2012. The list in its entirety is available at www.top500.org.



5 JUQUEEN

Specs:	IBM BlueGene/Q, Power BQC 16C 1.6 GHz, Custom interconnect
Country:	Germany
Site:	Forschungszentrum Juelich
Cores:	393,216
R_{max} (Pflops):	4.14
R_{peak} (Pflops):	5.03
Power (MW):	1.97
Memory (TB):	393.22

8 Tianhe-1A

Specs:	NUDT YH MPP, Xeon X5670 6C 2.93 GHz, NVIDIA 2050
Country:	China
Site:	National Supercomputing Center in Tianjin
Cores:	186,368
R_{max} (Pflops):	2.57
R_{peak} (Pflops):	4.70
Power (MW):	4.04
Memory (TB):	229.38

6 SuperMUC

Specs:	IBM iDataPlex DX360M4, Xeon E5-2680 8C 2.7 GHz, Infiniband FDR
Country:	Germany
Site:	Leibniz Rechenzentrum
Cores:	147,456
R_{max} (Pflops):	2.90
R_{peak} (Pflops):	3.19
Power (MW):	3.42
Memory (TB):	—

3 K computer

Specs:	Fujitsu SPARC64 VIIIfx 2.0 GHz, Tofu interconnect
Country:	Japan
Site:	RIKEN Advanced Institute for Computational Science
Cores:	705,024
R_{max} (Pflops):	10.51
R_{peak} (Pflops):	11.28
Power (MW):	12.66
Memory (TB):	1,410.05

9 Fermi

Specs:	IBM BlueGene/Q, Power BQC 16C 1.6 GHz, Custom interconnect
Country:	Italy
Site:	Cineca
Cores:	163,840
R_{max} (Pflops):	1.73
R_{peak} (Pflops):	2.10
Power (MW):	0.82
Memory (TB):	—

LEGEND	
R_{max}	Maximal LINPACK performance achieved
R_{peak}	Theoretical peak LINPACK performance
Pflops	Peta (i.e., quadrillion) floating-point operations per second
MW	Megawatts (i.e., million watts)
TB	Terabytes (i.e., trillion bytes)
[1]	For more on the LINPACK benchmark, visit www.netlib.org/utk/people/JackDongarra/faq-linpack.html