



# Report on Supercomputers in South-East Asia

Jasper Jansen - S2242168

Simulation and Modeling in Astrophysics

Professor: Prof.dr. S.F. Portegies Zwart

Place: Leiden

Date: October 3, 2023

## Introduction

The TOP500 project ranks and details the 500 most powerful supercomputers in the world. It lists the amount of cores, how many PFlops per seconds the computer can reach and the amount of power it uses. In recent years, green energy consumption has become more important in our world due to climate change. The TOP500 project now also has a Green500 list, which also computes the energy efficiency in GFlops per Watt.

South-East Asia is an interesting part of the world. In the recent years there has been much debate about the chip production around the world. South-East Asia is a region of the world where many chips are produced, especially Taiwan and South-Korea. The supercomputers in these countries are built with chips from probably the same countries. These countries are also highly developed, so it would be reasonable to assume they are very green.

## Chosen Supercomputers

In table 1 the results of the search are summarized. The questions asked were:

1. What is the energy consumption of  $x$ ?
2. What type of energy uses  $x$ ?
3. What is the carbon footprint of  $x$ ?
4. Why did your team choose to build two separate supercomputers with (almost?) the same specs and not one big supercomputer? (**Only for Guru & Maru**)

Where  $x$  loops over the supercomputers in table 1. Only the staff of Taiwan 2 replied, but they would not give more information and referred back to the Green500 website.

Supercomputer	Country	Owner	TOP500 list place	Green500 list place	Energy efficiency (GFlops/Watt)	Answered?
Taiwania 2	Taiwan	National Center for High Performance Computing	72	61	11.285	Yes, but could not provide information
Guru & Maru	South Korea	Korea Meteorological Administration	37	85	5.462 (both)	Not yet
Nurion	South Korea	Korea Institute of Science and Technology Information	49	208	Not known	Not yet

**Table 1:** In this table the results of the search are summarized

## Conclusion

It may be due to cultural differences that the staff of the supercomputers chosen were not willing to give information. Or it is possible that they do not want to give this information to someone not from their institute. However, it would seem reasonable to think that they would provide information, as they are high on the list and therefore have a good marketing standpoint. Especially Guru & Maru, hosted by the Korea Meteorological Administration, would be interesting, as the institute also measures climate change.