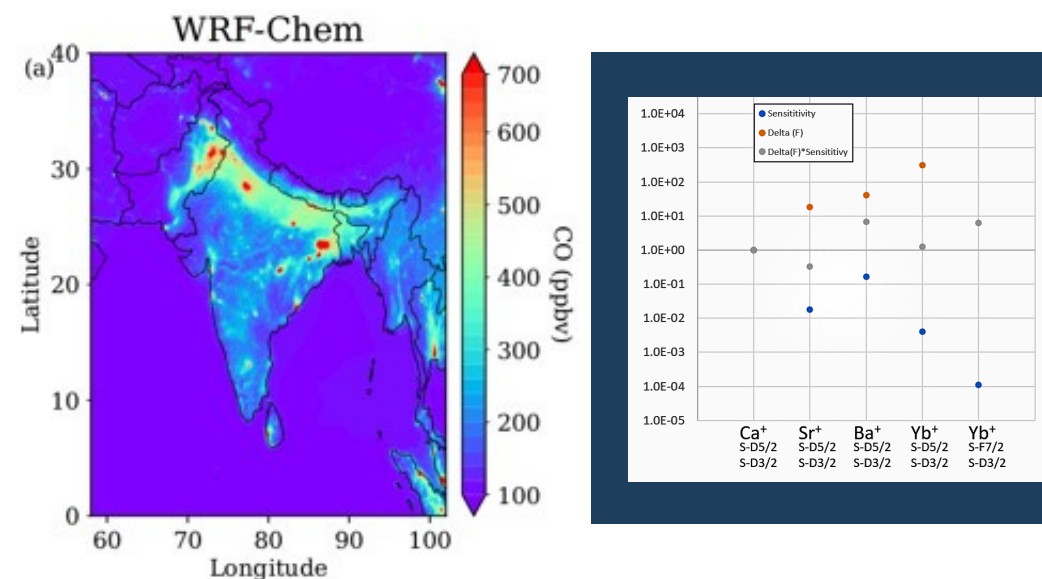


## About us

The Physical Research Laboratory (PRL), Ahmedabad is a premier research institute engaged in basic research in the areas of Astronomy and Astrophysics, Solar Physics, Planetary Science and Exploration, Space and Atmospheric Sciences, Geosciences, Theoretical Physics, Atomic, Molecular and Optical Physics and Astro-chemistry.

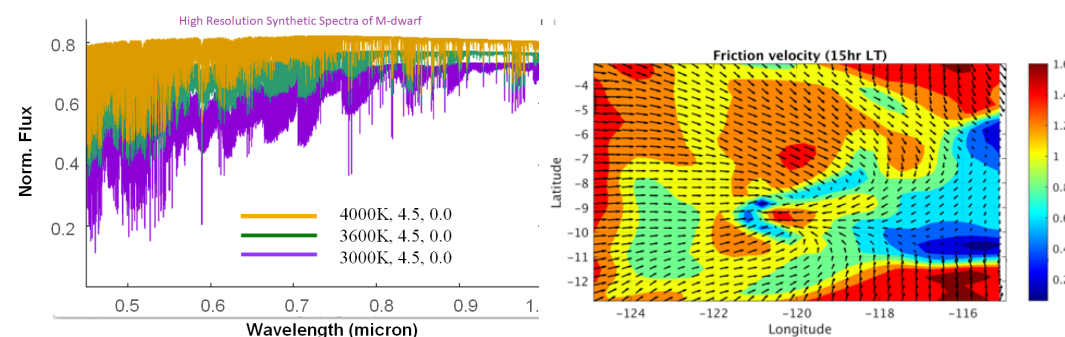
The Computer Networking and Information Technology division is located in the main campus of the Laboratory. It is spread over 4000 square feet of plinth area with a centrally air-conditioned environment. The main objectives of the division are: (i) Design, Implement and Manage IT Systems/Services, Networks, High End Computational facilities, (ii) Ensure Cyber Security and (iii) Provide technical support to the PRL fraternity.

## Scientific Highlights



Distribution of carbon monoxide, simulated by WRF-Chem model.

Sensitivity of field shift constants (F) in the atomic clock transitions for detecting a new vector boson.



High Resolution Synthetic Spectra of M-dwarf.

Surface shear velocity at Arsia Mons region of Mars simulated by a Mars-WRF model.

For any Query /Suggestion  
support@prl.res.in



PARAM VIKRAM - 1000



PRL- ENGLISH



PRL- HINDI

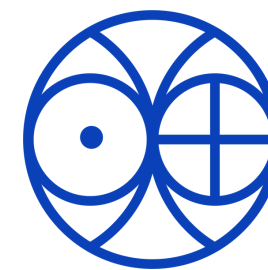
## PARAM VIKRAM - 1000



The Param Vikram-1000 is the 14<sup>th</sup> fastest supercomputer in India.

(Reference: <https://topsc.cdacb.in/filterdetailstry?page=20&slug=July2023>)

COMPUTER NETWORKING  
AND  
INFORMATION TECHNOLOGY DIVISION



PHYSICAL RESEARCH LABORATORY  
AHMEDABAD



# OUR HPC JOURNEY



IBM RS6000/SP  
2001 - 2006

3 TF HPC CLUSTER  
2009 - 2015



VIKRAM-100  
100TF HPC CLUSTER  
2015 - 2023

PARAM VIKRAM - 1000  
~1PF HPC CLUSTER  
2023 -



# WHAT IS HPC?

A High Performance Cluster (HPC) is a group of computers that work together to solve complex problems or handle demanding tasks more efficiently and quickly than a single computer.

## PARAM VIKRAM-1000

The Param Vikram-1000 is a High Performance Computing (HPC) Cluster setup in June 2023.

This HPC provides theoretical peak performance (Rpeak) 1395.63 TeraFlop/s (TF) and Maximal LINPACK performance (Rmax ) 956.34 TF.

With 108 computing nodes it dispense 7296 CPU cores, 2,76,480 GPU Cores, 74TB of RAM and 1 PB of high performance luster parallel file system.

A Visualization Node with two 32 core Intel CPUs of 2.60 GHz and two NVIDIA A40 GPU Cards is available to perform image analysis and run related scientific tools like Mathematica.

The system has been setup using open source tools/libraries like Lustre, OpenHPC, Slurm, Ganglia, Intel oneAPI etc. All the compute nodes are Make in India.

# HPC CONFIGURATION

## Master Node

- Numbers-02
- Model-Vantageo-1230-RT
- Processor-2 x Intel(R) Xeon(R) Platinum 8358
- RAM-512 GB
- Hard Disk-2 \* 960 GB SATA SSD

## CPU

- Numbers -80
- Model -Vantageo-1230-RT
- Processor -2 x Intel(R) Xeon(R) Platinum 8358
- Total CPU Cores-32 \* 2 \* 80 = 5120
- RAM -512 GB
- Hard Disk 2 \* 960 GB SATA SSD

## GPU

- Numbers -20
- Model -Vantageo-2230-RT
- Processor -2 x Intel(R) Xeon(R) Platinum 8358
- Total CPU Cores-32 \* 2 \* 20 = 1280
- GPU-2 x Nvidia A100
- RAM -512 GB
- Hard Disk 2 \* 960 GB SATA SSD

## SMP

- Numbers -08
- Model -Vantageo-2430-RT
- Processor-2 x Intel(R) Xeon(R) Platinum 8380H
- Total CPU Cores-28 \* 4 \* 8 = 896
- RAM -3 TB
- Hard Disk 2 \* 960 GB SATA SSD

## VIS

- Numbers -01
- Model -Vantageo-2230-RT
- Processor -2 x Intel(R) Xeon(R) Platinum 8358
- GPU-2 x Nvidia A40 GPU
- RAM -512 GB
- Hard Disk 2 \* 960 GB SATA SSD