SESSION NUMBER:
H45I

Model as a Service and Distributed Model on Demand: Tools to Automate and Abstract Model Development Overhead Tasks

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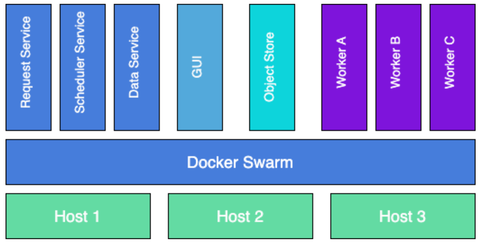
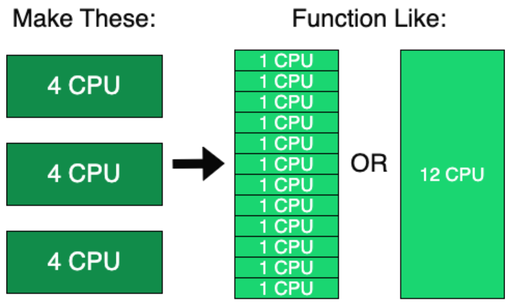
Abstract Compute Resources

DMOD is designed as a series of "stacks" providing its essential capabilities:



The Power of Abstracting Resources



Bundle Execution Environments

- All execution takes place within Docker *containers*
- Containers are started from Docker *images*
- Images are like snapshots of the state of a container

What Comes with DMOD?

- DMOD provides configurations for all necessary images
- This yields portable, reusable, generic environments

Key Benefits

- Users avoid figuring out how to get software to compile
- User don't have to fight with dependencies
- Users get consistent, re-creatable environments in which to run models

What Distributed Model on Demand Can Do For Domain Scientists

What is DMOD?

- A tool for managing the compute infrastructure needed for running domain science models
- Software to integrate and automate tedious steps of model development and testing
- A tool to reduce cognitive and manual burdens for domain science developers

It does this by:

- Abstracting compute environment and resources
- Building services to manage automated model job workflows
- Intelligently managing data and data requirements

Go From This:

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            },
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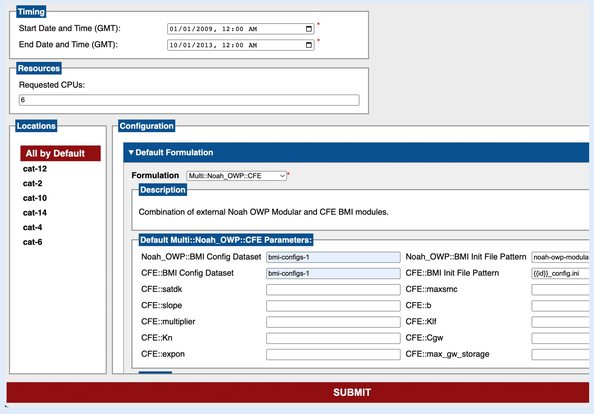
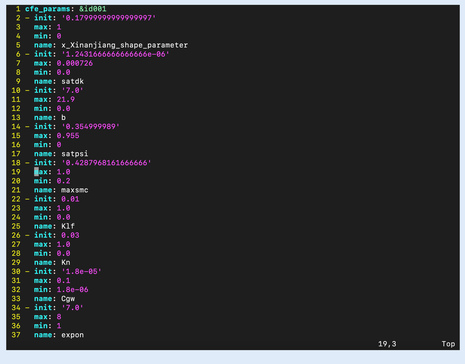
19 fewer lines                                                  33,25         Top
```

To This:





```
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  max: 1
  min: 0
  name: x_Xinanjiang_shape_parameter
- init: '1.2431666666666666-06'
  max: 0.000726
  min: 0.0
  name: satdk
- init: '7.0'
  max: 21.9
  min: 0.0
  name: b
- init: '0.354999989'
  max: 0.955
  min: 0
  name: satpsi
- init: '0.42879681616666666'
  max: 1.0
  min: 0.2
  name: maxsmc
- init: 0.01
  max: 1.0
  min: 0.0
  name: Klf
- init: 0.03
  max: 1.0
  min: 0.0
  name: Kn
- init: '1.8e-05'
  max: 0.1
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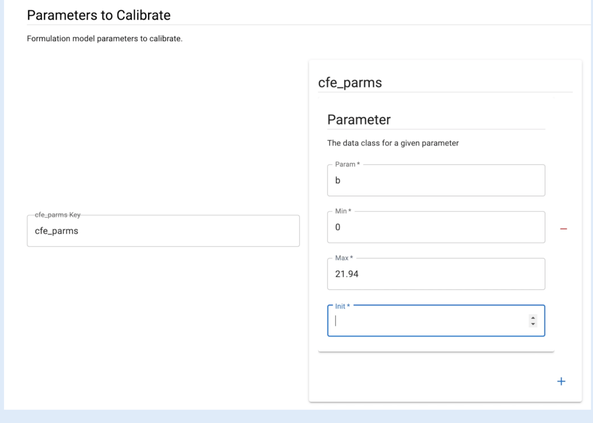
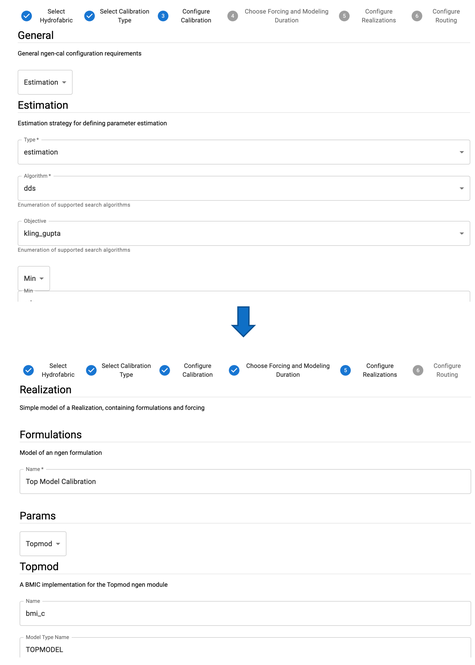
  name: Cgw
- init: '7.0'
  max: 8
  min: 1
  name: expon
                                                                19,3          Top
```



Automate Minutia

DMOD workflows simplify and guide the user interaction.

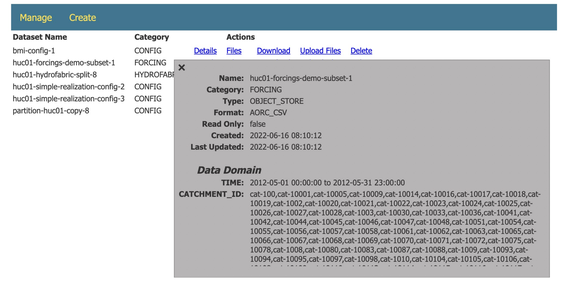


Orchestrate Data for Users

DMOD provides data access and intelligent management :

- placement of data for hosts, stacks, and workers
- deciding whether data for a requested task is available
- combining and/or reformatting datasets when necessary

Dataset Management



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