MODIS Image Based Computation of Vegetation Indices in MedioGRID Architecture

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SYNASC 2006

Objectives

- Satellite image processing system over GRID
  - environment for extracting relevant environmental and meteorological parameters
  - Greenland application concerning with the computation of vegetation indices

- User interactivity through a web portal

Data processing architecture in Medio-GRID

- MedioGRIDService

- MedioGRIDPortal

- MedioGRIDMyProxy

- MetadataCatalog and Replica Location Service

MedioGRID components
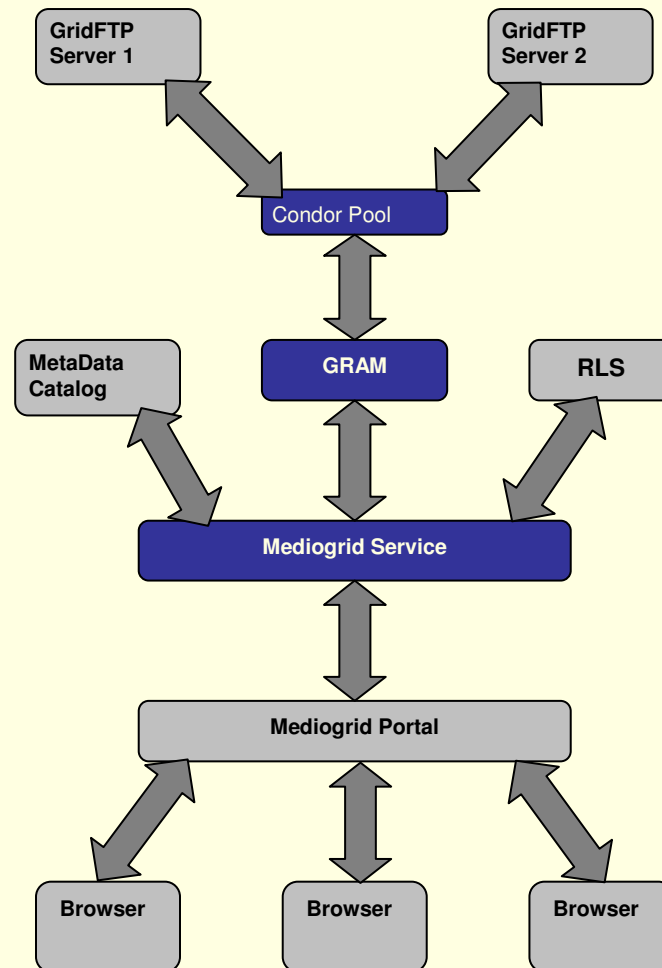
MedioGRIDService

- Creates and schedules jobs

- Job execution through Condor job manager and GlobusGatekeeper service

- Creates a unique resource for each client

- Stateful service

MedioGRIDPortal

- Client interface

- Control and interaction to MedioGRIDService

- Selection and visualization of the satellite images

- Notifications on the job state

MedioGRID Portal
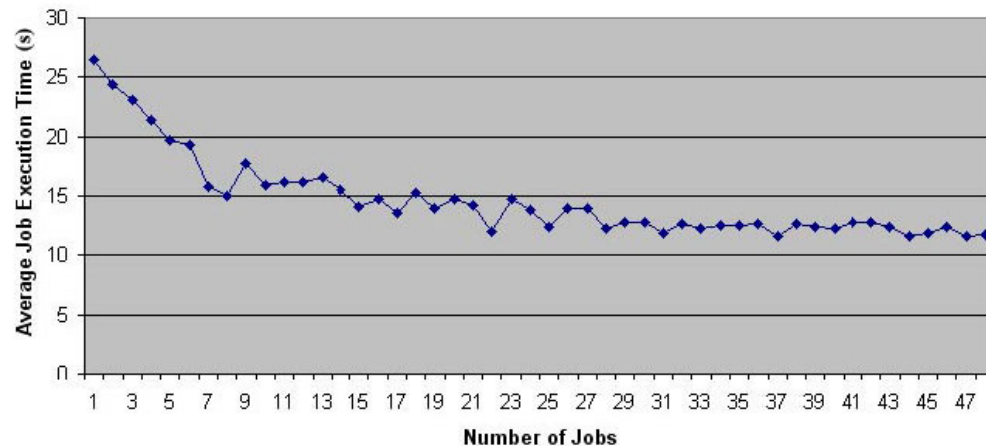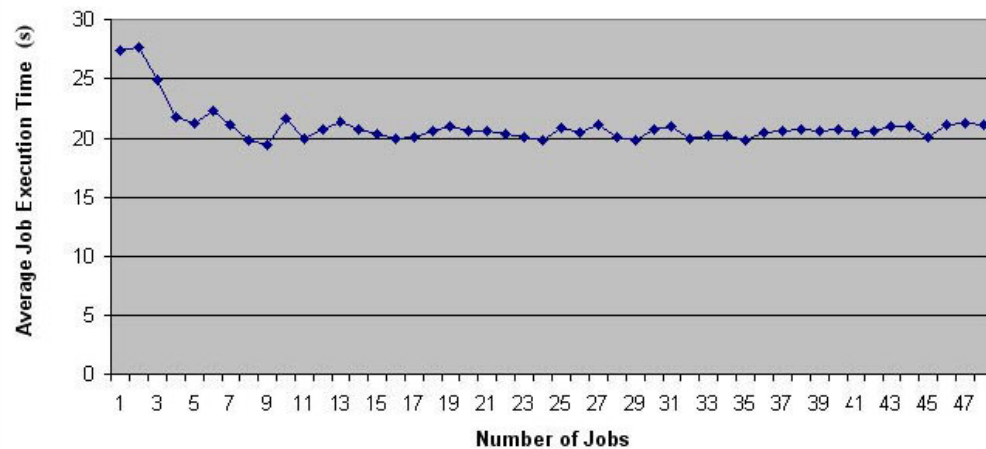
MedioGRIDMyProxy

- Each client and worker process needs a certificate in order to authorize to the service and to the GridFTP, RLS servers

- Provides a certificate for the authorization process

Greenland application
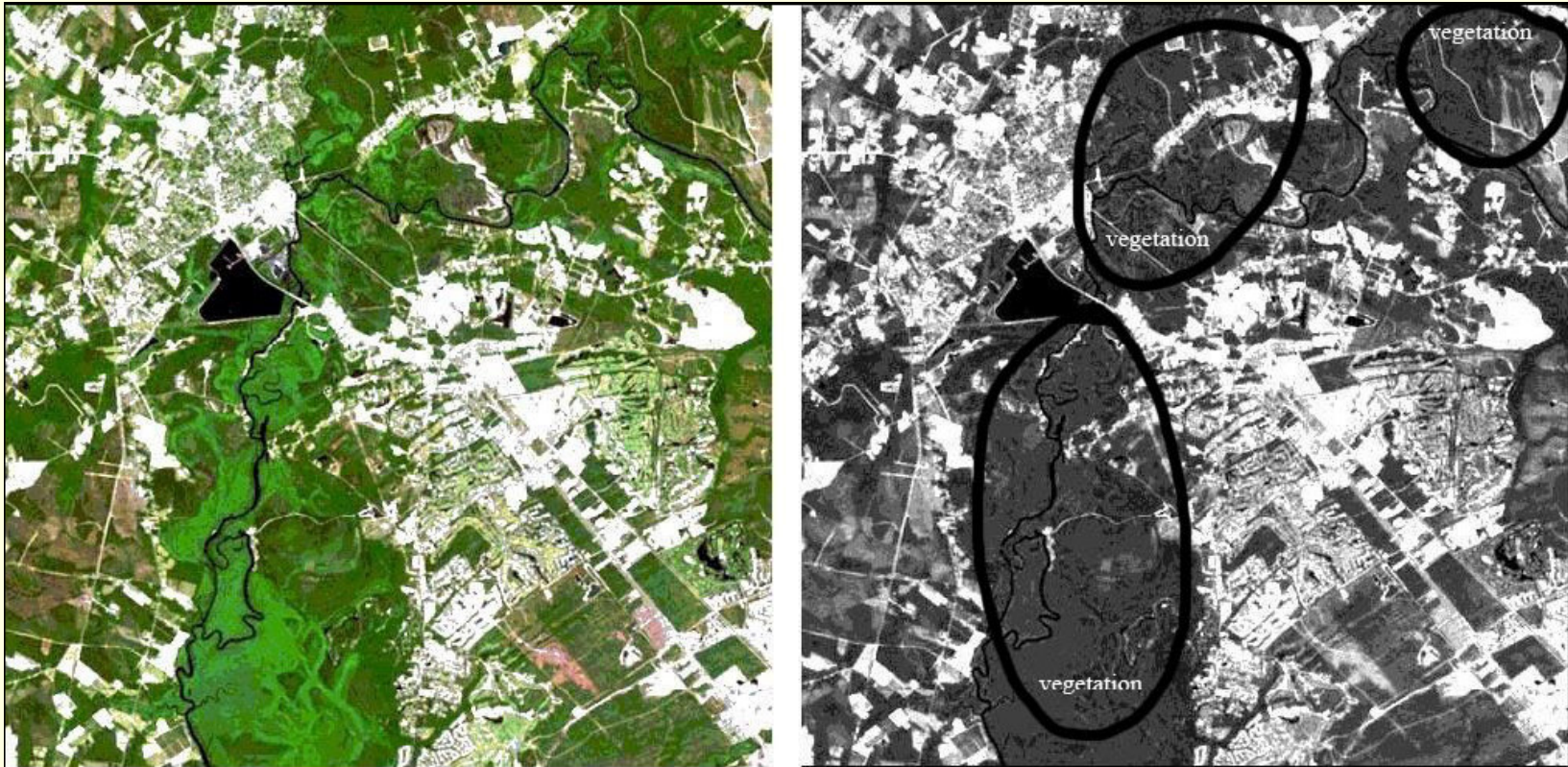
Testing performance

- Job execution time depends on:
  - the number of workstations
  - the number of jobs that are running

- Depends indirectly on the data transfer rate
- For a number of jobs greater than the number of workstations the average job execution time tends to remain constant

Conclusions

- Architectural specifications of the MedioGRID software system

- Interaction among MedioGRID components

- Experiments on the basic functionality, performance evaluation, and GUI usability

Future work

- GIS tools supporting the evaluation of flood and fire evolution

Thanks

Questions?