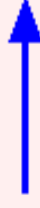




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# **EGEE and the role of IASA**

**( In close collaboration with UOA )**

**IASA GRID Steering Committee:**

**George Kallos**

**Lazaros Merakos**

**C.N. Papanicolas**

27 May 2004

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**An Autonomous Research Institute operating under the  
auspices of the Ministry of Education.**

**Participating Academic Units:**

**The National & Capodistrian University of Athens**

- **School of Medicine**
- **Department of Informatics**
- **Department of Physics**

**The National Technical University of Athens**

- **Department of Electrical & Computer Engineering**
- **Department of Chemical Engineering**
- **Department of General Science – Physics Division**

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## **Mission of the Institute**

**To support research and postgraduate studies in all thematic areas where accelerators and related technologies play a role.**

- **Medicine**
- **Materials Science**
- **Informatics and Computer Science**
- **Instrumentation**
- **Nuclear & Particle Physics**
- **Environmental Science**

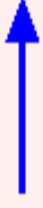
**Open to researchers both Nationally and Internationally**

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## Existing grid relevant infrastructure of IASA

- ❑ A Linux cluster of 32 dual-CPU ATHLON and XEON processors (GiagaBit/s internal network)
- ❑ A number of other single CPU systems are available for satellite services
- ❑ Storage system: three RAID 4:1 systems, total capacity of 2.5 TB; additional storage units also available in the system for total capacity ~ 4 TB
- ❑ Outside link: 1Gb/s (fiber-optic) connection
- ❑ Three alternative power sources (two independent connections to PPC and one to a local generator) and double cooling systems; fully covered by an array of UPSs

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## Applications Running on the Existing Cluster

### Present running applications related to

- system and software development and
- routine operations

### System utilization of IASA cluster; of a multidisciplinary-nature, includes applications related to:

- Environmental, meteorological, climatic and sea state analysis and forecasts on limited areas and global coverage
- Energy and environmental optimization
- High Energy Physics and data analysis
- Medical Applications

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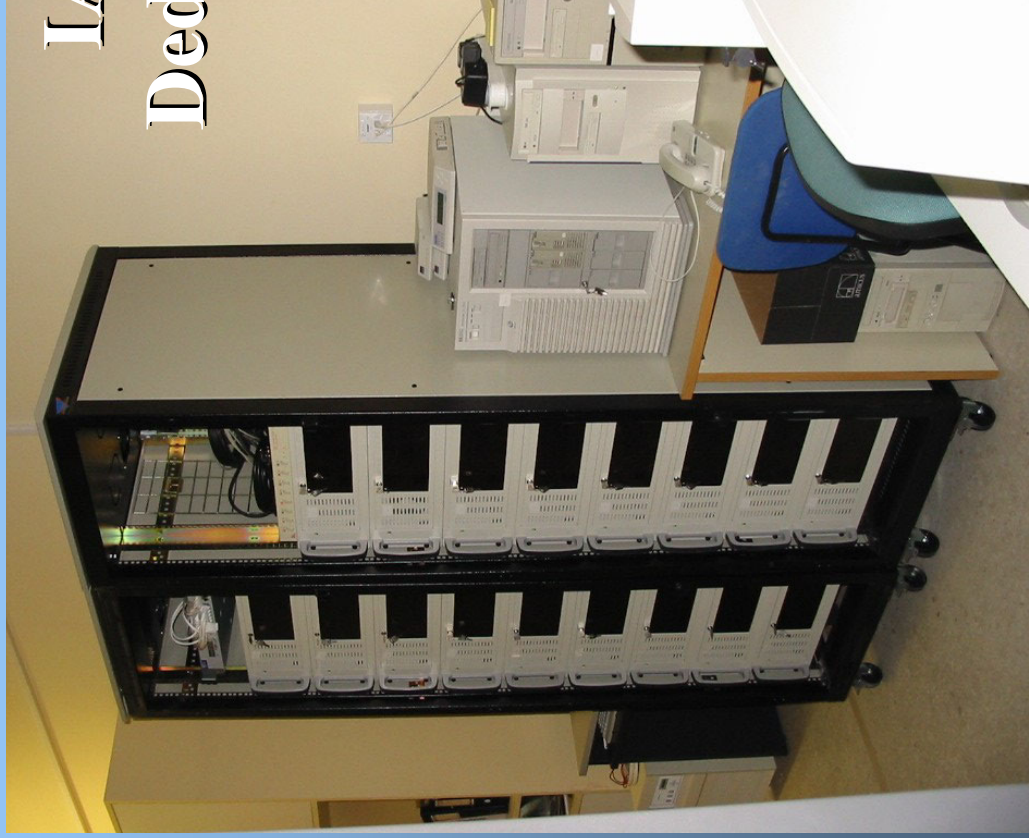
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## IASA Computer Facilities Dedicated to MIFSTEP project

- Cluster of 14 dual-CPU nodes based on ATHLON processors (10 computational + 4 assisting and spare nodes)
- RAID 4:1 system handling approximately 750 GB of data on-line.
- High-speed network of 1 Gb/s (internal and external)



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## **IASA and GRIDS – Future Applications**

**Existing IASA infrastructure cannot cover needs for real-time applications. Examples from meteorology:**

- **Stochastic-type of environmental predictions (weather, sea-state, air quality)**
- **Medium to long-range weather forecasting**
- **Climatic variability**
- **Specialized Environmental simulations**
- **Energy and Environmental relationships**

**These applications cannot be covered by individual clusters. But they are good candidates for GRID platforms**

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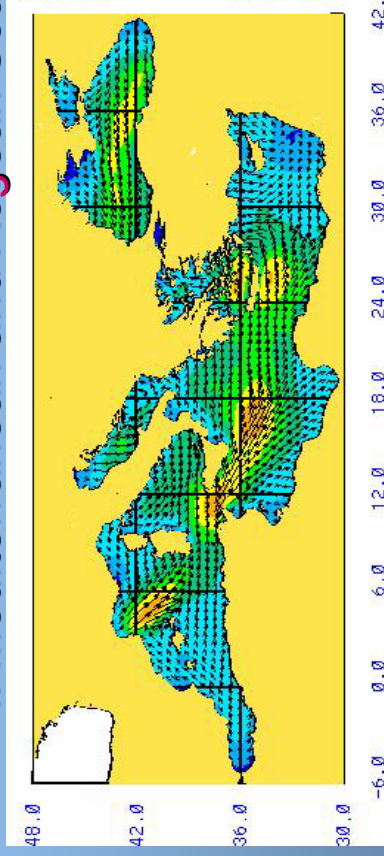


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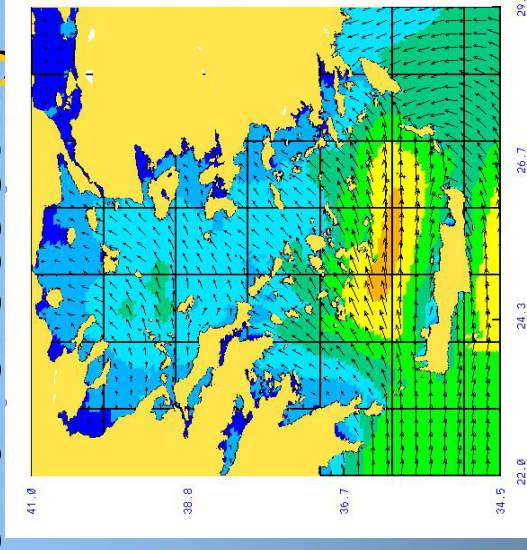
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## Operational wave analysis and forecasting

### I. Mediterranean and Aegean Sea

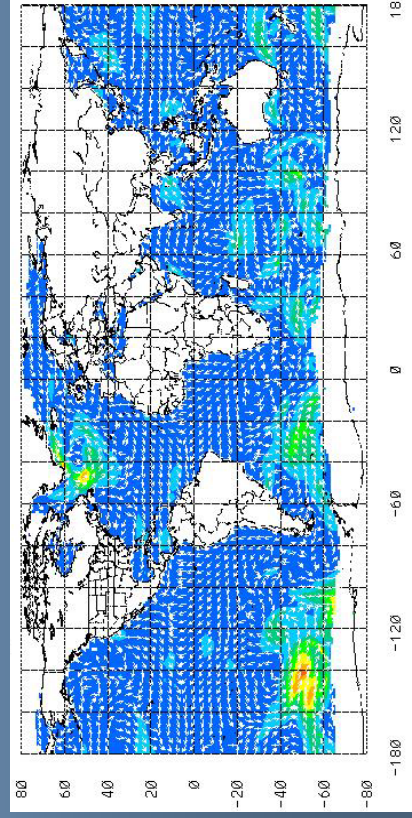


6W - 42E  
30S - 47N  
Res: 0.1deg

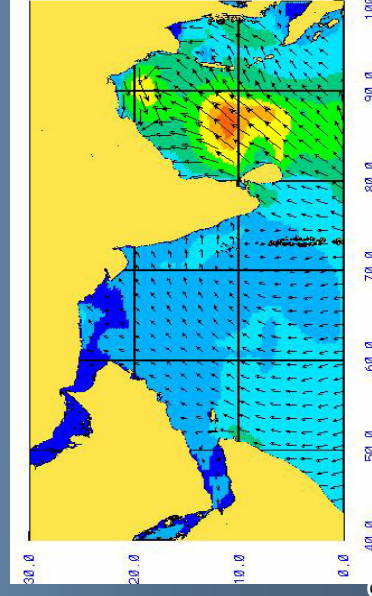


22E - 29E  
34.5S - 41N  
Res: 0.05deg

### II. Global and Indian Ocean



Res: 1.0 deg



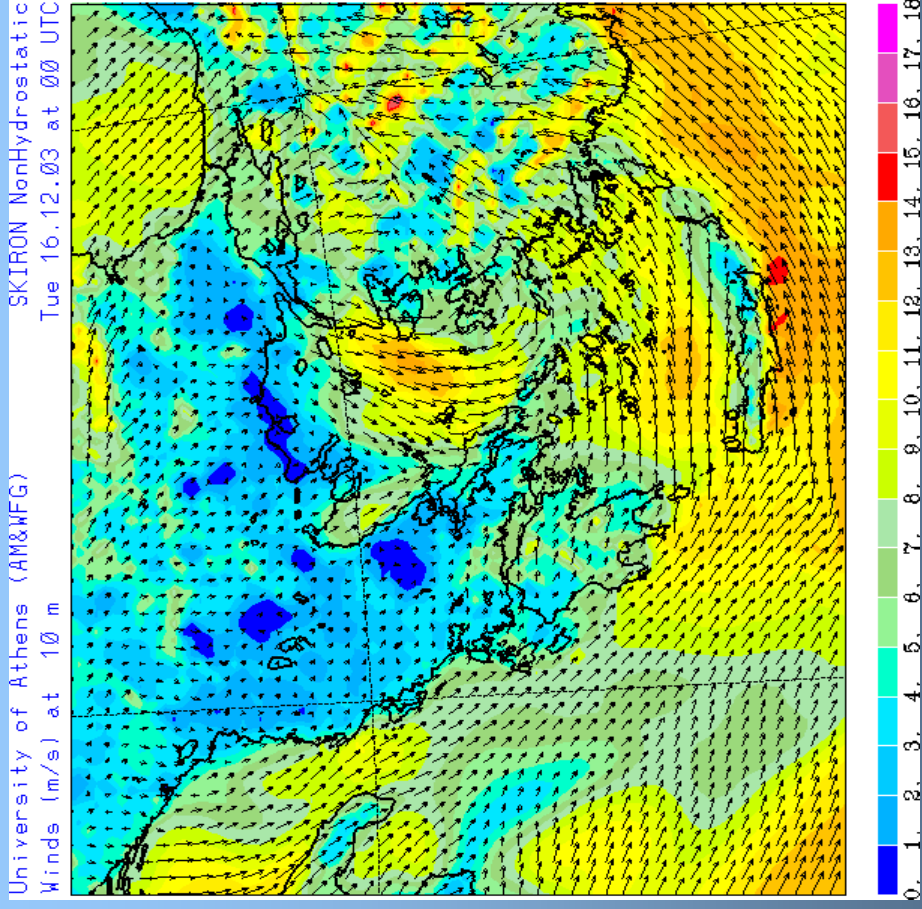
40E - 100E  
0 - 30N  
Res: 0.25deg

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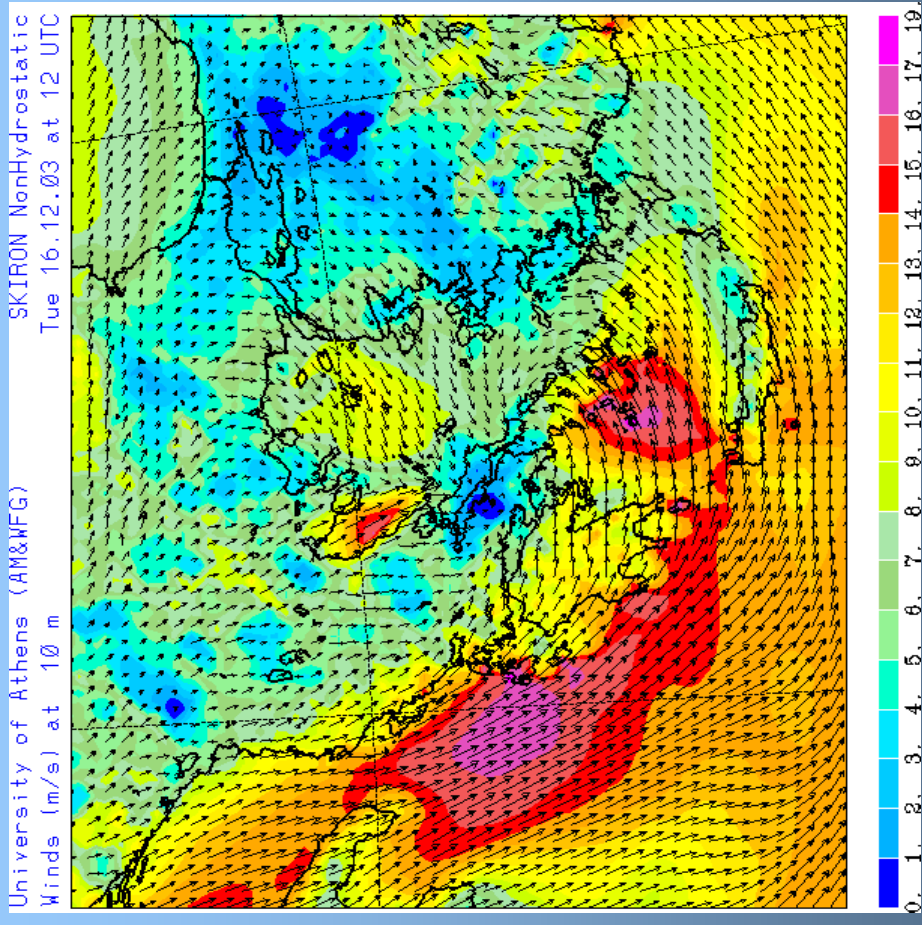
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# Example of operational SKIRON wind forecast over Greece (AUTOHAZARD project)



36-hour forecasted wind  
field



48-hour forecasted wind  
field

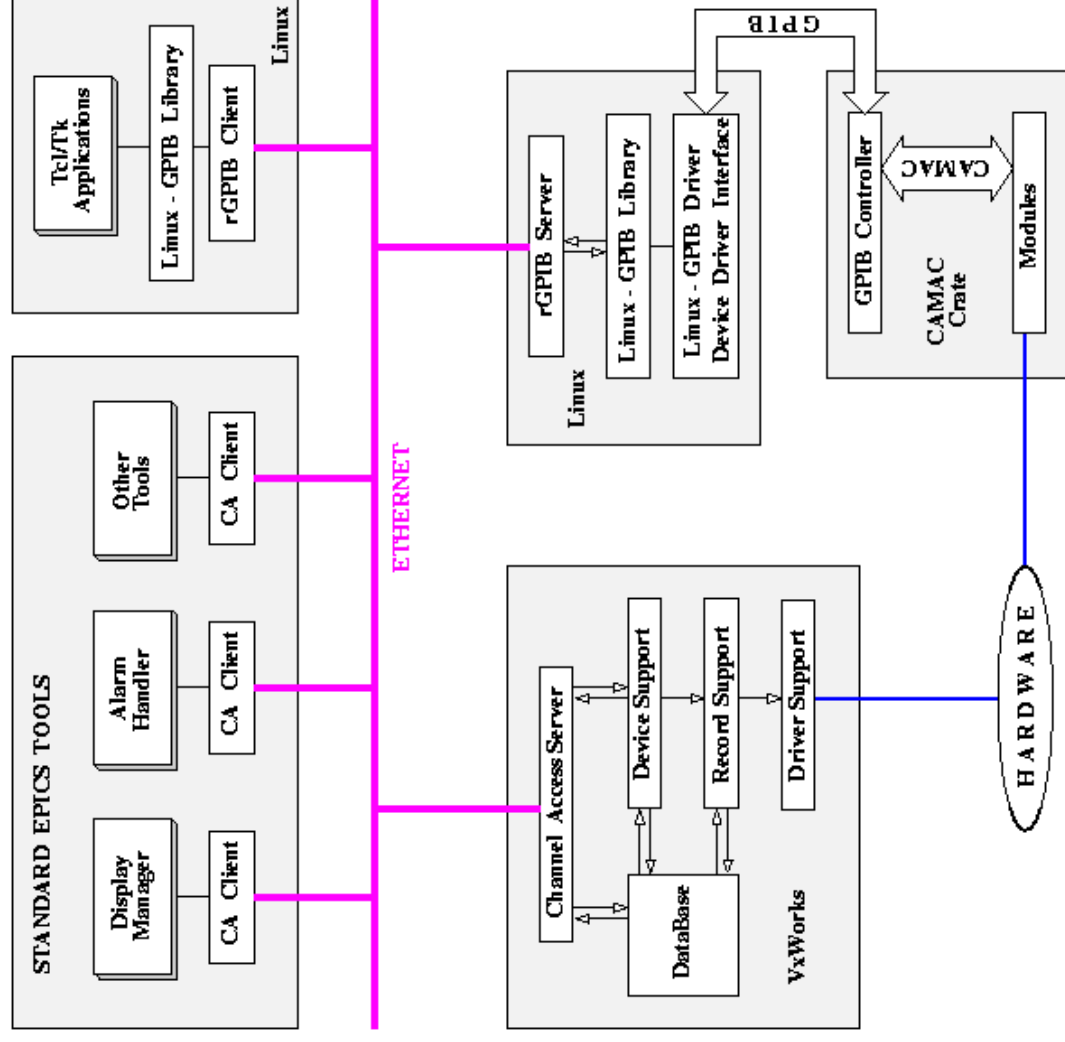
Forecast started at 12UTC on  
14/12/2003



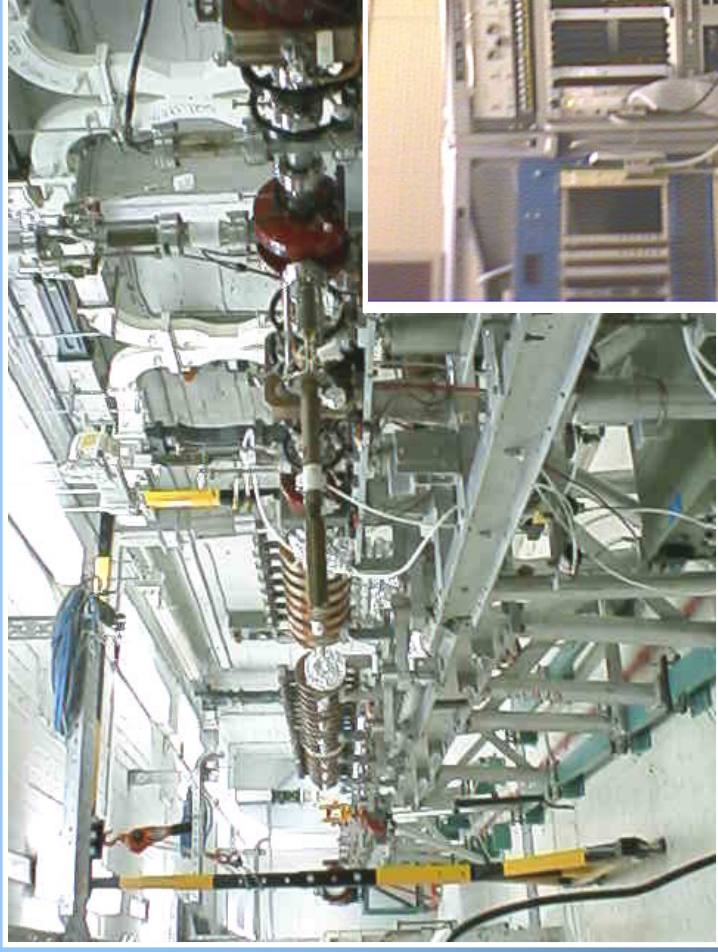
Other applications:

- real-time control and monitor of the accelerator
- data acquisition system

EPICS  
@ IASA



# EPICS @ IASA





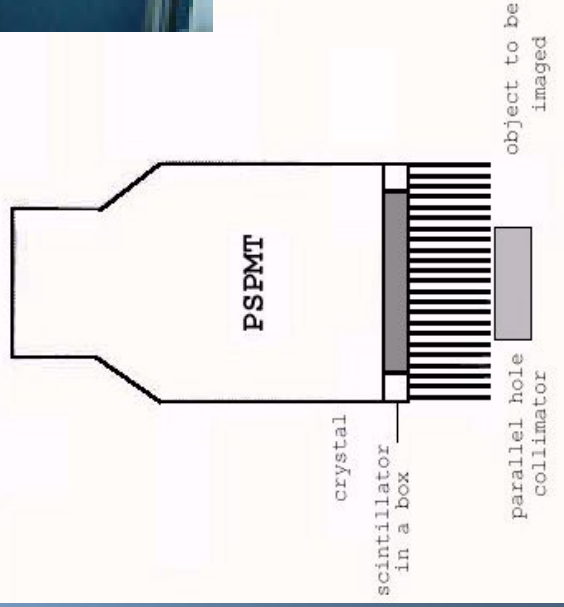
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Based on a position-sensitive PMT



# IASA SPECT Imaging Project

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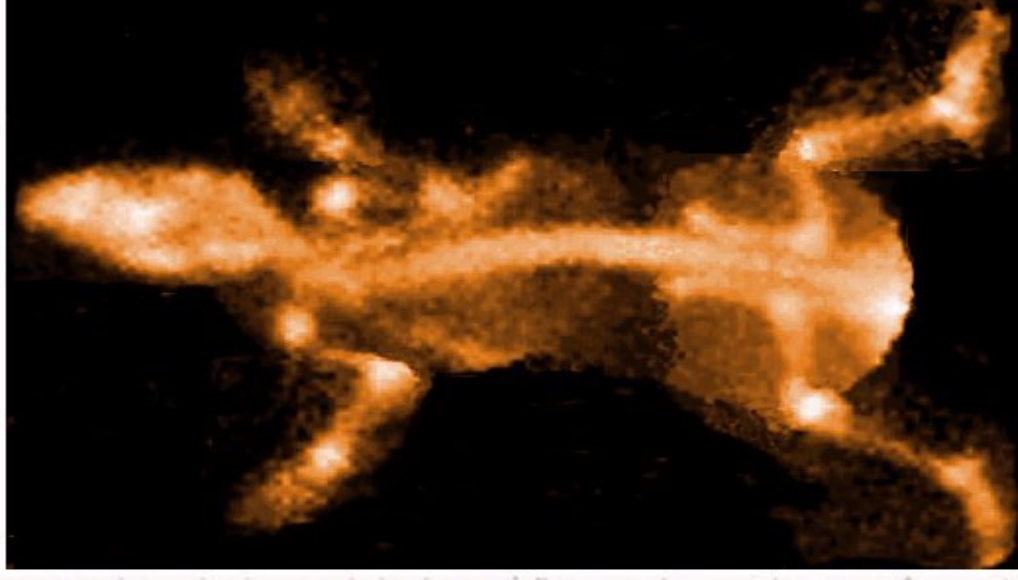
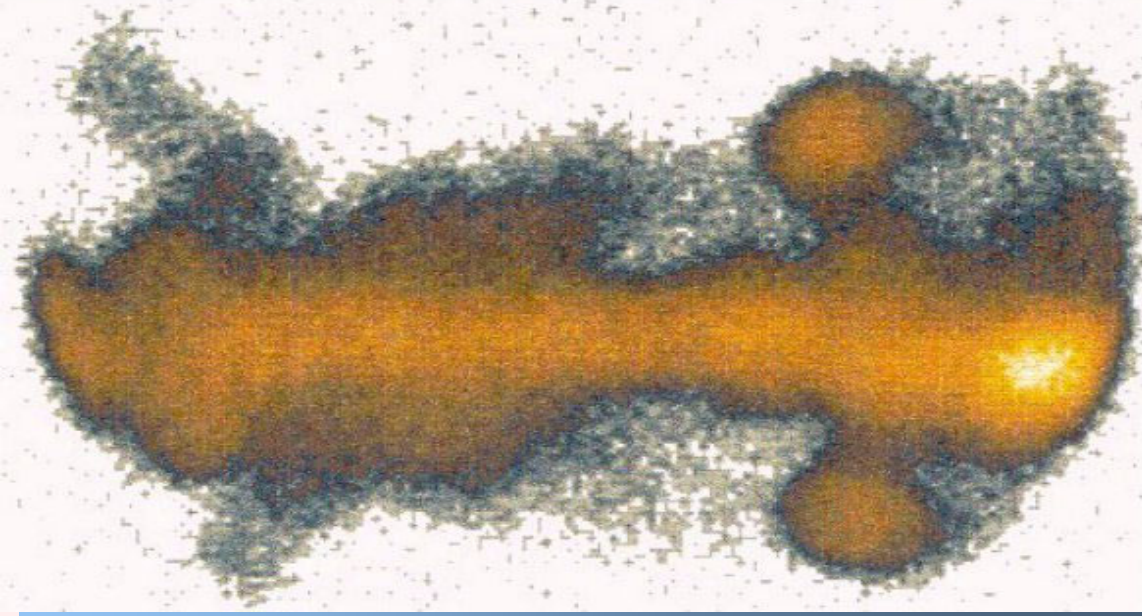
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# Small Animal Imaging (2D)

Imaging a mouse  
injected with  
 $^{99m}\text{Tc-MDP}$

Comparison with an  
image from a  
commercial gamma  
camera with pinhole  
collimator



experimental gamma camera

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## **IASA and its role in EGEE**

**IASA will host and manage the HG2 node (to be introduced in the second year of the project)**

- **Support (together with UoA) core services**
- **Support (together with ICCS and UoA) training services**
- **Evaluation of middleware and application-specific deployment (in IASA application areas: HEP, Environmental Science, Medical Applications...)**