



Establishment of an Efficient Managing System for NWP Operation in CMA

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- **Introduction**
 - Nwp development in CMA
 - Efficient management for NWP operation is required
- **Techniques for an efficient managing system in CMA**
 - Standardizing the running interface
 - Visualizing the running processes by SMS
 - Project “national meteorological data access and retrieve system”

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Introduction

- **Nwp development in CMA**
 - The application of NWP has made big progress in the past 8 years in china mainly for two reasons
 - Improvement of accuracies of NWP forecasts
 - The more and more forecast products required by society wouldn't be provided timely without the support of NWP products

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- Table 1 shows the NWP systems comparison in different periods

1996		2004	
Name	Operation interval	Name	Operation interval
Global (T106L19)	6hours	Global(T213L31)	6hours
Regional(Hlafs05)	6hours	Regional(Hlafs025)	6hours
Typhoon(Hlafs)	12hours	Regional(Grapes)(xp)	6hours
		Typhoon1(hlafs)	12hours
		Typhoon2(T213L31)	12hours
		Meso-Scale	6hours
		Very Short-Range(WRF)(xp)	3hours
		Medium-term Ensemble(T106L19)	Daily
		Air pollution forecast	Daily
		Ultraviolet radiation forecast	Daily
		Sandstorm forecast	Daily
		Potential fire index forecast	Daily
		Emergency response modeling system	Response anytime

Table 1

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Nwp development in CMA(cont.)

– Conclusion:

- *It is no doubt that NWP has played the important role in operational weather forecast service in china!!*

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Introduction(cont.)

- **Efficient management for NWP operation is required**
 - The increased NWP systems into operation ; the limited computing resources ; the management of the operational NWP systems more complex
 - There are frequent changes of NWP systems with the model development

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Efficient management for NWP operation is required(cont.)

- Changes of the minors are not always tested well and may result in human errors in some NWP systems
- Also, the well prepared handbook falls behind the NWP system operation often
- It is difficult for staff to operate the whole NWP systems in a short term and hold back the application in weather service

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Techniques for an Efficient Managing System in CMA

- **Standardizing the running interface**
- **Visualizing the running processes by SMS**
- **Project “national meteorological data access and retrieve system”**

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Techniques for an Efficient Managing System in CMA

- **Standardizing the running interface**
 - The staffs for maintaining the NWP operational systems are in three levels
 - Operators
 - Supervisors
 - Researchers

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Standardizing the running interface(cont.)

- If every NWP system upgrades to operational suite with a standard running interface , the supervisors could operate it more easier without know what the components actually do and just restart the right step
 - Unique ID for operational account in all computers
 - Part the constant data and inconstant data with different directories
 - Standardizing the components for running

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Standardizing the running interface(cont.)

– View of structure for operation in CMA

```
$BASE
|-----NWP_GMFS(NWP_RMFS)
|-----T213(hlafs/m m 5/grapes)
|-----condat
|-----$components
|-----$componentn
|-----bin
|-----script
|-----source
|-----Makefile
|-----$components
|-----codes
|-----$original
|-----libs
|-----$componentsn

$WORKDIR
|-----NWP_GMFS_DATA(NWP_RMFS_DATA)
|-----T213(hlafs/m m 5/grapes)
|-----$components1
|-----$components2
|-----$componentsn
|-----log
```

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Standardizing the running interface(cont.)

- Other rules about files naming also be considered
 - In the rules of files naming ,the information include model name , components name, functions name, the date and the time.
 - Some former rules are followed for the import models

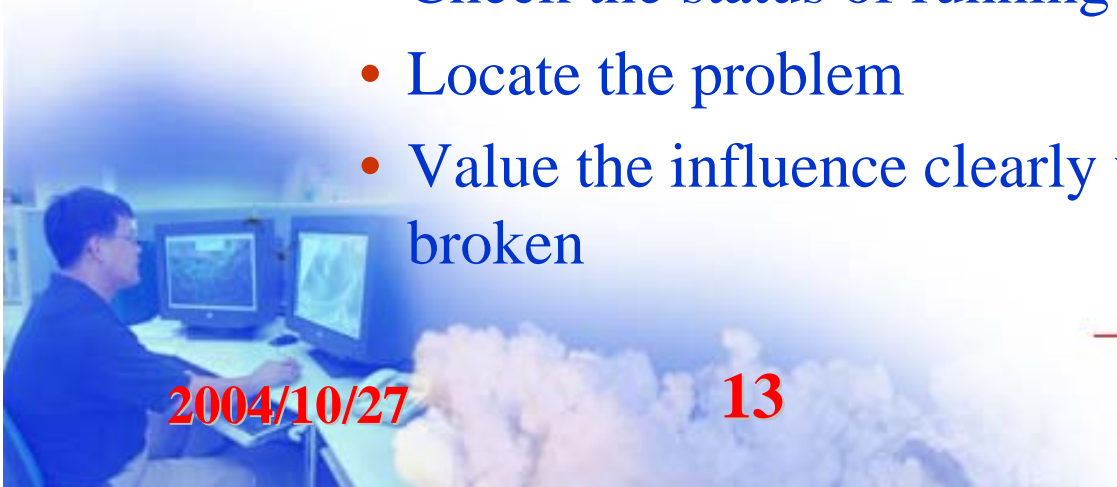
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Techniques for an Efficient Managing System in CMA(cont.)

- **Visualizing the running processes by SMS**
 - Visualization tools are very useful in the maintenance of NWP running
 - Check the status of running
 - Locate the problem
 - Value the influence clearly when the system broken



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Visualizing the running processes by SMS(cont.)

- The ECWFMF SMS (supervise monitor scheduler) met the requirements
 - Integrate the NWP operational system with SMS
 - Some advanced development of SMS
 - Extend permission to the suite
 - Function for alarm
 - » Voice
 - » Automatic telephone call

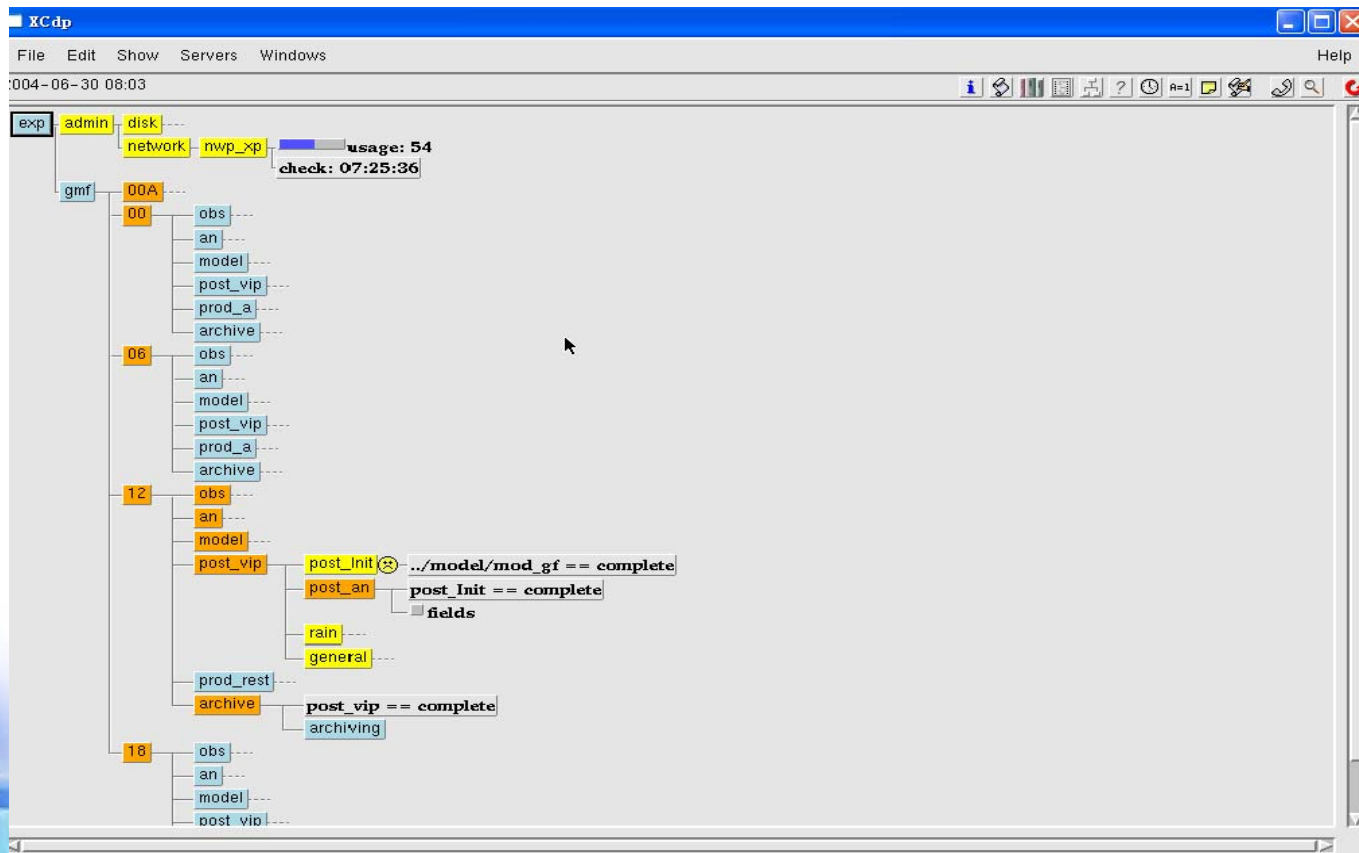
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Visualizing the running processes by SMS(cont.)

- Application in CMA



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Visualizing the running processes by SMS(cont.)

- SMS provides a function for scheduling the tasks ,so a reasonable logistics between tasks is pivotal for efficiency
 - Petri nets have proven to be useful in processes control.
 - » The graphical and precise nature
 - » The firm mathematical foundation and the abundance of analysis methods
 - » Typical extensions are the addition of ‘colour ’, ‘time’ and ‘hierarchy’

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Techniques for an Efficient Managing System in CMA(cont.)

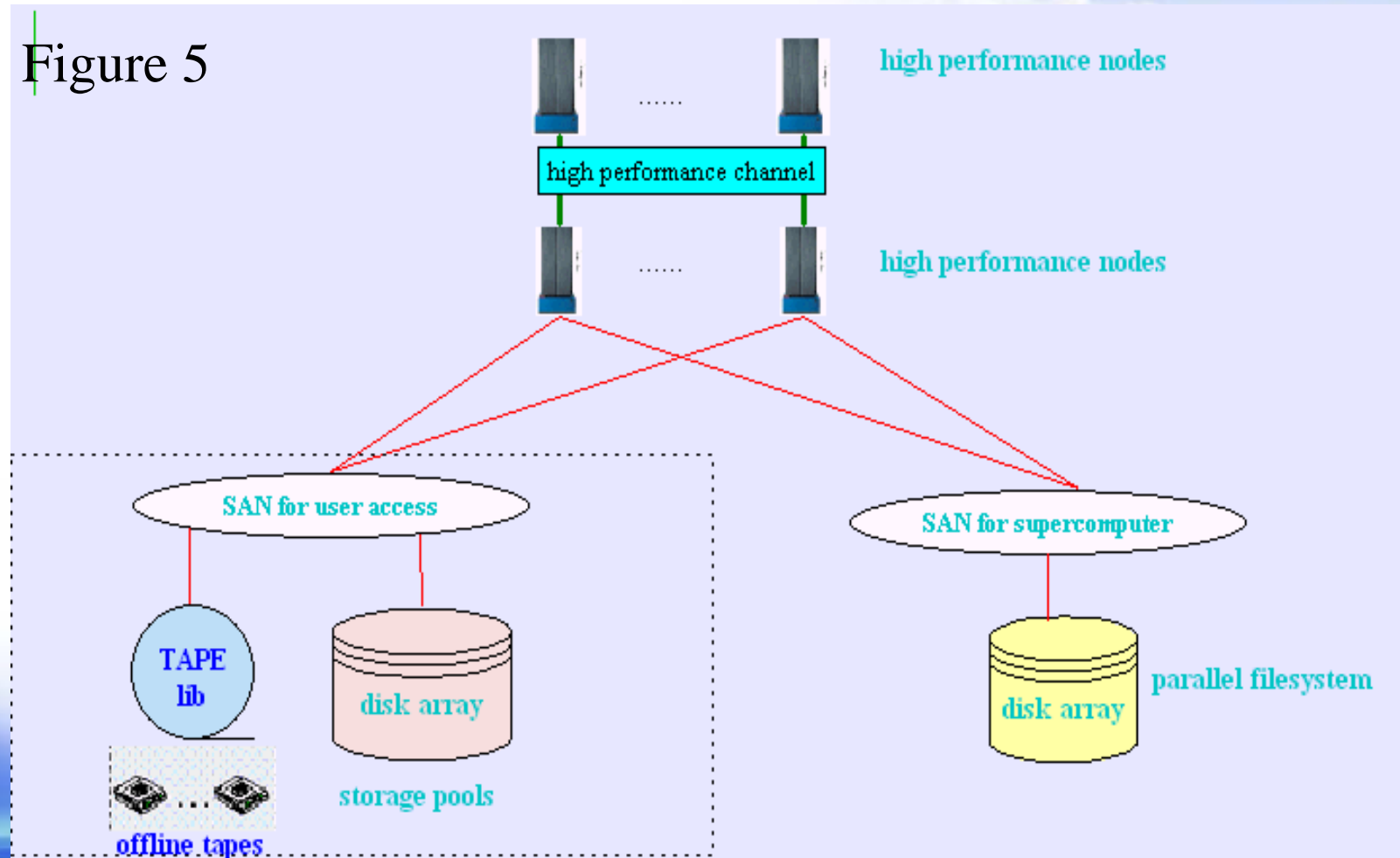
- **Project “national meteorological data access and retrieve system”**
 - Supporting standard user interface and mass capacity storage
 - Schematic figure of connection (Figure 5)

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Figure 5



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Project “national meteorological data access and retrieve system”(cont.)

- Reform the operation by new platform
 - Retrieve observations from storage pools
 - Move to HPFS(high performance file system)
 - A standard format product of NWP return back
 - For end user: get the various products by user interface
 - MICAPS(a visualization tools for weather forecast)
 - Images
 - Grib data
 - Text formatting

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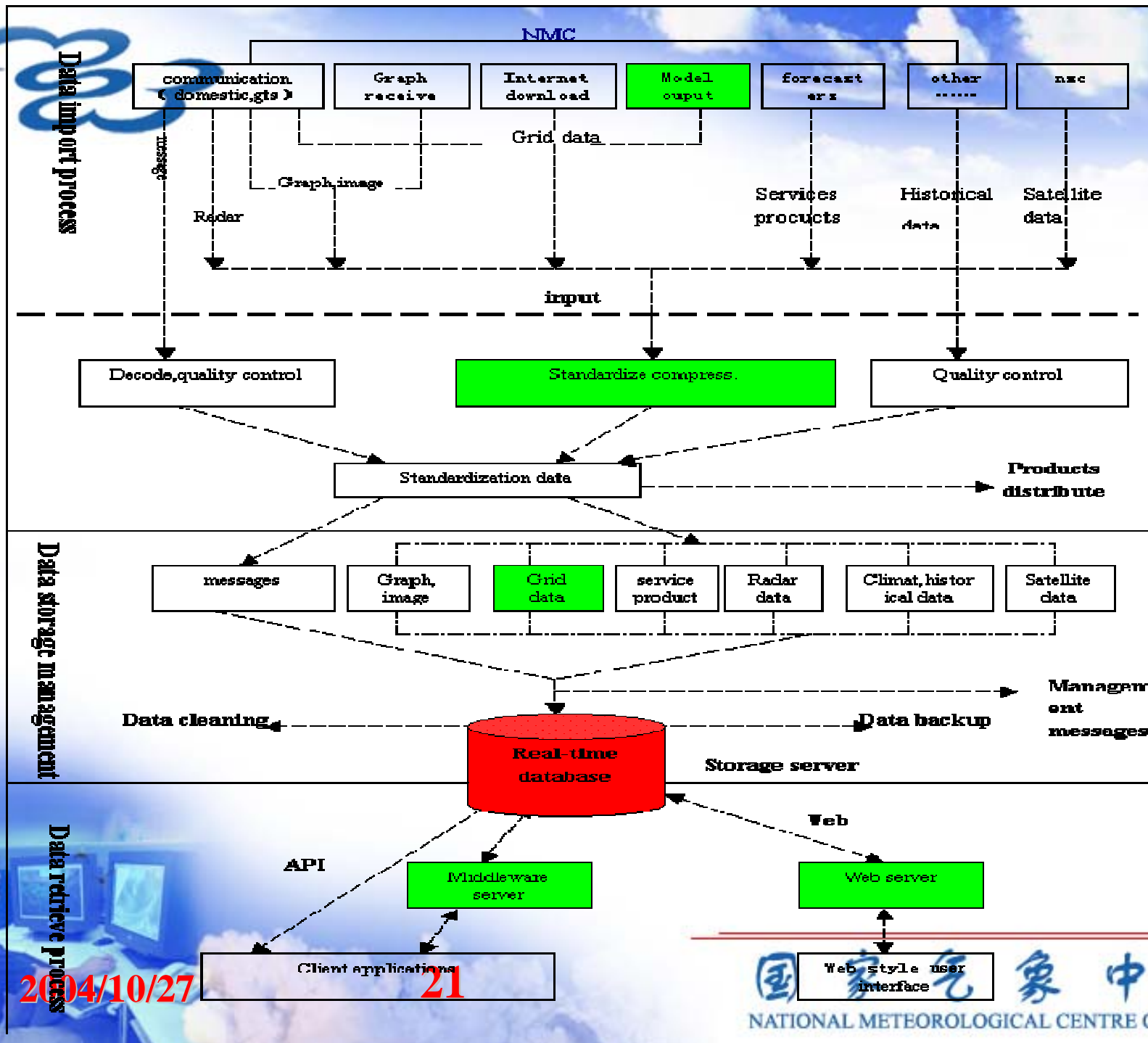
Project “national meteorological data access and retrieve system”(cont.)

– Figure 6 shows the reference model for user access

- Model output
- Compressed grid data
- Database for user
- Access interface: API; Middleware server; Web server

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Thank you!

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