Contribution and Policy of WMO CAgM to Ground Data Provision

Byong-Lyol LEE

Commission for Agricultural Meteorology (CAgM)
World Meteorological Administration (WMO)

WMO
OMM

Commission for Agricultural Meteorology

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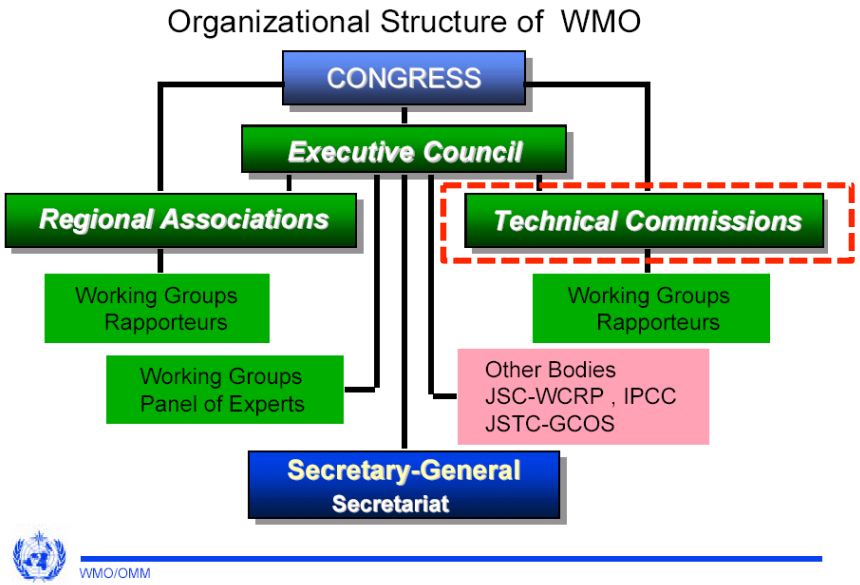
CLIMATE KNOWLEDGE



- Commission for Basic Systems **(CBS)**
- Commission for Instruments and Methods of Observations **(CIMO)**
- Commission for Hydrology **(CHy)**
- Commission for Atmospheric Sciences **(CAS)**

Applications Commissions

- Commission for Aeronautical Meteorology **(CAeM)**
- Commission for Agricultural Meteorology **(CAgM)**
- Commission for Marine Meteorology **(CMM)**
- Commission for Climatology **(CCl)**

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CAgM (135 member countries)

provides **guidance in the field of agricultural meteorology** by studying and reviewing the available science and technology;

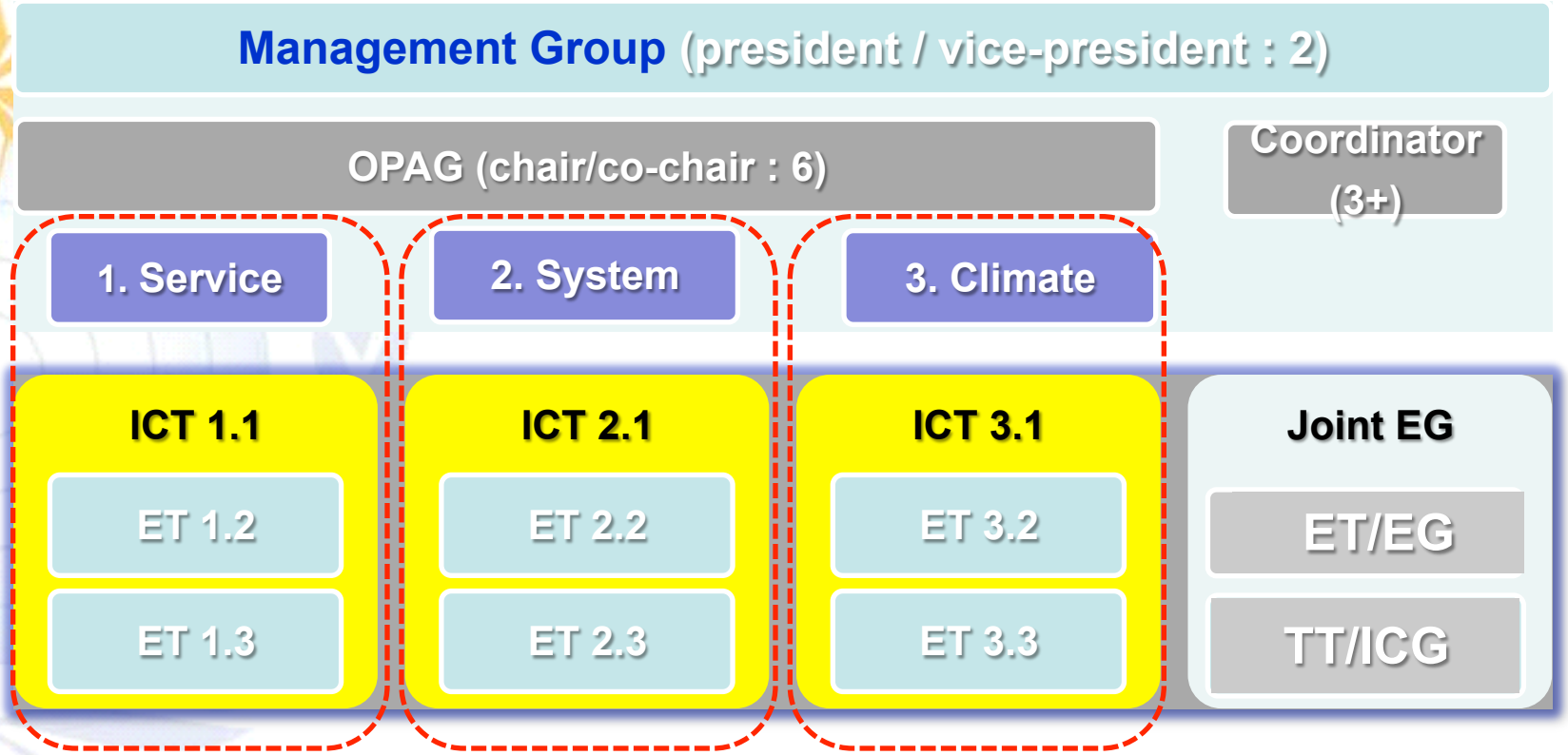
proposes **international standards for methods, procedures**;

provides a **forum for the examination and resolution** of relevant scientific and technical issues;

promotes the **training and the transfer of knowledge and methodologies**, including the results of research, between WMO Members; and

promotes **international cooperation** and maintains **close cooperation** in scientific and technical matters with other international organizations.♪

CAgM : Basic structure



each ET consists of 6-8 experts considering RAs/Expertise

- MG selects Experts recommended by NMHSs
- currently about 70 experts have been volunteered to serve♪

WMO Requirements to CAgM

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1. Strategic Plan : Enhanced Capability for Better Service

Enhanced Capabilities for **High Quality resources** , **Risk Management**, better **information service**, earth system **monitoring**, **ST developments**, **for emerging members** through **better partnerships and cooperations**

2. WMO Reform : Application oriented Service

a. Improved Documentation & **communication between TCs and Ras**
b. Orientate the constituent bodies of WMO **to deliver the Strategic Plan**
c. Reduce the intergovernmental part of constituent body sessions

3. GFCS Implementation : 5 Components

a. Internal working methods, …deciding on **implementation priorities,**
b. Mechanisms to strengthen the **global cooperative system**
c. Projects for **the needs of developing countries**
d. External communications, resource mobilisation and capacity development

4. WIS Implementation : DCPC, metadata

- **Agronomy data sharing beyond WMO**

5. WIGOS Implementation : Function/Manual/Metadata

- **LDAS, NASNET, Carbon Tracker supports, Ground truth, Phenology**

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NCAM

GFCS Structure vs CAgM Legacy

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Users
Government, private sector, research, agriculture, water, health, construction, disaster reduction, environment, tourism, transport, etc

USER INTERFACE PLATFORM

CLIMATE SERVICES INFORMATION SYSTEM

OBSERVATIONS AND MONITORING

RESEARCH, MODELLING AND PREDICTION

CAPACITY BUILDING

GFCS♪ = CAgM♪

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GFCS Core Components

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1. **Capacity building in developing countries (CB)**
   - Linking climate service users and providers.
   - Building national capacity for climate services.
2. **Strengthening the Climate Services Information System (CSIS)**
   - Standardizing products; promoting WIS; facilitating access to, use of GPC products
   - Strengthening regional climate capabilities through establishing and promoting RCCs and RCOFs
3. **Building capacity to implement the User Interface Platform (UIP)**
4. **Improving climate observations in data sparse areas (OM)**
5. **Building the capacity of the climate research sector (RMP)**

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Global Initiatives proposed by CAgM

In order to meet impending WMO requirements including strategic plans and implementations on GFCS, WIS, WIGOS, etc.

in terms of resource mobilization and allocations for human, financial, infrastructure & governance aspects

The following global initiatives are proposed by CAgM

- Global Federation of AgMet Society (GFAMS)
- Global Center of Research, Excellency in AgMet (CREAM)
- Global AgMet Pilot Projects (GAMPP)
- **Global AgMet Outlook System (GAMOS)**
- WAMIS next phase (WAMIS II)

CAgM - User Interface Platform

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World AgroMeteorological Information Service

Home
Objectives
Background
Brochure
Contact

Regions
Africa
Asia
South America
N & Central America
S.W. Pacific
Europe

Locust Weather
Tools & Resources

Related Web Sites
WMO AgMet
World Weather
Severe Weather

Other Links

Products Available For:

ACMAD	India
Albania	Italy
Australia	Lesotho
Belgium	Malawi
Belize	Malaysia
Brazil (2)	Mauritania
Bulgaria	Mexico
Burkina Faso	New Zealand
Canada	Niger
Chile	Pakistan
China	Peru
Colombia	Philippines
Côte d'Ivoire	SADC
Cuba	Sénégal
DMCSEE	South Pacific
Ecuador	Sudan
El Salvador	Swaziland
Ethiopia	

◎ **uWAMIS -** RS/GIS, Global Climate/weather info, NWPS, GISC/(DCPC), CAMI, DSSAT, JAWF, E/T, GFCS

◎ **kWAMIS -** IT/GIS, IT Resource, NWPs, Downscaling, GISC/(DCPC), Russia/FSU-DM, Interface, E/T, GFCS

◎ **iWAMIS -** Model/GIS, INSAM, Reg. projects, Phenology GISC/(DCPC)(DWD), COST, Education/Training

◎ bWAMIS - *Region-specific Information GISC/(DCPC) Argentina/Peru for Spanish

◎ aWAMIS - "

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CAgM Implementation Components for GFCS

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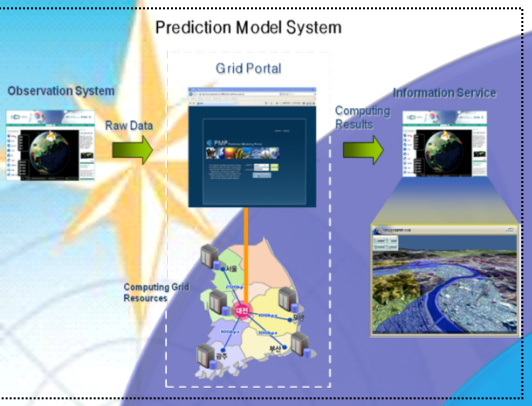
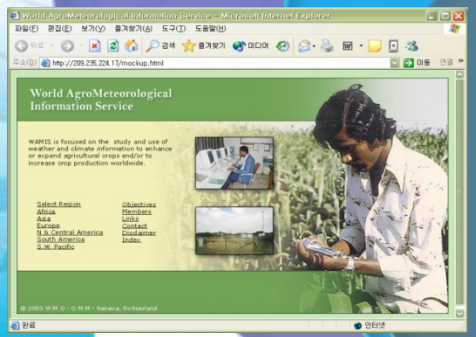


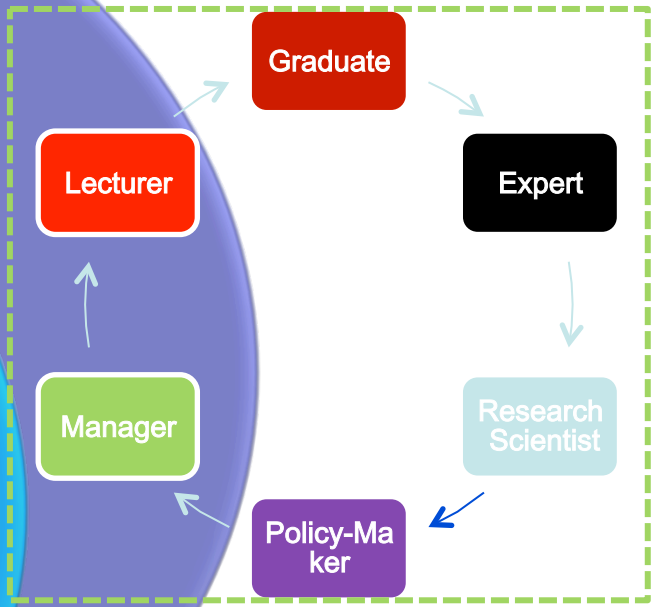
Global Center of Excellency in AgroMet

Global Federation of AgM Society

Regional AgMet Pilot Projects

Global AgMet OutLook System





WMO OMM

Key Climate Observations for CAgM

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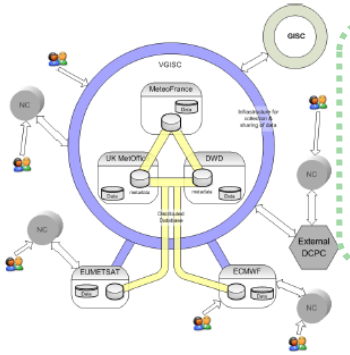
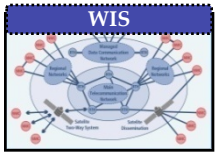


WMO Information System

WIS



WIS

GEONETCast

EUMETSAT

GEOSS

Global Earth Observation System of Systems

GROUP ON
EARTH OBSERVATIONS

WIGOS
WMO Integrated GOS

In-situ

Remote sensing

Standardization

Integration

- Weather Observation Network : e.g. WWW/GOS, AMDAR, ASAP etc.
- Atmospheric composition observing network : e.g. GAW etc.
- Radiation observing networks : e.g. BSRN
- Marine meteorological networks and arrays : e.g. VOS, ARGO, etc.
- Hydrological observing networks : e.g. components of WHYCOS etc.
- Climate components of atmos-, oceano-, terres- observing systems : Flux

SkyTeam

Global Carbon Project

ARGO

GEWEX

CliC

KoFlux

EGP

AsiaFlux

GCOS CLIVAR IGOS GBIF GTOS pogo CEOS

GFCS : Observation & Monitoring

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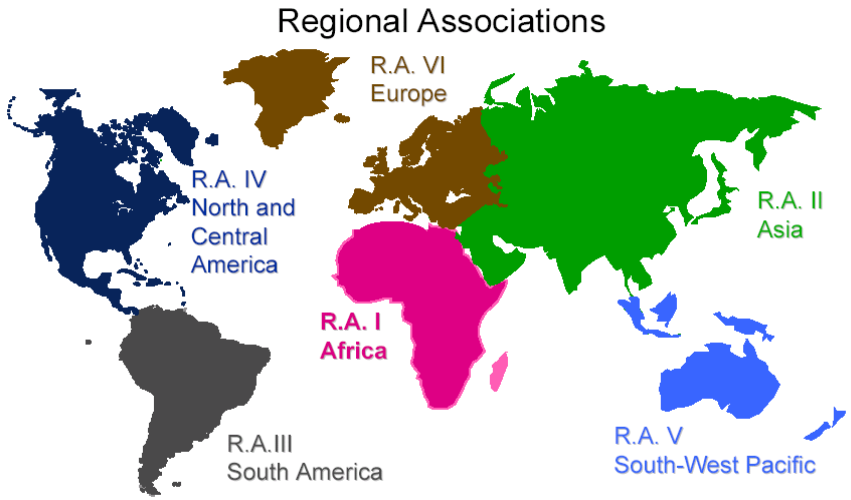
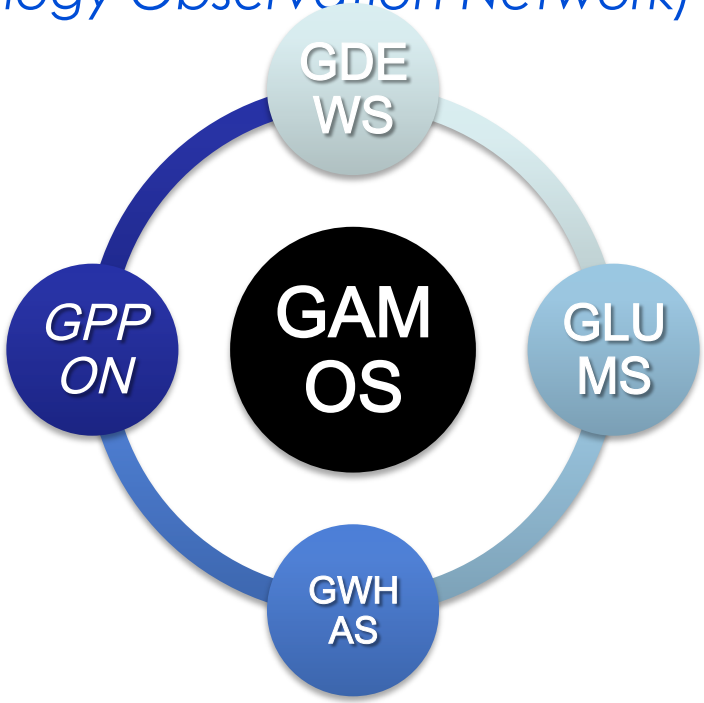
GAMOS(Global AgroMeteorological Outlook System)

- ***GDEWS****(Global Drought Early Warning System)*
- ***GLUMS****(Global Land Use Monitoring System)*
- ***GWHAS*** *(Global Weather Hazard Assessment System)*
- ***GPPON(****Global Plant Phenology Observation Network)*





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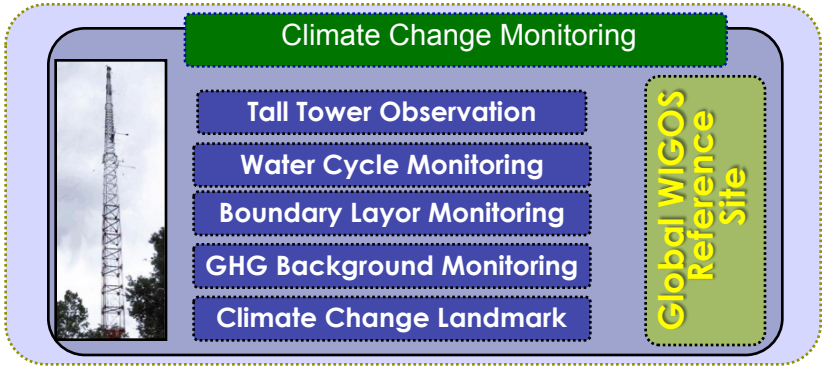
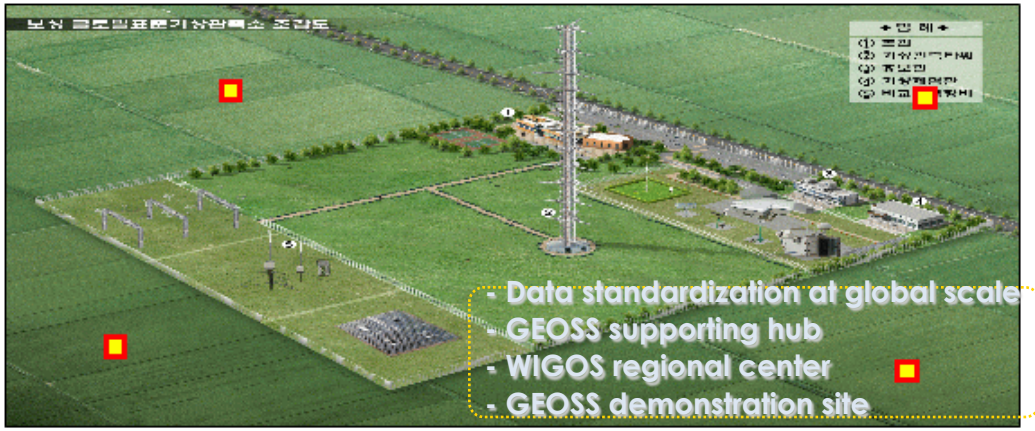
NASNET Pilot Sites- National Efforts

Core AgMet Station♪

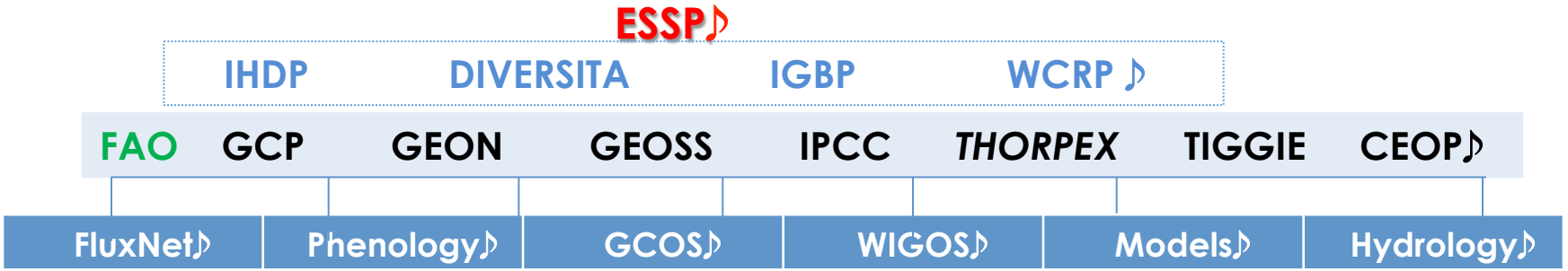




New Governance for enhanced AgMet National Service

- Strengthening multi-institutional governance within a nation
- High level education system for next generation AgMet experts
- **Core AgMet Station** (national reference site for AgMet)

External Partnerships beyond WMO♪



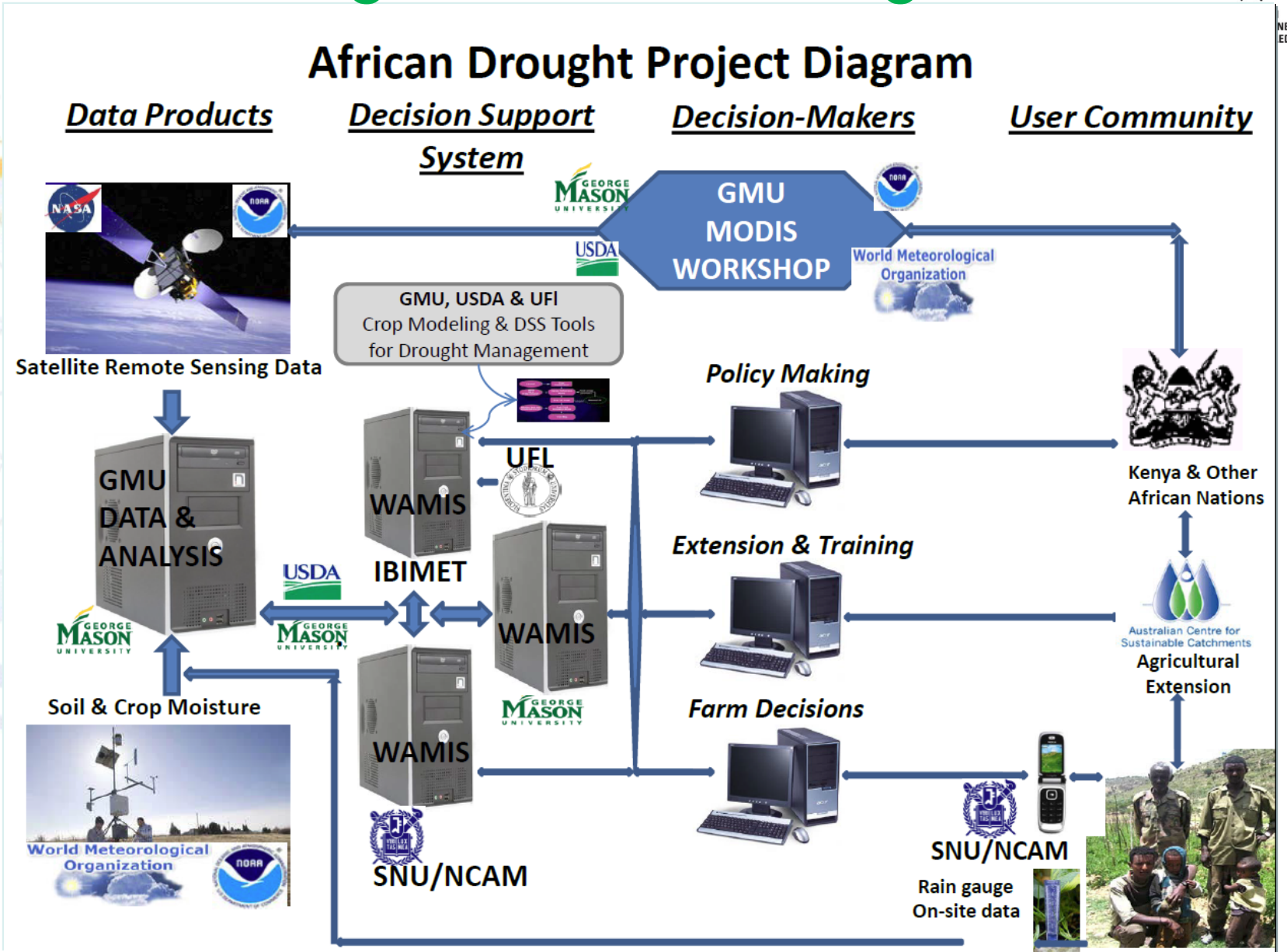
Monitoring with CAgM♪

GAMOS(Global AgroMeteorogical Outlook System)
GDEWS(Global Drought Early Warning System)
GLUMS(Global Land Use Monitoring System)
GWHAS (Global Weather Hazard Assessment System)
GPPON(Global Plant Phenology Observation Network
)♪

Other Collaborations beyond WMO

- INFITA : Informatics in Agriculture
- FluxNet : GHG/Energy flux monitoring, Caron tracker, LDAS
- Geant/Tein2/APAN/Gloriad : high performance networks

Promising candidates for regional PPs



Climate Service Schematics of CAgM

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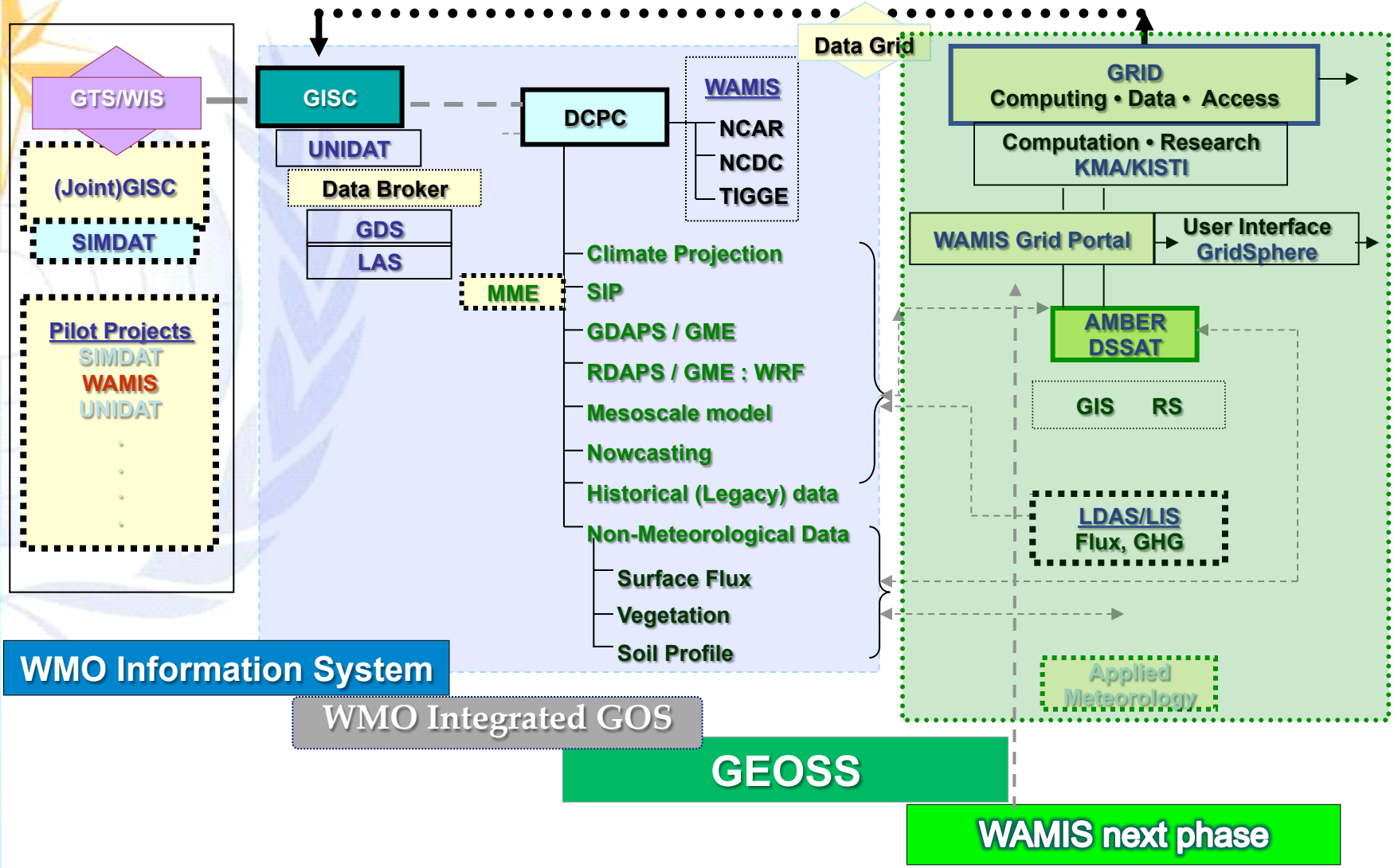

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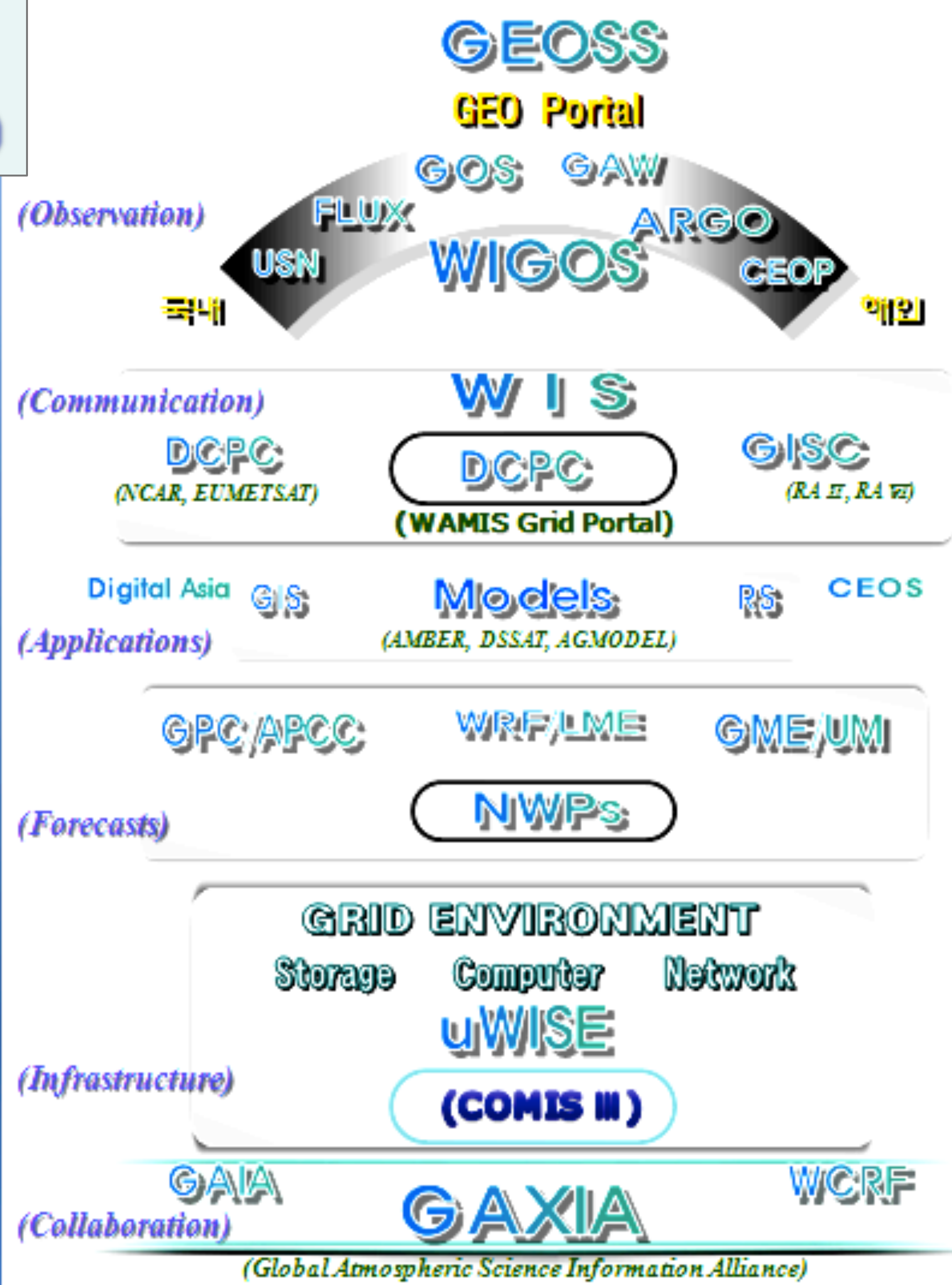
A Schematic of CAgM service



Concluding Remarks

- Establishment of Core AgMet Station in member countries
  - reference site for ground truth information for RS, Flux, LSM, QC/QA, phenology, crop yields, biomass production, ecosystem services, etc.
- Strengthening of ReAnalysis Data for land surface information to support AgModel's calibration and validation
  - In situ observation is limited, thus reanalysis data are essential for model developments
- Identification/Demonstration of case-studies/pilot projects at national/regional level on the integrated surface observation networks in agriculture
  - Integration over diverse disciplines/entities for one stop service, eg. Meteorological vs agronomical observations through new governance
- Enhancement of NWP-based AgMet forecast services in parallel with observation based now-casting service
  - Better use of Seasonal to inter-annual predictions in Agriculture
  - Diverse forecasts using models will reduce uncertainties in predition under high climate variability condition.

- * Land Surface Model, Numerical Weather Prediction Model, Agricultural Models

Thank for Your Attention!

End-User + Service Provider
= U Servicer
(You Servicer !)
USER=SERVICER

**The better observations,
the better predictions for future!**

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