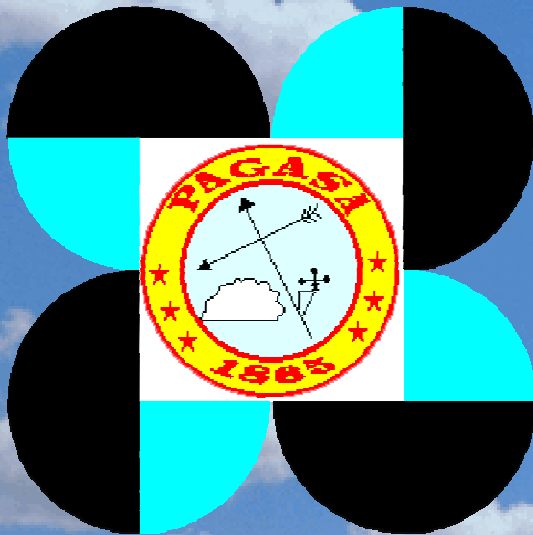


THE PHILIPPINE NATIONAL METEOROLOGICAL & HYDROLOGICAL SERVICES (NMHS): ITS PRODUCTS, SERVICES AND NEW INITIATIVES FOR SUSTAINABLE DEVELOPMENT

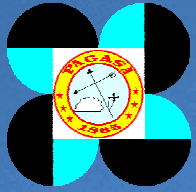


A paper presented to the UN-Austria-ESA Symposium on
**Space Tools & Solutions for Monitoring the Atmosphere
in Support of Sustainable Development**

Carina G. Lao

Philippines

“Tracking the sky...helping the country”



PUBLIC WEATHER SERVICES

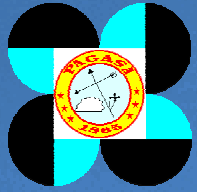


Topic Outline

1. PAGASA - the nation's public weather service provider

- a. Legal Mandate, Mission, Vision, Mandated Functions
- b. Services, Specialized Products and Information
- c. Range of Techniques for the services' provision
- d. End-users, Beneficiaries
- e. Policies, Challenges and Directions

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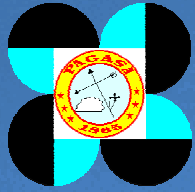


Topic Outline

2. The World Meteorological Organization (WMO)

- a. Main Purpose of WMO
- b. Role of National Meteorological and Hydrological Services
- c. Overall Objectives of WMO
- d. WMO Programmes

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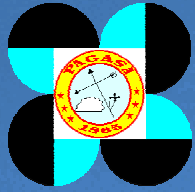
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Topic Outline

3. Conduct of/Attendance to Seminar/Conference

- a. National Seminar Workshop in the Phils
- b. International Conference in Madrid
- c. Purpose of the Conference
- d. Hydrometeorological & Related Influence on Social & Economical
- e. Major Economic Sectoral Groups
- f. Principal Goal/Recommendations/Action Plans



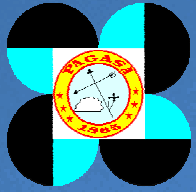
PUBLIC WEATHER SERVICES



Topic Outline

4. Programs/Projects/Initiatives

- a. Completed/On-going Projects
- b. Research Proposals/PAGASA Initiatives
- c. Other Activities
- d. Philippine Initiatives/Activities in STA
- e. PAGASA Weather Radar Network-Philippines
- f. On-going Initiatives on Radar
- g. Research Initiatives

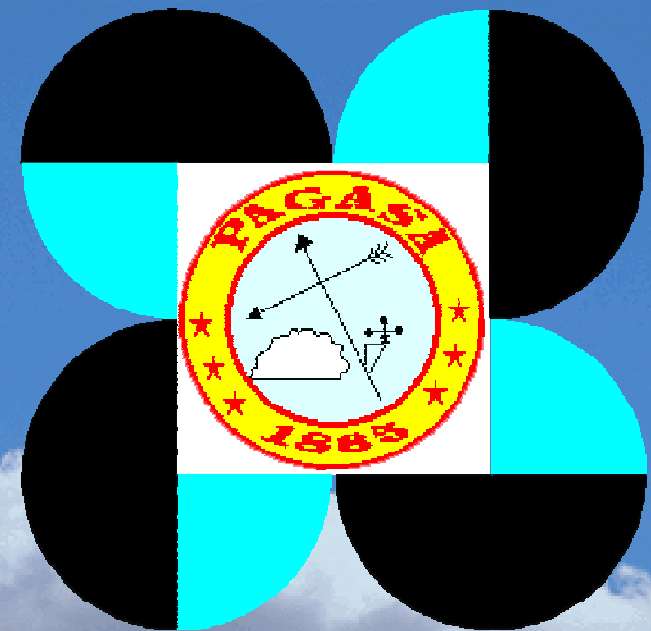
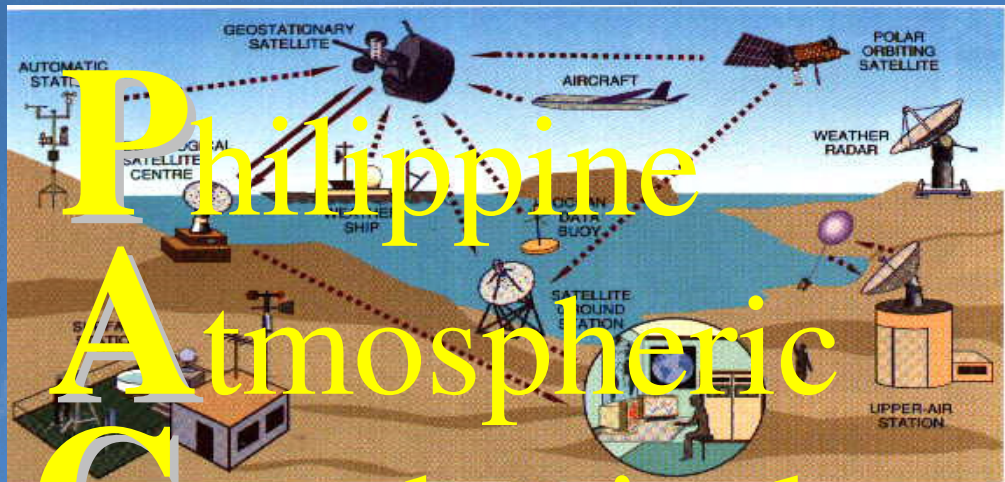


PUBLIC WEATHER SERVICES



LEGAL MANDATE, MISSION, VISION, MANDATED FUNCTIONS OF PAGASA

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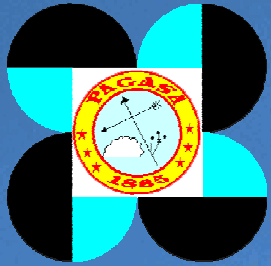


**The nation's
public weather
service
provider**

The Philippines, through the PAGASA, is a Member of the World Meteorological Organization (WMO), a specialized body of the United Nations



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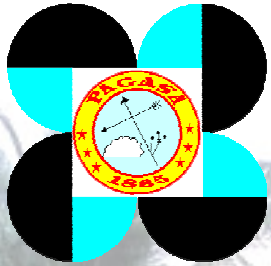


LEGAL MANDATE:

“To provide protection against natural calamities and utilize scientific knowledge as an effective instrument to insure the safety, well-being and economic security of all the people, and for the promotion of national progress.”

Section 2, Statement of Policy, Presidential Decree No. 78; December 1972 as amended by Presidential Decree No. 1149; August 1977

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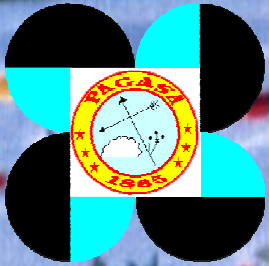


MISSION:

To provide typhoon and flood warnings, public weather forecasts, advisories, meteorological, astronomical, climatological products and other specialized services primarily for the protection of life and property and in support of economic productivity and sustainable development.

Satellite Antenna at Weather and Flood Forecasting Center

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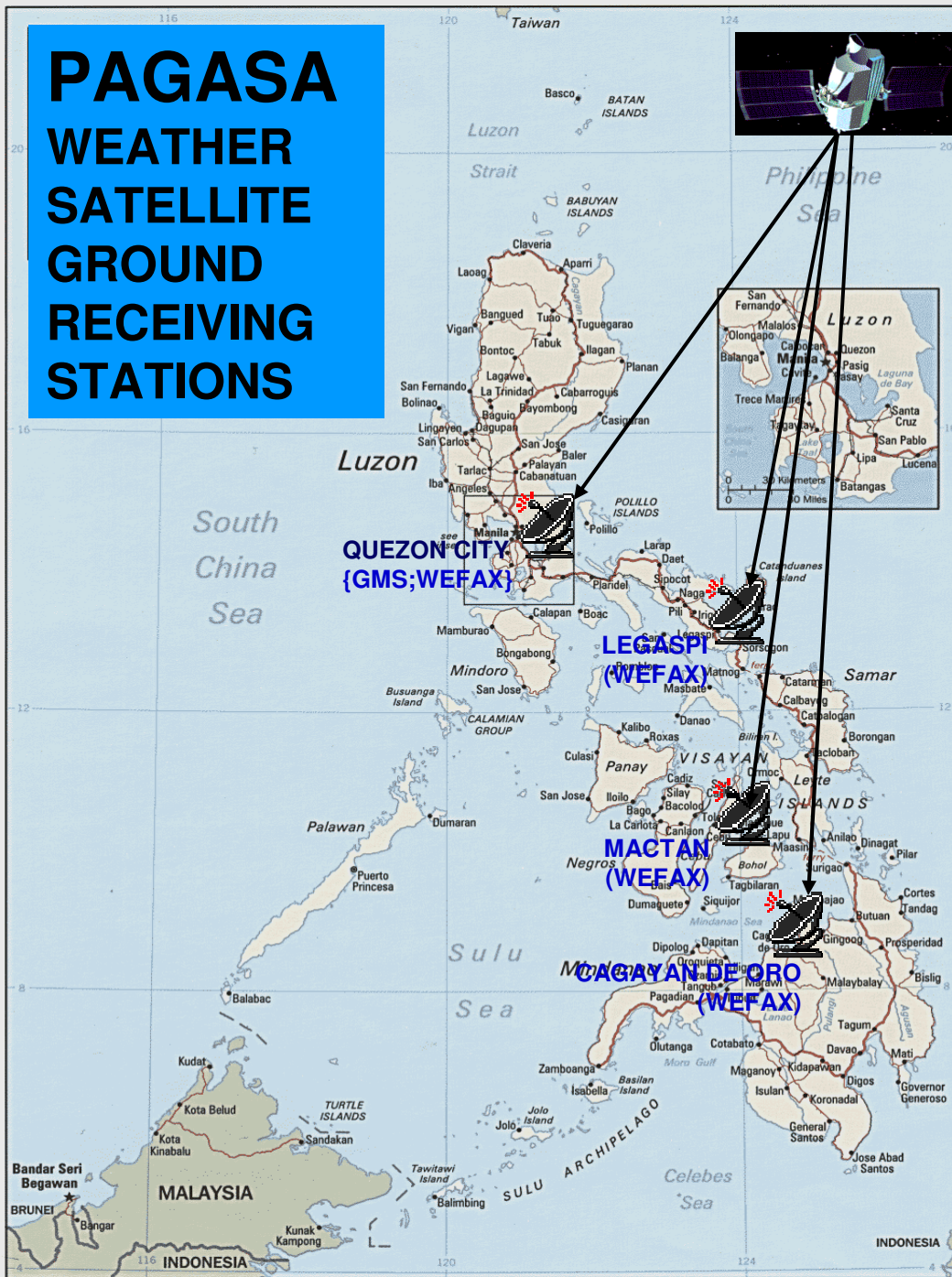


VISION:

Excellence in Meteorology, Geophysics, Astronomy and Allied Sciences that translates to quality public weather and related products and services beneficial to the nation.

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PAGASA WEATHER SATELLITE GROUND RECEIVING STATIONS



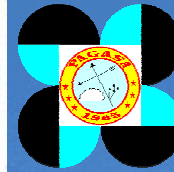
Base 801703 (R00150) 10-93



FUNCTIONS

(Executive Order No. 128; January 1987)

- Maintains a nationwide network pertaining to observation and forecasting of weather and flood and other conditions affecting national safety, welfare and economy;



FUNCTIONS

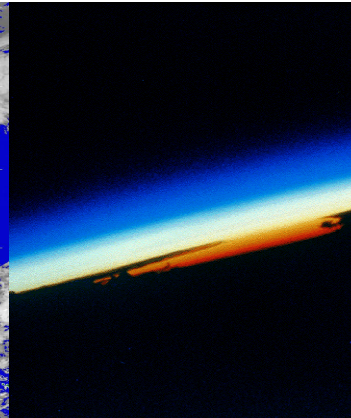
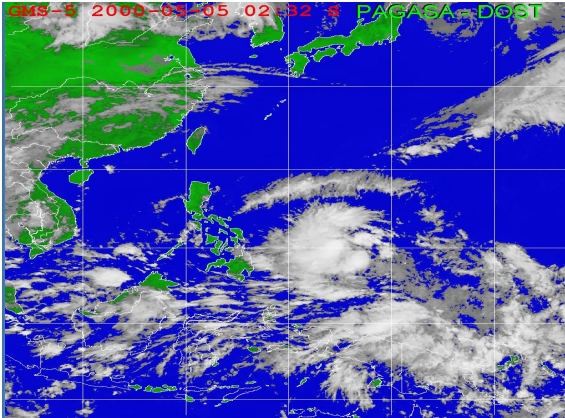
(Executive Order No. 128; January 1987)

24- Hour Weather Observation and Monitoring, Reporting and Collection of Data

- Undertake activities relative to observation, collection, assessment and processing of atmospheric and allied data for the benefit of agriculture, commerce and industry;


Processing and Analyses of Data, Preparation of Typhoon/ Flood Warnings, Weather/ Climate Forecasts


Dissemination of Forecasts, Warnings and Specialized Information through **Media** to Users

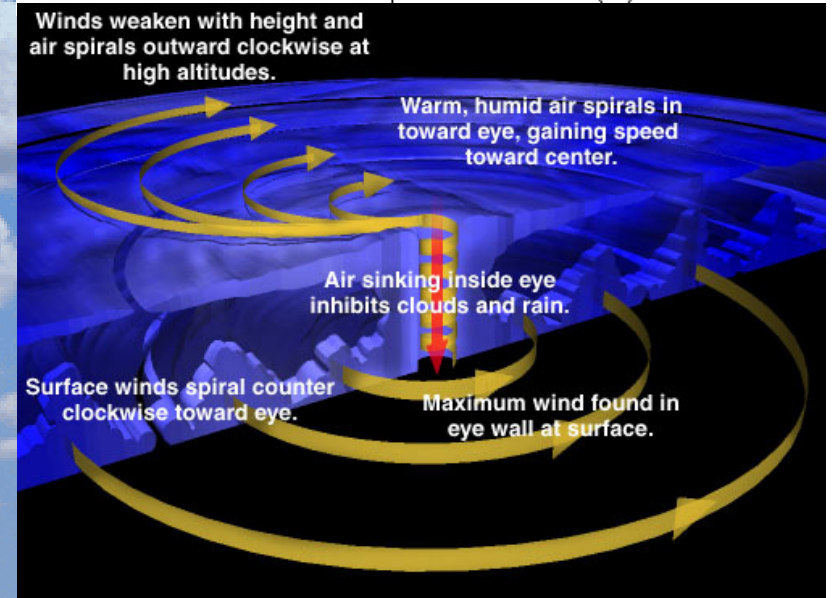
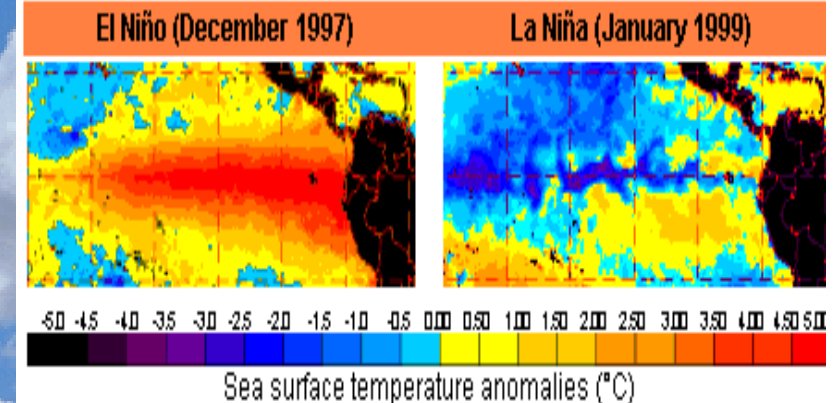


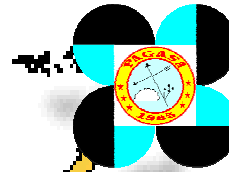
FUNCTIONS

(Executive Order No. 128; January 1987)

 Engage in studies of geophysical and astronomical phenomena essential to the safety and welfare of the people;

 Undertake researches on the structure, development and motion of typhoons and formulate measures for their moderation; and



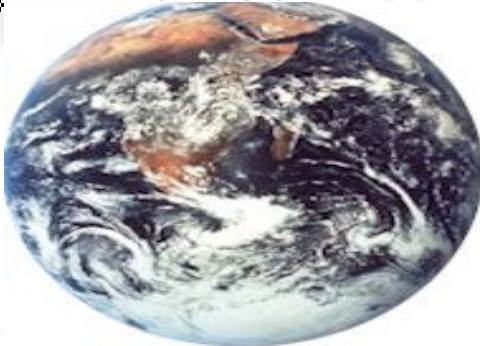


FUNCTIONS

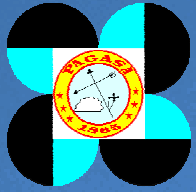
(Executive Order No. 128; January 1987)

- **Maintain effective linkages with scientific organizations here and abroad and promote exchange of scientific information and cooperation among personnel engaged in atmospheric, geophysical, astronomical and space studies.**

World Meteorological Organization
50 1950 2000
Celebrating fifty years of service...
A United Nations Specialized Agency



The Philippines, through the PAGASA is a Member of the WORLD METEOROLOGICAL ORGANIZATION (WMO), a Specialized Body of the United Nations

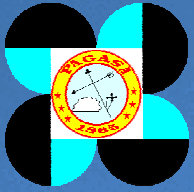


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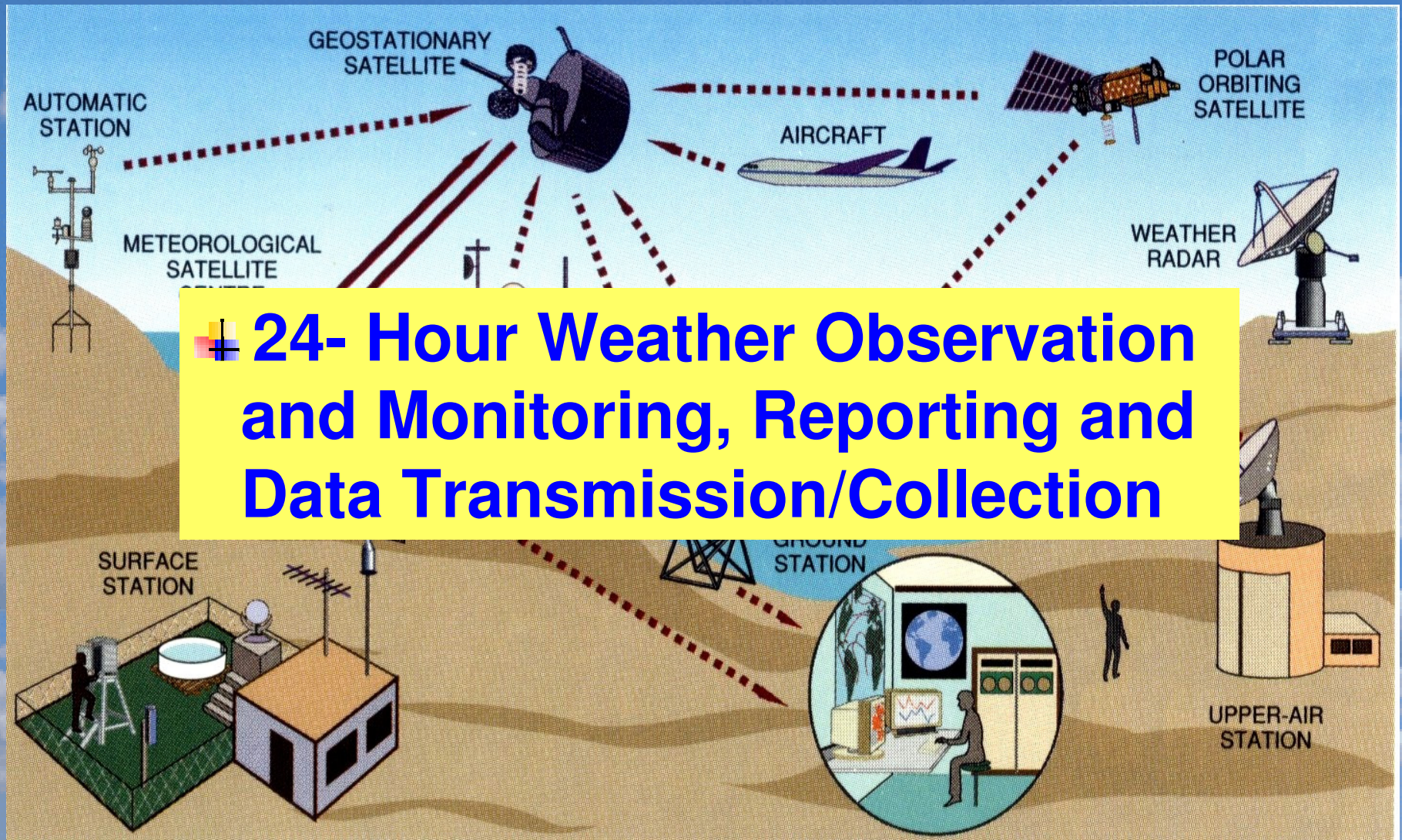


SERVICES AND PRODUCTS

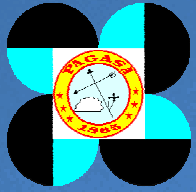
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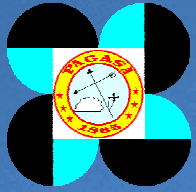
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SERVICES:

- **Weather Forecasts, Typhoon Warnings and Information on Extreme Climatic Events (El Niño/La Niña)**
- **Flood Advisories, Bulletins, Warnings**
- **Aviation Met. Services (METAR, TAF)**
- **Marine Met. Services (Gale Warning)**
- **Agro-meteorological Services**
- **Astronomical Services**

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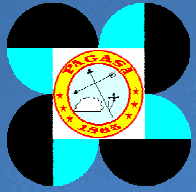
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SERVICES:

- **Conduct of Lectures/IEC on Natural Hazards and Community Disaster Preparedness and Prevention**
- **Information dissemination**
- **Weather Certifications**
- **Expert Assistance to Weather Researchers**
- **Calibration of On-Board-Ship Weather Instruments**

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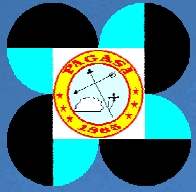
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SERVICES:

- **Planetarium shows**
- **Mobile Planetarium shows**
- **Stargazing sessions**
- **S&T Awareness on Astronomy**

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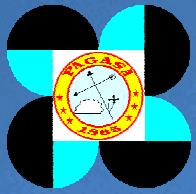
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PRODUCTS:

- **Climatological Data, Publications**
- **Astronomical Publications**
- **Specialized Forecasts**
- **Aviation Met. Flight Information**

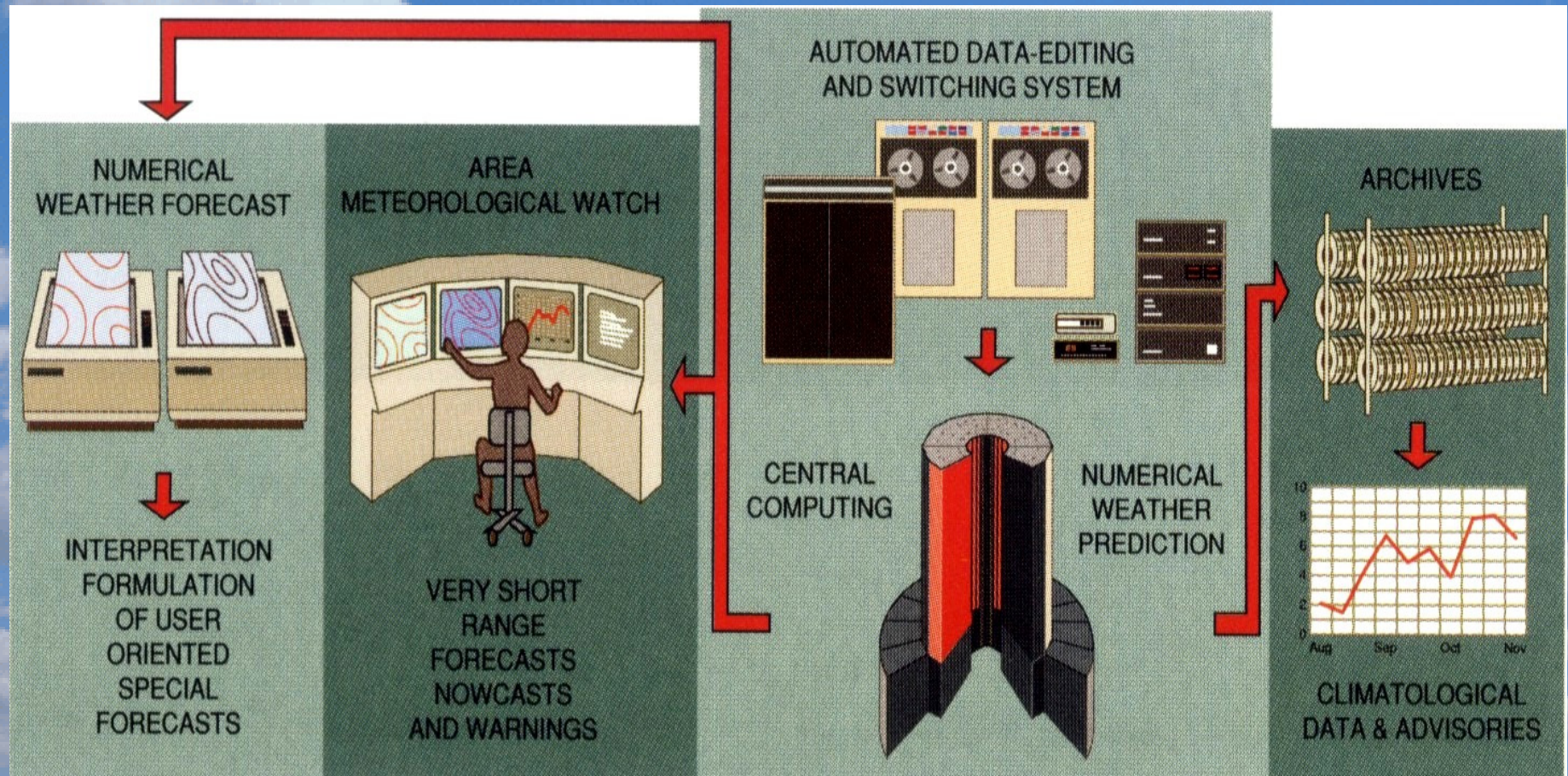
“Tracking the sky...helping the country”



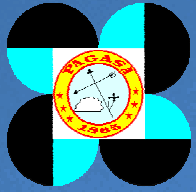
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TECHNIQUES FOR SERVICES' PROVISION



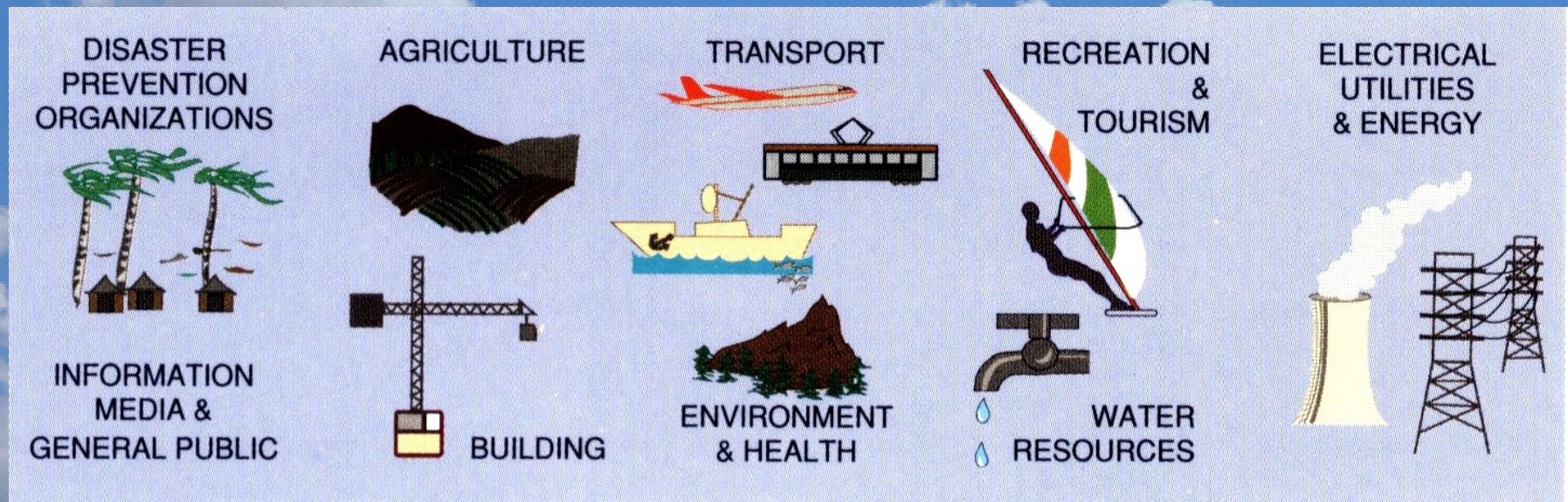
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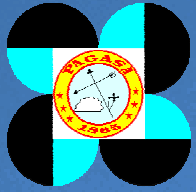
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END-USERS, BENEFICIARIES



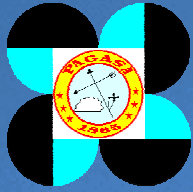
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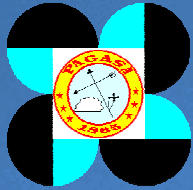
POLICIES, CHALLENGES AND DIRECTIONS

(from a Presentation by Eng'r. Claro S. Doctor, WSC (Ret.) during
the 1st National Meteorological-Hydrological Convention

12-13 December 2005, PAGASA Central Office)



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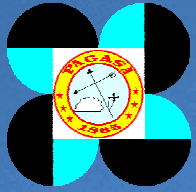
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GENERAL INFORMATION:

- **DAMAGE TO TYPHOONS AND FLOODS (1965-1986):
PhPeso 27.7 Million to PhPeso 2.2 Billion**
- **DAMAGE AS % TO GNP: 0.07% to 4.3% (at 1972 Price Level)**
- **1 or 2 strong Typhoons could roll back economic progress by 3 to 5 years (NEDA, P.P.Duque, et.al, NDCP:1987)**
- **In 1966 the value of Weather Forecasts to the U.K. economy equals 10 to 20 times the cost of the service (J.T.Houghton, U.K. Met. Office, 1987)**

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POLICIES:

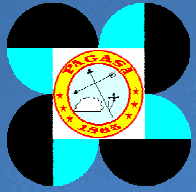
● **P.D. 1566 (1978)**

An Act Strengthening the Philippine Disaster Control, Capability and Establishing the National Program on Community Disaster Preparedness

Highlights:

- ***A National Calamities and Disaster Preparedness Plan shall be prepared and approved by the President***
- ***Disaster Coordinating Councils (DCCs) were established from the National, Regional, Provincial, City, Municipal to the Barangay level***

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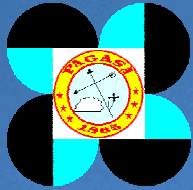


POLICIES:

- E.O. 128 (1987), reorganizing the NSTA to the Department of Science and Technology (DOST);
Section 3. Declaration of Policy:

“.... Support and encourage local scientific and technological efforts that address national and local problems and positively contribute to national development.”

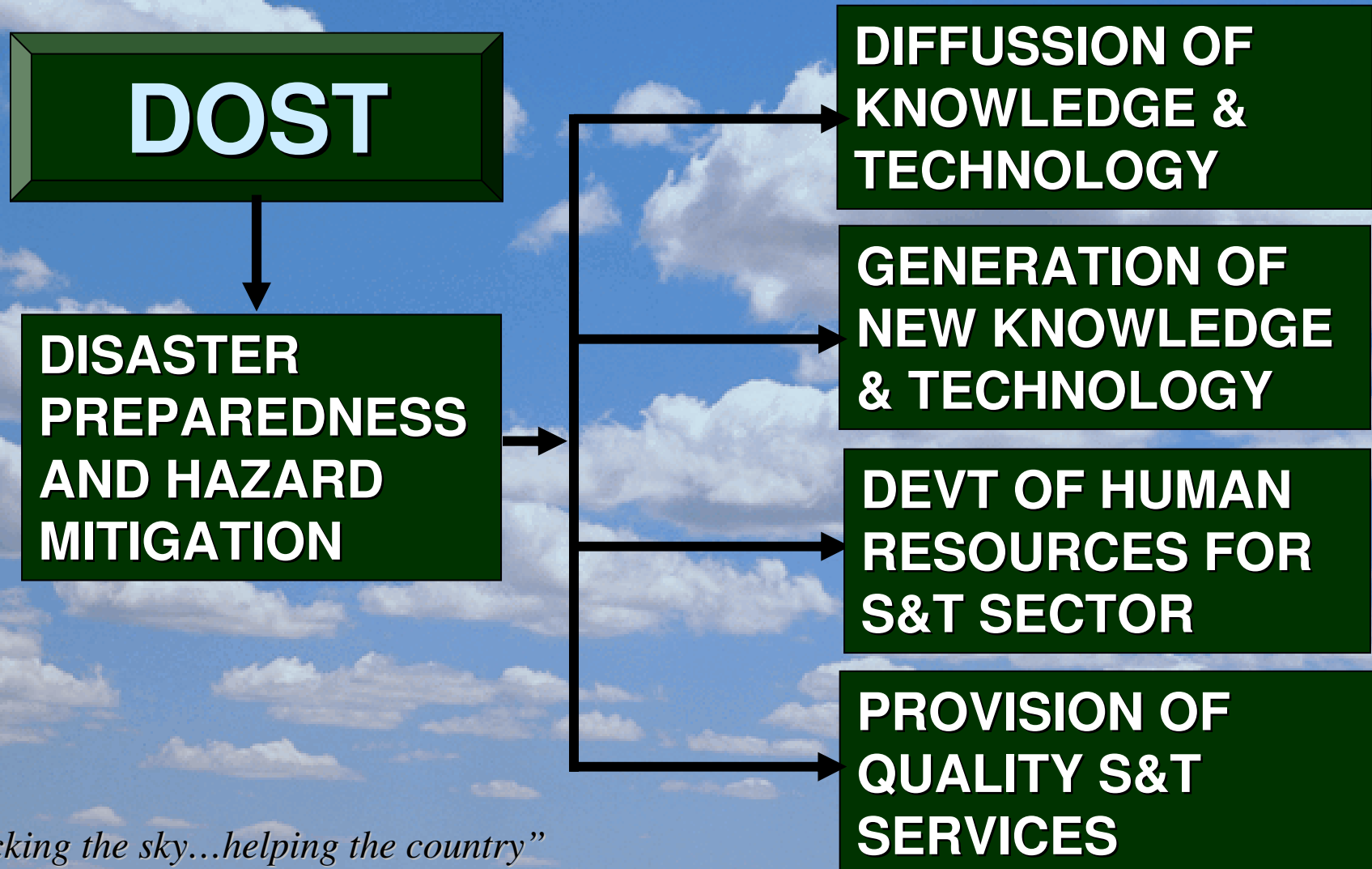
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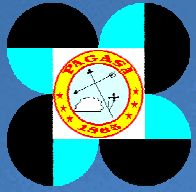
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DOST PROGRAMS AND MAJOR FINAL OUTPUTS (MFOs) RELEVANCE OF PAGASA



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CHALLENGES :

STEPS IN THE ARRIVAL AND ISSUANCE OF FORECASTS, ADVISORIES, WARNINGS TO REDUCE POTENTIAL DAMAGE

A. DATA COLLECTION

**B. PREPARATION OF
FORECAST/WARNING**

**C. DISSEMINATION OF
FORECAST/WARNING**

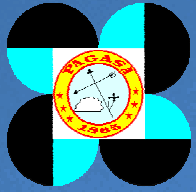
D. END-USER RESPONSE

(understand, believe and **ACT** accordingly)

IN ORDER FOR A FORECAST/WARNING TO REDUCE DAMAGE, ALL OF THE ABOVE MUST HAPPEN (Sittner, USGS 1981)



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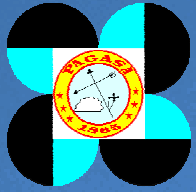
CHALLENGES :

PRINCIPLES OF GOOD WARNING (Asian Disaster Preparedness Center, ADM News, 1993)

A warning must include 3 essentials to be effective:

- 1. IT MUST ALERT PEOPLE**
- 2. IT MUST CALL THEM TO ACTION;**
and
- 3. IT MUST BE TARGET-ORIENTED.**

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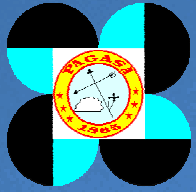


CHALLENGES :

The 1990s as INTERNATIONAL DECADE FOR NATURAL DISASTER REDUCTION (WMO Res 42/169; 1987,)

“AN OPPORTUNITY TO DEMONSTRATE NMHS’s ABILITY TO WORK TOGETHER PRODUCTIVELY AS A WORLD COMMUNITY AND TO ACHIEVE SIGNIFICANT HUMANITARIAN GAINS”

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DIRECTIONS:

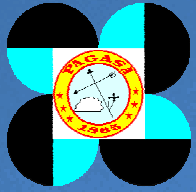
Enhancement of Economic and Other Benefits of Meteorological and Hydrological Services through:

A. IMPROVEMENT IN THE ACCURACY AND RANGE OF FORECASTS

B. THE EXPLOSION IN INFORMATION TECHNOLOGY

C. INCREASED ORGANIZATION AND AUTOMATION

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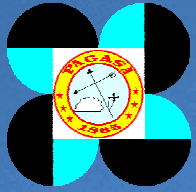


DIRECTIONS:

AREAS OF CONCERN:

- 1. BENEFIT TO AVIATION;**
- 2. BENEFIT TO AGRICULTURE;**
- 3. BENEFIT TO ROAD TRANSPORT;**
and
- 4. BENEFITS TO SHIPPING AND
OTHER OFFSHORE INDUSTRY**

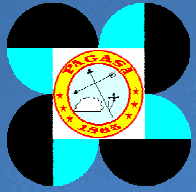
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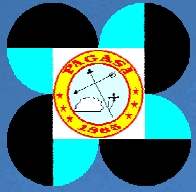


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THE WORLD METEOROLOGICAL ORGANIZATION

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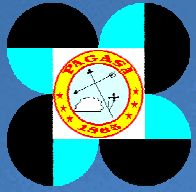
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THE WORLD METEOROLOGICAL ORGANIZATION (WMO)

- **Came into force on 23 March 1950**
- **A UN specialized agency**
- **Composed of 187 members (as of March 2006)**
- **WMO's predecessor, IMO was founded in 1873**
- **Activities are carried out under 7 major Programmes**

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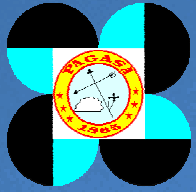
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Main Purpose of WMO

“To facilitate world-wide cooperation in the establishment of networks of stations for the making of meteorological observations as well as hydrological and other geophysical observations related to meteorology...”

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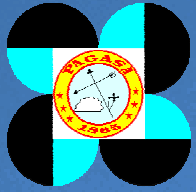
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The Role of NMHS

- **Security of life and property**
- **Reduction of the impacts of natural disasters**
- **Provision of adequate food and water**
- **Environmentally sustainable development**
- **Response to impacts of climate variability and change**

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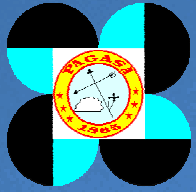
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WMO Programmes

- **World Weather Watch Programme**
- **World Climate Programme**
- **Atmospheric Research and Environment Programme**
- **Applications of Meteorology Programme**
- **Hydrology and Water Resources Programme**
- **Education and Training Program**
- **Technical Cooperation Programme**

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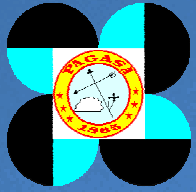
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The World Weather Watch Programme

- **GLOBAL OBSERVING SYSTEM**
- **GLOBAL TELECOMMUNICATION SYSTEM**
- **GLOBAL DATA-PROCESSING SYSTEM**

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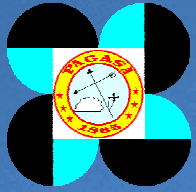
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The World Weather Watch Programme

- **GLOBAL OBSERVING SYSTEM**
- **GLOBAL TELECOMMUNICATION SYSTEM**
- **GLOBAL DATA-PROCESSING SYSTEM**

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The World Weather Watch Programme

MAJOR CONCERNS

- **WEATHER AND CLIMATE SYSTEMS**
- **DATA ANALYSES, PRACTICAL APPLICATIONS OF INFORMATION**
- **IMPROVED UNDERSTANDING LEADING TO PREDICTIONS**
- **PROTECTION OF HUMAN ACTIVITIES AND THE ENVIRONMENT**
- **INFORMED PLANNING AND DECISIONS**

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**Seminar Workshop on the Social and Economic Benefits of
Meteorological Services to the Philippine Society
23-25 November 2005**

- **11 Resource Persons (2 foreign, 7 local and 2 valuers)**
- **Participants (61 local (government sectors, NGOs) and 8 foreign participants)**
- **Five (5) Sectors Identified:**
 - **Agriculture**
 - **Transportation & Tourism**
 - **Water Resources**
 - **Disaster Risk Management & Public Health**
 - **Energy, Environment & Industry**

The 2007 MADRID CONFERENCE
on
SECURE AND SUSTAINABLE LIVING:
Social and Economic Benefits of Weather, Climate and
Water Services
Madrid, Spain/19-22 March 2007

**National/Regional Seminars/Conferences conducted
in 7 selected WMO member countries:**

Philippines	(23-25 Nov 2005)
Tanzania	(1-3 Nov 2006)
Mali	(29 May- 1 June 2006)
Kuwait	(18-21 Nov 2006)
Brazil	(12-14 July 2006)
Croatia	(Feb 2007)
Kenya	(28-30 Aug 2006)

SECURE AND SUSTAINABLE LIVING:

**Social and Economic Benefits of Weather,
Climate and Water Services**

**Palacios del Congresos, Paseo de Castellana, Madrid,
Spain**

19-22 March 2007

**Under the gracious patronage of QUEEN
SOFIA**

**Hosted by Environment Ministry & Institute of
National Meteorology of Spain**

**Participants: 458 from 115 countries
including the Opening Ceremony chaired by
QUEEN SOFIA**

and

**launching of WMO book on
ELEMENTS FOR LIFE**

SECURE AND SUSTAINABLE LIVING: Social and Economic Benefits of Weather, Climate and Water Services

- **The Purpose of the Conference was to contribute to secure and sustainable living for all the people of the world by evaluating and demonstrating, and then ultimately enhancing, the social and economic benefits of weather, climate and water services.**

SECURE AND SUSTAINABLE LIVING: Social and Economic Benefits of Weather, Climate and Water Services

The most important meteorological, hydrological and related influences on society are:

- **Natural hazards and natural disasters (wildfires, storms, floods, hurricanes, blizzards, etc);**
- **Weather (temperature, humidity, rainfall, wind, etc.);**
- **Climate (both short-term variability and long-term change);**
- **Air quality (smoke, chemicals, urban pollution, dust, etc);**
- **Water (flood and drought, quality and quantity); and**
- **Oceans (temperature, salinity, waves, currents, tsunamis, etc).**

SECURE AND SUSTAINABLE LIVING: Social and Economic Benefits of Weather, Climate and Water Services

The six major socio-economic sectoral groups examined at the Conference were:

- Agriculture, water resources and the natural environment**
- Human health;**
- Tourism and human welfare;**
- Energy, transport and communication;**
- Urban settlement and sustainable development; and**
- Economics and financial services.**



**SECURE AND SUSTAINABLE LIVING:
Social and Economic Benefits of Weather, Climate
and Water Services**

The principal goal of the workshops was to provide a forum for promoting interdisciplinary assessment of socio-economic benefits of meteorological and hydrological services involving service providers and different users.

Recommendations

- **To integrate the outcomes of the regional workshops into the various strategic plans of Regional Associations;**
- **To organize national workshop to define appropriate processes for quantitative evaluation of the socio-economic benefits of meteorological and related services including the development and implementation of pilot demonstration projects and sharing good practices and experiences;**

Recommendations

- **To establish appropriate partnerships between various stakeholders, in particular provider and users;**
- **To organize capacity building initiatives including training both providers and users to facilitate better delivery of meteorological and related information and products;**
- **To develop the capacities of NHMSs in marketing and communication; and**
- **To address emerging needs of users including climate change related issues.**

Action Plans (14)

Action 3: Embark on capacity building endeavors through creation of education and training opportunities for both users and providers of weather, climate and water information and services to increase awareness of users to the opportunities afforded by weather, climate and water services and to assist the providers of these services to understand more fully users requirements.

WHAT'S NEXT?

- **PAGASA prepared of project proposal with National Economic Development Authority (NEDA) to conduct capability building and training.**
- **PAGASA should start very soon and monitor the progress and success of the program within 5 years, as stated in the Madrid Action Plan.**

Completed Projects

- 1. Assessment of Aviation Forecast: S&T Concerns Addressing Aviation Safety Issues**
- 2. Application of S-Band Radar for the Improvement of Weather Forecasting**
- 3. Development and Application of Numerical Models for Weather, Climate, Marine and Hydrological Forecasting Services**

On-going Projects

- 1. Enhancement of Weather Forecasting Capabilities Using Satellite Data (MTSAT)**
- 2. Philippine Interactive Climate and Weather Information Network (PICWIN)**
- 3. Establishment of Doppler Weather Radar Network for Disaster Prevention and Preparedness in Metro Manila**
- 4. Disaster Mitigation through Enhanced Prediction Products and Satellite Data**

Research Proposals/Initiatives:

1. **Enhancement of Weather Forecasting Using Satellite Data**
2. **Disaster Mitigation through Enhanced Forecasts Using Numerical Prediction Products and Satellite Data**
3. **Disaster Mitigation through Enhanced Weather Forecasts Using Upper Air Data**
4. **Disaster Mitigation through Enhanced Weather and Climate Forecasts Using Moderate-Resolution Imaging Spectroradiometer**
5. **National Digital Forecasting Project**
6. **Establishment of E-Center and Network for State-of-the-Art Natural Hazards' Monitoring, Prediction, Forecasting, Early Warning and Information Exchange**

Research Proposals/Initiatives:

- 7. Enabling Communities for the Adoption of Disaster Prevention and Preparedness Measures in Areas Prone to Floods and Rain-Induced Landslides**
- 8. Scientific Research on Marine Hydro-Meteorology: Study of Forecasting Models**

Other Activities:

- 1. Conduct of Information and Education communication (IEC) campaign for selected areas frequently affected by natural hazards (by PAGASA)**
- 2. Conduct of outreach seminars in far flung areas (by PAGASA & NRCP)**
- 3. Rizal Technological University began offering a master of science in astronomy program starting (2005-2006 school year, 1st astronomy program offering in the Philippines and a collaborative project between the RTU and PAGASA, DOST**
- 4. Conduct of in-house training, sending of technical staff abroad for scholarships & fellowships**

PHILIPPINE INITIATIVES AND ACTIVITIES IN SPACE TECHNOLOGY APPLICATIONS

- 1. Conduct of the 1st National Congress on Space Technology Applications and Research (NC-STAR) last 15 November 2005, which laid the groundwork for Philippine STA program.**

PHILIPPINE INITIATIVES AND ACTIVITIES IN SPACE TECHNOLOGY APPLICATIONS

- 2. In January 2007, the Philippines through the Science and Technology Coordinating Council inked a memorandum of understanding with the Kyushu University - Space Environment Research Center, for the sunrise science on Sesimo-electromagnetics. Collaborative researches and exchange of human resources and information are hoped to be tapped under this MOU.**

PHILIPPINE INITIATIVES AND ACTIVITIES IN SPACE TECHNOLOGY APPLICATIONS

3. Creation of the National Advisory Committee on Space Education in the Philippines (NACSEP) under the aegis of the Science Education Institute-Department of Science and Technology (SEI-DOST). Long-term and short-term programs geared towards beefing up space science and technology education are in the works.

PHILIPPINE INITIATIVES AND ACTIVITIES IN SPACE TECHNOLOGY APPLICATIONS

- 4. Yearly celebrations of the Word Space Week (October 4-10) where the STCC-COSTA and SEI collaborate to launch space awareness programs for the youth and the general public.**

PHILIPPINE INITIATIVES AND ACTIVITIES IN SPACE TECHNOLOGY APPLICATIONS

5. Initial pre-feasibility and technical studies are underway for the possible development of Small Satellite for Earth Observation, with the primary mission of providing self-sufficiency for the Philippines in acquiring satellite information especially during times of disasters.

PHILIPPINE INITIATIVES AND ACTIVITIES IN SPACE TECHNOLOGY APPLICATIONS

- 6. Initial talks with the United Nations Office for Outer Space Affairs (UNOOSA) and the APEC-Technology Foresight Center on the Use of Space Technologies to Combat Emerging Infectious Diseases (EIDs)**

PHILIPPINE INITIATIVES AND ACTIVITIES IN SPACE TECHNOLOGY APPLICATIONS

7. Establishment of a National Spatial Data Infrastructure (NSDI) by NAMRIA and ASTI (dubbed as FedGIS) through a DOST-GIA funded project.

PHILIPPINE INITIATIVES AND ACTIVITIES IN SPACE TECHNOLOGY APPLICATIONS

- 8. Attendance to various space-related meetings/conferences/workshops/symposia organized by the following international entities: UNESCAP, UNOOSA, Asia-Pacific Multilateral Cooperation on Space Technology Applications (APMCSTA); participated in talks on the Asia-Pacific Space Cooperation Organization (APSCO), Asia-Pacific Regional Space Agency Forum (APRSAF), and GISTHDA of Thailand**

PHILIPPINE INITIATIVES AND ACTIVITIES IN SPACE TECHNOLOGY APPLICATIONS

- 9. JAXA-related initiatives and collaborations such as the following: Wideband Internetworking Engineering and Test and Demonstration Satellite (WINDS) – through STCC-COSTA ASTI, NAMRIA and OCD-NDCC and Sentinel Asia Project – through STCC-COSTA, ASTI, NAMRIA and OCD-NDCC**

PHILIPPINE INITIATIVES AND ACTIVITIES IN SPACE TECHNOLOGY APPLICATIONS

10. Astronomical training participated in by PAGASA personnel: 19th International School for Young Astronomers (ISYA), Kuala Lumpur, Mar 2007; Discussion Forum of the South East Asian Astronomical Network (SEANN), Thailand, Mar 2007; and 59th PG Course in Space and Atmospheric Science, Ahmedabad, India, Aug 2006-Apr 2007

PHILIPPINE INITIATIVES AND ACTIVITIES IN SPACE TECHNOLOGY APPLICATIONS

11. Conduct of R&D projects and related activities: Feasibility Study of Night-Time Cloudiness in the Philippines, Correlation of the Phases of the Moon on Tropical Cyclone and An Analysis of Susceptibility of the PAGASA Astronomical Observatory for Sunspot Observation.

PHILIPPINE INITIATIVES AND ACTIVITIES IN SPACE TECHNOLOGY APPLICATIONS

**12. New initiatives on astronomical activities:
OJT on Astronomical Research and
Outreach Activities and World Space Week
Celebration, Oct 2007.**

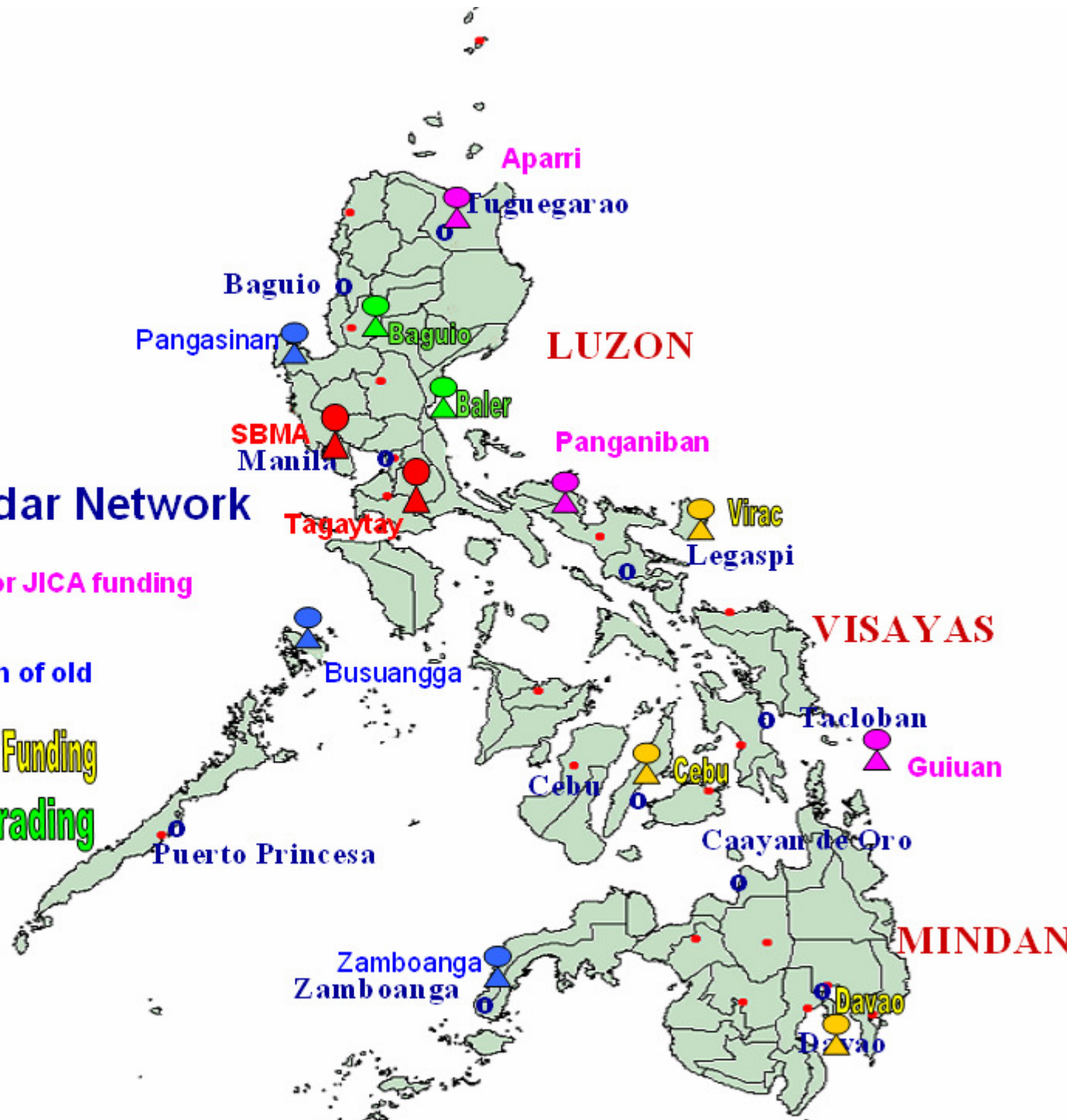
*Note: These are based on information that passes through
STCC-COSTA. Some other initiatives that are germane to
other government agencies that we have no information of
or have not been furnished information are not reflected in
this summary.*

PAGASA Weather Radar Network Philippines



AGASA Weather Radar Network

- Doppler radars requested for JICA funding
- ▲ PGMA Doppler Radars
- Proposed sites for relocation of old surveillance radars
- ▲ Proposed sites for relocation of old surveillance radars
- ▲ Doppler radars with Calamity Funding
- ▲ Doppler radars for upgrading



Ongoing Initiatives :

- 1. Establishment of eight (8) new radar stations: 5 for new Doppler radars (SBMA, Tagaytay, Cebu, Panganiban & Davao); 3 for relocated weather surveillance radars (Pangasinan, Busuanga & Zamboanga)**
- 2. Upgrading of three (3) surveillance radar to Doppler types: Aparri, Virac & Guiuan**

Ongoing Initiatives:

- 3. Acquisition of eight(8) new Doppler weather radars: SBMA, Tagaytay, Aparri, Virac, Guiuan, Panganiban, Davao & Cebu**
- 4. Upgrading of all radar stations with establishment of communication link from radar sites to Weather and Flood Forecasting Center**

Research Initiatives:

- 4. Application of radar data for rain-induced landslides, flashfloods and other related geophysical studies**
- 5. Use of weather radar in aviation and marine services development**

Research Initiatives:

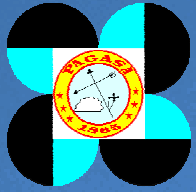
- 1. Quantitative rainfall estimation studies**
- 2. Rainfall studies for hydrologic applications (dams, river basin monitoring/management, etc.)**
- 3. Severe weather and nowcasting studies**

CONCLUSIONS

- PAGASA has exerted all efforts to provide the Philippines and its people timely, accurate and beneficial weather forecasts, flood and climate forecasts, can the UN help the PAGASA acquire meteorological equipment and instruments?

CONCLUSIONS (cont)

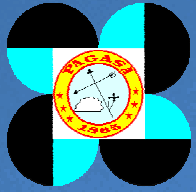
- PAGASA has participated in many activities of ONOOSA, UN-A-ESA, JAXA, STCC-COSTA, GOESS, etc., can the UN help in putting up a Space Agency in our country? (At present there is no specific agency responsible in its space technology activities, I think we have to put everything in its proper place).



PUBLIC WEATHER SERVICES



“Tracking the sky...helping the country”



PUBLIC WEATHER SERVICES



Thank you

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