

WATER CYCLE VARIABLES

ISSUE: THE PROPOSAL FOR A WORKSHOP FOR THE EVALUATION OF HIGH RESOLUTION GLOBAL PRECIPITATION PRODUCTS HAS NOT RECEIVED FULL FINANCIAL SUPPORT.

CONCLUSION: THE ALTERNATIVES PROPOSED FOR DEALING WITH THIS EVALUATION APPEAR TO BE ACCEPTABLE (DEPENDING ON THE FATE OF A GRANT PROPOSAL)

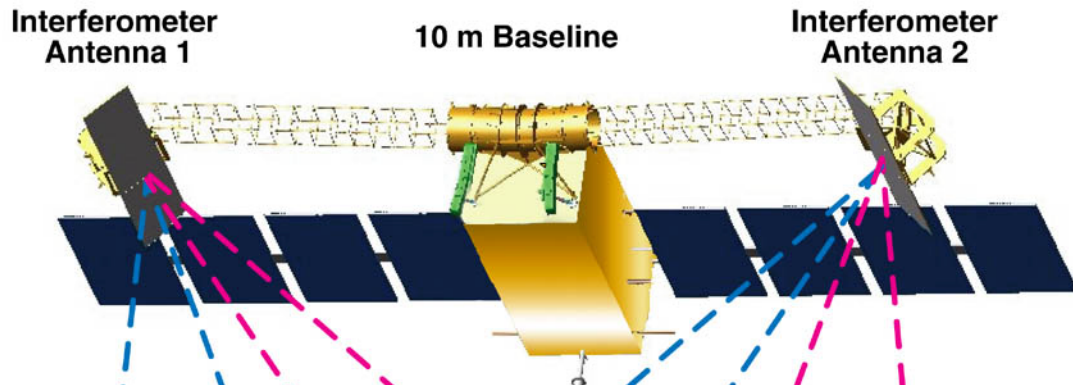
ACTION: NO ACTION NEEDED AT PRESENT

ISSUE: HYDROS AND SMOS PROVIDE NEW INTEREST IN THE POTENTIAL OF ESTIMATING SOIL “MOISTURE” AND OPPORTUNITIES FOR SOIL MOISTURE MEASUREMENTS.

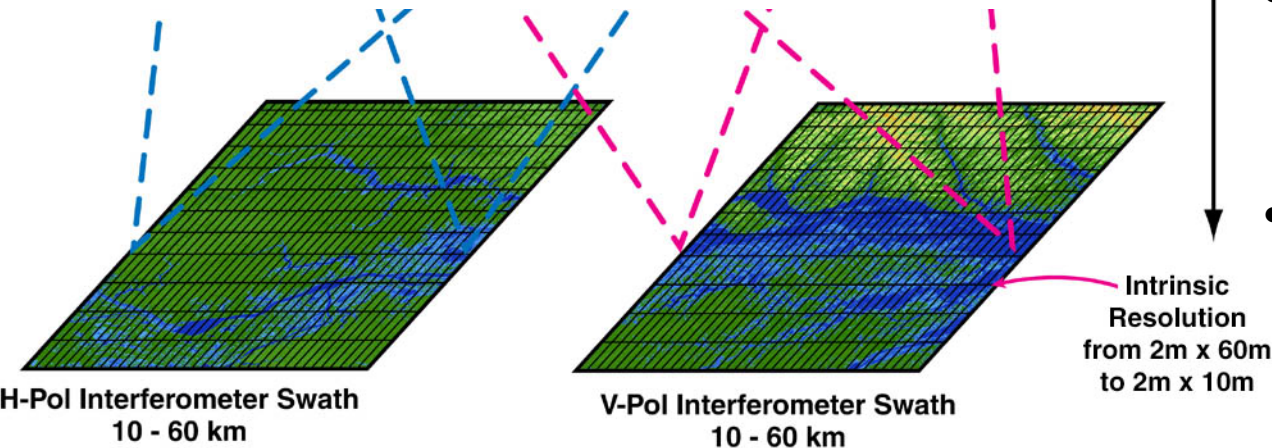
CONCLUSION: ISMWG IS PROGRESSING WELL AND THE COMMUNITY IS ENCOURAGED BY THE SUCCESS OF THE HYDROS AND SMOS SCIENCE TEAMS.

ACTION: ACTION PLANS WITH DEADLINES FOR WHITE PAPERS, ETC ARE NEEDED FOR ACTIONS RELATED TO GCOS (THE GLOBAL NETWORK AND THE QUASI-OPERATIONAL PRODUCT)

Surface Water Interferometric Altimeter Concept



These surface water elevation measurements are entirely new, especially on a global basis, and thus represent an incredible step forward in hydrology.



- Ka-band SAR interferometric system with 2 swaths, 50 km each
- WSOA and SRTM heritage
- Produces heights and co-registered all-weather imagery
- 200 MHz bandwidth (0.75 cm range resolution)
- Use near-nadir returns for SAR altimeter/angle of arrival mode (e.g. Cryosat SIRAL mode) to fill swath
- No data compression onboard: data downlinked to NOAA Ka-band ground stations

ISSUE: IGWCO HAS A NEED FOR THE CAPABILITY TO MAP CHANGES IN THE SURFACE WATER (WETLANDS, ETC)

CONCLUSION: THE NASA SUPPORTED PROJECT, SATELLITE BASED MEASUREMENTS OF SURFACE WATER HYDRAULICS IS A FIRST STEP TOWARDS MEETING THESE REQUIREMENTS.

ACTION: IGWCO WILL PROMOTE THIS INITIATIVE TO IGOS AND CEOS AND MONITOR ITS PROGRESS

ISSUE: IGWCO GROUNDWATER ACTIVITIES HAVE STRONG LINKS TO UNESCO IHP GROUNDWATER PROGRAMS AND THE GEOHAZARDS THEME.

CONCLUSION: WHILE THERE IS SIGNIFICANT POTENTIAL SYNERGISM A MORE COMPREHENSIVE ASSESSMENT OF NEEDS AND OPPORTUNITIES IS REQUIRED.

ACTION: A JOINT WORKSHOP TO BRING TOGETHER EXPERTS FROM THE THREE COMMUNITIES WILL BE PLANNED.

INTEGRATIVE ACTIVITIES

- CEOP II
- DATA COORDINATION WITH GWSP
- CAPACITY BUILDING
- EO FOR SUSTAINABLE DEVELOPMENT

ISSUE: THE GWSP FAST-TRACK PROJECTS OFFER AN OPPORTUNITY FOR IGWCO TO ENGAGE MORE DIRECTLY IN THE GWSP ACTIVITIES.

CONCLUSION: IN ORDER TO ADVANCE THE IGWCO THESE OPPORTUNITIES SHOULD BE SEIZED.

Initial “Fast-Track“ GWSP Activities

(Contributions to/interactions with IGWCO/GEOSS)

- **The Digital Water Atlas and World Water Balance** (indicators; harmonized data across physical, biological, biogeochemical, social dimensions; population / poverty / water vulnerability mapping; documenting water engineering impacts; integrated information platform for stakeholders / policy makers)
- **A Global Study of Environmental Flows** (existing rules inventory; use of high resolution hydromet data for global mapping and benchmarking of contemporary situation; water quality impacts included)
- **An Assessment of Global Water Governance** (quantifying role of management / laws / enforcement / economics in the water system; globalization impacts)
- **Advanced (Educational) Institute on “Global Environmental Change and Water”** (capacity building; new users of water information)

IGWCO and Initial “Fast-Track“ GWSP Activities

(Contributions IGWCO feels it can make to GWSP)

- **The Digital Water Atlas and World Water Balance** (indicators (IGWCO Input); harmonized data across physical, biological, biogeochemical, social dimensions (possible IGWCO input); integrated information platform for stakeholders / policy makers (CEOP system?))
- **A Global Study of Environmental Flows** (use of high resolution hydromet data for global mapping and benchmarking of contemporary situation (possible IGWCO activity); water quality impacts included)
- **Advanced (Educational) Institute on “Global Environmental Change and Water”** (capacity building (IGWCO module on EO for water management))



ISSUE: THE GWSP FAST-TRACK PROJECTS OFFER AN OPPORTUNITY FOR IGWCO TO ENGAGE MORE DIRECTLY IN THE GWSP ACTIVITIES.

CONCLUSION: IN ORDER TO ADVANCE STRENGTHEN IGWCO LINKS TO ESSP AND GWSP, THESE OPPORTUNITIES SHOULD BE SEIZED.

ACTION: IGWCO WILL WORK WITH GWSP TO HELP DEFINE THE REQUIREMENTS IN THESE THREE AREAS IN MORE DETAIL.

ISSUE: IGWCO WISHES TO LAUNCH AN INDICATORS WORKSHOP. A WORKSHOP PROPOSAL HAS BEEN DEVELOPED BASED ON NEEDS IN ECUADOR. HOWEVER, IGWCO HAS NOT BEEN SUCCESSFUL IN GETTING FUNDING SUPPORT FOR THIS ACTIVITIY.

CONCLUSION: THE LACK OF SUPPORT FOR THE PROPOSAL MAY REFLECT THE INTERESTS OF SPACE AGENCIES AND INTERNATIONAL ORGANIZATIONS IN BROADER ISSUES.

ACTION:

- 1) THE WORKSHOP PROPOSAL SHOULD BE REVISED TO MAKE IT MORE GENERAL AND PLACE A GREATER EMPHASIS ON DEFINING THE ROLE OF REMOTE SENSING IN INDICATORS DEVELOPMENT.
- 2) LINKS BETWEEN IGWCO ACTIVITIES AND GWSP INIDCATORS ACTIVITIES SHOULD BE DEVELOPED.

ISSUE: IGWCO, ALONG WITH SEVERAL OTHER IGOS THEMES, HAS BEEN ASKED TO INCORPORATE MORE SOCIO-ECONOMIC DATA INTO THEIR DATA BASE OR DATA ANALYSIS ACTIVITIES.

CONCLUSION: MANY ACTIVITIES ON THE DEMAND SIDE OF THE WATER SUPPLY/DEMAND QUESTION NEED SOCIO-ECONOMIC DATA. THE OPPORTUNITIES FROM ACQUIRING THESE DATA NEED TO BE EXAMINED

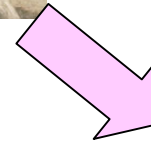
ACTION: A SMALL WORKSHOP WILL BE HELD WITH ICSU AND GWSP COLLEAGUES TO EXPLORE THE NEEDS AND OPPORTUNITIES IN THIS AREA.

WATER CYCLE MEASUREMENTS WILL HAVE GLOBAL BENEFITS IF DEVELOPING COUNTRIES GAIN THE CAPABILITY OF USING THESE DATA

(Capacity Development- Technology, Education/Training
Field Applications)



- Developing nations should be provided with the hardware and software to access all IGWCO data products and forecasts.
- Training materials should be developed and sessions carried out in developing countries.



IGWCO WILL WORK ACTIVELY TO SUPPORT THE TRANSFER OF ADVANCED TECHNOLOGIES TO THE DEVELOPING WORLD. IGWCO ENVISIONS WORKING CLOSELY WITH UNESCO AND SPACE AGENCIES (CEOS) TO ACHIEVE THIS GOAL.

ISSUE: CAPACITY “BUILDING” IS A BROAD FIELD INVOLVING MANY DEFINITIONS OF NEED, MANY AGENCIES AND FUNDERS, ETC.

CONCLUSION: THE STRATEGY OF APPROACHING THE ISSUE WITH SOME WORKSHOPS TO DEFINE NEEDS AND LAY OUT A PROGRAM OF FOLLOW-ON ACTIVITIES IS REQUIRED.

THERE IS A NEED FOR BALANCE BETWEEN SELLING THE AGENDA FOR A PARTICULAR MISSION OR SPACE AGENCY AND PROVIDING AID TO COUNTRIES TO BOLSTER THEIR GENERAL CAPACITY.

ACTION: IGWCO WILL STAY THE COURSE IN DEVELOPING AND IMPLEMENTING ITS WORKSHOPS.

THE CURRENT STATUS OF SUPPORT FOR THIS ACTIVITY IS AS FOLLOWS:

	LATIN AMERICA	SE ASIA	AFRICA
NOAA	YES		
JAXA		YES	
ESA			PROB. YES
CONAE	YES		
MAIRS		YES	
IAEA	YES	YES	YES

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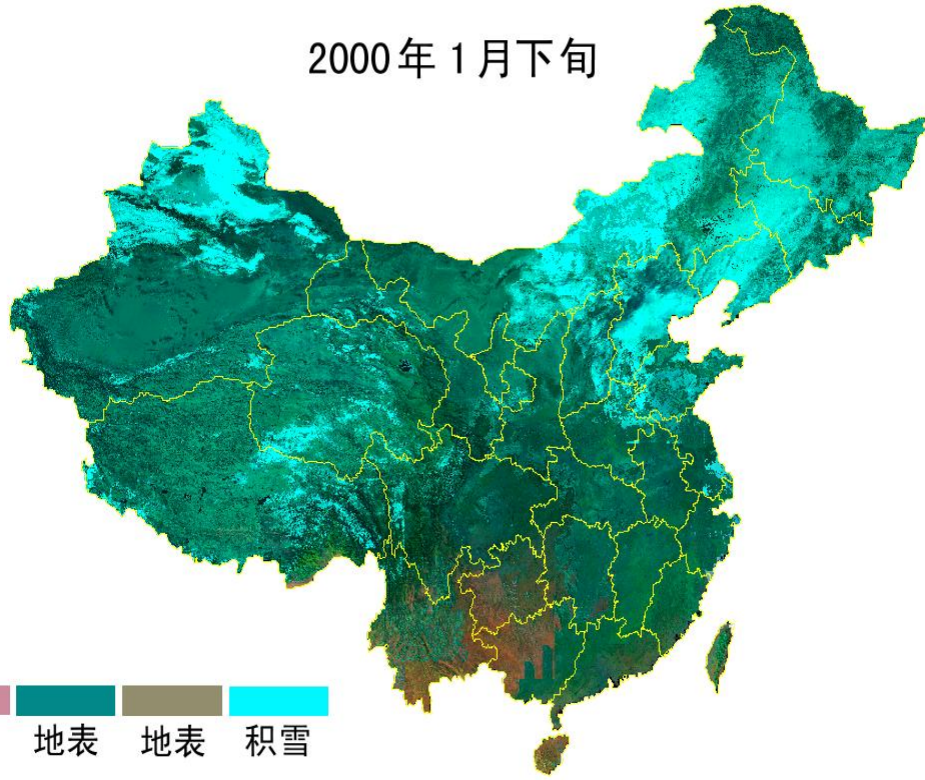
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SINCE AN OBVIOUS OMISSION TO THIS CHART IS UNESCO IHP, STEPS WILL BE TAKEN TO DEFINE THEIR ROLE AND INVOLVE THEM MORE DIRECTLY.

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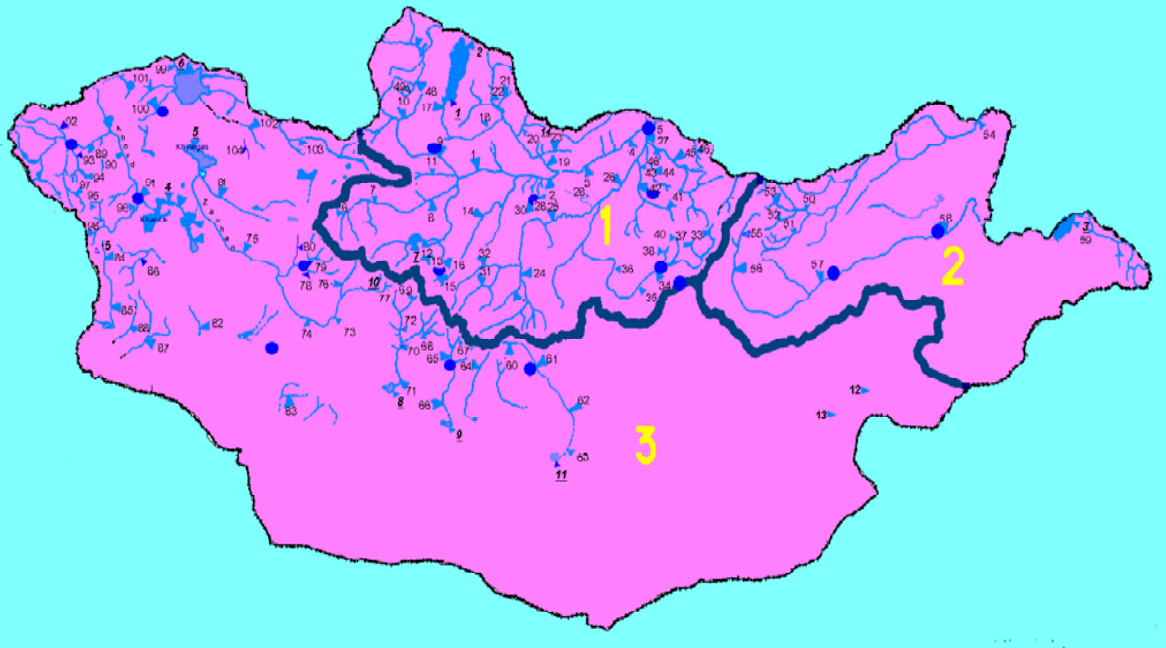
CHINA:



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CAPACITY BUILDING INTERESTS:

- infrastructure and platform for data sharing
- contributions of technology and data to GEOSS



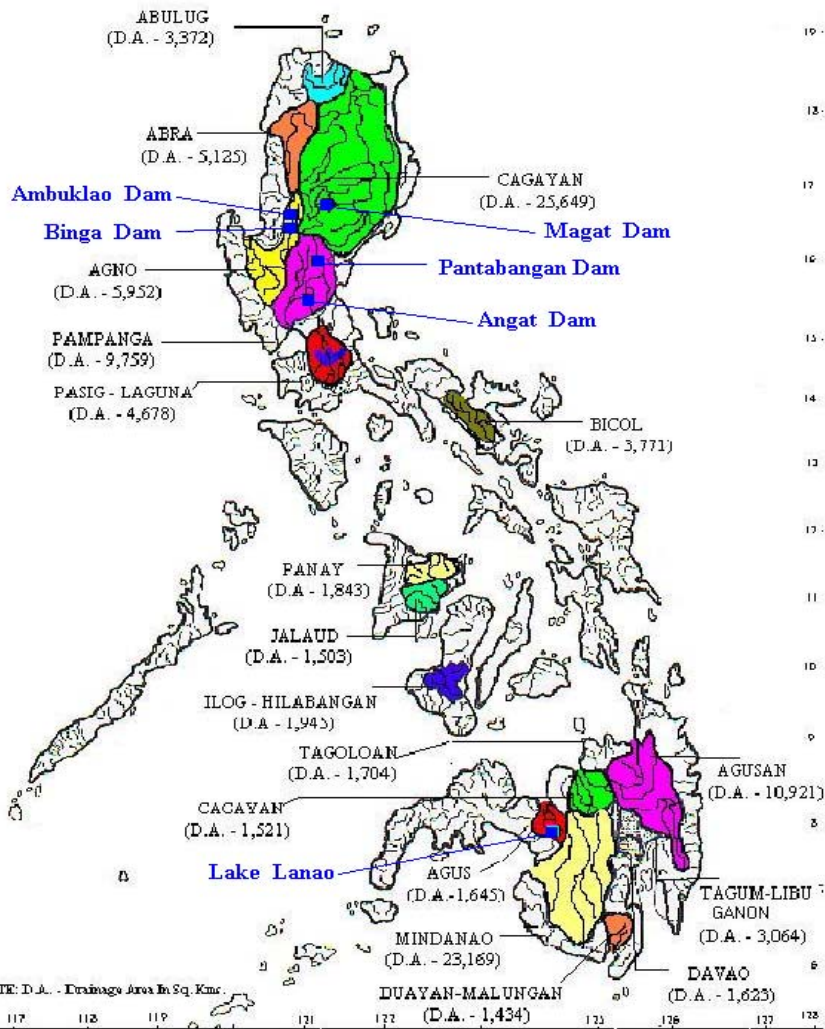
MONGOLIA:

-MONITOR AREAS WHERE WATER IS FLOWING IN STREAMS, WADIS, ETC

CAPACITY BUILDING INTERESTS:

- monitoring flowing rivers
- short- and long-term river level forecasting
- options for increasing the water resources of Mongolia
- GIS systems to monitor changes in water bodies
- Regional forecast models

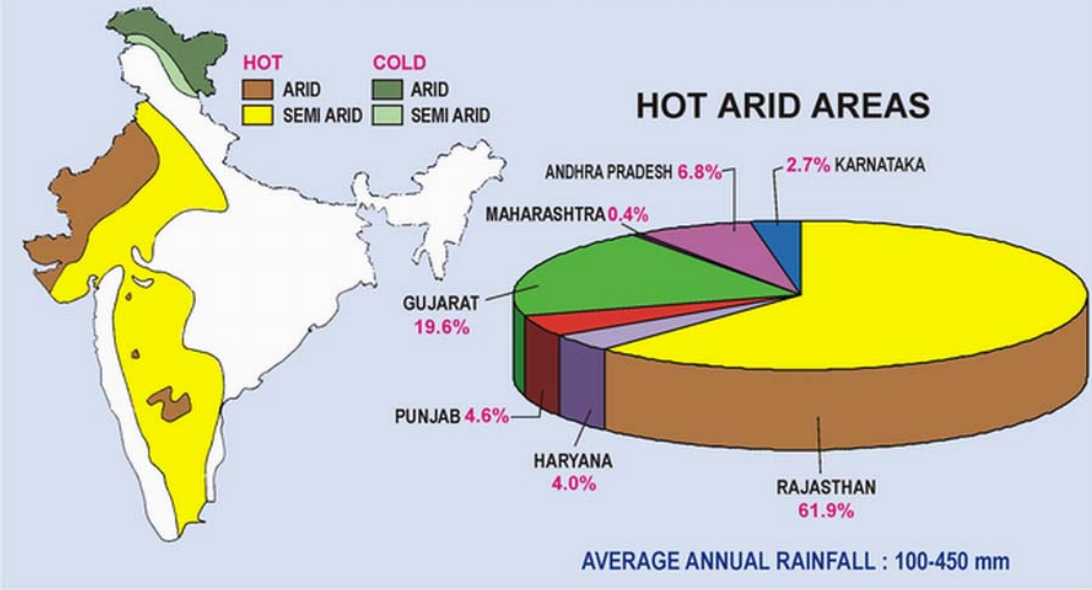
PHILIPPINES:



CAPACITY BUILDING INTERESTS:

- Use of satellite data (TRMM) in Typhoon tracking
- Rainfall estimates from satellites
- Regional climate modeling

ARID & SEMI-ARID AREAS IN INDIA

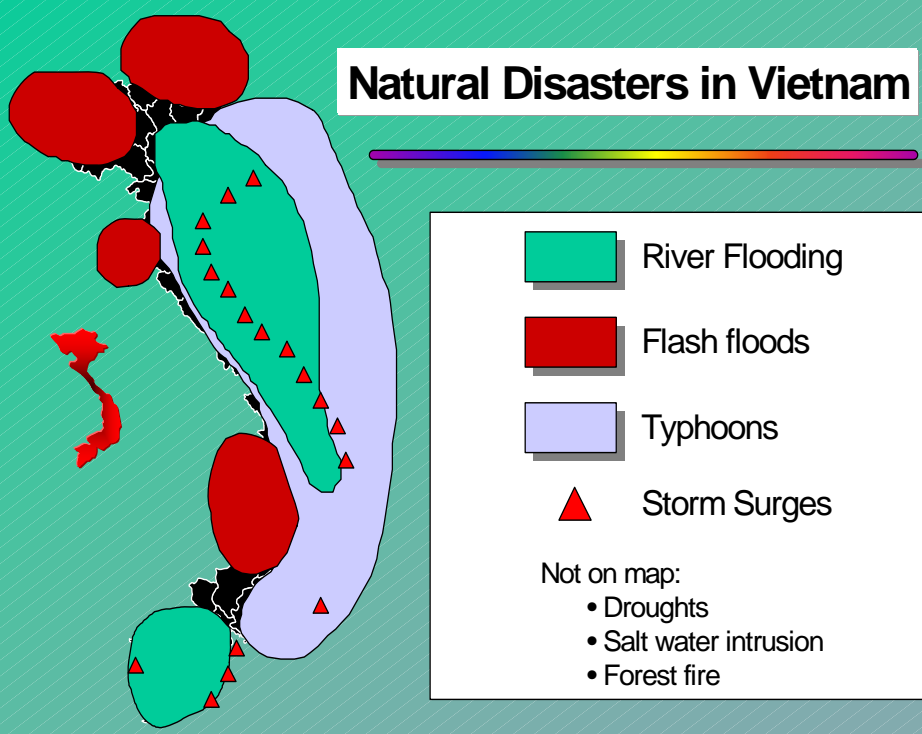


INDIA:

CAPACITY BUILDING INTERESTS:

- international water cycle research
- technology (EO systems, hydrologic models, GIS)
- case studies in the water problems in the country as addressed by technology

Natural Disasters in Vietnam

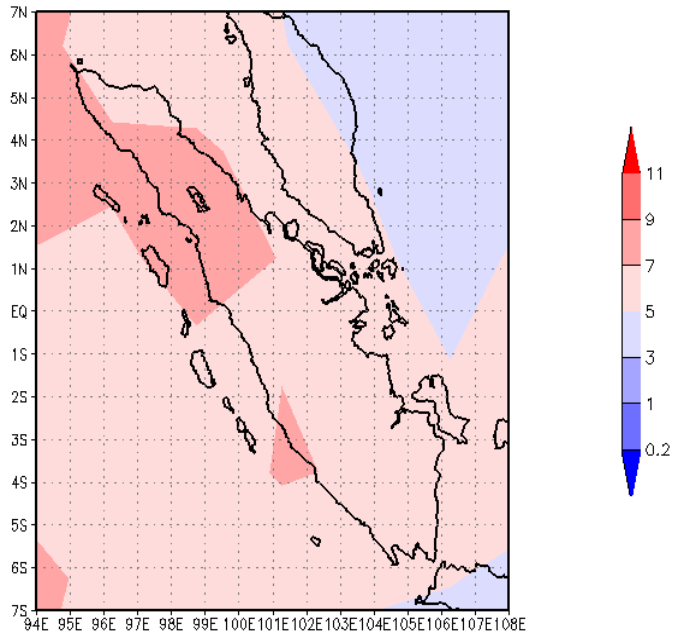


VIET NAM:

CAPACITY BUILDING INTERESTS:

- Expand rainfall measurement networks (automatic gauges, radar)
- models for precipitation forecasting
- prediction and tracking of typhoons and tropical cyclones

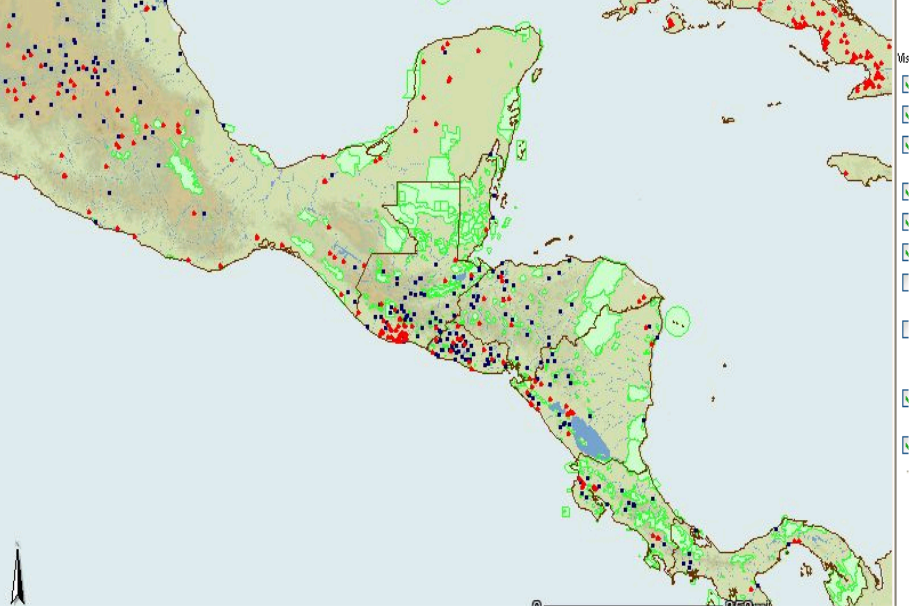
GPCP Monthly Mean Precipitation Rate (mm/day)
Calendar month MAY Average of 1979--2004



INDONESIA:

CAPACITY BUILDING INTERESTS:

- climate model prediction
- utilization of satellite data
- Prediction of the rainy season in localized areas
- Techniques to modify the climate model prediction for special areas
- Application of GPM (when available)
- Data form satellites – easy to access, easy to process
- Increase the manpower to analyze satellite data



PANAMA

CAPACITY BUILDING INTERESTS:

- data integration and assimilation into weather and water resources models
- soil moisture and groundwater
- data sources and downscaling techniques

ECUADOR:



CAPACITY BUILDING INTERESTS:

- what data can we get from satellites?
- How can we get that data – from which sites?
- Enhance the curricula on remote sensing and GIS technologies

EARTH OBSERVATIONS AND SUSTAINABLE DEVELOPMENT

**There are 4 different ways in which IGWCO could
participate in CSD13:**

1. Sponsoring an Information Table

2. Participating in the Partnership Fair

**Proposal for workshops on water resources, water
quality and groundwater and floods.**

3. Sponsoring a Training through the Learning Centre

Proposal has been submitted

4. Sponsoring Side Events

IGWCO hopes to participate in an IGOS-P event

BEYOND IGWCO

ISSUE: ARE THERE GAPS IN THE CURRENT IGWCO PLAN?

CONCLUSION: THE PLAN DOES NOT GIVE EMPHASIS TO SOME OF THE NEEDS OF OTHER THEMES FOR WATER INFORMATION. SPECIFIC AREAS THAT ARE MISSING INCLUDE:

- THE AREA OF FREE STANDING WATER (I.E. IN LAKES, RESERVOIRS, WETLANDS, ETC.) THIS INFORMATION IS PARTICULARLY NEEDED FOR MONITORING THE WATER IN WETLANDS BECAUSE IT IS RELATED TO METHANE PRODUCTION, BIRD PRODUCTIVITY, ETC.

ACTION:

- 1) AS NOTED, IGWCO WILL TRACK THE DEVELOPMENT OF THE MEASUREMENT OF SURFACE WATER FROM SPACE AND WILL HELP TO CLARIFY THE NEEDS FOR SUCH A SYSTEM WHEN IT MOVES FROM A RESEARCH PHASE TO AN OPERATIONAL PHASE.
- 2) IGWCO WILL ASSESS THE AVAILABILITY OF WATER SURFACE DATA AND THE FEASIBILITY OF ESTABLISHING A CENTRAL ARCHIVE FOR SUCH DATA.

ISSUE: THE POTENTIAL CONTRIBUTIONS OF OPERATIONAL METEOROLOGICAL AND HYDROLOGICAL SERVICES TO THE IMPLEMENTATION OF THE IGWCO PLAN SHOULD BE STRENGTHENED.

CONCLUSION: THERE ARE OPPORTUNITIES FOR DRAWING ON THE EXPERTISE OF THESE NATIONAL CENTERS MORE ACTIVELY AND FOR DERIVING BENEFITS FOR THEIR OPERATIONS.

ACTION:

AS A MEMBER OF THE IGWCO EXECUTIVE, WMO WILL BE ASKED TO PROVIDE AN OUTLINE OF HOW THEY SEE OPERATIONAL SERVICES CONTRIBUTING TO THE PLAN AND TO DEFINE THE OPPORTUNITY AREAS FOR IGWCO AND SERVICE CENTERS.

ISSUE: TO WHAT EXTENT DO THE IGOS THEMES OFFER THE POTENTIAL FOR GEO TO CARRY OUT ITS WORKPLAN (PARTICULARLY IN ACHIEVING THE TARGETS IN THE SOCIO-ECONOMIC THEME AREAS?)

CONCLUSION: THE IGOS THEMES NEED TO PRESENT TO GEO THE EXTENT OF THEIR WORK AND THEIR LINKS WITH THE GEO SOCIOECONOMIC AREAS. THIS SHOULD BE DONE DURING THE EARLY STAGES OF PLANNING THE GEO WORK PLAN AND THE YEAR-1 ACTIVITIES.

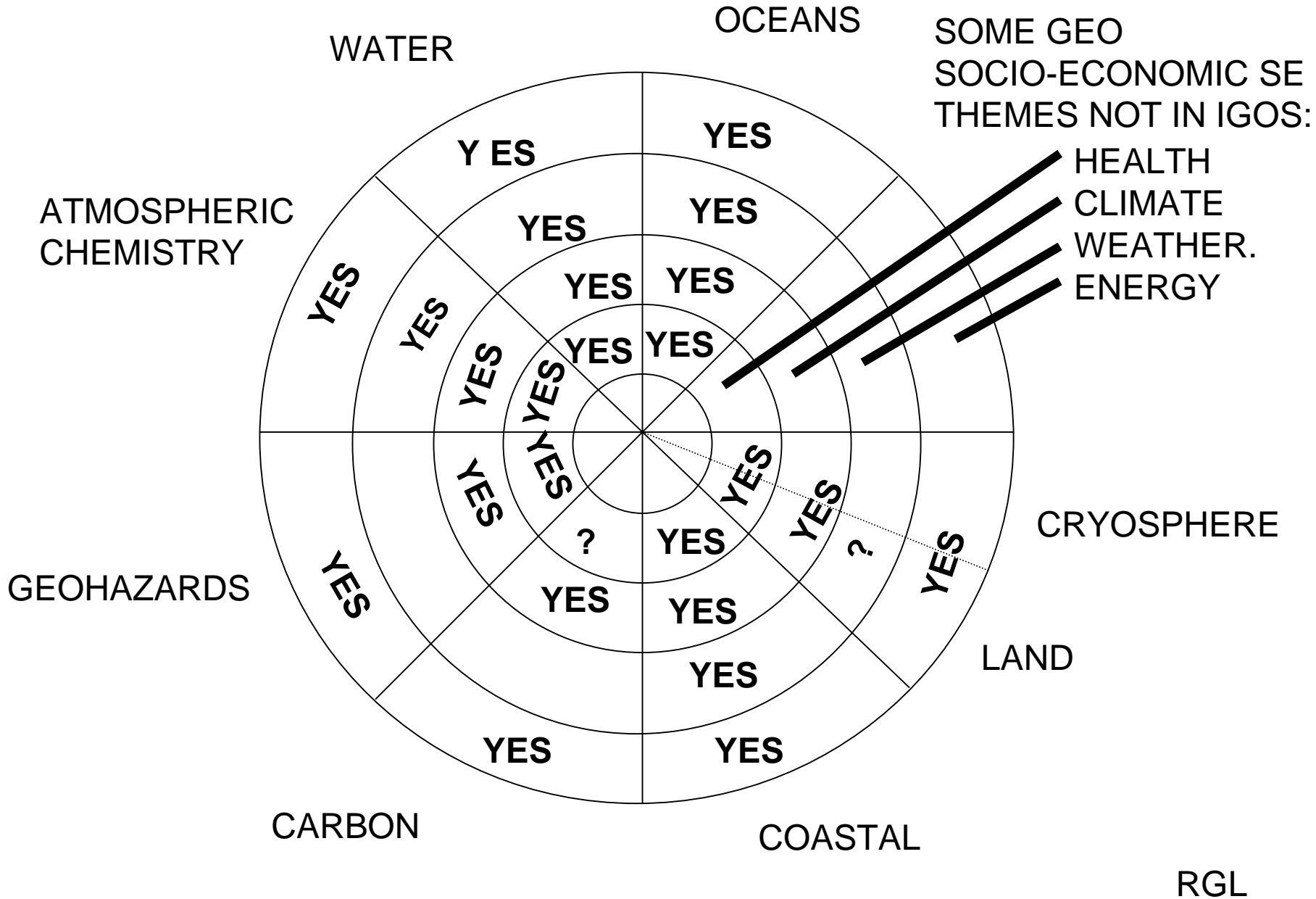
ACTION:

1) STUART MARSH AND PAUL DIGIACOMO WILL DEVELOP A FRAMEWORK THAT WILL BE DISTRIBUTED TO THEME LEADERS FOR INPUT IN THE NEXT FEW WEEKS.

THE COMPLETION OF THIS EXERCISE WILL BE ADJUSTED TO THE TIMING OF THE GEO-1 MEETING.

2) IGOS-P WILL BE ASKED TO MAKE A STRONG CASE TO GEO THAT THE SRTM30 BE RELEASED TO ALL NATIONS FOR THE GLOBE (SEEN AS A WIN-WIN OPTION)

PRELIMINARY:



ISSUE: THERE ARE MANY OPPORTUNITIES TO STRENGTHEN THE LINKAGES BETWEEN THEMES AND TO RESOLVE THE AREAS OF DUPLICATION.

CONCLUSION: SUCH LINKAGES COULD BE ADDRESSED THROUGH JOINT CROSS-THEME ACTIVITIES. THE LINKAGES COULD COME IN:

- SHARED INTERESTS IN TOPICS AND APPLICATIONS.
- SHARED INTERESTS IN INSTRUMENT DEVELOPMENT.
- SHARED INTERESTS IN SPECIFIC DATA SETS.

FURTHERMORE, AN ANALYSIS OF THESE POSSIBILITIES WOULD BE USEFUL BECAUSE THEY WOULD ALLOW GAPS TO BE DEFINED IN THE THEME ACTIVITIES.

ACTION: THIS WILL BE ACHIEVED AS PART OF THE REVIEW OF THE THEMES FOR GEO

ISSUE: ALTHOUGH UNESCO HAS AN ACTIVE GARS PROGRAM THE UNESCO IHP PROGRAM DOES NOT APPEAR TO HAVE STRONGLY ENGAGED IN THE USE OF REMOTE SENSING DATA.

CONCLUSION: UNESCO IHP HAS POTENTIAL TO PROVIDE STRONGER PROGRAMMATIC SUPPORT TO IGWCO.

ACTION: A SMALL MEETING WILL BE HELD WITH UNESCO IHP TO DETERMINE HOW IGWCO CAN WORK MORE CLOSELY WITH THE UNESCO IHP AND TO PROPOSE A UNESCO IHP PROJECT INVOLVING REMOTE SENSING DATA.