Reference U/A for GCOS

Seattle 2006

Richard K. Thigpen

GCOS Secretariat

Geneva

The GCOS Upper Air Network

Considered Baseline Calibration Network

Permits calibration of other data i.e. satellite, AMDAR

Should be the best stations

Long History, good operation

Climate Monitoring Principles

PR has Agreed

GCOS Upper Air Network

About 150 Stations

Uniform Global Distribution (5-10 Deg)

Minimum Requirement (Draft)

> **At least 25 soundings/month to 30HPa**
>
> **Temp, Humidity, Wind Speed and Direction**

Target requirement (Draft)

> **Temp, Wind, Humidity as High as Possible**
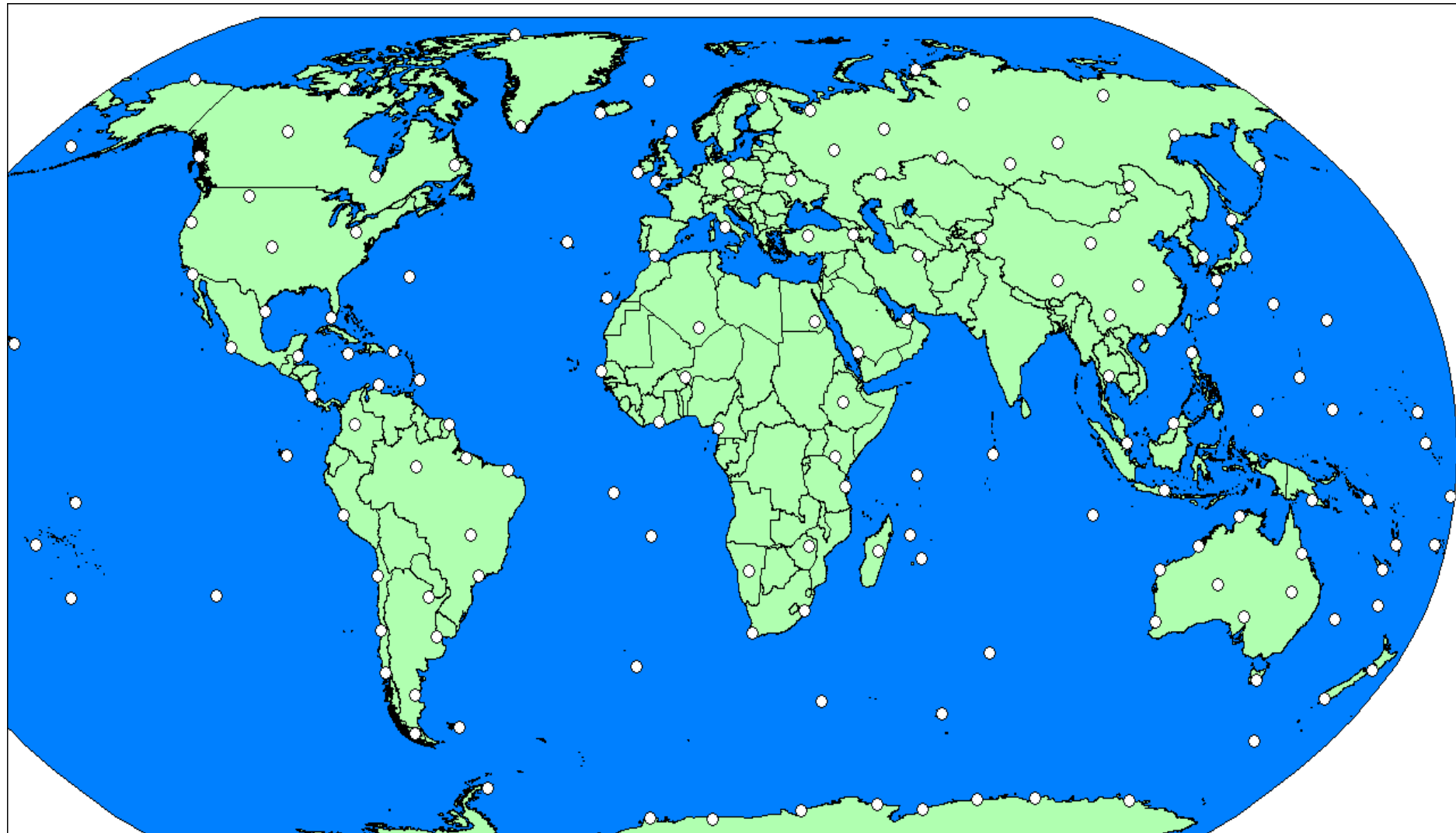>
> **CLIMAT TEMP**

Biggest problems:

> **Operating Costs**
>
> **Old Equipment**

GUAN

Things We Have Done to Improve GUAN

Direct Renovations

CBS Lead Centers for GCOS

Technical Support projects

Early Initiatives

Corrected Errors in Station Lists

> **Some Stations Closed, misidentified, GTS Routing Problems**

Revised Reports:

> **Additional Reports established**

> **Reporting Centers Using same Lists**

Improved Distribution of network Stations:

> **Additional Stations Added in Sparse Areas**

Revitalization Activities

Equipment Replacement

   Hydrogen Generators and Upper Air Systems

Gan, Maldives	**Dar es Salaam, Tanzania**
Windhoek, Namibia	**Harare, Zimbabwe**
Yerevan, Armenia	**Penrhyn, Cook Islands**
Douala, Cameroon	**Antananarivo, Madagascar**
Dakar, Senegal	**Addis Ababa, Ethiopia**
Nairobi, Kenya	**Bauerfield, Vanuatu**
Honiara, Solomon Islands	**Laoag, Philippines**
Galapagos, Ecuador	

Radiosondes and Balloons To Many

New GUAN Station at Gan, Maldives
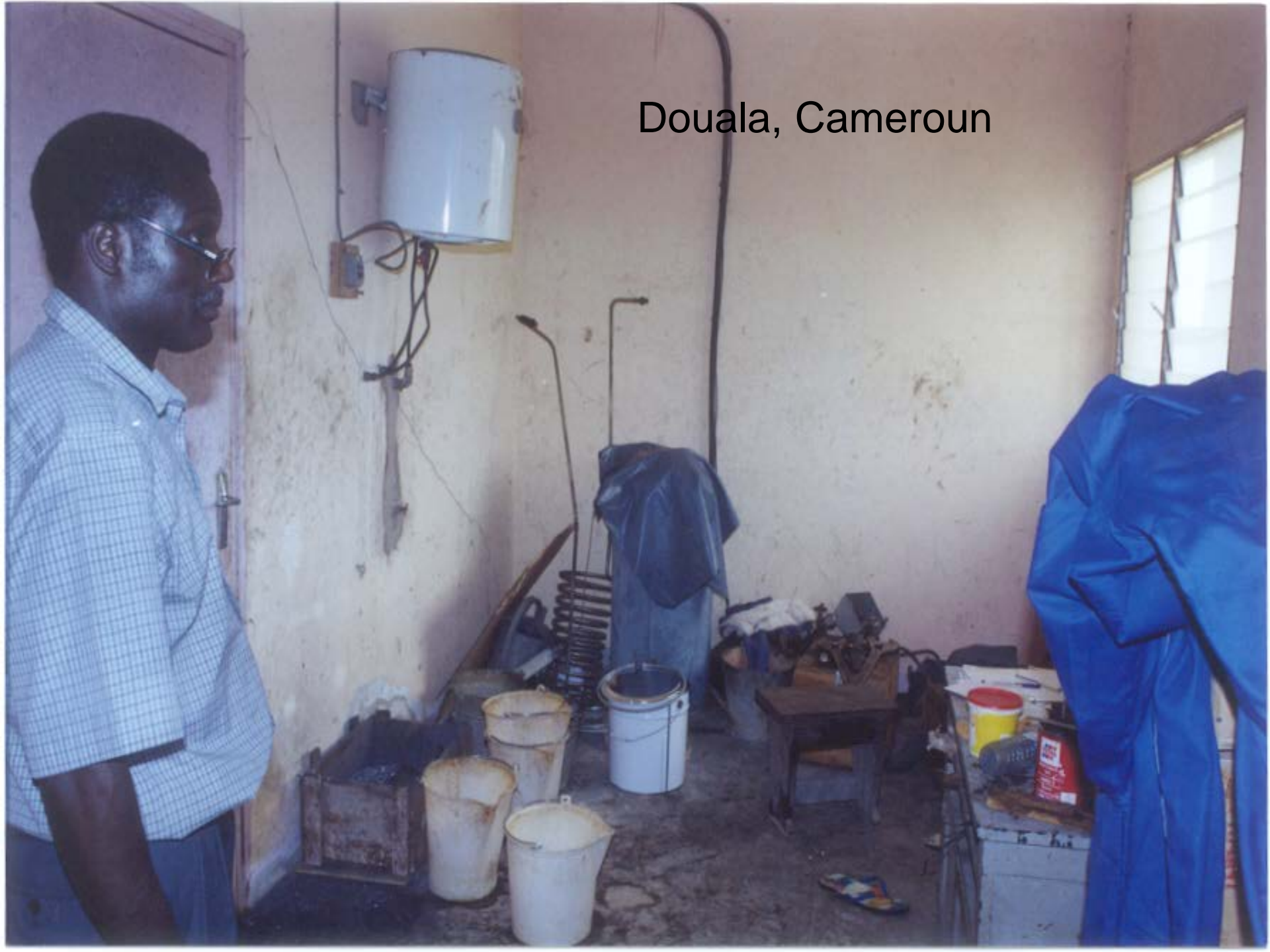
New GUAN Station at Dar es Salaam

Yerevan, Armenia

Windhoek

Douala, Cameroun

Antananarivo, Madagascar

How Did We Do Them?

Bi lateral Agreements

> **UKMO, New Zealand, South Africa**

> **Works Good But……**

GCOS Managed, WMO Procurement

> **Works Good But…..**

Employed many Different Systems

CBS Lead Centers for GCOS

Have Authority to Contact Country Directly

    WMO Very Formal About Contact with Members

Japanese Met Service First for GSN

Then NCDC for GSN and GUAN

Recently IRAN for GSN and GUAN

Now Australia and Morocco for GSN and GUAN

Lead Center Representatives

Hiroshi Nakamigawa	JMA
Larry Nicodemus	US
Mina Jabbari	Iran
Phil Alford	Australia
Rachid Sebbari	Morocco

CBS Lead Centers

Training Session Last month

Good Progress Already
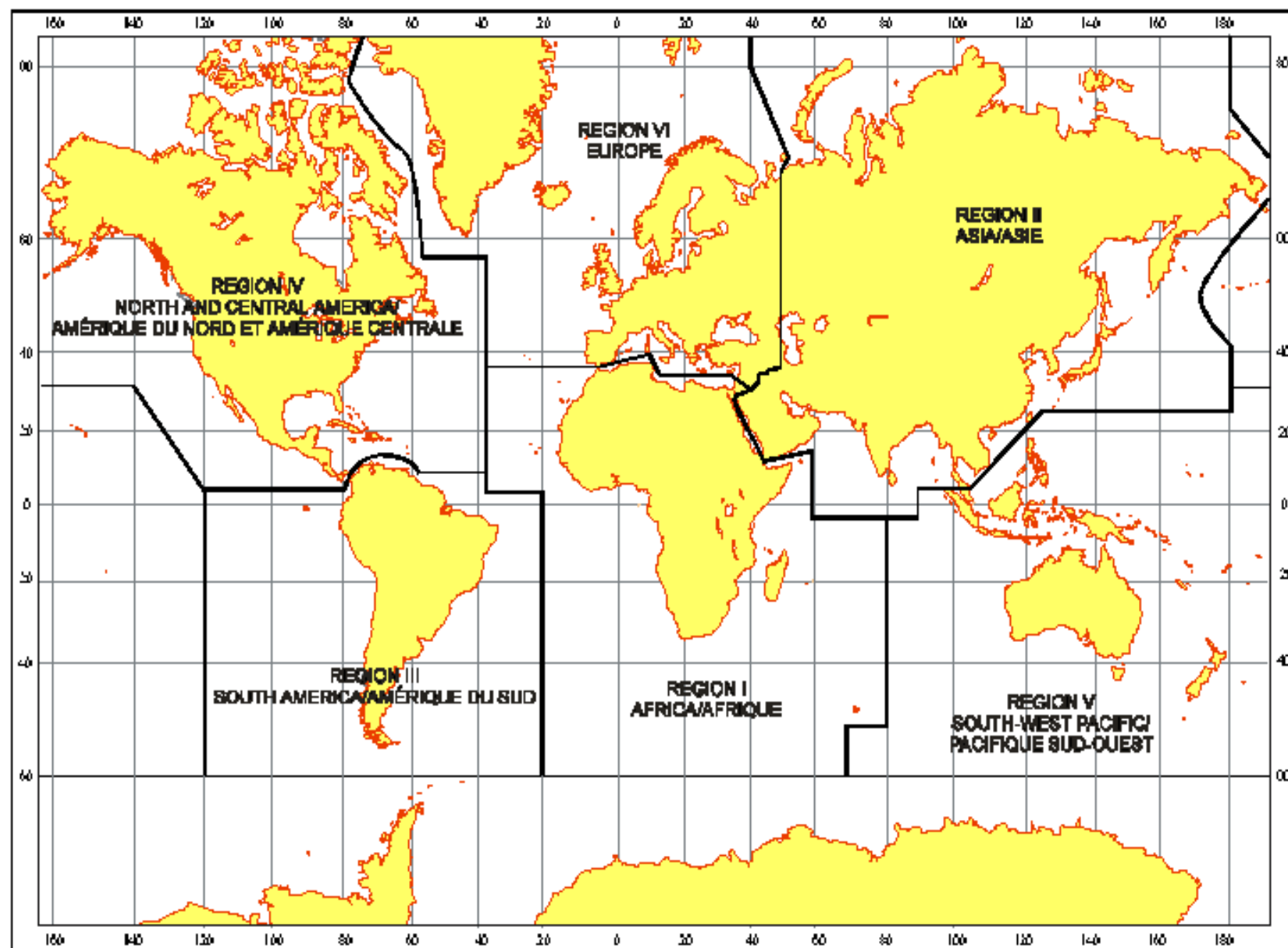
    Iran has contacted >12 Countries

    Retrieved Historic Data

See Results Already

    Language, Cultural, & Regional Differences

WORLD MAP OF WMO REGIONS / CARTE MONDIALE DES RÉGIONS

REGION VI
EUROPE

REGION II
ASIA/ASIE

REGION IV
NORTH AND CENTRAL AMERICA/
AMÉRIQUE DU NORD ET AMÉRIQUE CENTRALE

REGION III
SOUTH AMERICA/AMÉRIQUE DU SUD

REGION I
AFRICA/AFRIQUE

REGION V
SOUTH-WEST PACIFIC/
PACIFIQUE SUD-OUEST

GCOS Technical Support Projects

Three One Year Projects Established

Pacific Islands (New Zealand Met Service)

Caribbean (Private Company)

SADC Africa (Botswana Met Service)

Visit Each GUAN Station 2 Times per Year

Visit as Many GSN as Possible

Monitor reports from all Stations

Technical Support Projects

Site Visits:

Better Meta Data

Including Photos Around Sensor Suite

Actual Location of Many are Wrong

Many are no Longer Good Sites

Calibration and Training

Reference Network Assumptions

Global Coverage is needed

So Some will be in Poor Areas

Will be operated by Met Services

Reference Network Considerations

Developing Areas

Operational Cost

Cost will be Higher

Coordination

Flight Times Not Fixed

Communication

Need Near Real Time Management

Higher Cost

Radiosondes will Cost More

Balloons Will cost More

More of Both will be Needed

Staffing Needs will be Higher

Need a Long Term Commitment

Coordination

Satellite Over flight Times Must be Known

Burden on Operations Staff

Training Will be Needed

Different Sondes at Different Times

Communications

Must Communicate Flight Times

Telecommunications Changes Needed

An Operational Manager Will be Needed

Could be TSP, Lead Centers, GCOS Secretariat????

Keep Expectations Reasonable!

Upper Air Not Important to Developing Met Services

Even Then, They are Met Services not Climate Services

Need to Establish Importance of Climate Obs

Everything is Keyed to Met Operations

Thank You

GCOS

RKT