



# DATA, CAPACITY AND USER NEEDS FOR IMPACTS AND VULNERABILITY ASSESSMENTS IN SUPPORT OF ADAPTATION: ASSESSING AVAILABILITY AND NEEDS FOR THE DEVELOPMENT OF HISTORICAL CLIMATE DATASETS, THE WMO MEDARE INITIATIVE

By MANOLA BRUNET

CO-CHAIR OF WMO/ICCL OPAG 2: MONITORING AND ANALYSIS OF  
CLIMATE VARIABILITY AND CHANGE

UNFCCC WORKSHOP ON METHODS AND TOOLS, AND ON DATA AND OBSERVATIONS OF THE  
NAIROBI WORK PROGRAMME ON IMPACTS, VULNERABILITY AND ADAPTATION TO CLIMATE  
CHANGE (MEXICO CITY, 4-7 MARCH 2008)

## EMPHASIZING THE NEED FOR THE DEVELOPMENT OF HIGH-QUALITY HISTORICAL CLIMATE DATASETS

### OUTLINE

- ✦ WHY HIGH-QUALITY HISTORICAL CLIMATE DATA  
ARE NEEDED AND WHAT IMPROVEMENT WOULD  
WE GET WITH AN ENHANCED DATA AVAILABILITY?
- ✦ GAPS AND DEFICIENCIES IN CURRENTLY  
AVAILABLE CLIMATE DATA
- ✦ PREVIOUS WMO ACTIVITIES AND NEW INITIATIVES

## WHO IS REQUIRING GOOD CLIMATE DATA AND FOR WHAT?

### HISTORICAL CLIMATE DATASETS: ESSENTIAL AND PREVIOUS INFO IN SUPPORT OF ADAPTATION

DATA FOR THE LONGER TIME SCALES AND FOR CHANGES IN WEATHER AND CLIMATE EXTREMES ARE REQUESTED BY

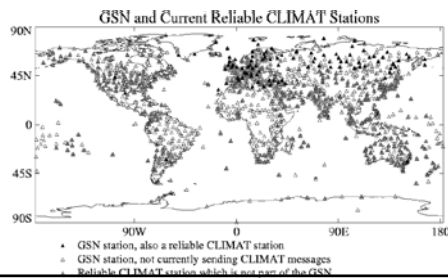
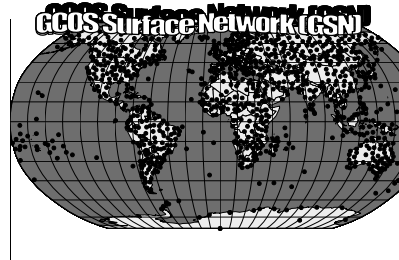
- ✦ SCIENTIST TO BETTER DETECT AND PREDICT CLIMATE VARIABILITY AND CHANGE
- ✦ SCIENTISTS AND PRACTITIONERS WORKING AT IMPACTS SECTOR TO MAKE MORE RELIABLE PRESENT AND CURRENT IMPACTS OF CLIMATE CHANGE OVER THE SOCIO-ECOSYSTEM
- ✦ CLIMATE MODELLERS TO MORE CONFIDENTLY GENERATE CLIMATE CHANGE SCENARIOS AT REGIONAL, SUB-REGIONAL AND NATIONAL SCALES
- ✦ MEDIA AND PUBLIC TO PUT IN CONTEXT ACTUAL VALUES (BOTH MEAN AND EXTREME VALUES)
- ✦ POLICY-MAKERS FOR ENHANCING CLIMATE CHANGE SERVICES
- ✦ ECONOMIC AND SOCIAL AGENTS AT REGIONAL, NATIONAL AND LOCAL LEVEL AND THE CITIZENS AND THEIR ORGANIZATIONS

### EXPECTABLE OUTCOMES OF ENHANCED DATA AVAILABILITY AND QUALITY

- ✦ IMPROVED KNOWLEDGE OF CLIMATE VARIABILITY AND CHANGE (LONG-TERM TRENDS ASSESSMENT AND FORCING FACTORS OF CLIMATE VARIABILITY)
- ✦ ENHANCED AND MORE RELIABLE PRESENT AND FUTURE CLIMATE CHANGE IMPACT ASSESSMENTS: REDUCING THE UNCERTAINTIES ASSOCIATED WITH CLIMATE DATA AND MAKING THE ASSESSMENTS MORE RELIABLE
- ✦ MORE ROBUST AND RELIABLE CLIMATE CHANGE SCENARIOS GENERATION: REDUCING UNCERTAINTIES AND INCREASING CONFIDENCE ON REGIONAL MODEL OUTPUTS

# WHAT IS AVAILABLE AND WHAT WE NEED: MONTHLY SCALE

- ✦ HISTORICAL CLIMATE DATA SETS ARE STILL INSUFFICIENT FOR CONFIDENTLY ASSESSING CLIMATE VARIABILITY AND CHANGE, ITS FORCING FACTORS AND DEFINING THE BEST STRATEGIES TO ADAPT THE COUNTRIES SOCIO-ECOSYSTEM TO CLIMATE CHANGE IMPACTS
- ✦ LONG-TERM CLIMATE DATA AVAILABILITY ON A MONTHLY BASIS: A LIMITED SPATIAL RESOLUTION FOR THE LONGER TIME SCALES
- ✦ ACCEPTABLE ON A GLOBAL SCALE FOR THE TWO KEY VARIABLES (TEMP AND PREC), BUT NEED TO DEVELOP DATASETS FOR OTHER ECVs (AIR PRESSURE, CLOUDINESS, WIND, WATER VAPOUR...), AND A STILL LIMITED SPATIAL RESOLUTION FOR THE LONGER TIME SCALES OVER MANY REGIONS (AFRICA, SOUTH AMERICA, EASTERN AND NORTHERN MEDITERRANEAN, ETC.)
- ✦ NEED FOR THE DEVELOPMENT OF OTHER LONG-TERM ECVs DATASETS AND IMPROVEMENTS AT NATIONAL, SUB-REGIONAL AND REGIONAL SCALE

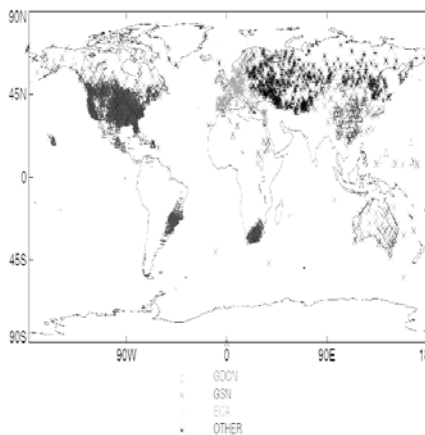


# WHAT IS AVAILABLE AND WHAT WE NEED: DAILY SCALE

LONG-TERM CLIMATE DATA ON A DAILY AND SUB-DAILY BASIS:

- ✦ WORST PANORAMA AT GLOBAL, BUT ABOVE ALL AT NATIONAL, SUB-REGIONAL, REGIONAL SCALES!
- ✦ RESTRICTED TO THE MID 20TH CENTURY (GLOBAL) AND SINCE 1970s FOR MOST OF DCs FOR TEMP AND PREC BUT HOMOGENEITY IS NOT PROVED
- ✦ SCARCELY FOR OTHER ECVs
- ✦ OTHER PROBLEMS:
  - ✦ INTEGRATED DATASETS OF CLIMATE CHANGE INFORMATION IN TERMS OF ATMOSPHERIC ECVs COVERING THE PAST 100 YEARS ARE TYPICALLY MISSING
  - ✦ INTEGRATION AND INTEROPERABILITY AMONG NETWORKS/DATASETS IS LACKING
  - ✦ DATA SHARING AND DATA ACCESS: ANOTHER UNSOLVED ISSUE

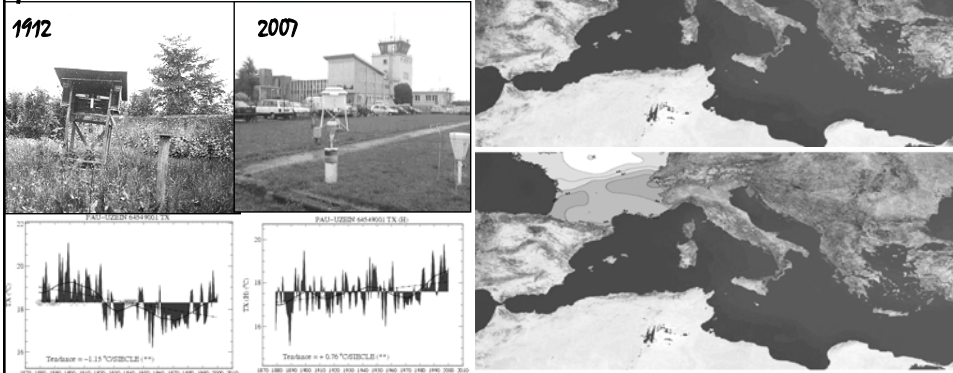
Stations with at least 28 years of daily precipitation data between 1961 and 1990



# NEED FOR DATA AND DATA HOMOGENIZATION

LONG-TERM, HIGH QUALITY AND HOMOGENEOUS INSTRUMENTAL CLIMATE DATASETS ARE STILL FAR AWAY OF BEING SUFFICIENT AND EASILY AVAILABLE AT NATIONAL, SUB-REGIONAL AND REGIONAL SCALES

NEED FOR DEVELOPMENT OF RELIABLE DATA



THE LIMITED CLIMATE DATA AVAILABILITY IS IMPEDING, AT THE NATIONAL, SUB-REGIONAL AND REGIONAL SCALES, THE ADOPTION OF THE BEST STRATEGIES TO MINIMIZE AND ADAPT TO THE PRESENT AND FUTURE IMPACTS OF CLIMATE VARIABILITY AND CHANGE ON THE SOCIO-ECOSYSTEM, AS IT IS THIS LONGER TIME SCALE THAT IS NEEDED FOR GOVERNMENTS TO IMPLEMENT THEIR CLIMATE CHANGE ACTION PLANS

# CLIMATE DATA CHALLENGE

- DARE PARADOX !! LONG-TERM CLIMATE DATA IS A PREVIOUS AND ESSENTIAL NEED, BUT ALMOST NOBODY WANTS TO SUPPORT THEIR RESCUE !!
- ARE WE BUILDING OUR HOUSE STARTING BY THE ROOF???

ALTHOUGH BIG EFFORTS ARE BEING PAID BY INTERNATIONAL (WMO) AND NATIONAL BODIES (NMHSs, UNIVERSITIES, RESEARCH INSTITUTES, ETC.) FOR RECOVERING/MAKING AVAILABLE CLIMATE DATA, THERE IS NOT STILL GOOD/ENOUGH SPATIAL AND TEMPORAL COVERAGE OF THESE DATA FOR CONFIDENTLY UNDERTAKING ASSESSMENTS ON, *i.e.* CHANGES IN CLIMATE EXTREMES: A PRESSING SOCIO-ECONOMICAL AND POLITICAL REQUEST

# WMO'S CLIMATE DATA-RELATED ACTIVITIES

## AT GLOBAL SCALE:

- WMO PROGRAMS, PROJECTS AND ACTIVITIES ON OBSERVATIONS, DATA MANAGEMENT AND DATA EXCHANGE: WWW, SPACE PROGRAMME, GCOS, WCDMP
- WMO LEADING ROLE IN DARE SINCE 1980s

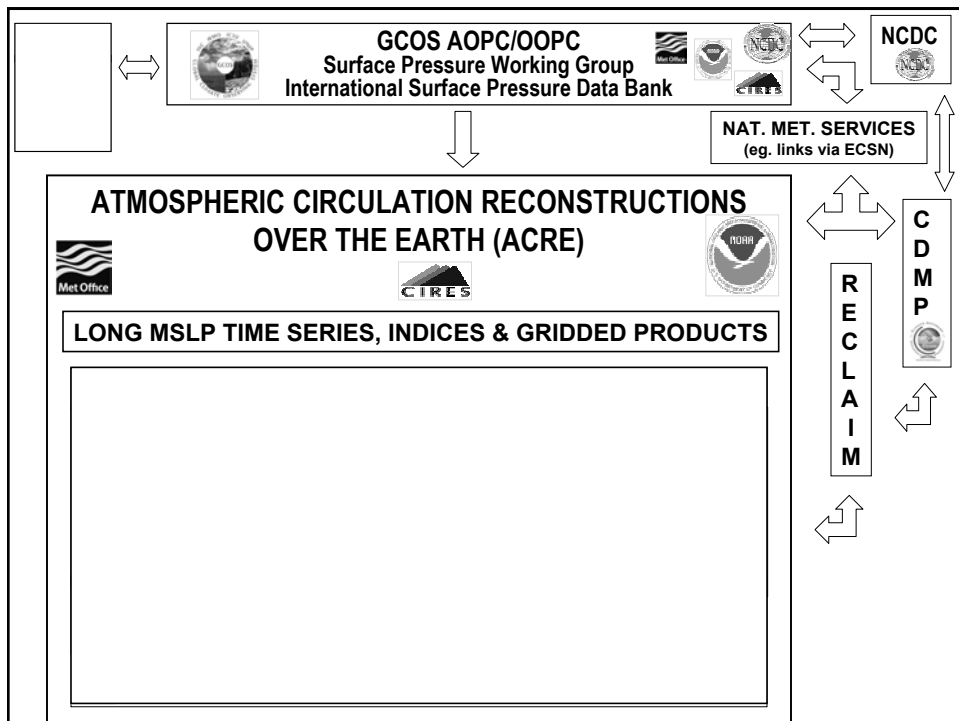
## Climate Data Management Systems (CDMSs)



## WCDMP CLIMATE DATA AND DATA MANAGEMENT

### CURRENT PRIORITY ACTIVITIES

- ✦ IMPLEMENTATION OF NEW CDMS TO ENSURE BETTER DATA MANAGEMENT INCLUDING NEW TYPE OF DATA AND QUALITY MANAGEMENT
- ✦ ESTABLISH STANDARDS FOR THE EXCHANGE OF METADATA AND THE NEEDS FOR WIS
- ✦ GUIDE ON THE CHOICE OF INSTRUMENTS AND SENSORS AND BASIC CHARACTERISTICS OF CLIMATE NETWORKS AND THEIR OBSERVATION
- ✦ BEST PRACTICES FOR LONG TERM HOMOGENEITY OF CLIMATE DATA
- ✦ GUIDANCE AND PROCEDURES FOR IMPROVED DATA EXCHANGE TO MEET GCOS REQUIREMENTS AND PRINCIPLES
- ✦ DATA RESCUE AT RISK OF LOST AND OR DEGRADATION



# THE WMO/MEDARE INITIATIVE (I)

<http://www.omm.urv.cat/MEDARE/index.html>

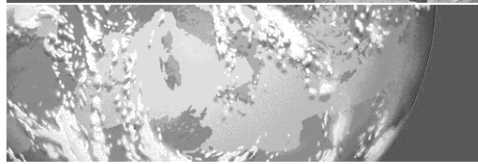
**LONG TERM MEDARE'S GOAL IS:**

**TO DEVELOP A HIGH QUALITY INSTRUMENTAL CLIMATE DATASET FOR THE GREATER MEDITERRANEAN REGION (GMR)**

**HOW ?**

- ✚ SEEKING AND MOBILIZING RESOURCES AT NATIONAL, REGIONAL AND INTERNATIONAL LEVELS
- ✚ UNDERTAKING SPECIFIC DATA RESCUE (DARE) PROJECTS IN A COLLABORATIVE FUNDING CONTEXT
- ✚ DEVELOPING A WEB-BASED DATA AND METADATA EXCHANGE INFRASTRUCTURE
- ✚ TRAINING YOUNG SCIENTISTS IN DARE TECHNIQUES AND PROCEDURES
- ✚ RAISING AWARENESS AMONGST NMHS MANAGERS AND STAFF, STAKEHOLDERS, POLICY-MAKERS, SOCIAL AGENTS AND SOCIETY
- ✚ CAPACITY BUILDING OVER MED IDCs AND DCs

WCDMP  
MEDARE initiative



- Workshop MEDARE
- MEDARE Workshop outcomes
- The MEDARE Initiative
  - What is MEDARE?
  - Rationale and background
  - Goal and objectives
  - The MEDARE community
  - Data inventory

# THE WMO/MEDARE INITIATIVE (II)

<http://www.omm.urv.cat/MEDARE/index.html>

**WHO ?**

**NMHSs, UNIVERSITIES, CLIMATE INSTITUTIONS, INTERNATIONAL DATA ARCHIVING CENTRES, INTERNATIONAL CLIMATE DATA PROJECTS AND NETWORKS**

**THE KEY ELEMENTS IN THIS ENTERPRISE ARE**

**COLLABORATION, PARTNERSHIP, INFORMATION SHARING, MULTILATERAL PROJECTS, NETWORKING**

**AND WE ARE ORGANISED THROUGH**

- WG1 ON OLD MATERIAL SOURCES AND HOLDERS.
  - WG2 ON DARE TECHNIQUES AND PROCEDURES (INCLUDING DIGITIZATION).
  - WG3 ON QUALITY CONTROLLING AND HOMOGENIZING SPECIFIC CLIMATE VARIABLES.
  - WG4 PROMOTIONAL ACTIVITIES
- WHAT WE NEED?**  
**RESOURCES, BOTH FINANCIAL AND HUMAN**



# WHAT MORE SHOULD BE DONE, THEN?

## SOME PROPOSALS TO BE ADDRESSED AT NATIONAL SCALES:

- ✦ FOSTERING DARE ACTIVITIES ALL OVER THE WORLD AND ESPECIALLY OVER LDCs AND DCs: i.e. DEVELOPING LONG-TERM HISTORICAL CLIMATE DATASETS AT REGIONAL SCALE AND HIGH-SPATIAL RESOLUTION CLIMATE DATASETS AT NATIONAL LEVEL
- ✦ MOBILIZING RESOURCES (FINANCIAL AND PERSONAL) IN A MULTI-APPROACH AND COOPERATIVE WAY: NMHSs, UNIVERSITIES, INDIVIDUALS...
- ✦ RAISING AWARENESS AMONG STAKE HOLDERS, POLICY MAKERS, NATIONAL AND INTERNATIONAL BODIES AND PROGRAMMES
- ✦ TRAINING AND DEMONSTRATION ON DARE
- ✦ CAPACITY BUILDING FOR LDCs AND DCs
- ✦ RESEARCHING ON DARE TECHNIQUES AND PROCEDURES
- ✦ IN SHORT, A DEEP INVOLVEMENT OF NATIONAL AND INTERNATIONAL BODIES ON THE ENTERPRISE

**THANKS**