

6th Antarctic Meteorological  
Observation, Modeling, &  
Forecasting Workshop  
Tasmania/Antarctica Region,  
Australian Bureau of Meteorology

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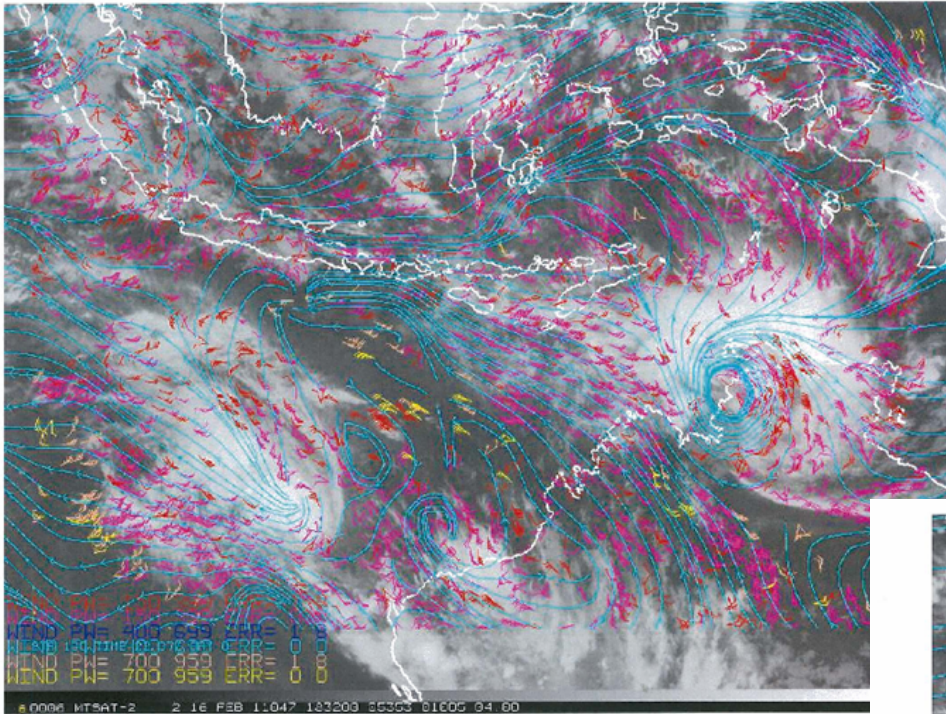


# Welcome to AMOMFW

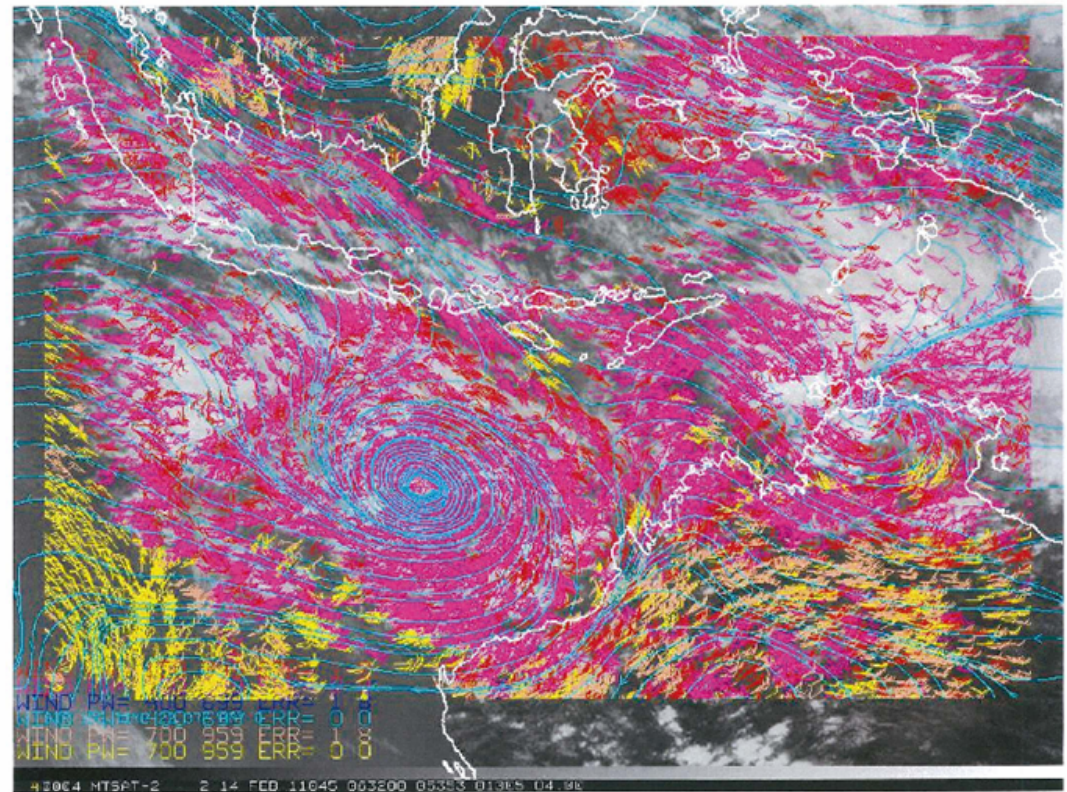




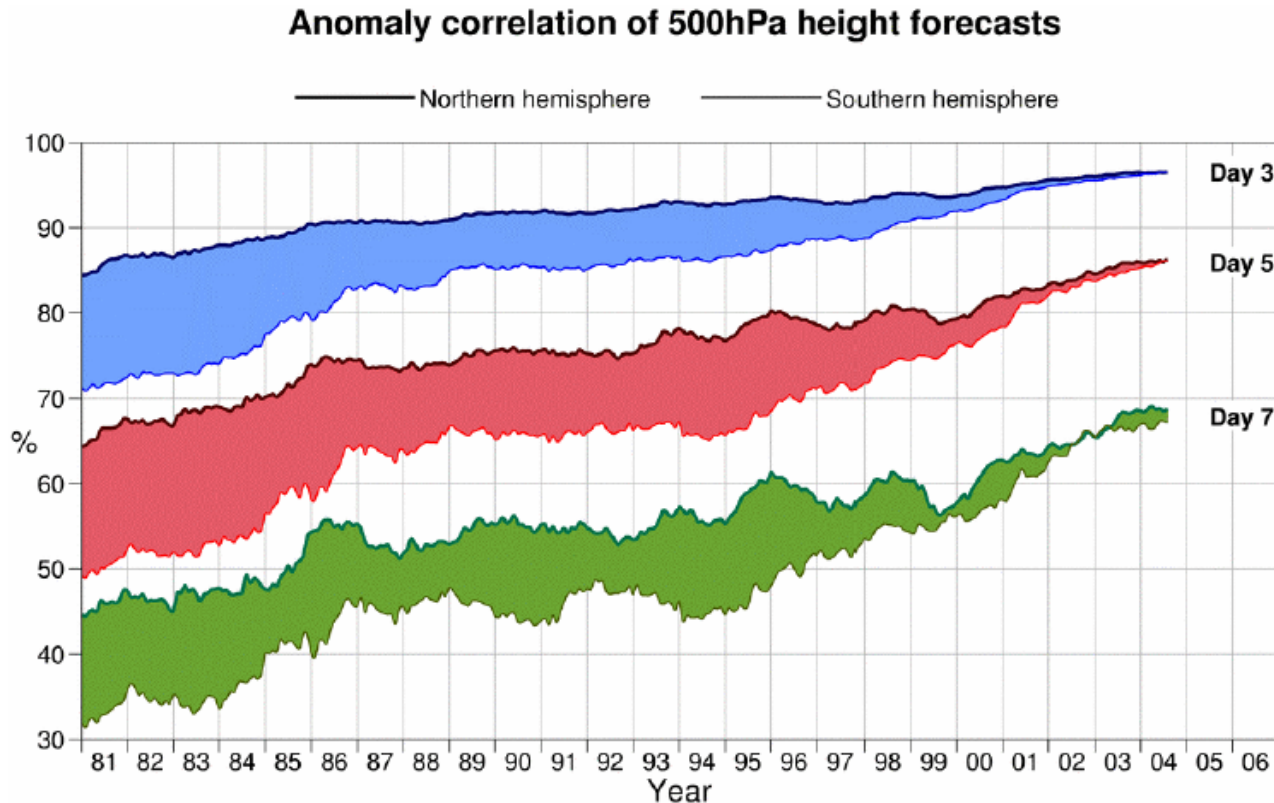
# Observations – satellite data



- Obtain temperatures at various levels and from that derive wind strengths.
- Still requires some ground truthing for calibration
- One reason why Antarctic obs are so important



# Progress in Weather Forecasting



## Improvements due to

- Increased supercomputing
  - Improved forecast system (model, physics, initialisation strategy)
  - New observing networks – principally satellite instrumentation
- Incremental change over long periods
  - Rarely a radical leap in skill
  - Each model builds upon the last and brings an improvement over time



# Providing forecast support





**World Meteorological Organization**  
Working together in weather, climate and water

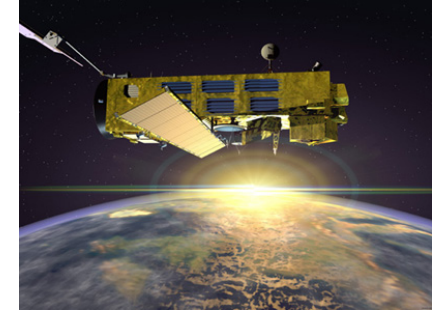
***Introduction to Activities of EC Panel of  
Experts on Polar Observations,  
Research and Services***

**Side Event on Strengthening WMO Polar Activities  
“Observing the Cryosphere with 2020 Vision”**

Geneva, 23 May 2011

*David Grimes and Greg Ayers  
Co-chairs, EC-PORS*

# WMO Executive Council Panel of Experts on Polar Observations, Research and Services (EC-PORS)



Following the recommendation of Cg-XV in 2007:

WMO Executive Council (EC-LX, June, 2008) established the EC-PORS to assist it in its oversight of WMO Polar activities:

Driven by the International Polar Year (IPY2007-2008)

WMO Members (18) nominated **24 experts** to participate (chaired by Greg Ayers and David Grimes )

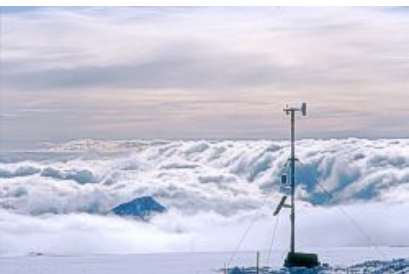
**entry point** to all WMO Programmes and to external partners seeking to collaborate with WMO **on polar activities**

Focus on *integrating programs in polar regions*

Program coordination for *Antarctica*

Development of Implementation Strategy for *Global Cryosphere Watch (GCW)*

*Aim is to bring observations, research and services together allowing WMO to maximize the value of its and its partners' investments in Polar Regions*



# ***A FOCUS ON THE POLAR REGIONS***

Significant influence on polar and global weather, climate, water and related environmental matters:

**Impact global climate and sea level**

**Early warning signal**

**Interactions with lower latitudes**

**Changes ocean biological productivity (food security)**

**Changes have direct socio-economic impact regionally and globally**

Polar observations are critical for improved regional and global forecasts, but polar regions are highly under-sampled



# *Collaboration/Engagement is Essential for Observations, Research, Services in WMO Polar Activities*



“Services” are the driver that anchors the Panel’s work

Strengthen the interface with users including research community, northern peoples, economic sectors – essential for any IPY follow-on

Partnerships are critical

WMO Technical Commissions (CAS, CBS, CCI, CHy, CIMO, CAgM, CAeM, JCOMM), Regional Associations, WMO Programmes, co-sponsored WCRP, GCOS; and their projects and activities

Intergovernmental Organizations (e.g. UNESCO/IOC.....)

International Collaboration (e.g. Arctic Council/AMAP, ATCM, GEOSS, IAATO, COMNAP, FARO, AMOMWF, PCOF, .....)

Scientific Bodies (e.g. SCAR, IASC, IPA, APECS, IASSA.....)

International Activities (e.g. GFCS, IICWG, Arctic-HYDRA, IPY.....)

IPY Legacy (GCW, GIPPS, SAON, SOOS, iAOOS,.....)

# Services

Conducted an **initial survey** of weather, water, and climate products and services currently available in the Polar Regions which included user/customer perspectives on additional or emerging service requirements

Responses indicate that there is a **wide variety of services and products** being offered over most time and spatial scales, especially for weather, marine, hydrology and aviation

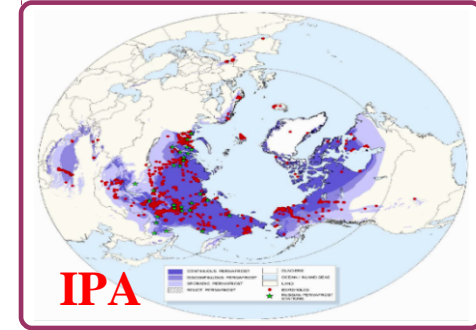
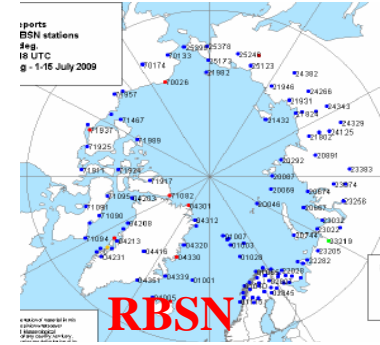
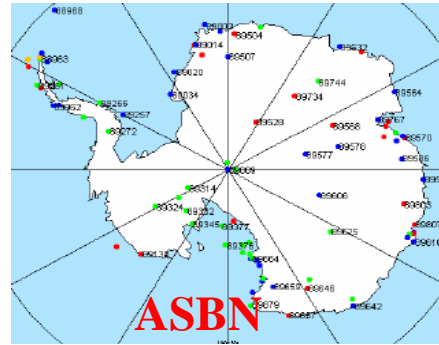
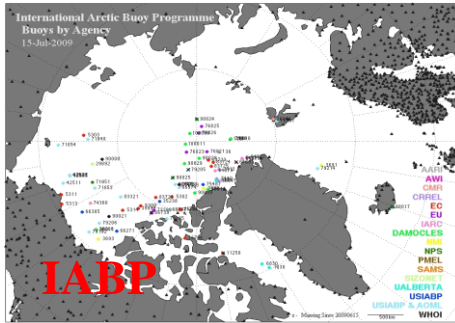
**relatively small number of climate products and services** highlighted a particular need in this area and it was noted that the EC-PORS should consider the role of **Polar Climate Outlook Forums** to fill this gap

will consider **how to integrate its activities with the GFCS** and to take the opportunity to drive the narrative on polar climate services.

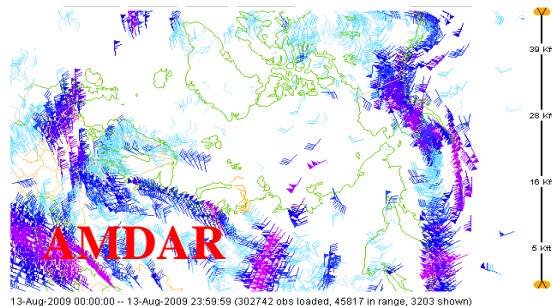
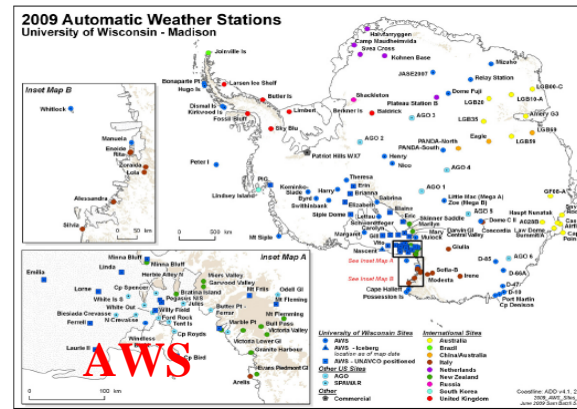
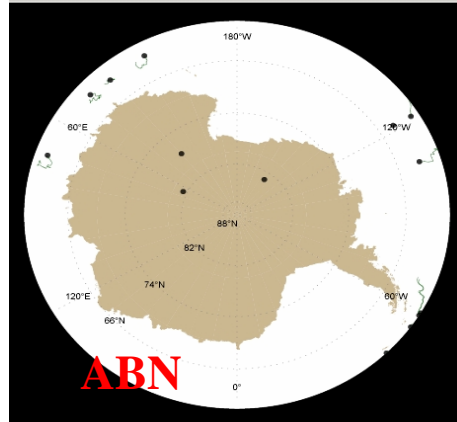
Services Task Team will be completing its survey and analysis which will be used as input to a **services “white paper”** to serve as a basis for GIPPS and as input to the WMO Strategic and Operational Plan, and framework for member/partner capabilities and investments

# Polar Network of Networks: GOS forms a core

*Challenge of sustaining and funding networks in remote harsh, cold environments and new networks established during IPY and meeting challenges associated with automation*



**Sea Ice**



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- Joint Programmes**
- GAW
  - WCRP
  - Arctic HYCOS
  - GCOS (GOOS, GTN-P, GTN-G)



*Especially critical for Success of IPY Follow-on Activities*



# *Polar Observations*

EC-PORS is proposing to WMO Congress to integrate all Antarctic networks into an Antarctic Observing Network (**AntON**), comprising all operational stations, all of which should produce climate messages to enhance climate monitoring

Essential nature of remote sensing/Space assets, especially for the cryosphere

**Polar Space Task Group (PSTG)** – co-ordinate polar observational requirements solicited from wide stakeholder group, including science community and end users and work with space agencies and WMO Space Programme on implementation.

Need to consider **user requirements**, **new technologies**, updated **standards** for sustainability of observing systems; identify and close observation **gaps** (e.g. oceans and land); promote **interoperability** with other polar observing networks

CIMO Intercomparison on Solid Precipitation including Snowfall and Snow Depth Measurements in various regions of the world is important

**Supersites** for multidisciplinary, integrated environmental monitoring

The **“Third Pole”** (Himalaya and Tibetan Plateau)

After a Member’s suggestion, EC-LXII decided that the main issues were cryospheric, and should be addressed by the Global Cryosphere Watch (GCW)

# **GLOBAL CRYOSPHERE WATCH (GCW):** **A WMO Initiative - an IPY Legacy**

*observation, monitoring, assessment, product development,  
research through to prediction*

***To meet the needs of WMO Members and partners in delivering services to users, the media, public, decision and policy makers, GCW will provide authoritative, understandable, and useable data, information, and analyses on the past, current and future state of the cryosphere.***

- GCW will involve WMO (technical departments, co-sponsored activities, TC's, RA's), national and international scientific programs and institutes, other inter-governmental organizations, academia... ***Partnering is essential***
- GCW is a crosscutting activity contributing to all **five priority areas** and to achieving the expected results of all Strategic Thrusts of the WMO Strategic Plan 2012-2015
- GCW will be an **essential component of WIGOS**, strengthen the WMO **contribution to the GFCS**, and **contribute to an IPD** should one be implemented
- Currently, 35 Members from all WMO Regions have nominated **GCW focal points** to be involved in the development of GCW globally and nationally
- GCW **Implementation Strategy** developed by EC-PORS has been submitted to Cg-XVI, including a **draft Resolution, for their consideration**

# ***Global Integrated Polar Prediction System (GIPPS) Polar Prediction System as a unifying focus***

Recognizing the need for an immediate, high-level and sustained focus on polar prediction, EC-PORS agreed to the concept for developing a **major decadal initiative** entitled the **Global Integrated Polar Prediction System (GIPPS)** that would:

- involve the Earth System approach, from daily to seasonal to decadal and longer timescales, **responding to societal needs**
- stimulate the **integration of environmental observations** to enhance prediction systems
- provide forecasts, predictions, projections and related information** for governments and relevant socio-economic sectors, contributing to the Global Framework for Climate Services

A polar prediction system will draw upon, and coordinate, many research and operational elements of WMO and related agencies, of national modelling centers and of other polar science organizations into a common purpose.

**Partnerships** will be critical – technical commissions, AMPS, AMOMWF,

SCAR, IASC, ICPM, WMO Global Producing Centres (e.g. ECMWF, NCEP)

Essential contribution of **major research programs and activities**, notably

**WWRP-THORPEX Polar Prediction**

**WCRP – Predictability of Polar climate**

*A polar prediction system could provide a central motivating idea for IPD*



# ***International Polar Decade (IPD)***

*St. Petersburg Workshop, 14-15 April 2011*

Representatives from key international environmental organizations as well as of leading polar associations and institutions (including AMAP, IASC, COMNAP) have **unanimously supported an IPD initiative and recommended that the IPD would start beyond 2015** to involve existing programs and available resources and allow them to align to a set of agreed decadal scale polar initiatives.

Workshop concluded that any **scientific efforts under the auspices of an IPD must be aligned to meeting broad societal needs**, such as WMO desired societal outcomes, and be anchored on delivering better, more reliable scientific information to inform risk-based decision and policy making activities in the Polar Regions, potentially being a strong contribution to GFCS.

funding agencies (international and national) of polar research, relevant international organizations, and main polar agencies and operators should be engaged in discussions at the earliest possibility.

At IPY 2012 in Montreal, a **draft IPD Concept Document**, prepared by a Steering Group established by relevant Intl organization, would be reviewed, corresponding community decisions recommended, and possible commitments expressed.

Key themes for this workshop are:

Collaboration and discussion on the relationships surrounding-

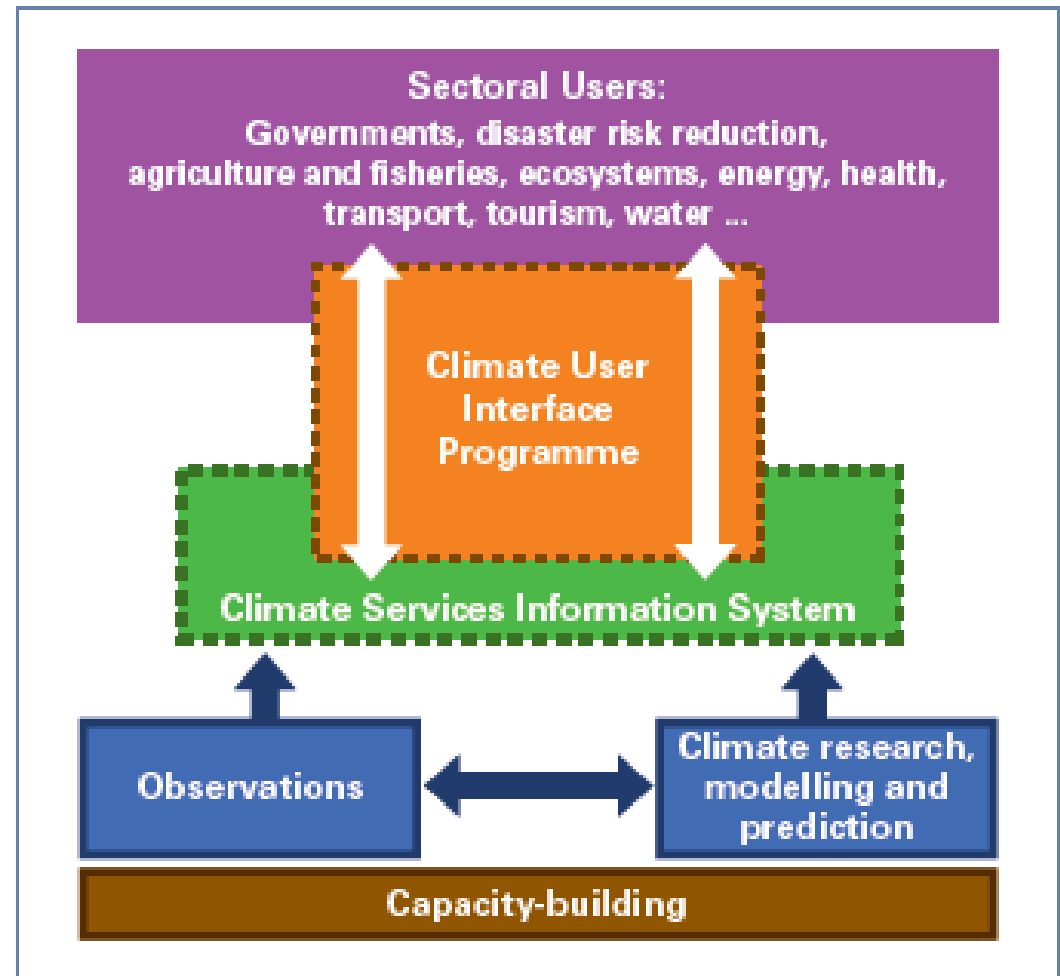
- International AWS networks
- Antarctic weather observations
- Antarctic numerical weather prediction, modeling and forecasting
- Antarctic meteorological research

Which really fits very neatly into the EC-PORS

# ***Polar Activities contribute to WMO Priorities***

## ***Working together in Polar Regions and Beyond...***

- Understanding polar processes relates to all WMO priorities
- Proposed concrete actions and an agenda forward for WMO's role
- Established improved linkages within and outside of WMO
- Articulated 6 resolutions on the forward for Congress





Thank you and good luck this week!

