



World Meteorological Organization
Working together in weather, climate and water

Workshop on the impact of SLP from drifters on NWP, Sedona, 21 May 2012

Data Buoy Cooperation Panel perspective

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The Data Buoy Cooperation Panel (DBCP)

- An official body of
World Meteorological Organization (WMO)
Intergovernmental Oceanographic Commission (IOC)
- Created in 1985 for coordinating drifting buoy programmes
- Moored buoys in the high seas included in 1993
(essentially for the tropical moored buoys, but other meteorological moorings also considered later)



Principal DBCP Objectives

- Review and analyse requirements for buoy data.
- Co-ordinate and facilitate deployment programmes to meet requirements
- Initiate and support Action Groups
- Improve quantity and quality of buoy data on GTS
- Information exchange and technology development
- Liaison with relevant bodies and programmes.



Principal DBCP modes of action

- 10 Action Groups (4 global, 6 regional)
- Technical Coordinator (Kelly Stroker, JCOMMOPS)
- Seminars and workshops
- Technical publications (best practices, annual reports)
- Annual panel meetings
- Web site (<http://www.jcommops.org/dbcp/>)
- Mailing lists, e.g.
 - DBCP general: dbcp@jcommops.org
 - DBCP NFPs: dbcp-focalpoints@jcommops.org
 - Reporting of systematic errors: dbcp-qc@jcommops.org

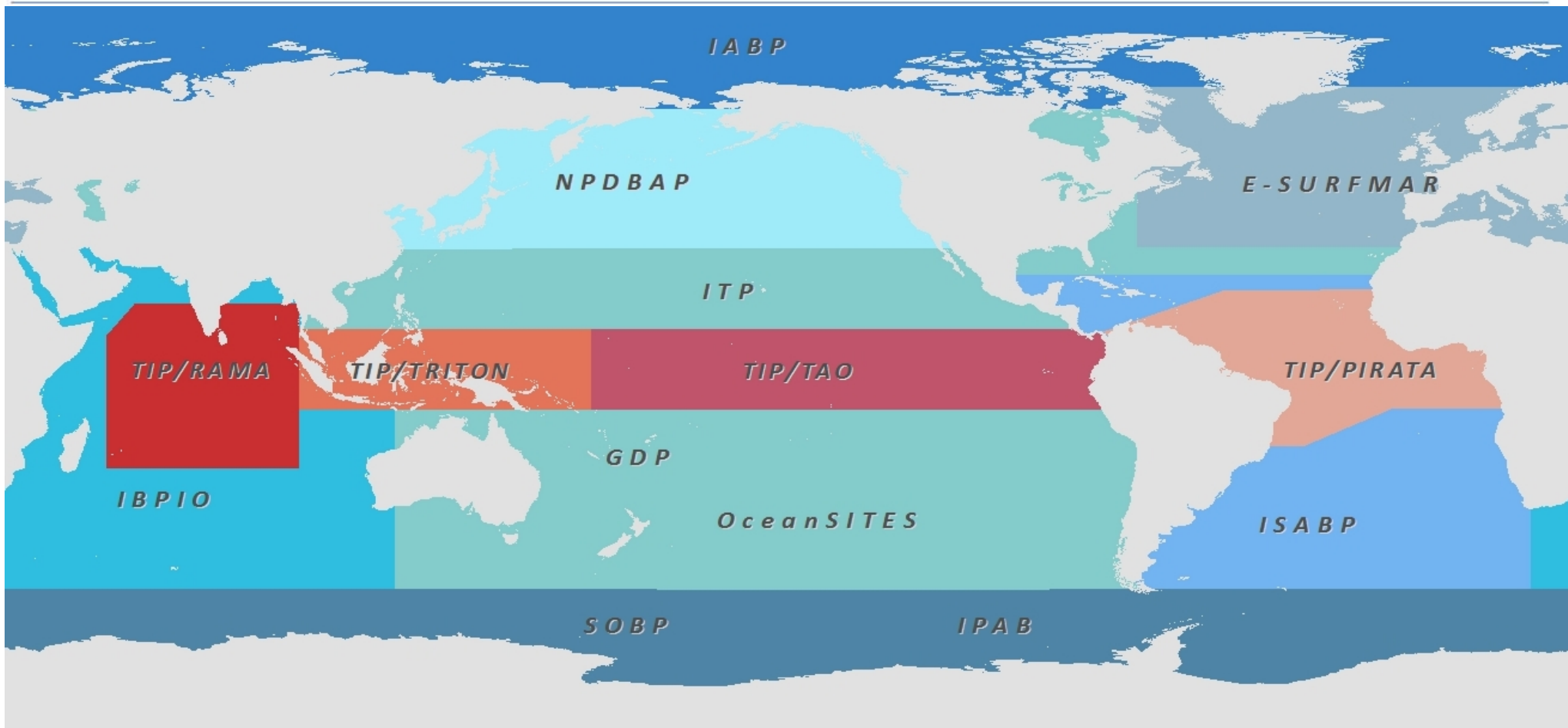


DBCP Action Groups

- Independent self-funded body that maintains an observational buoy programme in support of the WWW, WCRP, GCOS, and GOOS. They commit themselves to
 - Provide good quality Data
 - Distribute real-time data on GTS
 - Exchange information on activities and development
 - Submit annual reports to the DBCP
- DBCP supports AG activities and may assist AG through DBCP officers, Technical Coordinator, and WMO and IOC secretariats.

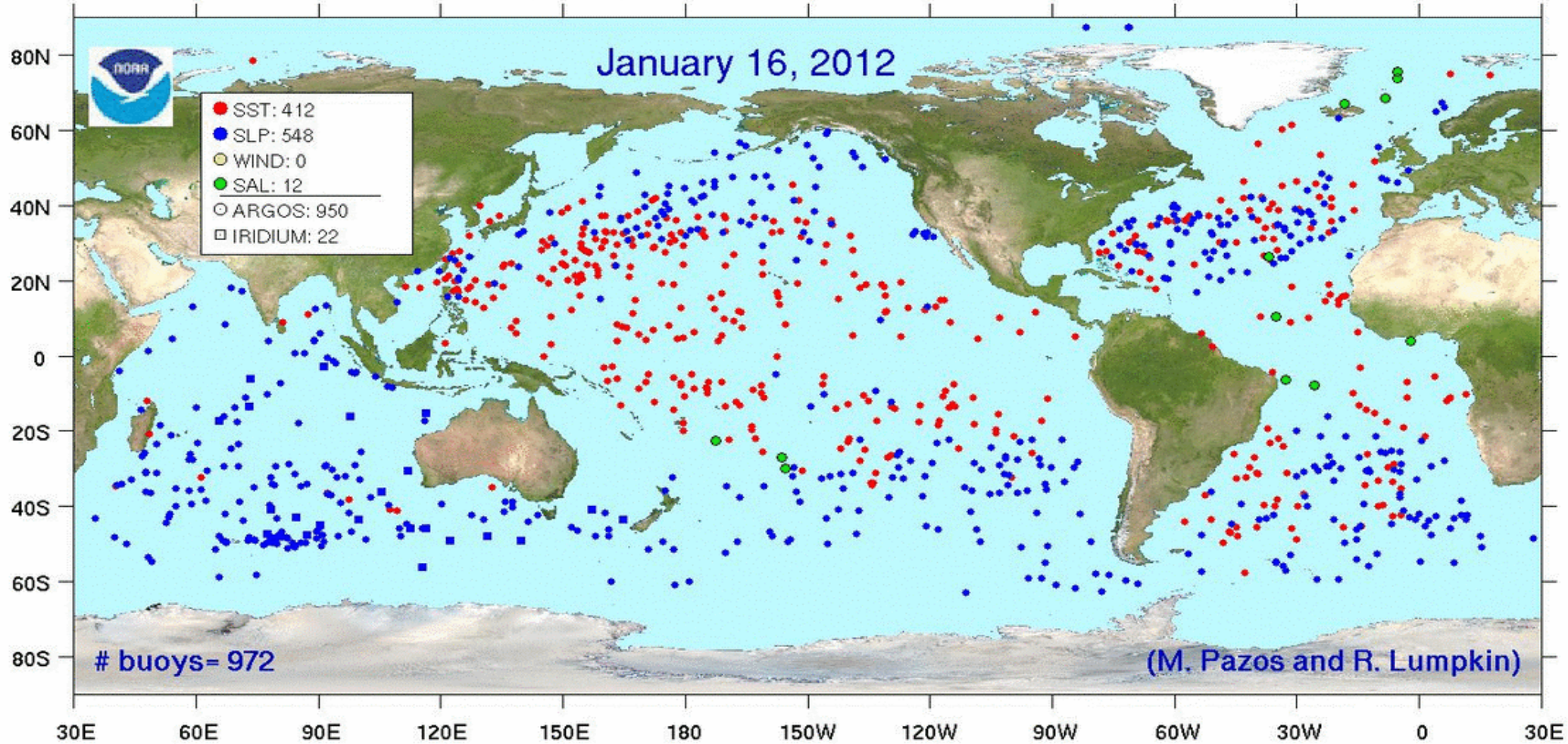


Action Groups

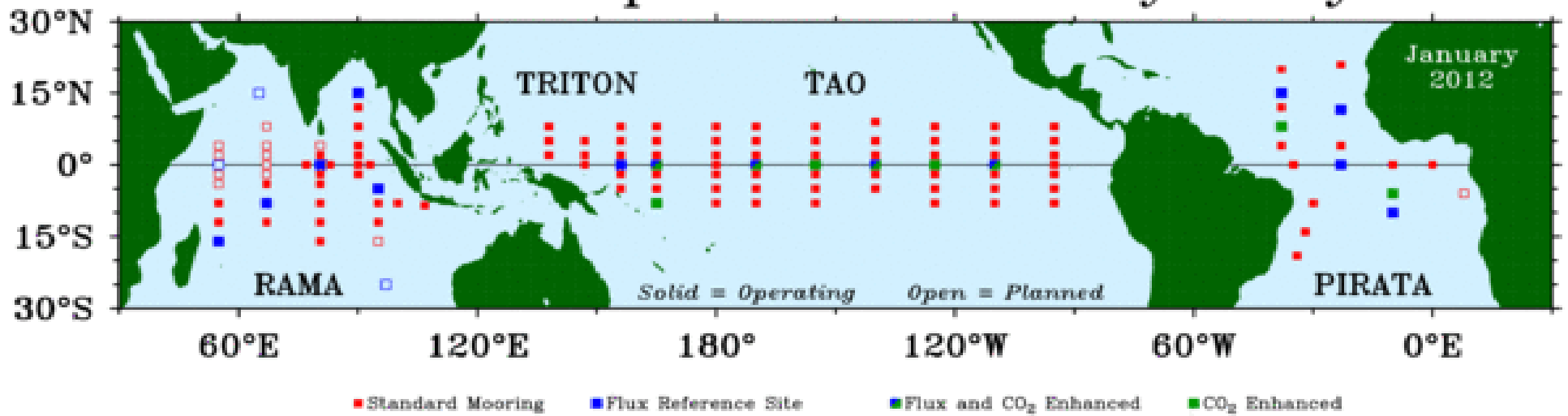




STATUS OF GLOBAL DRIFTER ARRAY



Global Tropical Moored Buoy Array

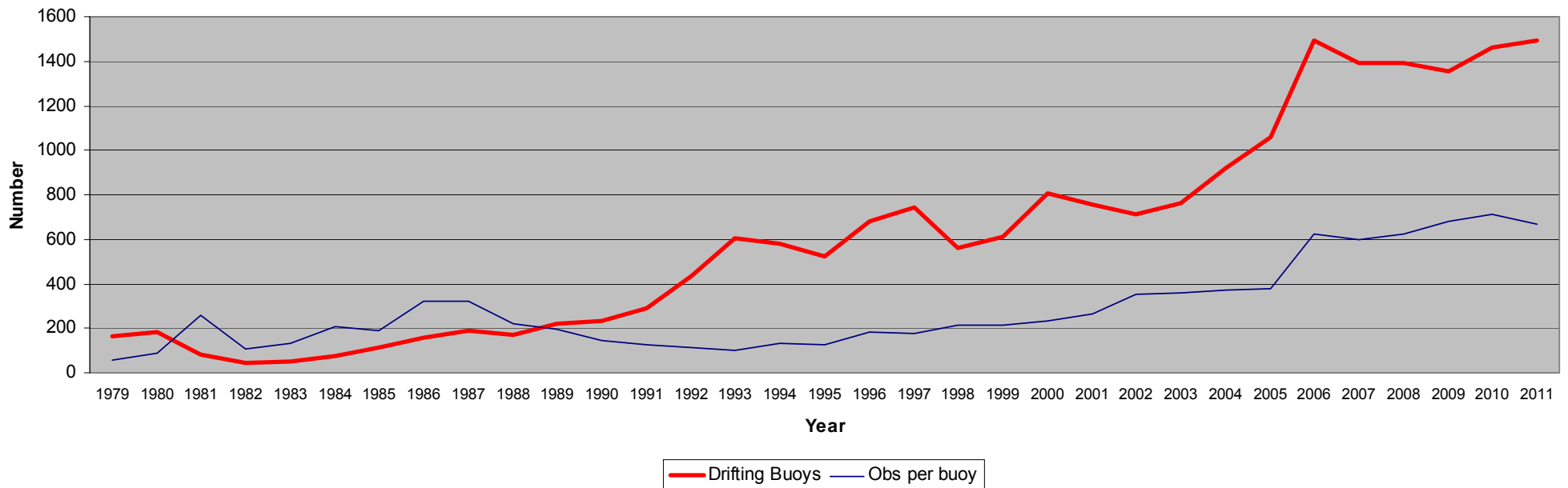


TAO Project Office, NOAA/PMEL



Evolution of number of operational buoys since 1979

Number of drifting buoys reporting on GTS, and number of observations per buoy (source ISDM)





DBCP Implementation Strategy

- Meant for the DBCP and its Action Groups
- In support of Global and National programmes under WMO & IOC
- Contributing to GOOS, GCOS, WIGOS Implementation
- Now considering WIGOS and GFCS needs
- Autonomy of Action Groups recognized



Requirements addressed

- DBCP is essentially responding to the JCOMM Observations Programme Area Implementation Goals, which in turn are responding to the climate monitoring requirements (GCOS-IP).
- By addressing climate monitoring requirements, most of the requirements for other application areas such as NWP and Ocean Applications (e.g. marine services) are considered to be met to a large extent.
- **Goal of 1250 operational drifters in the world ocean (i.e. about 500 km x 500 km resolution)**



Requirements addressed

- DBCP also addressing the WWW requirements
 - Meteorological Services deploying drifter networks (e.g. Canada, EUCOS, South Africa, Australia, New Zealand, Japan)
- Other requirements e.g.
 - Sea level 1hPa // 1 cm => El Niño
 - Maritime services (safety, ship routing, search & rescue)
- DBCP promoting data sharing, GTS distribution, and metadata collection through Technical Coordinator
 - Identify buoys not reporting on GTS, and working pro-actively with buoy operators to convince them to share data
 - Providing technical assistance to realize GTS distribution (Argos, WMO numbers, data processing)
- Quality Control
 - Simple automatic QC checks (DBCP TD No. 37)
 - NWP centres routinely providing feedback on data quality through JCOMMOPS, and systematic errors corrected
 - NWP centres providing buoy monitoring statistics (RMS of Obs-FG)



Addressing the SLP Requirements

- Goal of 300 barometer drifters South of 40S in the Southern Ocean
 - New goal of equipping all newly deployed drifters with barometers as part of the DBCP Implementation Strategy
 - Yet, only drifters deployed in extra-tropical regions are equipped with barometers
- ⇒ Knowing the impact of SLP in tropical regions would help the DBCP to refine its strategy
- ⇒ It would be useful to get estimates of the type of SLP capabilities that would be required in both tropical and extra-tropical regions (where, what density, what observing cycle, what uncertainty ?)



Addressing gaps

- DBCP is recommending to transmit high temporal resolution data (at least hourly)
- There are some identified data sparse areas for SLP (polar regions, North Pacific, NE tropical Pacific, Arabian Sea, Gulf of Guinea, Southern Ocean) where it would be useful to know the potential impact of filling those gaps.
- The DBCP is supported by ten global and regional Actions Groups, but is also directly coordinating the implementation of buoy networks in areas not covered by the Actions Groups
 - Southern Ocean
 - Black Sea
- The Technical Coordinator of the DBCP is maintaining a list of impact studies, and the workshop is invited to keep her informed (support@jcommops.org) of recent results.
http://www.jcommops.org/dbcp/doc/Impact_studies_data_buoys.pdf



Cooperation Oceanography // Meteorology

- There is a mix of drifters deployed under research programmes for ocean/climate research, and by operational meteorological agencies for NWP.
- Both cooperate to make sure the drifters meet both communities requirements
 - Oceanography: Lagrangian drifter with SST sensor and good water following characteristics (small spherical hull, drogue at 15m, slip due to wind stress corrected using simple model);
 - Meteorology: Can be optionally equipped with a barometer (SVPB)
 - Both communities cooperated in the 1990s to develop and test the SVPB
 - Operational SVPBs now purchased by Met. Agencies (>150 units)
 - NOAA/AOML SVPB upgrade scheme allows met. Services to purchase barometer only (the rest, including satcom is paid by NOAA)



Cooperation Oceanography // Meteorology

- Currents costs

- Standard SVP drifter (SST only): \$1550
- Barometer upgrade cost: \approx \$1400
- Drogue cost: \$300
- Argos costs: \$1200 (US/GDP), \$2600 (others)
- Iridium cost: \$260 (most meteorologists use Iridium; most oceanographers use Argos)
- Life-time: about 1 year

- Current cost sharing

- Meteorologists: 120 to 150 SVPBs; 100 barometer upgrades
- Oceanographers: 720 SVPs, 295 SVPBs



Cooperation Oceanography // Meteorology

- Risks

- Oceanographers not installing barometers on their drifters (e.g. Southern Ocean) forcing meteorologists to catch up the costs (e.g. barometer upgrades)
- Meteorologists removing the drogue from the drifters forcing oceanographers to purchase more drifters to achieve the required density or purchase drogue upgrade
- Overall increased costs to Meteorologists in the order to \$370k/year to keep the same level of barometers (and equivalent economy to oceanographers)
 - 68% of current Meteorologists commitments (\approx \$575k) – Huge impact
 - 13% of current Oceanographers commitments (\approx \$3200) – Small savings



Materials

Material	URL
DBCP website	http://www.jcommops.org/dbcp/
DBCP Session Reports	http://www.jcomm.info/jcomm-mr
DBCP Publications, e.g. <ul style="list-style-type: none">• DBCP Annual Reports• Proceedings at DBCP Scientific and Technical Workshops)• Best practices and standards	http://www.wmo.int/pages/prog/amp/mmop/dbcp_reports.html
DBCP Operating Principles	http://www.jcommops.org/FTPRoot/DBCP/meetings/2011/dbcp/DBCP-Operating-Principles-2011.pdf
DBCP Implementation Strategy	http://www.jcommops.org/doc/DBCP/DBCP_Impl_Strategy.pdf
DBCP Achievements	http://www.jcommops.org/dbcp/doc/Operation-and-achievements-of-the-DBCP.pdf



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IOC Secretariat, Albert Fischer, a.fischer@unesco.org

National Focal Points for buoy programmes, <http://www.jcomm.info/dbcp-nfp>



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Thank You

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