



Meteorological Service of Canada

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MSC Marine Network

MSC VOS Fleet Status

- 154 VOS Ships reporting (to June) 2003
-28,000 Observations : 2003-01-01 to 06-01
- 300 VOS Ships reporting in 1995
-89,969 Observations (full year)
- Recruitment of human VOS ships by PMO's ended
- Maintenance continued (this year) on VOS ships

AVOS


- There are 19 AVOS systems operating in the network.
- SAR funding to supply 18 AVOS to accelerate MSC development of the AVOS fleet.
 - 3 AVOS/yr for 3 yrs
- Future :
 - 75 AVOS systems will replace the human based VOS network.
 - 2 PMO (spread over 5 regions)
 - Annual funding to replace 7 AVOS every year
 - Initially, use this replacement funding to build the fleet to 75.

AVOS Status

- Some technical issues being addressed
 - Poor INMARSAT Communications in the north. Power to be beefed up on vessels traveling to the North due to more frequent communications attempts
 - INMARSAT transmitter no longer available. Replacement hasn't been tested in the north although so far is working as well as the original. No spares for original.
 - AVOS onboard compass unable to give accurate winds in the north. Modification uses the ship's gyro instead. Sir Wilfred Laurier under test with Gyro Mod with Excellent results
- *These improvements are included in next purchase (2003)*

Cost For 1 AVOS

- Complete AVOS system \$47K CAD
 - Includes Electronic payload, sensors, bridge display and INMARSAT transmitter
 - Sentinel with AVOS options \$34,388.00
 - Compass KVH Autocomp 1000 \$ 1,624.95
 - Vaisala Barometer PTB210 \$ 2,763.57
 - RH&Temp Rotronics MP101A \$ 2,327.90
 - Radiation Shield Rotronics MP101A \$ 410.96
 - Anemometer RM Young 05103Q \$ 2,138.85
 - Sea Surface Temp Axys HATS \$ 1,589.00
 - External Battery enclosure (northern applications) \$ 1,874.11
 - - Total \$47,117.34
- Installation package - extra (usually \$5K)
- Ongoing Communications - extra

A sepia-toned photograph of a ship's deck. In the foreground, there is a metal railing. In the background, a large, curved structure, possibly a part of the ship's superstructure or a large container, is visible. The overall scene is somewhat hazy and has a historical feel.

The big change at MSC (the Meteorological Service of Canada)

MSC Marine Network

A bit of recent history

- Not so serious networks rationalization in the 1990's (no noticeable cost reductions)
 - Emotional binds to every components of network too strong for rational decisions
 - Essentially, MSC tried to maintain all networks
 - Band aid solution at best for all problems
- End result :
 - Most of MSC's networks were essentially rusting out during the last decade.
 - Rust-out
 - Obsolescence
 - Capacity issues
 - Some program fragmentation
 - Varying standards and procedures
 - Limited ability to pursue new technology

Samples of rusted-out networks

- Surface weather automatic stations
 - Technology past life expectancy by 10 years.
 - Stations were originally installed in late 1970's.
 - No parts procurable
 - No spares left
 - Any breakage means
 - that station cease to observe that parameter
 - Or the entire station is out of commission
 - Resort to cannibalizing a station to repair another

Samples of rusted-out networks

- Buoys
 - Not enough O&M funding to sustain the network
 - Relying on Strategy Capital for maintenance (e.g. painting, repairing moorings)
 - Must fight for allocation everytime
 - Never get full amount required
 - End up with only partial maintenance
 - Using spare parts without replacing them
 - Further rusting out of the network.

Willed Future

- National monitoring programs that are:
 - Coherent and cohesive
 - Cost-effective and sustainable
 - Integrated to the extent feasible
 - Relevant and responsive to stakeholders; and,
 - incorporate new approaches and techniques for observing key variables

Focusing for the Future

- Recognition that regardless of the resource envelope, MSC needs to establish sustainable programs.
- Objectives
 - To establish by 2004-04-01, with an assigned A-base budget :
 - Sustainable monitoring programs,
 - Life cycle managed
 - To stated standards, and
 - To defined operating procedures and processes

The big changes

- New financial funding process
 - Life cycle management
 - Yearly amount to replace the networks
 - Capitalization = Network Capital/life expectancy
 - Replace components of networks at end of their respective normal life cycle (i.e. life expectancy) rather than when they break.
 - Sustain network to stated quality level.

Sustainable networks

- Zero base budget
- Cost every operations and maintenance per station. (“the big/huge/monster spreadsheet”)
- Monitoring Budget divided in envelopes for each monitoring networks.
- For each network, there is a maximum number of stations that MSC can sustain within its respective envelope.
- Some networks are more critical than others

Marine Networks

- Buoy Network
 - Critical marine network
 - Fully sustained
 - Drifting buoys (8-10 new launched each year)
 - Moored buoys (45) Ocean and inland
 - Ice beacons (2 per year)
 - *As long as Canadian Coast Guard does not demand full cost recovery for ship servicing.*

Marine Networks

- VOS Network
 - Lower priority than buoy
 - 75 AVOS
 - Focus on data sparse areas
 - *Arctic*
 - *Along East and West Coast*
 - *Some inland lakes*
 - *Trans-oceanic routes*
 - *A few global routes*
 - *Maximize sailing time*
 - *Regular routes (e.g. containers ships, Japanese Car Carriers)*
 - *Coast Guard vessels (e.g. ice breaker routes)*
 - *Research vessel to be frozen in Arctic*

AVOS

- Maximize number of observations
 - Hourly observation in the North (data sparse)
 - Every 3 hours within 200 miles of Canadian coasts
 - Every 6 hours (SM) otherwise.

In the mean time

- All MSC's "retained" networks will be sustained
- Quality to be restored
- No rusting out
- Transition
 - Will probably take 7-9 years for some networks
 - Already seeing sustainability for Surface Weather network.

A crack in the wall

- Earth Observation Summit
 - Organized by USA
 - Aim at getting politicians to see/hear needs and benefits of monitoring
 - Attempt at creating new funding for Monitoring
- MSC already planning Treasury Board submission for “Monitoring networks as they should be” but ...
 - Long and tortuous process
 - No guarantee of success

Managing Technological Change

- National Monitoring Change Management Board (NMCMB).
 - to ensure orderly management of technological change:
 - NMCMB: regional and national managers, research scientists, informatics.
 - rigorous review process.
 - includes all of MSC's air monitoring networks
 - Includes marine networks
 - supported with test and evaluation.
 - qualifies sensors, systems, algorithms, supporting documentation.
 - *And changes*
 - web-based documentation and accountability.

A photograph taken from the deck of a ship, looking out over a dark, choppy sea. In the foreground, a metal railing is visible. In the middle ground, a satellite dish is mounted on a structure, with other equipment and cables visible. The text "The end" is overlaid in yellow in the center of the image.

The end

MSC Marine Network