Evaluation of SVP-B drifters reporting through Iridium

by

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First Prototype #508430

Modem - Antennae

Status (non exhaustive)

1- Four first (Metocean) prototypes deployed at sea

WMO 62508 (2006/10/26- 2007/02/21) (45°N/10°W – 48°N/5°W) – 118 days at sea*

*re-deployed WMO 44746 (2007/05/03 – 2007/09/28) (43°N/63°W – 44°N/47°W) – 148 days at sea

WMO 62509 (2006/11/18 –2007/07/07) (45°N/38°W- 46°N/13°W) 242 days at sea

WMO 44747 (2007/05/03-) (42°N/62°W-) In operation

2- GTS data processing developed and operational (FM 18 BUOY code) at Meteo France/CMM

3- 2 Metocean (WMO 25617 – 25618) deployed in the Arctic Ocean by 87°N.

-2 Marlin (WMO 61501(MF) – 61502 (SAMS)) deployed in the Black Sea.

4-New prototypes ready to be deployed: (2 Metocean, 2 Pacific Gyre, 1 Marlin) off Nova Scotia – in Indian Ocean (3) and in South Atlantic (7 Met Office, 1 SAMS)…

40 buoys in order for ESURFMAR – 10 ones by INCOIS

Data transmission

```
Subject: SBD Msg From Unit: 300034012521630
From: sbdservice@sbd.iridium.com
To: cmm-vos@shom.fr

MOMSN: 0
MTMSN: 0
Time of Session (UTC): Wed Aug 29 15:03:18 2007
Session Status: 00 - Transfer OK
Message Size (bytes): 18

Unit Location: Lat = 33.189004 Long = -117.313096
CEPradius = 2
```

Figure 2 *– Example of mail (body text) received from Iridium. The buoy data (binary) are attached to it*

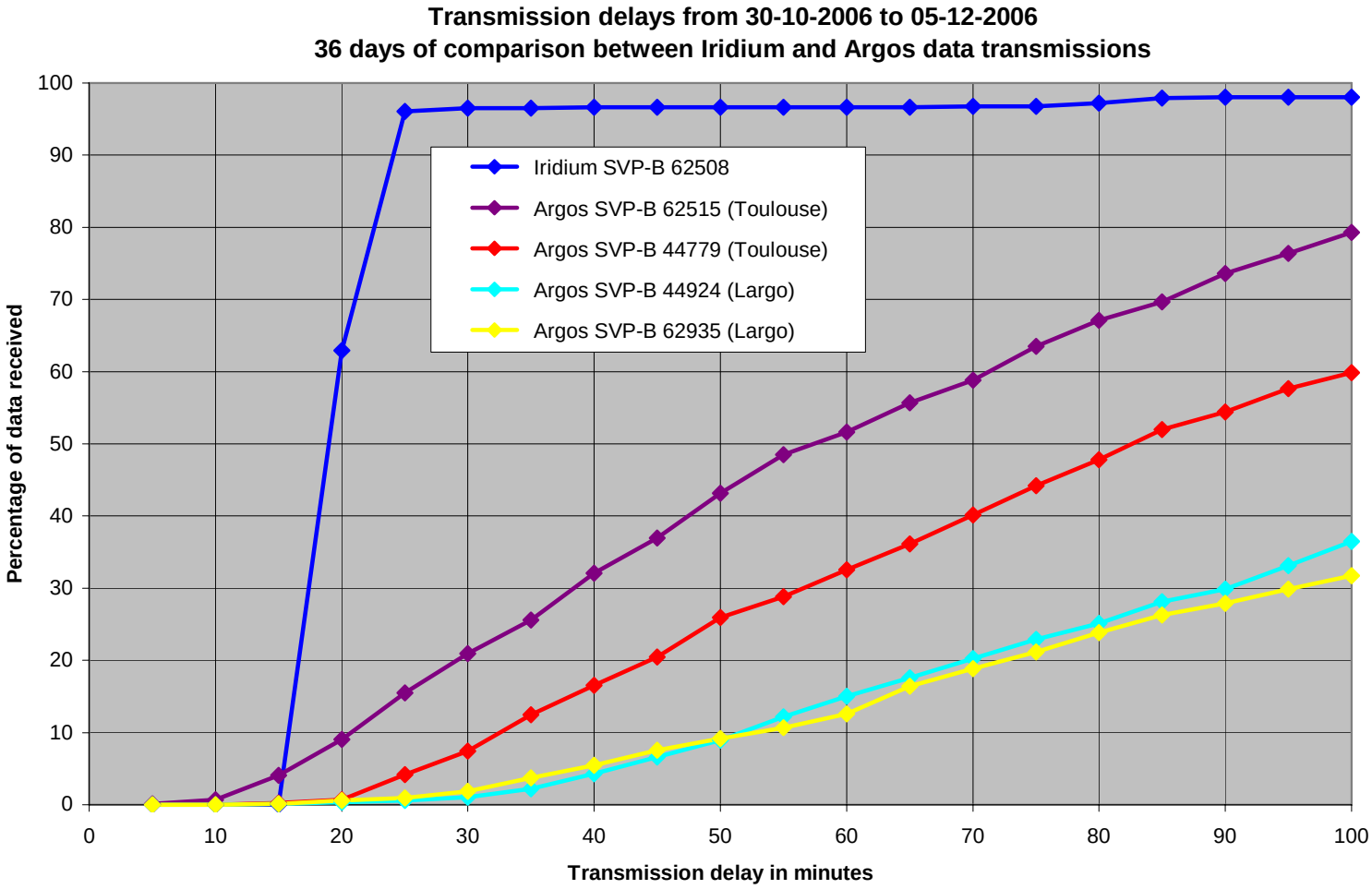
Format V3.2

Parameter	Bits	Pos	Min	Max	Formula
Mode	3	0	0	7	Fixed = 3 (011)
Observation time since 1st of January at 00:00	16	3	0	16382	Hour (UTC) = n * 0.25
Air pressure	11	19	850	1054.6	AP (hPa) = n*0.1 + 850
SST	9	30	-5	35.8	SST (°C) = n*0.08 - 5
Pressure tendancy	9	39	-25.5	25.5	dP (hPa) = n*0.1 - 25.5
Submergence count	6	48	0	100	Subm. (%) = n * 1.6129
Battery voltage	6	54	10.75	16.95	Vbat (V) = n*0.1 + xx[6]
Iridium transmission duration	8	60	0	254	SBDT (s) = n
2nd Iridium Tech. parameter	8	68	0	254	*See table 2*
GPS fix time since 1st of January at 00:00	16	76	0	16382	Hour (UTC) = n * 0.25
GPS Latitude	20	92	-90	98	Lat (deg) = n*0.00018 - 90
GPS Longitude	21	112	-180	197	Lon (deg) = n*0.00018 - 180
1st GPS Technical parameter	7	133	0	126	*See table 2*
2nd GPS Technical parameter	4	140	0	14	*See table 2*

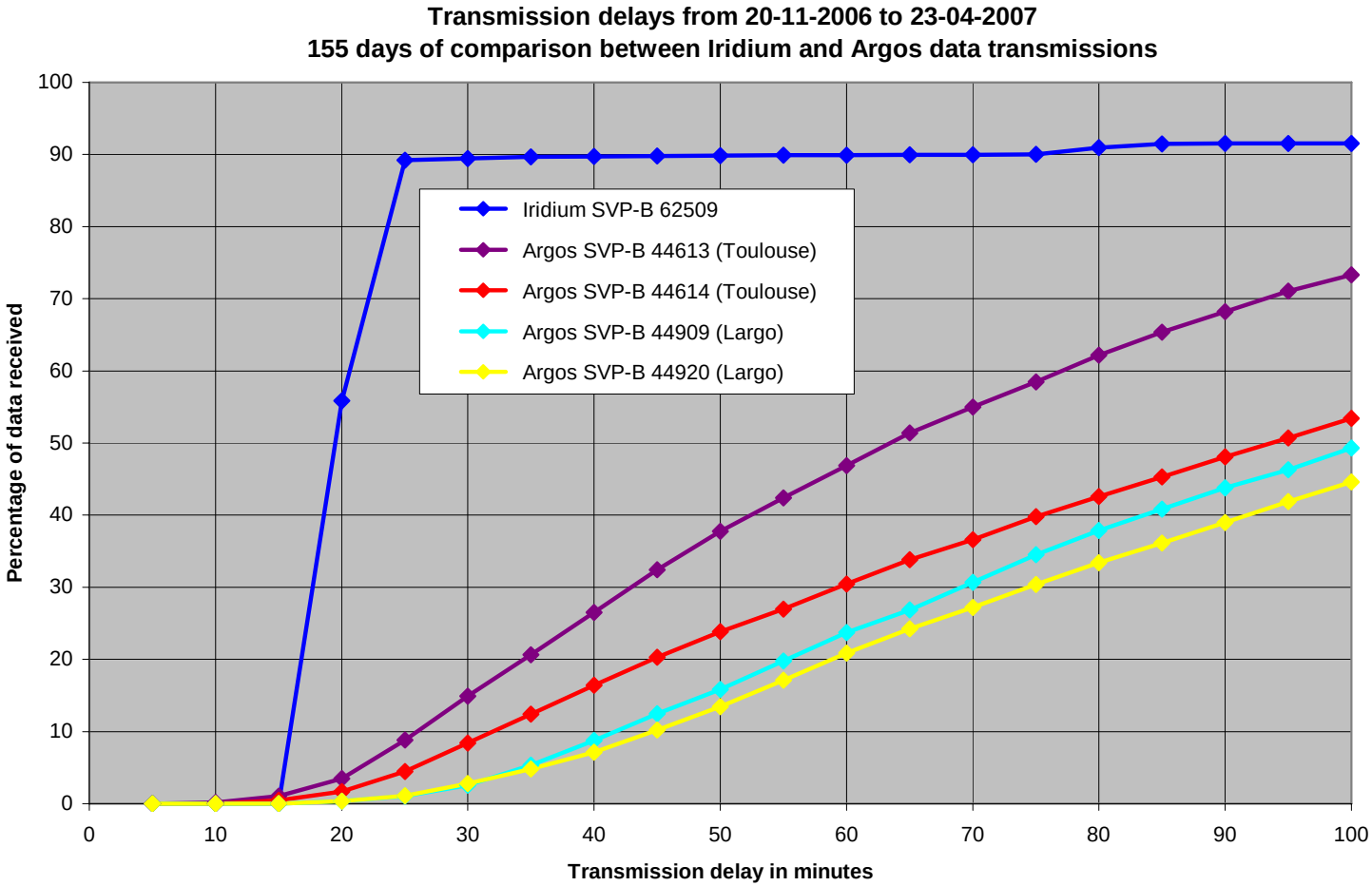
	Vbat offset	2nd Iridium parameter	1st GPS parameter	2nd GPS parameter
Marlin	7.00	Unused	Nb of GPS satellites	Unused
Metocean	10.75	Unused	Time to first GPS fix[7]	Unused
Pacific Gyre	7.00	Unused ?	Time to first GPS fix	2D or 3D GPS fix
Suggestion		Iridium transm. retry		

Table 2 – Manufacturer's choices for technological parameters

Data availability and timeliness (1)

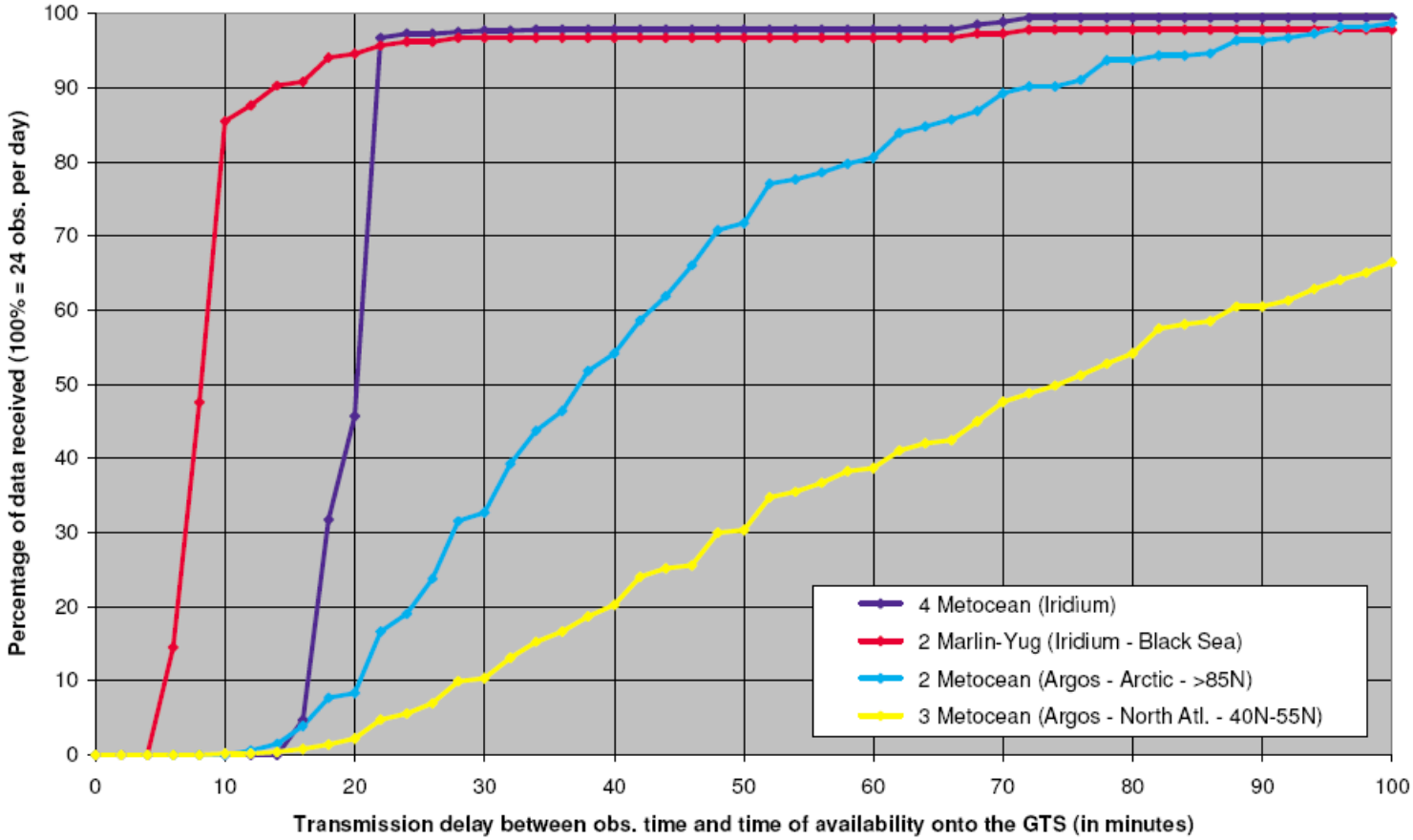


Data availability and timeliness (3)



Data availability and timeliness (4)

Transmission from 2007/09/17 to 2007/09/24



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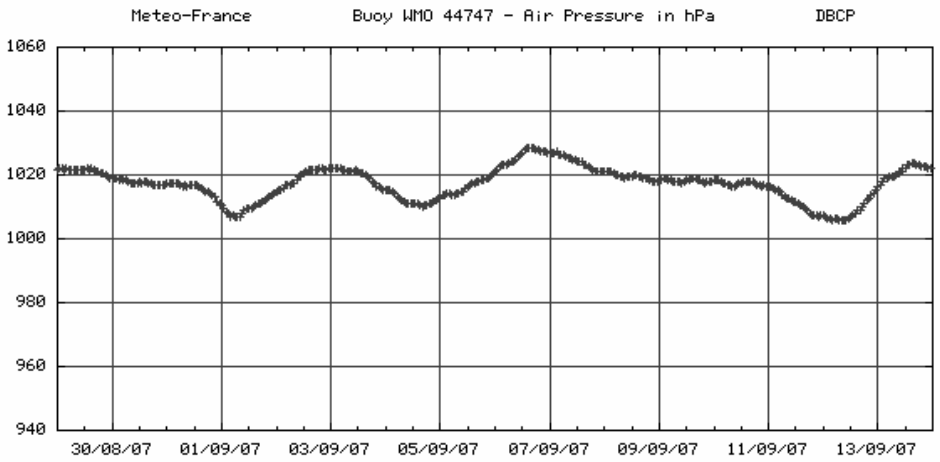
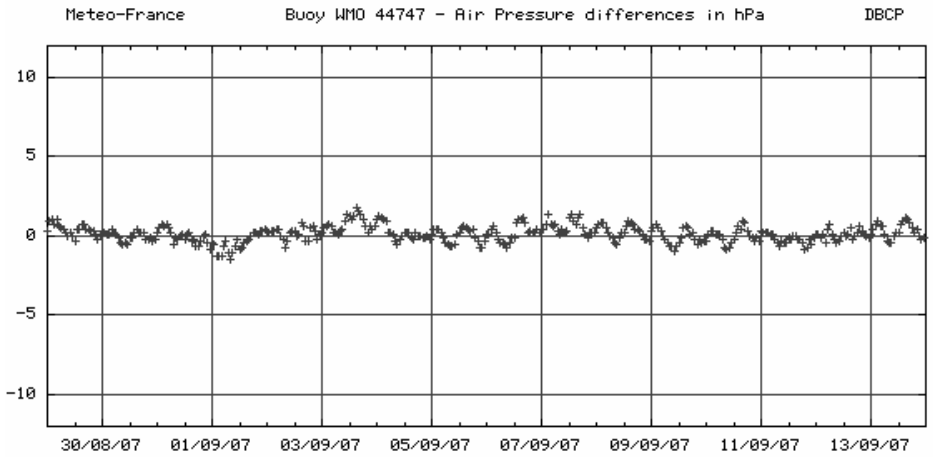
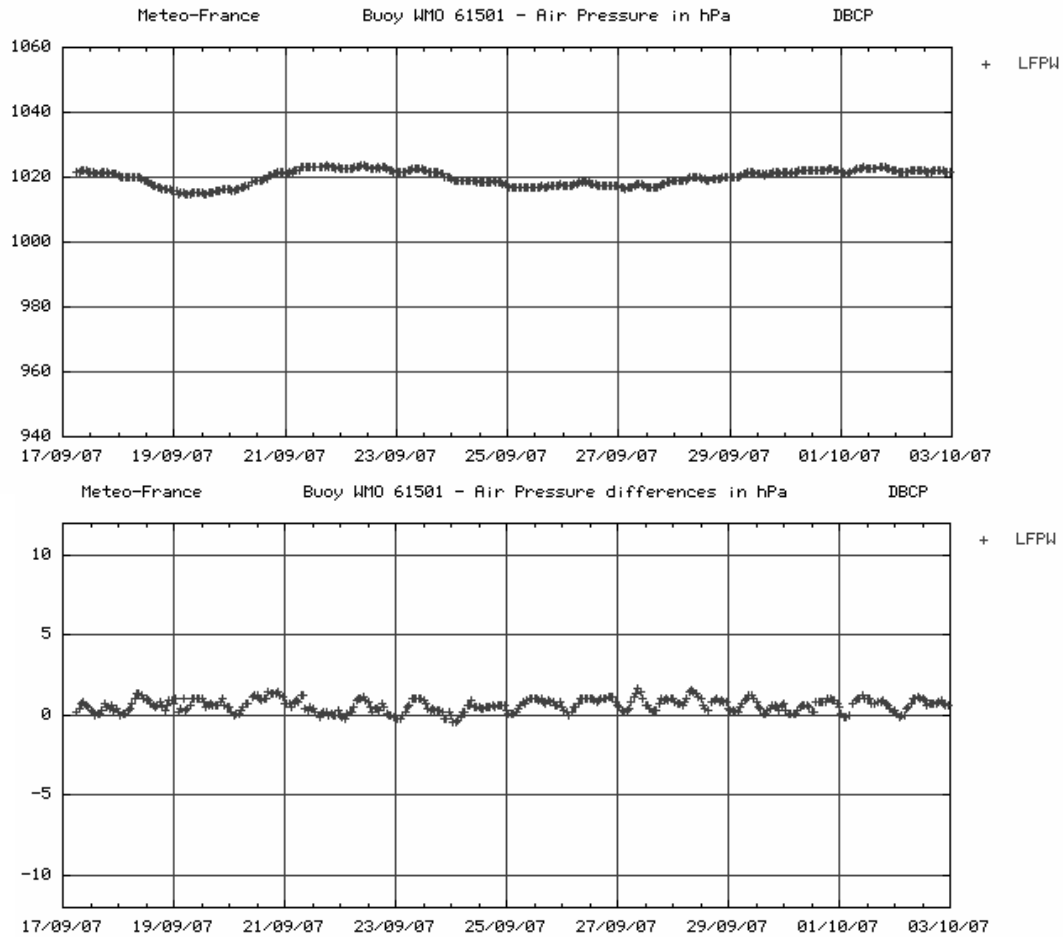
QC WMO 44747

http://www.meteo.shom.fr/qctools/



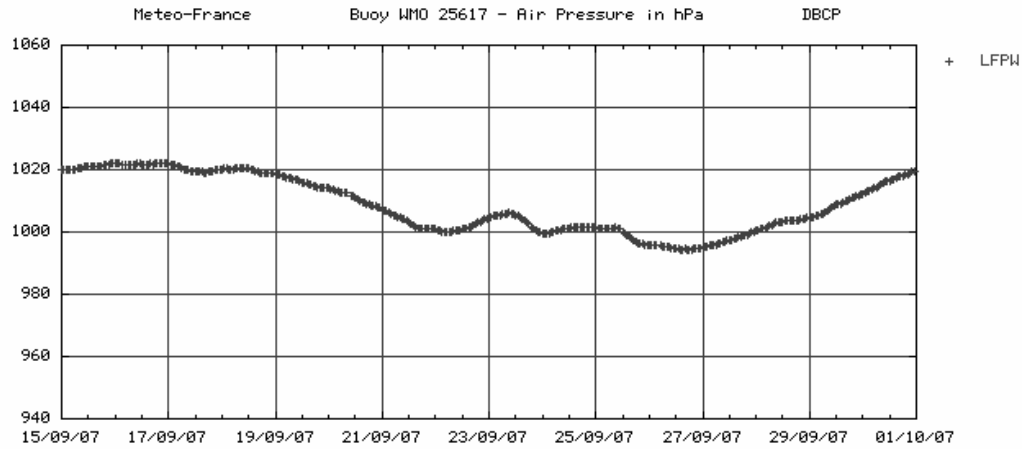


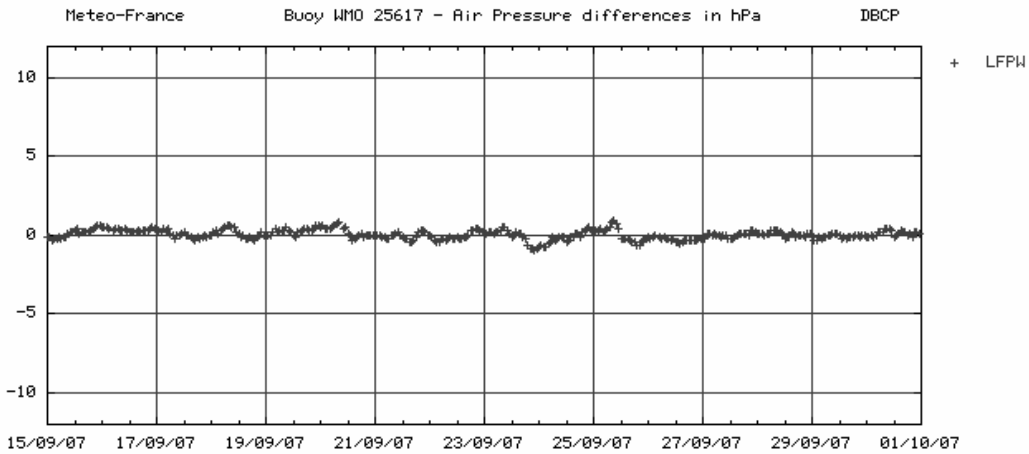
QC WMO 61501



QC WMO 25617

EUCOS
Surface Marine Programme





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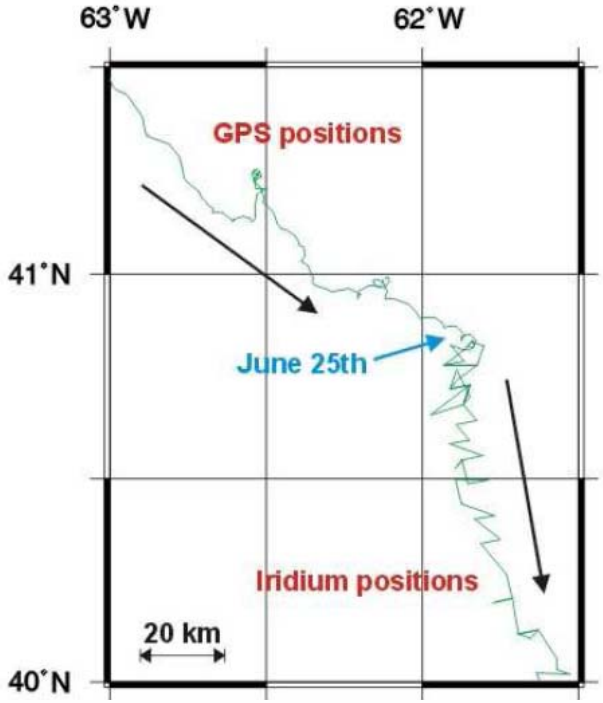
Position



Manufact	Area	Conditions	Period length[4]	CEP radius < 7.5km	Worse[5] than 10 km	Worse[5] than 20 km
Metocean	North Atlantic, between 40N and 50N	At sea	13 months	72%	0.5%	0.15%
Metocean	Arctic, north of 80N	On ship's deck	1 month	49%	2.3%	0.00%

Data quality

WMO	Type	May-June 2007			July-August 2007		
		Nobs	Bias	Sd	Nobs	Bias	Sd
44746	Iridium SVP-B	1297	0.4	0.5	1383	0.1	0.5
44747	Iridium SVP-B	1291	0.4	0.5	1396	0.0	0.4
44140	Moored buoy	1274	0.1	0.6	1355	0.3	0.5
44150	Moored buoy	1018	0.0	0.6	1438	0.3	0.5
44608	Argos SVP-B	722	-0.1	0.4	1395	0.2	0.4
44905	Argos SVP-B	119	0.3	0.4	1398	0.3	0.5

Table 2 *– Comparison of QC statistics – for Sea Level Pressure – from ECMWF for two Iridium prototypes, as well as for two moored buoys and two Argos SVP-Bs in the surroundings. Iridium positions were used instead of GPS ones on the two prototypes in July and August.*

Metocean (Technological parameter)

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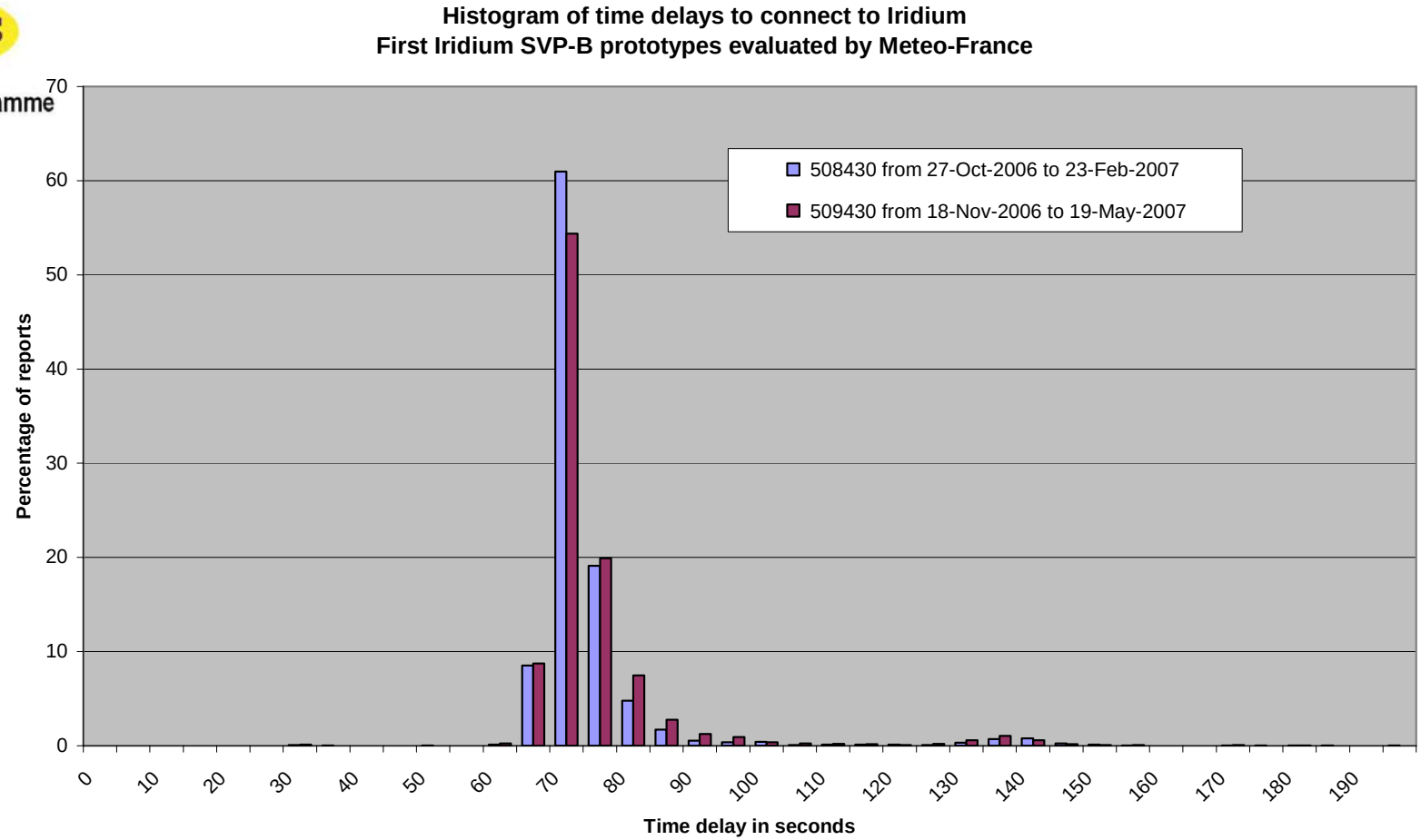

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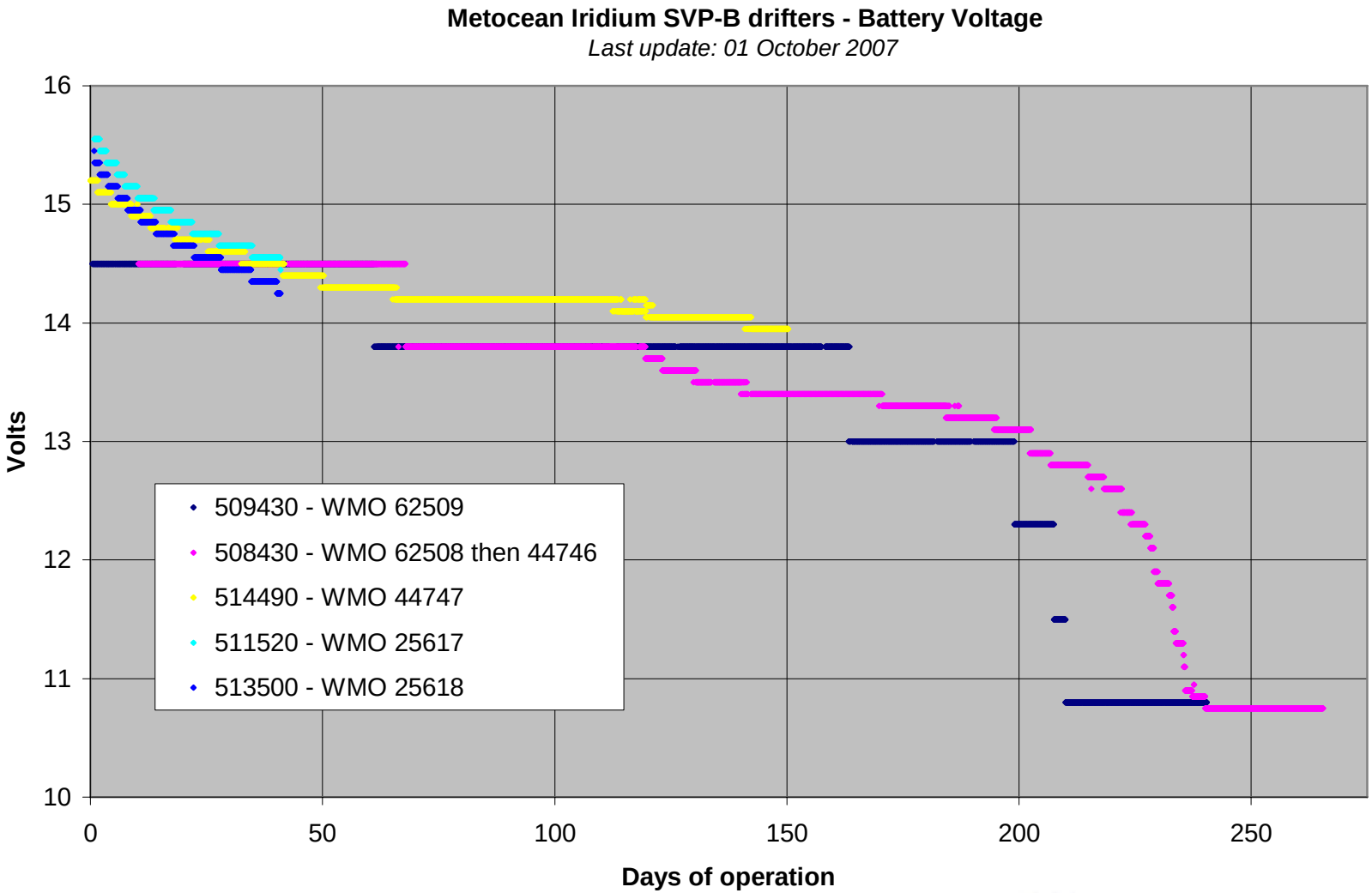
Metocean Buoy lifetimes



Costs

Iridium buoys are more expensive than Argos ones

Iridium buoys have shorter lifetimes than Argos ones

Iridium communications are cheaper than Argos ones

2 ARGOS = 3 IRIDIUM

DBCP Pilot Programme

Agreed at the last DBCP session

Aims:

Evaluate the feasibility of Iridium technology for real-time telecommunication of drifter data under various conditions e.g. rough seas, wide temperatures ranges…

At least 50 units deployed worlwide

See http://www.jcommops.org/dbcp/iridium-pp for more details

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