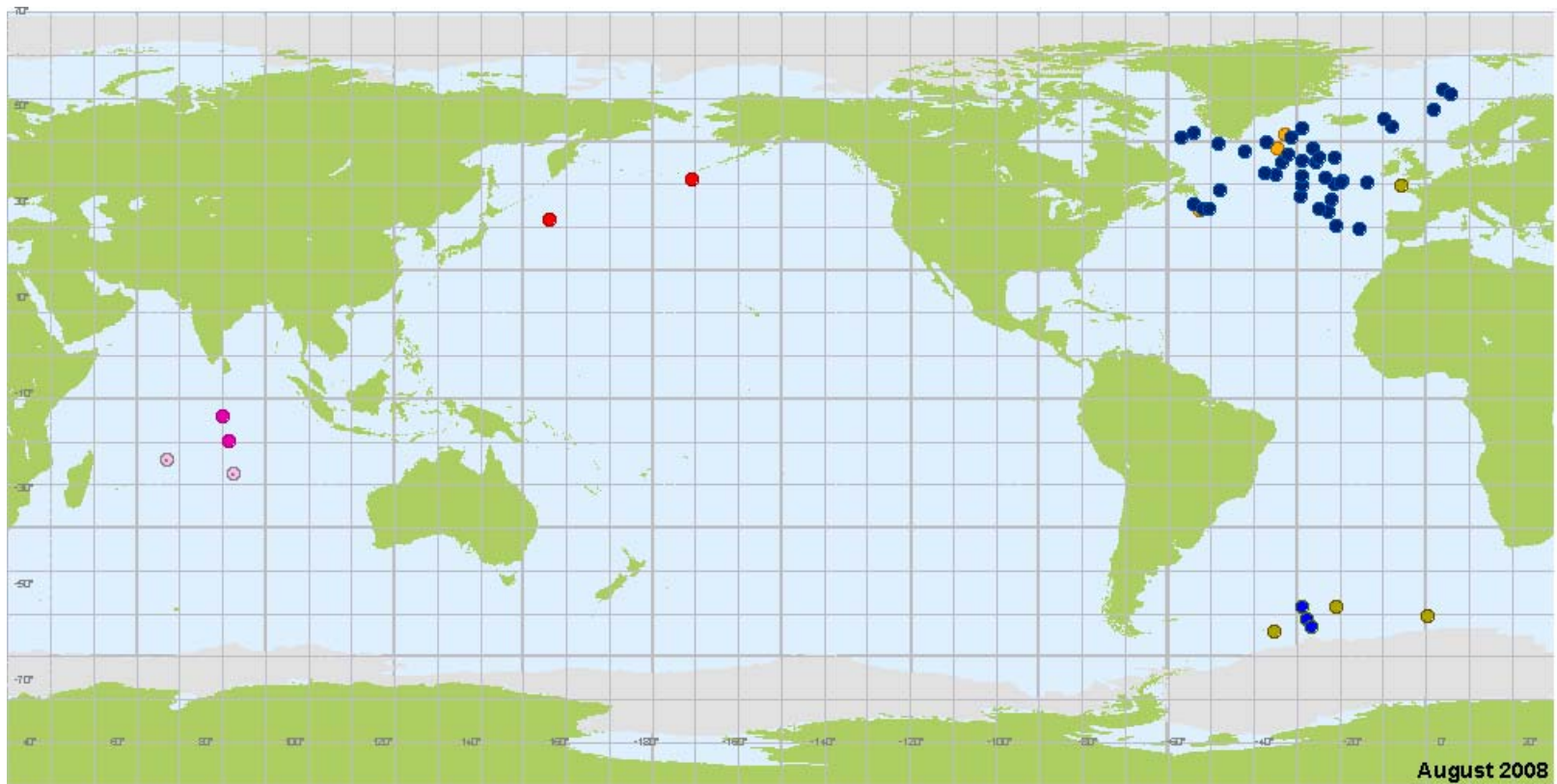




Evaluation of Iridium SVP-B drifters

by Jean Rolland and Pierre Blouch

Iridium SVP-Bs in operation (August)



Iridium Drifting Buoys (54)

● AUSTRALIA (2)	● EUROPE/ESURFMAR (38)	● JAPAN	● USA (3)
● CANADA (2)	● FRANCE (3)	● NEW ZEALAND	● UNKNOWN
● INDIA (2)	● UK (4)		



Deployments of SVP-Bs (until Oct. 3rd, 2008)

Owner	Manufacturer	GPS	Deployed buoys	1st deploy.	Remarks
Meteo-France	Metoccean	Yes	9	Oct. 2006	One still operating (since mid-March)
Meteo-France	Marlin	Yes	2	Sep. 2007	One still operating (since mid-March)
SAMS	Marlin	Yes	4	Sep. 2007	No more active
INCOIS	Clearwater	Yes	11	Nov. 2007	Two operating (since end of August - GTS transmission done by CLS)
Meteo-France	Pacific Gyre	Yes	3	Nov. 2007	One still operating (since mid-Aug.) but many GPS fixes are missing
E-SURFMAR	Metoccean	No	43	Dec. 2007	All but three operating (one failed at deployment)
UK Met Office	Metoccean	Yes	6	Dec. 2007	Three still operating
GDP	Pacific Gyre	Yes	3	Jan. 2008	All operating but with abnormal fixed GPS positions and wrong timings
BoM	Metoccean	Yes	2	May 2008	All operating
Env. Canada	Metoccean	Yes	3	Jun. 2008	All operating
TOTAL			86		... of which 53 are in operation

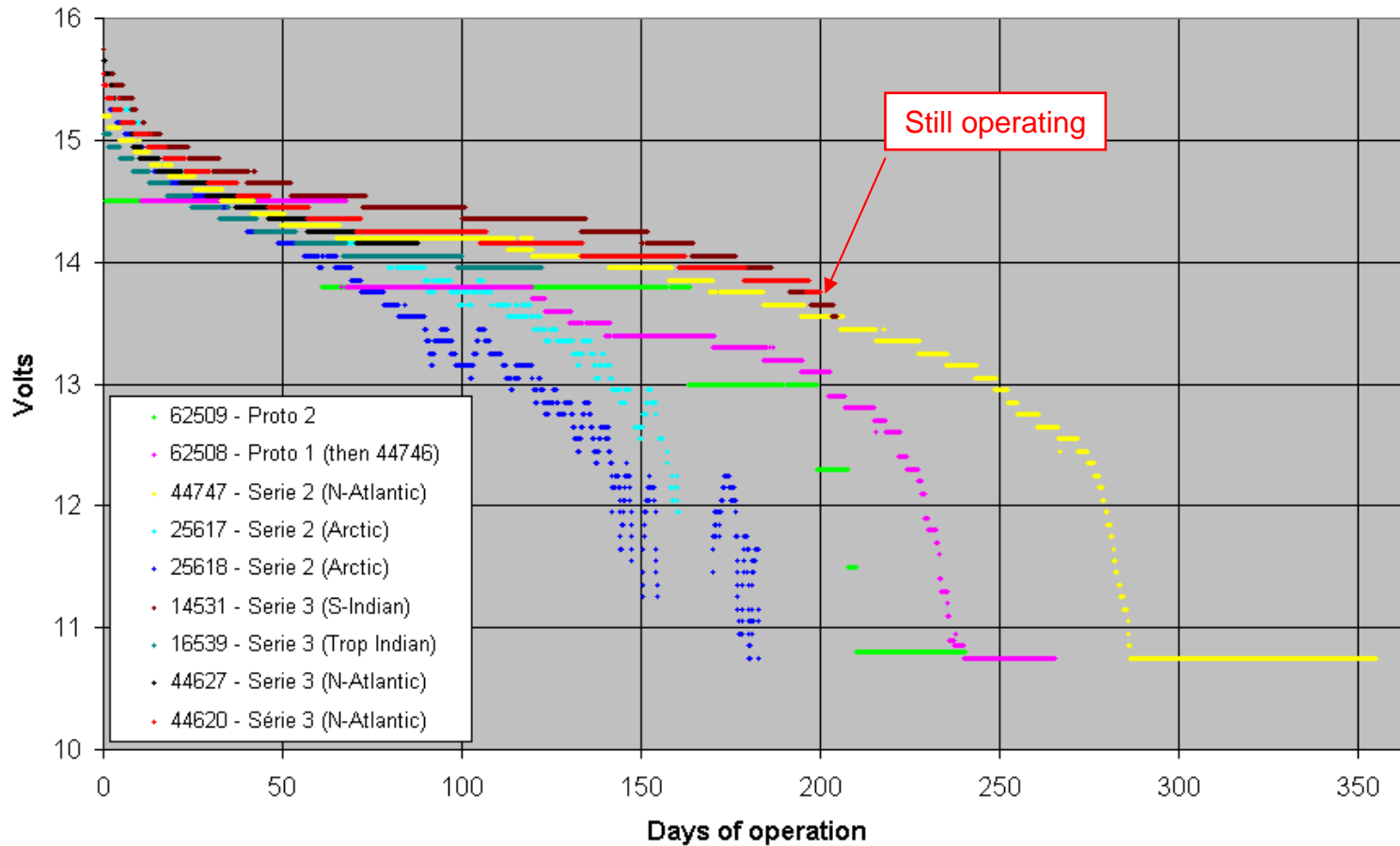
Summary of the evaluation

Manufacturer	GPS	Deployed buoys	Remarks
Clearwater	Yes	11	<ul style="list-style-type: none"> - Many problems on the first series. - Last two seem OK after ~40 days of operation
Marlin	Yes	6	<ul style="list-style-type: none"> - Two stopped because ashore in Black Sea. - One failed after 251 days in cold waters (batteries empty) - Two failed for unknown reasons after 5 and 38 days. - One drifter still operating after 200 days.
Metocean	Yes	20	<ul style="list-style-type: none"> - Seem having a maximum lifetime of 12 months in average : observed on one buoy. - Two deployed in the Arctic failed more quickly than expected (batt. empty). - Some failures also noticed (unknown reasons). - SST measurements fail on some buoys - Average lifetime (computed on 7 buoys purchased by Meteo-France – Arctic buoys excluded) : 230 days
Metocean	No	43	<ul style="list-style-type: none"> - One buoy failed at deployment - Two failed for unknown reason after 82 and 113 days resp. - Others (40) are still operating. The monitoring of battery voltage leads to expect a 400-day lifetime as a maximum
Pacific Gyre	Yes	6	<ul style="list-style-type: none"> - Dubious air pressure values in many occasions - Many problems with GPS acquisition. - Seem having an impact on observation timings.

Battery Voltage (9 Meteo-France drifters)

Metocean Iridium SVP-B drifters with GPS - Battery Voltage

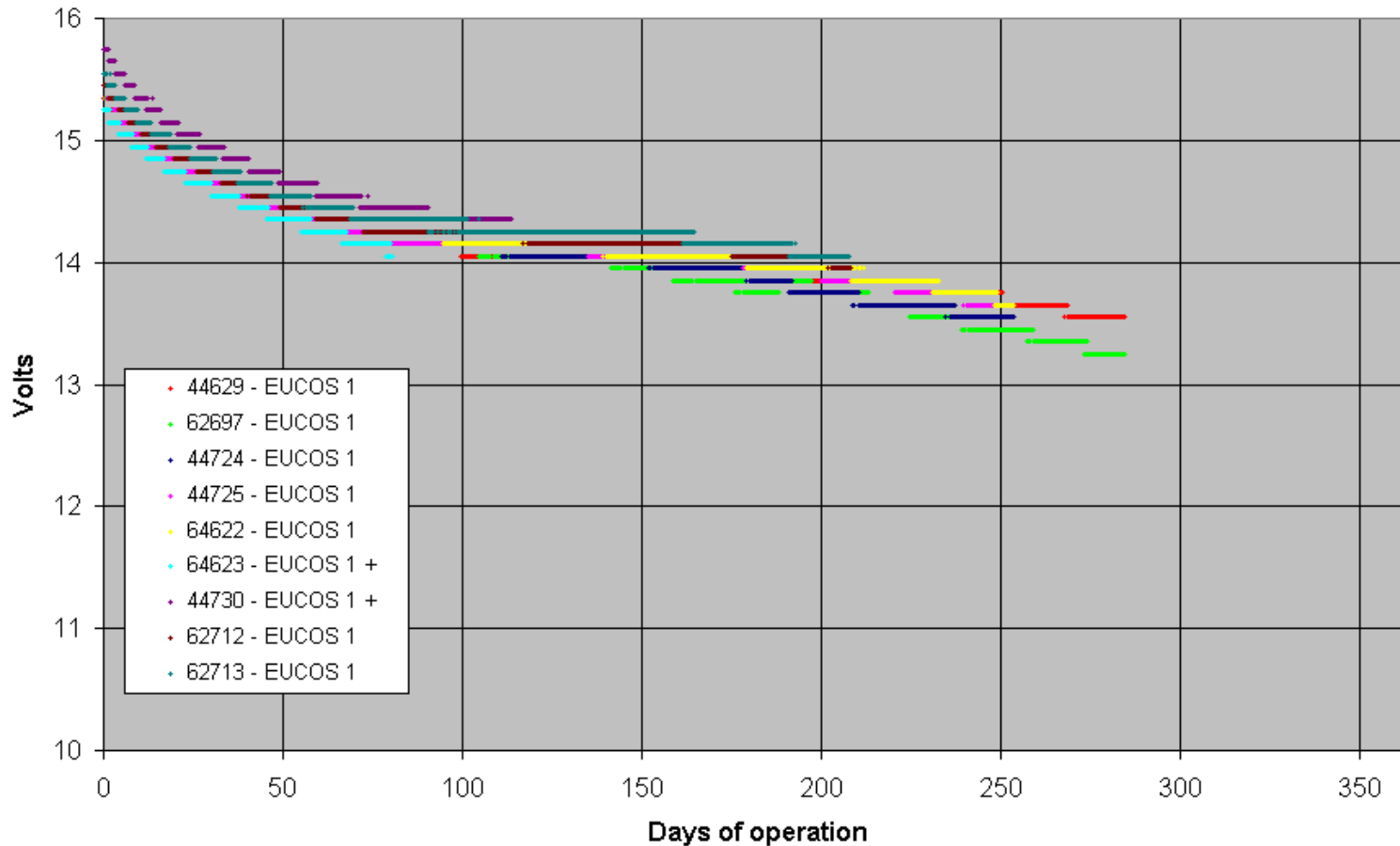
Last update: 30 September 2008



Battery Voltage (9 first EUCOS drifters)

Metocean Iridium SVP-B drifters without GPS - Battery Voltage

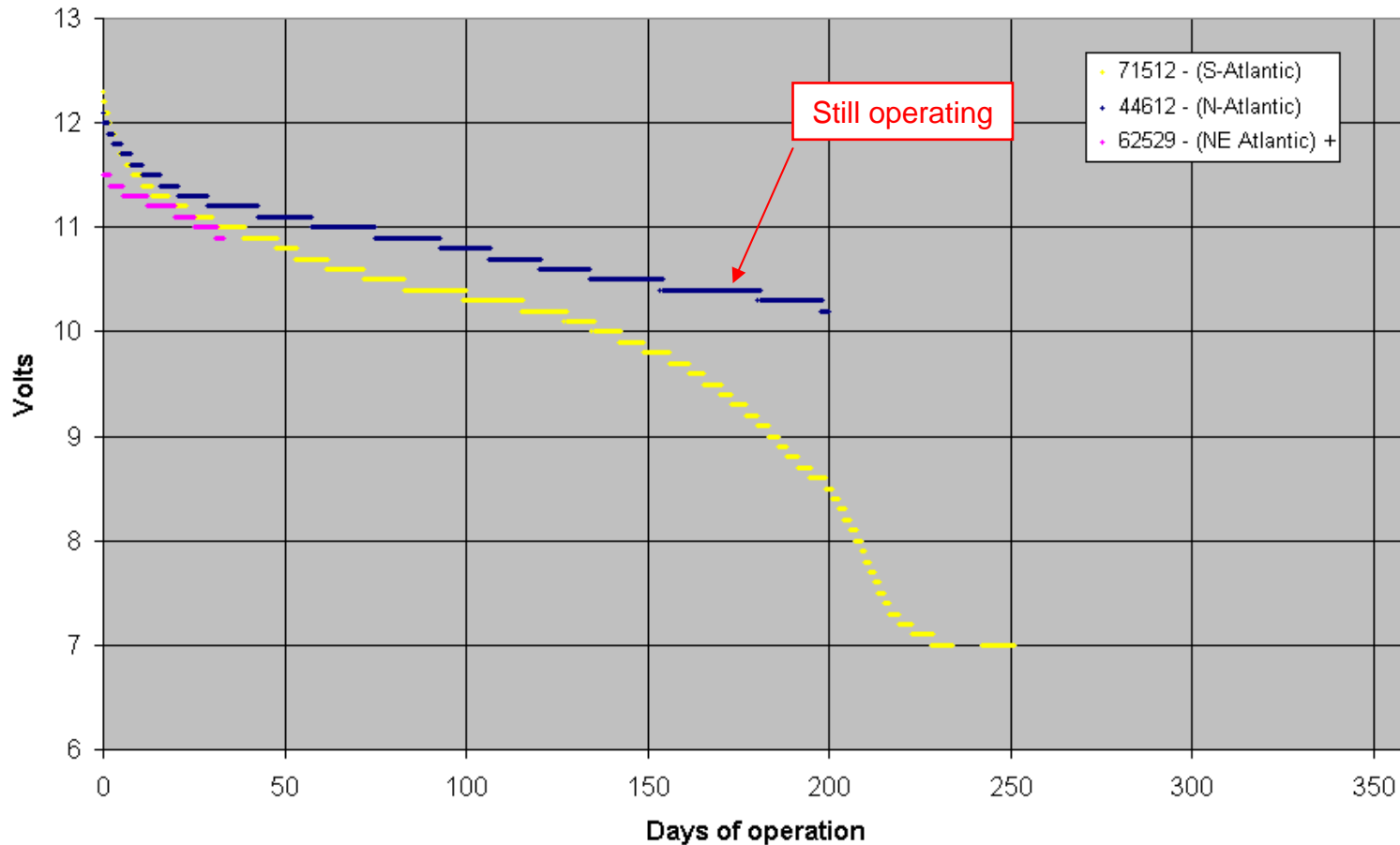
Last update: 30 September 2008



Battery Voltage (3 Meteo-France drifters)

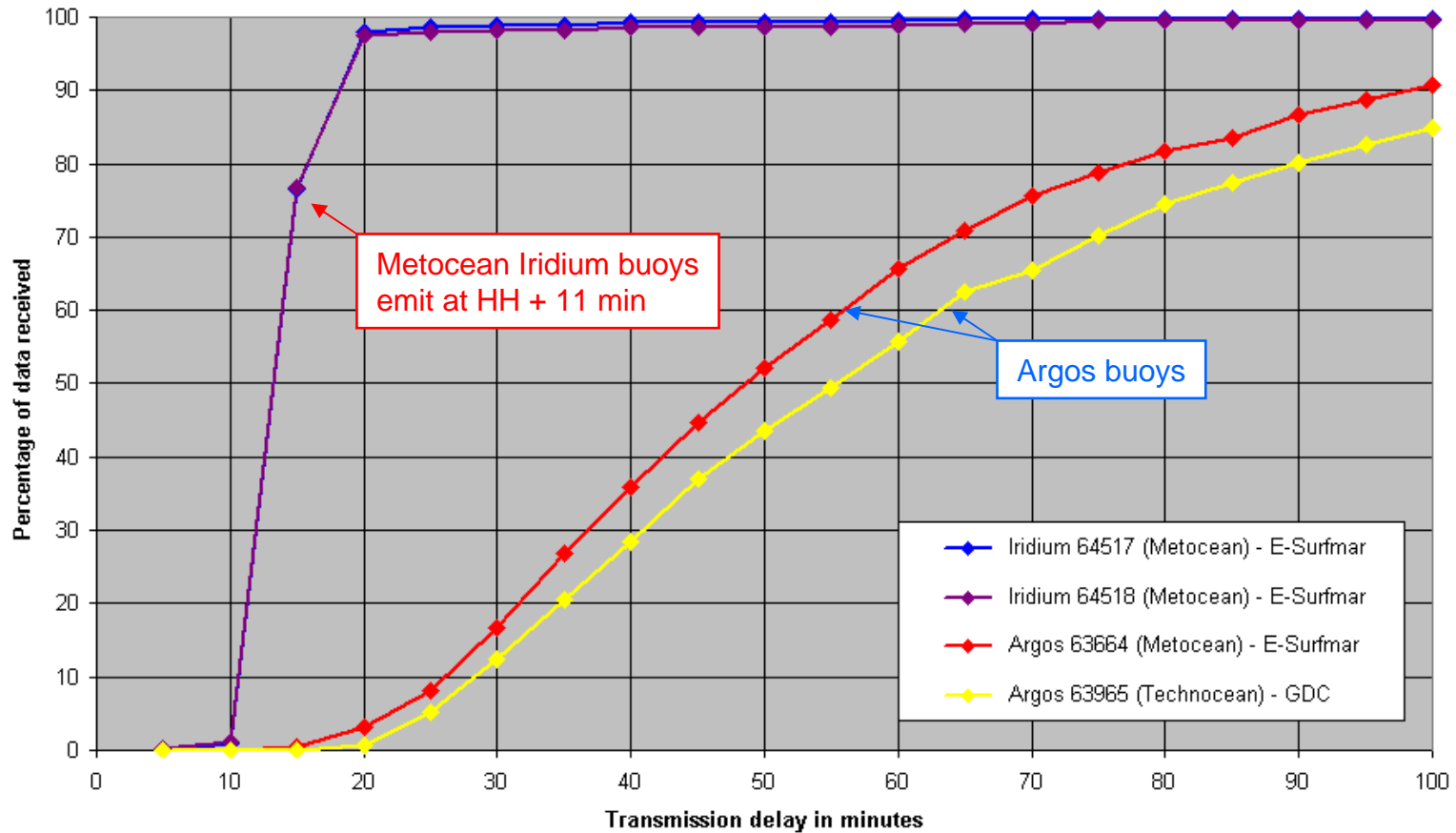
Marlin Iridium SVP-B drifters with GPS - Battery Voltage

Last update: 30 September 2008



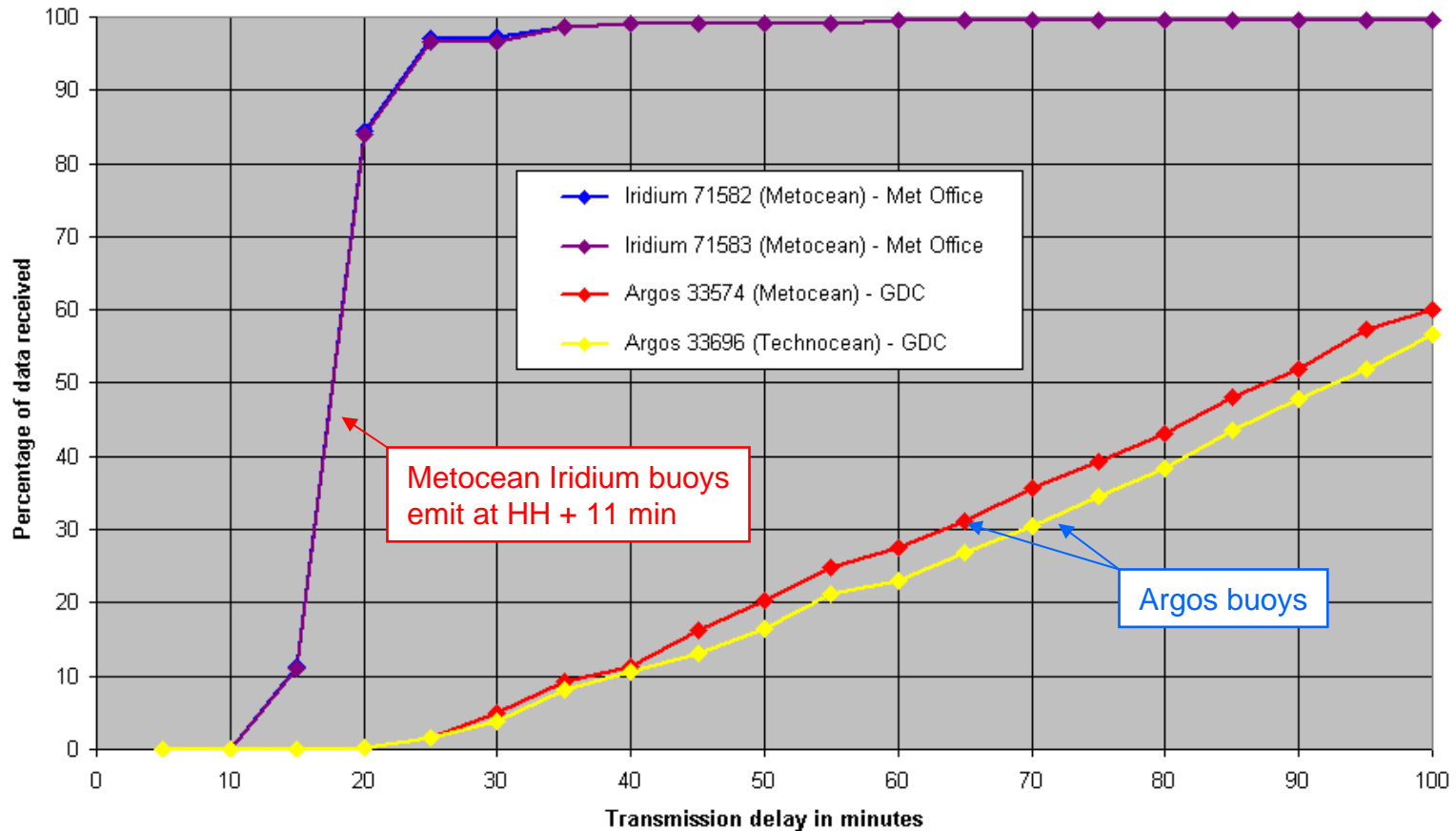
Time Delays (1)

Transmission delays (September 2008) - North Atlantic
30 days of comparison between Iridium and Argos data transmissions



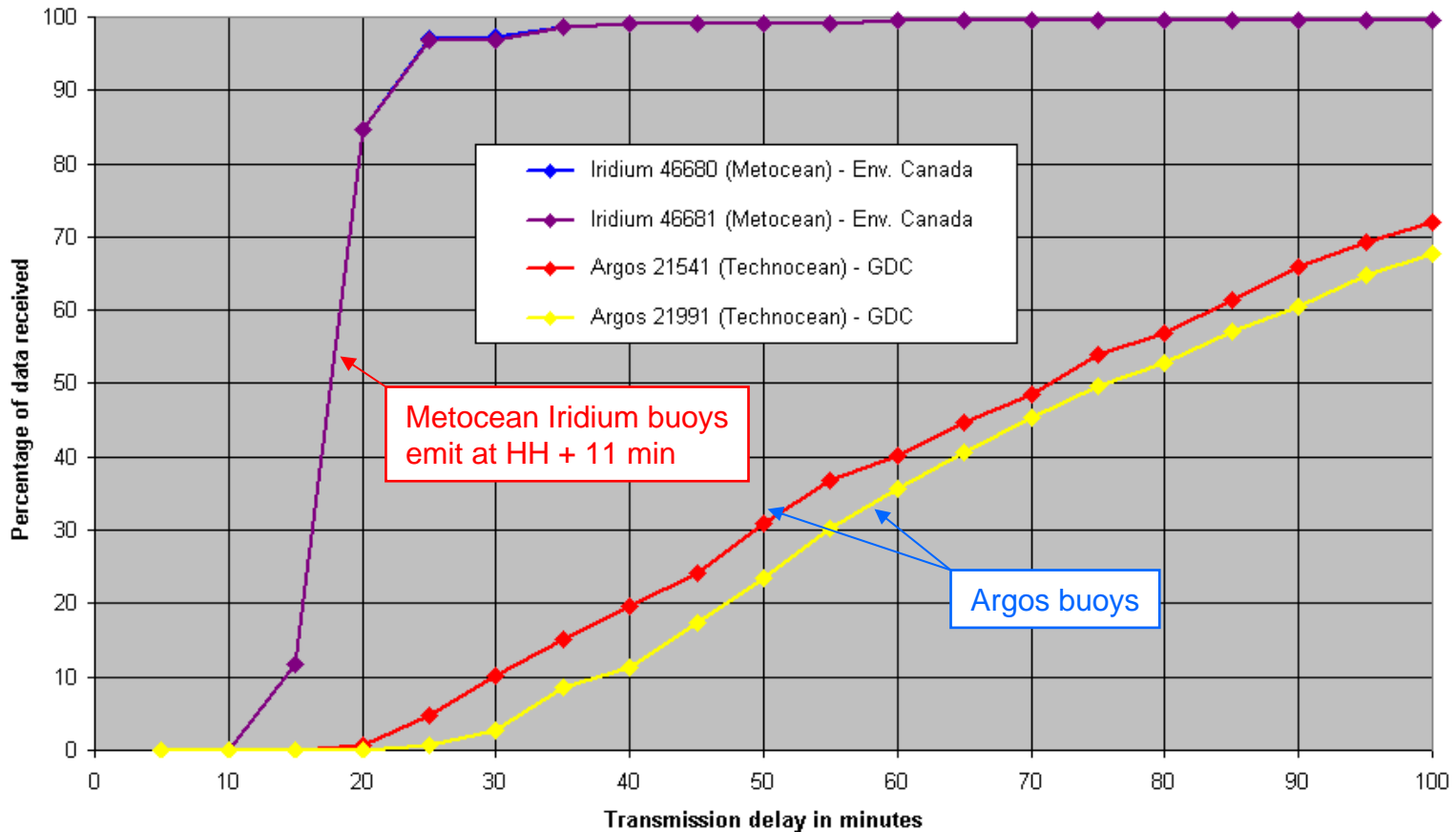
Time Delays (2)

Transmission delays (September 2008) - **South Atlantic**
30 days of comparison between Iridium and Argos data transmissions



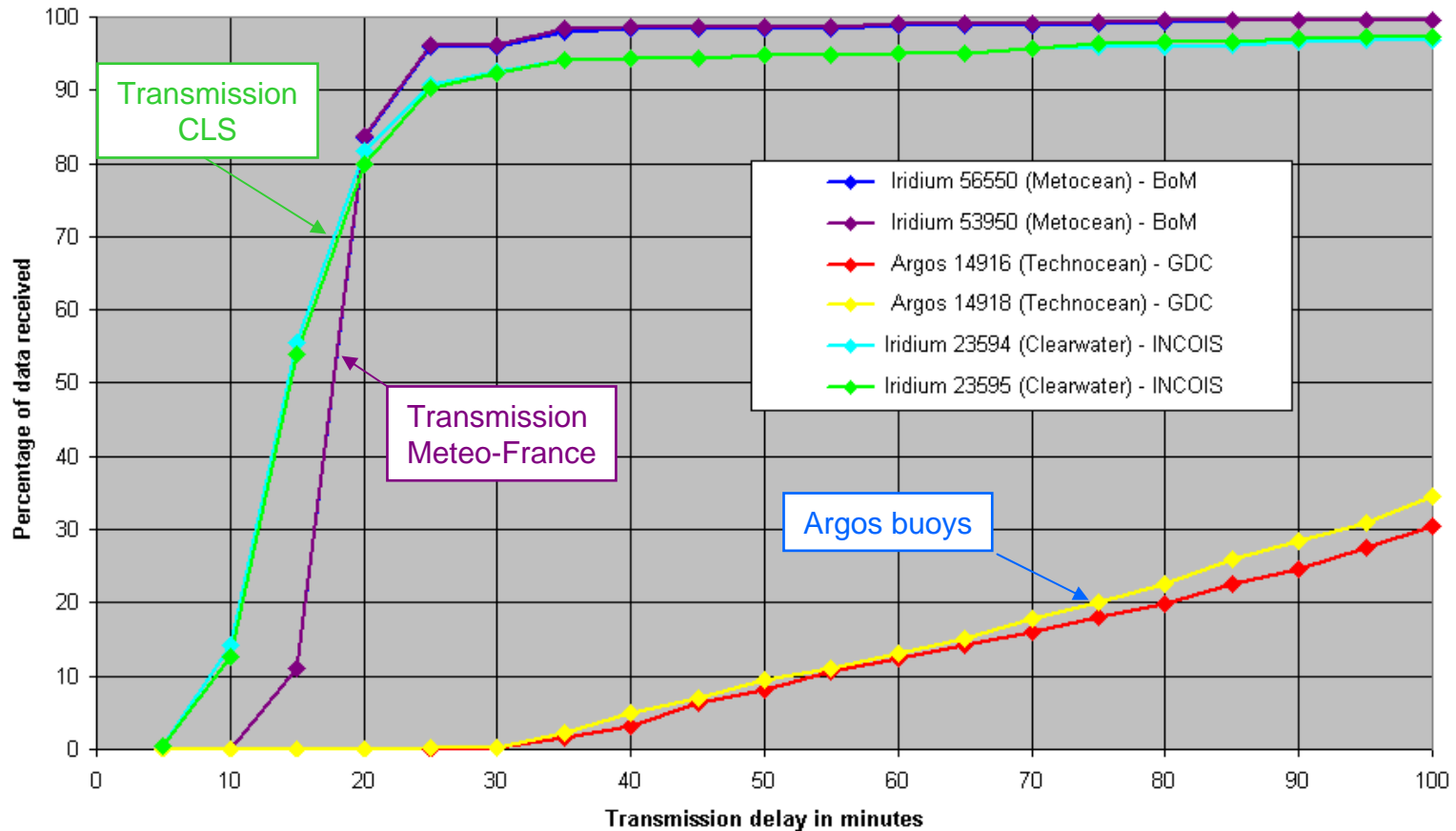
Time Delays (3)

Transmission delays (September 2008) - North Pacific
30 days of comparison between Iridium and Argos data transmissions



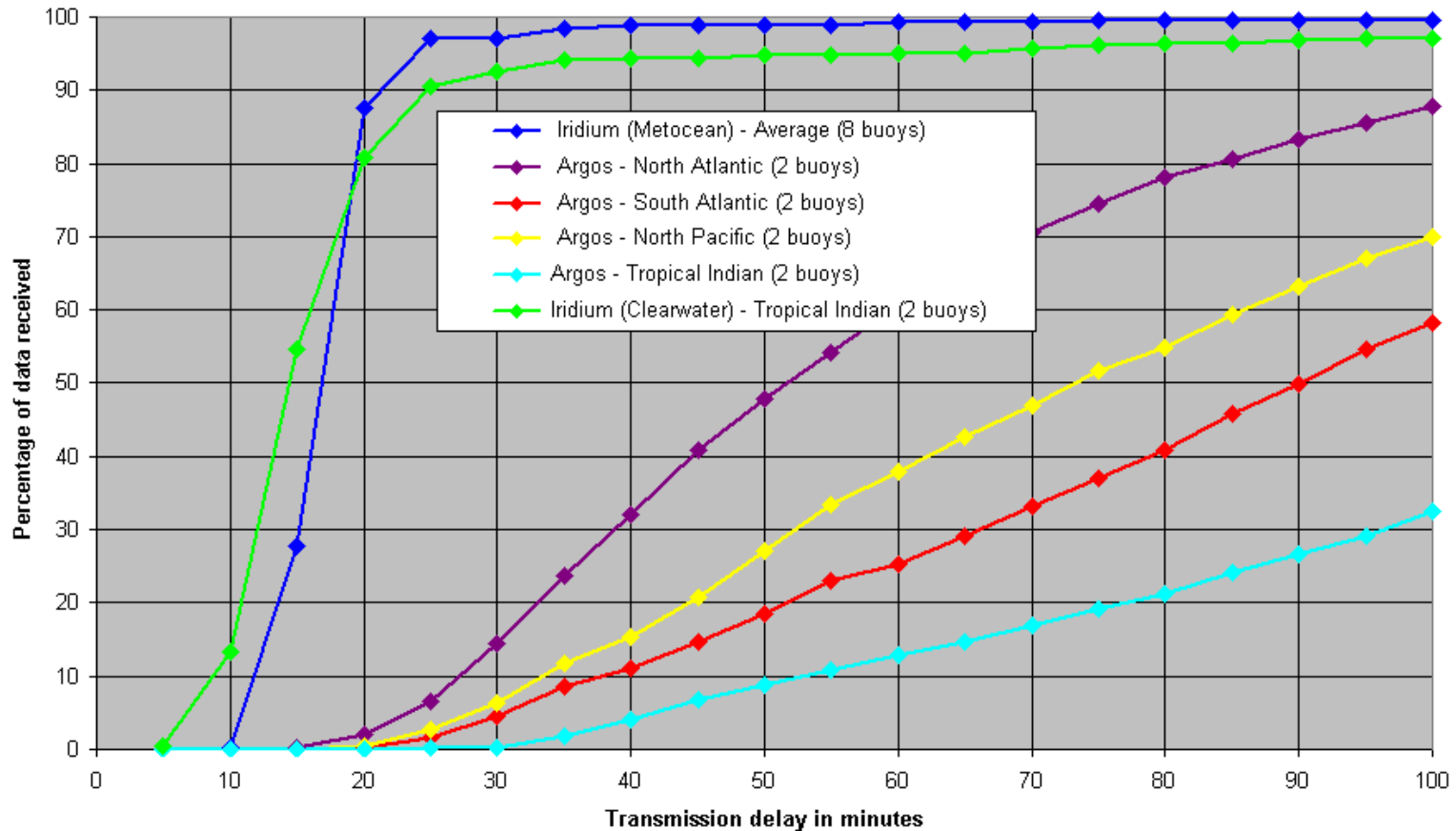
Time Delays (4)

Transmission delays (September 2008) - **Tropical Indian**
30 days of comparison between Iridium and Argos data transmissions

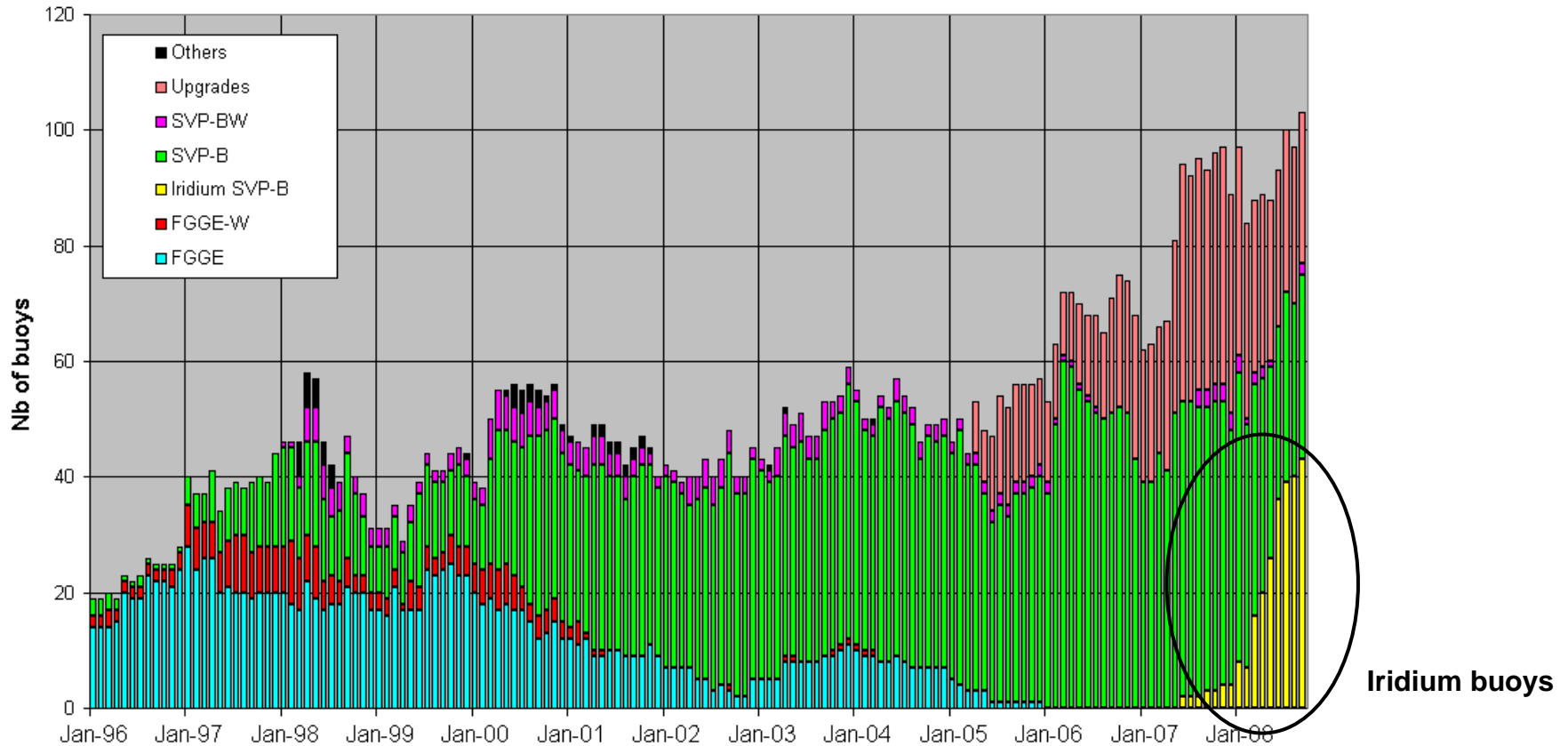


Time Delays (5)

Transmission delays (September 2008) - Summary
30 days of comparison between Iridium and Argos data transmissions

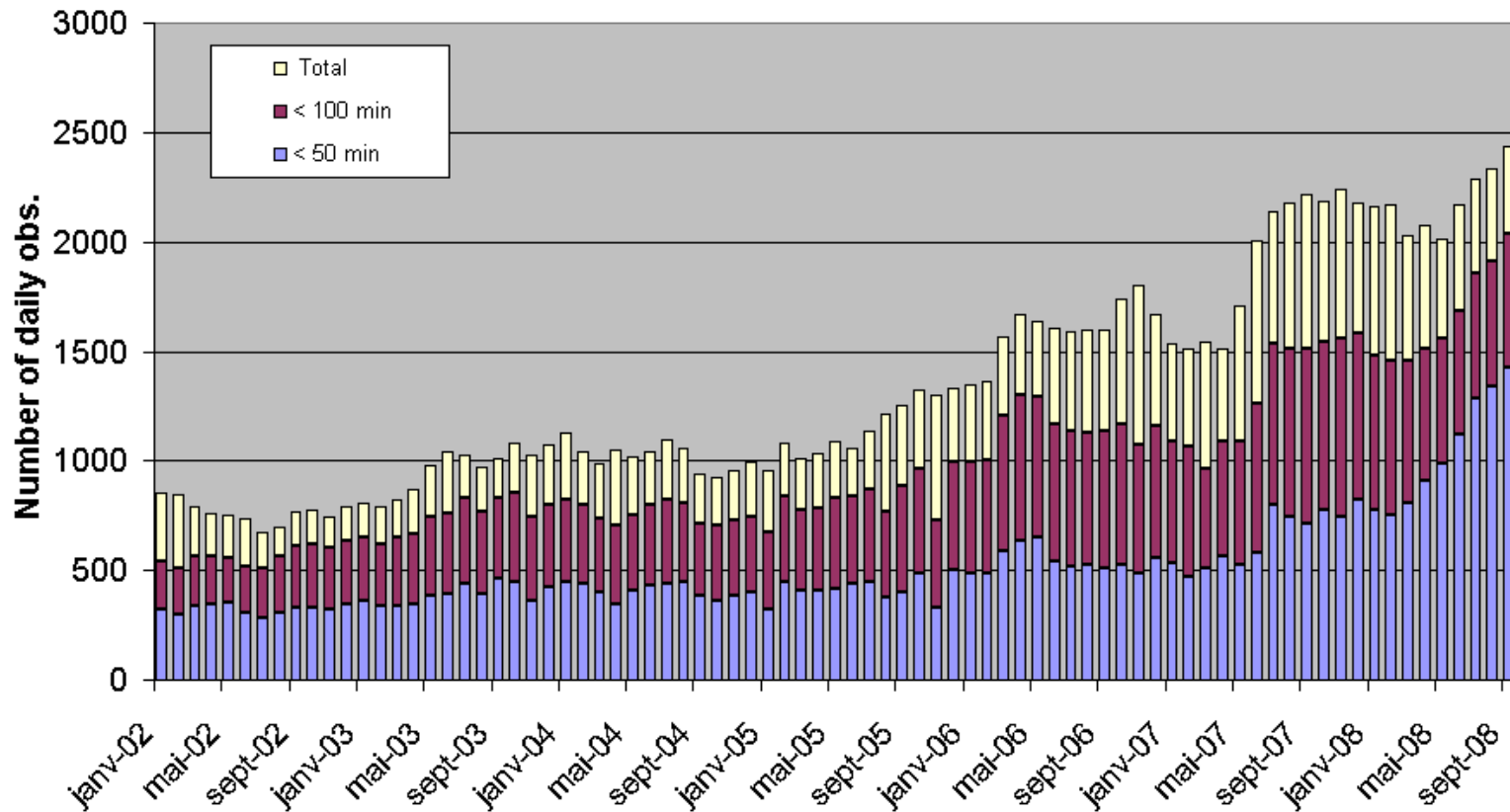


Use of Iridium drifters in E-SURFMAR



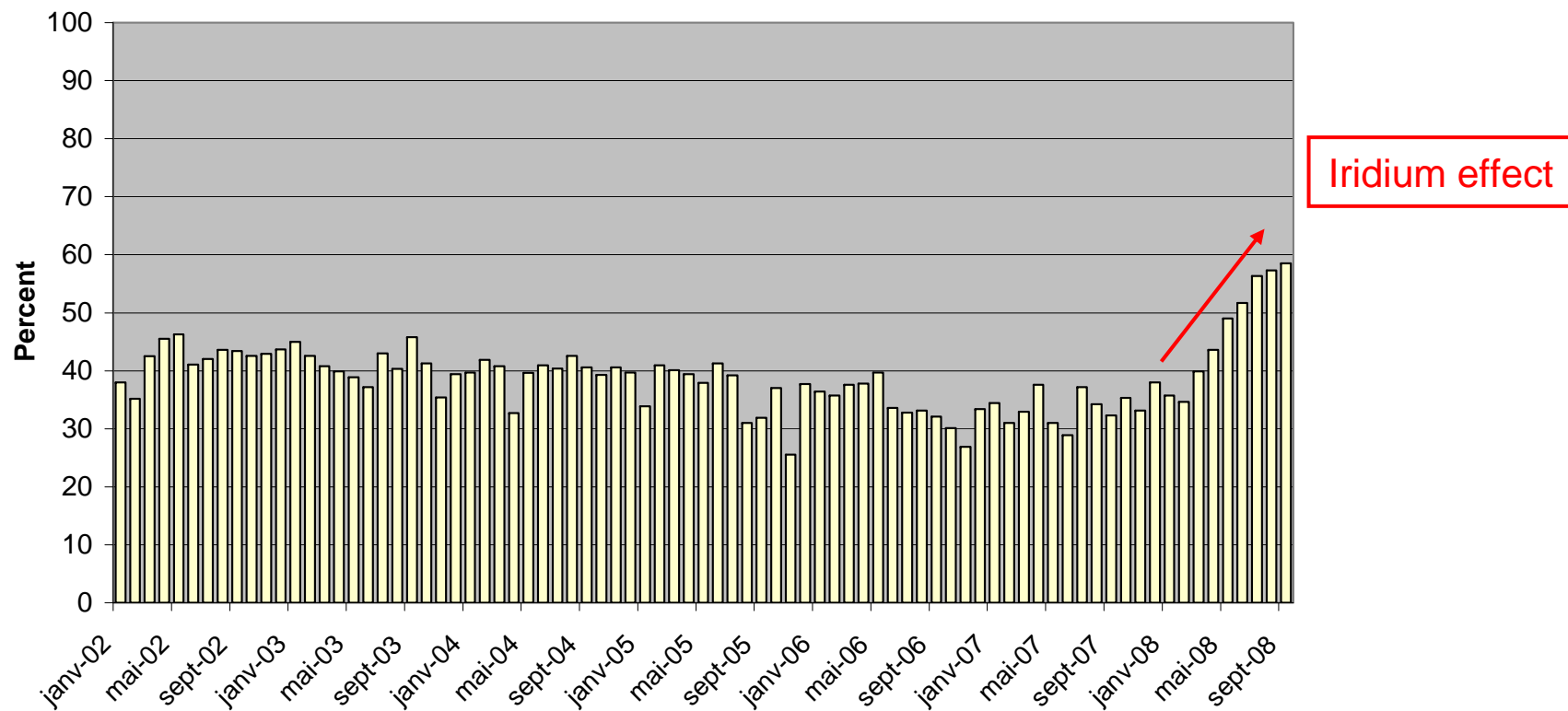
Impact on data timeliness in E-SURFMAR

EGOS then EUCOS drifting buoys - Data availability
Average number of hourly observations per day



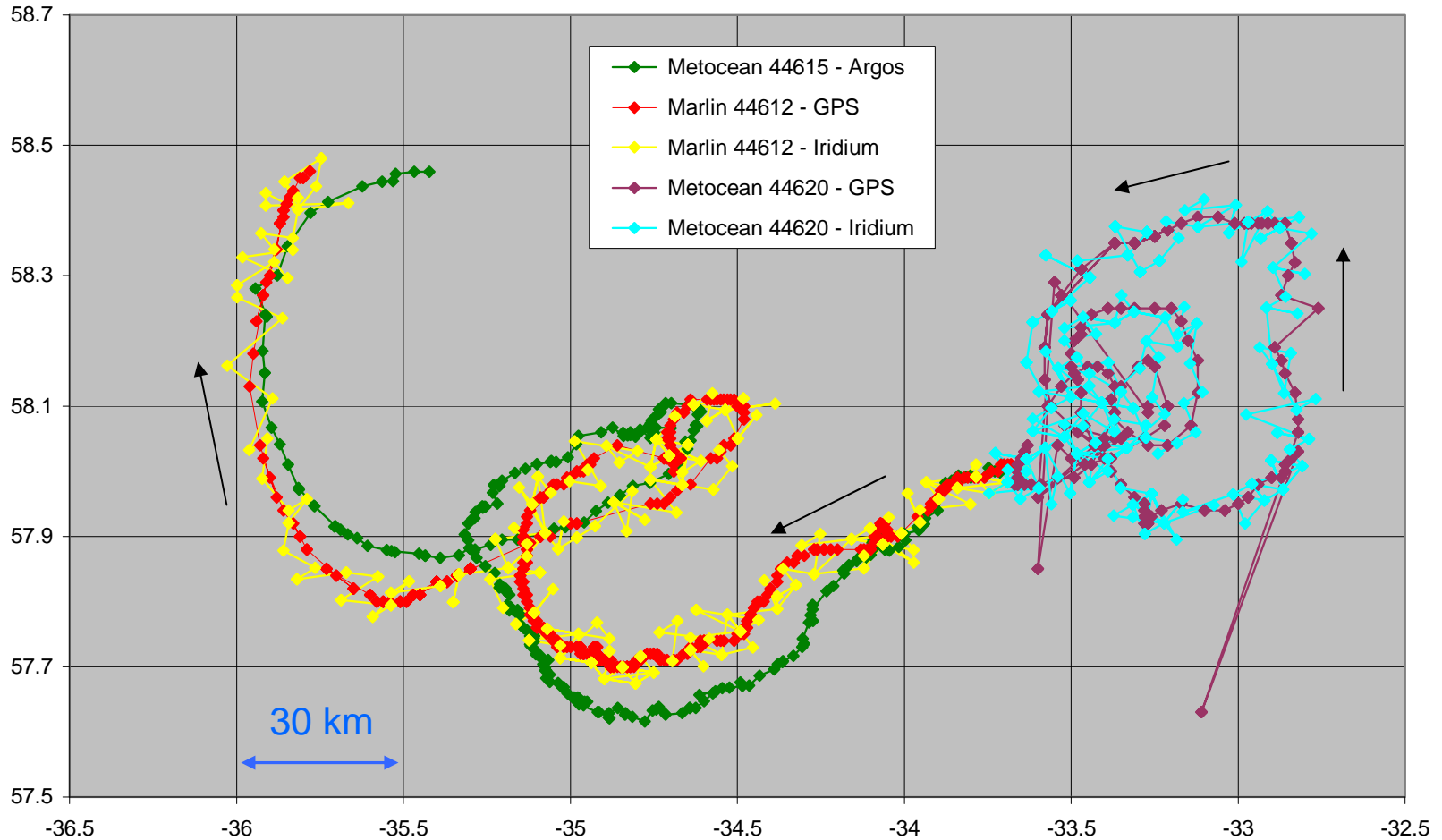
Impact on data timeliness in E-SURFMAR

EGOS then EUCOS drifting buoys - Data timeliness
Percentage of data arrived within 50 minutes



Comparisons on locations

Three buoy trajectories (15-31 March 2008)
Comparisons between Argos, GPS and Iridium positions



Conclusion

- **86 buoys deployed**, 53 in operation
- Clear **better data timeliness** than through Argos
- One prototype had a **lifetime of 12 months**
- A **maximum lifetime of 400 days** is expected from next series already deployed (Metocean without GPS). Equivalent to present mean lifetime of operational buoys in E-SURFMAR
- **Increase of lifetime** is still expected through an optimization of the energy consumption
- **80 more drifters** were recently delivered to deployment centres for E-SURFMAR
- **Problems still exist** at some manufacturers'

Questions ?