

# ASAP report (with focus on E-ASAP)

SOT-V Meeting 2009

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1. **ASAP fleets**
2. Performance
3. Satcom
4. Plans and activities 2009
5. Outlook

# ASAP fleets

Only 2 regular ASAP Programmes worldwide:

- European E-ASAP: 19 stations (15 active + 4 inactive)  
Mainly merchant vessels
- Japanese ASAP: 5 stations  
Research vessels



ASAP Aerological Profiles

- TEMP SHIP (483)

April 2009

# E-ASAP fleet

No	Station	Ship name	Operating area
1	ASEU01	Maria S. Merian	Research vessel, mainly North Atlantic
2	ASEU02	Liverpool Express	North Europe – East coast US
3	ASEU03	Endurance	Western Mediterranean – Montreal
4	ASEU04	Power	Western Mediterranean – Montreal
5	ASEU05	Atlantic Companion	North Europe – East coast US
6	ASDE01	Atlantic Compass	North Europe – East coast US
7	ASDE02	Meteor	Research vessel, worldwide
8	ASDE03	<i>currently inactive</i>	<i>4 week research campaign Mar/Apr 2009</i>
9	ASDE04	Hornbay	North Europe - Caribbean
10	ASGB01	Mississauga Express	Montreal – North Europe
11	ASFR1	Fort St. Louis	North West Europe – French West Indies
12	ASFR2	Fort St. Pierre	North West Europe – French West Indies
13	ASFR3	<i>currently inactive</i>	North West Europe – French West Indies
14	ASFR4	<i>currently inactive</i>	North West Europe – French West Indies
15	ASDK01	3 ships of the Royal Arctic Line	Denmark – West coast Greenland
16	ASDK02		Denmark – West coast Greenland
17	ASDK3		Denmark – West coast Greenland
18	ASES01	Esperanza del Mar	Off Mauretania and Canary Islands
19	ASIS01	<i>currently inactive</i>	

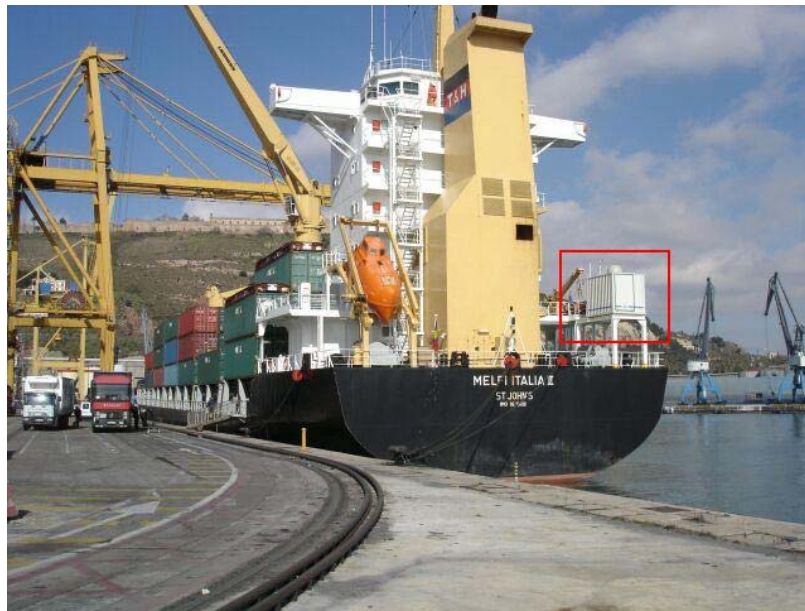
# Japanese ASAP fleet

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No	Station	Ship name	Operating area
1	JGQH	Ryofu Maru	North Pacific
2	JDWX	Kofu Maru	Seas adjacent to Japan
3	JIVB	Seifu Maru	Seas adjacent to Japan
4	JCCX	Chofu Maru	Seas adjacent to Japan
5	JNSR	Mirai	Variable areas

# ASEU05: De-/Re-installation in 2008

- De-installation of 10ft container in Jamaica in August
- Re-installation in Hamburg in November





# ASEU05: De-/Re-installation in 2008

Before and after  
refurbishment at  
DWD in Hamburg  
(Oct 2008)



Installation on  
board the  
ATLANTIC  
COMPANION  
(Nov 2008)



# Decommissions in 2008

Decommission of 3 Maersk ships in November:

- SeaLand Performance (ASEU01): moved to East Asia service
- SeaLand Achiever (ASEU02 ): moved to East Asia service
- SeaLand Motivator (ASDE03): to be scrapped





# Re-installation of ASEU02 in 2009

Hamburg, April 09



Liverpool Express: Line service North Europe – US East coast

# Re-installation of ASEU01 in 2009

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Las Palmas de Gran Canaria, May 09



Maria S. Merian: Mainly North Atlantic

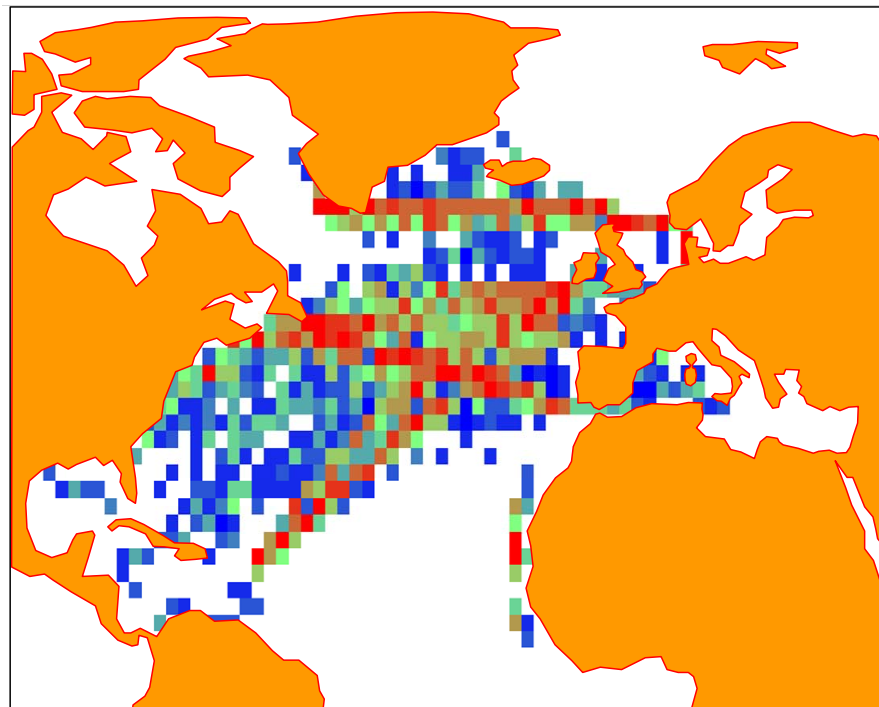
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# Contents

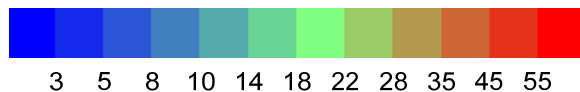
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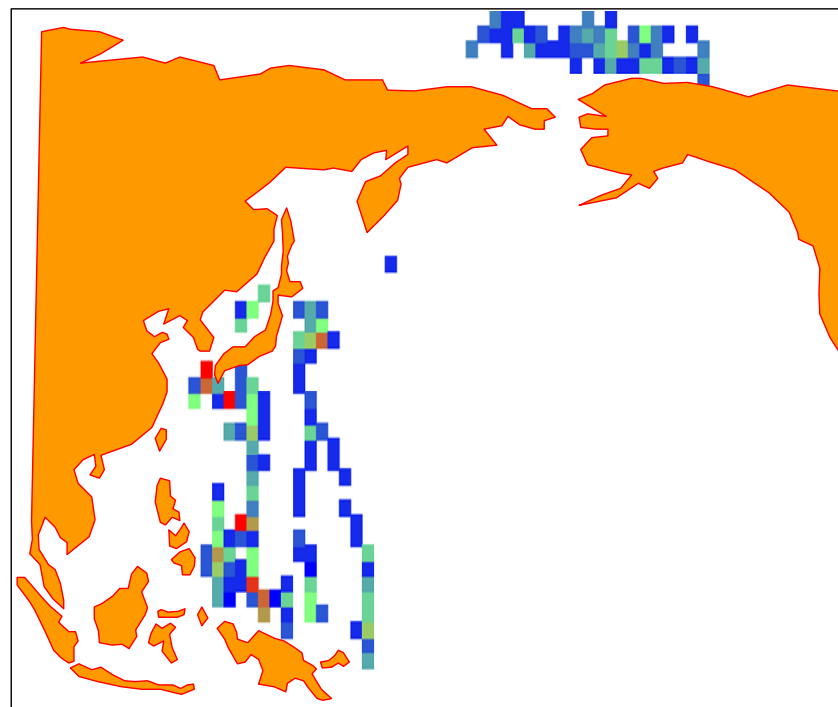
# Distribution of soundings 2008



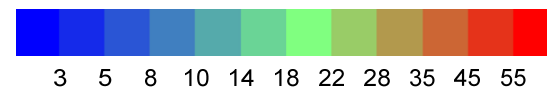
Bulletins per grid point:



**E-ASAP**



Bulletins per grid point:



**Japanese ASAP**

# Total performance 2008

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<b>Station(s)</b>	<b>Received soundings</b>
E-ASAP (15 ships)	3546
Norwegian Weather Ship POLARFRONT	1391
Japan (5 ships)	696
Research Vessel POLARSTERN, Germany	364
Research Vessel RON BROWN, US	205
Research Vessel AGULHAS, South Africa	75
Others	30
<b>Total</b>	<b>6307</b>



# E-ASAP quality achievement 2008

- Black: Target achieved.
- Blue:  $\leq 5\%$  below the target.
- Red:  $>5\%$  below the target.

No.	Station	Managed by	HH+100 (%)	100 hPa (%)	50 hPa (%)	GTS/ Launches (%)
	<i>Target</i>		95	90	75	80
1	ASEU01	E-ASAP	98	85	75	74
2	ASEU02	E-ASAP	91	90	85	82
3	ASEU03	E-ASAP	96	62	52	66
4	ASEU04	E-ASAP	87	94	91	99
5	ASEU05	E-ASAP	95	89	84	88
6	ASDE01	E-ASAP	99	94	87	92
7	ASDE02	E-ASAP	96	99	95	94
8	ASDE03	E-ASAP	88	93	90	75
9	ASDE04	E-ASAP	92	94	89	90
10	ASGB01	E-ASAP	94	94	84	81
11	ASDK01	DMI	93	78	71	88
12	ASDK02	DMI	96	77	68	84
13	ASFR1	Met. France	92	94	88	90
14	ASFR2	Met. France	95	94	83	93
15	ASES01	AEMET	92	88	80	66

# Support for research and development

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- Greenland Flow Distortion experiment, Feb/Mar 2008:  
E-ASAP ships sailing in that area provided additional soundings
- Shelf-basin exchange campaign, Oct 2008:  
E-ASAP provided consumables for RV KNORR off Iceland
- Research campaign off West Africa, Mar/Apr 2009:  
E-ASAP provided a fully equipped station (20ft container launcher)
- Data Targeting System Prototype, Feb-Nov 2009  
E-ASAP ships performed additional soundings on request  
(depending on sensitive areas)

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# Inmarsat-C vs. Iridium

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Inmarsat-C problems:

- Line-of-sight sometimes blocked by superstructure of the ship.
- Very limited 2-way communication.
- High transmission costs.
- No transmission of HiRes binary data.

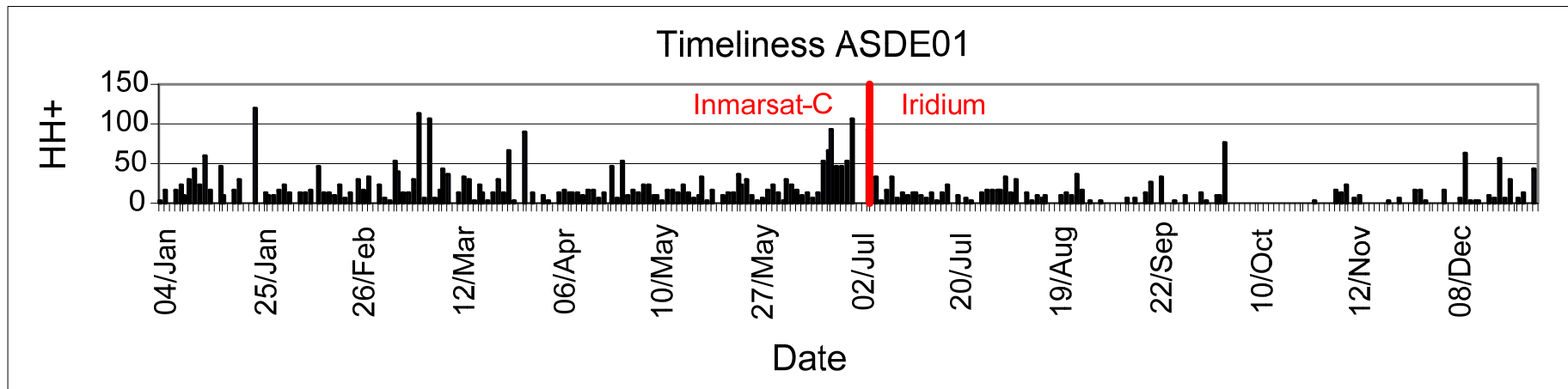
Iridium problems:

- Sometimes hampered intersatellite link (due to high airspeed of satellites).

=> E-ASAP decided to replace Inmarsat-C by Iridium on all Ships under E-ASAP management.

# Timeliness

- Improvements in timeliness through Iridium satcom (First test system installed on ASDE01 in July 2008).





# Decoupling of sounding and transmission

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- Sounding software by system supplier:  
Save data files (ASCII or binary) in specified directory.

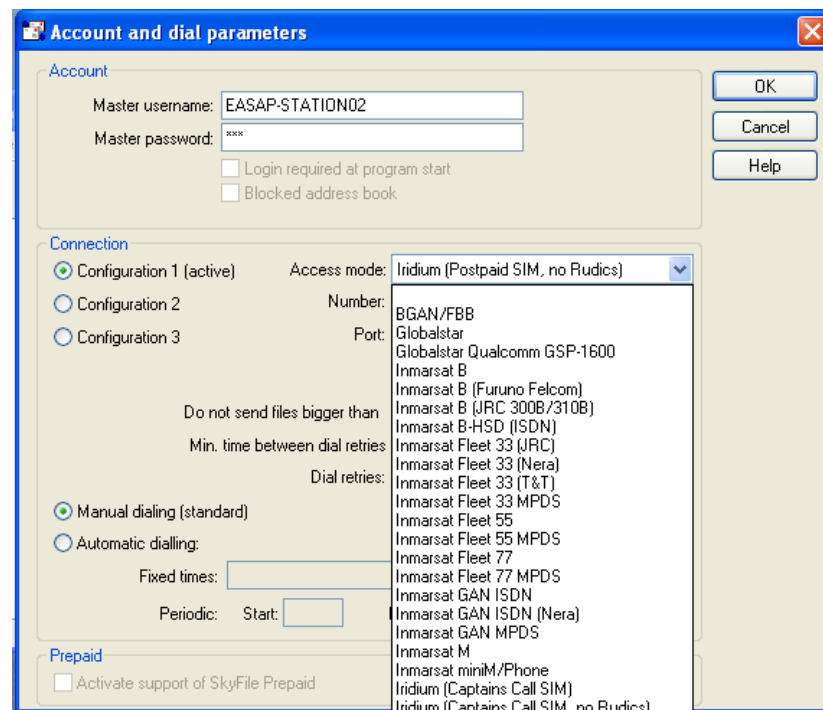


- Standard satcom email software:  
Send data files (ASCII or binary) from specified directory  
as email attachment to Met Service.

# Standard satcom email program

## Requirements:

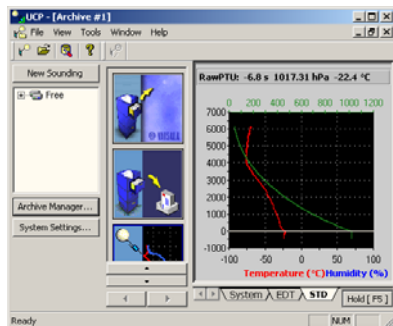
- Well-known on many ships.
- Maintained by provider.
- Can cope with many satcom systems.
- Can be configured for automatic transmission/reception.



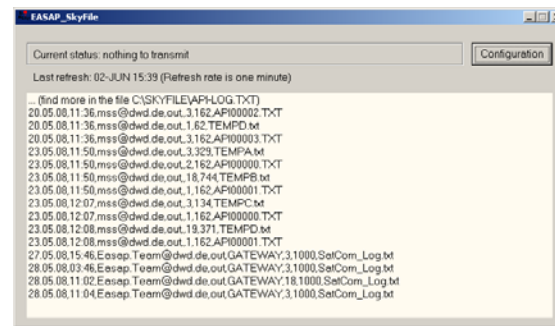
# E-ASAP solution

1. Sounding software saves data files in dedicated directory.
2. **EASAP\_SkyFile** software periodically checks the dedicated directory.
3. Email software **SkyFile** is triggered by **EASAP\_SkyFile** to send the data files as email attachment.

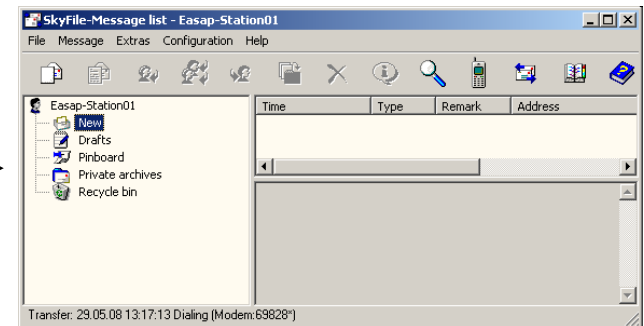
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# EASAP\_SkyFile interface

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## EASAP\_SkyFile

- triggers **SkyFile** as soon as data files are available,
- displays the satcom transmission log,
- enables remote log requests (delayed mode),
- cannot be closed (except via Windows task manager).

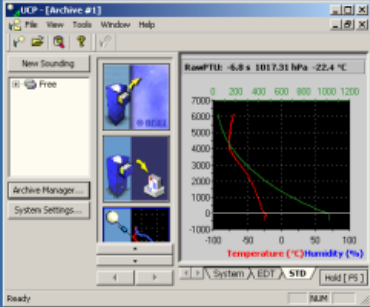
Local Disk (C:) RECOVERY (D:) DVD-RAM Drive (E:) Control Panel Shared Documents My Documents  
 My Computer Manager's Documents Operator's Documents Removable Disk (F:)

Recycle Bin My Computer  
 Adobe Reader 7.0  
 DigiCORA

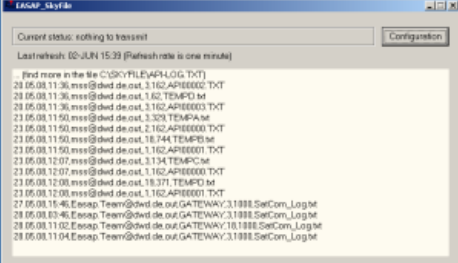
**Never close EASAP\_SkyFile or SkyFile  
 (If accidentally closed, please restart immediately)**




↓



**EASAP\_SkyFile**

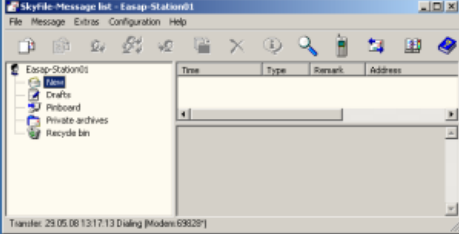


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**SkyFile**



- Check transmission of previous data files before next launch
- Report to [Easap.Team@dwd.de](mailto:Easap.Team@dwd.de) in case of problems

EN 01:57



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# Extension of the E-ASAP fleet

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- ASDE03
  - 20ft cont. is to be replaced by deck launcher.
- ASFR3, ASFR4
  - Deck launchers are to be installed on sister ships of ASFR1 and ASFR2.
- ASIS01
  - Proposed to be operated as temporary land station in NE Iceland.
  - First priority: Re-installation on board of a ship.

# Migration to HiRes BUFR

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- Several stations in E-ASAP fleet commenced transmission of
  - TEMP A, B, C, D**and**
  - BUFR surface-100 hPa (significant/mandatory levels),
  - BUFR surface-burst height (10 sec levels)
- HEADINGS:
  - USVX01 EDZW: Part A
  - UKVX01 EDZW: Part B
  - ULVX01 EDZW: Part C
  - UEVX01 EDZW: Part D
  - IUKX40 EDZW: BURF surface - 100 hPa
  - IUSX40 EDZW: BURF surface - Burst height

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# Risks for E-ASAP fleet

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- Shortage on the world market for helium.
- Due to the current economic crisis shipping companies tend to
  - get rid of their old ships,
  - prefer more flexible lines services.
- New ships have very limited space for containerised ASAP systems (=> need to reduce size of launchers).



# SWOT evaluation

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- **Strength:** Only source of routine upper air data (<100 hPa) from data sparse ocean regions.
- **Weakness:** Operated by non-professional observers (wide range of skill and motivation), satcom, resupply logistics.
- **Opportunity:** Significant improvement in forecast models.
- **Threats:** De-commission of stations due to changes in line services. Possible shortage of helium.



# Summary

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- Decommission of 4 E-ASAP stations in 2008 (3 stations already re-installed by May 2009)
- Better timeliness and reduced loss through Iridium satcom
- Fleet of currently 15 E-ASAP ships is to be extended to 19 in 2009 (including temporary land station ASIS01), if no stations are decommissioned
- Migration to HiRes BUFR on all ships under E-ASAP management in 2009
- ASAP's are the only source for upper air data (<100 hPa) in data sparse ocean regions.

