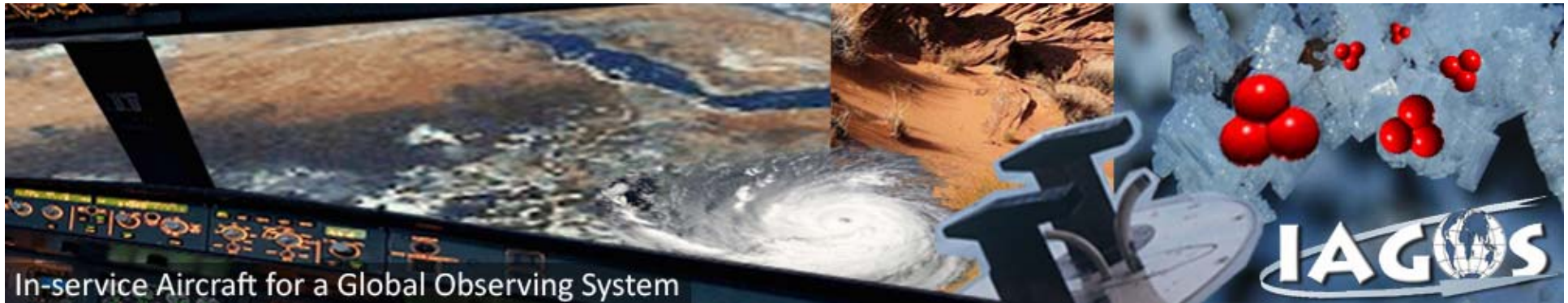


In-service Aircraft for a Global Observing System

WP-5 New technical developments

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IAGOS-ERI Annual Meeting 2011, Manchester, 12.-14.09.2011



- Design of a ultra-small IAGOS package for tropospheric/UTLS H₂O and aerosol (BCP) only.
 - 10 -15 kg
 - IAGOS Airbus 'flange'/ Boeing wing inspection panel

⇒ produce demonstration prototype/CDR by end of project

- CARIBIC

WP-5 : New Technical Developments

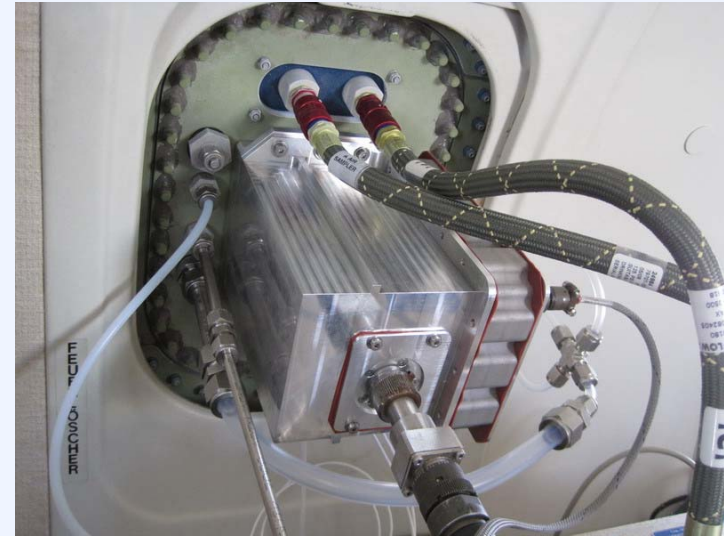
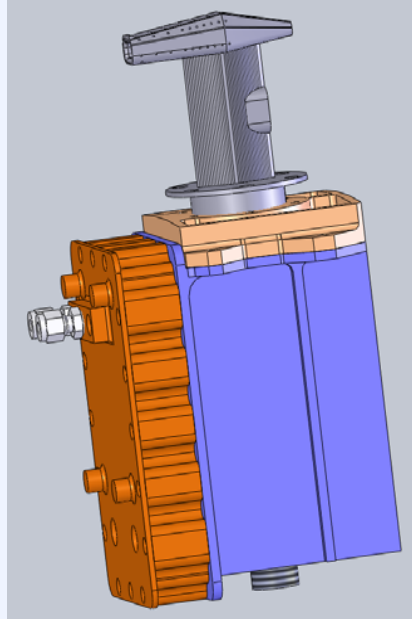
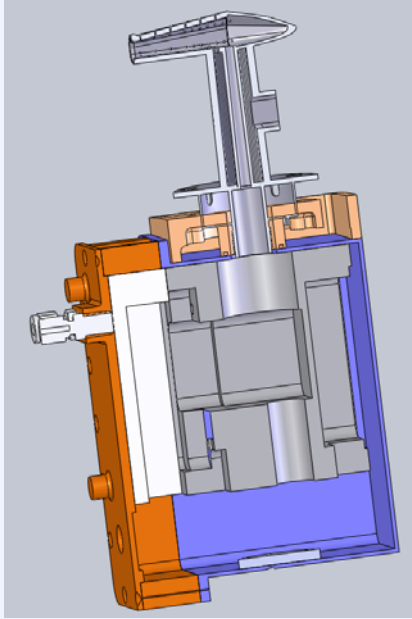
No	Objective/Deliverable	Partner	due
D5.1	Characterisation of BCP	UCAM	24
D5.2	Documentation of Critical Design Review (CDR) for certification of small instrument package	UCAM	48
D5.3	Modified and re-certificated CARIBIC-container system for routine operation (incl. documentation for certification)	IFT	36

Summary (BCP)

- BCP unit (one of two) has been characterised in the UMAN laboratory.
- BCP unit deployed on the FAAM BAe-146 aircraft platform for in-flight comparison as part of IAGOS ERI WP9.
- BCP used in a number of NERC funded programmes (see WP9 report).
- BCP unit and electronics delivered to UCAM for integration with the prototype small instrument package.

Task 5.1 : Construction of a Compact Instrument Package

Deliverable(s)	D5.2: Documentation of Critical Design Review (CDR) for certification of small instrument package (UCAM/M48)
Milestone(s)	M5.1.3: Construction of prototype integrated instrument package completed (UCAM/M39*)
Status	D5.2: On Schedule M5.1.3: Milestone delayed by 3 months *Interim report due for delay
Achievements	Construction of prototype integrated instrument package ongoing. Parallel small package component instrument deployment under WP9 (in conjunction with EUFAR/DENCHAR programme).
Deviations from Contract	None



Prototype hygrometer enclosure. The image on the far left is a cut away of the instrument. Image on right is flight trialed version (in conjunction with EUFAR/DENCHAR)

(Flange mounting plate is shown in pink, PTFE hygrometer enclosure in grey, aluminium housing block in blue with aluminium housing box cover in orange)

Summary (small package)

- Data acquisition system (see Milestone 5.1.2: “Development of prototype integrated instrument package”) tested with SAW control electronics unit.
- Protocols finalised for integration with the BCP and HUMICAP as part of the construction of a prototype small instrument package.
- CAD engineering documents have been developed for the integrated SAW and HUMICAP portion of the prototype instrument package.

Summary (contd.)

- Prototype reduced SAW/HUMICAP/BCP instrument suite being constructed, following the agreed MOZAIC flange installation philosophy.
- Boeing under-wing hatch cover installation has not been ruled out for long term investigation, outside the current IAGOS framework and remains outside the CDR remit.

Deviations from Annex I *(if any)*

- No major deviations from workplan are envisaged with no additional actions required.
- The small instrument package is on track for the construction of a prototype instrument package* and the final critical design review.

* except agreed 3 month delay

Use of Resources

- Projected person months is as per work-package plan.
- No changes to main deliverable items envisaged.
- Additional resource usage of NCAS instrument staff envisaged for BCP aircraft data validation phase but these will be provided along with data exchange by existing science programmes in collaboration with FAAM and UK Met Office.

Task 5.2 : Transfer of CARIBIC into a Routine Operational System

Deliverable(s)	D5.3: Modified and re-certificated CARIBIC-container system for routine operation (incl. documentation for certification) (IfT/M36)
Milestone(s)	M5.2.1: Modified CARIBIC-container system ready for routine operation (IfT/M33)
Status	Milestone and deliverable achieved, minor tasks still ongoing
Achievements	<ul style="list-style-type: none">• Routine operation restarted• Spare inlet system now available
Deviations from Contract	None

Summary

- After the recertification of the CARIBIC container in April 2010 and 3 volcano mission flights, regular flight activity was restarted in June 2011 (M5.2.1).
- For the first time four long distance flights were executed for 12 consecutive months, which is a great step forward towards a routine operation system.
- Theoretically 48 flights could have been achieved, but due to an aircraft maintenance issue, only 46 were reached (still a record for CARIBIC).
- Teething problems of the new instruments were solved and after the recertification the figure of merit concerning the instrument reliability is continuously increasing.
- A spare inlet system was constructed and is now available at LH maintenance facility in Hamburg.

Deviations from Annex I *(if any)*

- Because of the nine month delay at the beginning of WP5.2 (lack of adequate personal) the transfer of the CARIBIC system into a routine operational system is not completely finished yet.
- The major goal, the modification and recertification of the container was reached in time (D5.3, month 36), however there is still a need for improvements of the instrument reliability.
- The respective minor tasks (mainly on the software level, e.g., the reliability of the communication system) will be accomplished in the last year of IAGOS-ERI-PP.
- No problems are foreseen.

Use of Resources

- Salary for an engineer (half-position)