

**Press releases 2009**

**HALO - New research aircraft lands at its home airport**

*24 January 2009*



Shortly before the ferry flight - HALO in front of the maintenance hangar in Savannah, USA

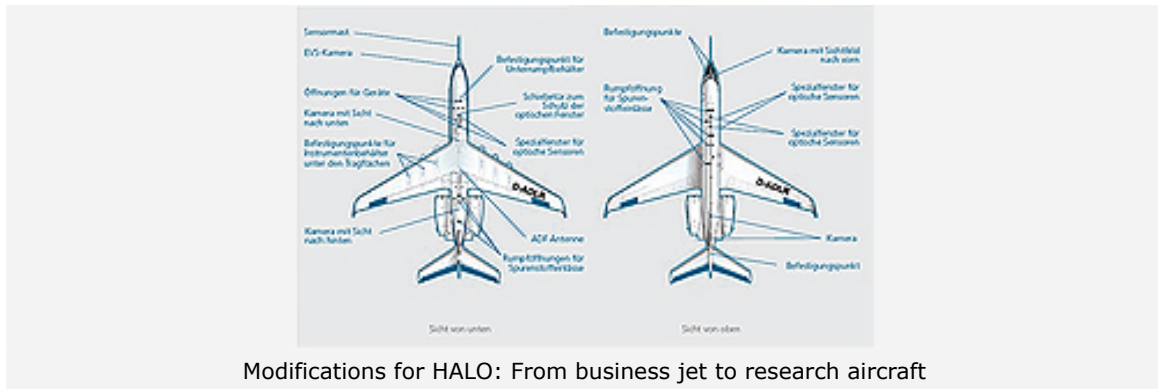
**Climate and atmospheric research about to be taken to a new level**

HALO – High Altitude and Long Range Research Aircraft – the latest member in the research fleet of the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) landed at Oberpfaffenhofen research airport on 24 January 2009. The aircraft, a Gulfstream G550, has been converted into one of the world's most state-of-the-art research aircraft for climate and atmospheric research. After an approximately nine-hour ferry flight from Gulfstream's manufacturing facility in Savannah in the US, HALO touched down on the landing strip of its new home airport shortly after 10am.

"HALO will enable scientists to conduct atmospheric research under much better conditions than ever before", said Professor Johann-Dietrich Wörner, Chairman of the DLR Executive Board. Wörner went on to say: "I would like to thank all scientists, engineers, technicians and pilots who helped to make this project a reality for their excellent work."

With its range of up to 8 000 kilometres and ceiling of 15.5 kilometres, the new research aircraft can carry a scientific payload of up to three tonnes to areas above the ocean which could not be reached before, or to the polar regions. HALO thus in many respects outperforms the Falcon 20E, the atmospheric research aircraft deployed by DLR until now, and it opens up new opportunities for researchers.

## At the service of science



In order to prepare the aircraft for scientific service, modifications were made to the cabin allowing the installation of 15 equipment racks, each capable of accommodating scientific instruments weighing up to 150 kilogrammes. Additional hardpoints for mounting measuring probes and measuring devices are located underneath the fuselage and under the wings. German company Aerostruktur has developed and built special wing stores and belly pods to accommodate such instrumentation when needed.

"The reason we developed HALO is that we wanted to be able to fly and collect data at higher altitudes and over longer distances than before. In addition to this, we will also be using significantly better instruments on board HALO. HALO will enable us to fill major gaps in our understanding of the atmosphere, especially with regard to the formation of clouds and the reduction of greenhouse gases. In this way we will lay the groundwork for more effective climate protection and better weather forecasting", said Professor Ulrich Schumann, Head of the DLR Institute for Atmospheric Physics (DLR-Institut für Physik der Atmosphäre). Professor Schumann is the initiator and, together with Max Planck Society researcher Professor Meinrat Andreae, one of the "spiritual fathers" of HALO.

Even before HALO's final commissioning, more than 50 mission proposals have been put forth. Ten of these will be selected as so-called demonstration missions. The first scientific flights are scheduled to take place from summer 2009. These will focus on the oxidising power of the troposphere, as well as on the influence of air traffic on the formation of ice clouds.



### Extensive modifications turn a business jet into a research aircraft

Extensive modifications were needed to convert the G550, originally designed as a business jet, into a research aircraft. HALO landed in Oberpfaffenhofen for the first time on 25 April 2006, in order to be prepared for its new purpose by aerospace company RUAG. More than 20 additional apertures needed to be cut into the fuselage in order to accommodate optical viewports and inlet systems. Almost one year, and 60 000 man hours, later the aircraft returned to the US in preparation for its delivery to DLR. In the same period, the new HALO hangar was built in Oberpfaffenhofen. The new building was needed because the G550, with its wingspan of 30 metres, could not have been properly accommodated in the existing hangar in Oberpfaffenhofen. DLR's Oberpfaffenhofen flight facility was also prepared for the arrival of the new aircraft, and the test pilots and flight test, development, and airworthiness engineers were trained to handle this new model.

## Current status

During the past few weeks, the aircraft was formally accepted by the US and German authorities and handed over to a team at DLR. And now that HALO has arrived, its first few months in Oberpfaffenhofen will look like this: First, a series of additional, permanently integrated sensors will be installed in the aircraft, as well as a versatile data acquisition system. These new components, together with the belly pods and wing stores, will then be tried and tested in different mounting configurations during a series of rigorous flight test programmes, after which they can be formally accepted by DLR's Design Organisation (Entwicklungsbetrieb) in conjunction with the Luftfahrt-Bundesamt (German Federal Office of Aviation).



HALO was financed using federal funds made available by the German Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung) as well financial support provided by the Free State of Bavaria, the Max Planck Society (Max-Planck-Gesellschaft; MPG) and the Helmholtz Association of German Research Centres (Helmholtz-Gemeinschaft Deutscher Forschungszentren), and contributions by Forschungszentrum Jülich (FZJ), Forschungszentrum Karlsruhe (FZK) and DLR. The German Federal Ministry of Economics and Technology (Bundesministerium für Wirtschaft und Technologie) is also involved in the project.

As HALO's owner-operator, DLR is responsible for operating the aircraft. Operational maintenance costs are shared between DLR and its partners, including the Deutsche Forschungsgemeinschaft (German Research Foundation), MPG, FZJ and FZK, as well as the Leibniz Institute for Tropospheric Research (Leibniz-Institut für Troposphärenforschung) and the German Research Centre for Geosciences (Deutsches GeoForschungszentrum; GFZ) in Potsdam.

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