Dedicated Airborne Platform for Fate and Transport Studies in the Lower Atmospheric Boundary Layer

by

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to the

Engineering Aspects and the Transport and Fate Strand

Collaborative Scientific Research in Relation to the Gulf Oil Spill Conference

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ATMOSPHERIC & ENVIRONMENTAL RESEARCH OPERATIONS PROGRAM

Environmental process research

at the atmosphere-surface interface

General Comments

- An understanding of fate of oil, dispersants, and associated compounds must include atmospheric connections at a variety of temporal and spatial scales

- Uncertainty, especially in spatial distributions, needs to be quantified to the maximum extent possible

- Technologies from other disciplines need to be effectively integrated into field research of this scale

- Approaches, methodologies, or technologies developed to investigate fate processes in GOM should be generalizable

Background and Interests

- Fate, treatment, and transport in multiphase complex systems with surface mediated processes

- Mass, momentum, and energy exchanges in the planetary boundary layer

- Coupling physical/chemical and biological processes through collaborations

- Micrometeorology and airborne environmental research

UA Aircraft N24UA & MFP

- SkyArrow 650 Environmental Research Aircraft (ERA)
- Mobile Flux Platform (MFP)
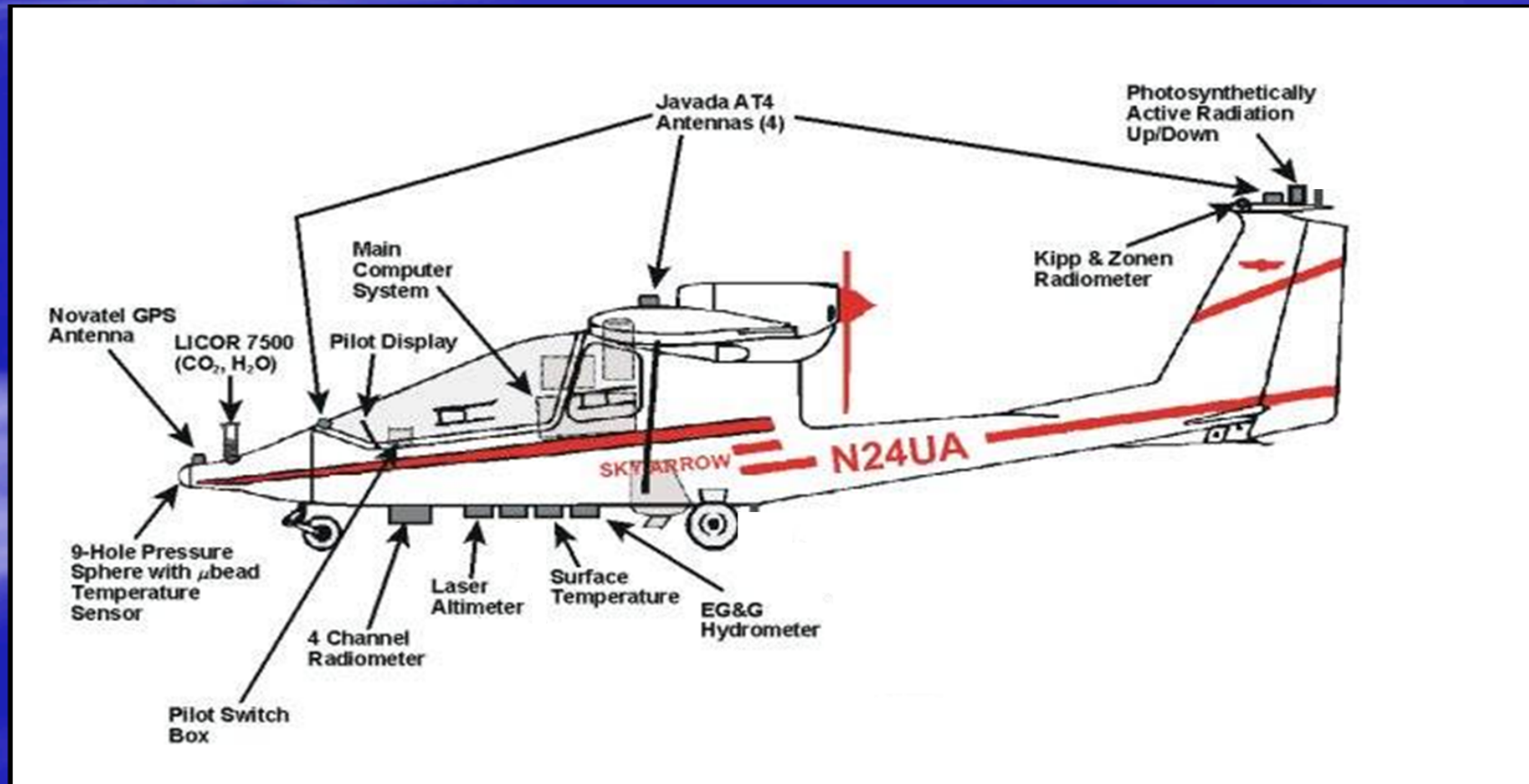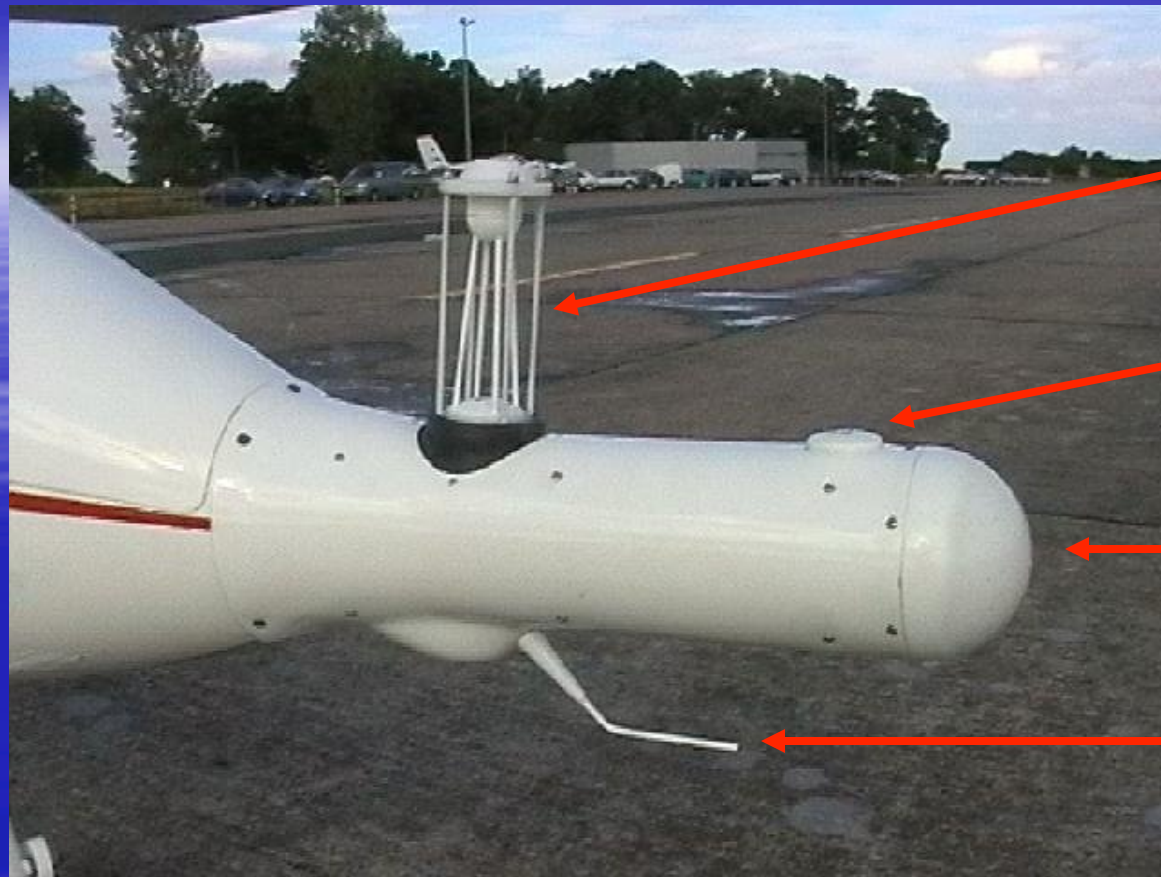
LiCor 7500 IRGA

NovAtel GPS Antenna

BAT hemisphere

Pitot tube

The LiCor 7500 CO_2/H_2O IRGA installed on the Sky Arrow probe. Note the BAT hemisphere attached to the front of the probe and the NovAtel GPS antenna. The tube protruding from the bottom of the probe is the pitot tube, used to measure aircraft airspeed and not part of the MFP instrument package.

Particular Interests Relative to GOM Oil Spill Research

- CO_2 and CH_4 fluxes across sea-air surface
- Flux measurements to parameterize and validate satellite data and models and to link to other measurements across spatial or temporal scales
- Measuring atmospheric boundary layer dynamics to support transport models
- Remote sensing application for ocean, atmosphere, surface, and contaminant characterization
- Instrument development, testing, and comparison