- Overview
- White Papers
- Contacts
- Platforms
- Flt-Planning
- Support
- Schedules
- Data
- Presentations
- Reports
- Publications
- Outreach
- Links

INTEX-NA Mission Description & Scienc Objectives

Mission Description

The principal NASA platform for the summer 2004 INTEX-NA mission is the DC-8 with long range and high altitude capability. This platform will be equipped with a comprehensive suite of in-situ and remote sensing instrumentation to provide a comprehensive suite of chemical, physical, and optical measurements involving gases and aerosols.

Complementing the NASA DC-8 will be as many as 12 other aircraft that will be concurrently operated over North America and Atlantic. Additionally several satellites (Terra, Aqua, Aura, Envisat) will be making atmospheric chemistry measurements from space. Interaction with ongoing satellites measurement programs is an important goal of INTEX-NA. INTEX-NA objectives require the use of satellite data and will also under fly key satellite instruments to validate their results. These platforms have complementary capabilities and their operation will be coordinated to maximize overall scientific output. The NASA DC-8 will be operated from bases in California,

Reference

Illinois, Missouri, and New Hampshire. Flights will pursue targeted objectives with optimized observational priorities.

Meteorological and chemical forecasts provided by a number of groups will be the principal means for flight planning. Output from a number of models with varying resolution and capabilities will be available for this purpose. These models will also play a critical role in post mission analysis of data.

Science Objectives

The principal science objectives of INTEX-NA are to:

- Quantify the outflow of radiatively and chemically important trace gases and aerosols from North America to the Atlantic, and relate this outflow to our understanding of sources and sinks over North America and elsewhere;

- Understand the transport and chemical evolution of the North American outflow over the Atlantic, and assess the impact and implications of the intercontinental transport of pollution on the global atmosphere and on regional air quality and climate;

- Quantify the transpacific transport of Asian pollution to North America and its implications for air quality (Phase B).

INTEX-NA will also perform the following important supporting functions that address critical needs and greatly facilitate the achievement of its objectives:

- Utilize INTEX-NA airborne platforms and observational strategy to validate key satellite observations (e. g. H_2O, O_3, NO_2, HNO_3, CO, CH_4 and HCN) in the troposphere especially from the Aura and Envisat platforms.

- Support the North American Carbon Program to quantify the North American carbon sink through direct observations of climatically relevant trace gases (e. g. CO_2 and methane) and aerosols across North America and beyond.

Science Overview

Parameters	Method*	PIs
O_3	NO/O_3 Chemiluminescence	M. Avery, NASA LaRC
NO, NO_2, HCHO	Laser Induced Fluorescence	D.Tan, GIT/EAS
CO, CH_4, N_2O	Tunable Diode Laser Absorption Spectrometry	G. Sachse, NASA LaRC
VOCs (NMHC, halocarbons, alkyl nitrates)	Whole air sample collection; GC-FID/EC/MS analysis	D. Blake, UC Irvine E. Atlas, U. Miami
NO_2, NO_y	Laser Induced Fluorescence & thermal dissociation	R. Cohen, UC Berkeley
CO_2	Non-Dispersive Infrared (NDIR)	S. Vay, NASA LaRC
CH_2O	Tunable Diode Laser Absorption Spectrometry	A. Fried, NCAR
PANs, OVOC, nitriles, tracers	GC-ECD/FID/RGD	H. Singh- NASA ARC
H_2O	Open path Tunable Diode Laser Absorption Spectrometry	G. Diskin- NASA LaRC J.Podolske, NASA ARC
OH, HO_2, RO_2	Laser Induced Fluorescence	W. Brune, Penn State Univ.
HNO_3, bulk aerosol composition	Mist chamber/GC-IC	R. Talbot, Univ. of New Hampshire
SO_2, HNO_4	Chemical Ionization Mass Spectrometry	G. Huey GIT-EAS
HNO_3, H_2O_2, organic acids	Chemical Ionization Mass Spectrometry	P. Wennberg, CalTech
Aerosol bulk ionic composition	Particle Into Liquid Sampling (PILS)/IC	R.Weber GIT-EAS
H_2O_2, CH_3OOH, HCHO	HPLC-flourometry	B. Heikes, Univ. of Rhode Island
Aerosol, O_3 profile	UV Lidar	E. Browell, NASA LaRC
Actinic fluxes & photolytic frequencies	Spectrally resolved Radiometer, Zenith & Nadir	R. Shetter, NCAR
H_2O, $J(NO_2)$	Cryogenic hygrometer, actinometer	J.Barrick, NASA LaRC
Aerosol composition, microphysics, and optical properties	Partical measuring probes, differential mobility analyzer, CN counters	A. Clarke, Univ. of Hawaii
Aerosol number density, size, and light scattering properties; cloud liquid water content	CN counters, cloud aerosol & precep. Spectrometer, soot photometer	B. Anderson, NASA GSFC

NASA Contact: Michael Craig, INTEX-NA Project Manager
Web Administrator: **Greg Klinedinst**