NOAA Activities
Interagency Meeting
Gulf Oil Spill Workers' Study

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NOAA Deepwater Horizon Response
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Immediate Science Actions

• Scientific support to the IC through the USCG Field On-Scene Commander (FOSC)
• Collection of a broad suite of samples to assess baseline environmental conditions
• Assess the safety of seafood and inform appropriate closures of federal waters
• Evaluate dispersant and oil related to seafood safety – conduct baseline contaminant studies
• Assist to calculate oil flow from the DWH site to estimate total release of oil (Flow Rate Technical Group)
• Track surface oil and dispersant fate and transport
• Initial studies on effects of dispersants on marine organisms seafood uptake
• Initiate and participate in interagency Joint Analysis Group (JAG) for sub-surface oil

• Complement existing air quality efforts through aircraft (P-3) and vessel deployments
• Measure distribution and magnitude of subsurface dispersed oil and dispersant
• Conduct aerial surveys of protected species distribution and abundance
• Update increased sensitivity of the Loop Current hydrodynamics – P-3s dropping AXBTs, sponsoring oceanographic cruises
• Conduct baseline studies of natural resources (water, sediment, biota, human use)
• Develop/Conduct studies to measure injuries of trust resources (water, sediment, biota, human use) by oil and or response actions
• Daily-weekly weather forecasts critical for field operations
• Daily hurricane updates critical for field operations
Air Quality

- Oil release and associated mitigation/remediation efforts (e.g., burning, skimming) can present potential exposures.
- EPA-conducting shore-based air sampling and ASPECT flights throughout the spill and associated mitigation efforts.
- OSHA-conducting worker exposure measurements for operations associated with oil spill cleanup activities.
- NOAA coordinated with EPA and OSHA to conduct air chemistry sampling to complement existing efforts.
  - “Hurricane hunter” P-3 aircraft (EPA and OSHA)
  - Air canister deployment on NOAA vessels (OSHA)
P-3 Aircraft Missions

- Deployed to the Gulf from California to conduct two flights on June 8 and June 10
- Flight area
- NOAA WP-3D aircraft, equipped with an extensive suite of in-situ chemical sensors
- Measurements included:
  - Hydrocarbons and other organic species (e.g., VOCs)
  - Particulate matter
  - Ozone, carbon monoxide, nitrogen dioxide, peroxycetyl nitrate (PAN)
P-3 Results

- Near the DWH site, the marine boundary layer (MBL) was polluted with organics from the spill and products.
  - $\Sigma$ aromatics (benzene, toluene and C8-C11 aromatics) was below 20 ppbv but well above maximum concentrations measured over the Los Angeles urban area (recent P-3 flight).
  - Highest particulate matter (PM) concentrations were $\sim25 \mu g \ m^{-3}$. The PM was composed primarily ($\sim80\%$) of organics.
  - Highest ozone concentrations were 70-80 ppbv, comparable to average maximum concentrations observed in U.S. urban areas.
  - MBL was fairly well mixed vertically and, except for smoke plumes, the air above the MBL was clean and unaffected by emissions.
- Greatest concentration of gaseous hydrocarbons (alkanes and aromatics) observed in a relatively narrow plume (<20 km wide) that emanated from a relatively small area around the DWH site.
- Measurements in coastal areas not directly downwind from the DWH site were relatively unaffected by the pollution seen closer to the site.
  - However, on 10 June, the largest PM and oxygenated volatile organic carbon (VOC) products were observed close to the southern tip of Louisiana, which was directly downwind of the DWH site.
  - On 8 June the pollution plume was transported toward the central Gulf.
Additional Air Sampling and Modeling

- Air canister deployment on NOAA vessels
  - Research-grade air canisters deployed on the NOAA R/V Thomas Jefferson
  - Air sample collection in vicinity of well-head and during transit on 11-day cruise at the end of June
- Canisters currently being analyzed for a broad suite of compounds, including:
  - polycyclic aromatic hydrocarbons
  - volatile organic compounds
  - carbon monoxide, and carbon dioxide.
- Daily atmospheric trajectory maps
  - hypothetical atmospheric releases of material are predicted to be transported
Reports and data available at http://www.noaa.gov/sciencemissions/bpoilspill.html