

Hurricane Rainband and Intensity Experiment (RAINEX)



Principal Investigators:

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Location:

Miami & Tampa, FL

Project Time Frame:

15 August – 30 September

Facilities:

NRL P3 with ELDORA

Dropsondes

NOAA P-3s, US Airforce

Overview of RAINEX – Hurricane Rainband and Intensity Change

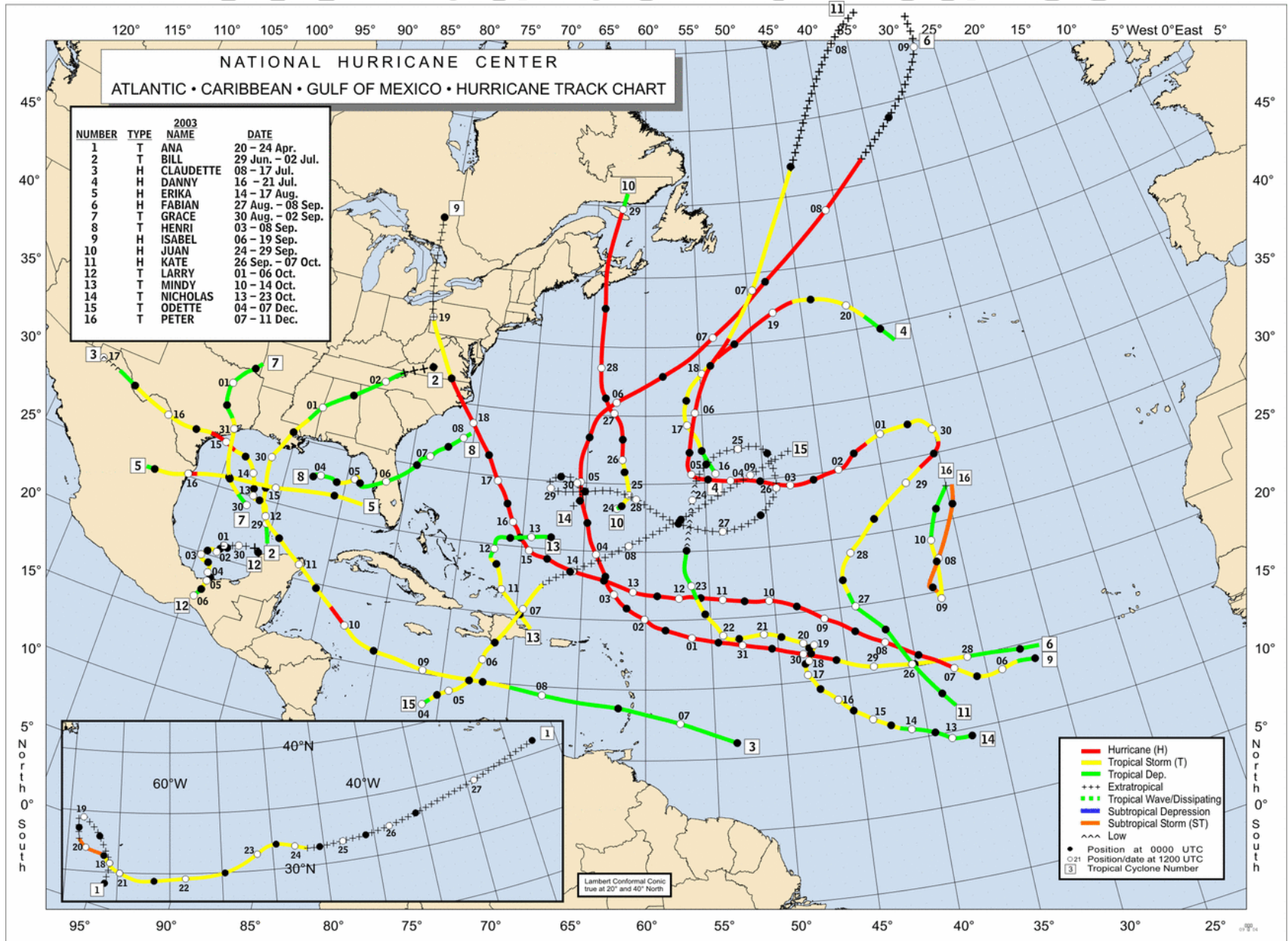
This is a coordinated modeling and observational study of hurricane intensity changes in relation to inner-core vortex dynamics, formation of secondary wind maxima in the outer rainband region, eyewall replacement cycles, and dynamic/thermodynamic feedbacks of outer rainbands.

Main objectives:

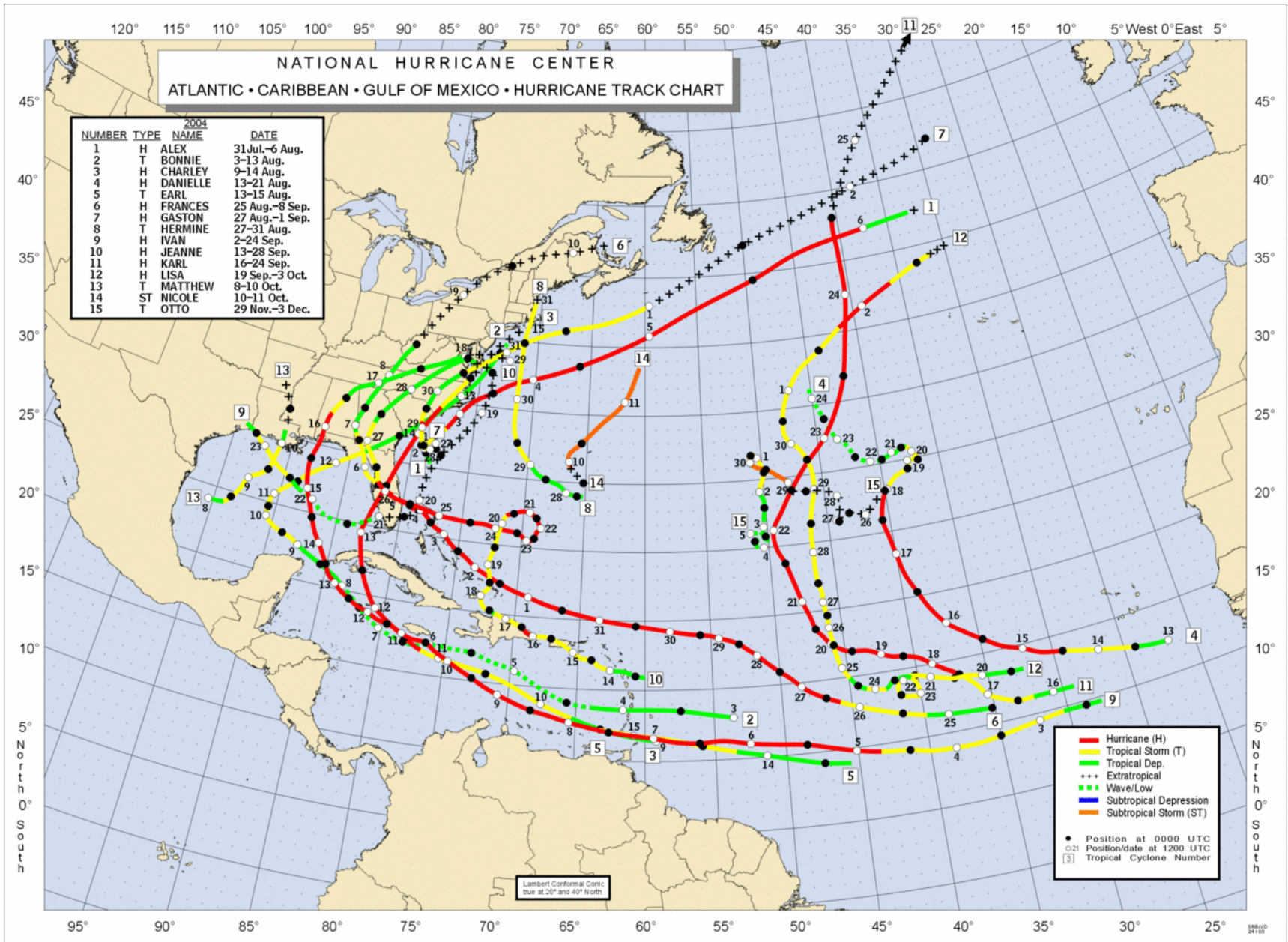
1. To examine *structures* (both dynamic and thermodynamic) of hurricane outer rainband and inner core regions simultaneously.
2. To investigate the *interactions* of the rainbands and primary hurricane vortex circulation and the role of these interactions in hurricane intensity changes



2003 Atlantic Hurricanes



2004 Atlantic Hurricanes



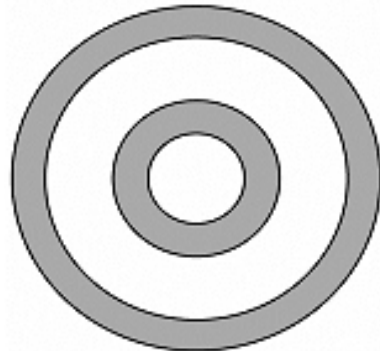
Types of Rainband



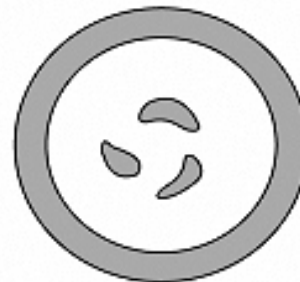
(i)



(ii)

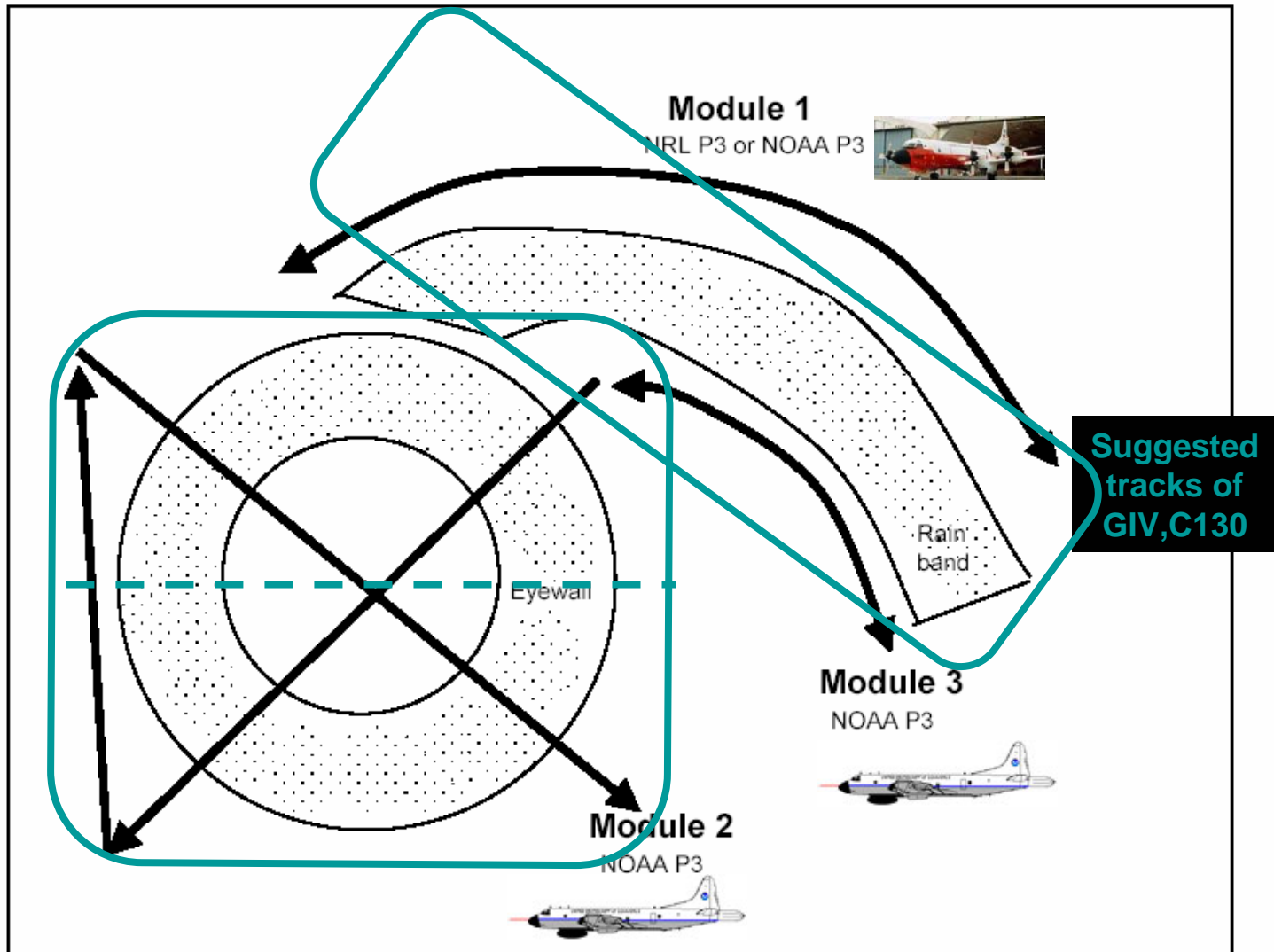


(iii)



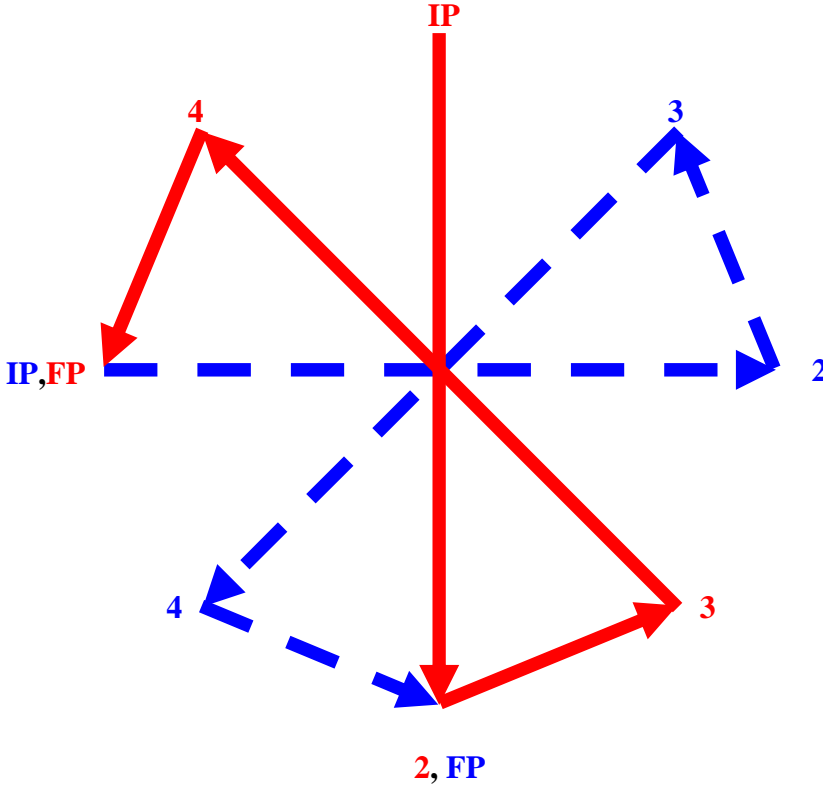
(iv)

RAINEX A/C Plan



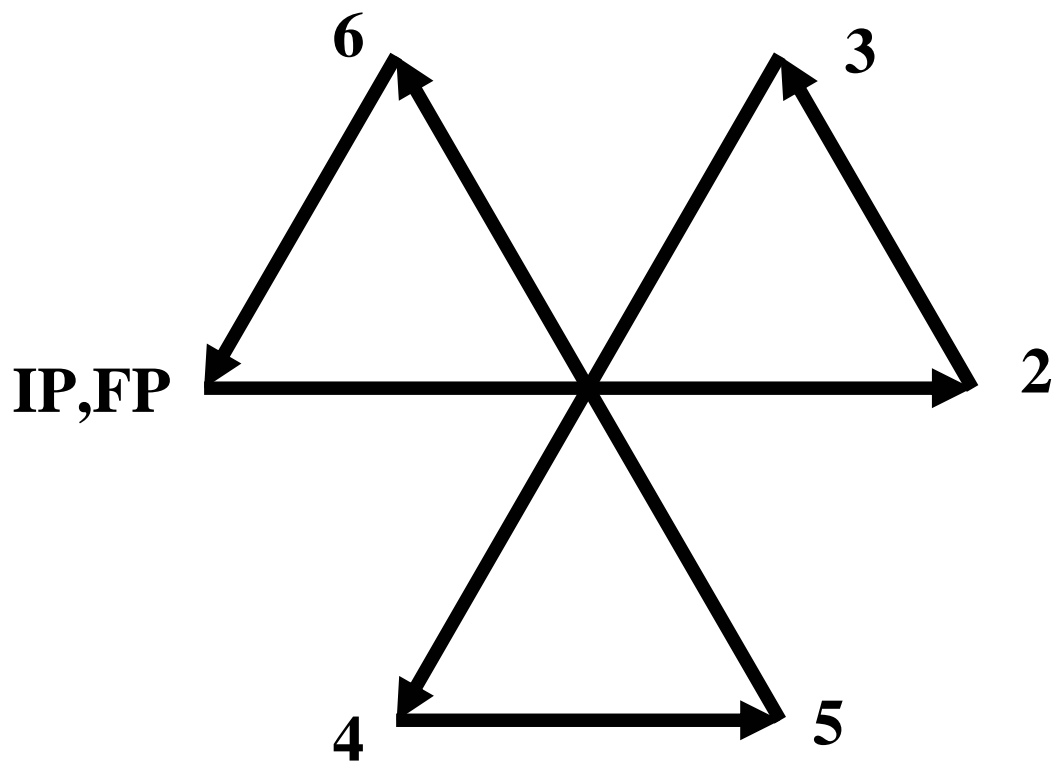
Coordinated dual-aircraft pattern

Doppler Coverage for 200 nm radius



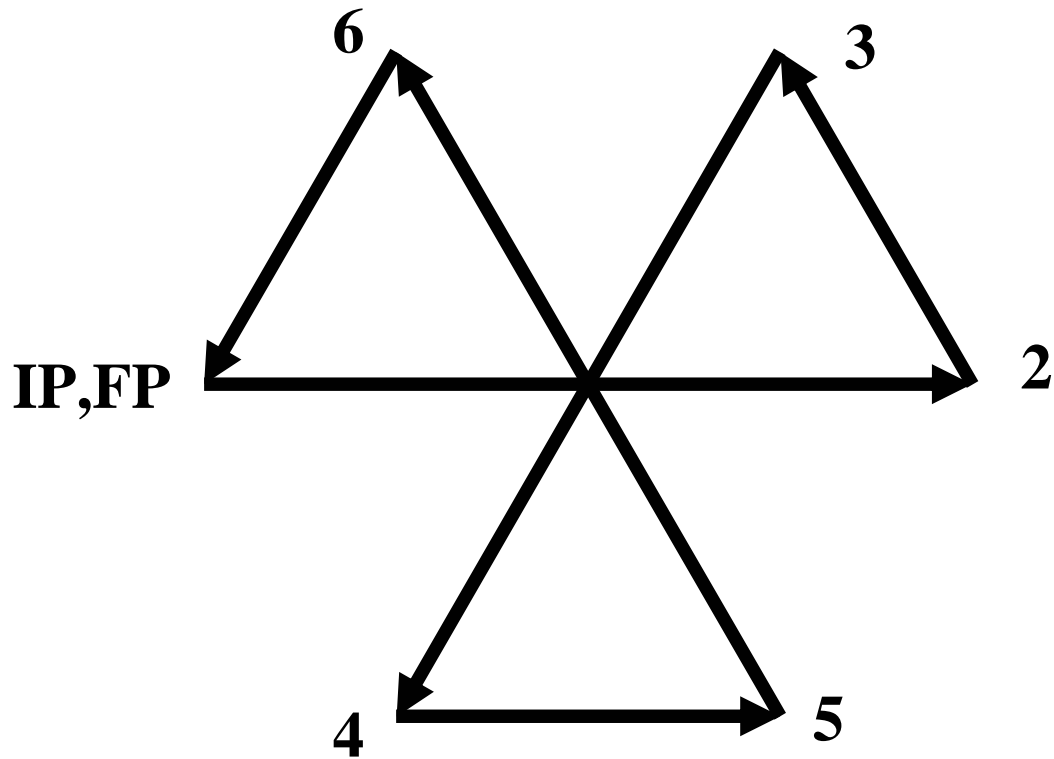
Hexagonal Flight Pattern

Doppler Coverage 150 nm radius

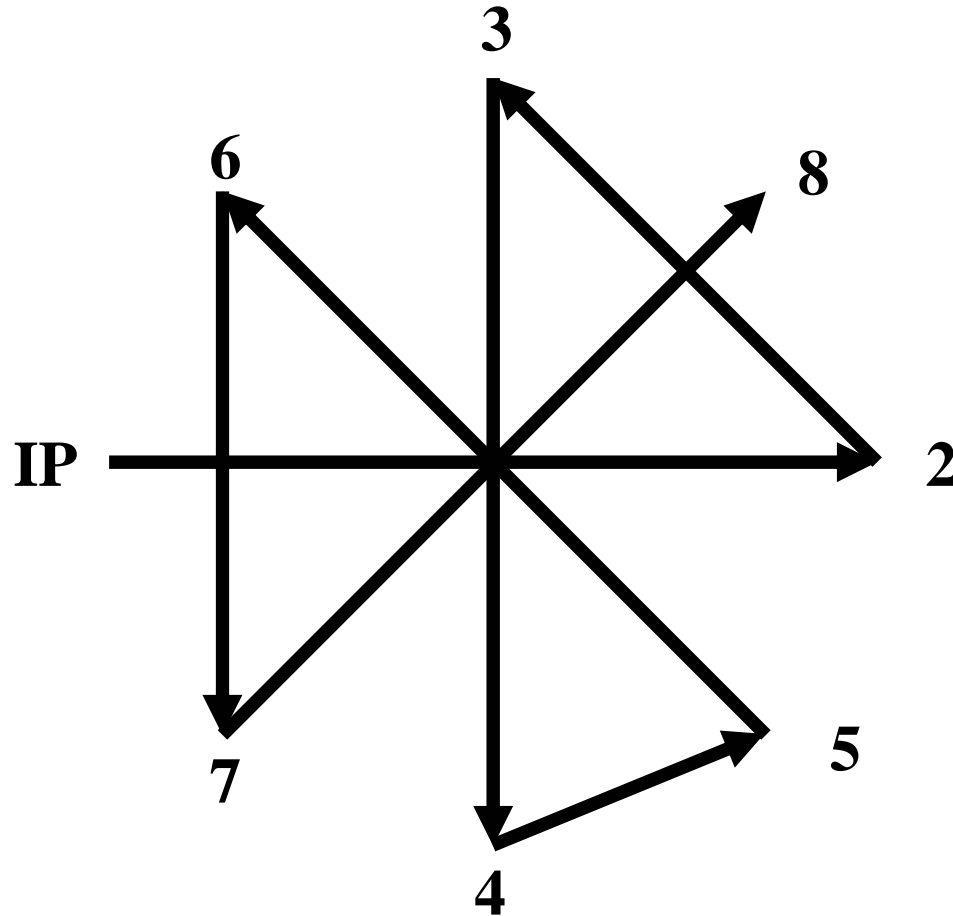


Hexagonal Flight Pattern

Doppler Coverage 100 nm radius



Single Aircraft Rotating Figure 4
Radius 100 nm--4.8 hours



Mode of Operation

- Primarily day-time operation, coordinated with one or both NOAA P3s.
- NRL P3 can be deployed or diverted to airports other than Tampa.
- Daily RAINEX briefing will be held at 11 am at the Ops center. A decision will be made about 12:30 pm after the HRD daily briefing.
- A possible operation will be announced at least 48 hours before and confirmed at least 24 hours before.
- Scientific staff will travel to Tampa if a mission is confirmed (by car or commercial flights).
- ELDORA data will be sent back to Miami via ground transportation after each mission (assuming landing in Tampa).

Staffing for RAINEX

- 2 RAF technicians
- 2 ELDORA technicians
- 1 ELDORA engineer
- 2 ELDORA scientists
- 1 ELDORA data manager
- 1 dropsonde technician

Staffing (continued)

- From 8/12/2005-10/2/2005, a total of 52 days. The tour of duty will be divided into three groups, each group will be in the field for ~18 days.
- The crew swap timing will be adjusted based on actual hurricane activities.
- If PIs stay in the field, EOL will maintain a minimal crew (1 RAF Tech, 1 ELDORA Tech, 1 dropsonde tech, 2 scientists) in Florida. The decision will be made by EOL project manager in consulting with RAINEX PIs.
- Engineers and Technicians will be based in Tampa. Scientific crew will be based in Miami.

NRL Requirements

- **Certified Flyers:**
 - Everybody needs updated Medical UpChit
 - Except for Tammy, Wen-Chau and Eric, NP4 training is still current
- **New Certification:**
 - 19/20 April (Pax)
 - 10/11 May (Pax)
 - 9/10 June (Whidbey)
 - 28/29 June (Pax)

Have Primary Care Physician fill out
OPNAV 3710/18

Obtain Medical UpChit from NAVAIR
Pass “Basic Swim Proof” at YMCA



YES**NO****Medical Questionnaire - Do you have or have you ever had:**

1. Disease of the eyes, ears, sinuses, seasonal allergies, hayfever, difficulty with clearing your ears, or pain in your ears or sinuses from diving or flying?

2. Chest pain, angina, heart attack, heart disease, heart murmur, palpitations, cardiac catheterizations, or pacemaker?

3. Hypertension, stroke, blood clots in legs, swelling in feet, or excessive fatigue with mild exertion?

4. Asthma, wheezing, emphysema, chronic cough, tuberculosis, collapsed lung, or shortness of breath with mild exertion?

5. Disease of the bowel, ulcers, rectal bleeding, chronic abdominal pain, hernia, kidney stone, or painful or frequent urination?

6. Arthritis, joint deformity, chronic back pain, or limitation of use of your back or extremities?

7. Paralysis, weakness of muscles, seizures, epilepsy, migraine or other severe headaches, loss of consciousness, or amnesia?

8. Mania, depression, schizophrenia, suicide attempt, alcoholism, panic attacks, fear of flying, fear of heights, fear of enclosed spaces?

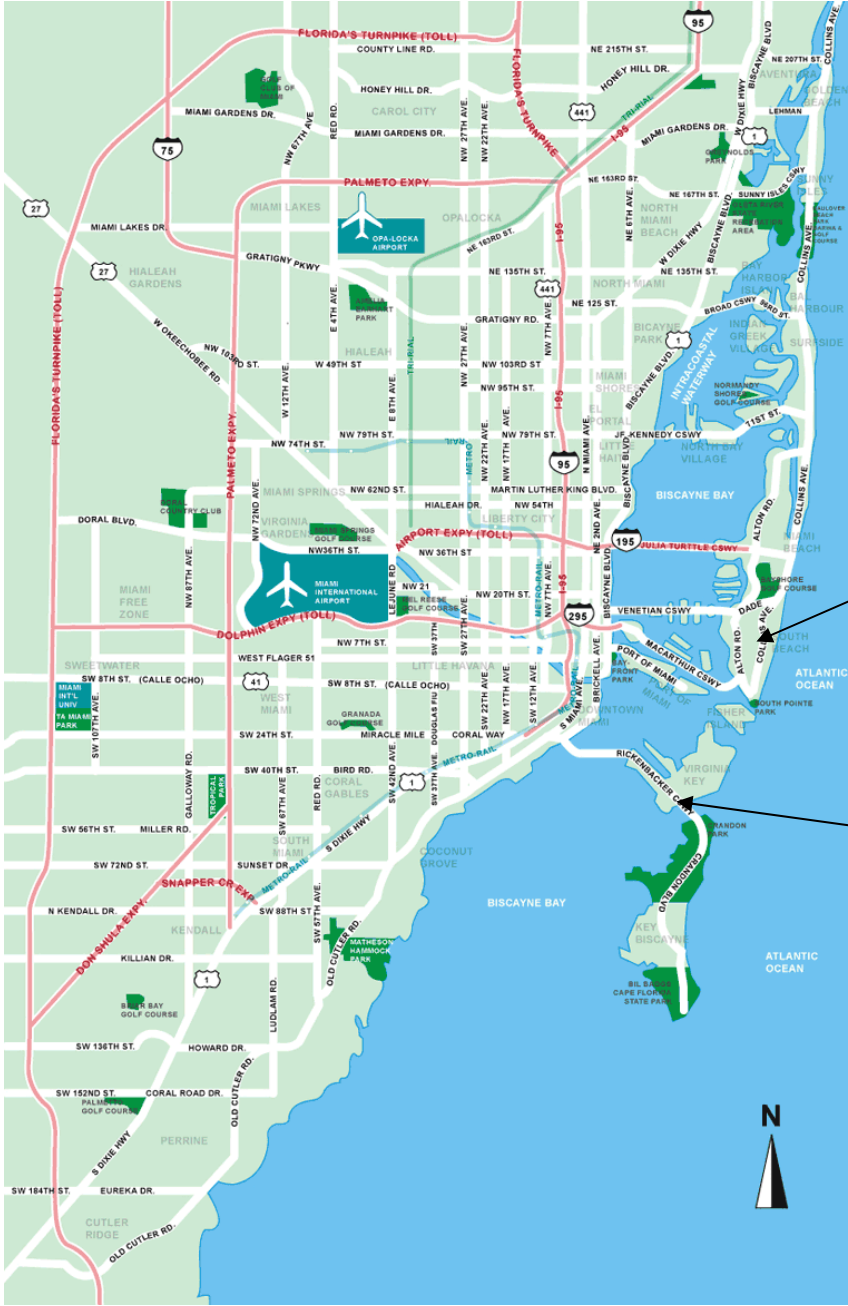
9. Anemia, diabetes, cancers, arterial gas embolism, bends, surgery, hospitalization, or other chronic medical conditions not listed?

10. Are you currently pregnant?

11. Are you currently taking any medication? List:

12. Can you jog 15 minutes continuously and swim 100 yards?

Miami Locations



Suggested Housing @
Miami/South Beach

Ops Center @ University of
Miami on Key Biscayne

Ops Center @ Marine Science Center

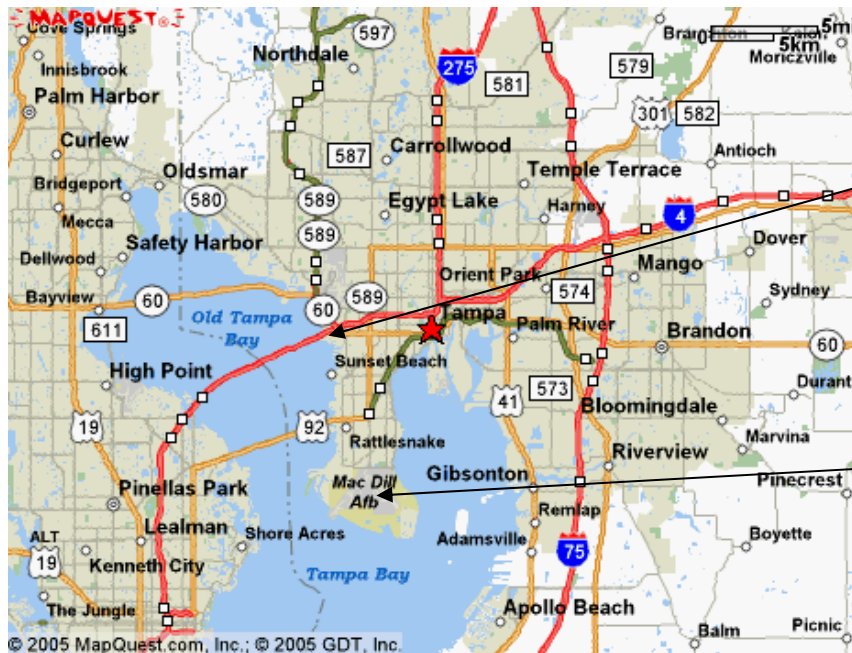
HRD

Ops Center



Tampa Locations

Driving Time – Miami to Tampa: 4.5 hours, about 370 miles



Sailport Resort

MacDill AFB

AOC at MacDill



Hangar 5

- Storage space for sondes, boxes etc in hangar
- Space for seatainer near NRL P-3 on ramp
- Availability of gases, stands, GPU etc



HANGAR 5

- Sufficient lab/workbench space for techs
- Sufficient desk space for workstations and laptops
- Access to conference room
- Coffee/Breakout Room
- Wireless Internet access through AOC
- Access to base facilities such as gym



Suggested Housing - Miami

1st Choice: DECOPLAGE

RATES:

- Studio: \$1800 to \$2300
- 1-bedroom: \$1800 to \$2500
- 2-bedroom: \$4200

PROS:

- Individually furnished condos
- Located directly on beach
- Near restaurants, shops, entertainment
- Fitness Center, Swimming Pool, Boardwalk

CONS:

- 20-min. drive to Ops Center
- Rush hour traffic
- Limited parking



2nd Choice: Waverly



RATES:

- 1-bedroom: \$3,000/mo

PROS:

- Views of city and bay areas
- Quiet location
- Walking distance to Lincoln Road (shops, restaurants, entertainment)
- Fitness Center, Swimming Pool, Concierge

CONS:

- No beach
- Further to shops & restaurants
- More expensive



3rd Choice Roney Palace

RATES:

- 1-bedroom: \$2300/mo

PROS:

- Located on beach
- Large wellness center, Swimming Pool

CONS:

- Not close to shops, restaurants, etc
- Difficult access to ocean
- No use of balconies
- Construction site
- Standard furnishings



Suggested Housing – Tampa

Sailport Resort

RATES:

- 1-bedroom: \$89/day (daily cleaning)
- 2-bedroom: \$93 to \$109/day

PROS:

- Located right on bay
- 4 Restaurants within walking distance
- Extensive laundry facilities
- Full kitchens, own phone number
- Swimming pool, large patio, sunning beach, grills, tennis courts
- Free membership at Bally Fitness
- Very accommodating management

CONS:

- About 20 min drive to shops, other restaurants, downtown etc.
- Traffic during rush hour
- Smaller quarters
- Standard but older furnishings



Other Tampa Possibilities

- Residence Inn – right next to airport
- At least 10 different hotels next to airport
- Apartments closer to Base (requires help from AOC)