Runway Headings, Runway Numbering, and Flight Headings

Presentation to:

Airport Noise Abatement Committee

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Topics

- **True north versus magnetic north**
  - Magnetic variation or declination
- **Headings**
  - Magnetic heading
  - Runway heading
  - Flight heading
- **FLL headings**

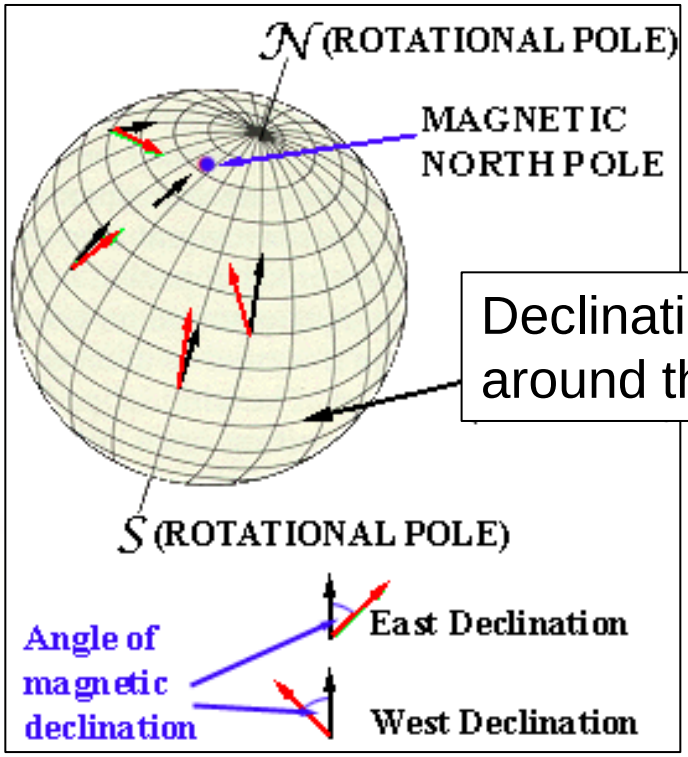
Note: Sources for FAA definitions / explanations of terms

- FAA Aeronautical Information Manual (AIM)
  - Official Guide to Basic Flight Information and ATC Procedures
  - http://www.faa.gov/air_traffic/publications/atpubs/aim/index.htm
- FAA Pilot/Controller Glossary (P/CG)
  - Addendum to the Aeronautical Information Manual
  - http://www.faa.gov/air_traffic/publications/atpubs/aim/index.htm

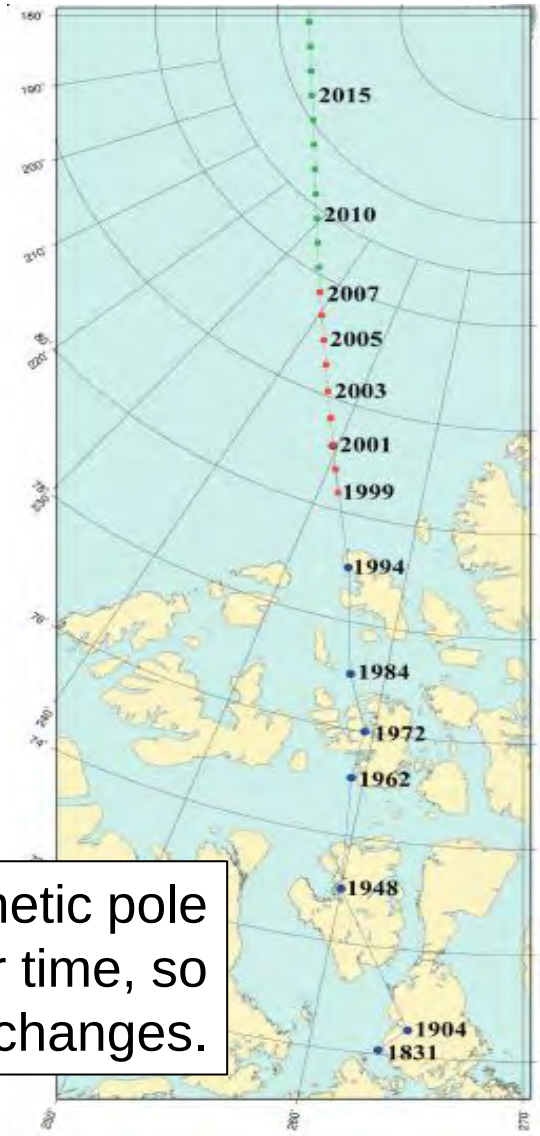
It all starts with “magnetic heading”

http://www.hmmh.com/

- **The magnetic north pole is offset from the true north pole**
  - Compasses point to “magnetic north”
  - The difference from “true north” is called “variation” or “declination”



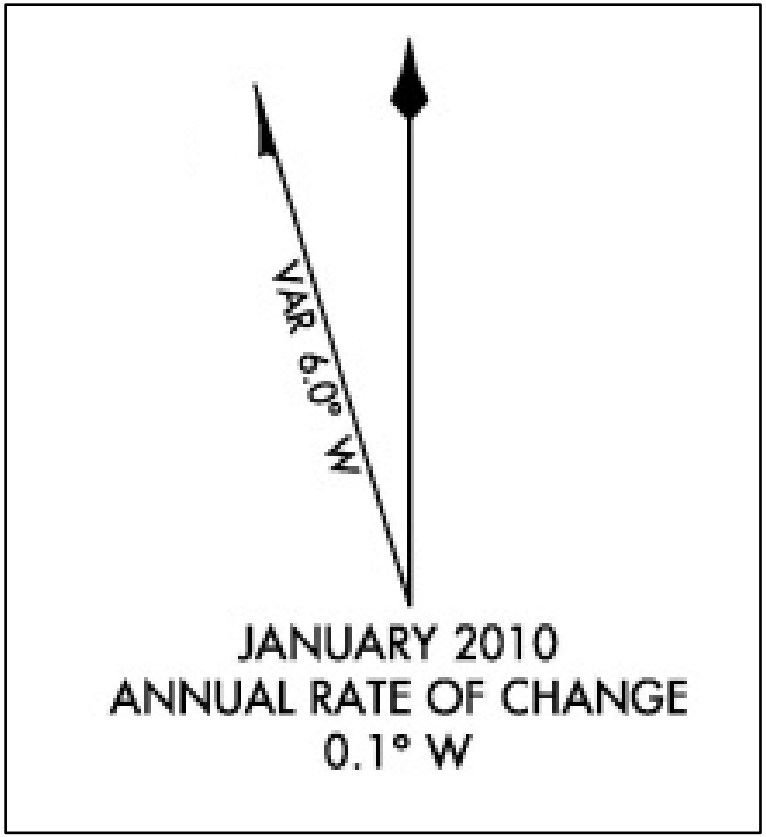
Declination varies around the world.



The magnetic pole moves over time, so declination changes.

Magnetic versus true north at FLL

- At FLL, the magnetic declination is approximately 6°W
- Small annual change (0.1°W)
- Approximately a one degree shift every ten years



Definitions from the FAA Pilot/Controller Glossary (P/CG)

Runway Numbering

Runways are normally numbered in relation to their magnetic headings, rounded off to the nearest 10 degrees; e.g., a runway with magnetic headings of 044° and 224° would normally be Runway 04/22.

Runway Heading

The magnetic direction [heading] that corresponds with the runway centerline extended, not the painted runway number.

When cleared to "fly or maintain runway heading," pilots are expected to fly or maintain the heading that corresponds with the extended centerline of the departure runway.

Drift correction shall not be applied; e.g., Runway 4, actual magnetic heading of centerline 044, fly 044.

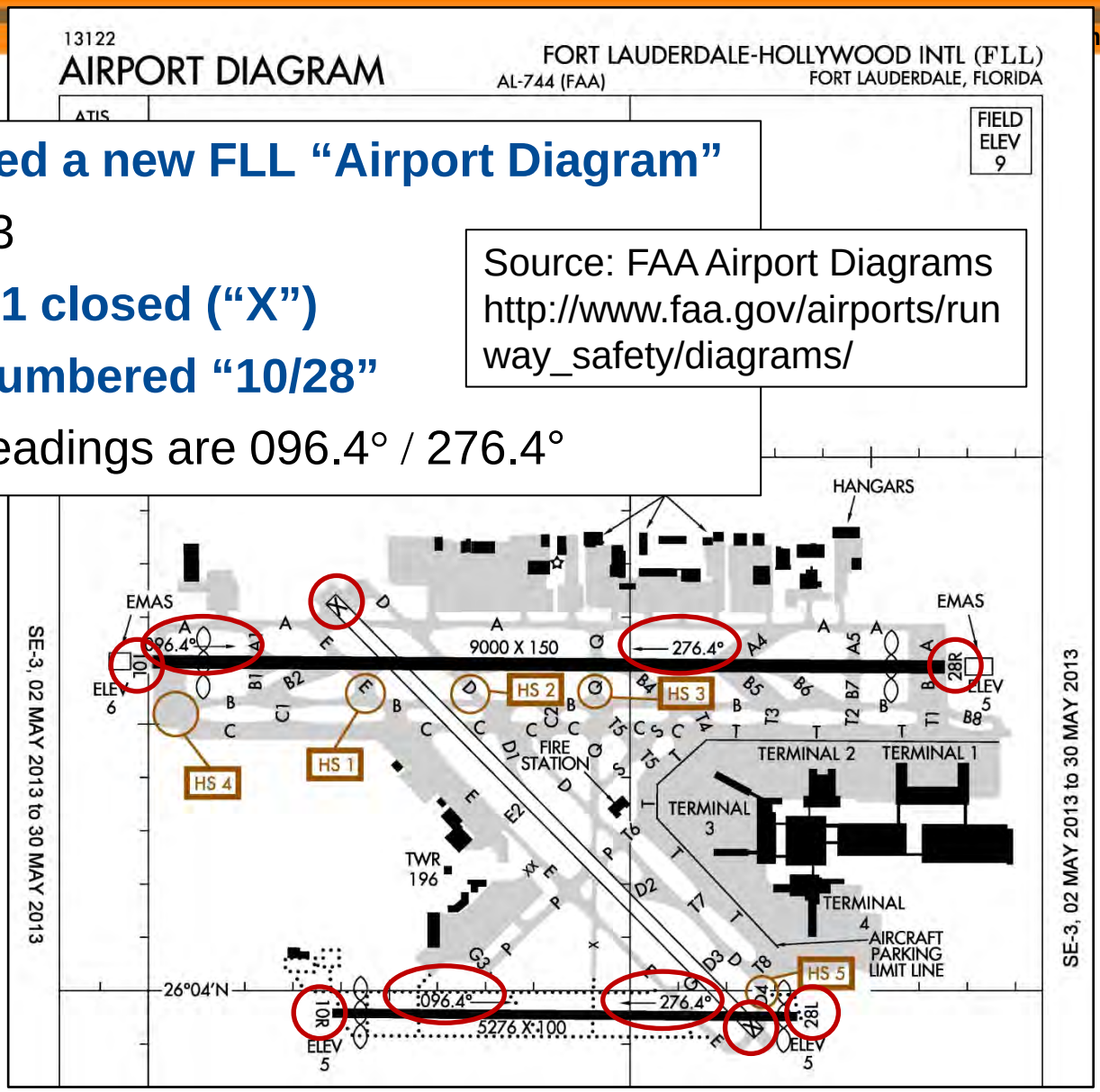
Flight Heading

A "heading" is a magnetic heading to be flown. Heading legs are subject to wind drift. [Therefore, aircraft paths over the ground may not be in the direction the aircraft is pointed.]

FLL Layout Considerations

- **FAA published a new FLL "Airport Diagram"**
  - May 2, 2013
- **Runway 13/31 closed ("X")**
- **Parallels renumbered "10/28"**
  - Magnetic headings are 096.4° / 276.4°

Source: FAA Airport Diagrams
http://www.faa.gov/airports/runway_safety/diagrams/



FLL Heading Assignments

- **The FAA assigns departures at FLL either runway heading or magnetic heading instructions**
  - An aircraft assigned to “fly or maintain runway heading” will point in the direction of the extended runway centerline, but may drift sideways (north or south) due to crosswinds
  - An aircraft departing on Runway 10 that is assigned to “fly heading 100” will turn approximately 3.6° to the south (i.e. 100.0 - 96.4), and also may drift north or south due to crosswinds
  - An aircraft departing on Runway 28 that is assigned to “fly heading 280” will turn approximately 3.6° to the north (i.e. 280.0 - 276.4), and also may drift north or south due to crosswinds
- **FAA has stated that departure heading instructions will be finalized after the extended southern parallel is operational**
- **Questions?**