Ground Monitoring of Co-location Vectors

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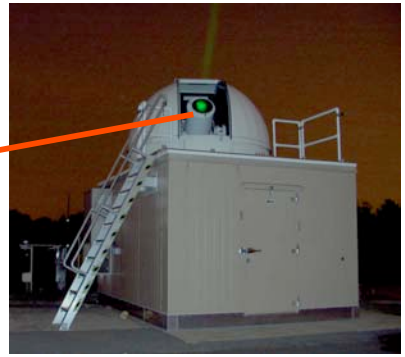
Introduction

- Co-location site
  - two or more space-geodetic techniques at one site
  - distance between techniques up to several km
  - essential for TRF combinations
- Current state
  - typical accuracies for tie vector: ±1…3 mm
  - insufficient number and distribution of co-location sites
  - infrequent resurveys
- Goal
  - accuracy ≤ 1 mm
  - frequent re-surveys or continuous monitoring

Fundamental Station

co-location system

VLBI



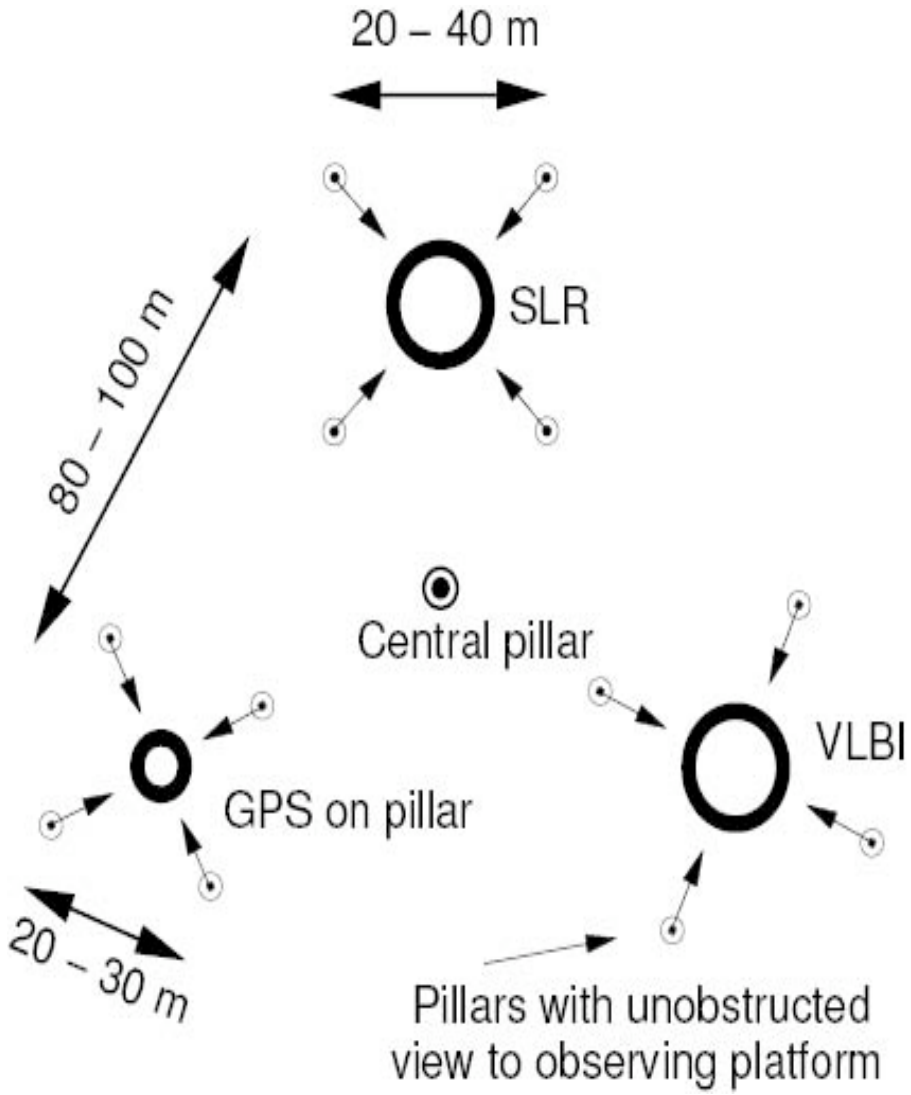
SLR

DORIS

gravimeter

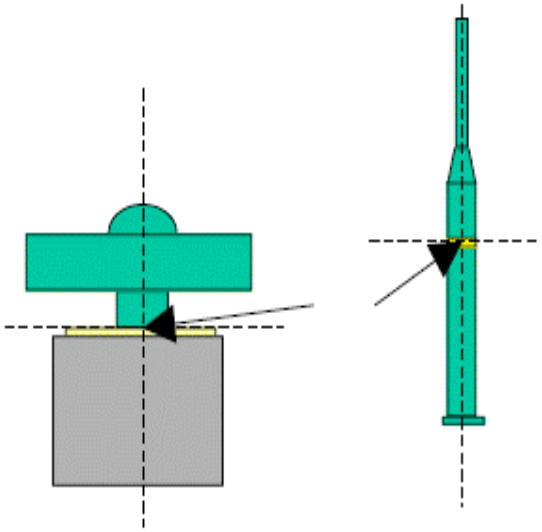
GPS

Idealized Local Monitoring Network



Antenna Reference Points (1)

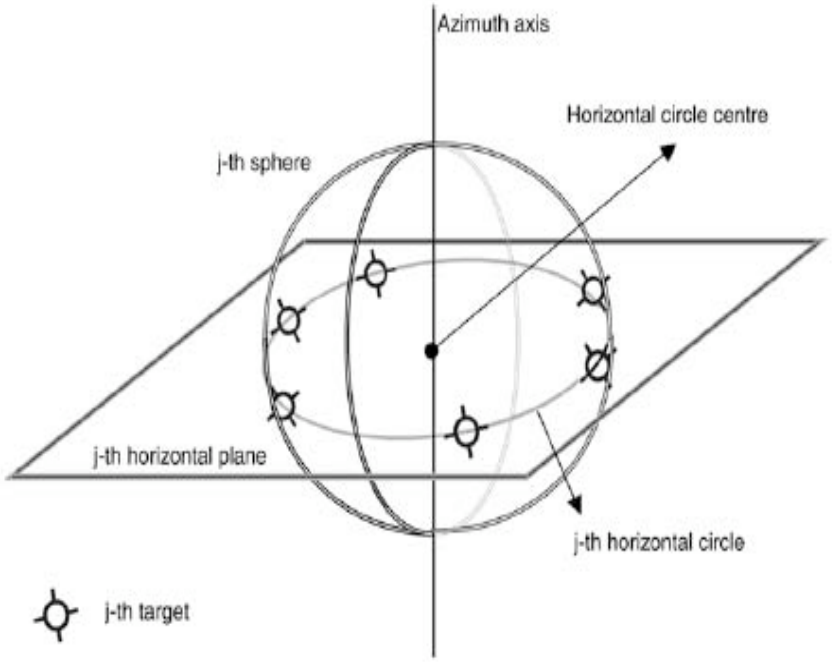
- GPS and DORIS Reference Points

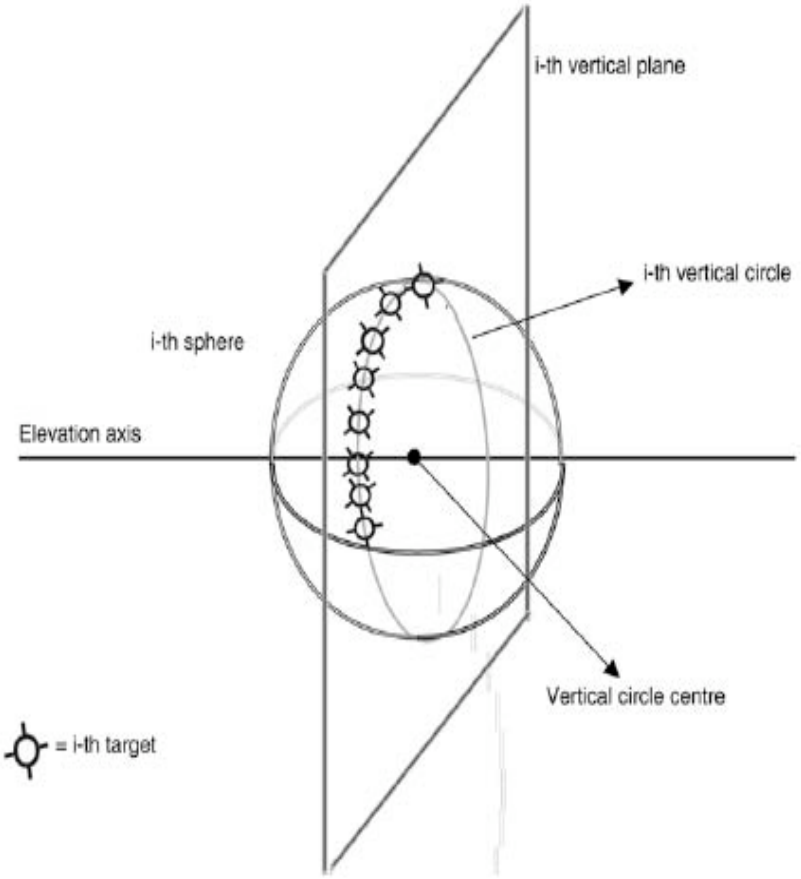


- VLBI and SLR Reference Points
  - RP through indirect approach
  - targets mounted on system structure
  - rotational sequence about axes of space geodetic instrument
  - model to determine axes location

Antenna Reference Points (2)

- VLBI and SLR (cont'd)





- azimuth axis
- elevation axis

Demo: VLBI Antenna

Demo: Total Station

Demo: SLR Telescope

Weatherproofing Examples