Determination of Astro-Geodetic Vertical Deflections using Digital Zenith Camera System in Istanbul, Turkey

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Outline

- Digital Zenith Camera Systems (DZCSs)
- Geoid Determination Studies In Turkey
- Contribution to Current Models with Astro-geodetic Data
- Observation Method And Instrumentation
- DZCS of Turkey
Geoid Determination Studies In Turkey

Ayan, 1976

THG-09
Contribution to Current Models With Astro-geodetic Data

\[ \Phi = \delta \quad \Lambda = \alpha - \text{GAST} \]

Turkozer, 2012
• UCAC2 star catalog
• 0.2 s exposure
• 3''x0.007'' arc
• Point like shape of stars

Hipparcos
Tycho-2
UCAC/2/3?/7
GSC 1.1
GSC 2
USNO-A
USNO-B
DZCS of Turkey

- 8" Meade LX200GPS telescope, 14.0-16.5 mag, system control, focusing (f/-distorsions)
- Pixel size>9x9µm, QE>high, FWC>20K-30K, TTL trigger CCD
- Leica Nivel 210 tiltmeters (0.001 rad~0.2")
- GPS time, geodetic coordinates 1PPSOut
- Star Catalogs, UCAC2/3, GSC
- Image Processing Software

The aim of this project

- VD data from DZCSs can be integrated to different techniques for improved solutions.
- Astrogedetic Geoid
- As an independent technique – Astrogeodesy – Validation purposes
- Determine Medium-Wave effects of Geoid
- 6-10 / 1000 km² VD Astro points (100-500 gravimetry) → cm Astro-geoid (Gerstbach)
- Contribution to height modernization studies in Turkey
Acknowledgements

The Scientific and Technological Research Council of Turkey
TUG (TUBITAK National Observatory)
Istanbul Technical University, Department of Geomatics Engineering
Bogazici University, KOERI Astronomy Department
Leica Sistem INC.