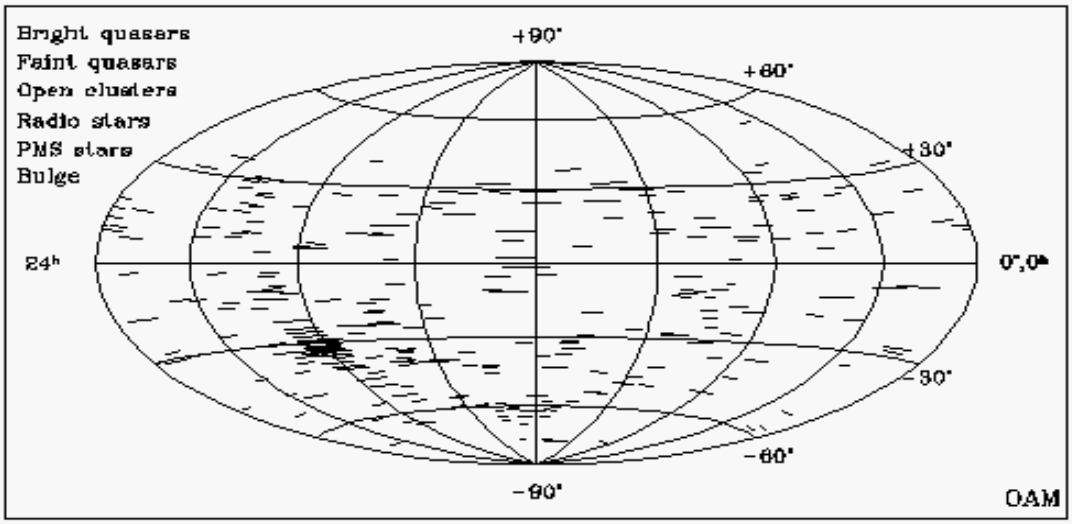
Situation in September/2000

Observed field distribution



Total surface: ~ 300 x 13′ x 40^m (~ 650 $deg.^2$)

~ 450,000 objects

Regions where we are currently extending de HIPPARCOS/Tycho catalogues:

- Extragalactic radio sources (ICRF)
- Radio stars (Wendker catalogue)
- Solar system objects (Pluto and few asteroids)
- Low extinction windows in the galactic bulge direction
- Open clusters
- Star-forming regions (Chamaeleon, Lupus, Upper Scorpius - Ophiuchus)

Instrument, observation and reduction

- The camera (-40C) operates in drift-scan mode with the telescope fixed in declination
- Telescope: achromatic doublet, D=0.19m, F=2.60m
- Detector: Thomson 7895M CCD 512x512 pixels
- Pixel size = 19 microns (~1.5 arcsec)
- Field:

  declination = 13 arcmin

  right ascension = arbitrary length (typicaly 40 min.)
- Exposure time = $51^{s}\sec\delta$
- Magnitude limit: V ~16.0 magnitudes
- Precision in the best magnitude interval (9<V<14)

  astrometric:0''.05 - photometric:0.05 magnitudes
- Filter GG495+BG38: spectral passband 5200Å-6800Å Final photometric band (filter plus doublet) is close to the Johnson V.
- Images fitted by a two-dimensional gaussian
- Reduction:

  a) for a field observed in several nights, a solution is obtained by fitting the coordinates of the reference stars with a first degree polynomial depending on the mesured X and Y;

$$\alpha = a + b\,X + c\,Y$$

$$\delta = a' + b'\,Y + c'\,X$$

b) the solution is improved by extending the model to all objects and interating towards a global reduction;

c) the observed flux is used to estimate the magnitudes by means of

$$m_V = K - 2.5\log(\phi)$$

Goal:

To extend the HIPPARCOS/Tycho catalogues to fainter objects - V < 15 magnitudes

Strategy:

To obtain the best positions and proper motions based on the HIPPARCOS Reference System for all objects (V<15) present in all fields observed with the CCD meridian circle at the Valinhos Observatory. These fields correspond to the various observational programs carried out with this instrument. For the proper motion measurements, we take as first or intermediate epoch positions those ones from AC2000, USNO-A2.0, plates scanned at MAMA, etc.

Valinhos (Brazil) CCD meridian circle:

Extension of the ICRF to the optical domain up to V < 15

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