

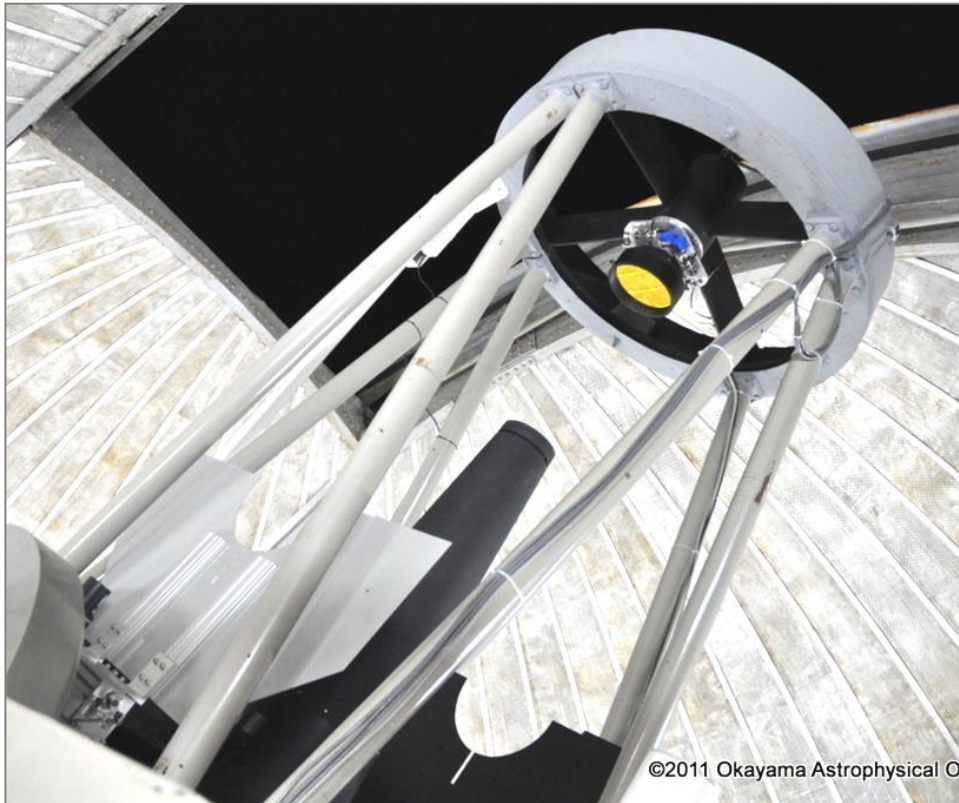
OAOWFCによる銀河面の Ks-band モニタ観測

柳澤 顕史 (OAO/NAOJ)

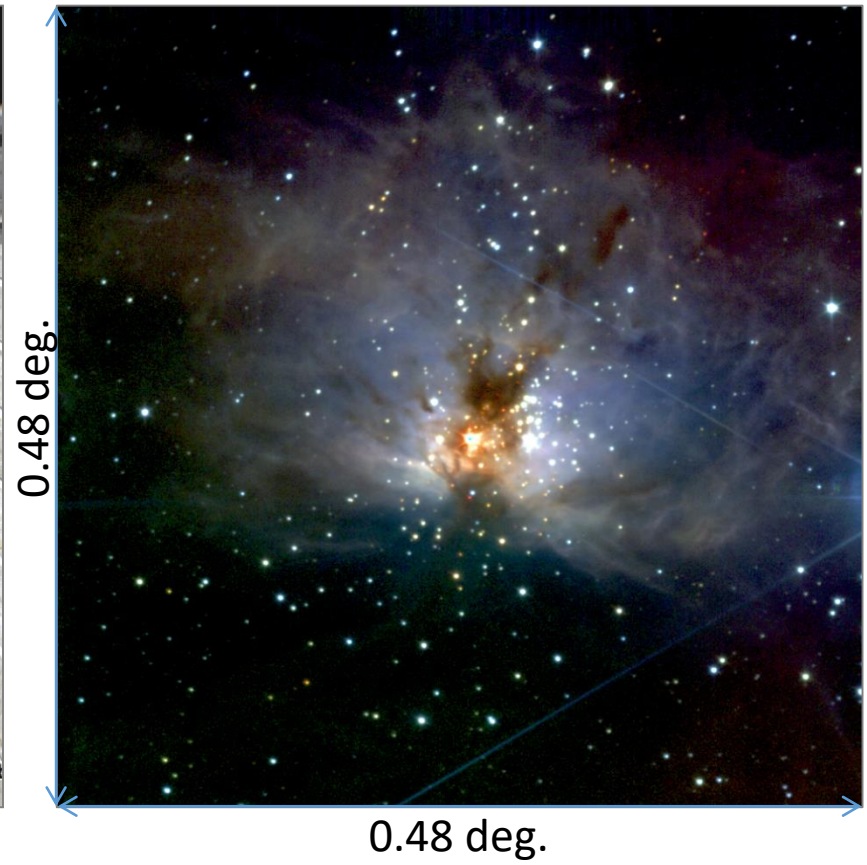
泉浦秀行、中田好一、清水康広、黒田大介、
筒井寛典、戸田博之、吉田道利、太田耕司、
河合誠之

OAOWFC

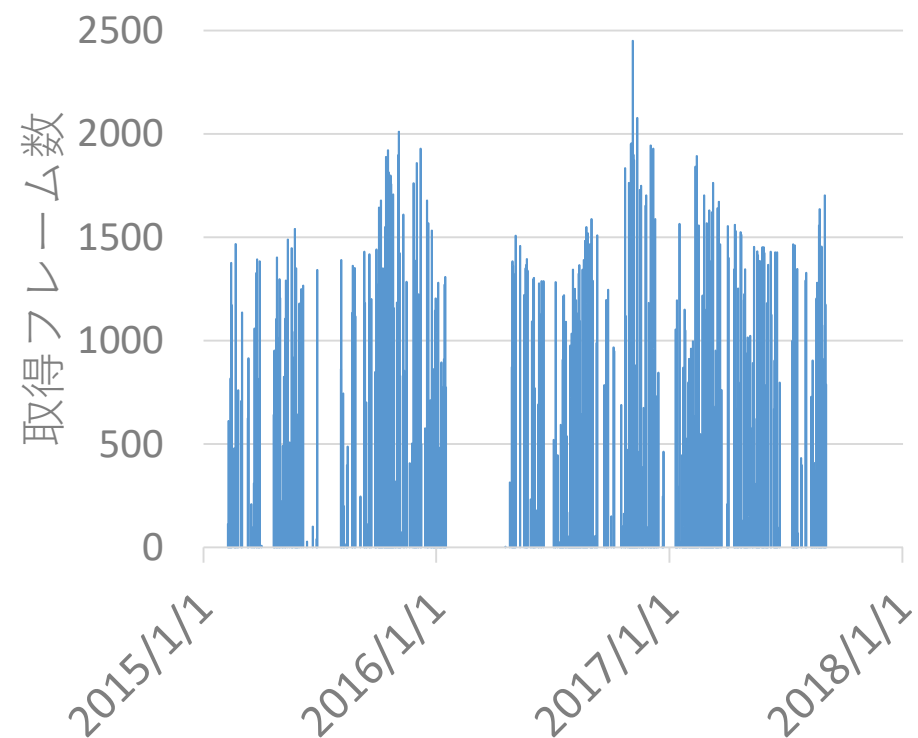
Okayama Astrophysical Observatory Wide Field Camera



OAOWFC



無人観測



OAQ Time lapse movie (Mar. 2015)



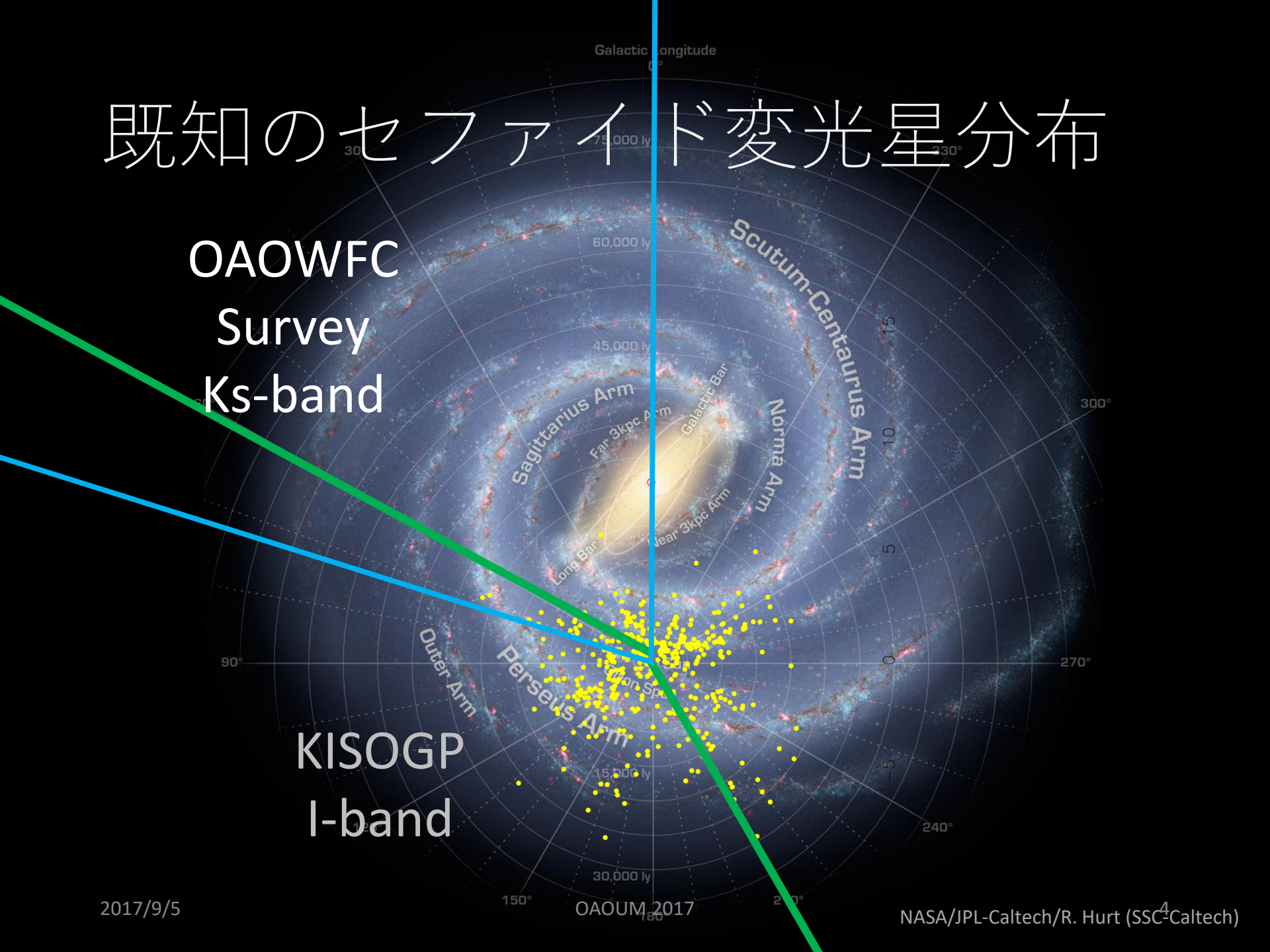
74-inch TEL.
inside

OAOWFC
inside

既知のセファイド変光星分布

OAOWFC
Survey
Ks-band

KISOGP
I-band



Gaia による Cepheid 観測予想

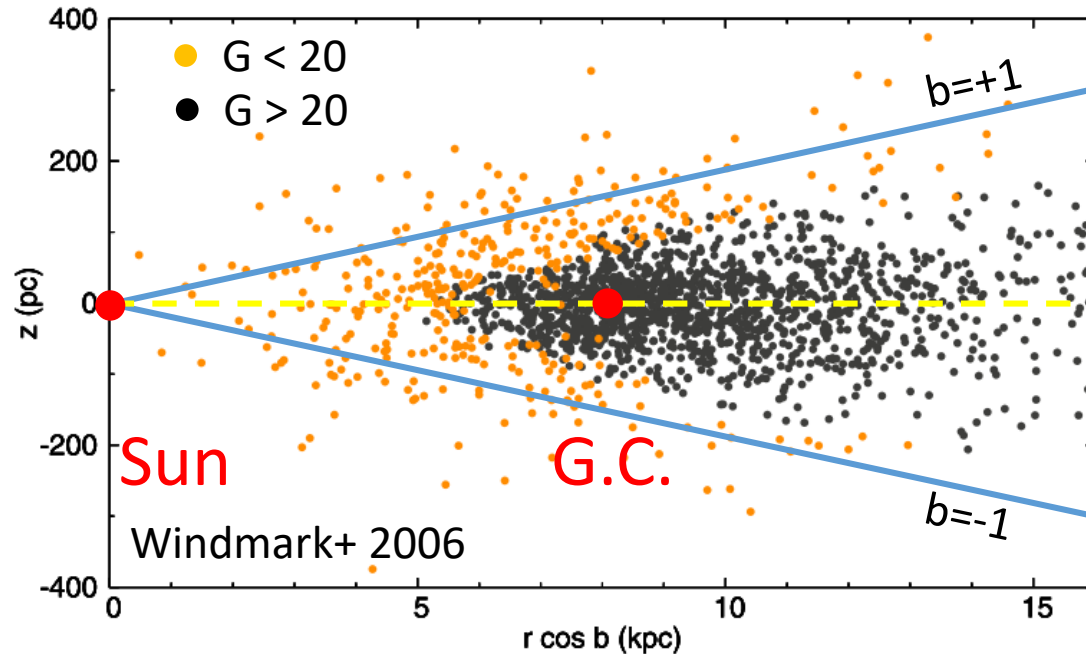
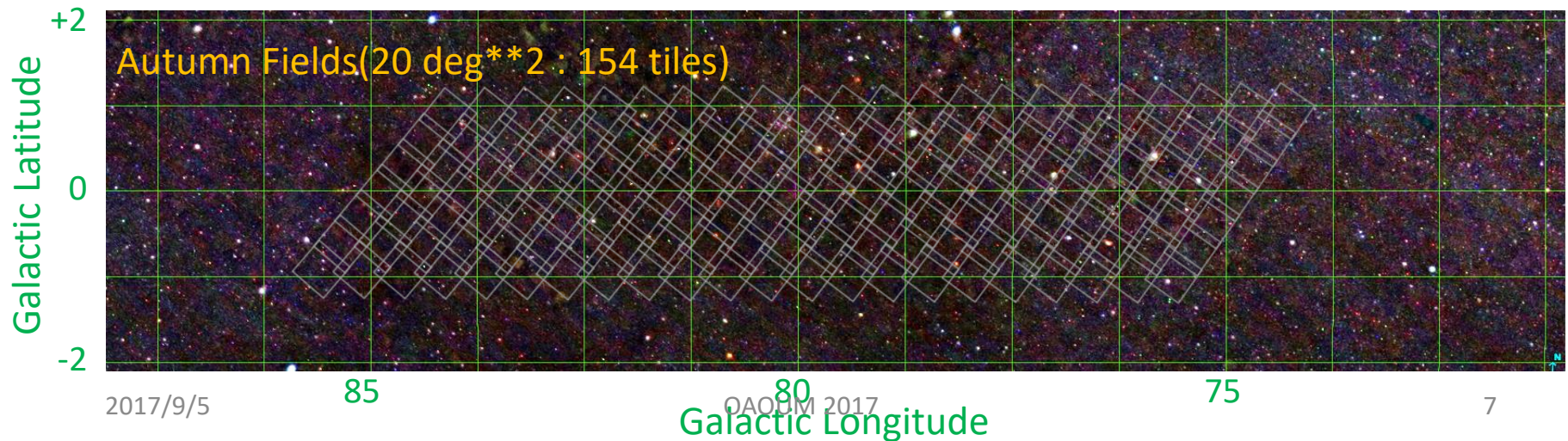
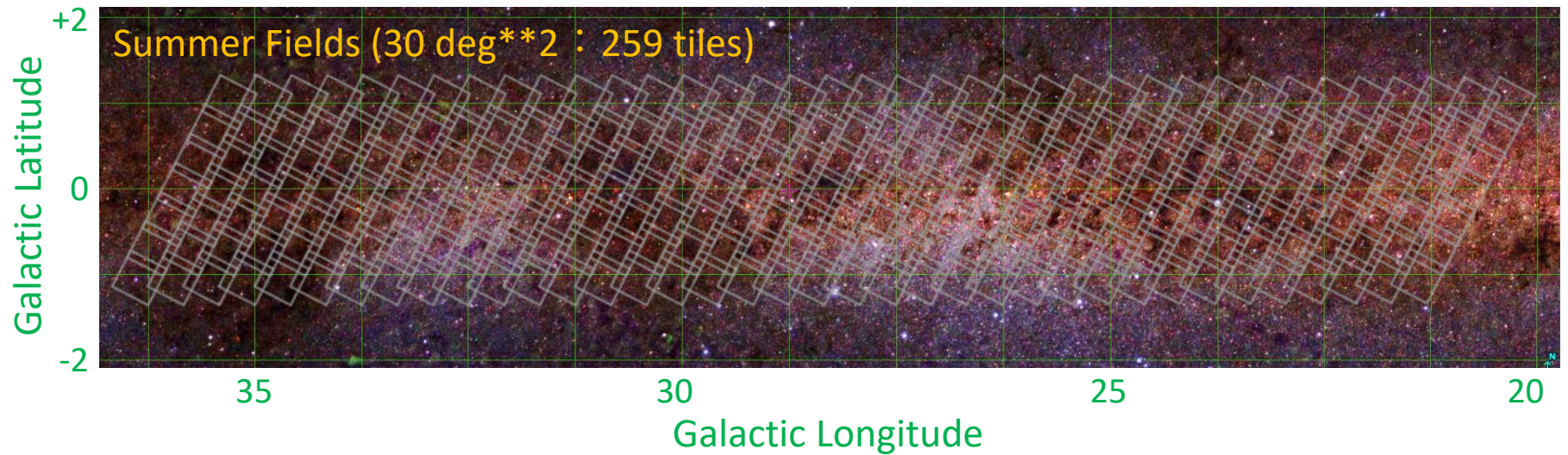


Fig. 5. The simulated inner Galaxy ($|l| < 5^\circ$), with projected distance to the Sun plotted versus height above the Galactic plane. The light dots correspond to Cepheids that will be observable by Gaia ($G < 20$) and the dark dots correspond to Cepheids that are too faint to be observed by Gaia ($G > 20$).

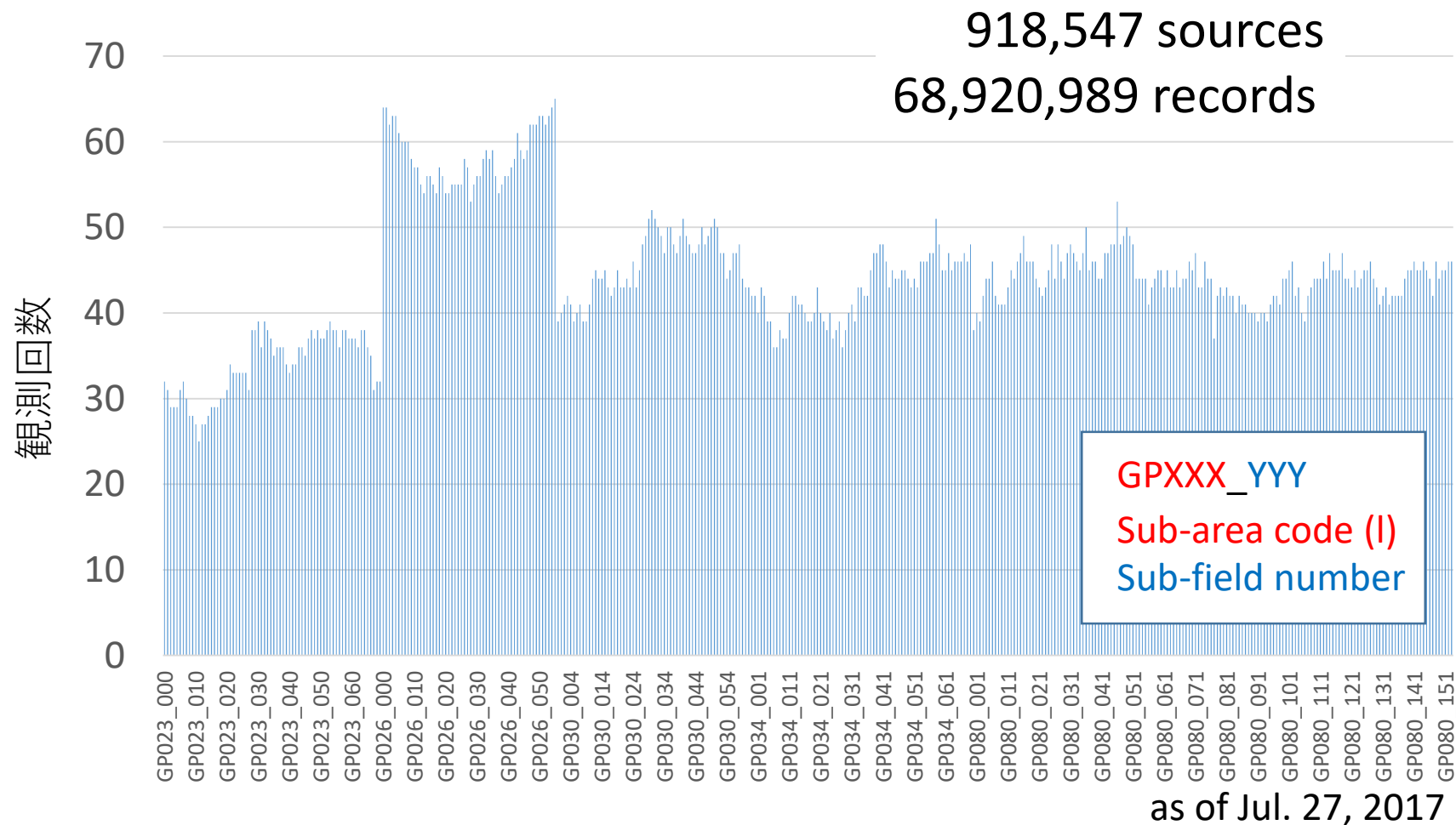
OAOWFC Ks-band 銀河面モニタ

- 2つの天域
 - 夏天域： $l = 21 - 36 \text{ deg.}$ (30 deg^2)
 - 秋天域： $l = 75 - 85 \text{ deg.}$ (20 deg^2)
 - とともに $|b| < 1$
- 2 & 10 sec $\times$ 8 frames
- 230,536 frames (as of Sep. 03, 2017)
- 30—60 回観測実施

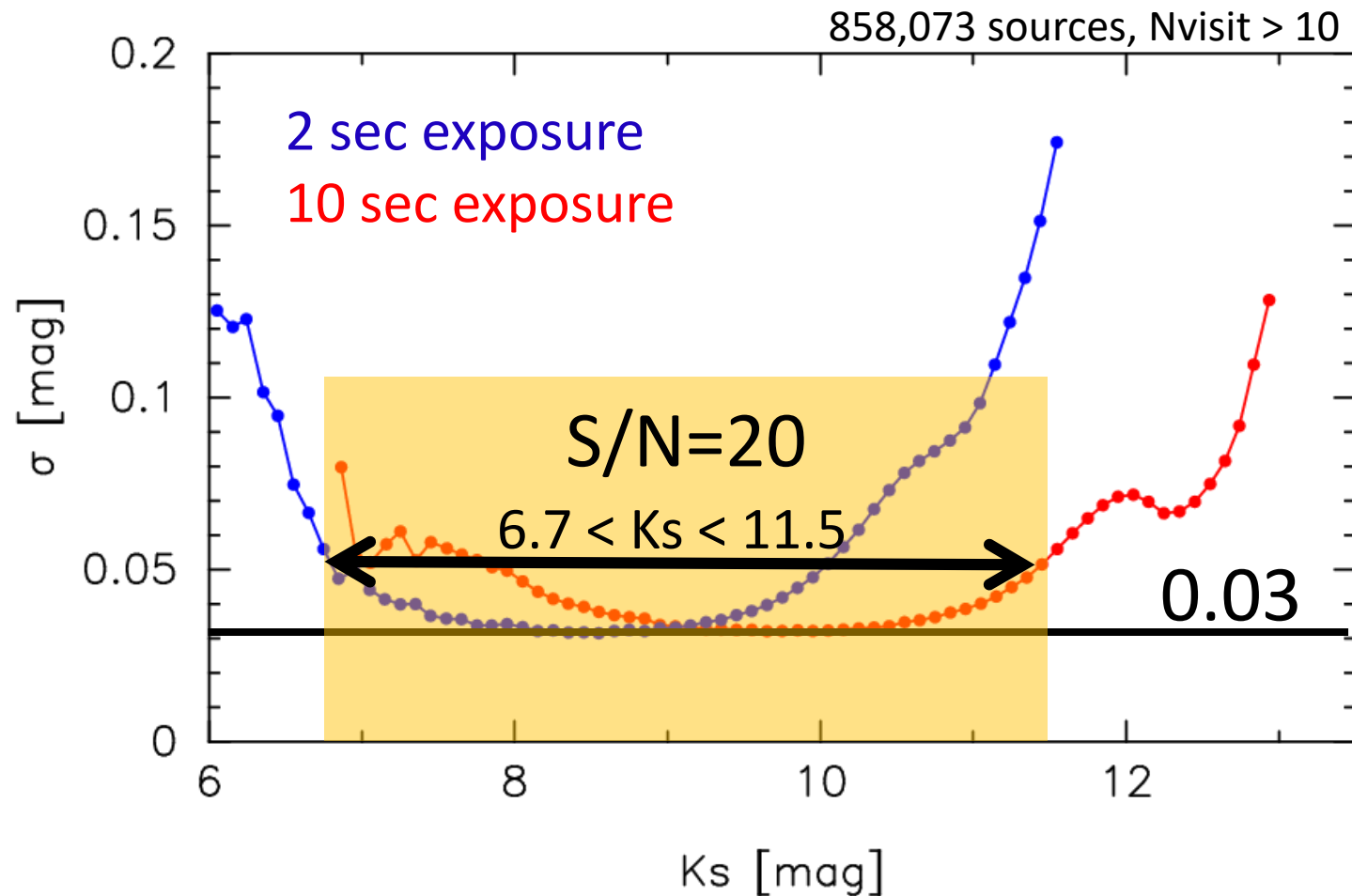
モ二天域



サブエリアごとの観測回数



サーベイ検出限界



観測エリアと
到達距離

Mira (P=300d)

Mk=-7.6, S/N=10

Cepheid (P=10d)

Mk=-5.7, S/N=20

Ak: 0.2 mag/kpc

Autumn field

Summer field

19.4

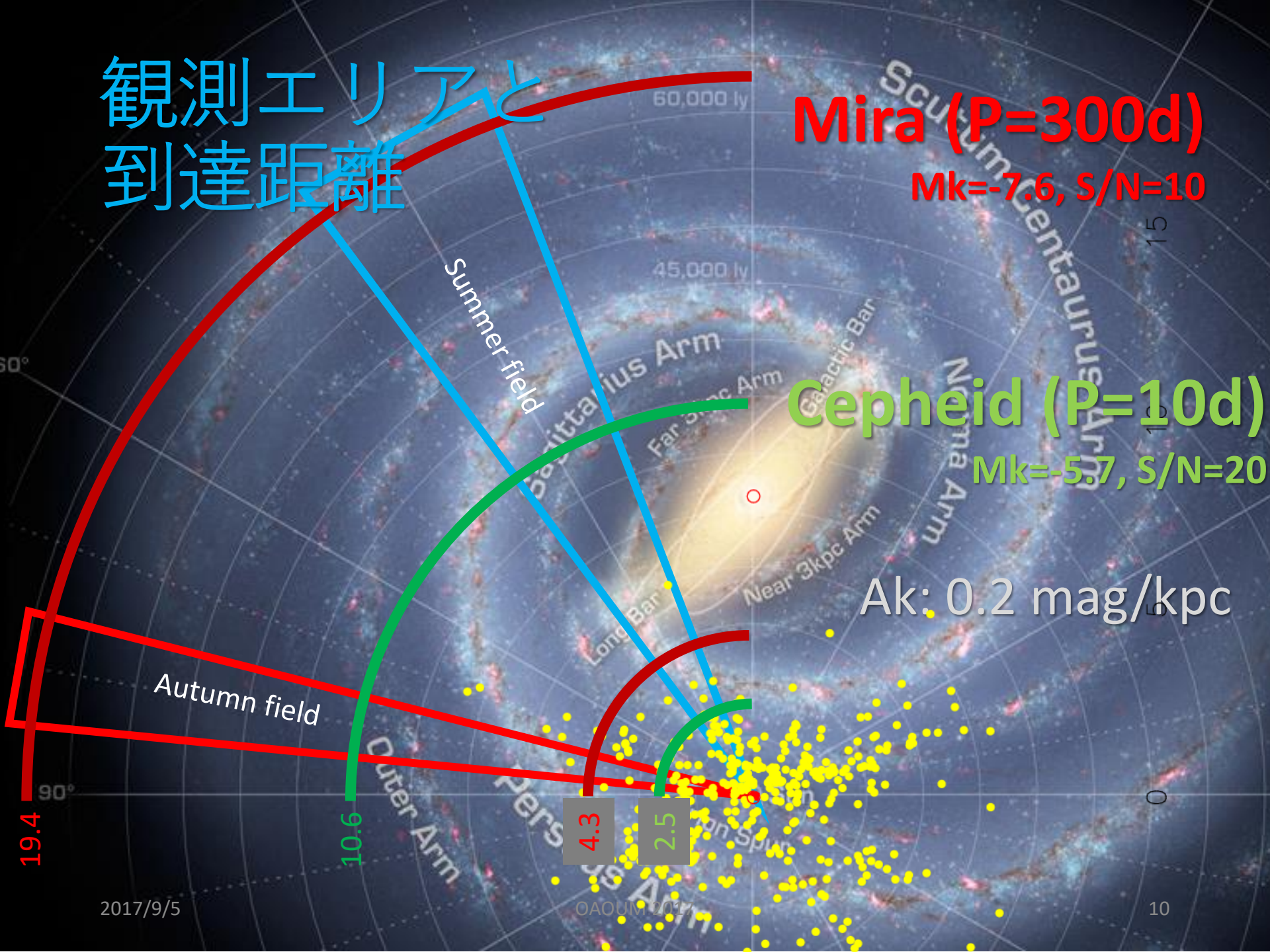
10.6

4.3

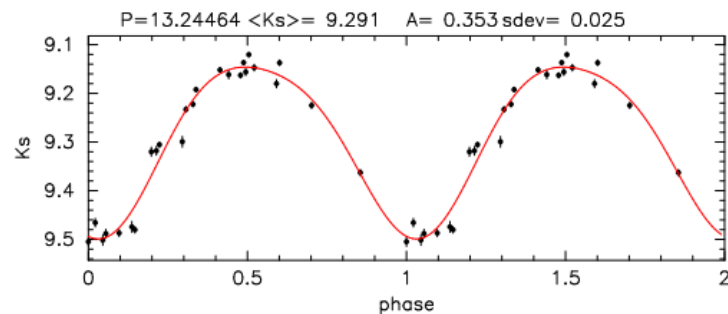
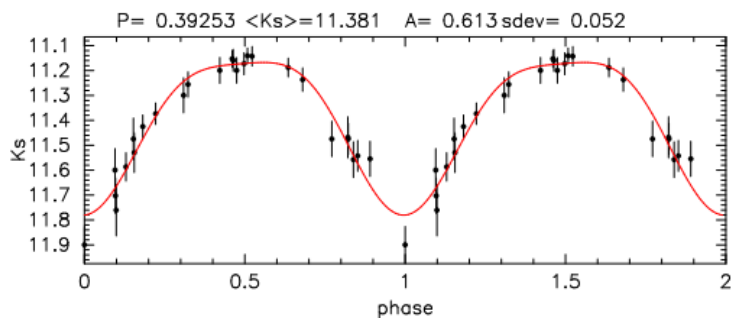
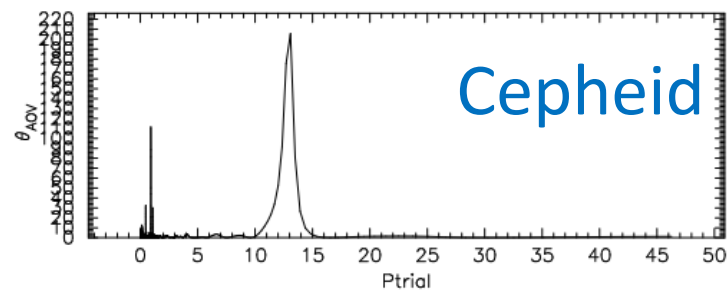
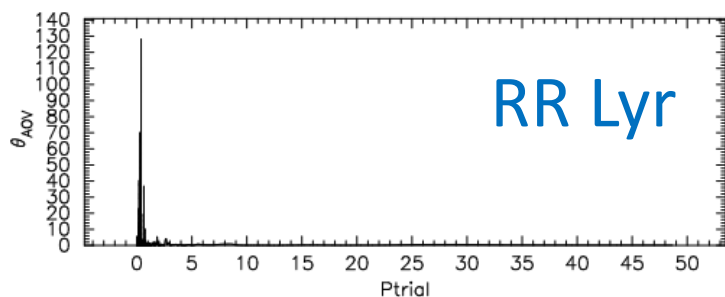
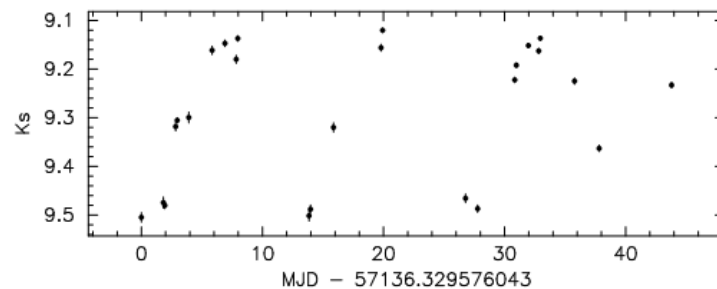
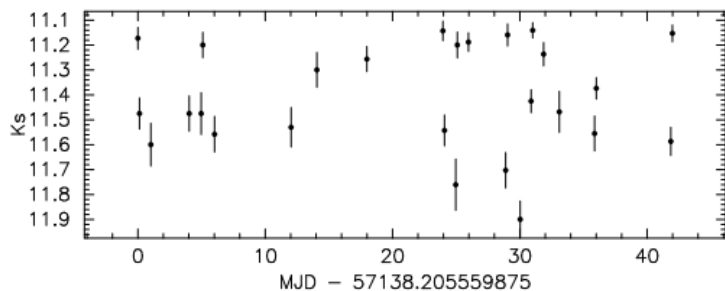
2.5

2017/9/5

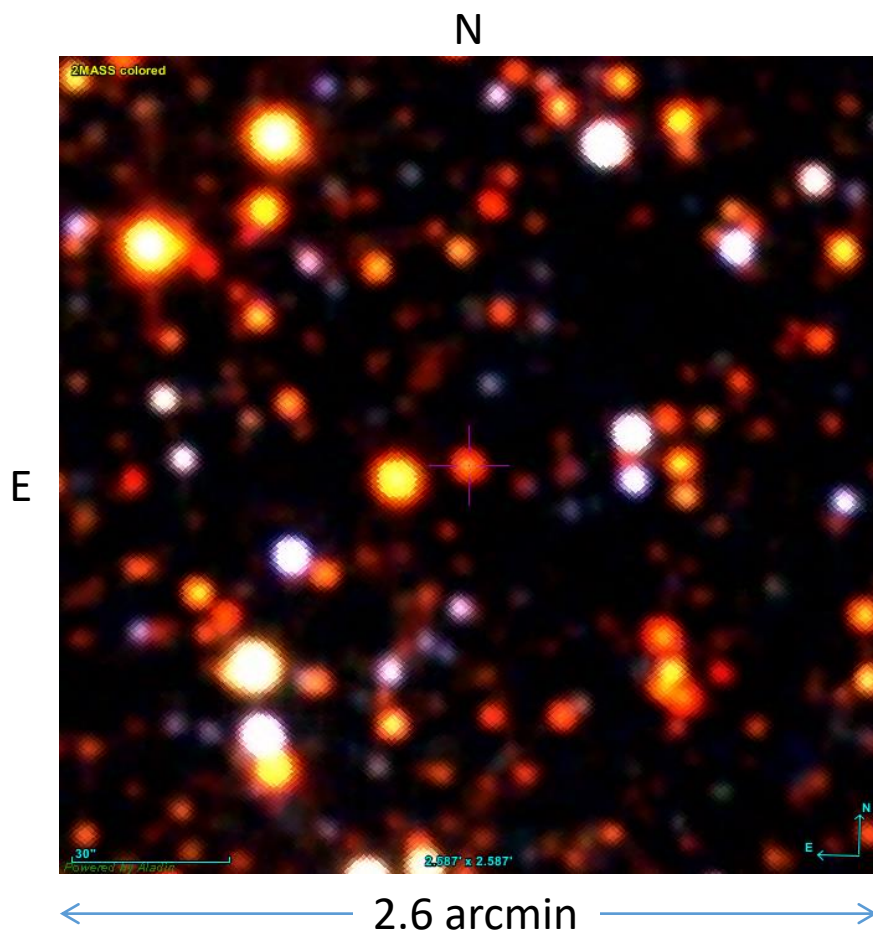
OAQUM 2017



光度曲線の例



Discovery of a Cepheid with $A_v=40^{\text{mag}}$



l, b (deg)	24.9, 0.1
J (2MASS)	17.694L
H(2MASS)	13.716
Ks(2MASS)	11.186
<Ks>	11.445
σ Ks	0.257
N visit	30
H-Ks (2MASS)	2.53
E(H-Ks)	2.46
Ak	4.01
Period (day)	34.599

まとめ

- OAOWFCでKs-band 銀河面サーベイを実施中
 - Summer field : 30 deg^2
 - Autumn field : 20 deg^2
- すべての画像を処理し、検出限界を確認した
 - $S/N=10$: $6.4 < K_s < 12.8$
 - $S/N=20$: $6.7 < K_s < 11.5$
- 変光星候補天体を 34,643 得た
 - 変光星を分類を開始する。
 - $A_v=40$ の Cepheid を発見
- 今後もサーベイを継続し、 $0 < \ell < 70$ を掃きたい。