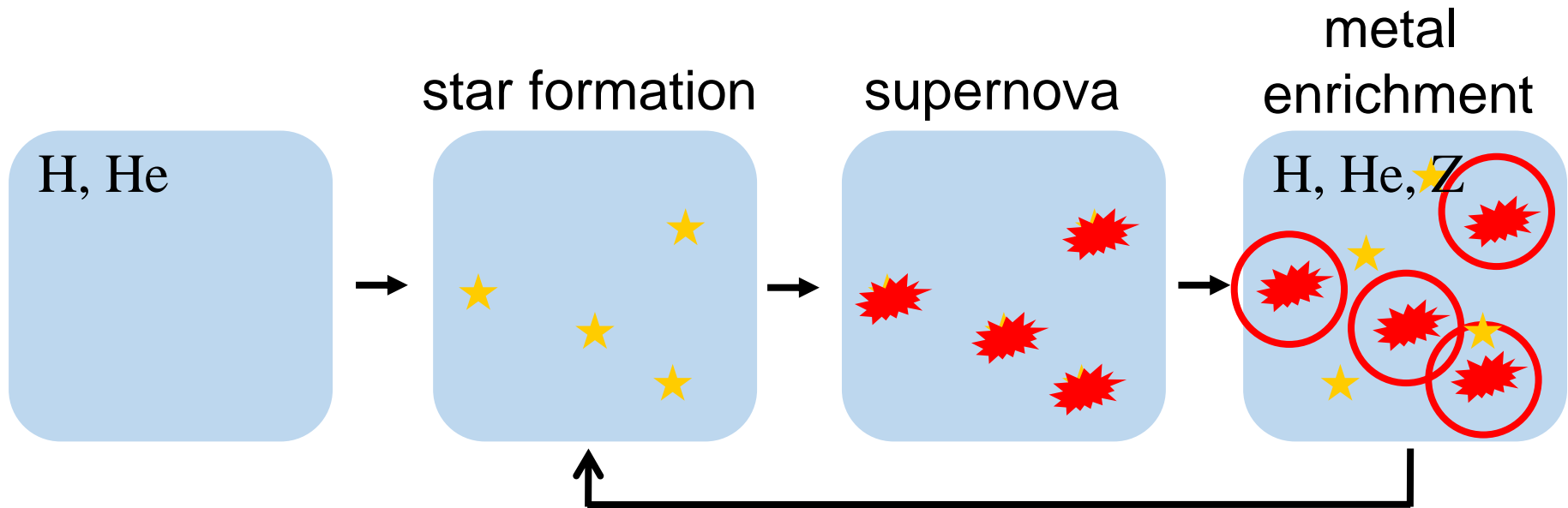


# All-sky bright metal-poor star survey with Tomo-e Gozen

冨永望  
(甲南大学)



# Metal-poor stars

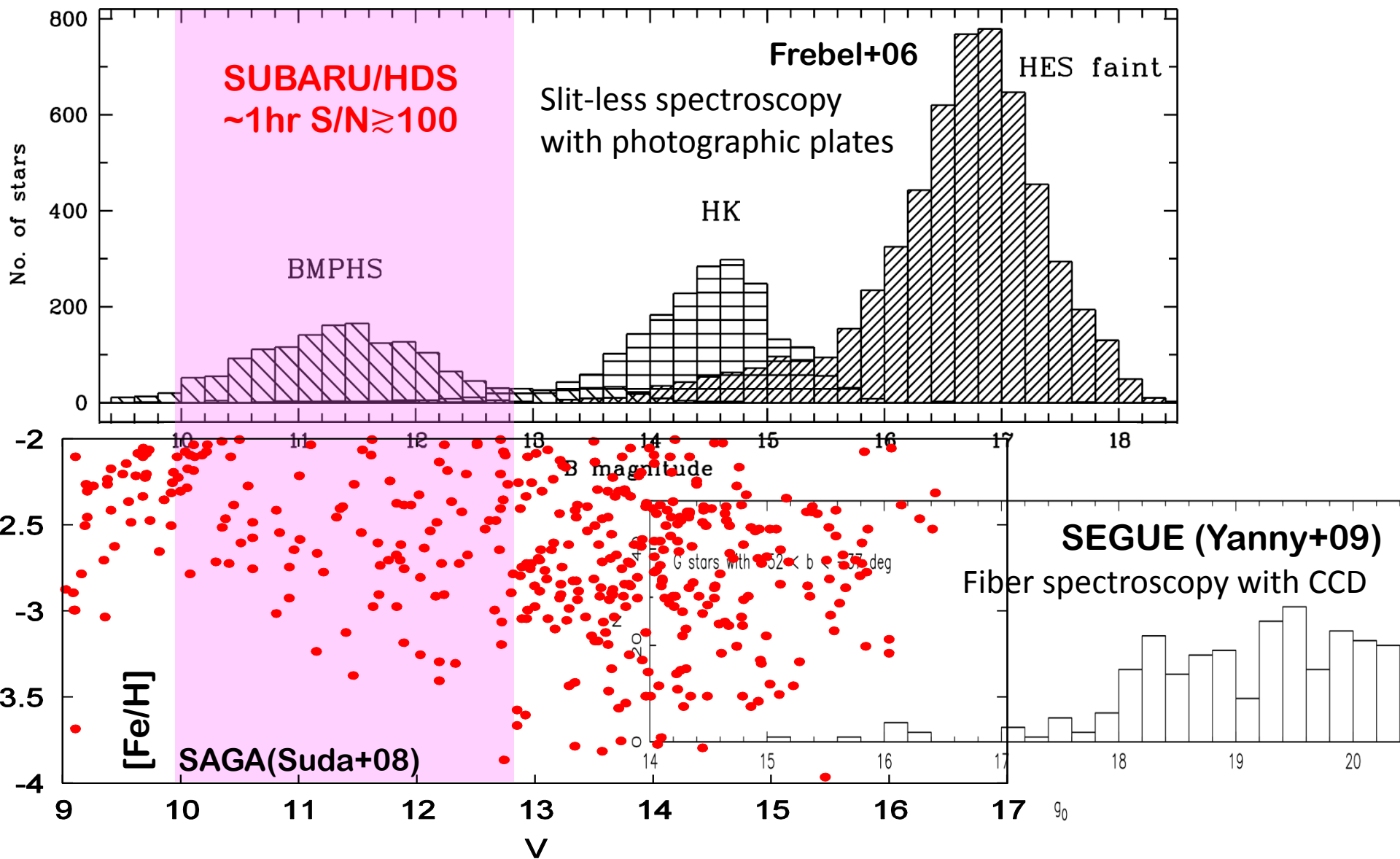


**Metallicity** increases with time

$$[\text{Fe}/\text{H}] = \log(\text{Fe}/\text{H}) - \log(\text{Fe}/\text{H})_{\odot}$$



# Past surveys



# Bright metal-poor stars remain

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doi:[10.1088/0004-637X/698/1/L37](https://doi.org/10.1088/0004-637X/698/1/L37)

2009

## BD+44°493: A NINTH MAGNITUDE MESSENGER FROM THE EARLY UNIVERSE; CARBON ENHANCED AND BERYLLIUM POOR\*

HIROKO ITO<sup>1,2</sup>, WAKO AOKI<sup>1,2</sup>, SATOSHI HONDA<sup>3</sup>, AND TIMOTHY C. BEERS<sup>4</sup>

THE ASTROPHYSICAL JOURNAL, 773:33 (17pp), 2013 August 10  
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doi:[10.1088/0004-637X/773/1/33](https://doi.org/10.1088/0004-637X/773/1/33)

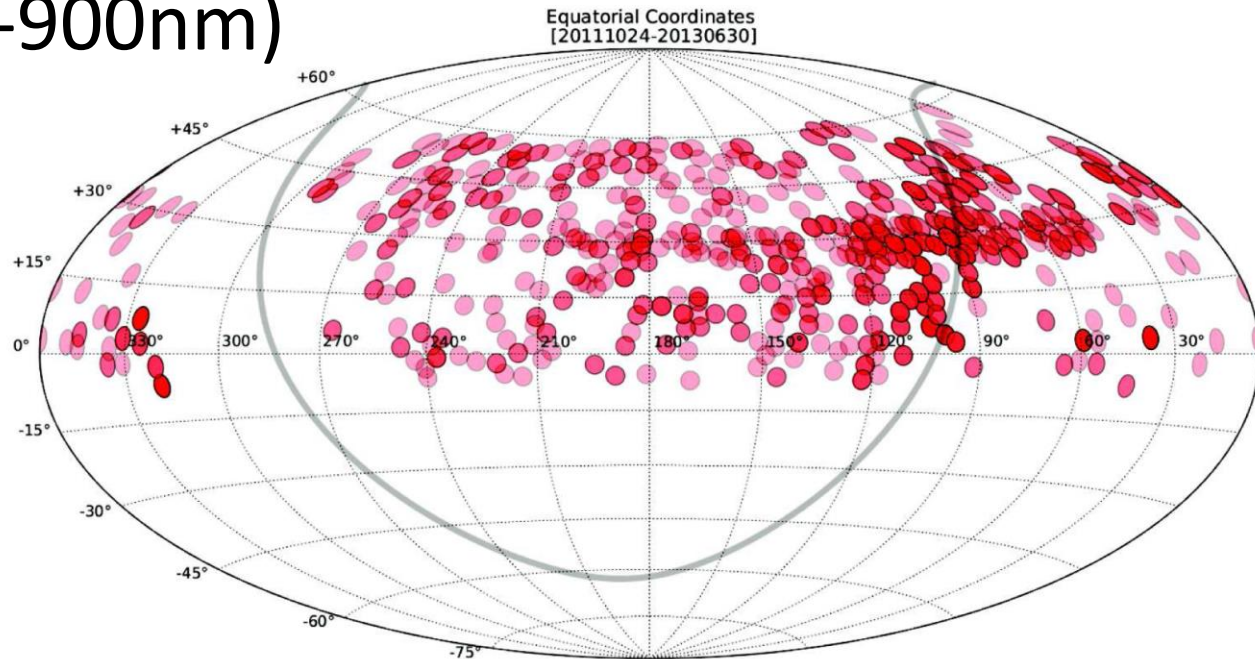
## CHEMICAL ANALYSIS OF THE NINTH MAGNITUDE CARBON-ENHANCED METAL-POOR STAR BD+44°493\*

HIROKO ITO<sup>1,2</sup>, WAKO AOKI<sup>1,2</sup>, TIMOTHY C. BEERS<sup>3,4</sup>, NOZOMU TOMINAGA<sup>5,6</sup>, SATOSHI HONDA<sup>7</sup>, AND DANIELA CAROLLO<sup>8,9</sup>

- 9<sup>th</sup> magnitude star with  $[\text{Fe}/\text{H}] = -3.8$  (BD+44°493)
- Upper limit on A(Be), depleted Li abundance
- The origin of BD+44°493 is **a faint SN**.

# LAMOST survey since 2011

- $V > 12 \text{ mag}$
- $\sim 800 \text{ fibers/deg}^2$ 
  - Targets are randomly selected.
- $R \sim 1000 \text{ (365-900 nm)}$

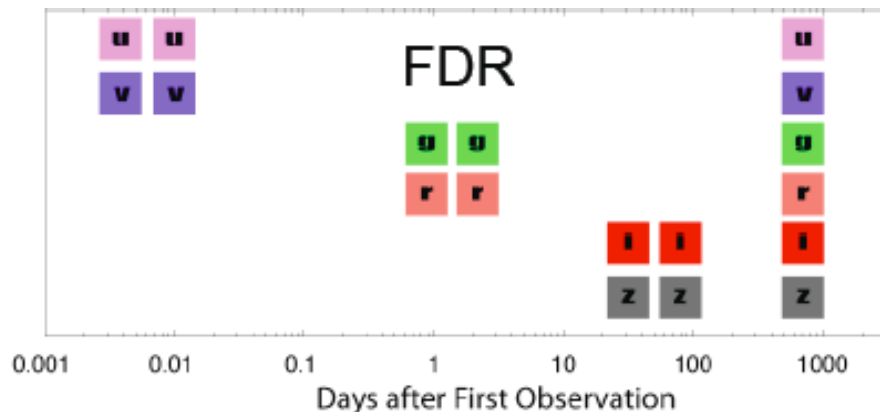


# Skymapper survey since 2014

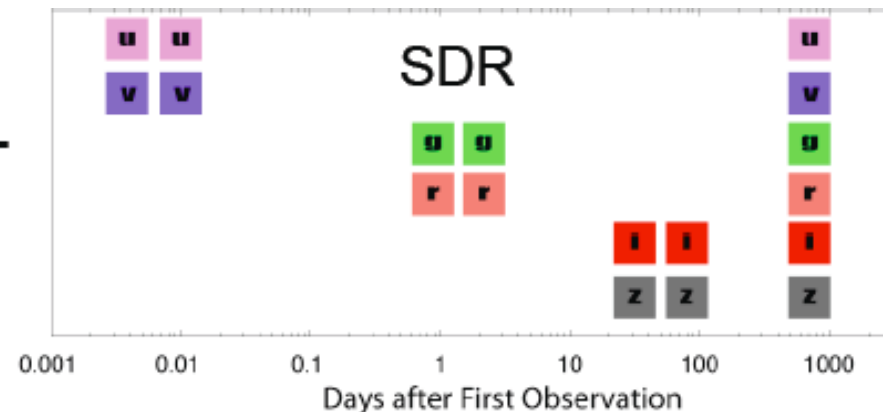


- All 20000 sq. degrees south of equator

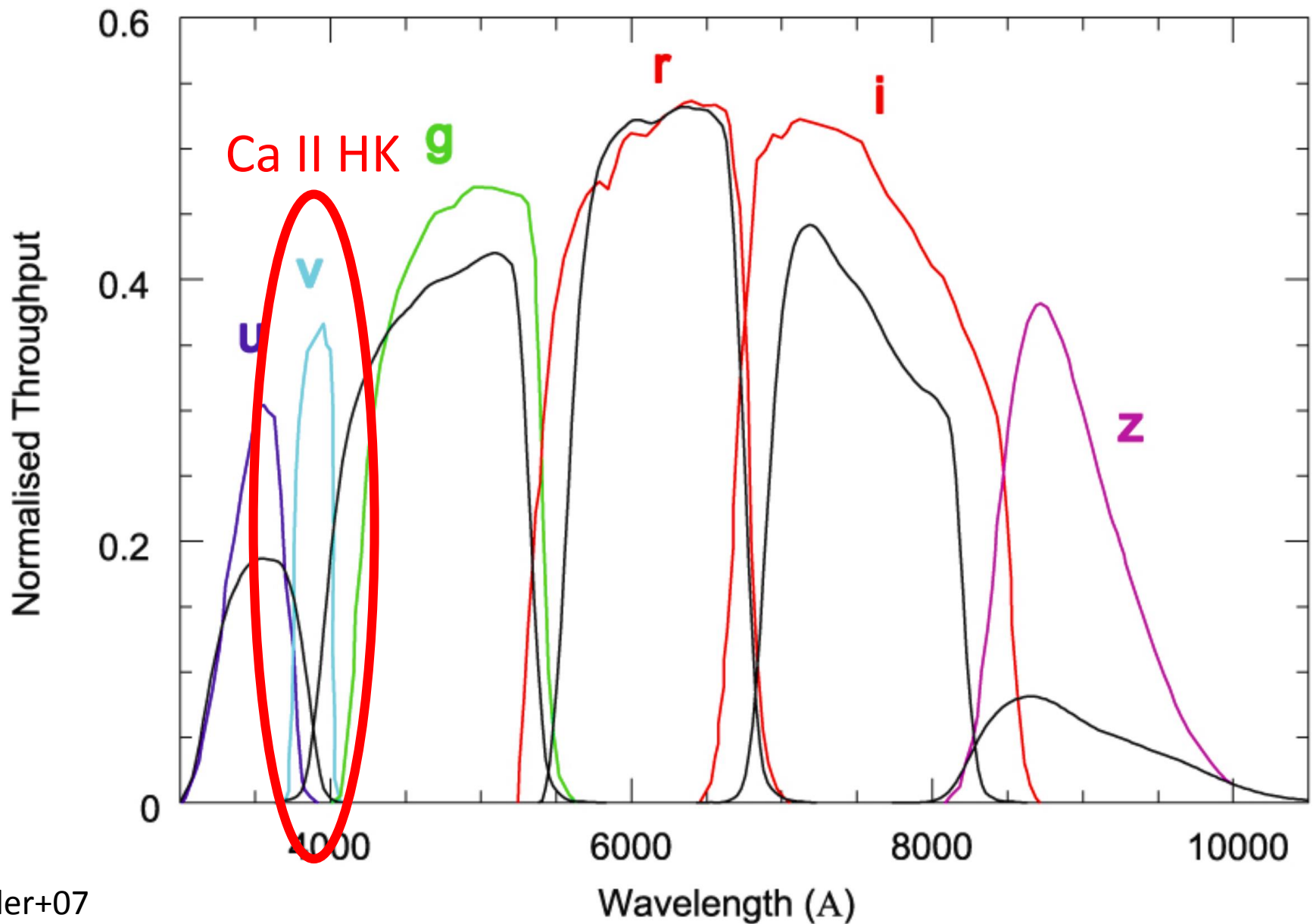
	u	v	g	r	i	z
1 EPOCH	19.5	19.5	21.0	21.0	20.0	19.0
SATURATION	10.0	10.5	13.0	13.0	11.0	10.5
EXP. TIME (s)	100	100	100	100	100	100
FINAL DEPTH	20.5	20.5	21.7	21.7	20.7	19.7



+

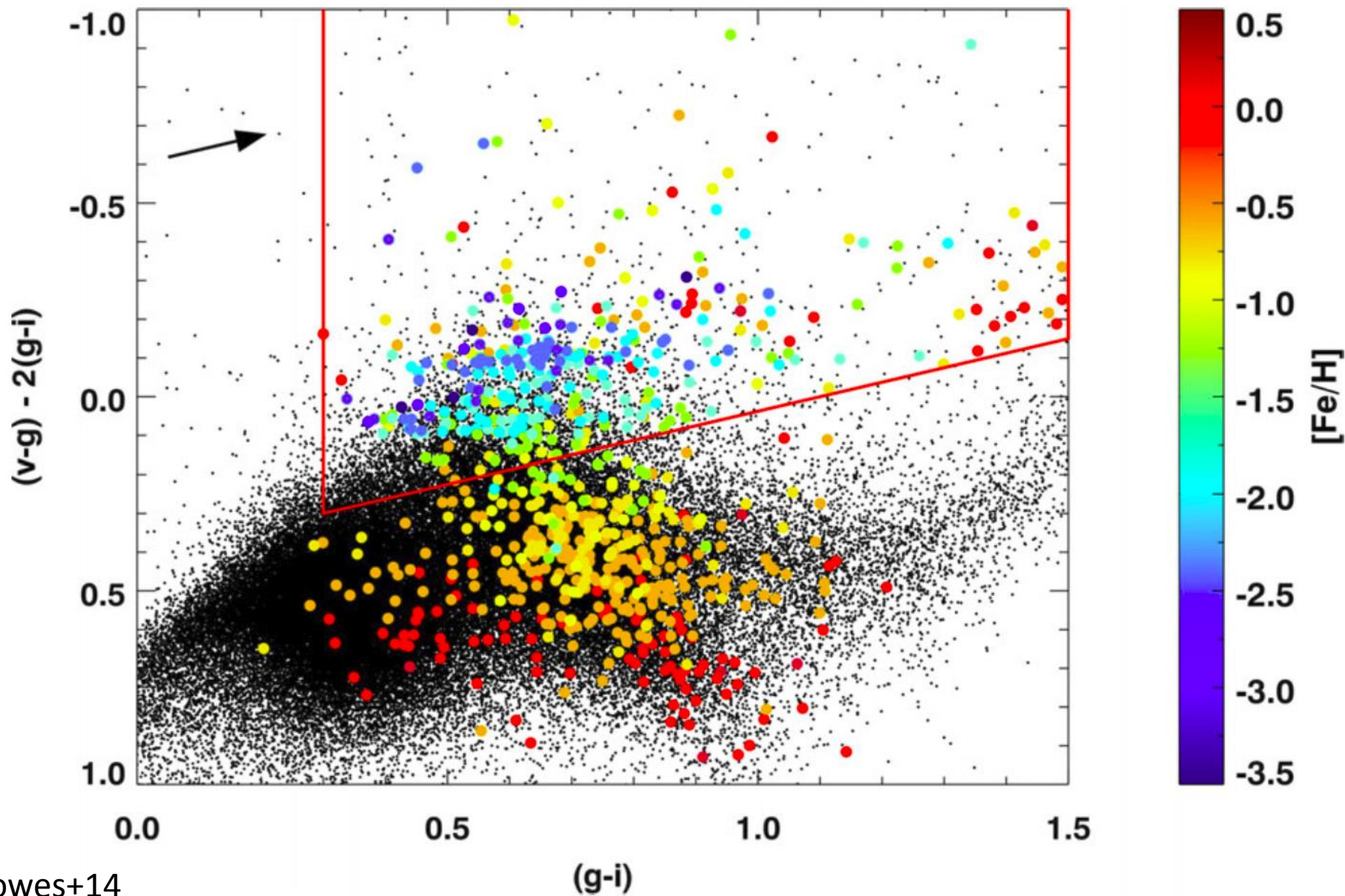


# Filter system of skymapper



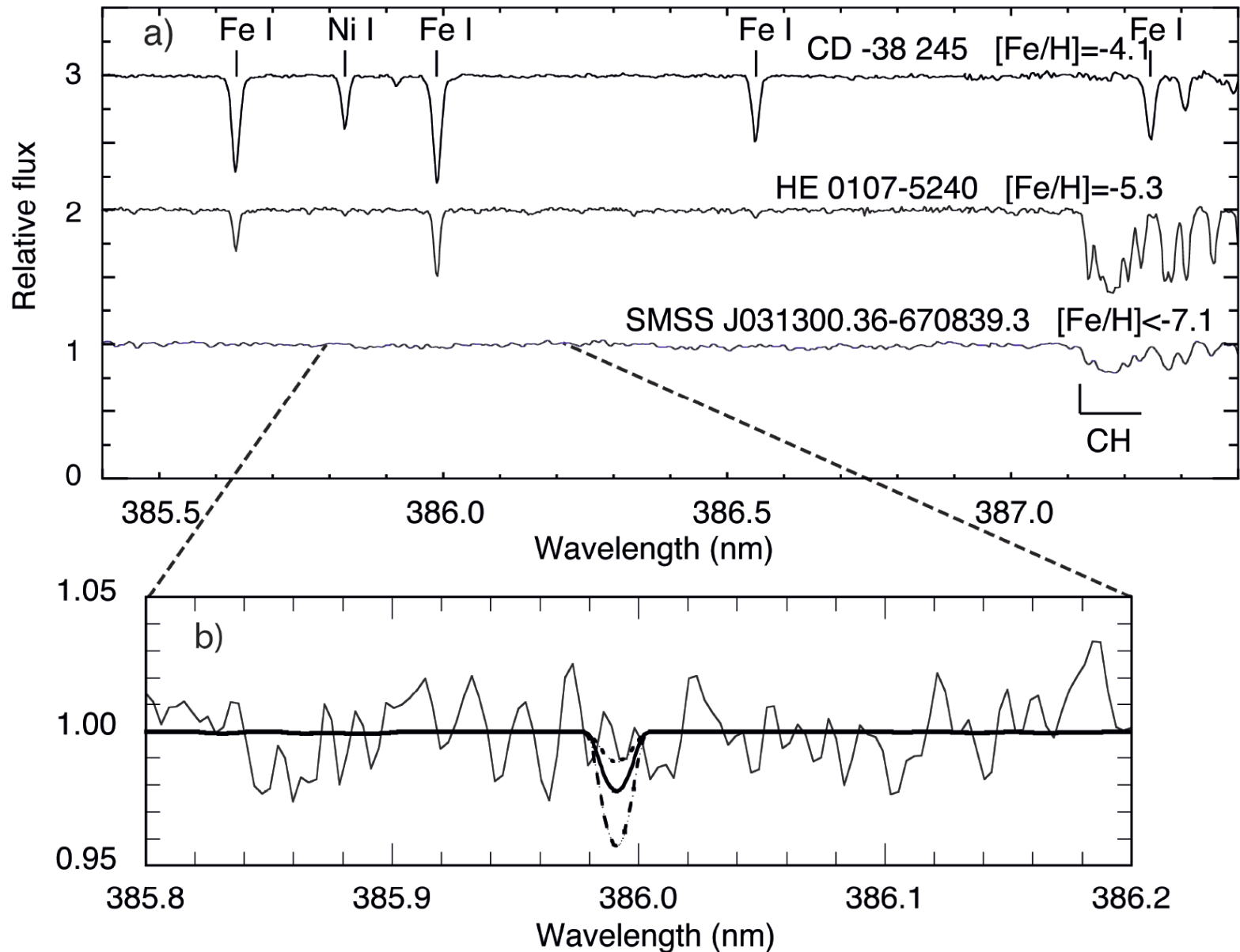


# Metallicity vs. color

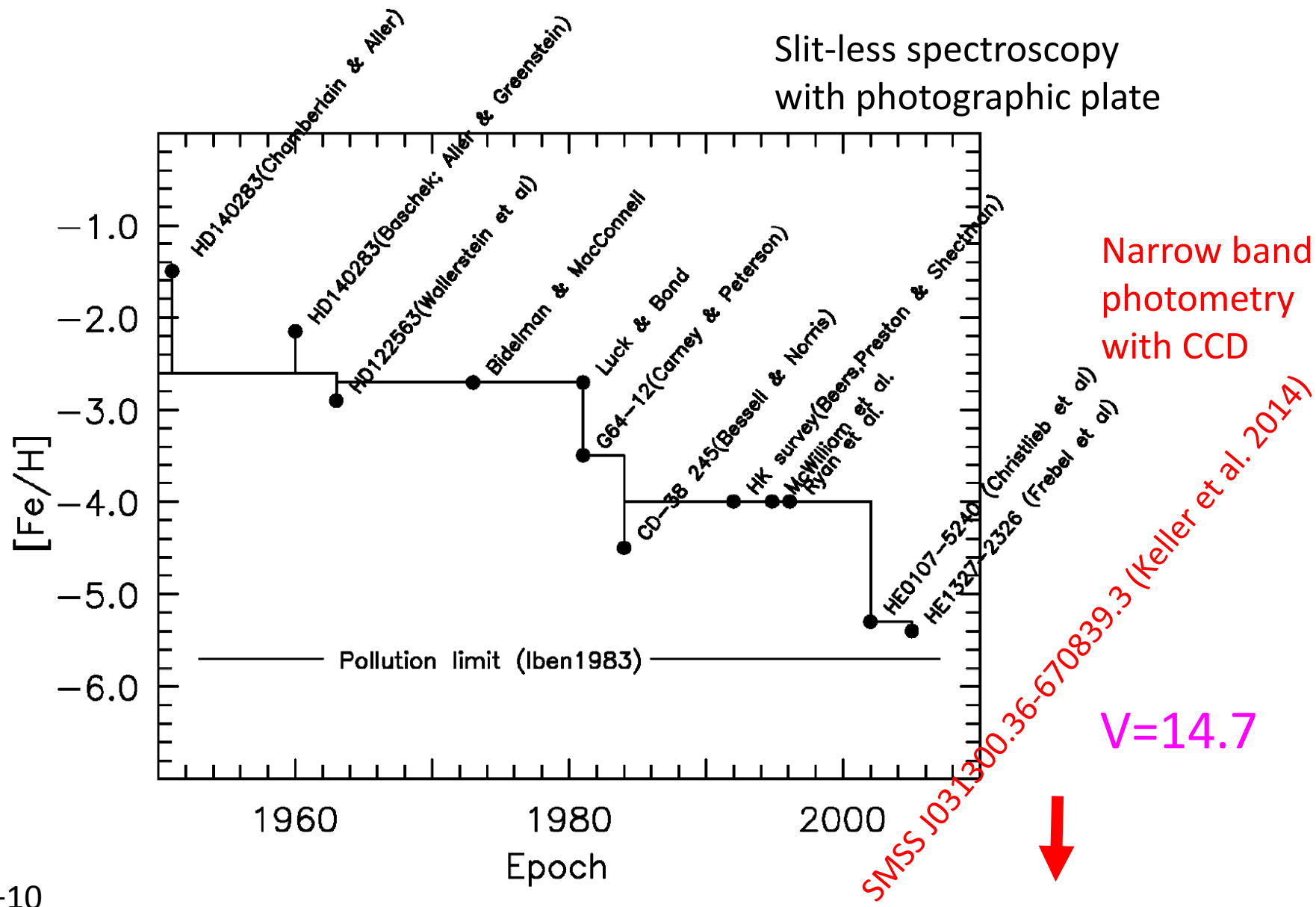




# Metal-poor star with the lowest [Fe/H]



# Record holders of low $[\text{Fe}/\text{H}]$



# All-sky bright metal-poor star survey

- Filter: Strömgren v (390nm, [Fe/H]),  
Strömgren G (430nm, [C/Fe])  
with PS1  $3\pi$  broad-band data
- Limiting magnitude and survey width:  
(no filter, 1night) 18mag 20000deg<sup>2</sup>  
→ (g/i, 1night) 16mag? 20000deg<sup>2</sup>  
(v/G, 1night) 14mag? 20000deg<sup>2</sup>  
Differences of band widths are taken into account.
- Area: 20000-30000deg<sup>2</sup>
- More realistic estimate is needed.
- High-res. spec. follow-up obs. with Kyoto 3.8m telescope