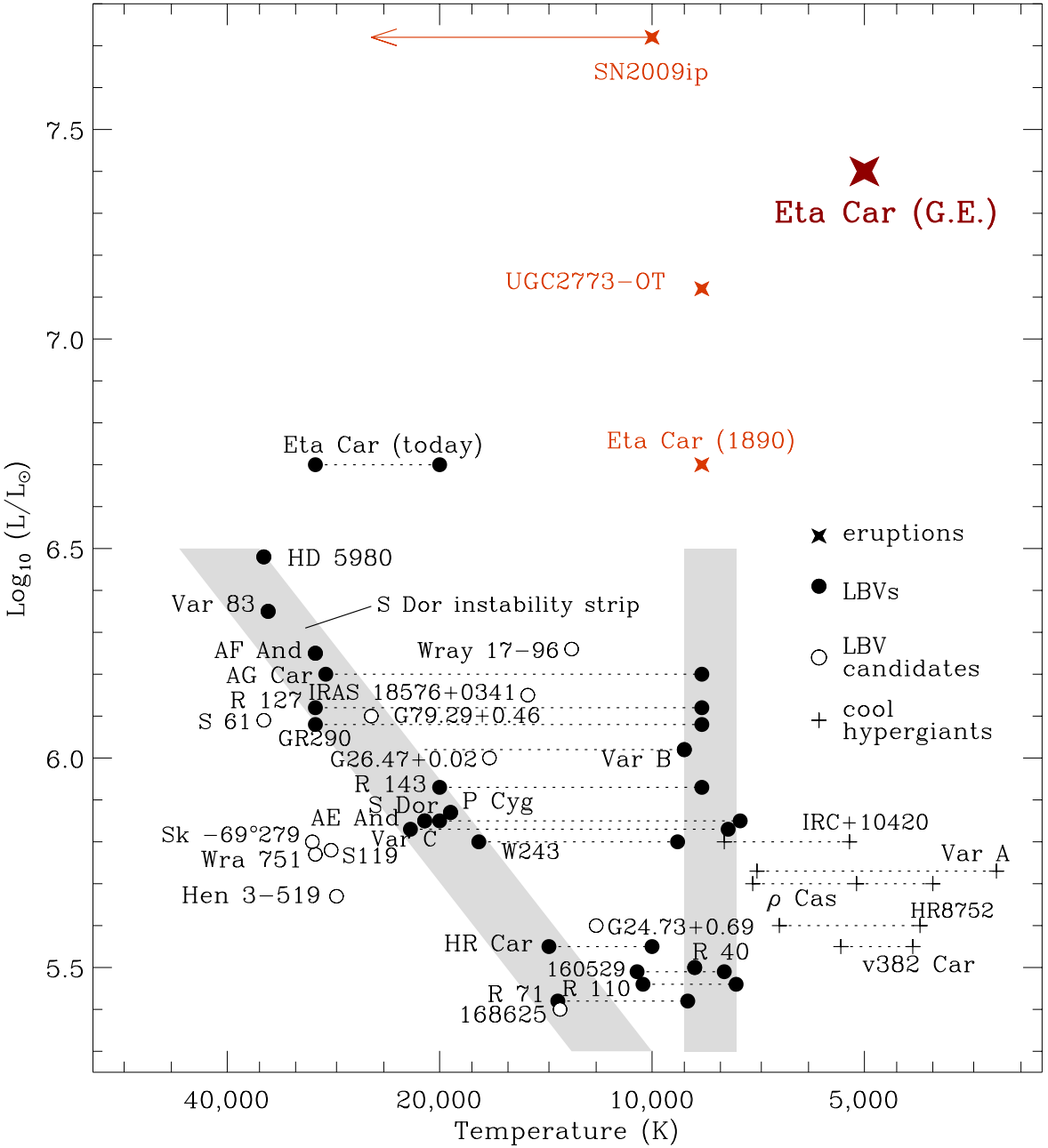
light echoes of η-Carinae

federica b. bianco


SN2009ip
Eta Car (G.E.)
UGC2773−OT
Eta Car (today)
Eta Car (1890)
HD 5980
Var 83
S Dor instability strip
AF And
Wray 17−96
AG Car
R 127
IRAS 18576+0341
S 61
G79.29+0.46
GR290
G26.47+0.02
Var B
R 143
S Dor
P Cyg
AE And
Sk −69°279
Var C
W243
IRC+10420
Wra 751
S119
Var A
Hen 3−519
ρ Cas
HR8752
G24.73+0.69
HR Car
R 40
160529
v382 Car
R 110
R 71
168625
eruptions
LBVs
LBV candidates
cool hypergiants
7.5
7.0
6.5
6.0
5.5
Log10 (L/L⊙)
40,000
20,000
10,000
5,000
Temperature (K)

Smith+ 2004

Davidson 1997

Vick 1997

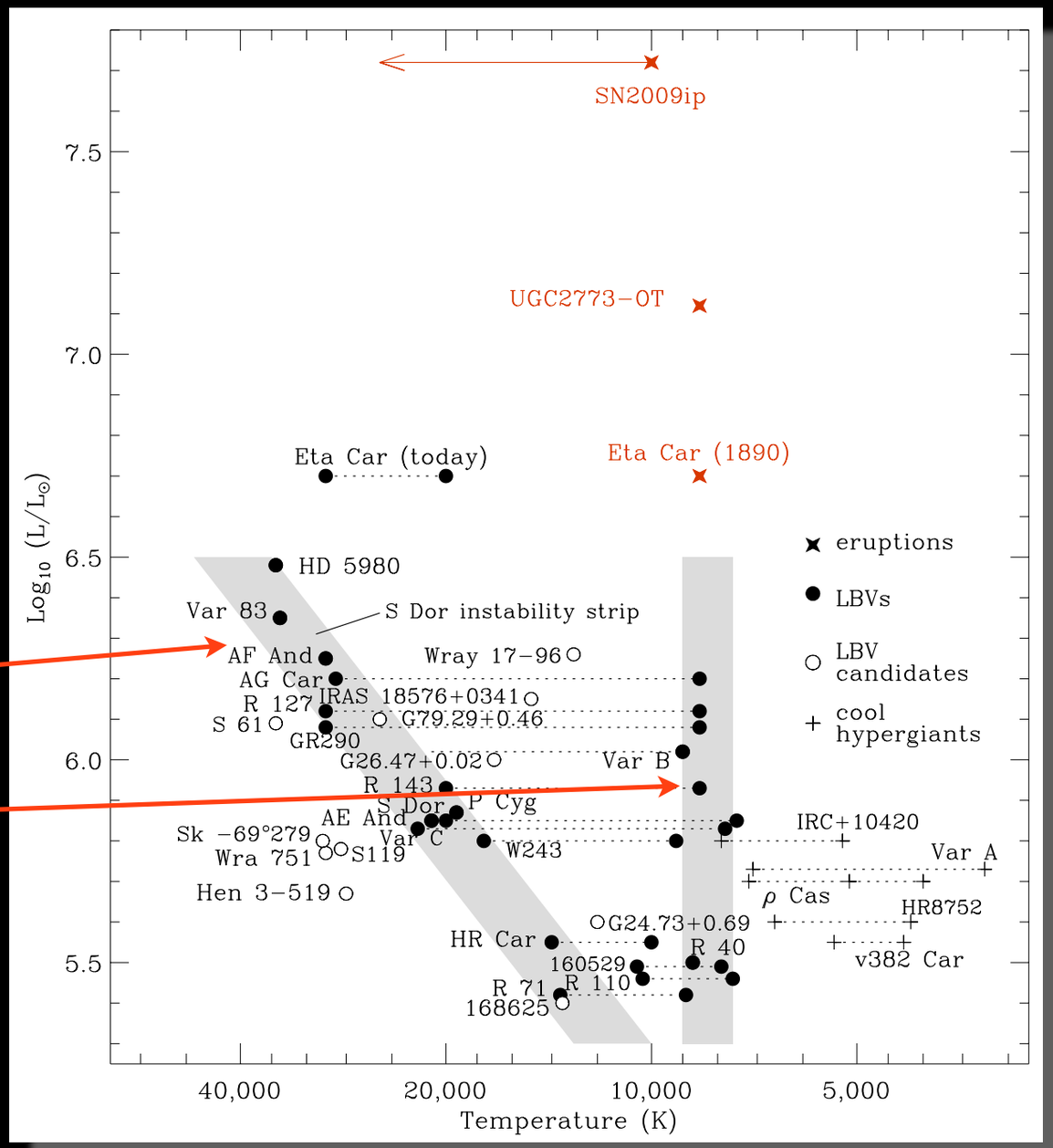
Vick 2009

Luminous Blue Variables

Luminous Blue Variables

transition in the HR diagram:

- quiescence: T_{eff} = 15,000 K - 30,000 K
- burst: T_{eff} > 7,000 K



Vick 2009 Smith+ 2004 Vick 1997 Davidson 1997

Luminous Blue Variables

η Car-like

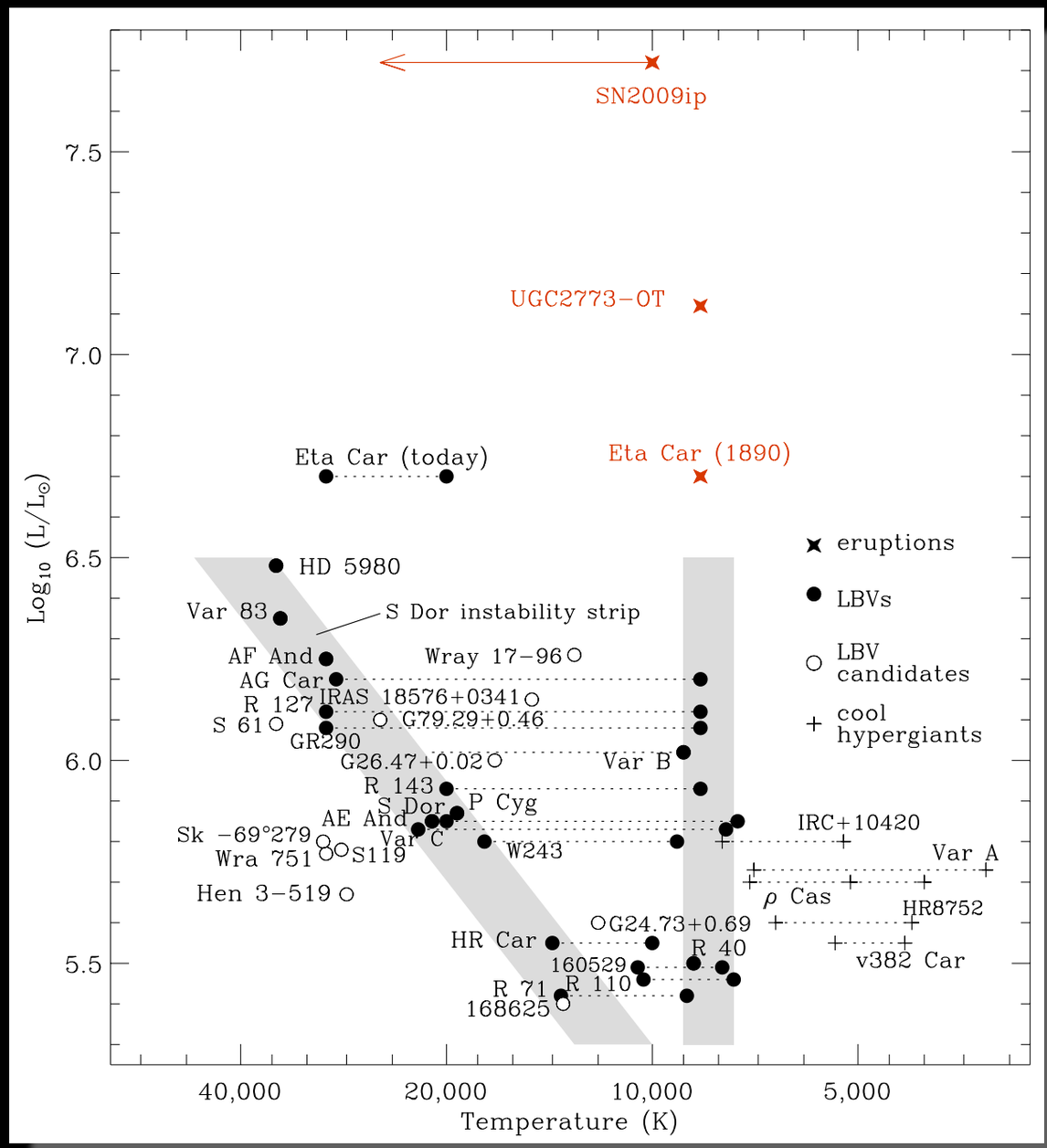
1. increase in luminosity (***unexplained***)
2. super-Eddington wind
3. optically thick pseudo-photosphere forms at larger radius than hydrostatic stellar surface
4. mass loss, decrease in effective temp
5. pseudo-photosphere moves out (no expansion of star)

HARD LIMIT T>=7000K, F-type spectrum

S Dor-like

1. massive star attempts to evolve redward
2. encounters the Humphreys-Davidson Limit beyond which no stable stars are observed

HARD LIMIT T>=7000-9000K A-F-type



Vick 2009 Smith+ 2004 Vick 1997 Davidson 1997

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